

The Amphibians and Reptiles Of the UK Overseas Territories, Crown Dependencies and Sovereign Base Areas

Species Inventory and Overview of Conservation and Research Priorities

> Paul Edgar July 2010



Acknowledgements

Amphibian and Reptile Conservation wishes to acknowledge the financial support of the Joint Nature Conservation Committee in the production of this report. The following people provided comments, advice and other assistance:

John Baker: Amphibian and Reptile Conservation, Bournemouth Gerald Benjamin: Senior Fisheries Officer, St. Helena David Bird: British Herpetological Society, London Oliver Cheesman: UK Overseas Territories Conservation Forum Andrew Darlow: Invasive Species Project Officer, St. Helena Ian Davidson-Watts: Defence Estates, Episkopi Garrison, Akrotiri Sovereign Base Area, Cyprus Ian Dispain: Cyprus Sovereign Base Areas Shayla Ellick: Joint Nature Conservation Committee, Peterborough Tony Gent: Amphibian and Reptile Conservation, Bournemouth Matthias Goetz: Durrell Wildlife Conservation Trust, Jersey Robert Henderson: Milwaukee Public Museum, Milwaukee, USA Lisa Kitson: Bermuda Tara Pelembe: Joint Nature Conservation Committee, Peterborough Angela Reynolds: Amphibian and Reptile Conservation, Bournemouth Sarah Sanders: RSPB, Sandy Peter Stafford: Natural History Museum, London Edward Thorpe: St. Helena David Wege: BirdLife International John Wilkinson: Amphibian and Reptile Conservation, Bournemouth Helen Wraight: Amphibian and Reptile Conservation, Bournemouth

Original maps produced by Sally Millar

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Front Cover: The critically endangered Bermuda skink Plestiodon longirostris (Photo: Paul Edgar)

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1. Introduction

1.1. Background

The "UK Overseas Territories, Crown Dependencies and Sovereign Base Areas" are a number of small, self-governing territories and dependencies around the world, plus two large military training areas on Cyprus (see Section 2.1.), that remain under the jurisdiction of the UK or the British Crown. Occurring in a wide range of regions and climatic zones, these "territories" include many different habitat types and, between them, support a remarkable wealth of biodiversity that includes a high proportion of endemic species. However, the often-unique flora and fauna of the territories also face a wide variety of threats to their survival (Oldfield 1987; UKDTCF 1996; Cross & Pienkowski 1998; Proctor & Fleming 1999; Varnham 2006). All of the territories recognise various international conservation conventions and agreements and have developed national strategies for environmental protection, sustainable development and the conservation of their biodiversity.

While some very positive conservation initiatives have already been undertaken in the UK Overseas Territories, Crown Dependencies and Sovereign Base Areas (e.g. Godley *et al* 2004) much remains to be done. It has been recognised for some time that a lack of basic species and ecosystem inventory data hinders the development of overarching biodiversity conservation strategies (Oldfield & Sheppard 1997). Basic information about the species present – their distribution, population status, conservation priorities and so on – is one of the key requirements for the successful conservation of the entire flora and fauna of a particular territory, not just a handful of high profile or charismatic species. Although such inventories have been prepared for some groups of flora and fauna in the British territories, and for the herpetofauna of some of the territories of the UK and other EU member states (e.g. Hodge, Censky & Powell 2003; Lorvelec *et al* 2007; Powell, Henderson & Parmerlee 2005), no complete inventory exists for the amphibians and reptiles of all the UK Overseas Territories, Crown Dependencies and Sovereign Base Areas. This report by the Amphibian and Reptile Conservation Trust and partners, which has been part funded by the Joint Nature Conservation Committee, is the first attempt at producing this basic information.

1.2. Aims

This report has four basic aims:

1. To produce a complete inventory of all the indigenous and introduced species of amphibian and reptile currently known to occur in all UK Overseas Territories, Crown Dependencies and Sovereign Base Areas as a resource for use by all interested bodies. Three adjuncts to this aim are to i. compile a dataset of all relevant literature; ii. to summarise the very considerable number of taxonomic changes that have recently been made to the herpetofauna and iii. to summarise the known conservation status of each species (as indicated their known distribution and the IUCN Red List and CITES appendices).

2. Once this report is completed, and following consultation with and input from relevant experts, to help identify conservation priorities for the herpetofauna of all UK Overseas Territories, Crown Dependencies and Sovereign Base Areas with a view to this being used widely and, in due course, to facilitate wider support and involvement.

3. To make initial recommendations for further survey, monitoring and scientific research work concerning the herpetofauna of the UK Overseas Territories, Crown Dependencies and Sovereign Base Areas. Please note that it is beyond the scope of this report to make detailed conservation recommendations for individual species. These should only be prepared (e.g. in the form of species action plans) with input and direction from the territory or dependency concerned and after specific background work, including appropriate fieldwork, and consultation have taken place.

4. In addition, to provide the Amphibian and Reptile Conservation Trust with the necessary background information on species distribution, conservation status, research priorities and funding requirements to help determine its own future involvement in this area. This will include exploring options for further projects and funding to aid the conservation status of the herpetofauna of the British Crown Dependencies, plus the Overseas Territories of the UK and other EU member states, in particular through working with our European partners and with the European Commission.

1.3. Research

The bulk of the background research to this project to date has included a detailed literature search. Almost 2400 potential references have been identified and, as of August 2009, over 600 of the most relevant papers have been obtained – N.B. only a small selection of these references is included here and the text will not be properly referenced throughout until the final version is produced. Nonetheless, this background work has enabled the draft species inventory (see section 2.1.) and the summary of recent taxonomic changes (see Appendix) to be prepared, upon which the rest of this report has subsequently been based. Several web-based inventories and databases were also examined, primarily to clarify a number of apparent anomalies and mistakes in distribution records and nomenclature that have appeared on the Internet.

1.4. Report Layout

The information contained in the rest of this report is presented in the following (hopefully) logical sequence.

Section 1: Background and Aims. Why this report has been produced.

Section 2: Basic species inventory information. Includes a species checklist, a summary of conservation status, a ranking of all species into six conservation categories and, as an appendix, a summary of recent taxonomic changes.

Section 3: Territory accounts. These provide, for each territory, a checklist of the amphibians and reptiles present, notes on their current status (if known), an indication of any priority species and key references for that territory.

Section 4: Priority species accounts. These include further notes, plus references and recommendations, for the priority species identified in the territory accounts. These accounts are divided into four categories: i. priority species of international conservation concern; ii. priority species of local conservation concern; iii. introduced species of conservation concern; iv. species that have become extinct in the UK Overseas Territories.

Section 5: Recommendations. Suggestions for further work, particularly surveys, monitoring and research.

1.6. References

Cross, S. and M. Pienkowski. (Eds.). 1998. Overlooking Britain's Greatest Biodiversity? The Convention on Biological Diversity and the UK Overseas Territories. Report to WWF-UK by the UK Overseas Territories Conservation Forum.

Godley, B.J, A.C. Broderick, L.M. Campbell, S. Ranger and P.B. Richardson. 2004. An Assessment of the Status and Exploitation of Marine Turtles in the UK Overseas Territories in the Wider Caribbean. Final Project Report for the Department of Environment, Food and Rural Affairs and the Foreign and Commonwealth Office, UK. Online at: http://www.seaturtle.org/mtrg/projects/tcot/finalreport/

Hindmarch, C. 2007. Biodiversity on the far-flung outposts of Europe. Biologist 54: 80-85.

Hodge, K.V.D., E. J. Censky and R. Powell 2003. The Reptiles and Amphibians of Anguilla, British West Indies. The Anguilla National Trust, The Valley, Anguilla.

Lorvelec, O., M. Pascal, C. Pavis and P. Feldmann. 2007. Amphibians and reptiles of the French West Indies: inventory, threats and conservation. Applied Herpetology 4: 131-161.

Oldfield, S. 1987. Fragments of paradise: a guide for conservation in the UK dependent territories. British Association of Nature Conservationists, Pisces Publications, Oxford.

Oldfield, S. and C. Sheppard. 1997. Conservation of biodiversity and research needs in the UK Dependent Territories. Journal of Applied Ecology 34: 1111-1121.

Powell, R., R.W. Henderson and J.S. Parmerlee. 2005. The Reptiles and Amphibians of the Dutch Caribbean. St. Eustatius, Saba, and St Maarten. The St. Eustatius National Parks Foundation, Gallows Bay, St. Eustatius, Netherlands Antilles.

Proctor, D. and L.V. Fleming. 1999. Biodiversity in the Overseas Territories. Joint Nature Conservation Committee, Peterborough.

UKDTCF. 1996. UK Dependent Territories: A Conservation Review. UK Dependent Territories Conservation Forum, Leighton Buzzard, UK.

Varnham, K.J. 2006. Non-native species in UK Overseas Territories: a review. JNCC Report No. 372, Joint Nature Conservation Committee, Peterborough.

2. The Amphibians and Reptiles of the UK Overseas Territories, Crown Dependencies and Sovereign Base Areas

2.1. The UK Overseas Territories, Crown Dependencies and Sovereign Base Areas

The following arrangement for the various UK Overseas Territories, Crown Dependencies and Sovereign Base Areas is used in this report, although this is not strictly politically accurate (e.g. Ascension Island, St. Helena and Tristan de Cunha are actually classed as a single UK Overseas Territory, whilst there are two separate Sovereign Base Areas on Cyprus). The territories are also grouped according to their general location – this means that Bermuda, which is often termed a 'wider Caribbean' territory, is included in the Atlantic (although the Turks and Caicos Islands, also in the Atlantic, are included in the Caribbean because they have many herpetofaunal similarities to this region).

Those territories with no recorded herpetofauna are not considered further in this report. The remaining 15 territories support a total of 135 indigenous (19 amphibian and 116 reptile) and 45 introduced species (11 amphibian and 34 reptile). Six of these species have both indigenous and introduced populations, so the overall total for the "British overseas herpetofauna" is therefore 174 species. While the herpetofauna of the UK itself is not considered in this report, nine of its 14 species also occur in several Crown Dependencies and territories in Europe.

A very high proportion (60 species or 44.4%) of the 135 species of herpetofauna native to these territories are of the highest concervation concern (indeed, seven of these species are already believed to be extinct in the UK Overseas Territories, although fortunately all still occur elsewhere). Most significantly, 34 species of amphibian and reptile (25.2% of the total) are endemic to the UK Overseas Territories and are therefore found nowhere else in the world.

Location of UK Overseas Territories, Crown Dependencies and Sovereign Base Areas



Map 1: Location of the UK Overseas Territories, Crown Dependencies and Sovereign Base Areas

The Caribbean

1. Anguilla. UK Overseas Territory. Seventeen indigenous (three of which are endemic) and eight introduced species of amphibian and reptile. One non-endemic indigenous species is believed to be extinct.

2. British Virgin Islands. UK Overseas Territory. Thirty-one indigenous (eight of which are endemic) and six introduced species of amphibian and reptile. Two non-endemic indigenous species are believed to be extinct.

3. Cayman Islands. UK Overseas Territory. Twenty-six indigenous (14 of which are endemic) and 14 introduced species of amphibian and reptile. One non-endemic indigenous species is believed to be extinct.

4. Montserrat. UK Overseas Territory. Fifteen indigenous (three of which are endemic) and three introduced species of amphibian and reptile.

5. Turks and Caicos Islands. UK Overseas Territory. Fifteen indigenous (five of which are endemic) and two introduced species of amphibian and reptile.

The Atlantic

6. Bermuda. UK Overseas Territory. Five indigenous (one of which is endemic) and eight introduced species of amphibian and reptile.

7. Ascension Island. UK Overseas Territory (part of the territory of St. Helena). Four indigenous and four introduced species of amphibian and reptile.

8. St. Helena. UK Overseas Territory (includes Ascension Island and Tristan da Cunha). Three indigenous and two introduced species of amphibian and reptile.

9. Tristan da Cunha. UK Overseas Territory (part of the territory of St. Helena). No herpetofauna recorded.

10. Falkland Islands. UK Overseas Territory. No herpetofauna recorded.

11. South Georgia and the Sandwich Islands. UK Overseas Territory. No herpetofauna recorded.

Antarctica

12. British Antarctic Territory. UK Overseas Territory. No herpetofauna recorded.

Europe and the Mediterranean

13. Isle of Man. British Crown Dependency (not part of the UK or the EU). Three indigenous species of amphibian and reptile.

14. Balliwick of Guernsey. British Crown Dependency (not part of the UK or the EU). Four indigenous and one introduced species of amphibian and reptile.

15. Balliwick of Jersey. British Crown Dependency (not part of the UK or the EU). Eight indigenous and one introduced species of amphibian and reptile.

16. Gibraltar. UK Overseas Territory. Twenty-two indigenous and nine introduced species of amphibian and reptile. Three indigenous species are believed to be extinct.

17. Cyprus Sovereign Base Areas. The Sovereign Base Areas of Akrotiri and Dhekelia, administered by the UK Ministry of Defence. Incomplete surveys - up to 30 indigenous and two introduced species of amphibian and reptile.

The Indo-Pacific

18. British Indian Ocean Territory. UK Overseas Territory. Three indigenous and six introduced species of amphibian and reptile.

19. Pitcairn Islands. UK Overseas Territory. Three indigenous and four introduced species of amphibian and reptile.

2.2. Checklist of the Amphibians and Reptiles of the UK Overseas Territories (Table 1)

ANG – Anguilla **CAY** – Cayman Islands **BVI** – British Virgin Islands **MON** – Montserrat ASC – Ascension Island StH – St. Helena IoM – Isle of Man **GUE** – Bailiwick of Guernsey **CYP** – Cyprus (the Sovereign Base Areas of Akrotiri and Dhelekia) IOT -British Indian Ocean Territory

TCI – Turks & Caicos Islands JER – Bailiwick of Jersey

BER – Bermuda **GIB** – Gibraltar

PIT - Pitcairn Islands

E – Denotes a species endemic to a particular Overseas Territory X – Denotes an indigenous species that is now thought to be extinct in a Territory * Denotes a non-indigenous species that has been introduced by humans, deliberately or unwittingly, to one or more Territories

	UK Overseas Territories, British Crown Dependencies and Sovereign Base Areas														
Species			Caribbea	n			Atlantic		I	Europe an	d the Mec	literranea	n	Indo-Pacific	
	ANG	BVI	CAY	MON	TCI	BER	ASC	StH	loM	GUE	JER	GIB	CYP	ΙΟΤ	PIT
AMPHIBIA															
Family Salamandridae															
Lissotriton helveticus											Х				
Lissotriton vulgaris										Х					
Pleurodeles waltl*												Χ*			
Family Pelobatidae															
Pelobates cultripes X												Х			
Family Bufonidae															
Bufo bufo											Х	Χ*			
Epidalea calamita												Х			
Epidalea viridis													Х		
Peltophryne lemur X		Х													
Rhinella marina*	X*	Χ*	Х*	Χ*		Χ*								Χ*	
Family Leptodactylidae															
Leptodactylus albilabris		Х													
Leptodactylus fallax				Х											
Family Brachycephalidae															
Eleutherodactylus antillensis		Х													
Eleutherodactylus cochranae		Х													
Eleutherodactylus gossei*						Χ*									
Eleutherodactylus johnstonei	X*			Х		Χ*									
Eleutherodactylus lentus		Х													
Eleutherodactylus planirostris*			Χ*		Χ*										
Eleutherodactylus schwartzi E		Х													
Family Hylidae															
Hyla meridionalis*												Χ*			
Hyla savignyi													Х		
Osteopilus septentrionalis	X*	X*	Х												

	UK Overseas Territories, British Crown Dependencies and Sovereign Base Areas														
Species			Caribbear	า			Atlantic		I	Europe an	d the Med	literranea	n	Indo-F	Pacific
	ANG	BVI	CAY	MON	TCI	BER	ASC	StH	loM	GUE	JER	GIB	CYP	ΙΟΤ	PIT
Family Ranidae															
Pelophylax bedriagae													Х		
Pelophylax perezi*												Χ*			
Rana dalmatina											Х				
Rana temporaria									Х	Х					
Family Pyxicephalidae															
Strongylopus grayii*								Χ*							
Family Microhylidae															
Gastrophryne carolinensis*			Х*												
REPTILIA															
Family Cheloniidae															
Caretta caretta	Х	Х	Х	Х	Х	Х	Х					Х	Х		
Chelonia mydas	Х	Х	Х	Х	Х	Х	Х	Х				Х	Х	Х	Х
Eretmochelys imbricata	Х	Х	Х	Х	Х	Х	Х	Х						Х	Х
Lepidochelys olivacea		Х													
Family Dermochelyidae															
Dermochelys coriacea	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
Family Emydidae															
Emys orbicularis*												Χ*			
Malaclemys terrapin*						Х*									
Mauremys leprosa*												Х*			
Mauremys rivulata													Х		
Pseudemys nelsoni*		Х*													
Trachemys decussata*			Х*												
Trachemys scripta*		Х*	Х*			Х*					Χ*	Х*			
Family Testudinidae															
Chelonoidis carbonaria	Х	Х		Х											
Testudo graeca*												Х*	Χ*		
Testudo marginata*													Χ*		
Family Geoemydidae															
Melanochelys trijuga*														Х*	
Family Pelomedusidae															
Pelusios subniger*														Х*	
Family Crocodylidae															
Crocodylus acutus			Х												
Crocodylus rhombifer X			Х												

	UK Overseas Territories, British Crown Dependencies and Sovereign Base Areas														
Species			Caribbear	า		Atlantic Europe				Europe an	d the Med	literranea	n	Indo-F	Pacific
-	ANG	BVI	CAY	MON	TCI	BER	ASC	StH	loM	GUE	JER	GIB	CYP	ΙΟΤ	PIT
Family Gekkonidae															
Aristelliger hechti E					Х										
Aristelliger praesignis			Х												
Cyrtopodion kotschyi													Х		
Gonatodes albogularis*			Х*												
Hemidactylus frenatus*							Χ*	Χ*						Х*	
Hemidactylus mabouia*	Х*	Х*	Х*	Χ*											
Hemidactylus mercatorius*							Χ*								
Hemidactylus turcicus												Х	Х		
Lepidodactylus lugubris*														Х*	Х*
Pachydactylus geitje*							Х*								
Sphaerodactylus argivus E			Х												
Sphaerodactylus caicosensis E					Х										
Sphaerodactylus fantasticus				Х											
Sphaerodactylus macrolepis		Х													
Sphaerodactylus mariguanae					Х										
Sphaerodactylus parthenopion E		Х													
Sphaerodactylus parvus	Х														
Sphaerodactylus sputator	Х														
Sphaerodactylus underwoodi E					Х										
Sphaerodactylus sp. nov. E	Х														
Tarentola mauritanica												Х			
Thecadactylus rapicauda	Х	Х		Х											
Family Agamidae															
Laudakia stellio													Х		
Calotes versicolor*														Х*	
Family Chamaeleonidae															
Chamaeleo chamaeleon												Χ*	Х		
Family Lacertidae															
Acanthodactylus erythrurus X												Х			
Acanthodactylus schreiberi													Х		
Lacerta bilineata										Х*	Х				
Ophisops elegans													Х		
Phoenicolacerta troodica													Х		
Podarcis hispanicus												Х			
Podarcis muralis											Х				
Psammodromus algirus												Х			
Timon lepidus												Х			
Zootoca vivipara									Х						

10

		UK Overseas Territories, British Crown Dependencies and Sovereign Base Areas													
Species			Caribbear	1		Atlantic Europe and t				d the Mediterranean			Indo-Pacific		
-	ANG	BVI	CAY	MON	TCI	BER	ASC	StH	loM	GUE	JER	GIB	CYP	ΙΟΤ	PIT
Family Iguanidae															
Cyclura carinata					Х										
Cyclura lewisi E			Х												
Cyclura nubila			Х												
Cyclura pinguis E		Х													
Iguana delicatissima	Х														
Iguana iguana*	Χ*	Χ*	Χ*	Х*	Х*										
Family Tropiduridae															
Leiocephalus carinatus			Х												
Leiocephalus psammodromus E					Х										
Liolaemus wiegmanni*							Χ*								
Family Polychrotidae															
Anolis carolinensis*	X*		Χ*												
Anolis conspersus E			Х												
Anolis cristatellus		Х													
Anolis cuvieri		Χ?													
Anolis ernestwilliamsii E		Х													
Anolis extremus*						Χ*									
Anolis garmani*			Х*												
Anolis gingivinus	Х														
Anolis grahami*						X*									
Anolis leachii*						X*									
Anolis lividus <mark>E</mark>				Х											
Anolis luteosignifer E			Х												
Anolis maynardi <mark>E</mark>			Х												
Anolis pogus X	Х														
Anolis pulchellus		Х													
Anolis roosevelti X		Х													
Anolis sagrei			X+X*												
Anolis scriptus					Х										
Anolis stratulus		Х													
Family Teiidae															
Ameiva corax E	Х														
Ameiva corvina E	Х														
Ameiva exsul		Х													
Ameiva plei	Х														
Ameiva pluvianotata				Х											

				UK Ove	rseas Ter	ritories, E	British Cro	wn Deper	ndencies	s and Sovereign Base Areas							
Species			Caribbear	า			Atlantic	•		Europe an	d the Med	literranea	n	Indo-F	Pacific		
	ANG	BVI	CAY	MON	TCI	BER	ASC	StH	loM	GUE	JER	GIB	CYP	ΙΟΤ	PIT		
Family Scincidae																	
Ablepharus budaki													Х				
Chalcides bedriagai												Х					
Chacides ocellatus													Х				
Chalcides striatus												Х					
Cryptoblepharus poecilopleurus*													Χ*				
Emoia cyanura*															Х*		
Eumeces schneideri													Х				
Lipinia noctua*															Х*		
Mabuya macleani <mark>E</mark>		Х															
Mabuya sloanii complex	Х	Х		Х	Х												
Plestiodon longirostris E						Х											
Trachylepis vittata													Х				
Family Anguidae																	
Anguis fragilis										Х	Х						
Celestus maculatus E			Х														
Diploglossus montisserrati E				Х													
Ophisaurus ventralis*			Χ*														
Family Amphisbaenidae																	
Amphisbaena fenestrata		Х															
Blanus cinereus												Х					
Blanus strauchi													Х				
Family Typhlopidae																	
Ramphotyphlops braminus*	Х*		Х*														
Typhlops catapontus E		Х															
Typhlops caymanensis E			Х														
Typhlops epactius E			Х														
Typhlops naugus <mark>E</mark>		Х															
Typhlops monastus				Х													
Typhlops richardi					Х												
Typhlops vermicularis													Х				
Family Boidae																	
Epicrates chrysogaster					Х												
Epicrates monensis		Х															
Family Tropidophiidae																	
Tropidophis caymanensis E			Х														
Tropidophis greenwayi E					Х												
Tropidophis parkeri <mark>E</mark>			Х														
Tropidophis schwartzi E			Х														

				UK Ove	rseas Ter	ritories, E	British Cro	wn Depei	ndencies	and Sove	reign Bas	e Areas			
Species			Caribbear	1			Atlantic		E	Europe an	d the Med	literranea	n	Indo-Pacific	
	ANG	BVI	CAY	MON	TCI	BER	ASC	StH	loM	GUE	JER	GIB	СҮР	ΙΟΤ	PIT
Family Colubridae															
Alsophis manselli <mark>E</mark>				Х											
Alsophis rijgersmaei	Х														
Borikenophis portoricensis		Х													
Coronella girondica												Х			
Cubophis caymanus E			Х												
Cubophis fuscicauda E			Х												
Cubophis ruttyi <mark>E</mark>			Х												
Diadophis punctatus*			Χ*												
Dolichophis cypriensis													Х		
Dolichophis jugularis													Х		
Eirenis levantinus													Х		
Hemorrhois hippocrepis												Х			
Hemorrhois nummifer													Х		
Macroprotodon cucullatus												Х			
Magliophis exiguus		Х													
Malpolon insignitus													Х		
Malpolon monspessulanus												Х			
Natrix maura X												Х			
Natrix natrix											Х	Х	Х		
Natrix tessellata													Х		
Pantherophis guttatus*	Χ*		Χ*												
Platyceps najadum													Х		
Rhinechis scalaris												Х			
Telescopus fallax													Х		
Tretanorhinus variabilis			Х												
Family Viperidae															
Macrovipera lebetina													Х		
Vipera latastei												Х			
Total No. of Native Species	17	31	26	15	15	5	4	3	3	4	8	22	30	3	3
No. of Endemic Species	3	8	14	3	5	1	0	0	0	0	0	0	0	0	0
No. of Extinct Native Species	1	2	1	0	0	0	0	0	0	0	0	3	0	0	0
No. of Introduced Species	8	6	14	3	2	8	4	2	0	1	1	9	2	6	4
Total Number of Species	25	37	40	18	17	13	8	5	3	5	9	31	32	9	7

2.3. Conservation Status

The tables below also list the 135 indigenous and 45 introduced species of amphibian and reptile that are currently known to occur in the UK Overseas Territories, the British Crown Dependencies and the two Cyprus Sovereign Base Areas of Akrotiri and Dhekelia. N.B. since three amphibian and three reptile species have both indigenous *and* introduced populations in the terrtories, the total number of all species is actually 174, not the 180 obtained by adding the total numbers of native and introduced species given above. An attempt has been made here to indicate the conservation status of these 174 species by placing each into one of six conservation categories:

- **Category I.** Includes all species and subspecies that are endemic to one of the UK Overseas Territories, plus any other non-endemic species that are listed as Critically Endangered and Endangered on the 2008 IUCN Red List or on Appendices I, II or III of CITES (60 species). Significantly, 34 species are endemic to the UK Overseas Territories.
- **Category II.** Indigenous species that are "near-endemics" (i.e. a significant proportion of their global population occurs within the UK Overseas Territories) *or* they are listed as Near Threatened or Vulnerable on the IUCN Red List and are not otherwise CITES listed (11 species).
- **Category III.** Indigenous species that are not thought to be threatened but nonetheless have a restricted global range, including one or more UK Overseas Territory or Dependency (e.g. the Anguilla Bank), which therefore increases their potential vulnerability (18 species).
- Category IV. Indigenous species that are widespread and under no immediate or apparent global threat (46 species).
- Category V. Introduced species considered to be of minimal conservation concern (32 species).
- **Category VI.** Introduced species that pose an actual or potential threat to indigenous amphibian or reptile species, in most cases through direct competition, or to other wildlife in at least one UK Overseas Territory (13 species).

Conservation Category	Amphibians	Reptiles	All Herpetofauna
Category I – Indigenous species	4	56	60
Category II – Indigenous species	1	10	11
Category III – Indigenous species	3	15	18
Category IV – Indigenous species	11	35	46
Totals of Indigenous Species	19	116	135
Category V – Introduced species	9	23	32
Category VI – Introduced species	2	11	13
Totals of Introduced Species	11	34	45
Total Numbers of all Species	30 (27*)	150 (147*)	180 (174*)

Table 2: Total Numbers of Species in UKOT Herpetofauna Conservation Categories

*Since three amphibian and three reptile species have both indigenous *and* introduced populations, those numbers marked with an asterix show the actual species totals. N.B. in some cases, species have been moved between islands within individual territories but these are not counted here as introductions. For example, *Anolis maynardi*, which is endemic to Little Cayman, has been introduced to both Grand Cayman and Cayman Brac but is not included in this Category. On the other hand *Anolis sagrei*, which is also indigenous to Little Cayman and has been introduced to Grand Cayman, is included here because the introduced animals clearly originated from Florida.

The following listings and designations are also shown for each species, although it should be borne in mind that the IUCN Red Lists are currently incomplete for reptiles and that many endemic and/or endangered species have not yet been listed.

IUCN 2008 Red List Categories (N.B. the two currently undescribed species are not included):

- CR Critically Endangered (12 species)
- NT Near Threatened (8 species)
- LC Least Concern (43 species)

EN – Endangered (7 species) VU – Vulnerable (4 species) X – Not yet listed (100 species, all reptiles)

CITES Appendices:

I - Appendix I (12 species)	II – Appendix II (10 species)	
III – Appendix III (0 species)	X – denotes species not listed on any CITES Append	ix (152 species)

Table 3: Category I Species. Includes all species and subspecies that are endemic to one of the UK Overseas Territories, plus any other non-endemic species that are listed as Critically Endangered and Endangered on the 2008 IUCN Red List or on Appendices I, II or III of CITES (60 species).

Species Name	Common Name	IUCN	CITES	Notes
Peltophryne lemur	Puerto Rican Crested Toad	CR	Х	Extinct on British Virgin Is.
Leptodactylus fallax	Mountain Chicken	CR	Х	Montserrat & Dominica only
Eleutherodactylus lentus	Virgin Islands Robber Frog	EN	Х	Only on British & US Virgin Is.
Eleutherodactylus schwartzi	Schwartz's Robber Frog	EN	Х	Endemic BVI (extinct on USVI)
Caretta caretta	Loggerhead Turtle	EN		Nests in 5 British territories
Chelonia mydas	Green Turtle	EN		Nests in 8 British territories
Eretmochelvs imbricata	Hawksbill Turtle	CR		Nests in 6 British territories
Lepidochelys olivacea	Olive Bidley Turtle	VU		Barely seen not known to nest
Dermochelys coriacea	Leatherback Turtle	CB		Nests in 4 British territories
Chelonoidis carbonaria	Bed-footed Tortoise	X		Serious decline on many islands
Crocodylus acutus	American Crocodile	VII		Very rare visitor to Cayman Is
Crocodylus rhombifer	Cuban Crocodile	CB		Extinct on the Cayman Islands
Aristelliger bechti	Caicos Croaking Gecko	X	X	Endemic to Turks & Caicos Is
Sphaerodactylus argivus	Cayman Dwarf Gecko	X	X	Endemic to the Cayman Islands
Sphaerodactylus caicosensis	Caicos Dwarf Gecko	X	X	Endemic to Turks & Caicos Is
Sphaerodactylus fantasticus	Eantastic Dwarf Gocko	X	X	One endemic subspecies
Sphaerodactylus narthananian	Virgin Corda Dwarf Gooko	×	×	Endomic to Britich Virgin Ic
Sphaerodactylus partnenopion	Underwood's Dwarf Gooko	× ×	× ×	Endemic to Turke & Calace Is
Sphaerodactylus under wood	"Sombroro Dwarf Gooko"	×	×	Endemic to Anguille?
Spriaerodactylus sp. nov.	Sombrero Dwari Gecko		X	Endernic to Anguilla?
Acanthodactylus schreiben	Schreiber's Fringe-toed Lizard	EN	<u> </u>	Declining in Cyprus/Svv Asia
	Turks & Calcos Ground Iguana	CR		Only on TCI and Mayaguana
Cyclura lewisi	Grand Cayman Blue Iguana	CR		Endemic to the Cayman Islands
Cyclura nubila	Lesser Caymans Ground Iguana	CR		One endemic subspecies
Cyclura pinguis	Anegada Ground Iguana	CR		Endemic to British Virgin Is.
Iguana delicatissima	Lesser Antillean Iguana	VU	II	Anguilla population critical
Leiocephalus carinatus	Northern Curly-tailed Lizard	Х	Х	Two endemic subspecies
Leiocephalus psammodromus	Bastion Cay Curly-tailed Lizard	Х	Х	Endemic to Turks & Caicos Is.
Anolis conspersus	Grand Cayman Anole	Х	Х	Endemic to the Cayman Islands
Anolis ernestwilliamsi	Carrot Rock Anole	Х	Х	Endemic to British Virgin Is.
Anolis lividus	Montserrat Anole	Х	Х	Endemic to Montserrat
Anolis luteosignifer	Cayman Brac Anole	Х	Х	Endemic to the Cayman Islands
Anolis maynardi	Little Cayman Green Anole	Х	Х	Endemic to the Cayman Islands
Anolis pogus	Anguilla Bank Bush Anole	Х	Х	Extinct on Anguilla
Anolis roosevelti	Roosevelt's Giant Anole	CR	Х	Extinct on British Virgin Is.
Ameiva corax	Censky's Ameiva	Х	Х	Endemic to Anguilla
Ameiva corvina	Sombrero Ameiva	Х	Х	Endemic to Anguilla
Ameiva pluvianotata	Montserrat Ameiva	Х	Х	One endemic subspecies
Mabuya macleani	Carrot Rock Skink	Х	Х	Endemic to British Virgin Is.
Plestiodon longirostris	Bermuda Skink	CR	Х	Endemic to Bermuda
Celestus maculatus	Cayman Galliwasp	Х	Х	Endemic to the Cayman Islands
Diploalossus montisserrati	Montserrat Galliwasp	CR	Х	Endemic to Montserrat
Typhlops catapontus	Anegada Worm Snake	Х	Х	Endemic to British Virgin Is.
Typhlops caymanensis	Grand Cayman Worm Snake	Х	Х	Endemic to the Cayman Islands
Typhlops epactius	Cayman Brac Worm Snake	X	X	Endemic to the Cayman Islands
Typlops naugus	Virgin Gorda Worm Snake	X	X	Endemic to British Virgin Is.
Typhlops monastus	Montserrat Worm Snake	X	X	One endemic subspecies
Enicrates chrysogaster	Turk's Island Boa	X		
Epicrates chi ysogaster	Mona Island Boa	X	 	Bestricted to Puerto Rico region
Tropidophis caymaponsis	Grand Cayman Dwarf Boa	X		Endemic to the Cayman Islands
Tropidophis caymanensis	Caicos Dwarf Boa	X	<u> </u>	Endemic to Turks & Caicos Is
Tropidophis parkori	Little Covman Dwarf Roa	× ×	 	Endemic to the Cayman Islands
	Courses Dree Dworf Boo	X		Endemic to the Cayman Islands
	Cayman Brac Dwarr Boa	<u>^</u>		Endemic to the Cayman Islands
		X	X	
Alsophis rijgersmaei	Anguilla Bank Racer	EN	X	On 4 Islands in Lesser Antilles
Borikenophis portoricensis	Puerto Rican Racer	X	X	One endemic subspecies
Cubophis caymanus	Grand Cayman Racer	X	X	Endemic to the Cayman Islands
Cubophis fuscicauda	Cayman Brac Racer	Х	Х	Endemic to the Cayman Islands
Cubophis ruttyi	Little Cayman Racer	Х	Х	Endemic to the Cayman Islands
Dolichophis cypriensis	Cyprus Whip Snake	EN	Х	Species endemic to Cyprus
Tretanorhinus variabilis	Caribbean Water Snake	Х	Х	One endemic subspecies

Table 4: Category II Species. Indigenous species that are "near-endemics" (i.e. a significant proportion of their global population occurs within the UK Overseas Territories) *or* they are listed as Near Threatened or Vulnerable on the IUCN Red List and are not otherwise CITES listed (11 species).

Species Name	Common Name	IUCN	CITES	Notes
Pelobates cultripes	Western Spadefoot	NT	Х	Extinct in Gibraltar
Sphaerodactylus mariguanae	Mayaguana Dwarf Gecko	Х	Х	Only on TCI and Mayaguana
Sphaerodactylus parvus	Anguilla Bank Dwarf Gecko	Х	Х	Only on the Anguilla Bank
Timon lepidus	Eyed Lizard	NT	Х	Serious decline in Europe
Anolis gingivinus	Anguilla Bank Anole	Х	Х	On 4 islands in Lesser Antilles
Anolis scriptus	Silver Cay Anole	Х	Х	TCI & southern Bahamas only
Ameiva plei	Plée's Ameiva	Х	Х	Anguilla & 2 other islands only
Chalcides bedriagai	Bedriaga's Skink	NT	Х	Very rare in Gibraltar
Amphisbaena fenestrata	Cope's Worm Lizard	Х	Х	Only on British & US Virgin Is.
Magliophis exiguus	Puerto Rican Ground Snake	Х	Х	One subsp BVI & USVI only
Vipera latastei	Lataste's Viper	NT	Х	Very rare in Gibraltar

Table 5: Category III Species. Indigenous species, or their subspecies, that are not thought to be threatened but nonetheless have a restricted global range that includes one or more UK Overseas Territory or Dependency (e.g. the Anguilla Bank or the island of Cyprus), which therefore increases their potential vulnerability (18 species).

Species Name	Common Name	IUCN	CITES	Notes
Leptodactylus albilabris	Günther's White-lipped Frog	LC	Х	Restricted to Puerto Rico region
Eleutherodactylus antillensis	Red-eyed Robber Frog	LC	Х	Restricted to Puerto Rico region
Eleutherodactylus cochranae	Cochran's Robber Frog	LC	Х	Restricted to Puerto Rico region
Aristelliger praesignis	Jamaican Croaking Gecko	Х	Х	Only on Jamaica & Cayman Is.
Cyrtopodion kotschyi	Kotschy's Gecko	Х	Х	Subspecies endemic to Cyprus
Sphaerodactylus macrolepis	Big-scaled Dwarf Gecko	Х	Х	Restricted to Puerto Rico region
Sphaerodactylus sputator	Island Dwarf Gecko	Х	Х	On 7 islands in Lesser Antilles
Laudakia stellio	Starred Agama	Х	Х	Subspecies endemic to Cyprus
Phoenicolacerta troodica	Cyprus Lizard	Х	Х	Species endemic to Cyprus
Anolis cristatellus	Puerto Rican Crested Anole	Х	Х	Mainly in Puerto Rico region
Anolis cuvieri	Puerto Rican Giant Anole	Х	Х	BVI record may be in error
Anolis pulchellus	Puerto Rican Bush Anole	Х	Х	Restricted to Puerto Rico region
Anolis stratulus	Spotted Anole	Х	Х	Restricted to Puerto Rico region
Ameiva exsul	Puerto Rican Ameiva	Х	Х	Restricted to Puerto Rico region
Typhlops richardi	Richard's Worm Snake	Х	Х	Lesser Antilles
Dolichophis jugularis	Large Whip Snake	Х	Х	Subspecies endemic to Cyprus
Telescopus fallax	Cat Snake	Х	Х	Subspecies endemic to Cyprus
Macrovipera lebetina	Levantine Viper	Х	Х	Subspecies endemic to Cyprus

Table 6: Category IV Species.	Indigenous species that are widespread and under no immediate or apparent global
threat (46 species).	

Species Name	Common Name	IUCN	CITES	Notes
Lissotriton helveticus	Palmate Newt	LC	Х	Widespread in Europe
Lissotriton vulgaris	Smooth Newt	LC	Х	Widespread in Europe
Bufo bufo ¹	Common Toad	LC	Х	Serious decline on Jersey
Epidalea calamita	Natterjack Toad	LC	Х	Serious decline in Gibraltar
Pseudepidalea viridis	Green Toad	LC	Х	Widespread in Europe
Eleutherodactylus johnstonei ²	Johnstone's Robber Frog	LC	Х	Widespread in Caribbean
Hyla savignyi	Savigny's Treefrog	LC	Х	Widespread in Southwest Asia
Osteopilus septentrionalis ³	Cuban Tree Frog	LC	Х	Widespread in Caribbean
Pelophylax bedriagae	Levantine Frog	LC	Х	Widespread in Southwest Asia
Rana dalmatina	Agile Frog	LC	Х	Almost extinct on Jersey
Rana temporaria	Common Frog	LC	Х	Widespread in Europe
Mauremys rivulata	Balkan Terrapin	Х	Х	Widespread in Europe/SW Asia
Hemidactylus turcicus	Turkish Gecko	Х	Х	Widespread in Europe
Tarentola mauritanica	Moorish gecko	LC	Х	Widespread in Europe/N Africa
Thecadactylus rapicauda	Turnip-tailed Gecko	Х	Х	Widespread in the Neotropics
Chamaeleo chamaeleon ⁴	Mediterranean Chameleon	Х	Х	Serious decline on Cyprus
Acanthodactylus erythrurus	Red-footed Lizard	LC	Х	Extinct in Gibraltar
Lacerta bilineata ⁵	Western Green Lizard	LC	Х	Serious decline on Jersey
Podarcis muralis	Common Wall Lizard	LC	Х	Serious decline on Jersey
Ophisops elegans	Snake-eyed Lizard	Х	Х	Widespread in SW Asia/Europe
Podarcis hispanicus	Iberian Wall Lizard	LC	Х	Widespread in Europe/N Africa
Psammodromus algirus	Large Psammodromus	LC	Х	Widespread in Europe/N Africa
Zootoca vivipara	Viviparous Lizard	LC	Х	Serious decline on Isle of Man
Anolis sagrei ⁶	Brown Anole	Х	Х	Widespread in Caribbean
Ablepharus budaki	Cyprus Lizard	LC	Х	Widespread in Cyprus/SW Asia
Chacides ocellatus	Ocellated Skink	Х	Х	Widespread Europe/Africa/Asia
Chalcides striatus	Western Three-toed Skink	LC	Х	Widespread in SW Europe
Eumeces schneideri	Schneider's Skink	Х	Х	Very rare on Cyprus
Mabuya sloanii complex	Slippery-backed Skink	Х	Х	Widespread in Caribbean
Trachylepis vittata	Bridled Skink	Х	Х	Widespread N Africa/SW Asia
Anguis fragilis	Slow Worm	Х	Х	Widespread in Europe
Blanus cinereus	Iberian Worm Lizard	LC	Х	Iberia – common in Gibraltar
Blanus strauchi	Anatolian Worm Lizard	Х	Х	Common SE Europe/SW Asia
Typhlops vermicularis	Eurasian Worm Snake	Х	Х	Widespread in Europe/SW Asia
Coronella girondica	Southern Smooth Snake	LC	Х	Widespread in Europe/N Africa
Eirenis levantinus	Levantine Dwarf Snake	Х	Х	Widespread in Europe/SW Asia
Hemorrhois hippocrepis	Horseshoe Whip Snake	LC	Х	Widespread in Iberia/N Africa
Hemorrhois nummifer	Coin-marked Snake	Х	Х	Widespread in Europe/SW Asia
Macroprotodon cucullatus	False Smooth Snake	LC	Х	Widespread in Iberia/N Africa
Malpolon insignitus	Eastern Montpellier Snake	Х	Х	Widespread in E. Europe
Malpolon monspessulanus	Western Montpellier Snake	Х	Х	Widespread in W. Europe
Natrix maura	Viperine Snake	LC	Х	Extinct in Gibraltar
Natrix natrix	Grass Snake	LC	Х	Rare in all three territories
Natrix tessellata	Dice Snake	Х	Х	Very rare on Cyprus
Platyceps najadum	Dahl's Whip Snake	Х	Х	Very rare on Cyprus
Rhinechis scalaris	Ladder Snake	LC	Х	Widespread in SW Europe

¹ Indigenous population on Jersey only – an introduced population also occurs in Gibraltar (see Category V) ² Indigenous populations only – introduced populations also occur on Anguilla and Bermuda (see Category V)

³ Indigenous populations only – introduced populations also occur on Anguilla and the British Virgin Islands (see Category VI)

⁴ Indigenous population on Cyprus only – an introduced population also occurs in Gibraltar (see Category V)
 ⁵ Indigenous population on Jersey only – an introduced population also occurs on the Bailiwick of Guernsey (see Category V)
 ⁶ Indigenous population on Little Cayman only – an introduced population also occurs on Grand Cayman (see Category VI)

The Amphibians and Reptiles of the UK Overseas Territories

able 7: Category V Species	Introduced species	considered to be c	of minimal co	onservation concern (32 species)
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Species Name	Common Name	IUCN	CITES	Notes
Pleurodeles waltl	Sharp-ribbed Salamander	NT	Х	Introduced to Gibraltar
Bufo bufo ¹	Common Toad	LC	Х	Introduced to Gibraltar
Eleutherodactylus gossei	Spalding's Robber Frog	LC	Х	Introduced to Bermuda
Eleutherodactylus johnstonei ²	Johnstone's Robber Frog	LC	Х	Introduced to two UKOTs
Eleutherodactylus planirostris	Greenhouse Frog	LC	Х	Widespread in Caribbean
Hyla meridionalis	Mediterranean Tree Frog	LC	Х	Introduced to Gibraltar
Pelophylax perezi	Iberian Green Frog	LC	Х	Introduced to Gibraltar
Strongylopus grayii	Gray's Stream Frog	LC	Х	Introduced to St. Helena
Gastrophryne carolinensis	Eastern Narrowmouth Toad	LC	Х	Introduced to the Cayman Is.
Emys orbicularis	European Pond Terrapin	NT	Х	Introduced to Gibraltar
Malaclemys terrapin	Diamondback Terrapin	NT	Х	Introduced to Bermuda?
Mauremys leprosa	Spanish Terrapin	Х	Х	Introduced to Gibraltar
Trachemys decussata	North Antillean Slider	Х	Х	Introduced to the Cayman Is.
Testudo graeca	Spur-thighed Tortoise	VU	=	Introduced to Gibraltar/Cyprus
Testudo marginata	Marginated Tortoise	LC	II	Introduced to Cyprus
Melanochelys trijuga	Indian Black Turtle	NT	Х	Introduced to the Br. IOT
Pelusios subniger	East African Black Mud Turtle	LC	Х	Introduced to the Br. IOT
Gonatodes albogularis	Yellow-headed Gecko	Х	Х	Introduced to the Cayman Is.
Hemidactylus frenatus	Asian House Gecko	Х	Х	Introduced to two UKOTs
Hemidactylus mabouia	African House Gecko	Х	Х	Introduced to four UKOTs
Hemidactylus mercatorius	Gray's Leaf-toed Gecko	Х	Х	Introduced to Ascension
Lepidodactylus lugubris	Mourning Gecko	Х	Х	Introduced to Pitcairn
Pachydactylus geitje	Cradock Thick-toed Gecko	Х	Х	Introduced to Ascension
Calotes versicolor	Oriental Garden Lizard	Х	Х	Introduced to the Br. IOT
Chamaeleo chamaeleon ³	Mediterranean Chameleon	Х	Х	Introduced to Gibraltar
Lacerta bilineata ⁴	Western Green Lizard	LC	Х	Introduced to Guernsey
Liolaemus wiegmanni	Weigmann's Swift	Х	Х	Introduced to Ascension
Cryptoblepharus poecilopleurus	Snake-eyed Skink	Х	Х	Introduced to Pitcairn
Emoia cyanura	Copper-tailed Skink	Х	Х	Introduced to Pitcairn
Lipinia noctua	Moth Skink	Х	Х	Introduced to Pitcairn
Ramphotyphlops braminus	Flowerpot Snake	Х	Х	Introduced to two UKOTs
Diadophis punctatus	Ring-necked Snake	LC	X	Introduced to the Cayman Is.

¹ Introduced population only – *Bufo bufo* is also indigenous to the Bailiwick of Jersey (Category IV)
 ² Introduced populations only – *Eleutherodactylus johnstonei* is also indigenous to Montserrat (Category IV)
 ³ Introduced population only – *Chamaeleo chamaeleon* is also indigenous to Cyprus (Category IV)
 ⁴ Introduced population only – *Lacerta bilineata* is also indigenous to the Bailiwick of Jersey (Category IV)

Table 8: Category VI Species. Introduced species that pose an actual or potential threat to indigenous amphibian or reptile species, in most cases through direct competition, or to other wildlife in at least one UK Overseas Territory (13 species).

Species Name	Common Name	IUCN	CITES	Notes
Rhinella marina	Marine Toad	LC	Х	Introduced to six UKOTs
Osteopilus septentrionalis ¹	Cuban Tree Frog	LC	Х	Introduced to two UKOTs
Pseudemys nelsoni	Florida Red-bellied Turtle	Х	Х	Introduced to the Br. Virgin Is.
Trachemys scripta ²	Red-eared Slider	Х	Х	Introduced to five UKOTs
Iguana iguana ³	Green Iguana	Х	=	Introduced to five UKOTs
Anolis carolinensis	Green Anole	LC	Х	Introduced to two UKOTs
Anolis extremus	Barbados Anole	Х	Х	Introduced to Bermuda
Anolis garmani	Jamaican Giant Anole	Х	Х	Introduced to the Cayman Is.
Anolis grahami	Graham's Anole	Х	Х	Introduced to Bermuda
Anolis leachii	Panther Anole	Х	Х	Introduced to Bermuda
Anolis sagrei ⁴	Brown Anole	Х	Х	Introduced Grand Cayman
Ophisaurus ventralis	Eastern Glass Lizard	LC	Х	Introduced to the Cayman Is.
Pantherophis guttatus	Corn Snake	LC	Х	Introduced to two UKOTs

¹ Introduced populations only – Osteopilus septentrionalis is also native to the Cayman Islands (Category IV) ² Refers to *Trachemys scripta elegans*, a widespread invasive alien, not the subspecies listed as NT on the IUCN Red List

³ Since 15 individuals of this species were recently washed up in Anguilla on plant debris after a hurricane (origin unknown), the exact definition of "indigenous" or "introduced" is open to debate in some circumstances

Introduced populations on Grand Cayman only - Anolis sagrei is also indigenous to Little Cayman (Category IV)

3. Territory Accounts

3.1. Anguilla

3.1.1. Location

Anguilla is the most northerly of the Leeward Islands, part of the Lesser Antilles. This Overseas Territory consists of the island of Anguilla itself (by far the largest) and more than twenty other islands and cays, most of which are small and uninhabited.



Map 2: Anguilla (Sombrero Island not shown on main map)

3.1.2. Area

The total land area is 102 km², most of which is the island of Anguilla itself (90.7 km²).

3.1.3. Population

Anguilla has a population of approximately 13,500 (2006 estimate), an average population density of more than 148 people/km².

3.1.4. Environment

Anguilla has a tropical though rather dry climate, moderated by northeast trade winds. Rainfall is erratic, averaging about 900 mm per year, although September and October tend to be the wettest months and February and March the driest. Anguilla is vulnerable to hurricanes from June to November. Most of the islands are flat, low-lying and composed of coral and limestone. The soil is generally thin and poor, supporting very little agriculture, and the main terrestrial habitats are various types of scrub vegetation, modified by the effects of past hurricanes. Anguilla is noted for its spectacular and ecologically important coral reefs. The main industries are tourism, offshore incorporation and management, offshore banking, and fishing. While tourism is very important to the economy of Anguilla, the associated building and infrastructure development is causing habitat loss and environmental problems. In addition, fishing and tourism both cause damage to the coral reefs.

3.1.5. Amphibians and Reptiles of Anguilla

A total of 17 indigenous and eight introduced species of amphibian and reptile are currently known from Anguilla (25 species of herpetofauna in total). The territory supports three endemic species, all lizards. These include Censky's ameiva *Ameiva corax*, which is only known from the tiny, 4.9 ha Little Scrub Island (just to the north east of Anguilla), the Sombrero ameiva, *Ameiva corvina*, endemic to the 38 ha island of Sombrero (some 55km north west of Anguilla itself, but not shown on the map above) and the newly discovered Sombrero dwarf gecko *Sphaerodactylus sp. nov.*, also thought to be confined to Sombrero. One further species of lizard, the Anguilla Bank bush anole *Anolis pogus*, was formerly recorded from the territory but is now thought to be extinct (it still occurs on other, non-UK islands on the Anguilla bank).

Table 9 indicates the population status of the herpetofauna of Anguilla – the column headed "Cat." refers to the conservation categories discussed in Section 2.3. (and shown in Tables 2 to 8) and Table 10 provides a numerical summary of the herpetofauna, including the five priority species and the three introduced species of conservation concern.

Table 9: Checklist of the Amph	nibians and Reptiles of Anguilla
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Species Name	Common Name	Cat.	Notes
Indigenous Species			
Caretta caretta	Loggerhead Turtle		Itinerant and rarely seen, not known to nest
Chelonia mydas	Green Turtle		Foraging turtles common but nesting very rare
Eretmochelys imbricata '	Hawksbill Turtle	I	Nests in moderate numbers on several of the
			Islands, foraging turtles common
Dermochelys coriacea '	Leatherback Turtle	I	Both foraging and nesting uncommon, although the latter does occur fairly regularly
Chelonoidis carbonaria	Red-footed Tortoise		Widespread on the main island but uncommon
			 may have been introduced centuries ago
Sphaerodactylus parvus	Anguilla Bank Dwarf Gecko	11	Abundant on Anguilla and several small islands
Sphaerodactylus sputator	Island Dwarf Gecko		Abundant on Anguilla and several small islands
Sphaerodactylus sp. nov.	Undescribed species of gecko		Endemic? Known only from Sombrero Island
Thecadactylus rapicauda	Turnip-tailed Gecko	IV	Widespread on the main island of Anguilla
Iguana delicatissima ¹	Lesser Antillean Iguana		Population now critical (range < 2km ²)
Anolis gingivinus	Anguilla Bank Anole	II	Abundant on Anguilla and several small islands
Anolis pogus ^x	Anguilla Bank Bush Anole	I	Now presumed to be extinct on Anguilla
Ameiva corax	Censky's Ameiva	I	Endemic to Little Scrub Island where abundant
Ameiva corvina ^{1?}	Sombrero Ameiva	I	Endemic to Sombrero Island where it has
			declined due to the effects of a recent
			hurricane, exacerbated by past human activities
Ameiva plei	Plée's Ameiva		Abundant on Anguilla and several small islands
Mabuya sloanii complex	Slippery-backed Skink	IV	Abundant on Anguilla and Dog Island
Alsophis rijgersmaei	Anguilla Bank Racer		Fairly common on Anguilla and Scrub Island
Introduced Checies			
Phinolla marina ²	Marina Tood	VI	Vory recently introduced, not yet established
Rinnena marina	Infanne Toau		Very recently introduced, not yet established
Eleutherodactylus johnstonel	Johnstone's Robber Frog	V	may well have declined due to Cuban tree frogs
Osteopilus septentrionalis	Cuban Tree Frog	VI	Widespread on the main island of Anguilla
Hemidactylus mabouia	African House Gecko	V	Abundant on buildings on the main island
Iguana iguana ²	Green Iguana	VI	Two small populations on Anguilla
Anolis carolinensis	Green Anole	VI	Recently introduced, not known if this species
			will compete with the native Anolis gingivinus
Ramphotyphlops braminus	Flowerpot Snake	V	Known from a few well-watered gardens
Pantherophis guttatus ²	Corn Snake	VI	Very recently introduced, not yet established

¹ Priority species for conservation action

² Introduced species of conservation concern

^x Extinct species

Table 10: Conservation Priorities for the Amphibians and Reptiles of Anguilla

	Conservation Categories				Species		
Amphibians and Reptiles	I	II	III	IV	V	VI	Totals
Indigenous Species	11	3	1	2	-	-	17
Endemic Species	3	-	-	-	-	-	3
Extinct Indigenous Species	1	-	-	-	-	-	1
Priority Species	5	-	-	-	-	-	5
Introduced Species	-	-	-	-	3	5	8
Species of Concern	-	-	-	-	-	3	3
Total Number of Species	11	3	1	2	3	5	25

3.1.6. Key General References for the Herpetofauna of Anguilla

Connor, R. and J. Connor. 1998. Anguilla's sea turtle project. Unpublished report for the Anguilla National Trust, The Valley, Anguilla.

Cope, E.D. 1861. On the reptilia of Sombrero and Bermuda. Proc. Acad. Nat. Sci. Philadelphia 13: 312-314.

Crother, B.I. (Ed.). 1999. Caribbean Amphibians and Reptiles. Academic Press, San Diego.

Gell, F. and M. Watson. 2000. UK Overseas Territories in the northeast Caribbean: Anguilla, British Virgin Islands, Montserrat. In: C. Sheppard (Ed.). Seas at the Millennium: an Environmental Evaluation. Pergamon, Elsevier Science Ltd., UK.

Godley, B.J, A.C. Broderick, L.M. Campbell, S. Ranger and P.B. Richardson. 2004b. 4. An assessment of the status and exploitation of marine turtles in Anguilla. Pp. 39-77 in: An Assessment of the Status and Exploitation of Marine Turtles in the UK Overseas Territories in the Wider Caribbean. Final Project Report for the Department of Environment, Food and Rural Affairs and the Foreign and Commonwealth Office, UK. Online at: <u>http://www.seaturtle.org/mtrg/projects/tcot/finalreport/</u>

Hedges, S.B., A. Couloux and N. Vidal. 2009. Molecular phylogeny, classification, and biogeography of West Indian racer snakes of the Tribe Alsophiini (Squamata, Dipsadidae, Xenodontinae). Zootaxa 2067: 1-28.

Henderson, R.W. and R. Powell (Eds.). 2003. Islands and the Sea: Essays on Herpetological Exploration in the West Indies. Society for the Study of Amphibians and Reptiles, Ithaca, NY.

Hodge, K.V.D., E. J. Censky and R. Powell 2003. The Reptiles and Amphibians of Anguilla, British West Indies. The Anguilla National Trust, The Valley, Anguilla.

Lazell, J.D., Jr. 1964. The reptiles of Sombrero, West Indies. Copeia 1964: 716-718.

MacLean, W.P., R. Kellner and H. Dennis. 1977. Island lists of West Indian amphibians and reptiles. Smithsonian Herpetological Information Service 40: 1-47.

Malhotra, A. and R.S. Thorpe. 1999. Reptiles and Amphibians of the Eastern Caribbean. Macmillan Education Ltd, London and Oxford.

Ogden, N.B., W.G. Gladfelter, J.C. Ogden and E.H. Gladfelter. 1985. Marine and terrestrial flora and fauna notes on Sombrero Island in the Caribbean. Atoll Research Bulletin 292: 61-74.

Oxenford, H.A. and W. Hunt. 1990. A survey of marine habitats around Anguilla. With baseline community descriptors for coral reefs and seagrass beds. Department of Agriculture and Fisheries, Government of Anguilla.

Powell, R., R.W. Henderson, K. Adler and H.A. Dundee. 1996. An annotated checklist of West Indian amphibians and reptiles. Pp. 51-93 in: R. Powell and R. W. Henderson (Eds.). Contributions to West Indian Herpetology: A Tribute to Albert Schwartz. Contributions to Herpetology Volume 12, Society for the Study of Amphibians and Reptiles, Ithaca, New York.

Richardson, L. 1984. The national report for the country of Anguilla. Pp. 7-11 in: P.R. Bacon, F. Berry, K. Bjorndal, H. Hirth, L. Ogren and M. Weber (Eds.). Proceedings of the Western Atlantic Turtle Symposium, Volume 3, Appendix 7: the National Reports. University of Miami Press, Miami, Florida.

Schwartz, A. and R. Thomas. 1975. A checklist of West Indian amphibians and reptiles. Carnegie Mus. Nat. Hist. Spec. Publ. 1: 1-216.

Schwartz, A. and R.W. Henderson 1985. A Guide to the Identification of the Amphibians and Reptiles of the West Indies Exclusive of Hispaniola. Milwaukee Public Mus., Milwaukee.

Schwartz, A. and R.W. Henderson. 1988. West Indian amphibian and reptiles: a checklist. Milwaukee Publ. Mus. Contr. Biol. Geol. No. 74: 1-264.

Schwartz, A. and R.W. Henderson. 1991. Amphibians and Reptiles of the West Indies. University of Florida Press, Gainesville, Florida.

Schwartz, A., R. Thomas and L.D. Ober. 1978. First supplement to a checklist of West Indian amphibians and reptiles. Carnegie Museum of Natural History Special Publication 5: 1-35.

Underwood, G. 1962. Reptiles of the eastern Caribbean; and 1964 first supplement. Caribbean Affairs (New Series) 1: 192, Department of Extra-Mural Studies, University of the West Indies, Trinidad.

3.2. British Virgin Islands

3.2.1. Location

The British Virgin Islands are located in the Caribbean to the east of Puerto Rico. Together with the U.S. Virgin Islands, they form the Virgin Islands archipelago. The British Virgin Islands consist of the main islands of Tortola, Virgin Gorda, Jost Van Dyke and Anegada, along with over fifty other smaller islands and cays. Approximately fifteen of the islands are inhabited.



Map 3: British Virgin Islands

3.2.2. Area

The total land area is 153 km² (Tortola, the largest and most populous island, is 55.7 km²).

3.2.3. Population

The islands have a total population of about 22,000, giving an overall population density of almost 144 people/ km² for the territory, with about 18,000 of these living on Tortola (population density: 323 people/ km²).

3.2.4. Environment

The British Virgin Islands enjoy a tropical climate, moderated by trade winds, with little temperature variation throughout the year. Rainfall averages about 1150 mm per year, with higher levels in the hills and less in coastal areas. Rainfall can be quite variable, but the wettest months on average are September to November and the driest months February and March. Hurricanes occasionally hit the islands, with the season running from June to November. Most of the islands are volcanic in origin and have a hilly, rugged terrain – at 530m, Mount Sage on Tortola is the highest point in the British Virgin Islands. The natural vegetation is often lush tropical forests and scrub, with some areas modified by past hurricane damage, with mangroves or beaches along the coasts. Anegada is geologically distinct from the rest of the group and is a flat island composed of limestone and coral with, in places, almost a semi-desert type of scrub vegetation. Tourism accounts for 45% of national income and, although this has brought associated development pressures in places, some resorts are very small and exclusive and put a premium on a natural setting. Substantial revenues are also generated by the registration of offshore companies, with over 550,000 (about 41% of the world total of such companies) registered in the British Virgin Islands as of 2004.

3.2.5. Amphibians and Reptiles of the British Virgin Islands

A total of 31 indigenous and six introduced species of amphibian and reptile are currently known from the British Virgin Islands (37 species of herpetofauna), making this the richest UK Overseas Territory in terms of native herpetofauna. The territory supports eight "endemic" species. Six of these are true endemics – the Virgin Gorda dwarf gecko *Sphaerodactylus parthenopion* (one of the smallest reptiles in the world), the Carrot Rock anole *Anolis ernestwilliamsi* and the Carrot Rock skink

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Mabuya macleani, both of which are restricted to tiny Carrot Rock, and the Anegada and Virgin Gorda worm snakes, *Typhlops catapontus* and *T. naugus*. The other two "endemics", the Virgin Islands robber frog *Eleutherodactylus schwartzi* and the Anegada iguana *Cyclura pinguis*, formerly occurred outside the territory although their entire world range is now confined to the British Virgin Islands. Two of the indigenous species have become extinct – the Critically Endangered Puerto Rican toad *Peltophryne lemur* and Roosevelt's giant anole *Anolis roosevelti*. In addition, it is unclear if one species, the Puerto Rican giant anole *Anolis cuvieri* is in fact an indigenous species (and, if so, if it is still extant) or if this old record was in fact actually *Anolis roosevelti*. Table 11 indicates the population status of the herpetofauna of the British Virgin Islands – the column headed "Cat." refers to the conservation categories discussed in Section 2.3. (and shown in Tables 2 to 8) and Table 12 provides a numerical summary of the herpetofauna, including the 11 priority species and the four introduced species of conservation concern.

Table 11: Checklist of the Amphibians and Reptiles of the British Virgin Islands

Indigenous Species Puerto Rican Crested Toad I Extinct on British Virgin Islands Peltophryne lemur [×] Puerto Rican Crested Toad I Extinct on British Virgin Islands Leptodactylus albilabris Günther's White-lipped Frog III Still abundant in suitable habitats but at risk Eleutherodactylus antillensis Red-eyed Robber Frog III Common in the BVI Eleutherodactylus cochranae Cochran's Robber Frog III Status unknown, may be declining Previously only known from the US Virgin Previously only known from the US Virgin Previously only known from the US Virgin
Peltophryne lemur * Puerto Rican Crested Toad I Extinct on British Virgin Islands Leptodactylus albilabris Günther's White-lipped Frog III Still abundant in suitable habitats but at risk Eleutherodactylus antillensis Red-eyed Robber Frog III Common in the BVI Eleutherodactylus cochranae Cochran's Robber Frog III Status unknown, may be declining Previously only known from the US Virgin Eleutherodactylon Network Previously only known from the US Virgin
Leptodactylus albilabris Günther's White-lipped Frog III Still abundant in suitable habitats but at risk Eleutherodactylus antillensis Red-eyed Robber Frog III Common in the BVI Eleutherodactylus cochranae Cochran's Robber Frog III Status unknown, may be declining Previously only known from the US Virgin Eleutherodactylus cochrane Description
Eleutherodactylus antillensis Red-eyed Robber Frog III Common in the BVI Eleutherodactylus cochranae Cochran's Robber Frog III Status unknown, may be declining Previously only known from the US Virgin Previously only known from the US Virgin
Eleutherodactylus cochranae Cochran's Robber Frog III Status unknown, may be declining Previously only known from the US Virgin Previously only known from the US Virgin
Previously only known from the US Virgin
Eleutherodactylus lentus ¹ Virgin Islands Robber Frog I Islands but also recently discovered on the BVI
- status unknown
Eleutherodactylus schwartzi ¹ Schwartz's Robber Frog I BVI only (extinct on USVI) – at risk
Caretta caretta Loggerhead Turtle I Only occasionally recorded and rarely nests
Chelonia mydas Green Turtle I Small number of nests annually, large numbers
of adults and juveniles forage in some areas
Eretmochelys imbricata ¹ Hawksbill Turtle I Small number of nests annually, large numbers
of adults and juveniles forage in some areas
Lepidochelys olivacea Olive Ridley Turtle I Very rare visitor, never known to have nested
Dermochelys coriacea ¹ Leatherback Turtle I Small numbers of nests and foraging turtles
Chelonoidis carbonaria Red-footed Tortoise I At risk but uncertain if native
Sphaerodactylus macrolepis Big-scaled Dwarf Gecko III Extremely abundant in suitable habitats
Sphaerodactylus parthenopion Virgin Gorda Dwarf Gecko I Endemic to the BVI – status unknown
Thecadactylus rapicauda Turnip-tailed Gecko IV Unknown, common in some areas (e.g. Necker
'Endemic' species (i.e. extirpated from former
range outside the BVI). Critically endangered,
Cyclura pinguis ¹ Anegada Ground Iguana I with just c. 250 adults surviving on Anegada,
although at least three other populations have
been re-established on other islands in the BVI
Anolis cristatellus Puerto Rican Crested Anole III Abundant in suitable habitats
Anolis cuvieri Puerto Rican Giant Anole III Unknown, BVI record likely to be erroneous
Anolis ernestwilliamsii Carrot Rock Anole I Endemic to the BVI, very limited range, at risk
Anolis pulchellus Puerto Rican Bush Anole III Extremely abundant in suitable habitats
Anolis roosevelti A Roosevelt's Giant Anole I Presumed to be extinct on the BVI
Anolis stratulus Spotted Anole III BVI populations appear to be healthy
Ameiva exsul Puerto Rican Ameiva III Abundant in suitable habitats
Mabuya macleani Carrot Rock Skink I Endemic to the BVI, very limited range, at risk
Mabuya sloanii complex Slippery-backed Skink IV Widespread but uncommon
Amphisbaena fenestrata Cope's Worm Lizard II Only on British & US Virgin Is.
<i>Typhlops catapontus</i> Anegada Worm Snake I Endemic to the BVI (Anegada and Necker),
status unknown
<i>Typhlops naugus</i> Virgin Gorda Worm Snake I Endemic to the BVI (Virgin Gorda only), status
Epicrates monensis Mona Island Boa I Status unknown
Borikenophis portoricensis Puerto Rican Racer I Endemic subspecies, declined on some islands
Very common on others
Magliophis exiguus Puerto Rican Ground Snake II Endemic subspecies, status unknown
Introduced Species
Rninella marina Marine Toad VI Widespread and abundant in some areas.
VI Introduced to two Islands in the early 1990s and
Osteophus septentrionalis Cuban Tree Frog nas spread since. May be having a negative
Impact on halive irrogs (<i>Elevinerodactylus</i> spp.)
Treebomve perinto ² Ped pared Slider
Hamidaatulus mabaula African House Gooke VI Abundant in human habitatian
Iduana jayana jayana Croon Jayana Croon Jayana VII Possible competitor with Cyclure ninguis se

¹ Priority species for conservation action

² Introduced species of conservation concern

^x Extinct species

Table 12: Conservation Priorities for the Amphibians and Reptiles of theBritish Virgin Islands

		Conservation Categories					
Amphibians and Reptiles		=	III	IV	V	VI	Totals
Indigenous Species	18	2	9	2	-	-	31
Endemic Species	8	-	-	-	-	-	8
Extinct Indigenous Species	2	-	-	-	-	-	2
Priority Species	10	1	-	-	-	-	11
Introduced Species	-	-	-	-	1	5	6
Species of Concern	-	-	-	-	-	4	4
Total Number of Species	18	2	9	3	1	5	37

3.2.6. Key General References for the Herpetofauna of the British Virgin Islands

Barbour, T. 1917. Notes on the herpetology of the Virgin Islands. Proc. Biol. Soc. Washington 30: 97-103.

Carey, W.M. 1972. The herpetology of Anegada, British Virgin Islands. Caribbean Journal of Science 12: 79-89.

Crother, B.I. (Ed.). 1999. Caribbean Amphibians and Reptiles. Academic Press, San Diego.

Eckert, K.L. 1989. Sea turtles of the British Virgin Islands. Pp. 35-37 in: N. Clarke and B. Lettsome (Eds.). Natural Resources of the British Virgin Islands, Laurel Publications International.

Eckert, K.L., J.A. Overing and B.B. Lettsome. 1992. WIDECAST Sea Turtle Recovery Action Plan for the British Virgin Islands. CEP Technical Report No. 15. UNEP Caribbean Environmental Programme, Kingston, Jamaica.

Fletemeyer, J. 1984. National report for the British Virgin Islands to the Western Atlantic Turtle Symposium, 17-22 July, Costa Rica. Pp. 70-117 in: P.R. Bacon, F. Berry, K. Bjorndal, H. Hirth, L. Ogren and M. Weber (Eds.). Proceedings of the Western Atlantic Turtle Symposium, Volume 3, Appendix 7: the National Reports. University of Miami Press, Miami, Florida.

Gell, F. and M. Watson. 2000. UK Overseas Territories in the northeast Caribbean: Anguilla, British Virgin Islands, Montserrat. In: C. Sheppard (Ed.). Seas at the Millennium: an Environmental Evaluation. Pergamon, Elsevier Science Ltd., UK.

Godley, B.J, A.C. Broderick, L.M. Campbell, S. Ranger and P.B. Richardson. 2004d. 6. An assessment of the status and exploitation of marine turtles in the British Virgin Islands. Pp. 96-123 in: An Assessment of the Status and Exploitation of Marine Turtles in the UK Overseas Territories in the Wider Caribbean. Final Project Report for the Department of Environment, Food and Rural Affairs and the Foreign and Commonwealth Office, UK. Online at: http://www.seaturtle.org/mtrg/projects/tcot/finalreport/

Grant, C. 1932b. Herpetology of Tortola; notes on Anegada and Virgin Gorda, British Virgin Islands. Journal of the Department of Agriculture of Porto Rico 16: 339-346.

Grant, C. 1937. Herpetological notes with new species from the American and British Virgin Islands, 1936. Jour. Dept. Agric. Puerto Rico 21: 503-522.

Grobman, A.B. 1983. The lizards of Virgin Gorda. Naturegraph Publ., Inc., Happy Camp, California: 5-23.

Heatwole, H., R. Levins and M.D. Byer. 1981. Biogeography of the Puerto Rican Bank. Atoll Research Bulletin 251: 1-63.

Hedges, S.B. and R. Thomas. 1991. Cryptic species of snakes (Typhlopidae: *Typhlops*) from the Puerto Rico bank detected by protein electrophoresis. Herpetologica 47: 448-459.

Hedges, S.B., A. Couloux and N. Vidal. 2009. Molecular phylogeny, classification, and biogeography of West Indian racer snakes of the Tribe Alsophiini (Squamata, Dipsadidae, Xenodontinae). Zootaxa 2067: 1-28.

Henderson, R.W. and R. Powell (Eds.). 2003. Islands and the Sea: Essays on Herpetological Exploration in the West Indies. Society for the Study of Amphibians and Reptiles, Ithaca, NY.

Lazell, J.D., Jr. 1983. Biogeography of the herpetofauna of the British Virgin Islands, with description of a new anole (Sauria: Iguanidae). Pp. 99-117 in: A.G. J. Rhodin and K. Miyata (Eds.). Advances in Herpetology and Evolutionary Biology. Essays in Honor of Ernest E. Williams. Mus. Comp. Zool., Harvard Univ., Cambridge, Massachusetts.

Lazell, J. 2002. Restoring vertebrate animals in the British Virgin Islands. Ecological Restoration 20: 179-185.

MacLean, W.P. 1982. Reptiles and Amphibians of the Virgin Islands. MacMillan Caribbean, London.

MacLean, W.P., R. Kellner and H. Dennis. 1977. Island lists of West Indian amphibians and reptiles. Smithsonian Herpetological Information Service 40: 1-47.

Mayer, G.C. and J. Lazell. 1988. Distributional records for reptiles and amphibians from the Puerto Rico Bank. Herpetological Review 19: 23-24.

Miller, G.S. 1918. Mammals and reptiles collected by Theodore de Booy in the Virgin Islands. Proc. U.S. Nat. Mus: 54: 507-511.

Overing, J. 1992. The status of sea turtle conservation in the British Virgin Islands. Pp. 88-89 in: J.I. Richardson and T.H. Richardson (Compilers). Proceedings of the 12th Annual Workshop on Sea Turtle Biology and Conservation. NOAA Technical Memorandum NMFS-SEFSC-361.

Perry, G. and G.P. Gerber. 2006. Conservation of amphibians and reptiles in the British Virgin Islands: status and patterns. Applied Herpetology 3: 237-256.

Philibosian, R. and J.A. Yntema. 1976. Records and status of some reptiles and amphibians in the Virgin Islands. I. 1968-1975. Herpetologica 32: 81-85.

Philibosian, R. and J.A. Yntema. 1977. Annotated checklist of the birds, mammals, reptiles, and amphibians of the Virgin Islands and Puerto Rico. Information Services, Frederiksted, St. Croix, U.S. Virgin Islands.

Philibosian, R. and J.A. Yntema. 1978. Records and status of some reptiles and amphibians in the Virgin Islands. II. 1975-1976. Herpetologica 34: 47-51.

Powell, R., R.W. Henderson, K. Adler and H.A. Dundee. 1996. An annotated checklist of West Indian amphibians and reptiles. Pp. 51-93 in: R. Powell and R. W. Henderson (Eds.). Contributions to West Indian Herpetology: A Tribute to Albert Schwartz. Contributions to Herpetology Volume 12, Society for the Study of Amphibians and Reptiles, Ithaca, New York.

Schmidt, K.P. 1928. Scientific Survey of Porto Rico and the Virgin Islands: Amphibians and land reptiles of Porto Rico, with a list of those reported from the Virgin Islands. New York Academy of Sciences 10: 1-160.

Schwartz, A. and R. Thomas. 1975. A checklist of West Indian amphibians and reptiles. Carnegie Mus. Nat. Hist. Spec. Publ. 1: 1-216.

Schwartz, A. and R.W. Henderson 1985. A Guide to the Identification of the Amphibians and Reptiles of the West Indies Exclusive of Hispaniola. Milwaukee Public Mus., Milwaukee.

Schwartz, A. and R.W. Henderson. 1988. West Indian amphibian and reptiles: a checklist. Milwaukee Publ. Mus. Contr. Biol. Geol. No. 74: 1-264.

Schwartz, A. and R.W. Henderson. 1991. Amphibians and Reptiles of the West Indies. University of Florida Press, Gainesville, Florida.

Schwartz, A., R. Thomas and L.D. Ober. 1978. First supplement to a checklist of West Indian amphibians and reptiles. Carnegie Museum of Natural History Special Publication 5: 1-35.

3.3. Cayman Islands

3.3.1. Location

The Cayman Islands are located in the western Caribbean, south of Cuba, and consist of three islands: Grand Cayman and, about 140 km to the east, the smaller "Sister Islands" of Little Cayman and Cayman Brac.

3.3.2. Area

The total land area of the three islands is about 259 km² (Grand Cayman - 197 km²; Little Cayman - 26 km²; Cayman Brac - 36 km²).

3.3.3. Population

The total population of the Cayman Islands is around 70,000 (2006 estimate), giving an average population density of approximately 270 people/km² (this about 350 people/km² on Grand Cayman, where most of the population lives). Cayman Brac and Little Cayman have much smaller populations of about 1,000 and 200 respectively.

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Map 4: Cayman Islands

3.3.4. Environment

The climate of the Cayman Islands is tropical with little temperature variation throughout the year. Rainfall averages about 1430 mm per year, with the heaviest rainfall occurring from September to November and the least in February and March. The hurricane season runs from June to November and the territory has experienced more hurricane strikes than any other country. Hurricane Ivan in 2004 caused heavy damage to Grand Cayman and was the worst storm to hit the Cayman Islands in nearly a century. All three islands were formed by large coral heads covering the submerged peaks of a massive underwater ridge that rises from the floor of the Cayman Trench, the deepest part of the Caribbean. All three islands are largely flat, with the exception of the Bluff, at the eastern end of Cayman Brac, which reaches 42.6 m above sea level – the highest point in the territory. The dominant vegetation types are dry, evergreen karstic woodland on limestone and mangrove swamps, both of which are impacted by hurricanes and human activities. Tourism, which includes significant numbers of visiting cruise ships, accounts for 70-75% of the annual GDP of the Cayman Islands and is a major driving force behind the development of natural habitats. The territory is also major offshore financial centre.

3.3.5. Amphibians and Reptiles of the Cayman Islands

A total of 26 indigenous and 14 introduced species of amphibian and reptile are currently known from the Cayman Islands, a total of 40 species (the endemic *Anolis maynardi* appears to have been introduced from Little Cayman to the other two islands but is not classed as an "introduced", i.e. of exotic origin, species here). Their fairly remote location means that the Cayman Islands support 14 endemic species (six lizards and eight snakes), which represents over 53.8% of the total indigenous herpetofauna and the highest proportion for any UK Overseas Territory. These are the Cayman dwarf gecko *Sphaerodactylus argivus*, the Grand Cayman blue iguana *Cyclura lewisi*, the Grand Cayman anole, *Anolis conspersus*, the Cayman Brac anole *Anolis luteosignifer*, the Little Cayman green anole *Anolis maynardi*, the Cayman galliwasp *Celestus maculatus* (recently elevated to full species status), the Grand Cayman worm snake *Typhlops caymanensis*, the Cayman Brac worm snake *Typhlops epactius*, and the dwarf boas of the genus *Tropidophis* and racers of the genus *Cubophis* found on each of the three islands (all recently elevated from two single species, with three endemic subspecies each, to full separate species). The Cuban crocodile *Crocodylus rhombifer* is known to have existed on Grand Cayman within historical times but is now extinct.

Table 13 indicates the population status of the herpetofauna of the Cayman Islands – the column headed "Cat." refers to the conservation categories discussed in Section 2.3. (and shown in Tables 2 to 8) and Table 14 provides a numerical summary of the herpetofauna, including the 11 priority species and the six introduced species of conservation concern.

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Table 13: Checklist of the Amphibians and Reptiles of the Cayman Islands

Species Name	Common Name	Cat.	Notes		
Indigenous Species					
Osteopilus septentrionalis	Cuban Tree Frog	IV	Common on all three islands – some authorities suggest that this species may have originally been introduced to the Cayman Islands		
Caretta caretta 1	Loggerhead Turtle		Small numbers of nests, foraging animals rare		
Chelonia mydas '	Green Turtle	I	Small numbers of nests, some adults and large		
Eretmochelys imbricata ¹	Hawksbill Turtle	I	Nesting very rare (possibly no longer occurs), some adults and many juveniles in some areas		
Dermochelys coriacea	Leatherback Turtle	I	Occasional nest, foraging animals rarely seen		
Crocodylus acutus 1?	American Crocodile	Ι	Very rare marine visitor to Grand Cayman, Little Cayman and Cayman Brac, not known to nest		
Crocodylus rhombifer ^x	Cuban Crocodile	Ι	Known to have become extinct on Grand Cayman within historical times		
Aristelliger praesignis	Jamaican Croaking Gecko		Status unknown		
Sphaerodactylus argivus	Cayman Dwarf Gecko	Ι	Endemic species – status unknown		
Cyclura lewisi ¹	Grand Cayman Blue Iguana	Ι	Species endemic to Grand Cayman. Critically endangered. Threats include habitat loss and alteration and feral animals. Fewer than 25 adult lizards were surviving in the wild until 2000. Since then, through captive breeding and re-introduction efforts, iguanas in protected areas again number a few hundred individuals.		
Cyclura nubila ¹	Lesser Caymans Ground Iguana	I	Endemic subspecies of the Cuban Iguana, found on Little Cayman and Cayman Brac. The population on Cayman Brac is critically endangered, with probably less than 50 lizards surviving. The Little Cayman population is healthier, with some 800-1800 individuals. Threats include habitat loss/alteration and feral animals. Historically translocated to Grand Cayman in very low numbers but apparently without establishing a breeding population		
Leiocephalus carinatus	Northern Curly-tailed Lizard	I	Two endemic subspecies – status unknown but exotic predators (especially cats) are a potential problem		
Anolis conspersus ¹	Grand Cayman Anole	I	Endemic species found on Grand Cayman – appears to be declining due to introduced Anolis sagrei plus habitat loss		
Anolis luteosignifer	Cayman Brac Anole	I	Endemic species – status unknown		
Anolis maynardi	Little Cayman Green Anole	Ι	Endemic species found on Little Cayman – status unknown (has also been introduced to Grand Cayman and Cayman Brac)		
Anolis sagrei	Brown Anole	IV	Indigenous to Little Cayman, abundant in suitable habitats. This species has also been introduced to Grand Cayman, with the animals originating from Florida, not Grand Cayman		
Celestus maculatus	Cayman Galliwasp	I	Endemic species – status unknown		
Typhlops caymanensis	Grand Cayman Worm Snake	Ι	Endemic species – status unknown		
Typhlops epactius	Cayman Brac Worm Snake	I	Endemic species – status unknown		
Tropidophis caymanensis ^{1?}	Grand Cayman Dwarf Boa	I	Endemic species – status unknown		
Tropidophis parkeri ^{1?}	Little Cayman Dwarf Boa		Endemic species – status unknown		
Tropidophis schwartzi '	Cayman Brac Dwarf Boa		Endemic species – status unknown		
Cubophis caymanus	Grand Cayman Racer		Endemic species – probably doing well		
Cubophis fuscicauda	Cayman Brac Racer		Endemic species – probably doing well		
Cubophis ruttyi	Little Cayman Racer	I	Endemic species – probably doing well		
Tretanorhinus variabilis	Caribbean Water Snake	I	Endemic subspecies – status unknown		
Introduced Species Rhinella marina ²	Marine Toad	VI	Has recently become well established on Grand Cayman		
Eleutherodactylus planirostris	Greenhouse Frog	V	Abundant in suitable habitats		

The Am	phibians	and Re	ptiles c	of the Uk	< Overseas	Territories

Gastrophryne carolinensis	Eastern Narrowmouth Toad	V	Widespread and v. abundant on Grand Cayman
Trachemys decussata	North Antillean Slider	V	Introduced in the 1880s and now naturalised on
			Grand Cayman and Cayman Brac
Trachemys scripta ²	Red-eared Slider	VI	Introduced to Grand Cayman, where it is
			hybridising with Trachemys decussata
Gonatodes albogularis	Yellow-headed Gecko	V	Introduced to Grand Cayman, status unknown
			but appears not to have become established
Hemidactylus mabouia	African House Gecko	V	Abundant in human habitation
			Very well established in the western half of
Iguana iguana ²	Green Iguana	VI	Grand Cayman, with numbers in the thousands
			and steadily spreading east. Some individuals
			(released pets) also occur on Cayman Brac
Anolis carolinensis ²	Green Anole	VI	Recently introduced, unknown if established
Anolis garmani	Jamaican Giant Anole	VI	Recorded once in the 1987, status unknown
			Introduced from Florida to Grand Cayman,
Anolis sagrei	Brown Anole	VI	where this species has been implicated in
			declines of the endemic Anolis conspersus –
			control is probably not practical however
<i>Ophisaurus ventralis</i> ²	Eastern Glass Lizard	VI	Introduced in the 1990s, status unknown. May
			compete with indigenous Celestus maculatus
Ramphotyphlops braminus	Flowerpot Snake	V	Introduced to Grand Cayman, status unknown
Diadophis punctatus	Ring-necked Snake	VI	Discovered on Grand Cayman in 1987, not
			considered an established part of fauna
			First recorded on Grand Cayman in 1985, now
Pantherophis guttatus ²	Corn Snake	VI	apparently established. Has been recorded
			eating endemic Anolis conspersus

¹ Priority species for conservation action

² Introduced species of conservation concern

* Extinct species

Table 14: Conservation Priorities for the Amphibians and Reptiles of the Cayman Islands

	Conservation Categories					Species	
Amphibians and Reptiles	I	I	III	IV	v	VI	Totals
Indigenous Species	23	-	1	2	-	-	26
Endemic Species	14	-	-	-	-	-	14
Extinct Indigenous Species	1	-	-	-	-	-	1
Priority Species	11	-	-	-	-	-	11
Introduced Species	-	-	-	-	6	9	15 (14*)
Species of Concern	-	-	-	-	-	6	6
Total Number of Species	23	0	1	2	6	9	41 (40*)

*Both indigenous and introduced populations of Anolis sagrei occur - marked numbers indicate the actual species totals

3.3.6. Key General References for the Herpetofauna of the Cayman Islands

Aiken, J.J., C. Bell, J. Solomon and J. Clamp. 2002. The reproductive status of marine turtles nesting in the Cayman Islands: work in progress. Marine Turtle Newsletter 95: 13-14.

Aiken, J.J., B.J. Godley, A.C. Broderick, T. Austin, G. Ebanks-Petrie and G.C. Hays. 2001. Two hundred years after a commercial turtle fishery: the current status of marine turtles nesting in the Cayman Islands. Oryx 35: 145-152.

Bonatto, S.L. 2009. Molecular phylogeny of advanced snakes (Serpentes, Caenophidia) with an emphasis on South American xenodontines: a revised classification and description of new taxa. Papeis Avulsos de Zoologia 49: 115-153.

Brunt, M.A. and J.E. Davies (Eds.). 1994. The Cayman Islands: Natural History and Biogeography. Kluwer Academic Publishers.

Cayman Wildlife Connection. 2004. Wildlife (including a checklist of the indigenous and introduced species of amphibian and reptile of the Cayman Islands). Online at: http://www.caymanwildlife.org/wildlife.html#frogs

Crother, B.I. (Ed.). 1999. Caribbean Amphibians and Reptiles. Academic Press, San Diego.

Davies, J.E. 1994. Rare and endemic plants, animals, and habitats in the Cayman Islands, and related legislation. Pp. 527-541 in: M.A. Brunt and J.E. Davies (Eds.). The Cayman Islands: Natural History and Biogeography. Kluwer Academic Publishers, Dordrecht, Netherlands.

Garman, S. 1887. On the reptiles and batrachians of Grand Cayman. Proc. Amer. Philos. Soc. 24: 273-277.

Garman, S. 1888. Reptiles and batrachians from the Caymans and from the Bahamas. Collected by Prof. C. J. Maynard for the Museum of Comparative Zoology at Cambridge, Mass. Bull. Essex Inst. 20: 1-13.

Godley, B.J, A.C. Broderick, L.M. Campbell, S. Ranger and P.B. Richardson. 2004e. 7. An assessment of the status and exploitation of marine turtles in the Cayman Islands. Pp. 124-154 in: An Assessment of the Status and Exploitation of Marine Turtles in the UK Overseas Territories in the Wider Caribbean. Final Project Report for the Department of Environment, Food and Rural Affairs and the Foreign and Commonwealth Office, UK. Online at: http://www.seaturtle.org/mtrg/projects/tcot/finalreport/

Grant, C. 1941. The herpetology of the Cayman Islands. Bulletin of the Institute of Jamaica Science Series 2: 1-56.

Grant, C. and C.B. Lewis. 1940. The herpetology of the Cayman Islands with an appendix on the Cayman Islands and marine turtles (see: Lewis 1940). Bulletin of the Institute of Jamaica 2: 1-65

Hedges, S.B. 2009. Cayman Islands checklist. Caribherp: database of West Indian amphibians and reptiles. Pennsylvania State University, University Park, Pennsylvania Online at: <u>http://evo.bio.psu.edu/caribherp/lists/CAY-LIST.HTM</u>

Hedges, S.B., A. Couloux and N. Vidal. 2009. Molecular phylogeny, classification, and biogeography of West Indian racer snakes of the Tribe Alsophiini (Squamata, Dipsadidae, Xenodontinae). Zootaxa 2067: 1-28.

Henderson, R.W. and R. Powell (Eds.). 2003. Islands and the Sea: Essays on Herpetological Exploration in the West Indies. Society for the Study of Amphibians and Reptiles, Ithaca, NY.

Lewis, C.B. 1940. The Cayman Islands and marine turtles. Bulletin of the Institute of Jamaica 2: 56-65.

MacLean, W.P., R. Kellner and H. Dennis. 1977. Island lists of West Indian amphibians and reptiles. Smithsonian Herpetological Information Service 40: 1-47.

Morgan, G.S. 1994. Late Quaternary fossil vertebrates from the Cayman Islands. Pp. 465-508 in: M.A. Brunt and J.E. Davies (Eds.). The Cayman Islands: Natural History and Biogeography. Kluwer Academic Publishers, Dordrecht, Netherlands.

Morgan, G.S. and T.H. Patton. 1979. On the occurrence of *Crocodylus* (Reptilia, Crocodylidae) in the Cayman Islands, British West Indies. Journal of Herpetology 13: 289-292.

Morgan, G.S., R. Franz and R.I. Crombie. 1993. The Cuban crocodile, *Crocodylus rhombifer*, from late Quaternary fossil deposits on Grand Cayman. Caribbean Journal of Science 29: 153-164.

Parsons, J. 1984. National report for the country of Cayman Islands. Pp. 118-122 in: P.R. Bacon, F. Berry, K. Bjorndal, H. Hirth, L. Ogren and M. Weber (Eds.). Proceedings of the Western Atlantic Turtle Symposium, Volume 3, Appendix 7: the National Reports. University of Miami Press, Miami, Florida.

Powell, R., R.W. Henderson, K. Adler and H.A. Dundee. 1996. An annotated checklist of West Indian amphibians and reptiles. Pp. 51-93 in: R. Powell and R. W. Henderson (Eds.). Contributions to West Indian Herpetology: A Tribute to Albert Schwartz. Contributions to Herpetology Volume 12, Society for the Study of Amphibians and Reptiles, Ithaca, New York.

Schwartz, A. and R. Thomas. 1975. A checklist of West Indian amphibians and reptiles. Carnegie Mus. Nat. Hist. Spec. Publ. 1: 1-216.

Schwartz, A. and R.W. Henderson 1985. A Guide to the Identification of the Amphibians and Reptiles of the West Indies Exclusive of Hispaniola. Milwaukee Public Mus., Milwaukee.

Schwartz, A. and R.W. Henderson. 1988. West Indian amphibian and reptiles: a checklist. Milwaukee Publ. Mus. Contr. Biol. Geol. No. 74: 1-264.

Schwartz, A. and R.W. Henderson. 1991. Amphibians and Reptiles of the West Indies. University of Florida Press, Gainesville, Florida.

Schwartz, A., R. Thomas and L.D. Ober. 1978. First supplement to a checklist of West Indian amphibians and reptiles. Carnegie Museum of Natural History Special Publication 5: 1-35.

Seidel, M.E. and R. Franz. 1994. Amphibians and reptiles (exclusive of marine turtles) of the Cayman Islands. Pp. 407-433 in: M.A. Brunt and J.E. Davies (Eds.). The Cayman Islands: Natural History and Biogeography. Kluwer Academic Publishers, Dordrecht, Netherlands.

Stoddart, D.R. 1980a. Scientific survey of Little Cayman. Atoll Research Bulletin 241: 1-10.

Stoddart, D.R. 1980b. Little Cayman: ecology and significance. Atoll Research Bulletin 241: 171-180.

Williams, E. 1964. Remarks on the relationships of the reptiles and amphibians of the Cayman Islands. Occasional Papers on Mollusks 2 (31): 383-384.

Williams, N. 1995. A History of the Cayman Islands. The Government of the Cayman Islands. Bourne Press Ltd., Bournemouth, Dorset.

Wood, F.E. and J.R. Wood. 1994. Sea turtles of the Cayman Islands. Pp. 229-236 in: M.A. Brunt and J.E. Davies (Eds.). The Cayman Islands: Natural History and Biogeography. Kluwer Academic Publishers, Dordrecht, Netherlands.

3.4. Montserrat

3.4.1. Location

Montserrat is located in the eastern Caribbean in the Leeward Islands of the Lesser Antilles (south of Anguilla). The territory consists of the main island of Montserrat plus two very small islets, Little Redonda and Virgin. Following the recent eruptions of the Soufrière Hills volcano, which began in 1995 and continue to the present (the last eruption was in December 2008), the entire southern third of Montserrat, including the former capital Plymouth, is now an exclusion zone.

3.4.2. Area

The total land area is 104 km². Montserrat is slowly increasing in size due to the accumulation of volcanic deposits on the south-eastern coast.

3.4.3. Population

Montserrat has a population of 4,819 (2007 estimate) and a population density of only about 46 people/km². In 1994 the preeruption population was some 13,000 (125 people/km²), but almost 8,000 refugees left the island following the resumption of volcanic activity in July 1995 and, since the capital Plymouth was entirely destroyed, few have returned.



Map 5: Montserrat

3.4.4. Environment

Montserrat has the typical tropical climate of the Caribbean islands with an average rainfall of about 1500mm (varying from about 1200 mm in the lowlands to over 1750 mm in the mountains), most of which falls in the wet season from June to November. This is also the main period of hurricane activity. Montserrat is obviously volcanic in origin and has three main hill ranges (the highest point is around 750 m) and dramatic, rock-faced cliffs up to 30 m high in places along the coast. The

natural vegetation in the lowlands is a mosaic of semi-evergreen forest, cactus, dry scrub woodlands and mangroves, while wetter rainforests, montane forests and elfin woodlands occur at higher altitudes. Large areas to the south of the island, however, including almost all of one of the main hill ranges, have been denuded of vegetation by the volcanic eruptions. There is a small tourism industry and limited agriculture, but the main environmental threats now stem from volcanic activity, either through direct habitat destruction or secondary effects such as the intensely acidic rainfall that can fall over the entire island.

3.4.5. Amphibians and Reptiles of Montserrat

A total of 15 indigenous and three introduced species of amphibian and reptile are currently known from Montserrat (the total for all herpetofauna is 18 species). Two species of lizard and one snake are endemic to the island, the Montserrat anole *Anolis lividus*, the Montserrat galliwasp *Diploglossus montisserrati* and the Montserrat racer *Alsophis manselli*. The territory now also supports most of the remaining world population of the large frog, the mountain chicken *Leptodactylus fallax*, following this species' extinction on all the other islands in its former range apart from Montserrat and Dominica and, more recently, the dramatic decline in its numbers on Dominica due to the amphibian pathogen *Batrachochytrium dendrobatidis* (chytrid fungus). Recent research indicates that the effects of chytrid fungus may well be worse when an amphibian population is already under stress of some kind. Agro-chemicals are often implicated and there can be little doubt that the recent volcanic episodes, especially the acidic rainfall, would also stress amphibians. Following reports in early 2009 of many dead frogs on Montserrat, research by the Durrell Wildlife Conservation Trust unfortunately revealed that all sub-populations for saving the species are now infected with chytrid and that the mortality rate is extremely high. Several potential options for saving the species are now being investigated. Table 15 indicates the population status of the herpetofauna of Montserrat – the column headed "Cat." refers to the conservation categories discussed in Section 2.3. (and shown in Tables 2 to 8) and Table 16 provides a numerical summary of the herpetofauna, including the seven priority species and the one introduced species of conservation concern.

Species Name	Common Name	Cat.	Notes			
Indigenous Species						
Leptodactylus fallax ¹	Mountain Chicken	I	Populations on Montserrat are now confined to about 1500 ha in the Centre Hills region of the island. A species action plan has been prepared. A recent severe population crash (first reported in March 2009) is now confirmed to have been caused by chytrid fungus.			
Eleutherodactylus johnstonei	Johnstone's Robber Frog	IV	Abundant in suitable habitats			
Caretta caretta ¹	Loggerhead Turtle	I	Small numbers of nests, foraging animals rare			
Chelonia mydas ¹	Green Turtle	I	Small numbers of nests, plus small numbers of foraging juveniles present			
Eretmochelys imbricata ¹	Hawksbill Turtle	I	Small numbers of nests, plus small numbers of adults and foraging juveniles			
Dermochelys coriacea ¹	Leatherback Turtle	I	Occasional nest, foraging animals rarely seen			
Chelonoidis carbonaria	Red-footed Tortoise	I	Has suffered declines – population may have been introduced to Montserrat			
Sphaerodactylus fantasticus	Fantastic Dwarf Gecko	I	Endemic subspecies, abundant in suitable habitats			
Thecadactylus rapicauda	Turnip-tailed Gecko	IV	Thought to be common in suitable habitats			
Anolis lividus	Montserrat Anole	I	Endemic species - abundant in suitable habitats			
Ameiva pluvianotata ¹	Montserrat Ameiva	I	Endemic subspecies – has declined severely in some areas, especially as a result of volcanic activity, although can still be common in others			
Mabuya sloanii complex	Slippery-backed Skink	IV	Also known as <i>Mabuya bistriata</i> here – status on Montserrat unknown			
Diploglossus montisserrati ¹	Montserrat Galliwasp	I	Endemic species. Extremely rarely recorded – current status and effects of the volcano eruptions on its population are not known			
Typhlops monastus	Montserrat Worm Snake	I	Endemic subspecies – status unknown			
Alsophis manselli	Antilles Racer	I	Endemic species, abundant in suitable habitats			
Introduced Species						
Rhinella marina ²	Marine Toad	VI	Widespread and abundant. Does not appear to be competing directly with <i>Leptodactylus fallax</i> , but acts as a reservoir and vector for the chytrid fungus (which does not affect this species)			
Hemidactylus mabouia	African House Gecko	V	Abundant in human habitation			
Iguana iguana	Green Iguana	VI	Status unknown. This species may actually be native to Montserrat - further work is needed			

Table 15: Checklist of the Amphibians and Reptiles of Montserrat

¹ Priority species for conservation action

² Introduced species of conservation concern

Table 16: Conservation Priorities for the Amphibians and Reptiles of Montserrat

	Conservation Categories						Species
Amphibians and Reptiles	I	II	III	IV	V	VI	Totals
Indigenous Species	12	-	-	3	-	-	15
Endemic Species	3	-	-	-	-	-	3
Extinct Indigenous Species	-	-	-	-	-	-	0
Priority Species	7	-	-	-	-	-	7
Introduced Species	-	-	-	-	1	2	3
Species of Concern	-	-	-	-	-	1	1
Total Number of Species	12	0	0	3	1	2	18

3.4.6. Key General References for the Herpetofauna of Montserrat

Agardy, M.T. 1990. Preliminary assessment of the impacts of Hurricane Hugo on sea turtle populations of the eastern Caribbean. Pp. 63-66 in: T.H. Richardson, J.I. Richardson and M. Donnelly (Compilers). Proceedings of the 10th Annual Symposium on Sea Turtle Biology and Conservation. NOAA Technical Memorandum NMFS-SEFSC-278.

Anonymous. 1993. Environmental profile, an assessment of the critical environmental issues facing Montserrat with an action agenda for the future. Project No. MOT/92/002/A/01/99, United Nations Development Program (UNDP).

Blankenship, J.R. 1990. The wildlife of Montserrat (including an annotated bird list for the island). Montserrat National Trust, Montserrat, West Indies.

Crother, B.I. (Ed.), 1999. Caribbean Amphibians and Reptiles, Academic Press, San Diego,

Daltry, J.C. 1999. Unpublished report to Montserrat Forestry and Environment Division on 1995 survey of reptiles and amphibians on Montserrat. Fauna and Flora International, Cambridge.

Gell, F. and M. Watson. 2000. UK Overseas Territories in the northeast Caribbean: Anguilla, British Virgin Islands, Montserrat. In: C. Sheppard (Ed.). Seas at the Millennium: an Environmental Evaluation. Pergamon, Elsevier Science, UK.

Godley, B.J, A.C. Broderick, L.M. Campbell, S. Ranger and P.B. Richardson. 2004f. 8. An assessment of the status and exploitation of marine turtles in Montserrat. Pp. 155-179 in: An Assessment of the Status and Exploitation of Marine Turtles in the UK Overseas Territories in the Wider Caribbean. Final Project Report for the Department of Environment, Food and Rural Affairs and the Foreign and Commonwealth Office, UK.

Online at: http://www.seaturtle.org/mtrg/projects/tcot/finalreport/

Hedges, S.B., A. Couloux and N. Vidal. 2009. Molecular phylogeny, classification, and biogeography of West Indian racer snakes of the Tribe Alsophiini (Squamata, Dipsadidae, Xenodontinae). Zootaxa 2067: 1-28.

Henderson, R.W. and R. Powell (Eds.). 2003. Islands and the Sea: Essays on Herpetological Exploration in the West Indies. Society for the Study of Amphibians and Reptiles, Ithaca, NY.

John, C.T. 1984. National report for the country of Montserrat. Pp. 332-328 in: P.R. Bacon, F. Berry, K. Bjorndal, H. Hirth, L. Ogren and M. Weber (Eds.). Proceedings of the Western Atlantic Turtle Symposium, Volume 3, Appendix 7: the National Reports. University of Miami Press, Miami, Florida.

MacLean, W.P., R. Kellner and H. Dennis, 1977. Island lists of West Indian amphibians and reptiles. Smithsonian Herpetological Information Service 40: 1-47.

Malhotra, A. and R.S. Thorpe. 1999. Reptiles and Amphibians of the Eastern Caribbean. Macmillan Education Ltd, London and Oxford.

Melyan, A.B. 1983. Marine turtles of the Leeward Islands, Lesser Antilles. Atoll Research Bulletin 278: 1-43.

Powell, R., R.W. Henderson, K. Adler and H.A. Dundee. 1996. An annotated checklist of West Indian amphibians and reptiles. Pp. 51-93 in: R. Powell and R. W. Henderson (Eds.). Contributions to West Indian Herpetology: A Tribute to Albert Schwartz. Contributions to Herpetology Volume 12, Society for the Study of Amphibians and Reptiles, Ithaca, New York.

Schwartz, A. and R. Thomas. 1975. A checklist of West Indian amphibians and reptiles. Carnegie Mus. Nat. Hist. Spec. Publ. 1: 1-216.

Schwartz, A. and R.W. Henderson 1985. A Guide to the Identification of the Amphibians and Reptiles of the West Indies Exclusive of Hispaniola. Milwaukee Public Mus., Milwaukee.

Schwartz, A. and R.W. Henderson. 1988. West Indian amphibian and reptiles: a checklist. Milwaukee Publ. Mus. Contr. Biol. Geol. No. 74: 1-264.

Schwartz, A. and R.W. Henderson. 1991. Amphibians and Reptiles of the West Indies. University of Florida Press, Gainesville, Florida.

Schwartz, A., R. Thomas and L.D. Ober. 1978. First supplement to a checklist of West Indian amphibians and reptiles. Carnegie Museum of Natural History Special Publication 5: 1-35.

Steadman, D.W., D.R. Watters, E.J. Reitz and G.K. Pregill. 1984. Vertebrates from archaeological sites on Montserrat, West Indies. Annals of the Carnegie Museum 53: 1-29.

Stevens, M. and G. Waldman. 2001. Animal biodiversity of the Lesser Antillean Island of Montserrat (British West Indies): an annotated checklist of terrestrial and freshwater Animals. Archiv Zoologischer Publikationen 6: 1-145.

Underwood, G. 1962. Reptiles of the eastern Caribbean; and 1964 first supplement. Caribbean Affairs (New Series) 1: 192, Department of Extra-Mural Studies, University of the West Indies, Trinidad.

Young, R.P. (Ed.). 2008. A biodiversity assessment of the Centre Hills, Montserrat. Durrell Conservation Monograph No.1. Durrell Wildlife Conservation Trust, Jersey, Channel Islands.

3.5. Turks and Caicos Islands

3.5.1. Location

The Turks and Caicos Islands, although often considered to be in the Caribbean, are actually located in the Atlantic Ocean. The territory consists of two distinct groups of islands, the Caicos Islands and the much smaller Turks Islands, separated by the 2200m deep Turks Island Passage. There are eight main islands and about thirty smaller islands and cays in the group, plus dozens of minor islets and rocks. The Turks and Caicos Islands are geographically contiguous with the Bahamas.



Map 6: Turks and Caicos Islands

3.5.2. Area

The total land area of the territory is 616.2 km² (Turks Islands - 26.7 km²: Caicos Islands - 589.5 km²).

3.5.3. Population

The total population for the territory is 30,600 (2008 estimate), of whom some 24,900 live in the Caicos Islands, mostly on the island of Providenciales, and 5,700 live in the Turks Islands. The average population density for the territory is about 50 people/km² but this varies considerably since only eight of the islands are inhabited. Providenciales, with a population of 22,500 and an area of 98 km², has a population density approaching 230 people/km².

3.5.4. Environment

The Turks and Caicos Islands have a tropical climate with fairly even temperatures throughout the year. Rainfall varies more than expected for such a small area, with parts of the territory receiving an annual average of about 1200mm but other areas, particularly in the south, experiencing less than 600mm of rainfall a year. The wettest period is from June to November when the fairly regular hurricanes also occur. The islands are primarily comprised of low, flat limestone with a few cliffs present on windward coasts (although nowhere in the territory is higher than 75m). There are outlying coral reefs and extensive marshes and mangrove swamps. The predominant terrestrial habitat is scrub forest, affected by rainfall, the thin sand soils, hurricanes and, in places, human activities. Taller forest stands still occur in some areas, including pine forest on North Caicos, the wettest island of the group. Tourism, offshore finance and fishing are the main economic activities. The impacts of development have been patchy, with many islands remaining in a near pristine state.

3.5.5. Amphibians and Reptiles of the Turks and Caicos Islands

A total of 15 indigenous and two introduced species of amphibian and reptile are currently known from the Turks and Caicos Islands (17 species of herpetofauna in total). The territory supports five endemic species, four lizards and one snake. These include the Caicos croaking gecko *Aristelliger hechti*, the Caicos dwarf gecko *Sphaerodactylus caicosensis*, Underwood's dwarf gecko *Sphaerodactylus underwoodi*, the Bastion Cay curly-tailed lizard *Leiocephalus psammodromus* and the Caicos dwarf boa *Tropidophis greenwayi*.

Table 17 indicates the population status of the herpetofauna of the Turks and Caicos Islands – the column headed "Cat." refers to the conservation categories discussed in Section 2.3. (and shown in Tables 2 to 8) and Table 18 provides a numerical summary of the herpetofauna, including the six priority species for the territory.

Species Name	Common Name	Cat.	Notes
Indigenous Species			
Caretta caretta ¹	Loggerhead Turtle	I	Possibly small numbers of nests, foraging
			adults and juveniles occasionally encountered
Chelonia mydas ¹	Green Turtle	I	Small numbers of nests, some adults and large
			numbers of foraging juveniles in some areas
Eretmochelys imbricata ¹	Hawksbill Turtle	I	Moderate numbers of nests, some adults and
			large numbers of foraging juveniles present
Dermochelys coriacea	Leatherback Turtle	I	Occasionally encountered, not known to nest
Aristelliger hechti	Caicos Croaking Gecko	I	Endemic species – status unknown
Sphaerodactylus caicosensis	Caicos Dwarf Gecko	Ι	Endemic species – status unknown
Sphaerodactylus mariguanae	Mayaguana Dwarf Gecko		Status unknown
Sphaerodactylus underwoodi	Underwood's Dwarf Gecko	I	Endemic species – status unknown
			Still found on 50-60 of the >200 Turks and
			Caicos Islands (plus only one island in the
Cyclura carinata ¹	Turks & Caicos Ground Iguana	I	Bahamas), but this species has suffered a
			greater than 25% population decline in the last
			20 years and its range now only covers about
			13km ² , out of a total island area of c.616km ²
Leiocephalus psammodromus	Bastion Cay Curly-tailed Lizard	I	Endemic species – status unknown
Anolis scriptus	Silver Cay Anole		Status unknown
<i>Mabuya sloanii</i> complex	Slippery-backed Skink	IV	Status unknown
Typhlops richardi (?)	Richard's Worm Snake	III	The actual Typhlops species occurring on the
			Turks and Caicos has yet to be determined
Epicrates chrysogaster 1?	Turks Island Boa	I	Endemic subspecies – status unknown
Tropidophis greenwayi ^{1?}	Caicos Dwarf Boa		Endemic species – status unknown
Introduced Species			
Eleutherodactylus planirostris	Greenhouse Frog	V	Abundant in suitable habitats?
Iguana iguana	Green Iguana	VI	Status unknown

Table 17: Checklist of the Amphibians and Reptiles of the Turks and Caicos Islands

¹ Priority species for conservation action

The Amphibians and Reptiles of the UK Overseas Territories

Table 18: Conservation Priorities for the Amphibians and Reptiles of theTurks and Caicos Islands

	Conservation Categories						Species
Amphibians and Reptiles	I	II	III	IV	V	VI	Totals
Indigenous Species	11	2	1	1	-	-	15
Endemic Species	5	-	-	-	-	-	5
Extinct Indigenous Species	-	-	-	-	-	-	0
Priority Species	6	-	-	-	-	-	6
Introduced Species	-	-	-	-	1	1	2
Species of Concern	-	-	-	-	-	-	0
Total Number of Species	11	2	1	1	1	1	17

3.5.6. Key General References for the Herpetofauna of the Turks and Caicos Islands

Crother, B.I. (Ed.). 1999. Caribbean Amphibians and Reptiles. Academic Press, San Diego.

Fletemeyer, J. 1984. National report for the country of Turks-Caicos. Pp. 409-422 in: P.R. Bacon, F. Berry, K. Bjorndal, H. Hirth, L. Ogren and M. Weber (Eds.). Proceedings of the Western Atlantic Turtle Symposium, Volume 3, Appendix 7: the National Reports. University of Miami Press, Miami, Florida.

Gaudin, G. and P. Medley. 2000. The Turks and Caicos Islands. In: C. Sheppard (Ed.). Seas at the Millennium: an Environmental Evaluation. Pergamon, Elsevier Science Ltd., UK.

Godley, B.J, A.C. Broderick, L.M. Campbell, S. Ranger and P.B. Richardson. 2004g. 9. An assessment of the status and exploitation of marine turtles in the Turks and Caicos Islands. Pp. 180-222 in: An Assessment of the Status and Exploitation of Marine Turtles in the UK Overseas Territories in the Wider Caribbean. Final Project Report for the Department of Environment, Food and Rural Affairs and the Foreign and Commonwealth Office, UK. Online at: http://www.seaturtle.org/mtrg/projects/tcot/finalreport/

Henderson, R.W. and R. Powell (Eds.). 2003. Islands and the Sea: Essays on Herpetological Exploration in the West Indies. Society for the Study of Amphibians and Reptiles, Ithaca, NY.

MacLean, W.P., R. Kellner and H. Dennis. 1977. Island lists of West Indian amphibians and reptiles. Smithsonian Herpetological Information Service 40: 1-47.

Powell, R., R.W. Henderson, K. Adler and H.A. Dundee. 1996. An annotated checklist of West Indian amphibians and reptiles. Pp. 51-93 in: R. Powell and R. W. Henderson (Eds.). Contributions to West Indian Herpetology: A Tribute to Albert Schwartz. Contributions to Herpetology Volume 12, Society for the Study of Amphibians and Reptiles, Ithaca, New York.

Schwartz, A. and R. Thomas. 1975. A checklist of West Indian amphibians and reptiles. Carnegie Mus. Nat. Hist. Spec. Publ. 1: 1-216.

Schwartz, A. and R.W. Henderson 1985. A Guide to the Identification of the Amphibians and Reptiles of the West Indies Exclusive of Hispaniola. Milwaukee Public Mus., Milwaukee.

Schwartz, A. and R.W. Henderson. 1988. West Indian amphibian and reptiles: a checklist. Milwaukee Publ. Mus. Contr. Biol. Geol. No. 74: 1-264.

Schwartz, A. and R.W. Henderson. 1991. Amphibians and Reptiles of the West Indies. University of Florida Press, Gainesville, Florida.

Schwartz, A., R. Thomas and L.D. Ober. 1978. First supplement to a checklist of West Indian amphibians and reptiles. Carnegie Museum of Natural History Special Publication 5: 1-35.

3.6. Bermuda

3.6.1. Location

Bermuda is located in the Atlantic Ocean about 1,030 kilometres east-southeast of Cape Hatteras in North Carolina, the nearest landmass. Although normally referred to in the singular, the territory actually consists of nearly 150 islands (ten main islands and many smaller ones) and is known officially as the Bermuda Islands or the Somers Isles.



Map 7: Bermuda

3.6.2. Area

The total land area of all islands is 53.2 km².

3.6.3. Population

The population of Bermuda is 66,163 (2007 estimate) giving a population density of almost 1,244 people/km², one of the highest population densities for any country or territory in the world.

3.6.4. Environment

Bermuda has a subtropical climate, being warmed by the nearby Gulf Stream and the prevailing westerly winds that carry warm, humid air over the islands. These ensure that even the average winter temperature rarely drops below 10 °C. The average annual rainfall is about 1450mm and there are only minor variations in monthly averages. Its position near the Gulf Stream means that Bermuda is very susceptible to hurricanes – Hurricane Fabian caused significant damage in September 2003. Bermuda consists of coral limestone islands, which are mostly flat with low coastal cliffs interspersed with the famous pink sand beaches of the islands. Because it is so densely populated, only about 10% of Bermuda's natural vegetation remains, now mostly protected. This comprises a few small areas of marshland and pockets of the littoral scrub and low woodland that once covered the islands. Bermuda supports the most northerly coral reef system and mangrove swamps in the world.

3.6.5. Amphibians and Reptiles of Bermuda

A total of five indigenous species (four of them sea turtles) and eight introduced species of amphibian and reptile are currently known from Bermuda (13 species of herpetofauna in total). The territory supports just one endemic species of reptile, the Bermuda skink *Plestiodon longirostris*, which is also Bermuda's only endemic terrestrial vertebrate. Table 19 indicates the population status of the herpetofauna of Bermuda – the column headed "Cat." refers to the conservation categories discussed in Section 2.3. (and shown in Tables 2 to 8) and Table 20 provides a numerical summary of the herpetofauna, including the three priority species and the five introduced species of conservation concern.
Species Name	Common Name	Cat.	Notes
Indigenous Species			
Caretta caretta	Loggerhead Turtle	I	Rare itinerant visitor, one nest recorded in 1990
Chelonia mydas ¹	Green Turtle	I	Not known to have nested since 1937, foraging
			juveniles can be common in some areas
Eretmochelys imbricata ¹	Hawksbill Turtle	I	Not known to have nested, foraging juveniles
			present in some areas
Dermochelys coriacea	Leatherback Turtle		Itinerant visitor, not known to have nested
			Bermuda's only endemic terrestrial vertebrate,
Plestiodon longirostris ¹	Bermuda Skink	1	has suffered a severe decline and is now found
			at fewer than 30 small sites covering <200ha
Introduced Species			
			Widespread and abundant throughout much of
Rhinella marina ²	Marine Toad	VI	Bermuda. Implicated in Bermuda skink
			declines (e.g. on Nonsuch Island) so control
			measures may be necessary in some areas
Eleutherodactylus gossei	Spalding's Robber Frog	V	Introduced to Bermuda in the early 20" Century
			but probably died out around 1990
Eleutherodactylus johnstonei	Johnstone's Robber Frog	V	Widespread and abundant throughout the main
			island of Bermuda and several smaller islands
			Occurs in a few areas of suitable habitat. Some
Malaclemys terrapin	Diamondback Terrapin	V	authorities speculate that this species could
			possibly be indigenous to Bermuda
Trachemys scripta ²	Red-eared Slider	VI	Introduced via the pet trade, started breeding
2			around 1985 and now occurs in most ponds
Anolis extremus ²	Barbados Anole	VI	First recorded in the 1950s and now
			widespread and abundant
			Introduced in 1905 and now widespread and
Anolis grahami -	Graham's Anole	VI	abundant throughout much of Bermuda. May
			compete with and predate Bermuda skinks to a
A 11 1 1 12			limited extent but control is not practical
Anolis leachli ⁻	Pantner Anole	VI	First recorded in the 1950s and now
			widespread and abundant

Table 19: Checklist of the Amphibians and Reptiles of Bermuda

¹ Priority species for conservation action

² Introduced species of conservation concern

Table 20: Conservation Priorities for the Amphibians and Reptiles of Bermuda

	Conservation Categories					Species	
Amphibians and Reptiles	I	I		IV	V	VI	Totals
Indigenous Species	5	-	-	-	-	-	5
Endemic Species	1	-	-	-	-	-	1
Extinct Indigenous Species	-	-	-	-	-	-	0
Priority Species	3	-	-	-	-	-	3
Introduced Species	-	-	-	-	3	5	8
Species of Concern	-	-	-	-	-	5	5
Total Number of Species	5	0	0	0	3	5	13

3.6.6. Key General References for the Herpetofauna of Bermuda

Babcock, H.L. 1938. Sea turtles of the Bermuda Islands, with a survey of the present state of the turtle fishing industry. Proc. Zool. Soc. London, Ser. A, 107: 595-601.

Bacon, J.P., J.A. Gray and L. Kitson. 2006. Status and conservation of the reptiles and amphibians of the Bermuda islands. Applied Herpetology 3: 323-344.

Burnett-Herkes, J. 1976. Bermuda turtle tagging programme. Monthly Bulletin of the Bermuda Department of Agriculture and Fisheries 46: 69-71.

Amphibian and Reptile Conservation

Burnett-Herkes, J. 1984. The national report for the country of Bermuda. Pp. 49-54 in: P.R. Bacon, F. Berry, K. Bjorndal, H. Hirth, L. Ogren and M. Weber (Eds.). Proceedings of the Western Atlantic Turtle Symposium, Volume 3, Appendix 7: the National Reports. University of Miami Press, Miami, Florida.

Cope, E.D. 1861. On the reptilia of Sombrero and Bermuda. Proc. Acad. Nat. Sci. Philadelphia 13: 312-314.

Dunn, E.R. and R. Conant. 1937. The herpetological fauna of Bermuda. Herpetologica 1: 78-80.

Garman, S. 1884. The reptiles of Bermuda. Pp. 285-303 in: J. Jones, J. Matthew and G.B. Goode (Eds.). Contributions to the Natural History of the Bermudas. Bull. U.S. Nat. Mus. 25: 1-353.

Godley, B.J, A.C. Broderick, L.M. Campbell, S. Ranger and P.B. Richardson. 2004c. 5. An assessment of the status and exploitation of marine turtles in Bermuda. Pp. 78-95 in: An Assessment of the Status and Exploitation of Marine Turtles in the UK Overseas Territories in the Wider Caribbean. Final Project Report for the Department of Environment, Food and Rural Affairs and the Foreign and Commonwealth Office, UK. Online at: http://www.seaturtle.org/mtrg/projects/tcot/finalreport/

Goode, G.B. 1877. A preliminary catalogue of the reptiles, fishes and leptocardians of the Bermudas, with descriptions of four species of fishes believed to be new. Amer. J. Sci. and Arts 14: 289-298.

Meylan, P., A. Meylan and J. Gray. 2004. The Bermuda Turtle Project's international course on biology and conservation of Sea Turtles, 2003. Marine Turtle Newsletter 103: 14-15.

Olson, S.L., P.J. Hearty and G.K. Pregill. 2006. Geological constraints on evolution and survival in endemic reptiles on Bermuda. Journal of Herpetology 40: 394-398.

Pope, P.H. 1917. The introduction of West Indian Anura into Bermuda. Bulletin of the Museum of Comparative Zoology 61: 119-131.

Ward, J. 1981. Of turtles and trash. Monthly Bulletin of the Bermuda Department of Agriculture and Fisheries 52: 1-3.

Wingate, D.B. (Ed.). 1959. A checklist of the birds, mammals, reptiles and amphibians of Bermuda. Bermuda Audubon Society.

Wingate, D.B. 1966. Terrestrial herpetofauna of Bermuda. Herpetologica 21: 202-218.

3.7. Ascension Island

3.7.1. Location

Ascension Island is an isolated island in the South Atlantic Ocean, around 1,600 km from the coast of Africa, and 2,250 km from the coast of South America. There is one main island, Ascension itself, plus the tiny islet of Boatswain Bird Island off the east coast. Along with Tristan de Cunha, Ascension Island forms part of the UK Overseas Territory of St. Helena.

3.7.2. Area

The total land area is 91 km².

3.7.3. Population

There is no indigenous or permanent population on the island, although about 1,100 people, mainly military personnel and civilian contract workers, can be living there at any one time (a population density of 12/km²).

3.7.4. Environment

Ascension's climate is tropical and dry, with a variable average annual rainfall of about 110 – 140mm. Rain showers can occur at any time during the year, but tend to be heavier between January and April. Ascension Island is basically a volcanic peak (the highest point is 858m) rising from just west of the Mid-Atlantic Ridge. Much of the island is a wasteland of lava flows and cinder cones with only about 30 native vascular plants, 10 of them endemic. However, many plants have been introduced and a mosaic of woodland, scrub and grassland has developed on parts of the island, along with food crops such as bananas. The most important aspect of Ascension Island from a herpetological viewpoint is the major sea turtle rookery found here.



Map 8: Ascension Island

3.7.5. Reptiles of Ascension Island

A total of four indigenous species (all of them sea turtles) and four introduced species of reptile are currently known from Ascension Island (eight species in total). The territory has no endemic species of reptile. Although all the species listed are reptiles, one report of an introduced amphibian was also located (the African clawed frog *Xenopus laevis*) but it is not known if this species has been able to establish itself on a largely barren volcanic island with little standing water. Table 21 indicates the population status of the herpetofauna of Ascension Island – the column headed "Cat." refers to the conservation categories discussed in Section 2.3. (and shown in Tables 2 to 8) and Table 22 provides a numerical summary of the herpetofauna, including the single priority species.



Ascension Island supports one of the largest green turtle rookeries in the Atlantic (Photograph: Paul Edgar)

Species Name	Common Name	Cat.	Notes
Indigenous Species			
Caretta caretta	Loggerhead Turtle		Itinerant visitor, not known to nest
Chelonia mydas ¹	Green Turtle	Ι	One of the most important green turtle rookeries in the Atlantic, with some 3000-5000 females nesting on Ascension island each year
Eretmochelys imbricata	Hawksbill Turtle		Not known to nest but juveniles quite common
Dermochelys coriacea	Leatherback Turtle		Itinerant visitor, not known to nest
Introduced Species			
Hemidactylus frenatus?	Asian House Gecko	V	Status unknown
Hemidactylus mercatorius	Gray's Leaf-toed Gecko	V	Common on many buildings on the island. Some authorities speculate that this species may have arrived naturally by rafting from West Africa
Pachydactylus geitje	Cradock Thick-toed Gecko	V	Unknown
Liolaemus wiegmanni	Weigmann's Swift	V	Widespread on Ascension from sea level to an altitude of about 300m

Table 21: Checklist of the Reptiles of Ascension Island

¹ Priority species for conservation action

Table 22: Conservation Priorities for the Amphibians and Reptiles of Ascension Island

	Conservation Categories					Species	
Amphibians and Reptiles	I	II	III	IV	V	VI	Totals
Indigenous Species	4	-	-	-	-	-	4
Endemic Species	-	-	-	-	-	-	0
Extinct Indigenous Species	-	-	-	-	-	-	0
Priority Species	1	-	-	-	-	-	1
Introduced Species	-	-	-	-	4	-	4
Species of Concern	-	-	-	-	-	-	0
Total Number of Species	4	0	0	0	4	0	8

3.7.6. Key General References for the Herpetofauna of Ascension Island

Ashmole, N.P. and M.J. Ashmole. 1997. The land fauna of Ascension Island: new data from caves and lava flows, and a reconstruction of the prehistoric ecosystem. Journal of Biogeography 24:549-89.

Ashmole, N.P. and M.J. Ashmole. 2000. St. Helena and Ascension Island: A Natural History. Anthony Nelson, Oswestry, Shropshire.

Duffey, E. 1964. The terrestrial ecology of Ascension Island. Journal of Applied Ecology 1: 219-251.

Feazel, C.T. 1980. The turtle run from Ascension to Brazil and back. Seafrontiers 26: 240-243.

Fletemeyer, J.R. 1979. Ascension Island development: lessons from Florida. Marine Turtle Newsletter 11: 2-3.

Hays, G.C., A.C. Broderick, F. Glen and B.J. Godley. 2003. Climate change and sea turtles: a 150-year reconstruction of incubation temperatures at a major marine turtle rookery. Global Change Biology 9: 642-646.

Huxley, R. 1997. Ascension Island and Turtles. A Monograph. Ascension Island Heritage Society.

Huxley, R. 1999. Historical overview of marine turtle exploitation, Ascension Island, South Atlantic. Marine Turtle Newsletter 84: 7-9.

Loveridge, A. 1959. Notes on the present herpetofauna of Ascension Island. Copeia 1959: 69-70.

Marx, R. 1975. Ascension Island. Oceans 8: 38-44.

Mortimer, J.A. 1979a. Ascension Island: British jeopardize 45 years of conservation. Marine Turtle Newsletter 10: 7-8.

Mortimer, J.A. 1986. Guest editorial: commentary on the situation at Ascension Island. Marine Turtle Newsletter 37: 11-12.

3.8. St. Helena

3.8.1. Location

St. Helena, 1,287km to the southeast of Ascension Island in the south Atlantic , is one of the most isolated islands in the world. In addition to the main island of St. Helena itself, there are over 20 rocks and islets off the coast. The official UK Overseas Territory of St. Helena also includes Ascension Island and Tristan de Cunha, although this account refers solely to the island of St. Helena.



Map 9: St. Helena

3.8.2. Area

St. Helena has a total land area of 122 km².

3.8.3. Population

The population of St. Helena is 4,255 (February 2008 census), giving a population density of about 35/km².

3.8.4. Environment

St. Helena has a subtropical climate and an average rainfall of about 820mm. The island is of volcanic origin and consists of extremely rugged, hilly terrain. The coastal areas are barren but the interior would once have been covered with lush forests. Much of these disappeared due to human activities and the introduction of goats, although extensive areas have recently been re-planted and re-vegetated.

3.8.5. Amphibians and Reptiles of St. Helena

A total of three indigenous species (all sea turtles) and two introduced species of amphibian and reptile are currently known from St. Helena (four species in total). The territory has no endemic species of amphibian or reptile. Table 23 indicates the population status of the herpetofauna of St. Helena – the column headed "Cat." refers to the conservation categories discussed in Section 2.3. (and shown in Tables 2 to 8) and Table 24 provides a numerical summary of the herpetofauna, including the single priority species.

Species Name	Common Name	Cat.	Notes
Indigenous Species			
Chelonia mydas ¹	Green Turtle	I	Nesting almost extirpated, foraging unknown
Eretmochelys imbricata	Hawksbill Turtle		Itinerant visitor, not known to nest
Dermochelys coriacea	Leatherback Turtle		Itinerant visitor, not known to nest
Introduced Species			
Strongylopus grayii	Gray's Stream Frog	v	Introduced shortly before 1883 and now well established and abundant all over St. Helena, at all altitudes, wherever there is fresh water
Hemidactylus frenatus	Asian House Gecko	V	Widespread and abundant

Table 23: Checklist of the Amphibians and Reptiles of St. Helena

¹ Priority species for conservation action

Table 24: Conservation Priorities for the Amphibians and Reptiles of St. Helena

	Conservation Categories					Species	
Amphibians and Reptiles		II	III	IV	V	VI	Totals
Indigenous Species	3	-	-	-	-	-	3
Endemic Species	-	-	-	-	-	-	0
Extinct Indigenous Species	-	-	-	-	-	-	0
Priority Species	1	-	-	-	-	-	1
Introduced Species	-	-	-	-	2	-	2
Species of Concern	-	-	-	-	-	-	0
Total Number of Species	2	0	0	0	2	0	4

3.8.6. Key General References for the Herpetofauna of St. Helena

Ashmole, N.P. and M.J. Ashmole. 1997. The land fauna of Ascension Island: new data from caves and lava flows, and a reconstruction of the prehistoric ecosystem. Journal of Biogeography 24: 549-589.

Ashmole, N.P. and M.J. Ashmole. 2000. St. Helena and Ascension Island: A Natural History. Anthony Nelson, Oswestry, Shropshire.

Barbour, T. 1934. The St. Helena frog. Copeia 1934: 183.

Mertens, R. 1971. Der Frosch von St. Helena. Natur und Museum 101: 472-473.

3.9. Isle of Man

3.9.1. Location

The Isle of Man is a self-governing British Crown Dependency (and, as such, is not part of either the UK or the EU) located in the middle of the northern Irish Sea.

3.9.2. Area

The total land area is 572 km².

3.9.3. Population

The Isle of Man has a population of 80,058 (2006 estimate) and a population density of just under 140/km².



Map 10: The Isle of Man

3.9.4. Environment

The Isle of Man has a temperate climate, tempered by the Gulf Stream, with cool summers and mild winters. Due to its location between Ireland and the west coast of Britain, average rainfall is high compared to some other parts of the British Isles. Snaefell, the highest point on the island (621m), receives about 1,900mm of rainfall per year, although low lying areas experience less at around 800m per year. The northern end of the island is a flat plain, while the south has two mountainous areas divided by a central valley. Over half of the island is farmed, with pasture predominating. Only about 6% of the Isle of Man is wooded but some 25% consists of moorland and heathland, important habitats for the common lizard, *Zootoca vivipara*.

3.9.5. Amphibians and Reptiles of the Isle of Man

A total of three indigenous species of amphibian and reptile are currently known from the Isle of Man. No endemic or introduced species are known. Table 25 indicates the population status of the herpetofauna of the Isle of Man – the column headed "Cat." refers to the conservation categories discussed in Section 2.3. (and shown in Tables 2 to 8) and Table 26 provides a numerical summary of the herpetofauna, including the single priority species.

Species Name	Common Name	Cat.	Notes
Indigenous Species			
Rana temporaria	Common Frog	IV	Status unknown
Dermochelys coriacea	Leatherback Turtle	I	Itinerant visitor only
Zootoca vivipara ¹	Common Lizard	IV	Thought to have suffered a serious decline

¹ Priority species for conservation action

Table 26: Conservation Priorities for the Amphibians and Reptiles of the Isle of Man

	Conservation Categories					Species	
Amphibians and Reptiles	I	II	III	IV	V	VI	Totals
Indigenous Species	1	-	-	2	-	-	3
Endemic Species	-	-	-	-	-	-	0
Extinct Indigenous Species	-	-	-	-	-	-	0
Priority Species	-	-	-	1	-	-	1
Introduced Species	-	-	-	-	-	-	0
Species of Concern	-	-	-	-	-	-	0
Total Number of Species	1	0	0	2	0	0	3

3.9.6. Key General References for the Herpetofauna of the Isle of Man

Arnold, E.N. 2002. Field Guide to Reptiles and Amphibians of Britain and Europe. Collins, London.

Beebee, T.J.C. and R.A. Griffiths. 2000. Amphibians and Reptiles. A Natural History of the British Herpetofauna. Harper Collins, London.

Gasc, J. P., A. Cabela, J. Crnobrnja-Isailovic, D. Dolmen, K. Grossenbacher, P. Haffner, J. Lescure, H. Martens, J.P. Martínez Rica, H. Maurin, M.E. Oliveira, T.S. Sofianidou, M. Veith and A. Zuiderwijk (Eds.). 1997. Atlas of Amphibians and Reptiles in Europe. Societas Europaea Herpetologica and Muséum National d'Histoire Naturelle (IEGB/SPN), Paris.

Smith, M. 1973. The British Amphibians and Reptiles. Fifth edition. Collins, London.

3.10. Bailiwick of Guernsey

3.10.1. Location

The Bailiwick of Guernsey is a self-governing British Crown Dependency (and, as such, is not part of either the UK or the EU) located in the English Channel off the French coast of Normandy. The Bailiwick includes Guernsey itself, plus Alderney, Sark, Herm, Jethou, Brecqhou, Burhou, Lihou and other islets. Together with the Bailiwick of Jersey, it forms the Channel Islands.



Map 11: Bailiwick of Guernsey

3.10.2. Area

The total land area of all islands is 78 km² (Guernsey itself being 63km²).

3.10.3. Population

A July 2007 estimate put the population at 65,573, which translates to a population density of about 841/km².

3.10.4. Environment

The climate is temperate with mild winters and cool but relatively sunny summers. The temperature rarely drops below freezing. Annual rainfall averages a moderate 750-900mm. Guernsey itself contains two main geographical regions, the Haut Pas, a high southern plateau, and the Bas Pas, a low-lying and sandy northern region. The Haut Pas is the more rural of the two, with intensive mixed agriculture, and the Bas Pas is more residential and industrialised. The smaller islands are predominantly rural. Few unmodified habitats exist on any of the islands of the Bailiwick.

3.10.5. Amphibians and Reptiles of the Bailiwick of Guernsey

A total of four indigenous and one introduced species of amphibian and reptile are currently known from the Bailiwick of Guernsey (five species of herpetofauna in total). No endemic species are present. Table 27 indicates the population status of the herpetofauna of the Bailiwick of Guernsey – the column headed "Cat." refers to the conservation categories discussed in Section 2.3. (and shown in Tables 2 to 8) and Table 28 provides a numerical summary of the herpetofauna. At present, no priority species are included for Guernsey.

Table 27: Checklist of the Amphibians and Reptiles of the Bailiwick of Guernsey

Species Name	Common Name	Cat.	Notes
Indigenous Species			
Lissotriton vulgaris	Smooth Newt	IV	Status unknown
Rana temporaria	Common Frog	IV	Status unknown
Dermochelys coriacea	Leatherback Turtle	I	Itinerant visitor only
Anguis fragilis	Slow Worm	IV	Status unknown. Some authorities consider that this species may have been originally introduced to the island of Guernsey
Introduced Species			
Lacerta bilineata	Western Green Lizard	II	Status unknown

Table 28: Conservation Priorities for the Amphibians and Reptiles of theBailiwick of Guernsey

	Conservation Categories						Species
Amphibians and Reptiles		II	III	IV	V	VI	Totals
Indigenous Species	1	-	-	3	-	-	4
Endemic Species	-	-	-	-	-	-	0
Extinct Indigenous Species	-	-	-	-	-	-	0
Priority Species	-	-	-	-	-	-	0
Introduced Species	-	-	-	-	1	-	1
Species of Concern	-	-	-	-	-	-	0
Total Number of Species	1	1	0	3	0	0	5

3.10.6. Key General References for the Herpetofauna of the Bailiwick of Guernsey

Arnold, E.N. 2002. Field Guide to Reptiles and Amphibians of Britain and Europe. Collins, London.

Beebee, T.J.C. and R.A. Griffiths. 2000. Amphibians and Reptiles. A Natural History of the British Herpetofauna. Harper Collins, London.

Bonnard, B. and J. Bonnard. 1995. A Natural History of Guernsey, Alderney, Sark and Helm. Guernsey Press Co. Ltd., Vale, Guernsey.

Daly, S. 2004. Wildlife of the Channel Islands. Seaflower Books, Bradford on Avon, Wiltshire.

Frazer, J.F.D. 1949. The reptiles and amphibia of the Channel Islands and their distribution. British Journal of Herpetology 1: 51-53.

Gasc, J. P., A. Cabela, J. Crnobrnja-Isailovic, D. Dolmen, K. Grossenbacher, P. Haffner, J. Lescure, H. Martens, J.P. Martínez Rica, H. Maurin, M.E. Oliveira, T.S. Sofianidou, M. Veith and A. Zuiderwijk (Eds.). 1997. Atlas of Amphibians and Reptiles in Europe. Societas Europaea Herpetologica and Muséum National d'Histoire Naturelle (IEGB/SPN), Paris.

Jee, N. 1967. Guernsey's Natural History. Guernsey Press Co. Ltd., Vale, Guernsey.

Smith, M. 1973. The British Amphibians and Reptiles. Fifth edition. Collins, London.

3.11. Bailiwick of Jersey

3.11.1. Location

The Bailiwick of Jersey is a self-governing British Crown Dependency located in the English Channel some 161 km south of England and 22km west of the Cotentin Peninsula in Normandy, France. Like the Isle of Man and the Bailiwick of Guernsey, Jersey is part of neither the UK nor the EU but is a separate possession of the British Crown. As well as the main island of Jersey itself, which is the largest and most southerly of the Channel Islands, the Bailiwick includes the islands of Les Minquiers, Les Écréhous, Les Pierres de Lecq and Les Dirouilles, none of which have a permanent population, plus various other small rocks and reefs.



Map 12: Bailiwick of Jersey

3.11.2. Area

The total land area of the Bailiwick of Jersey is 116 km².

3.11.3. Population

Jersey has a population of 91,533 (July 2008 estimate) and a population density of 789/km². About 30% of the population live in the capital, Saint Helier.

Amphibian and Reptile Conservation

3.11.4. Environment

The climate is temperate with mild winters and cool summers. Annual rainfall averages about 900mm. The mean annual total sunshine of 1918 hours is higher than anywhere in the British Isles. The terrain of Jersey is dominated by a plateau that slopes up from long sandy bays in the south and west to more rugged cliffs in the north and east. This plateau is cut by valleys running generally north-south. The highest point in the island is Les Platons at 143m. Over half of Jersey consists of arable farmland and pasture and a large proportion (20%) is urbanised. However, there are still several wooded areas and some significant heathland and sand dunes sites of importance to the herpetofauna, especially in the west. Perhaps surprisingly for such a densely populated island, semi-natural habitats of one kind or another still cover about 26% of Jersey and, although some species have suffered severe declines, most of these areas are now protected. With some 600,000 visitors a year, tourism is very important to the economy of Jersey, as are farming and the finance industry.

3.11.5. Amphibians and Reptiles of the Bailiwick of Jersey

A total of eight indigenous and one introduced species of amphibian and reptile are currently known from the Bailiwick of Jersey (nine species of herpetofauna in total). No endemic species are present. Table 29 indicates the population status of the herpetofauna of the Bailiwick of Jersey – the column headed "Cat." refers to the conservation categories discussed in Section 2.3. (and shown in Tables 2 to 8) and Table 30 provides a numerical summary of the herpetofauna, including the five priority species and the one introduced species of conservation concern.

Table 29: Checklist of the Amphibians and Reptiles of the Bailiwick of Jersey

Species Name	Common Name	Cat.	Notes
Indigenous Species			
Lissotriton helveticus	Palmate Newt	IV	Still relatively widespread and very abundant in
			almost every suitable waterbody
			Has suffered a serious decline on Jersey. Now
Dute hat 1	O manager To a d	11/	confined to a very few natural/semi-natural
Βυτο ουτο	Common Toad	IV	ponds in the west and some urban gardens in
			the south, almost extirpated from agricultural
Bana dalmatina ¹	Agile Frog	IV	Has suffered a very serious decline and is now
nana Gamatina	Aglie i Tog	IV	almost extinct on Jersey being confined to one
			small breeding site. Recent conservation work
			has seen an increase in spawn clumps, plus
			some breeding at a second location
Dermochelys coriacea	Leatherback Turtle	I	Itinerant visitor only
1			Has declined on Jersey but is thought to have
Lacerta bilineata '	Western Green Lizard	IV	recovered somewhat in recent years. Can still
			be very abundant in suitable habitats
			Has declined on Jersey, now confined to a
Podarcis muralis	Common Wall Lizard	IV	nanotul of man-made forts (but may have been
Anguis fragilis	Slow Worm	IV/	Status very poerly known, probably still
Anguis nagins		IV	relatively widespread and abundant
			This species is reported to be declining rapidly
Natrix natrix ¹	Grass Snake	IV	on Jersev, although the reasons for this are
			currently unknown
Introduced Species			
2			Found in a few water bodies, mostly along the
I rachemys scripta ⁻	Red-eared Slider	VI	west coast, although not known to breed. Most
			animais now appear to have gone

¹ Priority species for conservation action

² Introduced species of conservation concern



Typical habitat of western green lizard Lacerta bilineata at Les Blanches Banques, Jersey (Photograph: Paul Edgar)

Table 30: Conservation Priorities for the Amphibians and Reptilesof the Bailiwick of Jersey

	Conservation Categories						
Amphibians and Reptiles		II		IV	V	VI	Totals
Indigenous Species	1	-	-	7	-	-	8
Endemic Species	-	-	-	-	-	-	0
Extinct Indigenous Species	-	-	-	-	-	-	0
Priority Species	-	-	-	5	-	-	5
Introduced Species	-	-	-	-	-	1	1
Species of Concern	-	-	-	-	-	1	1
Total Number of Species	1	0	0	7	0	1	9

3.11.6. Key General References for the Herpetofauna of the Bailiwick of Jersey

Arnold, E.N. 2002. Field Guide to Reptiles and Amphibians of Britain and Europe. Collins, London.

Beebee, T.J.C. and R.A. Griffiths. 2000. Amphibians and Reptiles. A Natural History of the British Herpetofauna. Harper Collins, London.

Clemons, J. and M. Lambert. 1996. Herpetology in Jersey: a report of the 1996 visit to Jersey organised by the Conservation Committee. British Herpetological Society Bulletin 57: 33-40.

Daly, S. 2004. Wildlife of the Channel Islands. Seaflower Books, Bradford on Avon, Wiltshire.

Double, P. 1996. Wild Island, Jersey Nature Year. Seaflower Books, Bradford on Avon, Wiltshire.

Frazer, J.F.D. 1949. The reptiles and amphibia of the Channel Islands and their distribution. British Journal of Herpetology 1: 51-53.

Gasc, J. P., A. Cabela, J. Crnobrnja-Isailovic, D. Dolmen, K. Grossenbacher, P. Haffner, J. Lescure, H. Martens, J.P. Martínez Rica, H. Maurin, M.E. Oliveira, T.S. Sofianidou, M. Veith and A. Zuiderwijk (Eds.). 1997. Atlas of Amphibians and Reptiles in Europe. Societas Europaea Herpetologica and Muséum National d'Histoire Naturelle (IEGB/SPN), Paris.

Le Sueur, F. 1976. A Natural History of Jersey. Phillimore and Co. Ltd., London and Chichester.

Smith, M. 1973. The British Amphibians and Reptiles. Fifth edition. Collins, London.

Amphibian and Reptile Conservation

3.12. Gibraltar

3.12.1. Location

Gibraltar is a UK Overseas Territory located near the southernmost tip of the Iberian Peninsula, overlooking the Strait of Gibraltar. The territory shares a border with Spain to the north.

3.12.2. Area

The total land area of Gibraltar is only 6.8 km².

3.12.3. Population

Gibraltar has a population of 28,875 (January 2008 estimate). The resulting population density of 4,256/km² is one the highest of any country or territory in the world.



Map 13: Gibraltar

3.12.4. Environment

The climate is Mediterranean with mild winters, warm, dry summers and an average annual rainfall of about 800-900mm, most of which falls in the winter. Two main prevailing winds affect the climate of the territory at different times - an easterly wind known as the Levante causes humid weather and warmer sea temperatures, while the westerly Poniente brings in cooler air in and lowers the sea temperature. The terrain of Gibraltar is dominated by the 426 m Rock of Gibraltar, which supports typical Mediterranean maquis scrub vegetation and, on its eastern side, the steep Great Sand Slopes. Man has modified both areas and, until recently, the Great Sand Slopes were covered with tin sheeting for water catchment (the natural vegetation is now being restored). The Upper Rock is now a managed sympathetically as a nature reserve. Most of the narrow belt of coastal land to the west of the Rock is densely urbanised, although the Gibraltar Botanic Gardens and many of the larger private gardens are important for the herpetofauna.

3.12.5. Amphibians and Reptiles of Gibraltar

A total of 22 indigenous and nine introduced species of amphibian and reptile are currently known from Gibraltar (31 species of herpetofauna in total). No endemic species are present. Most of the introduced herpetofauna is comprised of species that would probably once have inhabited this area naturally, and most still occur across the border in Spain. However, several introductions have involved released pets, usually of non-lberian origin. Three species have become extinct in Gibraltar, the western spadefoot *Pelobates cultripes*, the red-footed lizard *Acanthodactylus erythrurus* and the viperine snake *Natrix maura* (although introduced individuals of the last names species appear to be present). It is possible that the natterjack toad *Epidalea calamita* is also now extinct in Gibraltar. Table 31 indicates the population status of the herpetofauna of the Gibraltar – the column headed "Cat." refers to the conservation categories discussed in Section 2.3. (and shown in Tables 2 to 8) and Table 32 provides a numerical summary of the herpetofauna, including the five priority species and the one introduced species of conservation concern.

Amphibian and Reptile Conservation

Table 31: Checklist of the Amphibians and Reptiles of Gibraltar

Species Name	Common Name	Cat.	Notes
Indigenous Species			
Pelobates cultripes *	Western Spadefoot	II	Extinct in Gibraltar. Re-introduction not possible as all suitable habitat has been lost
Epidalea calamita ¹	Natterjack Toad	IV	Unknown, probably no longer occurs in Gibraltar?
Caretta caretta	Loggerhead Turtle		Itinerant visitor, not known to nest
Chelonia mydas	Green Turtle		Itinerant visitor, not known to nest
Dermochelys coriacea	Leatherback Turtle	1	Itinerant visitor, not known to nest
Hemidactylus turcicus	Turkish Gecko	IV	Small population, rarely encountered
Tarentola mauritanica	Moorish gecko	IV	Abundant throughout on cliffs and buildings
Acanthodactylus erythrurus	Red-footed Lizard	IV	Now extinct in Gibraltar – there are plans to re- introduce this species to the Great Sand Slopes
Podarcis hispanicus	Iberian Wall Lizard	IV	Abundant and widespread throughout
Psammodromus algirus	Large Psammodromus	IV	Common in vegetated areas, especially on the Upper Rock
Timon lepidus ¹	Eyed Lizard		Has suffered a severe decline in Gibraltar
Chalcides bedriagai '	Bedriaga's Skink	II	Rarely seen on the Great Sand Slopes, declining
Chalcides striatus	Western Three-toed Skink	IV	Still fairly common on the Great Sand Slopes but probably declining
Blanus cinereus	Iberian Worm Lizard	IV	Common in suitable shady habitats throughout, especially in old gardens
Coronella girondica	Southern Smooth Snake	IV	Common in vegetated areas
Hemorrhois hippocrepis	Horseshoe Whip Snake	IV	The most common snake in Gibraltar, found in all vegetated areas
Macroprotodon cucullatus	False Smooth Snake	IV	Probably widespread, including gardens
Malpolon monspessulanus	Western Montpellier Snake	IV	Uncommon on the Upper Rock
Natrix maura ^x	Viperine Snake	IV	Indigenous population now extinct, although introduced individuals are occasionally found
Natrix natrix ¹	Grass Snake	IV	On the Upper Rock and a few other areas – now rare in Gibraltar
Rhinechis scalaris	Ladder Snake	IV	Found in a few areas such as the Upper Rock – status?
Vipera latastei ¹	Lataste's Viper	II	Status and distribution unknown – rare?
Introduced Species			
Pleurodeles waltl	Sharp-ribbed Salamander	V	One dead specimen found in the Gibraltar Botanic Gardens in 2002 – it is not known if this species is established here
Bufo bufo	Common Toad	V	A small introduced population exists in the Botanic Gardens – not known if established
Hyla meridionalis	Mediterranean Tree Frog	V	A small introduced population exists in the Botanic Gardens
Pelophylax perezi	Iberian Green Frog	V	Introduced to the Botanic gardens and several other localities – now common
Emys orbicularis	European Pond Terrapin	V	A small introduced population exists in the Botanic Gardens
Mauremys leprosa	Spanish Terrapin	V	Small introduced populations exist in the Botanic Gardens and several other localities
Trachemys scripta ²	Red-eared Slider	VI	A small introduced population exists in the Botanic Gardens – this species has bred here
Testudo graeca	Spur-thighed Tortoise	V	Captive population in the Botanic Gardens (mostly from Morocco) plus occasional escapes
Chamaeleo chamaeleon	Mediterranean Chameleon	v	Occasionally recorded on the Upper Rock and in gardens, thought to be released pets from Morocco rather than from the Iberian localities

¹ Priority species for conservation action

² Introduced species of conservation concern

^x Extinct species

Table 32: Conservation Priorities for the Amphibians and Reptiles of Gibraltar

		Species					
Amphibians and Reptiles	I	11	III	IV	V	VI	Totals
Indigenous Species	3	4	-	15	-	-	22
Endemic Species	-	-	-	-	-	-	0
Extinct Indigenous Species	-	1	-	2	-	-	3
Priority Species	-	3	-	2	-	-	5
Introduced Species	-	-	-	-	8	1	9
Species of Concern	-	-	-	-	-	1	1
Total Number of Species	3	4	0	15	8	1	31

3.12.6. Key General References for the Herpetofauna of Gibraltar

Andreu, A., A. Bea, F. Braña, P. Galán, L.F. López-Jurado, V. Pérez-Mellado, J.M. Pleguezuelos and A. Salvador. 1998. Reptiles. Fauna Ibérica 10: 1–705.

Arnold, E.N. 2002. Field Guide to Reptiles and Amphibians of Britain and Europe. Collins, London.

Barbadillo, L.J., J.I. Lacomba, V. Pérez-Mellado, V. Sancho and L.F. López-Jurado. 1999. Anfibios y Reptiles de la Península Ibérica, Baleares y Canarias. GeoPlaneta S.A., Barcelona.

Busack, S. 1986. Biogeographic analysis of the herpetofauna separated by the formation of the Strait of Gibraltar. Nat. Geograph. Res. 2: 17-36.

Busack, S.D. and F.M. Jaksic. 1982. Ecological and historical correlates of Iberian herpetofaunal diversity: an analysis at regional and local levels. J. Biogeogr. 9: 289-302.

Carrascal, L.M. and A. Salvador (Eds.). Enciclopedia Virtual de los Vertebrados Españoles. Museo Nacional de Ciencias Naturales, Madrid. Online at: <u>http://www.vertebradosibericos.org/</u>

Cortés, J.E. 1982. The herpetofauna of Gibraltar, status, recent history and current research. British Journal of Herpetology 6: 273-275.

Feriche, M., J.M. Pleguezuelos and A. Cerro. 1993. Sexual dimorphism and sexing of Mediterranean colubrids based on external characteristics. Journal of Herpetology 27: 357-362.

Franco, A., J. Mellado and F. Amores. 1980. Observaciones sobre actividad nocturna de reptiles en la España mediterránea occidental. Doñana, Acta Vertebr., 7: 261-262.

García-París, M. 1985. Los Anfibios de España. Ministerio de Agricultura, Pesca y Alimentación, Madrid.

Gasc, J. P., A. Cabela, J. Crnobrnja-Isailovic, D. Dolmen, K. Grossenbacher, P. Haffner, J. Lescure, H. Martens, J.P. Martínez Rica, H. Maurin, M.E. Oliveira, T.S. Sofianidou, M. Veith and A. Zuiderwijk (Eds.). 1997. Atlas of Amphibians and Reptiles in Europe. Societas Europaea Herpetologica and Muséum National d'Histoire Naturelle (IEGB/SPN), Paris.

Gleed-Owen, C.P. 2001. A preliminary report on the Late Pleistocene amphibians and reptiles from Gorham's Cave and Vanguard Cave, Gibraltar. Herpetological Journal 11: 167-170.

Joger, U., U. Fritz, D. Guicking, S. Kalyabina-Hauf, Z.T. Nagy and M. Wink, M. 2007. Phylogeography of western Palaearctic reptiles – spatial and temporal speciation patterns. Zoologischer Anzeiger 246: 293–313.

Meinig, H. and M. Schlüpmann. 1987. Herpetologische Eindrücke einer Iberienreise. Herpetofauna 9: 11-24.

Pleguezuelos, J.M. (Ed.). Distribución y Biogeografía de los Anfibios y Reptiles en España y Portugal. Monografías de Herpetología, 3. Ed., Univ. Granada y AHE, Granada.

Pleguezuelos, J.M., R. Márquez and M. Lizana (Eds.). 2002. Atlas y Libro Rojo de los Anfibios y Reptiles de España. Dirección General de Conservación de la Naturaleza-Asociación Herpetológica Española, Madrid.

Saint-Girons, H. 1982. Influence des climats de type méditerranéen sur l'ecophysiologie et la répartition des reptiles. Ecol. Medit. 8: 245-251.

Salvador, A. 1985. Guia de Campo de los Anfibios y Reptiles de la Peninsula Iberica, Islas Baleares y Canarias. Santiago Garcia, Leon.

Salvador, A. and M. García-París. 2001. Anfibios Españoles. Canseco-Esfagnos. Talavera de la Reina. Amphibian and Reptile Conservation 51 Silvani, L., M. Gazo and A. Aguilar. 1999. Spanish driftnet fishing and incidental catches in the western Mediterranean. Biological Conservation 90: 79-85.

Venchi, A. and R. Sindaco. 2006. Annotated checklist of the reptiles of the Mediterranean countries, with keys to species identification. Part 2 - Snakes (Reptilia, Serpentes). Annali del Museo Civico di Storia Naturale "G. Doria", Genova, Italy.

3.13. Cyprus Sovereign Base Areas

3.13.1. Location

The Sovereign Base Areas are two large military bases and training areas, administered by the UK's Ministry of Defence, which are located on the island of Cyprus in the eastern Mediterranean. Under the Treaty of Establishment, these bases were retained by the UK following the independence of Cyprus in 1960 and are, in effect, a UK Overseas Territory. In addition to the Sovereign Base Areas themselves, this treaty also provided for the continued use by the British Government of certain facilities within Cyprus, known as Retained Sites. The bases are split into Akrotiri (known, along with Episkopi Garrison, as the Western Sovereign Base Area) and Dhekelia (known, along with Ayios Nikolaos, as the Eastern Sovereign Base Area).



Map 14: Cyprus Sovereign Base Areas

3.13.2. Area

The combined land area of the Sovereign Base Areas is 254 km² (Akrotiri - 123 km²: Dhelekia - 131 km²), equivalent to nearly 3% of the total area of Cyprus.

3.13.3. Population

The Sovereign Base Areas have no indigenous inhabitants. Approximately 1,300 military personnel are stationed here at any one time, with larger numbers regularly using the areas for training purposes, while a further 5,000 British citizens (families of military personnel and civilian staff) are also based here (an average population density of about 25/km²). Cyprus citizens work on the bases, but do not live there.

3.13.4. Environment

Cyprus experiences a Mediterranean climate with hot, dry summers and cool winters. The Sovereign Base Areas are situated in lowland coastal areas where the average annual rainfall is 400-500mm (it is higher in more mountainous regions elsewhere on Cyprus). Records indicate a decline in the island's annual rainfall in recent years. In common with many military training areas, Akrotiri and Dhelekia support a range of semi-natural habitats that have declined elsewhere. These include Mediterranean scrub, sand dunes and, in Akrotiri a salt lake and one of the few wetlands remaining on Cyprus. Local Cypriots farm other areas, although they do not live on this land. Akrotiri has 56.3 km of coastline (Dhelekia - 27.5 km) some of which is used by sea turtles for nesting. Some 60% of the Sovereign Base Areas is privately owned, either by British or Cypriot citizens, while the other 40% is owned by the Ministry of Defence, or is otherwise classed as Crown land.

3.13.5. Amphibians and Reptiles of the Cyprus Sovereign Base Areas

A total of 30 indigenous and two introduced species of amphibian and reptile are currently known from the island of Cyprus (32 species of herpetofauna in total). It is unclear how many of these species inhabit the Sovereign Base Areas since no comprehensive herpetofauna surveys have been carried out there to date. However, the nesting of two of the sea turtles in Akrotiri has been well studied and sightings of a further 17 species have been reported to the Herpetological Conservation Trust by Defence Estates personnel (the status of these species is unknown, although worrying recent reports suggest that turtles caught in fishing nets in SBA waters have been deliberately killed). It is likely that most of the 11 indigenous species that have not yet been confirmed from the Sovereign Base Areas alone, but the island of Cyprus as a whole does support two endemic species – the Cyprus or Troodos lizard *Phoenicolacerta troodica* and the Cyprus whip snake *Dolichophis cypriensis* – plus several endemic subspecies. The value of most military training areas for nature conservation, and the pressures of development and farming elsewhere on Cyprus, mean that the Sovereign Base Areas may have a disproportionately high importance for such species, as well as for several other species that are known to be very rare on Cyprus. Table 33 indicates the population status of the herpetofauna of the Sovereign Base Areas – the column headed "Cat." refers to the conservation categories discussed in Section 2.3. (and shown in Tables 2 to 8) and Table 34 provides a numerical summary of the herpetofauna of the Sovereign conservation concern.

Species Name	Common Name	Cat.	Notes			
Indigenous Species						
Pseudepidalea viridis	Green Toad	IV	Status on Cyprus unknown – appears to be abundant in suitable habitats in the SBAs			
Hyla savignyi	Savigny's Treefrog	IV	Status on Cyprus unknown – presumed abundant in suitable habitats in the SBAs			
Pelophylax bedriagae *	Levantine Frog	IV	Not yet confirmed from either of the SBAs, status on Cyprus unknown			
Caretta caretta ¹	Loggerhead Turtle	Ι	Small numbers of nests in Akrotiri, averaging about 19 per year. Recent reports suggest that turtles are deliberately killed in SBA waters			
Chelonia mydas ¹	Green Turtle	I	Small numbers of nests in Akrotiri, averaging about 4 per year. Recent reports suggest that turtles are deliberately killed in SBA waters			
Dermochelys coriacea *	Leatherback Turtle	I	Rare itinerant, not known to nest on Cyprus. Not yet confirmed from either of the SBAs			
Mauremys rivulata *1	Balkan Terrapin	IV	Declining on Cyprus, status unknown			
Cyrtopodion kotschyi	Kotschy's Gecko	Ш	Subspecies endemic to Cyprus. Status unknown – appears to be abundant in suitable habitats in the SBAs			
Hemidactylus turcicus	Turkish Gecko	IV	Status on Cyprus unknown – appears to be abundant in suitable habitats in the SBAs			
Laudakia stellio	Starred Agama	III	Subspecies endemic to Cyprus. Status unknown – appears to be abundant in suitable habitats in the SBAs			
Chamaeleo chamaeleon ¹	Mediterranean Chameleon	IV	Rare and declining on Cyprus. Some authors have suggested that this species was originally introduced from Israel, although this is disputed			
Acanthodactylus schreiberi ¹	Schreiber's Fringe-toed Lizard	I	EN on IUCN Red List. Status on Cyprus and in SBAs unknown – presumed declining			
Ophisops elegans	Snake-eyed Lizard	IV	Status on Cyprus unknown – appears to be abundant in suitable habitats in the SBAs			
Phoenicolacerta troodica ¹	Cyprus Lizard	III	Species endemic to Cyprus – confirmed from the SBAs but status unknown			
Ablepharus budaki	Cyprus Lizard	IV	Status on Cyprus unknown – presumed abundant in suitable habitats in the SBAs			

Table 33: Checklist of the Amphibians and Reptiles of the Cyprus Sovereign Base Areas

The Amphibians	and Reptile	es of the UK	Overseas	Territories

Chacides ocellatus Ocellated Skink		IV	Status on Cyprus unknown – presumed				
			abundant in suitable habitats in the SBAs				
Eumeces schneideri *1	Schneider's Skink	IV	Very rare on Cyprus, not yet confirmed from				
			either of the SBAs				
Trachylepis vittata	Bridled Skink	IV	Status on Cyprus unknown – appears to be				
			abundant in suitable habitats in the SBAs				
Blanus strauchi *	Anatolian Worm Lizard	IV	Not yet confirmed from either of the SBAs				
Typhlops vermicularis *	Eurasian Worm Snake	IV	Not yet confirmed from either of the SBAs				
Dolichophis cypriensis ¹	Cyprus Whip Snake	I	Species endemic to Cyprus and listed as EN on IUCN Red List. Status on Cyprus and in SBAs unknown – presumed declining				
			Subspecies endemic to Cyprus. Status				
Dolichophis jugularis	Large Whip Snake	111	unknown – presumed abundant in suitable				
			habitats in the SBAs				
Eirenis levantinus *	Levantine Dwarf Snake	IV	Not yet confirmed from either of the SBAs				
Hemorrhois nummifer	Coin-marked Snake	IV	Status on Cyprus unknown – presumed				
			abundant in suitable habitats in the SBAs				
Malpolon insignitus	Eastern Montpellier Snake	IV	Status on Cyprus unknown – presumed				
			abundant in suitable habitats in the SBAs				
Natrix natrix *1	Grass Snake	IV	Very rare on Cyprus, not yet confirmed from either of the SBAs				
Natrix tessellata *1	Dice Snake	IV	Very rare on Cyprus, not yet confirmed from				
			either of the SBAs				
Platyceps najadum *1	Dahl's Whip Snake	IV	Very rare on Cyprus, not yet confirmed from either of the SBAs				
Telescopus fallax *	Cat Snake		Subspecies endemic to Cyprus, appears to be				
			abundant all over the island but not yet				
			confirmed from either of the SBAs				
Macrovipera lebetina ¹	Levantine Viper		The nominate subspecies of this snake is endemic to Cyprus. Declining on the island – status in the SBAs unknown				
Introduced Species							
			Occasional specimens recorded, presumably				
Testudo graeca *	Spur-thighed Tortoise	V	released pets. Not known it established on the				
			Island and also not confirmed from the SBAs				
Testudo marginata *	Marginated Tortoise	v	Occasional specimens recorded, presumably released pets. Not known if established on the island and also not confirmed from the SBAs				

¹ Priority species for conservation action

* Species not yet confirmed from either of the Cyprus SBAs



The Mediterranean chameleon Chamaeleo chamaeleon recticrista is declining on Cyprus (Photograph: Paul Edgar)

Table 34: Conservation Priorities for the Amphibians and Reptiles of theCyprus Sovereign Base Areas

	Conservation Categories						
Amphibians and Reptiles	I	II	III	IV	V	VI	Totals
Indigenous Species	5	-	6	19	-	-	30
Endemic Species	-	-	-	-	-	-	0
Extinct Indigenous Species	-	-	-	-	-	-	0
Priority Species	4	-	2	6	-	-	12
Introduced Species	-	-	-	-	2	-	2
Species of Concern	-	-	-	-	-	-	0
Total Number of Species	5	0	6	19	2	0	30

3.13.6. Key General References for the Herpetofauna of Cyprus

Atatür, M.K. and B. Göçmen. 2001. Amphibians and Reptiles of Northern Cyprus. Ege Üniversitesi, Fen Fakültesi Kitaplar Serisi, No. 170, Ege Üniversitesi Basimevi, Bornova-Izmir. Online at: http://sci.ege.edu.tr/~bgocmen/herptiles_cyprus.html

Boettger, O. 1880. Die Reptilien und Amphibien von Syrien, Palastina und Cypern. Ber. senckb. nat. Ges. Frankfurt 132-219.

Böhme, W. and H. Wiedl. 1994. Status and zoogeography of the herpetofauna of Cyprus with taxonomic and natural history notes on selected species (Genera *Rana, Coluber, Natrix, Vipera*). Amphibia and Reptilia. Zool. Mid. East 10: 31-52.

Boulenger, G.A. 1887. List of reptiles and batrachians from Cyprus. Ann. Mag. Nat. Hist. (5) 20: 344-345.

Boulenger, G. A. 1888. Second list of reptiles and batrachians from Cyprus. Ann. Mag. nat. Hist. (6) 2: 505-506.

Boulenger, G. A. 1910. A list of the reptiles and batrachians of Cyprus. Bull. Cypr. Nat. Hist. Soc.1: 1-3.

Cecconi, G. 1899. Reptili et anfibi raccolti nell'isola di Cipro. Bollettino della Societa Romana Per gli Studi Zoologica 152-155.

Clark, R.J. 1973. Report on a collection of reptiles from Cyprus. British Journal of Herpetology 5: 357-360.

Corti, C., M. Masseti, M. Delfino and V. Pérez-Mellado. 1999. Man and herpetofauna of the Mediterranean islands. Rev. Esp. Herp. 13: 83-100.

Demetropoulos, A. and M. Hadjichristophorou. 1995. Manual on marine turtle conservation in the Mediterranean. IUCN/Cyprus Wildlife Society, Manre, Cyprus.

Demetropoulos, A. and M. Lambert. 1986. Herpetology in Cyprus. British Herpetological Society Bulletin 17: 22-27.

Geißler, L. 1981. Die Skinke der Insel Zypern. Herpetofauna 3 (14): 22-24.

Göçmen, B., C.V. Tok, U. Kaya and M. Tosunoğlu. 1996. Kuzey Kıbrıs Herpetofaunası Hakkında Bir Ön Çalışma Raporu. Turk. J. Zool. 20: 161-176.

Göçmen, B., N. Kaşot, M.Z. Yildiz, I. Sas, B. Akman, D. Yalçinkaya and S. Gücel. 2008. Results of the herpetological trips to Northern Cyprus. North-Western Journal of Zoology 4: 139-149.

Godley, B. and A. Broderick. 1995a. Northern Cyprus is critical habitat for Mediterranean turtles. Marine Turtle Newsletter 1995: 18-19.

Godley, B.J. and A. Broderick. 1995b. Marine turtles in northern Cyprus. Testudo 4: 22-29.

Hadjisterkotis, E. and D.S. Reese. 1994. Paleontological and archaeological evidence for turtles on Cyprus, with new information on living tortoises. British Herpetological Society Bulletin 49: 16-18.

İlseven, S., G. Hıdırer and A. Tümer. 2006. Kıbrıs Coğrafyası (Geography of Cyprus). K.T. Eğitim Vakfı, Lefkoşa.

Joger, U., U. Fritz, D. Guicking, S. Kalyabina-Hauf, Z.T. Nagy and M. Wink, M. 2007. Phylogeography of western Palaearctic reptiles – spatial and temporal speciation patterns. Zoologischer Anzeiger 246: 293–313.

Lambert, M. 1987. Notes on reptiles from Cyprus. British Herpetological Society Bulletin 21: 26-28.

Osenegg, K. 1989. Die Amphibien und Reptilien der Insel Zypern. MSc Thesis, University of Bonn.

Amphibian and Reptile Conservation

Schätti, B. and H. Sigg. 1989a. Die herpetofauna der Insel Zypern. Teil 1. Die herpetologische Ergorschung Amphibien. Herpetofauna 11 (61): 9-18.

Schätti, B. and H. Sigg. 1989b. Die Herpetofauna der Insel Zypern. Teil 2: Schildkröten, Echsen und Schlangen. Herpetofauna 11 (62): 17-26.

Schmidtler, J.F. 1984. Zur Bestandsituation der Amphibien und hydrophilen Reptilien aus der Insel Zypern. Salamandra 20: 43-49.

Venchi, A. and R. Sindaco. 2006. Annotated checklist of the reptiles of the Mediterranean countries, with keys to species identification. Part 2 - Snakes (Reptilia, Serpentes). Annali del Museo Civico di Storia Naturale "G. Doria", Genova, Italy.

Unger, F. and T. Kotschy. 1865. Die Insel Cypern ihrer physischen und organischen Natur nach mit Rücksicht auf ihre frühere Geschichte. Braumüller, Wein.

Werner, F. 1936. Reptiles from Mount Troodos, Cyprus. Proc. Zool. Soc. London. 3: 655-658.

Werner, Y.L. 1994. Some unusual accidental herpetological finds from Cyprus and Lebanon, including a new *Ptyodactylus* (Reptilia: Lacertilia: Gekkonidae). Biologia Gallo-Hellenica 22: 67-76.

Ziegler, V.T. and A. Merten. 1997. Die Herpetofauna von Zypern. Datz 2: 78-81.

3.14. British Indian Ocean Territory

3.14.1. Location

The British Indian Ocean Territory is a UK Overseas Territory situated in the Indian Ocean to the south of India, halfway between Africa and Indonesia. The territory comprises the six atolls of the Chagos Archipelago with hundreds of mostly small islands and very extensive oral reef systems. The largest island, Diego Garcia, is the site of a joint UK-USA military facility.



Map 15: British Indian Ocean Territory

3.14.2. Area

Although the territory itself covers more 50,000 km² of the Indian Ocean, the combined total land area of the islands is only 63.17 km². Diego Garcia is 27.20 km² in extent.

3.14.3. Population

Since the indigenous population of the territory was controversially relocated, there have been no permanent residents. At any one time approximately 3,500 military personnel and civilian staff may be stationed on Diego Garcia (the population density of this island therefore averages about 129/km²).

3.14.4. Environment

The British Indian Ocean Territory has a hot, humid tropical monsoon climate with very high annual rainfall of about 2450mm. The terrain is flat and low, with most areas not exceeding an elevation of four metres. The highest point of 15m is on the island of Diego Garcia. Most of the original broad-leaved woodland that would have originally covered many of the islands has been heavily modified by past human activity and terrestrial areas are now dominated by the coconut stands and littoral scrub typical of so many small tropical islands. Negligible areas of sugar cane are also grown. Small patches of mangrove swamp also occur. However, the huge reef systems, which include the 12,642 km² Great Chagos Bank (the second largest atoll structure in the world) are by far the most important habitats for biodiversity in the territory, although much of the coral was damaged by the extreme temperatures experienced in 1998.

3.14.5. Amphibians and Reptiles the British Indian Ocean Territory

A total of three indigenous species (all sea turtles) and six introduced species of amphibian and reptile are currently known from the British Indian Ocean Territory (none species in total). The territory has no endemic species of amphibian or reptile. Reports of the introduction of the Indian black-spined toad *Duttaphrynus melanostictus* to Diego Garcia are possibly a case of mistaken identity as this large anuran resembles the marine toad *Rhinella marina*, which is certainly present there. Table 35 indicates the population status of the herpetofauna of the British Indian Ocean Territory – the column headed "Cat." refers to the conservation categories discussed in Section 2.3. (and shown in Tables 2 to 8) and Table 26 provides a numerical summary of the herpetofauna, including the two priority species and the single introduced species of conservation concern.

Table 35: Checklist of the Amphibians and Reptiles of the British Indian Ocean Territory

Species Name	Common Name	Cat.	Notes			
Indigenous Species						
Chelonia mydas ¹	Green Turtle	Ι	Although typical green turtle foraging habitat is fairly restricted, some 400-800 females nest annually throughout the Chagos Archipelago			
Eretmochelys imbricata ¹	Hawksbill Turtle	I	About 300-700 females nest annually, mainly on Diego Garcia and Peros Banhos, and foraging adult and juvenile turtles are also abundant on most of the coral reef systems			
Dermochelys coriacea	Leatherback Turtle		Itinerant visitor only, not known to nest			
Introduced Species						
Rhinella marina ²	Marine Toad	VI	Introduced in the 1990s and now widespread and abundant throughout Diego Garcia			
Melanochelys trijuga	Indian Black Turtle	V	Known from Diego Garcia since 1886 but may have long since died out			
Pelusios subniger	East African Black Mud Turtle	V	Known from Diego Garcia since 1905 but may have long since died out			
Hemidactylus frenatus	Asian House Gecko	V	Present on a number of the islands and atolls, on both buildings and in vegetated areas, but appears to be relatively uncommon			
Lepidodactylus lugubris	Mourning Gecko	V	Present on a number of the islands and atolls, on both buildings and in vegetated areas, and can be very abundant in places			
Calotes versicolor	Oriental Garden Lizard	V	Recently introduced to Diego Garcia where it is reported to be rapidly spreading			

¹ Priority species for conservation action

² Introduced species of conservation concern

Table 36: Conservation Priorities for the Amphibians and Reptiles of theBritish Indian Ocean Territory

	Conservation Categories						
Amphibians and Reptiles	I	II	III	IV	V	VI	Totals
Indigenous Species	3	-	-	-	-	-	3
Endemic Species	-	-	-	-	-	-	0
Extinct Indigenous Species	-	-	-	-	-	-	0
Priority Species	2	-	-	-	-	-	2
Introduced Species	-	-	-	-	5	1	6
Species of Concern	-	-	-	-	-	1	1
Total Number of Species	3	0	0	0	5	1	9

3.14.6. Key General References for the Herpetofauna of the British Indian Ocean Territory

Barnett, L.K. and C. Emms. 1997. Herpetological observations in the Chagos Archipelago, British Indian Ocean Territory. British Herpetological Society Bulletin 59: 6-12.

Dutton, R.A. 1981. The herpetology of the Chagos Archipelago. British Journal of Herpetology 6:133-134.

Frazier, J. 1977. Marine turtles in the western Indian Ocean: British Indian Ocean Territory, Comores. Typescript.

Hutson, A.M. 1975. Observations on the birds of Diego-Garcia, Chagos Archipelago, with notes on other vertebrates. Atoll Res. Bull. 175: 1-25.

Mortimer, J.A. 2000. Diego Garcia marine turtle conservation assessment (British Indian Ocean Territory). Final report on the fieldwork to the British Indian Ocean Territory Department, Environment Science and Energy Department and Foreign and Commonwealth Office.

Mortimer J.A. and D. Broderick. 1999. Population genetic structure and developmental migrations of sea turtles in the Chagos Archipelago and adjacent regions inferred from mtDNA sequence variation. Pp. 184-194 in: C.R.C. Sheppard and M.R.D. Seaward (Eds.). Ecology of the Chagos Archipelago. Linnean Society Occasional Publications No. 2.

Mortimer, J.A. and M. Day. 1999. Sea turtle populations and habitats in the Chagos Archipelago. Pp. 159-172 in: C.R.C. Sheppard and M.R.D. Seaward (Eds.). Ecology of the Chagos Archipelago. Linnean Society Occasional Publications No. 2.

Mortimer J.A, Day, M, Broderick, D. 2002. Sea turtle populations of the Chagos Archipelago, British Indian Ocean Territory. Pp. 47-49 in: A. Mosier, A., Foley and B. Brost (Compilers). Proceedings of the 20th Annual Symposium on Sea Turtle Biology and Conservation. NOAA Technical Memorandum NMFS-SEFSC-477.

Sheppard, C.R.C. 1979. Status of three rare animals on Chagos. Environmental Conservation 6: 310.

3.15. Pitcairn Islands

3.15.1. Location

The Pitcairn Islands are a UK Overseas Territory located in the southern Pacific Ocean. The territory consists of a group of four main islands, plus some small islets, which is indicated by the official name of the Pitcairn, Henderson, Ducie and Oeno Islands.

3.15.2. Area

The total land area of the territory is 46.5 km² (Pitcairn - 4.6 km²: Henderson – 37.3 km²: Ducie – 3.9 km²: Oeno – 0.7 km²).

3.15.3. Population

Only Pitcairn Island itself is inhabited and supports a tiny population of 48 (July 2007 estimate) – a population density of $10/km^2$ for Pitcairn and only around $1/km^2$ for the entire territory.



Map 16: Pitcairn Islands

3.15.4. Environment

Pitcairn has a tropical climate with an average annual rainfall of 1800mm. Pitcairn and Henderson are rugged volcanic islands while Ducie and Oeno are flat, scrubby atolls. All support various forms of lush woodland and scrub, with small areas of farmland on Pitcairn. Henderson Island has three beaches on its northern side that are of importance for nesting turtles.

3.15.5. Reptiles of the Pitcairn Islands

A total of three indigenous species (all sea turtles) and four introduced species of reptile are currently known from Pitcairn Islands (seven species in total). The territory has no endemic species of amphibian or reptile. Table 37 indicates the population status of the herpetofauna of the Pitcairn Islands – the column headed "Cat." refers to the conservation categories discussed in Section 2.3. (and shown in Tables 2 to 8) and Table 38 provides a numerical summary of the herpetofauna, including the single priority species of conservation concern.

Species Name	Common Name	Cat.	Notes
Indigenous Species			
Chelonia mydas ¹	Green Turtle	I	Small numbers of nests, averaging about 10 per year, are laid on Henderson Island only. Foraging patterns unknown.
Eretmochelys imbricata	Hawksbill Turtle		Status unknown
Dermochelys coriacea	Leatherback Turtle	I	Itinerant visitor, not known to nest
Introduced Species			
Lepidodactylus lugubris	Mourning Gecko	V	Status unknown
Cryptoblepharus poecilopleurus	Snake-eyed Skink	V	Occupies rocky littoral habitats, status on the Pitcairn Islands unknown
Emoia cyanura	Copper-tailed Skink	V	Status unknown
Lipinia noctua	Moth Skink	V	Status unknown

Table 37: Checklist of the Reptiles of the Pitcairn Islands

¹ Priority species for conservation action

Table 38: Conservation Priorities for the Reptiles of the Pitcairn Islands

	Conservation Categories						
Amphibians and Reptiles			III	IV	V	VI	Totals
Indigenous Species	3	-	-	-	-	-	3
Endemic Species	-	-	-	-	-	-	0
Extinct Indigenous Species	-	-	-	-	-	-	0
Priority Species	1	-	-	-	-	-	1
Introduced Species	-	-	-	-	4	-	4
Species of Concern	-	-	-	-	-	-	0
Total Number of Species	3	0	0	0	4	0	7

3.15.6. Key General References for the Herpetofauna of the Pitcairn Islands

Allen, M.S. 2007. Three millennia of human and sea turtle interactions in remote Oceania. Coral Reefs 26: 959-970.

Benton, T.G. 1995. From castaways to throwaways - marine litter in the Pitcairn Islands. Biological Journal of the Linnean Society 56: 415-422.

Brooke, M. de L. 1995. Seasonality and numbers of green turtles *Chelonia mydas* nesting on the Pitcairn Islands. Biological Journal of the Linnean Society 56: 325-327.

Gill, B.J. 1993. The lizards of the Pitcairn Island group, South Pacific. New Zealand Journal of Zoology 20: 161-164.

Weisler, M.I. 1995. Henderson Island prehistory: colonization and extinction on a remote Polynesian Island. Biological Journal of the Linnean Society 56: 377-404.

4. Amphibian and Reptile Species of Conservation Concern

4.1. Priority Species of International Conservation Concern

4.1.1. Mountain Chicken Leptodactylus fallax

Subspecies. None described.

Wordwide Distribution. Formerly occurred on six (possibly seven) islands in the Lesser Antilles but is now extinct on all except Montserrat and Dominica.

Distribution in the UK Overseas Territories and Dependencies. Montserrat, where it is now confined to the Centre Hills region of the island.

Conservation Status. Listed as Critically Endangered on the IUCN Red List. Not CITES listed. On Montserrat, populations in the South Soufrière Hills, Soufrière Hills and Garibaldi Hill have been lost to lava flows from the recent volcanic eruptions. The range of this species on Montserrat is now restricted to about 20 km² in the Centre Hills to the north of the island. Has recently also declined dramatically on Dominica due to a chytrid fungus outbreak. Nonetheless, the Centre Hills population on Montserrat appeared to be relatively stable until recently, despite heavy exploitation for food, the effects of Hurricane Hugo in 1989 and even the regular eruptions of the Soufrière Hills volcano since 1995, and had also showed no signs of chytrid fungus infection. However, a massive population crash of *Leptodactylus fallax* on Montserrat was reported in March 2009 and the presence of chytrid fungus was confirmed shortly afterwards.

Current Conservation Action. Detailed surveys of the Centre Hills, including a population assessment of *Leptodactylus fallax* were recently carried out by the Durrell Wildlife Conservation Trust. This work included the production of an action plan and the establishment of a captive breeding facility for this species – several other zoos also hold captive populations. The Durrell Wildlife Conservation Trust are currently investigating potential responses, aimed literally at saving this species, to the recent catastrophic die-off of this species on Montserrat due to chytrid fungus infection.

Recommendations. The situation for *Leptodactylus fallax* has recently become critical, although everything that can be done at present is being done. Appropriate recommendations will be forthcoming from the Durrell Wildlife Conservation Trust in due course.

References (also see general references for Montserrat)

Brooks, G.R. 1982. An analysis of prey consumed by the anuran, *Leptodactylus fallax*, from Dominica, West Indies. Biotropica 14: 301-309.

Buley, K.R. 2001. Montserrat mountain chicken population and habitat assessment and a preliminary assessment of the other herpetofauna of Montserrat. Herpetology Department, Durrell Wildlife Conservation Trust, Jersey.

Buley, K.R. 2003. Leptodactylus fallax (Mountain Chicken). Ophiophagy. Herpetological Review 34: 358-359.

Daltry, J.C. 1998. Mountain chicken emergency assessment: findings of field work in January and February 1998. Preliminary Report. Fauna and Flora International, Cambridge.

Daltry, J.C. 2002. Mountain chicken monitoring manual. First Draft. Fauna and Flora International, Cambridge and the Forestry and Wildlife Division, Dominica.

Daltry, J.C. and G. Gray. 1999. Effects of volcanic activity on the endangered mountain chicken frog (*Leptodactylus fallax*). Froglog 32: 1-2.

Davis, S.L., R.B. Davis, A. James and B.C.P. Talyn. 2000. Reproductive behavior and larval development of *Leptodactylus fallax* in Dominica, West Indies. Herpetological Review 31: 217-220.

Fa., J., B. Hedges, B. Ibéné, M. Breuil, R. Powell and C. Magin 2004. *Leptodactylus fallax*. In: IUCN 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/57125</u>

Garcia, G., A.A. Cunningham, D.L. Horton, T.W.J. Garner, A. Hyatt, S. Hengstberger, J. Lopez, A. Ogrodowczyk, C. Fenton and J.E. Fa. 2007. Mountain chickens *Leptodactylus fallax* and sympatric amphibians appear to be disease free on Montserrat. Oryx 41: 398-401.

Gatten, R.E., Jr. and G.R. Brooks. 1969. Blood physiology of a tropical frog, *Leptodactylus fallax*. Comparative Biochemistry and Physiology 30: 1019-1028.

Ghilardi, A., A. Renata, G. Skuk, R.O. de Sá, M.T. Rodrigues and Y. and Yonenaga-Yassuda. 2006. Karyotypes of eight species of *Leptodactylus* (Anura, Leptodactylidae) with a description of a new karyotype for the genus. Phyllomedusa 5: 119-133.

Gibson, R.C. and K.R. Buley. 2001. A new mode of endotrophic reproduction in frogs - evolutionary pioneering by mountain chickens. Pp. 33-34 in: A. de Silva (Ed.). Abstracts: Fourth World Congress of Herpetology, 3-9 December 2001, Bentota, Sri Lanka.

Gibson, R.C. and K.R. Buley. 2004. Maternal care and obligatory oophagy in *Leptodactylus fallax*: a new reproductive mode in frogs. Copeia 2004: 128-135.

Heyer, W.R. 1979. Systematics of the *pentadactylus* species group of the frog genus *Leptodactylus* (Amphibia: Leptodactylidae). Smithsonian Contributions to Zoology 301: 1-43.

Kaiser, H. 1994. Leptodactylus fallax. Catalogue of Amphibians and Reptiles No. 583: 1-3.

Kaiser, H. 1995 Abiotic disturbances in the Lesser Antilles. Froglog 15: 1-2.

Kaiser, H. and R.W Henderson. 1994. The conservation status of Lesser Antillean frogs. Herpetol. Nat. Hist. 2: 41-56.

King, J.D., L.A. Rollins-Smith, P.F. Nielsen and J.M. Conlon. 2005. Characterization of a peptide from skin secretions of male specimens of the frog *Leptodactylus fallax* that stimulates aggression in male frogs. Peptides 26: 597-601.

Lescure, J. 1979. Etude taxinomique et eco-ethologique d'un amphibien des Petites Antilles: *Leptodactylus fallax* Muller, 1926 (Leptodactylidae). Bulletin du Muséum National d'Histoire Naturelle Section A Zoologie Biologie et Ecologie Animales 3: 757-774.

Lescure, J. 2000. Répartition passée de *Leptodactylus fallax* Muller, 1923 et *d'Eleutherodactylus johnstonei* Barbour, 1914 (Anoures, Leptodactylidés). Bulletin de la Société Herpétologique de France 94: 13-23.

Lescure, J. and F. Letellier. 1983. Reproduction en captivité de *Leptodactylus fallax* Müller, 1926 (Amphibia, Leptodactylidae). Revue Francaise d'Aquariologie Herpétologie 10: 61-64.

Martin, L., M.N. Morton, G.M. Hilton, R.P. Young, G. Garcia, A.A. Cunningham, A. James, G. Gray and S. Mendes (Eds.). 2007. A species action plan for the Montserrat mountain chicken *Leptodactylus fallax*. Department of Environment, Montserrat.

Selbert, P. 1996. Giving *Leptodactylus fallax* a leg up. Reptiles Magazine 4: 32-39.

Stuart, S.N., M. Hoffman, J.S. Chanson, N.A. Cox, R.J. Berridge, P. Ramani and B.E. Young (Eds.). 2008. Threatened Amphibians of the World. Lynx Edicions, Barcelona, Spain; IUCN, Gland, Switzerland; and Conservation International, Arlington, Virginia, USA.

4.1.2. Virgin Islands Robber Frog *Eleutherodactylus lentus*

Subspecies. None described.

Taxonomic Notes. Alternatively known as Euhyas lenta. It is likely that this name change will soon be widely accepted.

Wordwide Distribution. Formerly known only from the U.S. Virgin Islands, but recently also reported from the British Virgin Islands.

Distribution in the UK Overseas Territories and Dependencies. British Virgin Islands

Conservation Status. Listed as Endangered on the IUCN Red List. Not CITES listed. The current population status of this species on the British Virgin Islands is unknown.

Current Conservation Action. No specific conservation actions known.

Recommendations. A distribution survey and population status assessment of this species on the British Virgin Islands is urgently needed.

References (also see general references for the British Virgin Islands)

Barbour, T. 1915. Recent notes regarding West Indian reptiles and amphibians. Proc. Biol. Soc. Washington 28: 71-78.

Frost, D.R., T. Grant, J.N. Faivovich, R.H. Bain, A. Haas, C.F.B. Haddad, R.O. de Sá, A. Channing, M. Wilkinson, S.C. Donnellan, C.J. Raxworthy, J.A. Campbell, B.L. Blotto, P. Moler, R.C. Drewes, R.A. Nussbaum, J.D. Lynch, D.M. Green and W.C. Wheeler. 2006. The amphibian tree of life. Bulletin of the American Museum of Natural History 297: 1-370.

Hedges, B. and R. Thomas 2004. *Eleutherodactylus lentus*. In: IUCN 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/56711</u>

Jones, K.L. 1982. Prey patterns and trophic niche overlap in four species of Caribbean frogs. Pp. 49-55 in: N.J. Scott, Jr. (Ed.). Herpetological Communites. Wildlife Research Report 13, USDI Fish and Wildlife Service, Washington D.C.

Stuart, S.N., M. Hoffman, J.S. Chanson, N.A. Cox, R.J. Berridge, P. Ramani and B.E. Young (Eds.). 2008. Threatened Amphibians of the World. Lynx Edicions, Barcelona, Spain; IUCN, Gland, Switzerland; and Conservation International, Arlington, Virginia, USA.

4.1.3. Schwartz's Robber Frog Eleutherodactylus schwartzi

Subspecies. None described.

Wordwide Distribution. Now only known from the British Virgin Islands, although this is not strictly an endemic species in the UK Overseas Territories since it also formerly occurred on the island of St. John in the U.S. Virgin Islands.

Distribution in the UK Overseas Territories and Dependencies. Apparently confined to the islands of Virgin Gorda and Tortola in the British Virgin Islands.

Conservation Status. Listed as Endangered on the IUCN Red List. Not CITES listed. The current population status of this species on the British Virgin Islands is unknown.

Current Conservation Action. No specific conservation actions known.

Recommendations. Reported to be common in some parts of Tortola in the 1980s. An updated distribution survey and population status assessment of this species on both Virgin Gorda and Tortola is urgently needed. The habitat of this species requires improved protection on both islands and there is also a need to control invasive predators.

References (also see general references for the British Virgin Islands)

Hedges, B. and R. Thomas 2004. *Eleutherodactylus schwartzi*. In: IUCN 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/56954</u>

Jones, K.L. 1982. Prey patterns and trophic niche overlap in four species of Caribbean frogs. Pp. 49-55 in: N.J. Scott, Jr. (Ed.). Herpetological Communites. Wildlife Research Report 13, USDI Fish and Wildlife Service, Washington D.C.

Ovaska, K., J. Caldbeck and J. Lazell. 1998. Eleutherodactylus schwartzi. Reproduction. Herpetological Review 29: 97.

Amphibian and Reptile Conservation

Ovaska, K.E. and J. Caldbeck. 1999. Courtship call of the frog *Eleutherodactylus schwartzi* from the British Virgin Islands. Journal of Herpetology 33: 501-504.

Thomas, R. 1965. New species of Antillean Eleutherodactylus. Quarterly Journal Florida Academy of Sciences 28: 375-391.

Stuart, S.N., M. Hoffman, J.S. Chanson, N.A. Cox, R.J. Berridge, P. Ramani and B.E. Young (Eds.). 2008. Threatened Amphibians of the World. Lynx Edicions, Barcelona, Spain; IUCN, Gland, Switzerland; and Conservation International, Arlington, Virginia, USA.

4.1.4. Loggerhead Turtle Caretta caretta

Subspecies. Two subspecies are recognised: *Caretta caretta caretta* in the Caribbean, Atlantic Ocean and the Mediterranean Sea and *Caretta caretta gigas* in the Indian and Pacific Oceans.

Wordwide Distribution. Occurs worldwide in most subtropical and warm temperate seas, less abundant in tropical waters. Wandering animals also appear in regularly in cool temperate regions.

Distribution in the UK Overseas Territories and Dependencies. Has been recorded from the waters of nine territories: Anguilla, the British Virgin Islands, the Cayman Islands, Montserrat, the Turks and Caicos Islands, Bermuda, Ascension Island, Gibraltar and the Cyprus Sovereign Base Areas. Loggerhead turtles have also been recorded around the Channel Islands but are not counted here as members of the herpetofauna of the Bailiwicks of Guernsey or Jersey as these animals are invariably cold-stunned vagrants.

Conservation Status. Listed as Endangered on the IUCN Red List and on Appendix I of CITES. This species has suffered large declines and this trend appears to be continuing in many regions. Loggerhead turtles are not abundant in any British territory. However, small numbers regularly nest in five territories: the British Virgin Islands, the Cayman Islands, Montserrat, the Turks and Caicos Islands and on the beaches of Akrotiri in the Western Sovereign Base Area on Cyprus. Foraging animals have also been recorded in the waters of Anguilla, Bermuda, Ascension Island, St. Helena, Gibraltar, the British Indian Ocean Territory and the Pitcairn Islands.

Current Conservation Action. A huge amount of survey, monitoring and nest protection work, as well as scientific research, is undertaken annually in most territories for sea turtles, including *Caretta caretta*.

Recommendations. Current conservation work for this species needs to be continued and, in many cases, should be expanded in scope.

References (also see general references for the relevant territories)

Baran, I. and M. Kasparek 1989. On the whereabouts of immature sea turtles (*Caretta caretta* and *Chelonia mydas*) in the eastern Mediterranean. Zoology in the Middle East 3: 31.

Bjorndal, K.A. 1995. Biology and Conservation of Sea Turtles. Smithsonian Institute Press, Washington D.C.

Bjorndal, K.A. and A.B. Bolten. 1988. Growth rates of juvenile loggerheads, *Caretta caretta*, in the southern Bahamas. Journal of Herpetology 22: 480-482.

Bjorndal, K.A., A.B. Bolten, J. Gordon and J.A. Caminas. 1994. *Caretta caretta* (loggerhead). Growth and pelagic movement. Herpetological Review 25: 23-24.

Bolten, A.B., K.A. Bjorndal and H.R. Martins. 1995. Life history of the loggerhead sea turtle, *Caretta caretta* (Reptilia: Cheloniidae), in the Atlantic. Bol., Mus. Mun. Funchal. Suppl. No. 4: 115-122.

Bowen, B., J.C. Avise, J.I. Richardson, A.B. Meylan, D. Margaritoulis and S.R. Hopkins-Murphy. 1993. Population structure of loggerhead turtles (*Caretta caretta*) in the northwestern Atlantic Ocean and Mediterranean Sea. Conservation Biology 7: 834-844.

Bowen, B.J., A.L. Bass, L. Soares and R. J. Toonen. 2005. Conservation implications of complex population structure: lessons from the loggerhead turtle (*Caretta caretta*). Molecular Ecology 14: 2389–2402.

Bowen, B.W. and S.A. Karl. 2007. Population genetics and phylogeography of sea turtles. Molecular Ecology 16: 4886–4907.

Bowen, B.W., N. Kamezaki, C.J. Limpus, G.R. Hughes, A.B. Meylan and J.C. Avise. 1994. Global phylogeography of the loggerhead turtle (*Caretta caretta*) as indicated by mitochondrial DNA haplotypes. Evolution 48: 1820-1828.

Bowen, B.W., F.A. Abreu-Grobois, G.H. Balazs, N. Kamezaki, C.J. Limpus and R.J. Ferl. 1995. Trans-Pacific migrations of the loggerhead turtle (*Caretta caretta*) demonstrated with mitochondrial DNA markers. Proceedings of the National Academy of Science 92: 3731-3734.

Broderick, A.C. and B.J. Godley. 1996. Population and nesting ecology of the green turtle, *Chelonia mydas*, and the loggerhead turtle, *Caretta caretta*, in northern Cyprus. Zoology in the Middle East 13: 27. Amphibian and Reptile Conservation 63 July 2010 Dodd, C.K., Jr. 1990. Caretta caretta. Catalogue of American Amphibians and Reptiles No. 483: 1-7.

Ernst, C.H., R.G.M. Altenberg and R.W. Barbour. 1997. Turtles of the World Online CD-ROM. Online at: <u>http://nlbif.eti.uva.nl/bis/turtles.php?menuentry=inleiding</u>

Godley, B. and A. Broderick. 1995a. Northern Cyprus is critical habitat for Mediterranean turtles. Marine Turtle Newsletter 1995: 18-19.

Godley, B.J. and A. Broderick. 1995b. Marine turtles in northern Cyprus. Testudo 4: 22-29.

Godley, B.J., A.C. Broderick and N. Mrosovsky. 2001. Estimating hatchling sex ratios of loggerhead turtles in Cyprus from incubation durations. Marine Ecology Progress Series 210: 195-201.

Grand, J. and S.R. Beissinger. 1997. When relocation of loggerhead sea turtle (*Caretta caretta*) nests becomes a useful strategy. Journal of Herpetology 31: 428-434.

Hays, G.C. and J.R. Speakman. 1992. Clutch size for Mediterranean loggerhead turtles (*Caretta caretta*). Journal of Zoology (London) 226: 321-327.

Hays, G.C., P.I. Webb, J.P. Hayes, I.G. Priede and J. French. 1991. Satellite tracking of a loggerhead turtle (*Caretta caretta*) in the Mediterranean. J. Mar. Biol. Ass. U.K. 71: 743-746.

Lewison, R.L., S.A. Freeman and L.B. Crowder. 2004. Quantifying the effects of fisheries on threatened species: the impact of pelagic longlines on loggerhead and leatherback sea turtles. Ecol. Let. 7: 221-231.

Marine Turtle Specialist Group 1996. *Caretta caretta*. In: IUCN 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/3897</u>

Peters, A., K.J.F. Verhoeven and H. Strijbosch. 1994. Hatching and emergence in the Turkish Mediterranean loggerhead turtle, *Caretta caretta*: natural causes for egg and hatchling failure. Herpetologica 50: 369-373.

Ross, J.P. 2005. Hurricane effects on nesting Caretta caretta. Marine Turtle Newsletter 108: 13-14.

Shoop, C.R. 1989. Synopsis of the biological data on the loggerhead sea turtle *Caretta caretta*. Copeia 1989: 534-535.

Silvani, L., M. Gazo and A. Aguilar. 1999. Spanish driftnet fishing and incidental catches in the western Mediterranean. Biological Conservation 90: 79-85.

Witherington, B.E. 1992. Behavioral responses of nesting sea turtles to artificial lighting. Herpetologica 48: 3-39.

Witherington, B.E. and K.A. Bjorndal. 1991. Influences of artificial lighting on the seaward orientation of hatchling loggerhead turtles (*Caretta caretta*). Biol. Cons. 55: 139-150.

Wood, F.G., Jr. 1953. Mating behavior of captive loggerhead turtles, Caretta caretta caretta. Copeia 1953: 184-186.

4.1.5. Green Turtle *Chelonia mydas*

Subspecies. Four subspecies of green turtle have been described, although the taxonomy of this species in the eastern Pacific Ocean remains unresolved. The two subspecies occurring in the UK Overseas Territories are *Chelonia mydas mydas* in the Caribbean, Atlantic Ocean and Mediterranean Sea and *Chelonia mydas japonica* in the western Pacific and Indian Oceans.

Taxonomic Notes. The eastern Pacific form has been variously described as *Chelonia mydas agassizi* or *Chelonia mydas carrinegra*. *Chelonia mydas agassizi* is also sometimes referred to as *Chelonia agassizi*, the black turtle, by some authors, although this elevation to full species status is still subject to considerable debate. This form does not occur in the UK Overseas Territories.

Wordwide Distribution. Occurs worldwide in many tropical and warm temperate seas.

Distribution in the UK Overseas Territories and Dependencies. Has been recorded from the waters of 13 territories: Anguilla, the British Virgin Islands, the Cayman Islands, Montserrat, the Turks and Caicos Islands, Bermuda, Ascension Island, St. Helena, Gibraltar, the Cyprus Sovereign Base Areas, the British Indian Ocean Territory and the Pitcairn Islands

Conservation Status. Listed as Endangered on the IUCN Red List and on Appendix I of CITES. Extensive declines have occurred in many areas, although the status of some populations may be improving. Nesting of this species has been recorded in eight of the 13 territories where it occurs. By far the most important green turtle nesting beaches in any of the territories are found on Ascension Island, where some 3,000 – 5,000 females nest annually. Significant numbers (400 – 800 females per year) also nest in the British Indian Ocean Territory. This species nests in much smaller numbers on the British Virgin Islands, the Cayman Islands, Montserrat, the Turks and Caicos Islands, the Cyprus Sovereign Base Areas and the Pitcairn Islands. In

addition, important foraging grounds for adults and/or juvenile turtles occur in the waters of the British Virgin Islands, the Cayman Islands, the Turks and Caicos Islands and Bermuda.

Current Conservation Action. A huge amount of survey, monitoring and nest protection work, as well as scientific research, is undertaken annually in most territories for the sea turtles, including *Chelonia mydas*.

Recommendations. Current conservation work for this species needs to be continued and, in many cases, should be expanded in scope. In particular, the status of nesting populations on the island of St. Helena and also on Henderson Island, in the Pitcairn Islands, requires further investigation.

References (also see general references for the relevant territories)

Baran, I. and M. Kasparek 1989. On the whereabouts of immature sea turtles (*Caretta caretta* and *Chelonia mydas*) in the eastern Mediterranean. Zoology in the Middle East 3: 31.

Bonhomme, F., S. Salvidio, A. LeBeau and G. Pasteur. 1987. Comparaison génétique tortues vertes (*Chelonia mydas*) des Oceans Atlantique, Indien, et Pacifique. Genetica 74: 89-94.

Bowen, B.W., A.B. Meylan and J.C. Avise. 1989. An odyssey of the green sea turtle: Ascension Island revisited. Proceedings of the National Academy of Sciences of the U.S.A. 86: 573-576.

Broderick, A.C. and B.J. Godley. 1996. Population and nesting ecology of the green turtle, *Chelonia mydas*, and the loggerhead turtle, *Caretta caretta*, in northern Cyprus. Zoology in the Middle East 13: 27.

Broderick, A.C. and B.J. Godley. 1997. Observations of reproductive behavior of male green turtles (*Chelonia mydas*) at a nesting beach in Cyprus. Chelonian Conservation and Biology 2: 615-616.

Brooke, M. de L. 1995. Seasonality and numbers of green turtles *Chelonia mydas* nesting on the Pitcairn Islands. Biological Journal of the Linnean Society 56: 325-327.

Brown, C.W. 1990. The significance of the south Atlantic equatorial countercurrent to the ecology of the green turtle breeding population of Ascension Island. Journal of Herpetology 24: 81-84.

Burnett-Herkes, J. 1974. Returns of green sea turtles (*Chelonia mydas* Linnaeus) tagged at Bermuda. Biological Conservation 6: 307-308.

Campbell, C.L. and C.J. Laguex. 2005. Survival probability estimates for large juvenile and adult green turtles (*Chelonia mydas*) exposed to an artisanal marine turtle fishery in the western Caribbean. Herpetologica 61: 91-103.

Carr, A. 1975. The Ascension Island green turtle colony. Copeia 1975: 547-555.

Carr, A. and L. Ogren. 1960. The ecology and migrations of sea turtles. 4. The green turtle in the Caribbean Sea. Bulletin of the American Museum of Natural History 121: 1-48.

Considine, J.L. and J.J. Winberry. 1978. The green sea turtle of the Cayman Islands. Oceanus 21: 50-55.

Encalada, S.E., P.N. Lahanas, K A. Bjorndal, A.B. Bolten, M.M. Miyamoto and B.W. Bowen. 1996. Phylogeography and population structure of the Atlantic and Mediterranean green turtle *Chelonia mydas*: a mitochondrial DNA control region sequence assessment. Molecular Ecology 5: 473-483.

Feazel, C.T. 1980. The turtle run from Ascension to Brazil and back. Seafrontiers 26: 240-243.

Godley, B.J., A.C. Broderick and G.C. Hays. 2001. Nesting of green turtles *Chelonia mydas* at Ascension Island, South Atlantic. Biological Conservation 97: 151-158.

Groombridge, B. and R. Luxmoore. 1989. The green turtle and hawksbill (Reptilia: Cheloniidae): world status, exploitation and trade. CITES Secretariat, Lausanne, Switzerland.

Hastings, M. 1992. Survey of hawksbill/green turtle nesting sites in 1990 and 1991 in the British Virgin Islands. Technical Report No. 13, Conservation and Fisheries Department, Ministry of Natural Resources and Labour, British Virgin Islands.

Hays, G.C., C.R. Adams and J.R. Speakman. 1993. Reproductive investment by green turtles nesting on Ascension Island. Canadian Journal of Zoology 71: 1098-1103.

Hays, G.C., C.R. Adams, A.C. Broderick, B.J. Godley, D.J. Lucas, J.D. Metcalfe and A.A. Prior. 2000. The diving behaviour of green turtles at Ascension Island. Animal Behaviour 59: 577-586.

Hays, G.C., A.C. Broderick, F. Glen and B.J. Godley. 2003. Climate change and sea turtles: a 150-year reconstruction of incubation temperatures at a major marine turtle rookery. Global Change Biology 9: 642-646.

Hirth, H.F. 1980. Chelonia mydas. Catalogue of American Amphibians and Reptiles No. 249: 1-4.

Kasparek, M., B.J. Godley and A.C. Broderick. 2001. Nesting of the green turtle, *Chelonia mydas*, in the Mediterranean: a review of status and conservation needs. Zoology in the Middle East 24: 45.

Koch, A.L., Carr, A., Ehrenfeld, D.W. 1969. The problem of open-sea navigation: the migration of the green turtle to Ascension Island. Journal of Theoretical Biology 22:163-179.

Lahanas, P.N., M.M. Miyamoto, K.A. Bjorndal and A.B. Bolten. 1994. Molecular evolution and population genetics of greater Caribbean green turtles (*Chelonia mydas*) as inferred from mitochondrial DNA control region sequences. Genetica 94: 57-67.

Luschi, P., G.C. Hays, C. del Seppia, R. Marsh and F. Papi. 1998. The navigational feats of green sea turtles migrating from Ascension Island investigated by satellite telemetry. Proceedings Royal Society London B. 265: 2279-2284.

McDonald, M.A. 1993. Genetic variability in Caribbean populations of the green turtle, *Chelonia mydas*: significance for conservation strategies. Bulletin of the Ecological Society of America 74: 352.

Meylan, A., P. Meylan and A. Mosier. 1994. Green turtles in developmental habitat: an update on the Bermuda Turtle Project. P. 254 in: B.A. Schroeder and B.E., Witherington (Compilers). Proceedings of the 13th Thirteenth Annual Symposium on Sea Turtle Biology and Conservation. NOAA Technical Memorandum NMFS-SEFSC-341.

Meylan, A.B., P.A. Meylan and J. Gray. 1998. Density and biomass of green turtles in developmental habitat in Bermuda. P. 68 in: S.P. Epperly and J. Braun (Compilers). Proceedings of the 17th Annual Sea Turtle Symposium. NOAA Technical Memorandum NMFS-SEFSC-415.

Meylan, A.B., P.A. Meylan, H.C. Frick and J.N. Burnett-Herkes. 1992. Population structure of green turtles (*Chelonia mydas*) on foraging grounds in Bermuda. P. 73 in: M. Salmon and J. Wyneken (Compilers). Proceedings of the 11th Annual Workshop on Sea Turtle Biology and Conservation. NOAA Technical Memorandum NMFS-SEFC-302.

Mortimer, J.A. 1979. Influence of beach characteristics on nesting density site fixity and hatching success on green turtles at Ascension Island South Atlantic. Annual Meeting Of The American Society of Zoologists, Society of Systematic Zoology and The American Microscopical Society, Tampa, Fla., USA, Dec.27-30, 1979. American Zoologist 19: 954.

Mortimer, J.A. 1988. Reproductive homing and internesting behavior of the Green turtle (*Chelonia mydas*) at Ascension Island, South Atlantic Ocean. Pp. 67-70 in: B.A. Schroeder (Compiler). Proceedings of the Eighth Annual Workshop on Sea Turtle Conservation and Biology. NOAA Technical Memorandum NMFS-SEFC-214.

Mortimer, J.A. and A. Carr. 1984. Reproductive ecology and behavior of the green turtle (*Chelonia mydas*) at Ascension Island. National Geographic Society Research Reports 17: 257-270.

Mortimer, J.A. and A. Carr. 1987. Reproduction and migrations of the Ascension Island green turtle (*Chelonia mydas*). Copeia 1987: 103-113.

Mortimer, J.A. and K.M. Portier. 1989. Reproductive homing and internesting behavior of the green turtle (*Chelonia mydas*) at Ascension Island, South Atlantic Ocean. Copeia 1989: 962-977.

Seminoff, J.A. 2004. *Chelonia mydas*. In: IUCN 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/4615</u>

Simon, M.H. and A.S. Parkes. 1976. The green sea turtle (*Chelonia mydas*) nesting on Ascension Island, 1973-1974. Journal of Zoology (Lond.) 179: 153-163.

Thompson, N.P., P.W. Rankin and D.W. Johnston. 1974. Polychlorinated biphenyls and ppDDE in green turtle eggs from Ascension Island, South Atlantic Ocean. Bulletin of Environmental Contamination and Toxicology 11: 399-406.

Townson, S. 1994. Observations and notes on the captive breeding of the green sea *turtle (Chelonia mydas*) on Grand Cayman, British West Indies. Pp. 175-183 in: S. Townson (Ed.). Breeding Reptiles & Amphibians. British Herpetological Society, London.

Wngate, D.B. 1971. Detailed results of the 1970 green turtle restocking project. Monthly Bulletin of the Bermuda Department of Agriculture and Fisheries 41: 58-59.

Wood, F. and J. Wood. 1993. Release and recapture of captive reared green turtle (*Chelonia mydas*) in the waters surrounding Grand Cayman. Herpetological Journal 3: 84-89.

4.1.6. Hawksbill Turtle Eretmochelys imbricata.

Subspecies. Two subspecies are generally recognised: *Eretmochelys imbricata imbricata* from the Caribbean, Atlantic and Mediterranean and *Eretmochelys imbricata bissa* from the Indo-Pacific region.

Taxonomic Notes. The intra-specific variation of the hawksbill turtle is still insufficiently understood. *Eretmochelys imbricata squamata* is also sometimes used as a synonym for the Indo-Pacific form.

Amphibian and Reptile Conservation

Wordwide Distribution. Occurs worldwide in tropical and, to a lesser extent, subtropical and warm temperate seas. This species is an important component of healthy coral reef ecosystems.

Distribution in the UK Overseas Territories and Dependencies. Has been recorded from the waters of ten territories: Anguilla, the British Virgin Islands, the Cayman Islands, Montserrat, the Turks and Caicos Islands, Bermuda, Ascension Island, St. Helena, the British Indian Ocean Territory and the Pitcairn Islands.

Conservation Status. Listed as Critically Endangered on the IUCN Red List and on Appendix I of CITES. This species has suffered extensive declines in all oceans (worldwide, on average, there has been more than an 80% decline in nesting females in just three generations) and this trend appears to be continuing in many regions. As a result of intensive conservation efforts, however, a few populations are now showing signs of stability or recovery in some areas. This species has been recorded nesting in six territories: internationally important numbers (300 – 700 females annually) nest in the British Indian Ocean Territory, plus moderate numbers in Anguilla and the Turks and Caicos Islands and smaller numbers in the British Virgin islands, the Cayman Islands and on Montserrat. In addition, important foraging grounds for adults and/or juvenile turtles occur in the waters of the British Indian Ocean Territory, the British Virgin Islands, the Cayman Islands and Ascension Island.

Current Conservation Action. A huge amount of survey, monitoring and nest protection work, as well as scientific research, is undertaken annually in most territories for the sea turtles, including *Eretmochelys imbricata*.

Recommendations. Current conservation work for this species needs to be continued and, in many cases, should be expanded in scope. In particular, the status of any nesting populations on Henderson Island, in the Pitcairn Islands, requires further investigation.

References (also see general references for the relevant territories)

Bass, A.L. 1999. Genetic analysis to elucidate the natural history and behavior of hawksbill turtles (*Eretmochelys imbricata*) in the wider Caribbean: a review and re-analysis. Chelonian Conservation and Biology 3:195-199.

Bass, A.L., D.A. Good, K.A. Bjorndal, J.I. Rochardson, Z.-M. Hillis, J.A. Horrocks and B.W. Bowen. 1996. Testing models of female reproductive migratory behavior and population structure in the Caribbean hawksbill turtle, *Eretmochelys imbricata*, with mtDNA sequences. Molecular Ecology 5: 321-328.

Boulon, R.H., Jr. 1994. Growth rates of wild juvenile hawksbill turtles, *Eretmochelys imbricata*, in St. Thomas, United States Virgin Islands. Copeia 1994: 811-814.

Bowen, B.W. and A.L. Bass. 1997. Movement of hawksbill turtles: what scale is relevant to conservation, and what scale is resolvable with mtDNA data? Chelonian Conservation and Biology 2: 440-442.

Bowen, B.W., A.L. Bass, A. Garcia-Rodriguez, C.E. Diez, R. van Dam, A.B. Bolten, K.A. Bjorndal, M.M. Miyamoto and R.J. Ferl. 1996. Origin of hawksbill turtles in a Caribbean feeding area as indicated by genetic markers. Ecological Applications 6: 566-572.

Carr, A.F., H.F. Hirth and L.H. Ogren. 1966. The ecology and migrations of sea turtles. 6: The hawksbill turtle in the Caribbean Sea. American Museum Novitates 2248: 1-29.

Groombridge, B. and R. Luxmoore. 1989. The green turtle and hawksbill (Reptilia: Cheloniidae): world status, exploitation and trade. CITES Secretariat, Lausanne, Switzerland.

Hastings, M. 1992. Survey of hawksbill/green turtle nesting sites in 1990 and 1991 in the British Virgin Islands. Technical Report No. 13, Conservation and Fisheries Department, Ministry of Natural Resources and Labour, British Virgin Islands.

IUCN. 2002. Hawksbill turtles in the Caribbean region. Basic biological characteristics and population status. Report for CITES. Online at: <u>http://www.cites.org/common/prog/hbt/consolidated_paper.pdf</u>

Marcovaldi, M.A. 1999. Biology and status of the hawksbill in the Caribbean. A review prepared by the IUCN/SSC Marine Turtle Specialist Group. Chelonian Conservation and Biology 3: 173 (Forward).

Meylan, A.B. 1999a. International movements of immature and adult hawksbill turtles (*Eretmochelys imbricata*) in the Caribbean region. Chelonian Conservation and Biology 3:189-194.

Meylan, A.B. 1999b. Status of the hawksbill turtle (*Eretmochelys imbricata*) in the Caribbean region. Chelonian Conservation and Biology 3: 177-184.

Meylan, P., A. Meylan, J. Gray and J. Ward. 2004. The hawksbill turtle in Bermuda (abstract). P. 26 in: Proceedings of the 22nd Annual Symposium on Sea Turtle Biology and Conservation. NOAA Technical Memorandum NMFS-SEFC-503.

Mortimer, J.A. and D.A. Crain. 1999. Sex steroid concentrations in immature hawksbill turtles (*Eretmochelys imbricata*) in the Chagos Archipelago. Pp. 177-183 in: C.R.C. Sheppard and M.R.D. Seaward (Eds.). Ecology of the Chagos Archipelago. Linnean Society Occasional Publications No. 2.

Mortimer, J.A and M. Donnelly. 2008. *Eretmochelys imbricata*. In: IUCN 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/8005</u>

Okayama, T., R. Díaz-Fernandez, Y. Baba, M. Halim, O. Abe, N. Azeno and H. Koike. 1999. Genetic diversity of the hawksbill turtle in the Indo-Pacific and Caribbean regions. Chelonian Conservation and Biology 3: 362-367.

Starbird, C.H., Z. Hillis-Starr, J.T. Harvey and S.A. Eckert. 1999. Internesting movements and behavior of hawksbill turtles (*Eretmochelys imbricata*) around Buck Island Reef National Monument, St. Croix, U.S. Virgin Islands. Chelonian Conservation and Biology 3: 237-243.

4.1.7. Leatherback Turtle Dermochelys coriacea

Subspecies. Two subspecies are often recognised: *Dermochelys coriacea coriacea* from the Atlantic, Caribbean and Mediterranean and *Dermochelys coriacea schlegelii* (sometimes spelled *schlegeli*) from the Indo-Pacific.

Taxonomic Notes. The subspecific arrangement of *Dermochelys coriacea* mentioned above appears to have become widely accepted without a valid description ever having been published so is not recognised by many authors.

Wordwide Distribution. Worldwide in tropical, subtropical and temperate seas. This species is well adapted to cold waters and is able to venture as far north as, and even enter, the Arctic Circle.



The leatherback turtle is the most widely distributed reptile in the UK Overseas Territories (Photograph: Paul Edgar)

Distribution in the UK Overseas Territories and Dependencies. Almost certainly enters the waters of all 15 of the territories included in this report, albeit as an occasional itinerant visitor in most cases. This species is notoriously difficult to census, and is nowhere abundant, so records at sea are very scarce or non-existent for most territories.

Conservation Status. Listed as Critically Endangered on the IUCN Red List and on Appendix I of CITES. This species has declined catastrophically in the Pacific Ocean, with over 80% of nesting females disappearing within a single generation (this is thought to be largely as a result of incidental by-catch by the massive Pacific long-line fishing industry). Atlantic populations appear to be more stable, although long-line fishing is now increasing here as the Pacific becomes depleted. Caribbean populations are reported to be stable or even increasing, although are relatively small in size. Small numbers of leatherback turtles nest in four territories: Anguilla, the British Virgin Islands, the Cayman Islands and Montserrat.

Current Conservation Action. Survey, monitoring and nest protection work is carried out in the four territories where this species nests. Less specific conservation work is targeted at this species in other territories because of the difficulties of monitoring this species at sea. A recent project in the Irish Sea, which includes the waters of the Isle of Man, had some success in identifying leatherback movements and, in particular, important concentrations of the jellyfish prey of this species.

Recommendations. Current conservation work for this species needs to be continued and, in many cases, should be expanded in scope.

References (also see general references for all territories)

Boulon, R.H., Jr., P.H. Dutton and D.L. McDonald. 1996. Leatherback turtles (*Dermochelys coriacea*) on St. Croix, U.S. Virgin Islands: fifteen years of conservation. Chelonian Conservation and Biology 2: 141-147.

Cambers, G. and H. Lima. 1989. Survey of leatherback turtle nesting sites in 1989. Conservation Office Technical Report No. 2, Government of the British Virgin Islands.

Cambers, G. and H. Lima. 1990. Leatherback turtles disappearing from the BVI. Marine Turtle Newsletter 49: 4-7.

Davenport, J. 1998. Sustaining endothermy on a diet of cold jelly: energetics of the leatherback turtles *Dermochelys coriacea*. British Herpetological Society Bulletin 62: 4-8.

Dutton, P.H., B.W. Bowen, D.W. Owens, A. Barragan and S.K. Davis. 1999. Global phylogeography of the leatherback turtle (*Dermochelys coriacea*). Journal Of Zoology 248: 397-409.

Eckert, K.L. 1987. Environmental unpredictability and leatherback sea turtle *Dermochelys coriacea* nest loss. Herpetologica 43: 315-323.

Eckert, K.L. and S.A. Eckert. 1988. Pre-reproductive movements of leatherback sea turtles, *Dermochelys coriacea*, nesting in the Caribbean. Copeia 1988: 400-406.

Eckert, S.A. and K.L. Eckert. 1983. U.S. Virgin Islands: Leatherback Project. Marine Turtle Newsletter 24: 4.

Eckert, K.L., J.A. Overing and B.B. Lettsome. 1992. WIDECAST Sea Turtle Recovery Action Plan for the British Virgin Islands. CEP Technical report No. 15. UNEP Caribbean Environmental Programme, Kingston, Jamaica.

Eckert, K.L., S.A. Eckert, T.W. Adams and A.D. Tucker. 1989. Inter-nesting migrations by leatherback sea turtles (*Dermochelys coriacea*) in the West Indies. Herpetologica 45: 190-194.

Eckert, S.A., D.W. Nellis, K.L. Eckert and G.L. Kooyman. 1986. Diving patterns of two leatherback sea turtles (*Dermochelys coriacea*) during intervesting intervals at Sandy Point, St. Croix, U.S. Virgin Islands. Herpetologica 42: 381-388.

Ernst, C.H., R.G.M. Altenberg and R.W. Barbour. 1997. Turtles of the World Online CD-ROM. Online at: <u>http://nlbif.eti.uva.nl/bis/turtles.php?menuentry=inleiding</u>

Ferraroli, S., J.-Y. Georges, P. Gaspar and Y. Le Maho. 2004. Where leatherback turtles meet fisheries. Nature 429: 521-522.

Frair, W., R.G. Ackman and N. Mrosovsky. 1972. Body temperature of *Dermochelys coriacea*: warm turtle from cold water. Science 177: 791-793.

Grant, G.S., H. Malpass and J. Beasley. 1996. Correlation of leatherback turtle and jellyfish occurrence. Herpetological Review 27: 123-125.

Greer, A.E., J.D. Lazell and R.M. Wright. 1973. Anatomical evidence for a counter-current heat exchanger in the leatherback turtle (*Dermochelys coriacea*). Nature 244 (5412): 181.

Hartog, J.C. d. and M.M. v. Nierop. 1984. A study on the gut contents of six leathery turtles *Dermochelys coriacea* (Linnaeus) (Reptilia: Testudines: Dermochelyidae) from British waters and from the Netherlands. Zoologische Verhandelingen 209: 1-36.

Hastings, M. 1991. Survey of leatherback turtle nesting sites in 1991. Conservation Office Technical Report No. 9, Government of the British Virgin Islands.

Hastings, M. 2003. A conservation success: leatherback turtles in the British Virgin Islands. Marine Turtle Newsletter 99: 5-7.

Hays, G.C, J.D.R. Houghton and A.E. Myers. 2004. Pan-Atlantic leatherback turtle movements. Nature 429: 522.

Hays, G.C, J.D.R. Houghton, C. Isaacs, R.S. King, C. Lloyd and P. Lovell. 2004. First records of oceanic dive profiles for leatherback turtles, *Dermochelys coriacea*, indicate behavioural plasticity associated with long-distance migration. Animal Behaviour 67: 733-743.

Houghton, J.D.R., T.K. Doyle, M.W. Wilson, J. Davenport and G.C. Hays. 2006. Jellyfish aggregations and leatherback turtle foraging patterns in a temperate coastal environment. Ecology 87: 1967-1972.

Keinath, J.A. and J.A. Musick. 1993. Movements and diving behavior of a leatherback turtle, *Dermochelys coriacea*. Copeia 1993: 1010-1017.

Lewison, R.L., S.A. Freeman and L.B. Crowder. 2004. Quantifying the effects of fisheries on threatened species: the impact of pelagic longlines on loggerhead and leatherback sea turtles. Ecol. Let. 7: 221-231.

McDonald, D.L. and P.H. Dutton. 1996. Use of PIT tags and photo identification to revise remigration estimates of leatherback turtles (*Dermochelys coriacea*) in St. Croix, U.S. Virgin Islands, 1979-1995. Chelonian Conservation and Biology 2: 148-152.

Morris, A. 1990. Survey of leatherback turtle nesting sites in 1990. Technical Report No. 6, Conservation and Fisheries Department, Ministry of Natural Resources and Labour, British Virgin Islands.

NOAA. 2007. An assessment of the leatherback turtle population in the Atlantic Ocean. NOAA Technical Memorandum NMFS-SEFSC-555, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Miami, Florida. Online at: <u>http://www.sefsc.noaa.gov/PDFdocs/TM_555_DcTEWG.pdf</u>

Pérez, A., G.A. Llorente and M.A. Carretero. 1994. Estatus de *Dermochelys coriacea* en el Mediterraneo y dos nuevas citas para Mediterraneo noroccidental. Boletín de la Asociación Herpetológica Española 5: 13-16.

Pritchard, P.C.H. 1980. *Dermochelys coriacea*. Leatherback turtle. Catalogue of American Amphibians and Reptiles No. 238: 1-4.

Pritchard, P.C.H. 1996. Are leatherbacks really threatened with extinction? Chelonian Conservation and Biology 2: 303-306.

Sarti Martinez, A.L. 2000. Dermochelys coriacea. In: IUCN 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/6494</u>

Spotila, J.R., A.E. Dunham, A.J. Leslie, A.C. Steyermark, P.T. Plotkin and F.V. Paladino. 1996. Worldwide population decline of *Dermochelys coriacea*: are leatherback turtles going extinct? Chelonian Conservation and Biology 2: 209-222.

Spotila, J.R., R.D. Reina, A.C. Steyermark, P.T. Plotkin and F.V. Paladino. 2000. Pacific leatherbacks face extinction. Nature 405: 529–530.

4.1.8. American Crocodile Crocodylus acutus

Subspecies. None described.

Wordwide Distribution. Southeastern USA, Mexico, Central America (Belize, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica and Panama), northwestern South America (Colombia, Venezuela and Ecuador) and several Caribbean Islands including Cuba, Hispaniola (both Haiti and the Dominican Republic), Jamaica and the Cayman Islands.

Distribution in the UK Overseas Territories and Dependencies. Cayman Islands, where this species has been recorded from Little Cayman and Cayman Brac.



The American crocodile *Crocodylus acutus* has been reported as a vagrant in the Cayman Islands (Photograph: Paul Edgar)

Conservation Status. Listed as Vulnerable on the IUCN Red List and on Appendix I of CITES. This species has declined in many parts of its range. The status of the American crocodile in the Cayman Islands is unclear – it has been recorded as an occasional vagrant to date. However, this species can traverse open seas and the possibility that it is a more regular visitor to the islands needs to be considered.

Current Conservation Action. No specific conservation actions known for this species in the Cayman Islands.

Recommendations. Periodic surveys for this species should be carried out in the remoter coastal areas of Little Cayman and Cayman Brac in order to determine if this species is anything other than an itinerant visitor to the Cayman Islands and, therefore, if any specific conservation actions are required.

References (also see general references for the Cayman Islands)

Casas-Andreu, G. 1997. Dispersión o vicarianza en la distribución de *Crocodylus* en el continente Americano. Pp: 44-51 in: Memorias de las 4ta Reunión Regional del Grupo de Especialistas en Cocodrilos de América Latina y el Caribe. Centro Regional de Innovación Agroindustrial, S.C. Villahermosa, Tabasco.

Conant, R. and J.T. Collins. 1991. A Field Guide to Reptiles and Amphibians of Eastern/Central North America. Houghton Mifflin, Boston/New York.

Crocodile Specialist Group. 1996. *Crocodylus acutus*. In: IUCN. 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/5659</u>

Ellis, T.M. 1981. Tolerance of sea water by the American crocodile, *Crocodylus acutus*. Journal of Herpetology 15: 187-192.

Ernst, C.H., F.D. Ross and C.A. Ross. 1999. *Crocodylus acutus*. Catalogue of American Amphibians and Reptiles No. 700: 1-17.

Kushlan, J.A. 1988. Conservation and management of the American crocodile. Environ. Management 12: 777-790.

Kushlan, J. and F. Mazzotti. 1989. Population biology of the American crocodile. Journal of Herpetology 23: 8-21.

Mazzotti, F.J. and W.A. Dunson. 1984. Adaptations of *Crocodylus acutus* and *Alligator* for life in saline water. Comparative Biochemistry and Physiology 79A: 641-646.

Messel, H., F.W. King and J.P. Ross. 1995. Introducción: la Conservación y el Manejo de Caimanes y Cocodrilos. Pp. 1-3. in: A. Larriera and L.M. Verdade (Eds.). La Conservación y el Manejo de Caimanes y Cocodrilos de América Latina. Vol. I. Fundación Banco Bica, Santo Tomé, Santa Fe, Argentina.

Morgan, G.S. and T.H. Patton. 1979. On the occurrence of *Crocodylus* (Reptilia, Crocodylidae) in the Cayman Islands, British West Indies. Journal of Herpetology 13: 289-292.

Ogden, J.C. 1978. Status and nesting biology of the American crocodile, *Crocodylus acutus* (Reptilia, Crocodylidae), in Florida. Journal of Herpetology 12: 183-196.

Thorbjarnarson, J.B. 1989. Ecology of the American crocodile, *Crocodylus acutus*. Pp. 228-259 in: Crocodiles: their ecology, management and conservation. A special publication of the Crocodile Specialist Group of the Species Survival Commission of the International Union for Conservation of Nature and Natural Resources, Gland, Switzerland.

Varona, L.S. 1985. The distribution of Crocodylus acutus in Cuba. Herpetological Review 16: 103-105.

Varona, L.S. 1987. The status of *Crocodylus acutus* in Cuba. Caribbean J. Sci. 23: 256-259.

4.1.9. Cyprus Lizard Phoenicolacerta troodica

Subspecies. None described.

Taxonomic Notes. Formerly known as either Lacerta laevis troodica or Lacerta troodica.

Wordwide Distribution. Endemic to Cyprus.

Distribution in the UK Overseas Territories and Dependencies. Cyprus Sovereign Base Areas, where the presence of this species has been confirmed by site personnel (Ian Davidson-Watts, *pers. com.*, March 2009).

Conservation Status. Not listed on either the IUCN Red List or on any CITES appendices. Status on Cyprus as a whole is unknown. Furthermore, no herpetological surveys of the Cyprus Sovereign Base Areas have been carried out to date so the current distribution and status of this species in both Akrotiri and Dhelekia is also unknown.

Current Conservation Action. No specific conservation actions known.

Recommendations. An initial distribution survey of *Phoenicolacerta troodica* in the Cyprus Sovereign Base Areas is urgently required, ideally as part of a wider herpetological survey. This should be followed if necessary by a more detailed population status and habitat assessment for this species in the Sovereign Base Areas.

References (also see general references for the Cyprus Sovereign Base Areas)

Arnold, E.N., O. Arribas and S. Carranza. 2007. Systematics of the Palaearctic and oriental tribe Lacertini (Squamata: Lacertidae: Lacertinae), with description of eight new genera. Zootaxa 1430: 1-86.

Bischoff, W. and J.F. Schmidtler. 1999. New data on the distribution, morphology and habitat choice of the *Lacerta laevis-kulzeri* complex. Natura Croatica 8: 211-222.

Böhme, W. 1995. A hypothesis on the origin of the Cypriot wall lizard (*Lacerta laevis troodica*): evolutionary and zoogeographical implications. Abstr. 7th Intern. Congr. Zoogeogr. Ecol. Greece Adj. Regions, Athens: 10.

Böhme, W. 1996. A hypothesis on the origin of the Cypriot wall lizard (*Lacerta laevis troodica*) and its implication for a purely biological species concept. Abstr. 2nd Intern. Symp. Lacertids Mediter. Basin, Algarve, Portugal: 5.

Budak, A. 1976. Anadolu'da yasayan *Lacerta laevis*, *Lacerta danfordi* ve *Lacerta anatolica*'nin taksonomik durumlari ve cografik yayilislari üzerinde arastirmalar. E. Ü. Fen Fak. Ilmi Rap. Ser. No. 214: 1-59.

Budak, A. and B. Göçmen. 1995. On the specimens of *Lacerta laevis* Gray, 1838 (Sauria: Lacertidae) from North Cyprus. Turk. J. Zool. 19: 1-15.

Eiselt, J. and J.F. Schmidtler. 1986. Der Lacerta danfordi-Komplex. Spixiana 9: 289-328.

Tosunoğlu, M., B. Göçmen, E. Taskavak and A. Budak. 1999. A serological comparison of the populations of the *Lacerta laevis* complex in northern Cyprus and southern Turkey. Zoology in the Middle East 19: 117-122.

Tosunoğlu, M., B. Göçmen, M.K. Atatür and I.E. Çevik. 2001. Morphological and serological investigations on *Lacerta laevis* Gray, 1838 (Sauria: Lacertidae) populations from Anatolia. Zoology in the Middle East 23: 55-60.

Troidl, S. and A. Troidl. 2008. Erster Nachweis der Syrischen Eidechse, *Phoenicolacerta laevis*, bei Side und Manavgat. Die Eidechse 19: 14-18.

Zawadzki, M. 2000. Haltung und Zucht von Lacerta laevis troodica Werner 1936. Die Eidechse 11: 55-62.

4.1.10. Turks and Caicos Ground Iguana Cyclura carinata

Subspecies. Two subspecies have been described: *Cyclura carinata carinata*, which is endemic to the Turks and Caicos Islands, and *Cyclura carinata bartschi*, which is only found on Booby Cay, east of Mayaguana Island, in the Bahamas.

Wordwide Distribution. Turks and Caicos Islands and Bahamas only.

Distribution in the UK Overseas Territories and Dependencies. Turks and Caicos Islands. *Cyclura carinata carinata* is found on both the Turks Islands and the Caicos Islands.

Conservation Status. Listed as Critically Endangered on the IUCN Red List and on Appendix I of CITES. At least 13 subpopulations of this species, most on relatively large islands in the Turks and Caicos, have been extirpated over the last 20 years. This represents a 25% or greater rate of population decline. Although still found on 50-60 islands, cays and islets, the combined area supporting this species has been reduced to approximately 13km², out of a total of 616.2km2 for the Turks and Caicos (plus Booby Cay in the Bahamas). The largest remaining subpopulation (about 30% of the total world population) occurs on a privately owned island that is undergoing extensive development.

Current Conservation Action. *Cyclura carinata* has recently been granted legal protection in the Turks and Caicos Islands. A number of protected areas also support this species, although few resources are currently allocated to maintain or enforce protection or to control introduced species, particularly cats, dogs and goats, that are detrimental to the iguanas. A Conservation and Management Plan has been prepared that includes a comprehensive strategy to conserve existing populations and restore the historic range of this species. Several US zoos maintain captive populations of this species and carry out education activities. The Turks and Caicos Islands National Trust have also initiated a public education campaign for ground iguanas within the territory.

Recommendations. Few additional conservation actions are required. Ensure that recent conservation initiatives and future plans for the recovery of this species are adequately supported and implemented.
References (also see general references for the Turks and Caicos Islands)

Alberts, A. (Compiler and Editor). 2000. West Indian iguanas: status survey and conservation action plan. IUCN/SSC West Indian Iguana Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK.

Alberts, A.C.; R.L. Carter, W.K. Hayes and E.P. Martins (Eds.). 2004. Iguanas - Biology and Conservation. University of California Press, Berkeley.

Auffenberg, W. 1975. The Dragon Isles: West Indian rock iguanas. Bahamas Nat., Summer 1975: 2-7.

Auffenberg, W. 1982. Feeding strategy of the Caicos ground iguana, *Cyclura carinata*. Pp. 84-116 in: G.M. Burghardt and A.S. Rand (Eds.). Iguanas of the World: Their Behavior, Ecology, and Conservation. Noyes Publications, Park Ridge, New Jersey.

Barbour, T. 1916. Additional notes on West Indian reptiles and amphibians. Proc. Biol. Soc. Washington 29: 215-220.

Barbour, T. and G.K. Noble. 1916. A revision of the lizards of the genus Cyclura. Bull. Mus. Comp. Zool. 60: 139-64.

Bryan, J.J., G.P. Gerber, M.E. Welch and C.L. Stephen. 2007. Re-evaluating the taxonomic status of the Booby Cay iguana, *Cyclura carinata bartschi*. Copeia 2007: 734-739.

Byrd, D. and S. Byrd. 1997. Turks and Caicos Island rock iguanas. Reptiles Magazine 5 (4): 76-79.

Cochran, D.M. 1931. New Bahaman reptiles. Journal of the Washington Academy of Sciences 21: 39-40.

Cope, E.D. 1886. On the species of Iguaninae. Proc. Amer. Philos. Soc. 23 (122): 261-271.

Gerber, G. 2004. *Cyclura carinata*. In: IUCN. 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/6026</u>

Gerber, G.P. and A. Alberts. 2004. Turks and Caicos Iguana, Cyclura carinata carinata: 2003 project update. Iguana 11: 37.

Iverson, J.B. 1978. The impact of feral cats and dogs on populations of the West Indian rock iguana, *Cyclura carinata*. Biological Conservation 14: 63-73.

Iverson, J.B. 1979. Behavior and ecology of the rock iguana Cyclura carinata. Bull. Florida State Mus. Biol. Sci. 24: 175-358.

Malone, C.L., T. Wheeler, J.F. Taylor and S.K. Davis. 2000. Phylogeography of the Caribbean rock iguana (*Cyclura*): implications for conservation and insights on the biogeographic history of the West Indies. Mol. Phylogen. Evol. 17: 269.

Mitchell, N. 2003. Another chance for the Turks and Caicos rock iguana. Iguana 10: 10-14.

Mitchell, N.C., R. Haeffner, M. Fulford and W. Clerveaux. 2000. Geographic distribution. *Cyclura carinata carinata*. Herpetological Review 31: 253-254.

Schwartz, A. and M. Carey. 1977. Systematics and evolution in the West Indian iguanid genus *Cyclura*. Stud. Fauna Curaçao and Carib. Is. 53 (173): 15-97.

Wiewandt, T.A. 1993. Evolution of nesting patterns in iguanine lizards. Iguana Times 2: 2-19.

4.1.11. Grand Cayman Blue Iguana Cyclura lewisi

Subspecies. None described.

Taxonomic Notes. The Grand Cayman Blue Iguana, which was formerly a subspecies of the Cuban ground iguana *Cyclura nubila lewisi*, has recently been elevated to full species status.

Wordwide Distribution. Endemic to the Cayman Islands.

Distribution in the UK Overseas Territories and Dependencies. Cayman Islands, where in the wild this species is confined to a very small area of the eastern end of Grand Cayman.

Conservation Status. Listed as Critically Endangered on the IUCN Red List and on Appendix I of CITES. This species has been declining rapidly for some time and is now all but functionally extinct in the wild. The remaining area of occupation in the wild is estimated to have been reduced from 7km² in 1993 to about 4km² in 2002. Furthermore, the population density of *Cyclura lewisi* within this area of occupation area fell by 80% within the same period. The unmanaged wild population was estimated to be between 10-25 individuals in 2002. Since major threats such as habitat destruction, introduced predators, road kills and illegal capture continue unabated, the wild population was expected to be extinct in the next 5-10 years.

Current Conservation Action. The Blue Iguana Recovery Programme, under the auspices of the National Trust for the Cayman Islands, is successfully breeding *Cyclura lewisi* in captivity and releasing them into the 26ha Queen Elizabeth II Botanic Park on Grand Cayman. This managed population began breeding itself in 2002 and the eggs are artificially incubated to allow head-starting of the hatchlings. The long-term aim is to expand this successful pilot project through the establishment of a large protected area where a population of about 1,000 iguanas can be restored. With the original protected release area now at its carrying capacity of about 400 iguanas, the Cayman Islands Government's announcement in May 2009 of the provision of a second large protected release area, combined with continued breeding/head-starting success, makes this goal a very real possibility. In addition, various US zoos also keep breeding groups of "insurance" iguanas. This species receives full legal protection, both locally and internationally, and is the subject of intensive and well co-ordinated education and publicity campaigns on the Cayman Islands.

Recommendations. Few additional conservation actions are required at present, but it is vital that further funding is secured to ensure that recent conservation initiatives and future plans for the recovery of this are adequately supported and implemented and can also be expanded as necessary.

References (also see general references for the Cayman Islands)

Alberts, A. (Compiler and Editor). 2000. West Indian iguanas: status survey and conservation action plan. IUCN/SSC West Indian Iguana Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK.

Alberts, A.C.; R.L. Carter, W.K. Hayes and E.P. Martins (Eds.). 2004. Iguanas - Biology and Conservation. University of California Press, Berkeley.

Auffenberg, W. 1975. The Dragon Isles: West Indian rock iguanas. Bahamas Nat., Summer 1975: 2-7.

Blair, D.W. 1983. Dragons of the Cayman: rock iguanas cling to their islands. Oceans 16: 31-33.

Burghardt, G.M. and A.S. Rand (Eds.). 1982. Iguanas of the World: Their Behavior, Ecology, and Conservation. Noyes Publications, Park Ridge, New Jersey.

Burton, F. 1996. Any hope for Grand Cayman's blue iguana? Iguana Times 5 (4): 75-79.

Burton, F.J. 2004a. Cyclura nubila lewisi (Grand Cayman blue rock iguana). Reproduction. Herpetological Review 35: 388-389.

Burton, F.J. 2004b. Revision to species of *Cyclura nubila lewisi*, the Grand Cayman Blue Iguana. Caribbean Journal of Science 40: 198-203.

Burton, F. J. 2004c. The blue iguana, *Cyclura lewisi*, recovery programme, Grand Cayman: summary of progress for 2003. Iguana 11: 30-31.

Burton, F. 2004d. Color and pattern in Grand Cayman blue iguanas. Iguana 11: 149-151.

Burton, F.J. 2004e. Battling extinction: a view forward for the Grand Cayman blue iguana (Cyclura lewisi). Iguana 11: 233-237.

Burton, F.J. 2004f. *Cyclura lewisi*. In: IUCN 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/44275</u>

Burton, F.J. 2005. Restoring a new wild population of blue iguanas (*Cyclura lewisi*) in the Salina Reserve, Grand Cayman. Iguana 12: 166-174.

Burton, F.J. 2006. Fire in the Salina Reserve, Grand Cayman. Iguana 13: 104-107.

Christie, B. 1994. The Indianapolis Zoo's Cyclura management program. Iguana Times 3 (2): 9-11.

Dorge, R. 1996. A tour of the Grand Cayman blue iguana (Cyclura nubila lewisi) captive-breeding facility. Reptiles Magazine 4 (9): 32-42.

Ehrig, R. W. 1992. The trouble with 'lewisi'. Iguana Times 1 (6): 2-3.

Goodman, R.M. 2003. Studying the world's most endangered rock iguana, Cyclura nubila lewisi. Iguana 10: 15-20.

Goodman, R.M. 2005. Attachment of radio transmitters in a rock iguana, *Cyclura lewisi*. Herpetological Review 36: 150-152.

Goodman, R.M. and F.J. Burton. 2005. *Cyclura lewisi* (Grand Cayman blue iguana). Hatchlings. Herpetological Review 36: 176.

Goodman, R.M., A.C. Echternacht and F.J. Burton. 2005. Spatial ecology of the endangered iguana, *Cyclura lewisi*, in a disturbed setting on Grand Cayman. Journal of Herpetology 39: 402-408.

Gutman, A. J. 2002. Grand Cayman blues: the Cayman blue rock iguana. Fauna 3 (2): 34-35.

Gutman, A.J., J. Bendon and J. Binns. 2002. Grand Cayman blues: the struggle to preserve *Cyclura nubila lewisi*. Iguana Times 9 (3): 51-58.

Köhler, G. 2002. Kurz vor der Ausrottung: der Blaue Leguan von Grand Cayman. Iguana Rundschreiben 15: 9-10.

Malone, C.L., T. Wheeler, J.F. Taylor and S.K. Davis. 2000. Phylogeography of the Caribbean rock iguana (*Cyclura*): implications for conservation and insights on the biogeographic history of the West Indies. Mol. Phylogen. Evol. 17: 269.

Townson, S. 1980. West Indian iguanas of the genus *Cyclura*: the threat of habitat destruction in the Cayman Islands. British Journal of Herpetology 6: 101-104.

Wissman, M. 1995. In search of the Grand Cayman blue rock iguana (Cyclura nubila lewisi). Reptiles 3: 56-57.

4.1.12. Lesser Caymans Ground Iguana Cyclura nubila

Subspecies. Two subspecies are recognised: *Cyclura nubila nubila* from Cuba and several nearby islands and *Cyclura nubila caymanensis*, which is endemic to the Cayman Islands.

Taxonomic Notes. A further subspecies, Cyclura nubila lewisi from the Cayman Islands, has now been elevated to full species status.

Wordwide Distribution. Cuba, Isla de la Juventud, Archipélago de los Cannerreos, Cayos de San Felipe, Jardin de la Reina, Archipélago de Sabana-Camagüey, Cayo Cinco Leguas and the Cayman Islands. Also introduced to Isla Magueyes, Puerto Rico.

Distribution in the UK Overseas Territories and Dependencies. Cayman Islands, where the natural range of *Cyclura nubila caymanensis* is confined to Little Cayman and Cayman Brac. This subspecies has also been introduced to the western end of Grand Cayman – although this area does not overlap with the current range of *Cyclura lewisi*, this action has clearly increased the risks of future interbreeding.

Conservation Status. Listed as Critically Endangered on the IUCN Red List (as *Cyclura nubila* ssp. *caymanensis*) and on Appendix I of CITES. This iguana was reported to be abundant on both Little Cayman and Cayman Brac in 1938 but had declined markedly by the 1960s, especially on the latter island. This subspecies is now almost extinct on Cayman Brac, with fewer than 50 individuals estimated to remain on the island. Little Cayman still supports a widely, although patchily, distributed iguana population, estimated to number between 800 and 1,800 mature animals, although a growing population of feral cats and increasing human development severely threaten the long-term survival of *Cyclura nubila caymanensis* here as well.

Current Conservation Action. The Lesser Caymans Ground Iguana is fully protected by law on the Cayman islands although only about 147 ha of potential iguana habitat are currently protected - 65 ha on Cayman Brac and 82 ha on Little Cayman. The National Trust for the Cayman Islands has had an active iguana conservation programme since 1990. However, due to limited resources, efforts have largely been concentrated on *Cyclura lewisi*. In 2007, however, the Durrell Wildlife Conservation Trust initiated its Cayman Sister Isles Iguana Project, in collaboration with the National Trust and the Cayman Islands Government. This project includes nesting surveys, collection of basic biological data and population estimates. Preliminary results are expected in 2010. There is currently no captive breeding programme for the Lesser Caymans Ground Iguana and no pure examples of this subspecies are held by any zoos.

Recommendations. Conservation efforts for this species require urgent and substantially increased support. In particular, distribution, population status and habitat assessments need to be updated for both Cayman Brac and Little Cayman. An appropropriate conservation strategy is also needed before the situation for this iguana gets much worse and it is anticipated that this will be developed from the research being carried out by the Durrell Wildlife Conservation Trust in collaboration with the National Trust and the Cayman Islands Government.

References (also see general references for the Cayman Islands)

Alberts, A. (Compiler and Editor). 2000. West Indian iguanas: status survey and conservation action plan. IUCN/SSC West Indian Iguana Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK.

Alberts, A.C., R.L. Carter, W.K. Hayes and E.P. Martins (Eds.). 2004. Iguanas - Biology and Conservation. University of California Press, Berkeley.

Auffenberg, W. 1975. The Dragon Isles: West Indian rock iguanas. Bahamas Nat., Summer 1975: 2-7.

Barbaro, G.L. and R.T. Henry. 1992. A note on captive maintenance of Cyclura nubila. Iguana Times 1 (4): 16.

Barbour, T. and G.K. Noble. 1916. A revision of the lizards of the genus Cyclura. Bull. Mus. Comp. Zool. 60: 139-64.

Blair, D.W. 1983. Dragons of the Cayman: rock iguanas cling to their islands. Oceans 16: 31-33.

Blair, D.W. 1992. The Cayman Island rock iguana, Cyclura nubila caymanensis. Iguana Times 1 (4): 2-5.

Burghardt, G.M. and A.S. Rand (Eds.). 1982. Iguanas of the World: Their Behavior, Ecology, and Conservation. Noyes Publications, Park Ridge, New Jersey.

Burton, F.J. 2004. Revision to species of *Cyclura nubila lewisi*, the Grand Cayman Blue Iguana. Caribbean Journal of Science 40: 198-203.

Carey, W.M. 1966. Observations of the ground iguana *Cyclura macleayi caymanensis* on Cayman Brac, British West Indies. Herpetologica 22: 265-268.

Cei, J. M. 1956. Notes on the Cuban iguana. Herpetologica 12: 323-324.

Gerber, G. 1996. *Cyclura nubila* ssp. *caymanensis*. In: IUCN. 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/6043</u>

Knapp, C. 1993. Captive husbandry and reproduction of the Cayman Island rock iguana (*Cyclura nubila caymanensis*). Captive Breeding 1: 26-27.

Lemm, J. and A. Alberts. 1997. Guided by nature: conservation research and captive husbandry of the Cuban iguana. Reptiles Magazine 5 (8): 76-87.

Malone, C.L., T. Wheeler, J.F. Taylor and S.K. Davis. 2000. Phylogeography of the Caribbean rock iguana (*Cyclura*): implications for conservation and insights on the biogeographic history of the West Indies. Mol. Phylogen. Evol. 17: 269.

Rodríguez Schettino, L. (Ed.). 1999. The Iguanid Lizards of Cuba. University Press of Florida.

Schwartz, A. and M. Carey. 1977. Systematics and evolution in the West Indian iguanid genus *Cyclura*. Stud. Fauna Curaçao and Carib. Is. 53 (173): 15-97.

Townson, S. 1980. West Indian iguanas of the genus *Cyclura*: the threat of habitat destruction in the Cayman Islands. British Journal of Herpetology 6: 101-104.

4.1.13. Anegada Ground Iguana Cyclura pinguis

Subspecies. None described.

Wordwide Distribution. British Virgin Islands only. However, this species is not strictly endemic to the British Virgin Islands since it was formerly distributed across the entire Puerto Rico Bank. Habitat destruction and predation by humans, and their cats and dogs, have now extirpated natural populations of this species everywhere except for the island of Anegada.

Distribution in the UK Overseas Territories and Dependencies. British Virgin Islands, where natural populations are confined to the island of Anegada. As part of ongoing conservation efforts for this species, a population has also been established on the island of Guana, also in the British Virgin Islands. This species has also been recently introduced to Necker Island (plus one other island?) but it is not known if it has become established yet.

Conservation Status. Listed as Critically Endangered on the IUCN Red List and on Appendix I of CITES. *Cyclura pinguis* has suffered a catastrophic decline. As well as being extirpated from virtually its entire world range, the single remaining natural population has continued to decline due to introduced predators, as well as free-ranging livestock that both compete with the lizards and damage their habitat. The population density of iguanas in this population was estimated to be 2.03/ha in 1968, but this had dropped to 0.36/ha in comparable habitat by 1991. Many other areas of Anegada that once supported dense populations of ground iguanas now support none. The total world population, including all animals in the wild on Anegada, Guana and Necker, probably consists of fewer than 200 individuals.

Current Conservation Action. A major grant has been received by the UK Foreign and Commonwealth Office to facilitate conservation activities on Anegada and this should result in significant benefits for *Cyclura pinguis*, among other species. Goals of this programme are to i. implement a cat eradication/control feasibility study. Ii. expand the current headstart facility, iii. train the Senior Terrestrial Warden on Anegada in iguana husbandry and facility maintenance, iv. conduct population censusing and mapping at nesting sites and in other potential areas where adults may be found, and v. develop environmental education materials to raise public awareness of the importance and vulnerability of iguanas on Anegada. In addition, efforts to remove sheep on Guana Island, in order to improve the habitat for the iguanas there, are ongoing.

Recommendations. Few additional conservation actions are required at present, but it is vital that continues funding is secured in the future to ensure that recent conservation initiatives and future plans for the recovery of this are adequately supported and implemented.

References (also see general references for the British Virgin Islands)

Alberts, A. (Compiler and Editor). 2000. West Indian iguanas: status survey and conservation action plan. IUCN/SSC West Indian Iguana Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK.

Alberts, A.C., R.L. Carter, W.K. Hayes and E.P. Martins (Eds.). 2004. Iguanas - Biology and Conservation. University of California Press, Berkeley.

Auffenberg, W. 1975. The Dragon Isles: West Indian rock iguanas. Bahamas Nat., Summer 1975: 2-7.

Barbour, T. 1916. Additional notes on West Indian reptiles and amphibians. Proc. Biol. Soc. Washington 29: 215-220.

Barbour, T. and G.K. Noble. 1916. A revision of the lizards of the genus Cyclura. Bull. Mus. Comp. Zool. 60: 139-64.

Burghardt, G.M. and A.S. Rand (Eds.). 1982. Iguanas of the World: Their Behavior, Ecology, and Conservation. Noyes Publications, Park Ridge, New Jersey.

Carey, W.M. 1975. The rock iguana, *Cyclura pinguis*, on Anegada, British Virgin Islands, with notes on *Cyclura ricordi* and *Cyclura cornuta* on Hispaniola. Bull. Fonda State Mus. Biol. Sci. 19: 189-233.

Cope, E.D. 1886. On the species of Iguaninae. Proc. Amer. Philos. Soc. 23 (122): 261-271.

Gerber, G.P. 2004. An update on the ecology and conservation of *Cyclura pinguis* on Anegada. Iguana 11: 23-26.

Gerber, G.P. and K. Bradley. 2004. Anegada iguana, *Cyclura pinguis*: 2003 update on field research and release project. Iguana 11: 33.

Goodyear, N.C. and J.D. Lazell. 1994. Status of a relocated population of *Iguana pinguis* on Guana Island, British Virgin Islands. Restoration Ecology 2: 43-50.

Grant, C. 1937. Herpetological notes with new species from the American and British Virgin Islands, 1936. Jour. Dept. Agric. Puerto Rico 21: 503-522.

Levering, K. and G. Perry. 2003. *Cyclura pinguis* (stout iguana, Anegada rock iguana). Juvenile predation. Herpetological Review 34: 367-368.

Malone, C.L., T. Wheeler, J.F. Taylor and S.K. Davis. 2000. Phylogeography of the Caribbean rock iguana (*Cyclura*): implications for conservation and insights on the biogeographic history of the West Indies. Mol. Phylogen. Evol. 17: 269.

Mitchell, N.C. 1999. Effect of introduced ungulates on density, dietary preferences, home range, and physical condition of the iguana (*Cyclura pinguis*) on Anegada. Herpetologica 55: 7-17.

Mitchell, N. 1996. *Cyclura pinguis*. In: IUCN. 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/6031</u>

Pagni, L.E. 2004. Public attitudes and perceptions regarding conservation of the Anegada iguana, *Cyclura pinguis*: the use and role of social surveys in conservation. Iguana 11: 34.

Perry, G., K. Levering and N. Mitchell. 2003. *Cyclura pinguis* (stout iguana, Anegada rock iguana). Juvenile behavior. Herpetological Review 34: 367.

Schwartz, A. and M. Carey. 1977. Systematics and evolution in the West Indian iguanid genus *Cyclura*. Stud. Fauna Curaçao and Carib. Is. 53 (173): 15-97.

4.1.14. Lesser Antillean Iguana Iguana delicatissima

Subspecies. None described.

Wordwide Distribution. Confined to the Lesser Antilles in the Caribbean where is has been recorded on Anguilla, St.-Martin, Île Fourchue, Les Îles Fregates, Île Chevreau, St.-Bartélémy, St. Eustatius, Nevis, St. Kitts, Antigua, Barbuda, Guadeloupe, La Désirade, Les Îles des Saintes, Dominica, Martinique and Marie-Galante.

Distribution in the UK Overseas Territories and Dependencies. Anguilla, where this species is only found on the main island of Anguilla itself.

Conservation Status. Listed as Vulnerable on the IUCN Red List and on Appendix II of CITES. Populations of this species have been extirpated on Antigua, Nevis, St. Kitts, Les Îles des Saintes and Marie Galante and are considered critically endangered on many other islands, including Anguilla. Although Lesser Antillean iguanas once occupied much of the northern half of the island of Anguilla, they are now restricted to only about 2km² (3% of the total island area) along the northern coast. Recent population estimates for Anguilla range from fewer than 100 to almost 300 animals.

Current Conservation Action. This species is legally protected on Anguilla. Research into the population biology, ecology, distribution and status of *Iguana delicatissima* is currently underway throughout the Lesser Antilles. Captive animals (all from Dominica) are held at the Jersey Wildlife Preservation Trust, Memphis Zoo and San Diego Zoo.

Recommendations. Conservation efforts for this species on Anguilla require urgent and substantially increased support.

References (also see general references for Anguilla)

Alberts, A.C., R.L. Carter, W.K. Hayes and E.P. Martins (Eds.). 2004. Iguanas - Biology and Conservation. University of California Press, Berkeley.

Barbour, T. 1923. West Indian investigations of 1922. Occasional Papers of the Museum of Zoology, University of Michigan 132: 1-9.

Bendon, J. 1997. A delicate situation: Iguana delicatissima at the Jersey Wildlife Preservation Trust. Iguana Times 6: 36-37.

Breuil, M. and M. Day. 1996. Iguana delicatissima. In: IUCN. 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/10800</u>

Burghardt, G.M. and A.S. Rand (Eds.). 1982. Iguanas of the World: Their Behavior, Ecology, and Conservation. Noyes Publications, Park Ridge, New Jersey.

Cope, E.D. 1886. On the species of Iguaninae. Proc. Amer. Philos. Soc. 23 (122): 261-271.

Daltry, J.C. 2007. An introduction to the herpetofauna of Antigua, Barbuda and Redonda, with some conservation recommendations. Applied Herpetology 4: 97-130.

Fogarty, S.P., V.H. Zero and R. Powell. 2004. Revisiting St. Eustatius: estimating the population size of Lesser Antillean iguanas (*Iguana delicatissima*). Iguana 11: 138–146.

Lazell, J.D., Jr. 1973. The lizard genus Iguana in the Lesser Antilles. Bulletin of the Museum of Comparative Zoology 145: 1-28.

Malhotra, A. R.S. Thorpe, E. Hypolite, A. James. 2007. A report on the status of the herpetofauna of the Commonwealth of Dominica, West Indies. Applied Herpetology 4: 177-194.

Pasachnik, S.A., J.J. Shew, J.H. Townsend and R. Powell. 2002. *Iguana delicatissima*. Activity. Herpetological Review 33: 51–52.

Pasachnik, S.A., M. Breuil and R. Powell. 2006. *Iguana delicatissima*. Catalogue of American Amphibians and Reptiles No. 811: 1–14.

Powell, R. 2004. Lesser Antillean iguanas, Iguana delicatissima and I. iguana. Iguana 11: 37.

Powell, R. 2004. Conservation of iguanas (Iguana delicatissima and I. iguana) in the Lesser Antilles. Iguana 11: 239-246.

Reichling, S. 1995. Conservation status of the Lesser Antillean iguana (Iguana delicatissima). Reptiles Magazine 2 (6): 40-50.

Schardt, M. 1998. Freilanduntersuchungen zur Lebensweise und Ökologie von *Iguana iguana* (Linnaeus, 1758) auf der Karibikinsel Terre de Haute, mit einer Bemerkung zum sympatrischen Vorkommen mit *Iguana delicatissima* Laurenti, 1768. Sauria 20 (3): 15-21.

Schardt, M. 2003. Morphologie und Färbung des Karibischen Grünen Leguans (Iguana delicatissima). Reptilia 8: 47-49.

Wiens, J.J., and B.D. Hollingsworth 2000. War of the iguanas: conflicting molecular and morphological phylogenies and longbranch attraction in iguanid lizards. Systematic Biology 49: 143–159.

Wijffels, L.C.M. 1976. De Antillenleguaan. Lacerta 34: 135-136.

4.1.15. Grand Cayman Anole Anolis conspersus

Subspecies. Two subspecies have been described: *Anolis conspersus conspersus*, which occurs on the western half of Grand Cayman island, and *Anolis conspersus lewisi*, found on the eastern half of Grand Cayman.

Wordwide Distribution. Endemic to the Cayman Islands.

Distribution in the UK Overseas Territories and Dependencies. Cayman Islands, where this species is only found on Grand Cayman.

Conservation Status. Not listed on the IUCN Red List or any CITES appendices. This species appears to be declining on Grand Cayman as result of habitat loss plus competitive displacement following the introduction of brown anoles *Anolis sagrei* from Florida.

Current Conservation Action. No specific conservation actions known.

Recommendations. A distribution survey and population status assessment of this species on Grand Cayman is urgently needed.

References (also see general references for the Cayman Islands)

Avery, R.A. 1988. Observations on habitat utilization by the lizard *Anolis conspersus* on the island of Grand Cayman, West Indies. Amphibia-Reptilia 9: 417-420.

Bursey, C.R. and S.R. Goldberg. 1995. *Spauligodon caymanensis sp. n.* (Nematoda: Pharyngodonidae) from *Anolis conspersus* (Sauria: Polychrotidae) from Grand Cayman Island, British West Indies. Journal of the Helminthological Society of Washington 62: 183-187.

Echternacht, A.C., G.P. Gerber and F.J. Burton. 2000. *Anolis conspersus* (Grand Cayman blue-throated anole). Nectivory. Herpetological Review 31: 173.

Garman, S. 1887. On the reptiles and batrachians of Grand Cayman. Proc. Amer. Philos. Soc. 24: 273-277.

Grant, C. 1940. The herpetology of Jamaica II. The reptiles. Bulletin of the Institute of Jamaica, Science Series 1: 61-148.

Grant, C. 1941. The herpetology of the Cayman Islands. Bulletin of the Institute of Jamaica, Science Series 2: 1-56.

Jackman, T.R., D.J. Irschick, K. de Queiroz, J. Losos and A. Larson. 2002. Molecular phylogenetic perspective on evolution of lizards of the *Anolis grahami* series. Journal of Experimental Zoology: Molecular and Developmental Evolution 294: 1-16.

Macedonia, J.M. 2001. Headbob display analysis of the Grand Cayman anole, *Anolis conspersus*. Journal of Herpetology 35: 300-310.

Poe, S. 2004. Phylogeny of anoles. Herpetological Monographs 18: 37-89.

Schoener, T.W. 1967. The ecological significance of sexual dimorphism in size in the lizard *Anolis conspersus*. Science 155: 474-476.

4.1.16. Carrot Rock Anole Anolis ernestwilliamsii

Subspecies. None described.

Wordwide Distribution. Endemic to the British Virgin Islands.

Distribution in the UK Overseas Territories and Dependencies. British Virgin Islands, where the entire world range of this species restricted to the 1.2 ha island of Carrot Rock .

Conservation Status. Not listed on the IUCN Red List or any CITES appendices. Estimated to occur at a population density of about 2 - 4 lizards per 100^2 . The world population was estimated to be around 2,000 - 3,000 animals in the early 1980s (Lazell 1983). It is not known how the status has changed since then.

Current Conservation Action. No specific conservation actions known.

Recommendations. An updated population status assessment of this species is required. Consideration should be given to maintaining a captive population for "insurance" purposes.

References (also see general references for the British Virgin Islands)Amphibian and Reptile Conservation79

Brandley, M.C. and K. de Queiroz. 2004. Phylogeny, ecomorphological evolution, and historical biogeography of the *Anolis cristatellus* series. Herpetological Monographs 18: 90-126.

Cooper, W.E., Jr. 2005. Duration of movement as a lizard foraging movement variable. Herpetologica 61: 363-372.

Lazell, J. D., Jr. 1983. Biogeography of the herpetofauna of the British Virgin Islands, with description of a new anole (Sauria: Iguanidae). Pp. 99-117 in: A.G. J. Rhodin and K. Miyata (Eds.). Advances in Herpetology and Evolutionary Biology. Essays in Honor of Ernest E. Williams. Mus. Comp. Zool., Harvard Univ., Cambridge, Massachusetts.

Poe, S. 2004. Phylogeny of anoles. Herpetological Monographs 18: 37-89.

4.1.17. Sombrero Ameiva Ameiva corvina

Subspecies. None described.

Wordwide Distribution. Endemic to Anguilla.

Distribution in the UK Overseas Territories and Dependencies. Anguilla, where it is confined to the 36.6 ha Sombrero Island.

Conservation Status. Not listed on the IUCN Red List or any CITES appendices. However, this species meets IUCN criteria for listing as Critically Endangered on the Red List. The entire environment of Sombrero has been drastically modified by past phosphate mining activities in the 1800s. While the Sombrero ameiva has survived such habitat alterations, these changes appear to have made this species more vulnerable to stochastic events such as hurricanes, as evidenced by the dramatic population decline caused by Hurricane Luis in 1995.

Current Conservation Action. This species is monitored but no other specific conservation actions are known.

Recommendations. Regular population status assessments of this species are required. Any further habitat alterations should be prevented and consideration should be given to maintaining a captive population for "insurance" purposes.

References (also see general references for Anguilla)

Barbour, T. and G.K. Noble. 1915. A revision of the lizards of the genus Ameiva. Bull. Mus. Comp. Zool. 59: 417-479.

Baskin, J.N. and E.E. Williams. 1966. The Lesser Antillean ameiva. Stud. Fauna Curaçao and Carib. Is. 89: 143-176.

Censky, E. J. and D. R. Paulson. 1992. Revision of the *Ameiva* (Reptilia: Teiidae) of the Anguilla Bank, West Indies. Ann. Carnegie Mus. 61: 177-195.

Cope, E.D. 1861. On the reptilia of Sombrero and Bermuda. Proc. Acad. Nat. Sci. Philadelphia 13: 312-314.

Hower, L.M., and S. Blair Hedges. 2003. Molecular phylogeny and biogeography of West Indian teiid lizards of the genus *Ameiva*. Caribbean Journal of Science 39: 298-306.

Lazell, J.D., Jr. 1964. The reptiles of Sombrero, West Indies. Copeia 1964: 716-718.

Shew, J.J., E.J. Censky and R. Powell. 2002. Ameiva corvina. Catalogue of American Amphibians and Reptiles No. 747: 1-2.

White, A.M., R. Powell and E.J. Censky. 2002. On the thermal biology of *Ameiva* (Teiidae) from the Anguilla Bank, West Indies: does melanism matter? Amphibia-Reptilia 23: 517–523.

4.1.18. Montserrat Ameiva Ameiva pluvianotata

Subspecies. Two subspecies have been described, *Ameiva pluvianotata pluvianotata*, which is endemic to Montserrat, and *Ameiva pluvianotata atrata*, found on the island of Redonda to the north west of Montserrat.

Wordwide Distribution. The islands of Montserrat and Redonda in the Lesser Antilles.

Distribution in the UK Overseas Territories and Dependencies. Montserrat only, where it formerly occurred over most of the island.

Conservation Status. Not listed on the IUCN Red List or any CITES appendices. A large proportion of the former habitat of this species in the south of Montserrat has been completely destroyed by the eruptions of the Soufrière Hills volcano. While the

Montserrat ameiva remains abundant in some of the remaining areas of suitable habitat on the island, it has declined dramatically in others, possibly as a result of the peripheral effects of volcanic eruptions.

Current Conservation Action. The Montserrat Government, Montserrat National Trust and the Durrell Wildlife Conservation Trust have carried out a detailed biodiversity assessment of the Centre Hills region of the island, which included observations on this species. No other specific conservation actions are known.

Recommendations. A distribution survey and population status assessment of this species in all remaining areas of suitable habitat throughout Montserrat is urgently needed.

References (also see general references for Montserrat)

Baskin, J.N. and E.E. Williams. 1966. The Lesser Antillean ameiva. Stud. Fauna Curaçao and Carib. Is. 89: 143-176.

Bauer, A.M. and R. Günther 1994. An annotated type catalogue of the teiid and microteiid lizards in the Zoological Museum, Berlin (Reptilia: Squamata: Teiidae and Gymnophthalmidae). Mitt. Zool. Mus. Berlin 70: 267-280.

Daltry, J.C. 2007. An introduction to the herpetofauna of Antigua, Barbuda and Redonda, with some conservation recommendations. Applied Herpetology 4: 97-130.

Garman, S. 1887. On the West Indian Teiidae in the Museum of Comparative Zoology. Bulletin of the Essex Institute 19: 1-12.

Hower, L.M., and S. Blair Hedges. 2003. Molecular phylogeny and biogeography of West Indian teiid lizards of the genus *Ameiva*. Caribbean Journal of Science 39: 298-306.

Young, R.P. and A. Ogrodowczyk. 2008. Amphibians and reptiles of the Centre Hills. Pp. 90-99 in: Young, R.P. (Ed.). A biodiversity assessment of the Centre Hills, Montserrat. Durrell Conservation Monograph No.1. Durrell Wildlife Conservation Trust, Jersey, Channel Islands.

4.1.19. Carrot Rock Skink Mabuya macleani

Subspecies. None described.

Wordwide Distribution. Endemic to the British Virgin Islands

Distribution in the UK Overseas Territories and Dependencies. British Virgin Islands, where the entire world range of this species restricted to the 1.2 ha island of Carrot Rock.

Conservation Status. Not listed on the IUCN Red List or any CITES appendices. Current population status unknown.

Current Conservation Action. No specific conservation actions known.

Recommendations. An updated population status assessment of this species is required. Consideration should be given to maintaining a captive population for "insurance" purposes.

References (also see general references for the British Virgin Islands)

Carey, W.M. 1972. The Herpetology of Anegada, British Virgin Islands. Carib. J. Sci.12(1/2): 79-89.

Mausfeld, P., A. Schmitz, W. Böhme, B. Misof, D. Vrcibradic and C.F.D. Rocha. 2002. Phylogenetic affinities of *Mabuya atlantica* Schmidt, 1945, endemic to the Atlantic Ocean archipelago of Fernando de Noronha (Brazil): necessity of partitioning the genus *Mabuya* Fitzinger, 1826 (Scincidae: Lygosominae). Zool. Anz. 241: 281–293.

Mayer, G.C. and J. Lazell. 2000. A new species of *Mabuya* (Sauria: Scincidae) from the British Virgin Islands. Proc. Biol. Soc. Washington 113: 871-886.

4.1.20. Bermuda Skink Plestiodon longrostris

Subspecies. None described.

Taxonomic Notes. This species was formerly known as Eumeces longirostris.

Wordwide Distribution. Endemic to Bermuda, where it is the sole native species of terrestrial vertebrate.

Distribution in the UK Overseas Territories and Dependencies. Only known from Bermuda.

Conservation Status. Listed as Critically Endangered on the IUCN Red List. Not CITES listed. Has suffered a very severe decline. The Bermuda skink was once widespread in a variety of habitat types across most of the islands of Bermuda. However, it is now restricted to fewer than 30 very small and isolated sites, mostly in coastal areas of the main islands and on small offshore islands, which even when counted together still mean that the total world range of this species is now less than 200 ha. The last remaining viable population appears to be the one on Southampton Island, which numbers about 240 adult lizards. Although skinks are present in various protected areas, certain threats are still thought to be a problem, especially predation by and competition with introduced species and the loss of habitat to invasive plants. Continued development is also a threat to some subpopulations.

Current Conservation Action. Extensive ecological research and distribution surveys have now been carried out, captive breeding has occurred (although there is no co-ordinated release programme as yet), education efforts have taken place in recent years and a Species Recovery Plan has been recently produced.

Recommendations. Despite recent conservation actions, the situation for this species is becoming critical. Regular and more extensive monitoring is required along with appropriate habitat management (especially the removal of invasive *Casuarina*) and control of non-native competitors and predators. A captive breeding programme should be established with a view to future restocking of certain areas (assuming appropriate criteria are met) or simply as an "insurance policy". It would be useful to conduct additional research on this species, particularly its habitat requirements and the effects of management, and also to assess the effectiveness of habitat protection and planning controls.

References (also see general references for Bermuda)

Barnes, J. and F. Eddy. 1986. Captive reproduction of the Bermuda rock lizard or skink *Eumeces longirostris*. Animal Keepers Forum 14: 239-240.

Conyers, J. & Wingate, D. 1996. *Eumeces longirostris*. In: IUCN. 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/8218</u>

Coughlin, J.P., L. Kitson, E. Dillane, J. Davenport and T.F. Cross. 2004. Characterization of six microsatellite loci in the Bermuda skink (*Eumeces longirostris*). Molecular Ecology Notes 4: 678-679.

Davenport, J., J. Hills, A. Glasspool and J. Ward. 1997. The distribution and population size of the Bermudian rock lizard (skink) *Eumeces longirostris* Cope (1861) on the islands of Nonsuch and Southampton, Bermuda. Unpublished report, University Marine Biological Station, Millport, Maine.

Davenport, J., J. Hills, A. Glasspool, and J. Ward. 2001a. A study of the populations of the endangered endemic Bermudian skink, *Eumeces longirostris*, on the islands of Nonsuch and Southampton, Bermuda. Oryx 35: 216-229.

Davenport, J., J. Hills, A. Glasspool and J. Ward. 2001b. Threats to the critically endangered endemic Bermudian skink *Eumeces longirostris*. Oryx 35: 332-339.

Edgar, P., L. Kitson and A. Glasspool. 2006. Recovery plan for the Bermuda skink, *Eumeces longrostris*. Department of Conservation Services, Ministry of the Environment, Bermuda.

Griffith, H. and D.B. Wingate. 1994. *Eumeces longirostris* (Bermuda rock lizard or skink). Predation. Herpetological Review 25: 26.

Griffith, H., A. Ngo and R.W. Murphy. 2000. A cladistic evaluation of the cosmopolitan genus *Eumeces* Wiegmann (Reptilia, Squamata, Scincidae). Russ. J. Herpetol. 7: 1-16.

Losos, J.B. 1996. Dynamics of range expansion by three introduced species of *Anolis* lizards on Bermuda. Journal of Herpetology 30: 204-210.

Raine, A. 1998. A study of the morphological differentiation, fluctuating asymmetry and the threats facing isolated populations of the critically endangered Bermuda rock lizard (*Eumeces longirostris*). Unpublished MSc. Dissertation, University College, London.

Richmond, J.Q. 2006. Evolutionary basis of parallelism in North American scincid lizards. Evolution and Development 8: 477–490.

Samuel, D. 1975. Feeding Habits of the Kiskadee Flycatcher. Bermuda Biological Station Newsletter 4: 3-4.

Schmitz, A., P. Mausfeld and D. Embert. 2004. Molecular studies on the genus *Eumeces* Wiegmann, 1834: phylogenetic relationships and taxonomic implications. Hamadryad 28: 73-89.

Taylor, E.H. 1936. A taxonomic study of the cosmopolitan lizards of the genus *Eumeces* with an account of the distribution and relationship of its species. Univ. Kansas Sci. Bull. 23: 1-643.

Wingate, R. 1998. A comparison of demography and morphological variation in two insular populations of the Bermuda rock lizard (*Eumeces longirostris*). Unpublished B.Sc. dissertation. University of Swansea, Wales.

4.1.21. Montserrat Galliwasp Diploglossus montisserrati

Subspecies. None described.

Wordwide Distribution. Endemic to Montserrat.

Distribution in the UK Overseas Territories and Dependencies. Montserrat only.

Conservation Status. Listed as Critically Endangered on the IUCN Red List. Not CITES listed. Until recently, *Diploglossus montisserrati* was only known from a single specimen collected in the Woodlands area of the Centre Hills in the 1960s. After the initial eruptions of the Soufrière Hills volcano in 1995, it was thought this species was potentially extinct. However, another specimen was observed in the same area in 1998, followed by a third sighting in 2004 and two more in 2006. All six confirmed records of this species are concentrated in the same very small area (< 1km²) of unprotected moist forest, which has led to the assumption that *Diploglossus montisserrati* is very restricted in range and is therefore extremely rare. However, this assumption needs testing with more systematic surveys (Young & Ogrodowczyk 2008)

Current Conservation Action. The Montserrat Government, Montserrat National Trust and the Durrell Wildlife Conservation Trust have carried out a detailed biodiversity assessment of the Centre Hills region of the island, which included two out of the six confirmed observations on this species.

Recommendations. A detailed distribution survey and population status assessment of this species, using appropriate survey methodology, in all remaining areas of suitable habitat throughout Montserrat is urgently required. A Species Action Plan needs to be developed and implemented, including a programme of ongoing monitoring, research, habitat protection and invasive mammal control. Given the highly unpredictable nature of life next to an active volcano, consideration should also be given to establishing a captive breeding group of this species.

References (also see general references for Montserrat)

Campbell, J A. and R.J.L. Camarillo. 1994. A new lizard of the genus *Diploglossus* (Anguidae: Diploglossinae) from Mexico, with a review of the Mexican and northern Central American species. Herpetologica 50: 193-209.

Day, M. 1996. *Diploglossus montisserrati*. In: IUCN. 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/6638</u>

Garman, S. 1887. On West Indian Geckonidae and Anguidae. Bull. Essex Inst. 19: 17-24.

Ogrodowczyk, A., P. Murrain, L. Martin and R.P. Young. 2007. Recent observations of the Montserrat galliwasp (*Diploglossus montisserrati*). British Herpetological Society Bulletin 98: 9-11.

Savage, J.M. and K.R. Lips. 1993. A review of the status and biogeography of the lizard genera *Celestus* and *Diploglossus* (Squamata: Anguidae), with description of two new species from Costa Rica. Rev. Biol. Trop. 41: 817-842.

Underwood, G. 1964. An anguid lizard from the Leeward Islands. Breviora, Mus. Comp. Zool. 200: 1-10.

Young, R.P. and A. Ogrodowczyk. 2008. Amphibians and reptiles of the Centre Hills. Pp. 90-99 in: Young, R.P. (Ed.). A biodiversity assessment of the Centre Hills, Montserrat. Durrell Conservation Monograph No.1. Durrell Wildlife Conservation Trust, Jersey, Channel Islands.

4.1.22. Turks Island Boa Epicrates chrysogaster

Subspecies. Three subspecies have been described. The nominate subspecies *Epicrates chrysogaster chrysogaster* occurs in, and is endemic to, the Turks and Caicos Islands, while the other two, *E.c. relicquus* and *E.c. schwartzi* are found in the Bahamas.

Wordwide Distribution. Turks and Caicos Islands and the Bahamas Islands.

Distribution in the UK Overseas Territories and Dependencies. Turks and Caicos Islands, where this form is known from both island groups: Turks Islands – Grand Turk; Caicos Islands – North Caicos, Middle Caicos, Long Cay, Ambergris Cay and Little Ambergris Cay. The type locality is believed to be Grand Turk Island, although this snake has not been reported here since.

Conservation Status. Not listed on the IUCN Red List. Listed on CITES Appendix II. The current status of *Epicrates*chrysogaster chrysogaster is unknown, although in common with most members of the genus this snake is probably declining.Amphibian and Reptile Conservation83July 2010

Current Conservation Action. No specific conservation actions known.

Recommendations. A distribution survey and population status assessment of this species in all remaining areas of suitable habitat throughout the Turks and Caicos Islands is urgently needed.

References (also see general references for the Turks and Caicos Islands)

Barbour, T. and B. Shreve. 1935. Concerning some Bahamian reptiles, with notes on the fauna. Proc. Boston Soc. Nat. Hist. 40: 347-365.

Buden, D.W. 1975. Notes on *Epicrates chrysogaster* (Serpentes: Boidae) of the southern Bahamas, with the description of a new subspecies. Herpetologica 31: 167-177.

Bulian, J. 1995. Probleme und Erfolge bei der haltung und zucht von *Epicrates chrysogaster chrysogaster* Cope, 1871. Sauria 17: 3-10.

Cope, E.D. 1871. Eighth contribution to the herpetology of tropical America. Proc. Amer. Philos. Soc. 11 (1870): 553-559.

Mitchell, N.C. 2000. Geographic distribution. *Epicrates chrysogaster chrysogaster*. Herpetological Review 31: 255.

Sheplan, B.R. and A. Schwartz. 1974. Hispaniolan boas of the genus *Epicrates* and their Antillean relationships. Ann. Carnegie Mus. Nat. Hist. 45: 57-143.

Tolson, P.J. 1982. Comparative reproductive behaviour of four species of snakes in the boid genus *Epicrates*. Pp. 87-97 in: Proc. 4th Reptile Symp. Captive Propagation and Husbandry, Zool. Consort., Inc., Thurmont, Maryland.

Tolson, P.J. 1987. Phylogenetics of the boid snake genus *Epicrates* and Caribbean vicariance theory. Occ. Pap. Mus. Zool. Univ. Michigan 715: 1-68.

Tolson, P.J. and R.W. Henderson. 1993. The Natural History of West Indian Boas. R&A Publishing Ltd., Taunton, Somerset.

4.1.23. Mona Island Boa Epicrates monensis

Subspecies. Two subspecies are recognised: *Epicrates monensis monensis* from Mona Island, west of Puerto Rico, and *Epicrates monensis granti* from the U.S. and British Virgin Islands.

Wordwide Distribution. Mona Island, U.S. Virgin Islands, British Virgin Islands.

Distribution in the UK Overseas Territories and Dependencies. British Virgin Islands, where this species is known from Tortola and Guana island.

Conservation Status. Not listed on the IUCN Red List. Listed on CITES Appendix II. The current status of *Epicrates monensis granti* is unknown, although in common with most members of the genus this snake is probably declining.

Current Conservation Action. No specific conservation actions known.

Recommendations. A distribution survey and population status assessment of this species in all remaining areas of suitable habitat throughout the British Virgin Islands is urgently needed.

Recommendations.

References (also see general references for the British Virgin Islands)

Chandler, C.R. and P.J. Tolson. 1990. Habitat use by a boid snake, *Epicrates monensis*, and its anoline prey, *Anolis cristatellus*. Journal of Herpetology 24: 151-157.

Grant, C. 1932. Notes on the boas of Puerto Rico and Mona. J. Dept. Agr. Porto Rico. 16: 327-329.

Nellis, D.W., R.L. Norton and W.P. MacLean. 1983. On the biogeography of the Virgin Island boa, *Epicrates monensis granti*. Journal of Herpetology 17: 413-417.

Sheplan, B.R. and A. Schwartz. 1974. Hispaniolan boas of the genus *Epicrates* and their Antillean relationships. Ann. Carnegie Mus. Nat. Hist. 45: 57-143.

Stull, O.G. 1933. Two new subspecies of the family Boidae. Occasional Papers, Museum of Zoology, University of Michigan 267: 1-4.

Tolson, P.J. 1987. Phylogenetics of the boid snake genus Epicrates and Caribbean vicariance theory. Occ. Pap. Mus. Zool. Univ. Michigan 715: 1-68.

Tolson, P.J. 1988. Critical habitat, predator pressures, and the management of Epicrates monensis (Serpentes: Boidae) on the Puerto Rico Bank: a multivariate analysis. Pp. 228-238 in: Management of amphibians, reptiles and small mammals in North America. Gen. Tech. Rept. RM-166, U.S. Dept. of Agriculture.

Tolson, P.J. and R.W. Henderson. 1993. The Natural History of West Indian Boas. R&A Publishing Ltd., Taunton, Somerset.

Tolson, P.J. 1989. Breeding the Virgin Islands boa Epicrates monensis granti at the Toledo Zoological Gardens. International Zoo Yearbook 28: 163-167.

4.1.24. Cayman Island Dwarf Boas Tropidophis species

Grand Cayman Dwarf Boa Tropidophis caymanensis Little Cayman Dwarf Boa Tropidophis parkeri Cayman Brac Dwarf Boa Tropidophis schwartzi

Subspecies. None described for the taxonomic arrangement used here.

Taxonomic Notes. The three dwarf boas from the Cayman Islands have, until recently, been treated as a single species with three subspecies: Tropidophis caymanensis caymanensis from Grand Cayman, T. c. parkeri from Little Cayman and T.c. schwartzi from Cayman Brac.

Wordwide Distribution. This species group is endemic to the Cayman Islands - all three are treated here together.

Distribution in the UK Overseas Territories and Dependencies. Cayman Islands only, where Tropidophis caymanensis is endemic to Grand Cayman, Tropidophis parkeri to Little Cayman and Tropidophis schwartzi to Cayman Brac.

Conservation Status. Not listed on the IUCN Red List. These species are listed on CITES Appendix II as Tropidophis caymanensis. Current status unknown but due to habitat loss and introduced species, all three are probably declining.

Current Conservation Action. No specific conservation actions known.

Recommendations. Distribution surveys and population status assessments of all three species in all remaining areas of suitable habitat throughout the Cayman Islands are urgently needed.

References (also see general references for the Cayman Islands)

Battersby, J.C. 1938. Some snakes of the genus Tropidophis. Ann. Mag. Nat. Hist. (11) 1: 557-560.

Burger, R.M. 1997. Natural history and husbandry of the Caribbean dwarf boas of the genus Tropidophis. Vivarium 8: 6-11.

Echternacht, A.C. 2004. Species profile: ground boas (Tropidophis) of the Cayman Islands. Iguana 11: 151-152.

Hedges, S.B. 2002. Morphological variation and the definition of species in the snake genus Tropidophis (Serpentes, Tropidophiidae). Bull. Nat. Hist. Mus. London (Zool.) 68: 83-90.

Hedges, S.B. and O.H. Garrido. 1992. A new species of Tropidophis from Cuba (Serpentes: Tropidophiidae). Copeia 1992: 820-825.

Hedges, S.B., A.R. Estrada and L.M. Diaz. 1999. New snake (Tropidophis) from western Cuba. Copeia 1999: 376-381.

Stull, O.G. 1928. A revision of the genus Tropidophis. Occasional Papers of the Museum of Zoology, University of Michigan 195: 1-49.

Thomas, R. 1963. Cayman Islands Tropidophis (Reptilia, Serpentes). Breviora 195: 1-8.

Zaher, H. 1994. Les Tropidopheoidea (Serpentes: Alethinophidia) sont-ils réellement monophylétiques? Arguments en faveur de leur polyphylétisme. Comptes Rendus de l'Academie Des Sciences Serie III, Sciences de La Vie, 317: 471-478.

4.1.25. Caicos Dwarf Boa Tropidophis greenwayi

Subspecies. Two subspecies, both from the Caicos Islands, have been described: Tropidophis greenwayi greenwayi and Tropidophis greenwayi lanthanus.

Wordwide Distribution. Endemic to the Turks and Caicos Islands.

Distribution in the UK Overseas Territories and Dependencies. Turks and Caicos Islands, where is it only known from six islands in the Caicos group: South Caicos, Middleton and Long Cays (off South Caicos), North Caicos, Middle Caicos and Ambergris Cay. This species has not been recorded on Ambergris Cay since it was first collected there in 1936. Its occurrence on the island of Providenciales is uncertain.

Conservation Status. Not listed on the IUCN Red List. Listed on CITES Appendix II. Current status unknown but due to habitat loss and introduced species, is probably declining.

Current Conservation Action. No specific conservation actions known.

Recommendations. A distribution survey and population status assessment of this species in all remaining areas of suitable habitat throughout the Turks and Caicos Islands is urgently needed.

References (also see general references for the Turks and Caicos Islands)

Barbour, T. and B. Shreve. 1936. New races of Tropidophis and of Ameiva from the Bahamas. Proc. New England Zool. Club 40: 347-365.

Burger, R.M. 1997. Miscellaneous notes on the Caicos Islands dwarf boa, Tropidophis greenwayi: reproduction, locomotion and maximum size. Bulletin of the Chicago Herpetological Society 32: 26-27.

Burger, R.M. 1997. Natural history and husbandry of the Caribbean dwarf boas of the genus Tropidophis. Vivarium 8: 6-11.

Burger, R.M. 2004. Dwarf boas of the Caribbean. Reptilia 35: 43-47.

Hedges, S.B. 2002. Morphological variation and the definition of species in the snake genus Tropidophis (Serpentes, Tropidophiidae). Bull. Nat. Hist. Mus. London (Zool.) 68: 83-90.

Iverson, J.B. 1986. Notes on the natural history of the Caicos Islands dwarf boa, Tropidophis greenwayi. Caribbean Journal of Science 22: 191-198.

Schwartz, A. 1963. A new subspecies of Tropidophis greenwayi from the Caicos Bank. Breviora 194: 1-6.

Schwartz, A. and R.J. Marsh. 1960. A review of the pardalis-maculatus complex of the boid genus Tropidophis of the West Indies. Bull. Mus. Comp. Zool. 123: 49-84.

Stull, O.G. 1928. A revision of the genus Tropidophis. Occasional Papers of the Museum of Zoology, University of Michigan 195: 1-49.

Zaher, H. 1994. Les Tropidopheoidea (Serpentes: Alethinophidia) sont-ils réellement monophylétiques? Arguments en faveur de leur polyphylétisme. Comptes Rendus de l'Academie Des Sciences Serie III, Sciences de La Vie, 317: 471-478.

4.1.26. Cyprus Whip Snake Dolichophis cypriensis

Subspecies.

Taxonomic Notes.

Wordwide Distribution. Endemic to Cyprus.

Distribution in the UK Overseas Territories and Dependencies. Cyprus Sovereign Base Areas, where the presence of this species has been confirmed by site personnel (Ian Davidson-Watts, pers. com., March 2009).

Conservation Status. Listed as Endangered on the IUCN Red List. Not listed on CITES appendices. The status on Cyprus as a whole is unknown. Furthermore, no herpetological surveys of the Cyprus Sovereign Base Areas have been carried out to date so the current distribution and status of this species in both Akrotiri and Dhelekia is also unknown.

Current Conservation Action. No specific conservation actions known.

Recommendations. A initial distribution survey of *Dolichophis cypriensis* in the Cyprus Sovereign Base Areas is urgently required, ideally as part of a wider herpetological survey. This should be followed if necessary by a more detailed population status and habitat assessment for this species in the Sovereign Base Areas.

References (also see general references for the Cyprus Sovereign Base Areas) Amphibian and Reptile Conservation 86

Böhme, W. and H. Wiedl. 1994. Status and zoogeography of the herpetofauna of Cyprus with taxonomic and natural history notes on selected species (Genera *Rana, Coluber, Natrix, Vipera*). Amphibia and Reptilia. Zool. Mid. East 10: 31-52.

Nagy, Z.T., R. Lawson, U. Joger and M. Wink. 2004a. Molecular systematics of racers, whipsnakes and relatives (Reptilia: Colubridae) using mitochondrial and nuclear markers. Journal of Zoological Systematics and Evolutionary Research 42: 223-233.

Nagy, Z.T., J.F. Schmidtler, U. Joger and M. Wink. 2004b. Systematik der Zwergnattern (Reptilia: Colubridae: *Eirenis*) und verwandter Gruppen anhand von DNA-Sequenzen und morphologischen Daten. Salamandra 39: 149-168.

Schätti, B. 1985. Eine neue Zornnatter aus Zypern, *Coluber cypriensis* n. sp. (Reptilia, Serpentes, Colubridae). Revue Suisse de Zoologie 92: 471-477.

Schätti, B. 1986. Morphological evidence for a partition of the genus *Coluber* (Reptilia: Serpentes). Pp. 235-238 in: Z. Rocek (Ed.). Studies in Herpetology. Proceedings of the Third Ordinary General Meeting of the Societas Europaea Herpetologica, Charles University, Prague.

Schätti, B. and L.D. Wilson. 1986. *Coluber* Linnaeus. Holarctic racers. Catalogue of American Amphibians and Reptiles No. 399: 1-4.

Utiger, U., and B. Schätti. 2004. Morphology and phylogenetic relationships of the Cyprus racer, *Hierophis cypriensis*, and the systematic status of *Coluber gemonensis gyarosensis* Mertens (Reptilia: Squamata: Colubrinae). Rev. Suisse de Zoologie 111: 225-238.

Utiger, U., B. Schätti and N. Helfenberger. 2005. The oriental colubrine genus *Coelognathus* Fitzinger, 1843 and classification of Old and New World racers and ratsnakes (Reptilia, Squamata, Colubridae, Colubrinae. Russ. J. Herpetol. 12: 39-60.

4.2. Priority Species of Local Conservation Concern

4.2.1. Common Toad Bufo bufo



The common toad Bufo bufo has suffered recent declines on Jersey (Photograph: Paul Edgar)

Subspecies. Various subspecies have been described from across the huge range of this species, although the taxonomic situation remains unresolved for some. Two of these occur in British territories: *Bufo bufo bufo in the Bailiwick of Jersey and Bufo bufo spinosus* in Gibraltar.

Wordwide Distribution. The common toad occurs from the UK and Iberia eastwards to Lake Baikal in Siberia, and from within the arctic circle in Scandinavia south to the Balkans, Turkey and parts of North Africa.

Distribution in the UK Overseas Territories and Dependencies. Occurs naturally in the Bailiwick of Jersey. This species has also been re-introduced to Gibraltar, where it would have once been indigenous, although the origin of these animals is unknown.

Conservation Status. Listed as Least Concern on the IUCN Red List. Not CITES listed. Although widespread in Europe, this species is included here since populations on Jersey have undergone a serious decline in recent years.

Current Conservation Action. Extensive research has recently been carried on this species on Jersey by the Durrell Institute of Conservation and Ecology at the University of Kent, England, supported by the States of Jersey.

Recommendations. Implement the findings of the recent research project.

References (also see general references for the Bailiwick of Jersey)

Beja, P., S. Kuzmin, T. Papenfuss, M. Stöck, M. Denoël, M. Sparreboom, I. Ugurtas, V. Ishchenko, B. Tuniyev, S. Anderson, T. Beebee, F. Andreone, P. Nyström, B. Anthony, B. Schmidt Agnies. 2006. Bufo bufo. In: IUCN. 2008. 2008 IUCN Red List of Threatened Species. Online at: http://www.iucnredlist.org/details/54596

Cooke, A.S. 1972. Indications of recent changes in status in the British Isles of the frog (Rana temporaria) and the toad (Bufo bufo). Journal of Zoology, London 167: 161-178.

Cooke, A.S. 1975. Spawn site selection and colony size of the frog (Rana temporaria) and the toad (Bufo bufo). Journal of Zoology, London 175: 29-38.

Cooke, A.S. 1995. Road mortality of common toads (Bufo bufo) near a breeding site, 1974-1994. Amphibia-Reptilia 16: 87-90.

Cooke, A.S. and R.S. Oldham. 1995. Establishment of populations of the common frog, Rana temporaria, and common toad, Bufo bufo, in a newly created reserve following translocation. Herpetological Journal 5: 173-180.

Cooke, A.S. and T.H. Sparks. 2004. Population declines of common toads (Bufo bufo): the contribution of road traffic and monitoring value of casualty counts. British Herpetological Society Bulletin 88: 13-26.

Ewert, J.-P. and R. Traud. 1979. Releasing stimuli for antipredator behaviour in the common toad Bufo bufo (L.). Behaviour 68: 169-180.

Grist, E.P.M. 1994. Climatic factors affecting the activity of natteriacks (Bufo calamita) and common toads (Bufo bufo) outside the breeding season: Mathias revisited. Herpetological Journal 4: 126-131.

Hemelaar, A. 1988. Age, growth and other population characteristics of Bufo bufo from different latitudes and altitudes. Journal Of Herpetology 22: 369-388.

Kutrup, B., N. Yilmaz, S. Canakci, A.O. Belduz and S. Doglio. 2006. Intraspecific variation of Bufo bufo, based on 16S Ribosomal RNA sequences. Amphibia- Reptilia 27: 268-273.

Moore, H.J. 1954. Some observations on the migration of the toad (Bufo bufo bufo). British Journal of Herpetology 1: 194-224. Schmidt, B.R. and B.R. Anholt. 1999. Analysis of survival probabilities of female common toads, Bufo bufo. Amphibia-Reptilia 20: 97-108.

Wisniewski, P.J., L.M. Paull and F.M. Slater. 1981. The effects of temperature on the breeding migration and spawning of the common toad (Bufo bufo). British Journal of Herpetology 6: 119-121.

4.2.2. Natterjack Toad Epidalea calamita

Subspecies. None described.

Taxonomic Notes. Formerly known as Bufo calamita.

Wordwide Distribution. Occurs in 17 countries in Europe, ranging from the Iberian Peninsula in the south west to Estonia in central northern Europe.

Distribution in the UK Overseas Territories and Dependencies. Gibraltar only.

Conservation Status. Listed as Least Concern on the IUCN Red List. Not CITES listed. The status of this species in Gibraltar is unclear but there is likely to be no suitable habitat remaining and it is probably now extinct in the territory. Amphibian and Reptile Conservation July 2010 88

Current Conservation Action. No specific conservation actions known in Gibraltar.

Recommendations. Determine the status of this species in Gibraltar.

References (also see general references for Gibraltar)

Beebee, T.J.C. 1983. The Natterjack Toad. Oxford University Press, Oxford.

Beja, P., S. Kuzmin, T. Beebee, M. Denoël, B. Schmidt, D. Tarkhnishvili, N. Ananjeva, N. Orlov, P. Nyström, A. Ogrodowczyk, M. Ogielska, J. Bosch, C. Miaud, M. Tejedo, M. Lizana and I. Mar. 2006. *Epidalea calamita*. In: IUCN. 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/54598</u>

Fleming, L.V., B. Mearns and D. Race. 1996. Long term decline and potential for recovery in a small, isolated population of natterjack toads *Bufo calamita*. Herpetological Journal 6: 119-124.

Grist, E.P.M. 1994. Climatic factors affecting the activity of natterjacks (*Bufo calamita*) and common toads (*Bufo bufo*) outside the breeding season: Mathias revisited. Herpetological Journal 4: 126-131.

Hemmer, H. and K. Kadel. 1971. Untersuchungen zur laichgrosse nebst bemerkungen zur populationsdynamik der Kreuzkrote (*Bufo calamita* Laur.) und der Wechselkrote (*Bufo viridis* Laur.). Zool. Beitr. 17: 327-336.

Heusser, H. 1972. Intra- und interspezifische crowding-effekte bei kaulquappen der Kreuzkrote, *Bufo calamita* Laur. Oecologia 10: 93-98.

Miaud, C., D. Sanuy and J.-N. Avrillier. 2000. Terrestrial movements of the natterjack toad *Bufo calamita* (Amphibia, Anura) in a semi-arid, agricultural landscape. Amphibia-Reptilia 21: 357-369.

Phillips, R.A., D.A. Patterson and P. Shimmings. 2002. Increased use of ponds by breeding natterjack toads, *Bufo calamita*, following management. Herpetological Journal 12: 75-78.

Reques, R. and M. Tejedo. 1995. Negative correlation between length of larval period and metamorphic size in natural populations of natterjack toads (*Bufo calamita*). Journal of Herpetology 29: 311-314.

Seigel, R.A. and C.K. Dodd, Jr. 2001. Translocations of amphibians: proven management method or experimental technique? Conservation Biology 16: 552-554.

Tejedo, M. 1991. Effects of predation by two species of sympatric tadpoles on embryo survival in natterjack toads (*Bufo calamita*). Herpetologica 47: 322-327.

Tejedo, M. 1992. Absence of the trade-off between the size and number of offspring in the natterjack toad (*Bufo calamita*). Oecologia 90: 294-296.

Tejedo, M. 1993. Do male natterjack toads join larger breeding choruses to increase mating success? Copeia 1993: 75-80.

Tejedo, M. and R. Reques. 1992. Effects of egg size and density on metamorphic traits in tadpoles of the natterjack toad (*Bufo calamita*). Journal of Herpetology 26: 146-152.

4.2.3. Agile Frog Rana dalmatina

Subspecies. None described.

Taxonomic Notes. It is likely that the generic name of this species will be changed to Laurasiarana.

Wordwide Distribution. This species has a wide but scattered distribution in Europe and occurs from northern Spain eastwards to the Black Sea and from southern Sweden south to the Balkans.

Distribution in the UK Overseas Territories and Dependencies. The Bailiwick of Jersey only.

Conservation Status. Listed as Least Concern on the IUCN Red List. Not CITES listed. The agile frog population on Jersey has been declining since the early 1900s. It was reduced to seven localities by the 1970s, two by the mid 1980s and today is restricted to a single breeding site, L'Ouaisné Common, in the south west of the island. However, work by the Environment Department of the States of Jersey and the Durell Wildlife Conservation Trust has produced signs of breeding at one other site.

Current Conservation Action. A Species Action Plan has been produced and intensive conservation work, including monitoring, scientific research, habitat management and captive breeding, is now being undertaken by various bodies with the aim of restoring some of the former range on Jersey.

Recommendations. Current conservation efforts require continued funding and support.

References (also see general references for the Bailiwick of Jersey)

Anonymous. 1995a. Rana dalmatina on Jersey. Froglog 14: 3.

Anonymous. 1995b. Agile frog *Rana dalmatina* and other Jersey amphibians. Newsletter of the Minnesota Herpetological Society 15: 3.



L'Ouaisné Common is one of the last breeding sites on Jersey for the agile frog Rana dalmatina (Photograph: Paul Edgar)

Baker, J. and R. Gibson. 1995. The precarious status of *Rana dalmatina* on Jersey. British Herpetological Society Bulletin 54: 34-36.

Bennati, R., M. Bonetti, A. Lavazza and D. Gelmetti. 1994. Skin lesions associated with herpesvirus-like particles in frogs (*Rana dalmatina*). Veterinary Record 135: 625-626.

Cambar, R. and B. Marrot. 1954. Table chronologique du developpement de la grenouille agile (*Rana dalmatina* Bon). Bulletin Biologique de la France et de la Belgique 88: 168-177.

Dubois, A. 1984. Notes sur les grenouilles brunes (groupe de *Rana temporaria* Linné, 1758). III. Un critere meconnu pour distinguer *Rana dalmatina* de *Rana temporaria*. Alytes 3: 117-124.

Heusser, H., M. Lippuner and B. R. Schmidt. 2002. Laichfressen durch Kaulquappen des Springfroschs (*Rana dalmatina*) und syntopes Vorkommen mit andern Anuren-Arten. Zeitschrift für Feldherpetologie 9: 75-87.

Kuzmin, S., T. Papenfuss, M. Sparreboom, I. Ugurtas, D. Tarkhnishvili, S. Anderson, F. Andreone, C. Corti, P. Nyström, B. Schmidt, B. Anthony, A. Ogrodowczyk, M. Ogielska, J. Bosch and M. Tejed. 2004. *Rana dalmatina*. In: IUCN. 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/58584</u>

Riis, N. 1991. A field study of survival, growth, biomass, and temperature dependence of *Rana dalmatina* and *Rana temporaria* larvae. Amphibia-Reptilia 12: 229-243.

4.2.4. Balkan Terrapin Mauremys rivulata

Subspecies. None described.

Taxonomic Notes. Formerly known as Mauremys caspica rivulata.

Wordwide Distribution. The Balkans, Turkey, the Caucasus, much of the Middle East and Cyprus.

Distribution in the UK Overseas Territories and Dependencies. As suitable habitat is present this species is presumed to occur in the Cyprus Sovereign Base Areas, although this has not yet been confirmed.

Conservation Status. Not listed on the IUCN Red List or any CITES appendices. This species is known to be declining on Cyprus as a whole.

Current Conservation Action. No specific conservation actions known.

Recommendations. A initial distribution survey to search for *Mauremys rivulata* in the Cyprus Sovereign Base Areas is urgently required, ideally as part of a wider herpetological survey. If discovered, this should be followed if necessary by a more detailed population status and habitat assessment for this species in the Sovereign Base Areas.

References (also see general references for the Cyprus Sovereign Base Areas)

Auer, M. and E. Taskavak. 2004. Population structures of syntopic *Emys orbicularis* and *Mauremys rivulata* in western Turkey. Biologia 59: 81-84.

Ernst, C.H., R.G.M. Altenberg and R.W. Barbour. 1997. Turtles of the World Online CD-ROM. Online at: <u>http://nlbif.eti.uva.nl/bis/turtles.php?menuentry=inleiding</u>

Feldman, C. R. and J.F. Parham. 2004. Molecular systematics of Old World stripe-necked turtles (Testudines: *Mauremys*). Asiatic Herpetological Research 10: 28-37.

Fritz, U. and T. Wischuf. 1997. Zur Systematik west-asiatisch-südosteuropäischer Bachschildkröten (Gattung *Mauremys*) (Reptilia: Testudines: Bataguridae). Zool. Abh. Staatl. Mus. Tierk. Dresden 49 (13): 223-260.

Fritz, U, D. Ayaz, J. Buschbom, H.G. Kami, L.F. Mazanaeva, A.A. Aloufi, M. Auer, L. Rifai, T. Silic and A.K. Hundsdorfer. 2008. Go east: phylogeographies of *Mauremys caspica* and *M. rivulata* - discordance of morphology, mitochondrial and nuclear genomic markers and rare hybridization. Journal of Evolutionary Biology 21: 527-540.

Rifai, L. and G. Mantziou. 2005. L'Emyde caspienne de l'ouest, Mauremys rivulata. Manouria 29: 33-36.

Rifai, L. and Z.S. Amr. 2006. Diet of the stripe-necked terrapin, *Mauremys rivulata*, in Jordan. Russian Journal of Herpetology 13: 41-46.

Sidis, I. and A. Gasith. 1985. Food habits of the Caspian terrapin (*Mauremys caspica rivulata*) in unpolluted and polluted habitats in Israel. Journal of Herpetology 19: 108-115.

4.2.5. Mediterranean Chameleon Chamaeleo chamaeleon

Subspecies. Four subspecies have been described from across the range of this species. Two of these occur in British territories: the nominate subspecies *Chamaeleo chamaeleon chamaeleon* (presumably) which has been introduced to Gibraltar, possibly from North Africa, and *Chamaeleo chamaeleon recticrista* on Cyprus, where this form is indigenous.

Wordwide Distribution. This species has a discontinuous distribution in parts of southern Europe, the Middle East and the Arabian Peninsula, North Africa and several Mediterranean islands (including Cyprus).

Distribution in the UK Overseas Territories and Dependencies. Cyprus, where this species is indigenous and has been confirmed from the Sovereign Base Areas (Ian Davidson-Watts, *pers. com.*), plus a small introduced population on Gibraltar.

Conservation Status. Not listed on the IUCN Red List or any CITES appendices. This species is known to be declining in may areas of its range, including on Cyprus.

Current Conservation Action. No specific conservation actions known.

Recommendations. A distribution survey of the Mediterranean chameleon in the Cyprus Sovereign Base Areas is urgently required, ideally as part of a wider herpetological survey. This should be followed if necessary by a more detailed population status and habitat assessment for this species in the Sovereign Base Areas.

References (also see general references for the Cyprus Sovereign Base Areas)

Aresté, M. and J.R. Farriols. 2000. Chamaeleo chamaeleon. Common chameleon (Linnaeus, 1758). Reptilia 11: 39-42.

Blázquez, M.C., C. Díaz-Paniagua and J. A. Mateo. 2000. Egg retention and mortality of gravid and nesting female chameleons (*Chamaeleo chamaeleon*) in southern Spain. Herpetological Journal 10: 91-94.

Cuadrado, M. and J. Loman. 1999. The effects of age and size on the reproductive timing in female *Chamaeleo chamaeleon*. Journal of Herpetology 33: 6-11.

Díaz -Paniagua, C. and M. Cuadrado. 2003. Influence of incubation conditions on hatching success, embryo development and hatchling phenotype of common chameleon (*Chamaeleo chamaeleon*) eggs. Amphibia- Reptilia 24: 429-440.

Díaz - Paniagua, C., M. Cuadrado, M.C. Blázquez and J.A. Mateo. 2002. Reproduction of *Chamaeleo chamaeleon* under contrasting environmental conditions. Herpetological Journal 12: 99-104.

Gray, J.E. 1865a. Revision of the genera and species of Chamaeleonidae, with the description of some new species. Ann. Mag. Nat. Hist. (3) 15: 340-354.

Hillenius, D. 1978. Notes on chameleons. V: The chameleons of North Africa and adjacent countries, *Chamaeleo chamaeleon* (Linnaeus) (Sauria: Chamaeleonidae). Beaufortia 28 (345): 37-55.

Hofman, A., L.R. Maxson and J.W. Arntzen. 1991. Biochemical evidence pertaining to the taxonomic relationships within the family Chamaeleonidae. Amphibia-Reptilia 12: 245-265.

Luiselli, L. and L. Rugiero. 1996. Chamaeleo chamaeleon. Diet. Herpetological Review 27: 78-79.

Necas, P. 1999. Chameleons - Nature's Hidden Jewels. Edition Chimaira, Frankfurt.

Necas, P. and D. Hegner. 1997. Chamaeleo chamaeleon (Linnaeus). Sauria 19: 403-408.

Rieppel, O. 1987. The phylogenetic relationships within the Chamaeleonidae, with comments on some aspects of cladistic analysis. Zoological Journal of the Linnean Society 89: 41-62.

4.2.6. Schreiber's Fringe-toed Lizard Acanthodactylus schreiberi

Subspecies. Two subspecies have been described, of which the nominate subspecies *Acanthodactylus schreiberi schreiberi* occurs on Cyprus (the other, *A.s. syriacus*, is found in Lebanon and Israel)

Wordwide Distribution. This species has a fragmented range in Turkey, Cyprus, Lebanon and Israel (with a possible occurrence in Egypt).

Distribution in the UK Overseas Territories and Dependencies. Cyprus, where this species has been confirmed from the Sovereign Base Areas (lan Davidson-Watts, *pers. com.*).

Conservation Status. Listed as Endangered on the IUCN Red List. Not CITES listed. This is primarily a coastal species and has suffered a population decline across its range of >50% over the last three generations, largely due to development. Status on Cyprus not known but also believed to be declining on the island as coastal resorts are built. Distribution and status in the Sovereign Base Areas not known.

Current Conservation Action. No specific conservation actions known.

Recommendations. A distribution survey of *Acanthodactylus schreiberi* in the Cyprus Sovereign Base Areas is urgently required, ideally as part of a wider herpetological survey. This should be followed if necessary by a more detailed population status and habitat assessment for this species in the Sovereign Base Areas.

References (also see general references for the Cyprus Sovereign Base Areas)

Arnold, E.N. 1983. Osteology, genitalia and the relationships of *Acanthodactylus* (Reptilia: Lacertidae). Bulletin of the British Museum (Natural History), Zoology 44: 291–339.

Franzen, M. 1998. Erstnachweis von *Acanthodactylus schreiberi schreiberi* Boulenger, 1879 für die Türkei (Squamata: Sauria: Lacertidae). Herpetozoa 11: 27-36.

Harris, D.J. and E.N. Arnold. 2000. Elucidation of the relationships of spiny-footed lizards, *Acanthodactylus* ssp. (Reptilia: Lacertidae) using mitochondrial DNA sequence, with comments on their biogeography and evolution. J. Zool. (London) 252: 351-362.

Hraoui-Bloquet, S., R. Sadek, Y. Werner, P. Lymberakis, V. Tok, I. Ugurtas, M. Sevinç and W. Böhme. 2006. *Acanthodactylus schreiberi*. In: IUCN. 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/61462</u>

Salvador, A. 1982. A revision of the lizards of the genus *Acanthodactylus* (Sauria: Lacertidae). Bonner Zoologische Monographien (No. 16) 1982: 1-167.

Schmidt, K.P. 1939. Reptiles and amphibians from Southwestern Asia. Publ. Field Mus. Nat. Hist., Zool. Ser., 24: 49-92.

4.2.7. Western Green Lizard Lacerta bilineata

Subspecies. Up to five subspecies have been described, depending on the author, but the intra-specific taxonomic situation remains unresolved. At present, the nominate subspecies, *Lacerta bilineata bilineata*, occurs in the Bailiwick of Jersey.

Taxonomic Notes. Formerly known as *Lacerta viridis bilineata*, although this elevation to full species status is only weakly supported by genetic data. The *Lacerta viridis-bilineata* complex requires further research.

Wordwide Distribution. This species has a wide distribution in northern Spain, most of France, western Germany, southern Switzerland, most of Italy, southern Austria, western Slovenia, western Croatia and the islands of Elba, Sicily and Jersey.

Distribution in the UK Overseas Territories and Dependencies. Natural populations occur in the Bailiwick of Jersey. This species has also been introduced to the island of Guernsey.



Male western green lizard Lacerta bilineata, L'Ouaisné Common, Jersey (Photograph: Paul Edgar)

Conservation Status. Listed as Least Concern on the IUCN Red List. Not CITES listed. While still abundant in many areas, populations tend to be declining in the north of the range. Western green lizards have declined markedly on Jersey, where the main strongholds are now found in the west and south west of the island.

Current Conservation Action. This species is legally protected on Jersey and many populations now occur within protected areas. An Action Plan has been prepared and a Green Lizard Project established

Recommendations. Current conservation efforts require continued funding and support.

References (also see general references for the Bailiwick of Jersey)

Amann, T. S. Rykena, U. Joger, H.K. Nettmann and M. Veith. 1997. Zur artlichen Trennung von *Lacerta bilineata* Daudin, 1802 und *L. viridis* (Laurenti, 1768). Salamandra 33: 255-268.

Böhme, M.U., U. Fritz, T. Kotenko, G. Dzukic, K. Ljubisavljevic, N. Tzankov and T.U. Berendonk. 2007. Phylogeography and cryptic variation within the *Lacerta viridis* complex (Lacertidae, Reptilia). Zoologica Scripta 36: 119–131.

Bowles, F.D. 2002. Update on the status of the green lizard (*Lacerta viridis*) and wall lizard (*Podarcis muralis*) in Jersey. British Herpetological Society Bulletin 80: 2-3.

Brückner, M., B. Klein, A. Düring, T. Mentel, S. Rabus and J. T. Soller. 2001. Phylogeographische Analyse des *Lacerta viridis/bilineata* Komplexes: Molekulare Muster und Verbreitung. Pp. 45-51 in: K. Elbing and H.-K. Nettmann (Eds.). Beiträge zur Naturgeschichte und zum Schutz der Smaragdeidechsen (*Lacerta s. str.*). Mertensiella 13: 1-285.

Canova, L. and M. Marchesi. 2007. Amphibian and reptile communities in eleven Sites of Community Importance (SCI): relations between SCI area, heterogeneity and richness. Acta Herpetologica 2: 87-96.

Corbett, K. 2001. Status, threats and conservation requirements of *Lacerta bilineata* on Jersey. Pp. 98-104 in: K. Elbing and H.-K. Nettmann (Eds.). Beiträge zur Naturgeschichte und zum Schutz der Smaragdeidechsen (*Lacerta s. str.*). Mertensiella 13: 1-285.

Elbing, K. 2001. Die Smaragdeidechsen. Laurenti Verlag, Bochum, Germany.

Funke, O. 1996. Ungewöhnliches Verhalten von Lacerta bilineata und Podarcis muralis. Die Eidechse 7: 30.

Joger, U., T. Amann and M. Veith. 2001. Phylogeographie und genetische Differenzierung im *Lacerta viridis/bilineata* Komplex. Pp. 60-68 in: K. Elbing and H.-K. Nettmann (Eds.). Beiträge zur Naturgeschichte und zum Schutz der Smaragdeidechsen (*Lacerta s. str.*). Mertensiella 13: 1-285.

Joger, U., U. Fritz, D. Guicking, S. Kalyabina-Hauf, Z.T. Nagy and M. Wink. 2007. Phylogeography of western Palaearctic reptiles – spatial and temporal speciation patterns. Zoologischer Anzeiger 246: 293–313.

Lantermann, W. and Y. Lantermann. 2007. Westliche Smaragdeidechsen (*Lacerta bilineata*) an der Atlantikküste in der Bretagne. Reptilia (Münster) 12: 40-42.

Nettmann, H.K. 1995. Zur Geschichte einer vermeintlichen Neuentdeckung. Elaphe 3: 63-66.

Pérez-Mellado, V., M. Cheylan, P. Geniez, P., H.K. Nettmann and B. Schmidt. 2006. *Lacerta bilineata*. In: IUCN. 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/61519</u>

Perkins, C.M. and R.A. Avery. 1989. The biology and conservation of the green lizard, *Lacerta viridis*, and the wall lizard, *Podarcis muralis*, in Jersey. Jersey Wildlife Preservation Trust Special Scientific Report No. 2: 1-155.

Rykena, S. 1991. Kreuzungsexperimente zur Prüfung der Artgrenzen im Genus *Lacerta sensu stricto*. Mitteilungen des Zoologischen Museum Berlin 67: 55–68.

4.2.8. Common Wall Lizard Podarcis muralis

Subspecies. From eight or nine to 18 subspecies are recognised depending on the author. The nominate subspecies *Podarcis muralis muralis* occurs in the Bailiwick of Jersey.

Taxonomic Notes. Intra-specific relationships of *Podarcis muralis* need revision. This species was formerly known as *Lacerta muralis*.

Wordwide Distribution. Widely distributed in Europe, from Spain to Turkey and the Netherlands to the southern Greece.

Distribution in the UK Overseas Territories and Dependencies. Found on the island of Jersey only, where the possible origin of these animals is contentious.

Conservation Status. Listed as Least Concern on the IUCN Red List. Not CITES listed. While still abundant in many areas, populations tend to be declining in the north of the range. This species is restricted to a few man-made forts on the north and east coasts of Jersey and these populations are isolated from each other.

Current Conservation Action. *Podarcis muralis* is legally protected on Jersey. Monitoring and habitat management is regularly carried out by the States of Jersey. The Durrell institute of Conservation and Ecology at the University of Kent, England, is currently carrying out research project on the Jersey wall lizard populations in order to clarify their origins and to assess their distribution and population viability.

Recommendations. Ensure that any recommendations for conservation strategies and actions for this species that arise from the current research are implemented.

References (also see general references for the Bailiwick of Jersey)

Avery, R., A. Basker and C. Corti. 1993. "Scan" behaviour in *Podarcis muralis*: the use of vantage points by an actively foraging lizard. Amphibia-Reptilia 14: 247-260.

Barbault, R. and Y.P. Mou. 1988. Population dynamics of the common wall lizard, *Podarcis muralis*, in southwestern France. Herpetologica 44: 38-47.

Bischoff, W. 2005. Die echten Eidechsen der Familie Lacertidae - eine Übersicht. Draco 5: 4-27.

Böhme, W., V. Pérez-Mellado, M. Cheylan, H.K. Nettmann, L. Krecsák, B. Sterijovski and B. Schmidt. 2006. *Podarcis muralis*. In: IUCN. 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/61550</u>

Bowles, F.D. 2002. Update on the status of the green lizard (*Lacerta viridis*) and wall lizard (*Podarcis muralis*) in Jersey. British Herpetological Society Bulletin 80: 2-3.

Damme, R.V., D. Bawens, F. Brana and F. Rudolf. 1992. Incubation temperature differentially affects hatching time, survival, and hatchling performance in the lizard *Podarcis muralis*. Herpetologica 48: 220-228.

Funke, O. 1996. Ungewöhnliches Verhalten von Lacerta bilineata und Podarcis muralis. Die Eidechse 7: 30.

Gruschwitz, M. and W. Böhme. 1986. *Podarcis muralis* - Mauereidechse. Pp. 155-208 in: W. Böhme (Ed.). Handbuch der Reptilien und Amphibien Europas, Band 2/II., Echsen III (*Podarcis*). Aula-Verlag Wiesbaden.

Lutzmann, N. and F. Hulbert. 2002. Zur Winteraktivität von Mauereidechsen (*Podarcis muralis*), Algerischen Sandläufern (*Psammodromus algirus*) und Mauergeckos (*Tarentola mauritanica*) in Katalonien. Die Eidechse 13: 22-26.

Mou, Y.-P. 1987. Eclogie trophique d'une population de lézards des murailles *Podarcis muralis* dans l'ouest de la France. Revue d'écologie 42: 81-100.

Mou, Y.-P. and R. Barbault. 1986. Régime alimentaire d'une population de lézard des murailles, *Podarcis muralis* (Laurent, 1768) dans le sud-ouest de la France. Amphibia-Reptilia 7: 171-180.

Oppliger, A., L. Degen, C. Bouteiller-Reuter, H.-B. John-Alder. 2007. Promiscuity and high level of multiple paternity in common wall lizards (*Podarcis muralis*): data from microsatellite markers. Amphibia-Reptilia 28: 301-303.

Perkins, C.M. and R.A. Avery. 1989. The biology and conservation of the green lizard, *Lacerta viridis*, and the wall lizard, *Podarcis muralis*, in Jersey. Jersey Wildlife Preservation Trust Special Scientific Report No. 2: 1-155.

Pinho, C., D.J. Harris and N. Ferrand. 2008. Non-equilibrium estimates of gene flow inferred from nuclear genealogies suggest that Iberian and North African wall lizards (*Podarcis* spp.) are an assemblage of incipient species. BMC Evolutionary Biology 8: 63.

Schmidt-Loske, K. 1996a. Anmerkungen zur Winteraktivität bei Podarcis muralis - Teil 1. Die Eidechse 7: 6-12.

Schmidt-Loske, K. 1996b. Fotografische Identifikation von Podarcis muralis - Möglichkeiten und Grenzen. Die Eidechse 7: 7-12.

Schmidt-Loske, K. 1998. Anmerkungen zur Winteraktivität bei Podarcis muralis - Teil 2. Die Eidechse 8: 69-74.

4.2.9. Eyed Lizard Timon lepidus

Subspecies. Four subspecies are recognised, of which the nominate subspecies Timon lepidus lepidus occurs in Gibraltar.

Taxonomic Notes. Formerly known as *Lacerta lepida*. N.B. as the genus *Timon* is masculine, the specific name is now spelled *lepidus*, not *lepida*.

Wordwide Distribution. Portugal, Spain, Gibraltar, southern France and northwestern Italy.

Distribution in the UK Overseas Territories and Dependencies. Gibraltar only.

Conservation Status. Listed as Near Threatened on the IUCN Red List. Not CITES listed. This species appears to have been undergoing a significant decline across its range in recent years, including in Gibraltar.

Current Conservation Action. No specific conservation actions known.

Recommendations. A distribution survey and population status assessment of *Timon lepidus* in Gibraltar is urgently required, followed by appropriate conservation actions for this species.

References (also see general references for Gibraltar)

Arets, M.H.M. 2003. Het verzorgen en observeren van de Parelhagedis, *Timon lepidus lepidus* Daudin 1802. Deel I. Lacerta 61: 189-200.

Arets, M.H.M. 2003. Het verzorgen en observeren van de Parelhagedis, *Timon lepidus lepidus* Daudin 1802. Deel II. Lacerta 61: 207-216.

Arnold, E.N., O. Arribas and S. Carranza. 2007. Systematics of the Palaearctic and oriental tribe Lacertini (Squamata: Lacertidae: Lacertinae), with description of eight new genera. Zootaxa 1430: 1-86.

Bischoff, W. 1982. Zur Frage der taxonomischen Stellung europäischer und nordwestafrikanischer Perleidechsen (Sauria, Lacertidae, *Lacerta lepida*-Gruppe). Amphibia-Reptilia 2: 357-367.

Bischoff, W. 2005. Die echten Eidechsen der Familie Lacertidae - eine Übersicht. Draco 5: 4-27.

Bischoff, W., M. Cheylan and W. Böhme. 1984. *Lacerta lepida* - Perleidechse. Pp. 181-210 in: W. Böhme (Ed.). Handbuch der Reptilien und Amphibien Europas, Band 2/I., Echsen II (*Lacerta*). Aula-Verlag, Wiesbaden.

Bischoff, W. 1982. Zur Frage der taxonomischen Stellung europäischer und nordwestafrikanischer Perleidechsen (Sauria, Lacertidae, *Lacerta lepida*-Gruppe). Amphibia-Reptilia 2: 357-367.

Busack, S.D. 1987. Morphological and biochemical differentiation in Spanish and Moroccan populations of the lizard, *Lacerta lepida*. Journal of Herpetology 21: 277-284.

Busack, S.D. and J.A. Visnaw. 1989. Observations on the natural history of *Lacerta lepida* in Cádiz Province, Spain. Amphibia-Reptilia 10: 201-213.

Castilla, A.M. 1989. Reproductive characteristics of the lacertid lizard Lacerta lepida. Amphibia-Reptilia 10: 445-452.

Castilla, A.M. and D. Bauwens. 1992. Habitat selection by the lizard *Lacerta lepida* in a Mediterranean oak forest. Herpetological Journal 2: 27-30.

Castilla, A.M., D. Bauwens and G.A. Llorente. 1991. Diet composition of the lizard *Lacerta lepida* in central Spain. Journal of Herpetology 25: 30-36.

Funke, O. 1999. Standorttreue bei Timon lepidus lepidus. Die Eidechse 10: 63.

Kober, I. 2004. Die Perleidechse Timon lepidus. Natur und Tier Verlag, Münster.

Mateo, J.A., L.F. Lopezjurado and C.P. Guillaume. 1996. Proteic and morphological variations in ocellated lizards (Lacertidae): a complex of species across the Strait of Gibraltar. Comptes Rendus de l'Academie Des Sciences Serie III, Sciences de La Vie, 319: 737-746.

Martín, J. and P. López. 1996. Avian predation on a large lizard (*Lacerta lepida*) found at low population densities in Mediterranean habitats: an analysis of bird diets. Copeia 1996: 722-726.

Mateo, J.A. and J. Castanet. 1994. Reproductive strategies in three Spanish populations of the ocellated lizard, *Lacerta lepida* (Sauria, Lacertidae). Acta Oecologica 15: 215-229.

Mateo, J.A., L.F. Lopezjurado and C.P. Guillaume. 1996. Proteic and morphological variations in ocellated lizards (Lacertidae): a complex of species across the Strait of Gibraltar. Comptes Rendus de l'Academie des Sciences Serie III, Sciences de La Vie, 319: 737-746.

Mayer, W., and W. Bischoff. 1996. Beiträge zur taxonomischen Revision der Gattung *Lacerta* (Reptilia: Lacertidae). Teil 1: *Zootoca, Omanosaura, Timon* und *Teira* als eigenständige Gattungen. Salamandra 32: 163-170.

Pleguezuelos, J., P. Sá-Sousa, V. Pérez-Mellado, R. Marquez, M. Cheylan and C. Corti. 2006. *Timon lepidus*. In: IUCN. 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/61583</u>

Salvador, A., J.P. Veiga and M. Esteban. 2004. Preliminary data on reproductive ecology of *Lacerta lepida* at a mountain site in central Spain. Herpetological Journal 14: 47-49.

Valverde, J.A. 1974. Malpolon monspessulanus llevando Lacerta lepida aplastado por un coche. Doñana, Act. Vertebr., 1:56.

4.2.10. Common Lizard Zootoca vivipara

Subspecies. Four subspecies are currently recognised, of which the nominate form *Zootoca vivipara vivipara* occurs on the Isle of Man.

Taxonomic Notes. Formerly known as Lacerta vivipara.

Wordwide Distribution. This species has a huge range from northern Spain right across Eurasia to Sakhalin Island, and from the mountains of the Balkans to within the Arctic Circle. This species is found as far north as 70.00° N at Varangerfjord, Norway, making this the northernmost reptile in the world.

Distribution in the UK Overseas Territories and Dependencies. Isle of Man only.

Conservation Status. Listed as Least Concern on the IUCN Red List. Not CITES listed. Although very widely distributed, this species is known to have been declining in many areas, especially in northwest Europe, as a result of habitat loss, chemical pollution and unsuitable management such as overgrazing. It is believed to have suffered a significant decline on the Isle of Man.

Current Conservation Action. No specific conservation actions known.

Recommendations. A distribution survey and population status assessment of *Zootoca vivipara* on the Isle of Man is urgently required, followed by appropriate conservation actions for this species.

References (also see general references for the Isle of Man)

Avery, R.A. 1966. Food and feeding habits of the common lizard (*Lacerta vivipara*) in the west of England. Journal of Zoology (London) 149: 115-121.

Avery, R.A. 1975a. Age-structure and longevity of common lizard (*Lacerta vivipara*) populations. Journal of Zoology (London) 176: 555-558.

Avery, R.A. 1975b. Clutch size and reproductive effort in the lizard *Lacerta vivipara* Jacquin. Oecologia 19: 165-170.

Avery, R. 1993. The relationship between disturbance, respiration rate and feeding in common lizards (*Lacerta vivipara*). Herpetological Journal 3: 136-139.

Avery, R.A., A.S. White, M.H. Martin and S.P. Hopkin. 1983. Concentrations of heavy metals in common lizards (*Lacerta vivipara*) and their food and environment. Amphibia-Reptilia 4: 205-213.

Bauwens, D. 1981. Survivorship during hibernation in the European common lizard, Lacerta vivipara. Copeia 1981: 741-744.

Bauwens, D. and R.F. Verheyen. 1987. Variation of reproductive traits in a population of the lizard *Lacerta vivipara*. Holarctic Ecology 10: 120-127.

Costanzo, J.P., C. Grenot and R.E. Lee. 1995. Supercooling, ice inoculation and freeze tolerance in the European common lizard, *Lacerta vivipara*. Journal of Comparative Physiology 165: 238-244.

Dely, O.G. and W. Böhme. 1984. *Lacerta vivipara* - Waldeidechse. Pp. 362-393 in: W. Böhme (Ed.). Handbuch der Reptilien und Amphibien Europas, Band 2/I., Echsen II (*Lacerta*). Aula-Verlag Wiesbaden.

European Reptile and Amphibian Specialist Group. 1996. *Zootoca vivipara*. In: IUCN. 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/61741</u>

Guillaume, C.P., B. Heulin, I.Y. Pavlinov, D.V. Semenov, A. Bea, N. Vogrin and Y. Surget-Groba. 2006. Morphological variations in the common lizard, *Lacerta (Zootoca) vivipara*. Russian Journal of Herpetology 13: 1-10.

Guillette, L.J. 1993. The evolution of viviparity in lizards. BioScience 43: 742-751.

Gvoždík, L. and A. M. Castilla. 2001. A comparative study of preferred body temperatures and critical thermal tolerance limits among populations of *Zootoca vivipara* (Squamata: Lacertidae) along an altitudinal gradient. Journal of Herpetology 35: 486-492.

Hofmann, S., W.-R. Grosse and K. Henle. 2005. Zur Dispersion und Populationsstruktur der Waldeidechse (*Zootoca vivipara*) in der naturnahen Landschaft. Zeitschrift für Feldherpetologie 12: 177-196.

Massot, M., J. Clobert, J. Lecomte and R. Barbault. 1994. Incumbent advantage in common lizards and their colonizing ability. Journal of Animal Ecology 63: 431-440.

Mayer, W., and W. Bischoff. 1996. Beiträge zur taxonomischen Revision der Gattung *Lacerta* (Reptilia: Lacertidae). Teil 1: *Zootoca, Omanosaura, Timon* und *Teira* als eigenständige Gattungen. Salamandra 32: 163-170.

Pilorge, T., F. Xavier and R. Barbault. 1983. Variations in litter size and reproductive effort within and between some populations of *Lacerta vivipara*. Holarctic Ecology 6: 381-386.

Strijbosch, H., P.T.J.C. v. Rooy and L.A.C.J. Voesenek. 1983. Homing behaviour of *Lacerta agilis* and *Lacerta vivipara* (Sauria, Lacertidae). Amphibia-Reptilia 4: 43-47.

Tosini, G., S. Jones and R. Avery. 1994. Effects of feeding on set point temperatures and thermoregulatory behavior in the lizards *Podarcis muralis* and *Lacerta vivipara*. Amphibia-Reptilia 15: 257-265.

Van Damme, R., D. Bauwens and R.F. Verheyen. 1987. Thermoregulatory responses to environmental seasonality by the lizard *Lacerta vivipara*. Herpetologica 43: 405-415.

4.2.11. Bedriaga's Skink Chalcides bedriagai

Subspecies. Three subspecies have been described, of which the nominate form *Chalcides bedriagai bedriagai* occurs in Gibraltar.

Wordwide Distribution. Endemic to the Iberian Peninsula: Spain, Portugal and Gibraltar only.

Distribution in the UK Overseas Territories and Dependencies. Gibraltar only.

Conservation Status. Listed as Near Threatened on the IUCN Red List. Not CITES listed. This species is patchily distributed throughout its range and is believed to have undergone a significant decline in recent years, including in Gibraltar.

Current Conservation Action. No specific conservation actions known.

Recommendations. A distribution survey and population status assessment of *Chalcides bedriagai* in Gibraltar is urgently required, followed by appropriate conservation actions for this species.

References (also see general references for Gibraltar)

Caputo, V. and G. Odierna. 1990. The chromosomal complement and NOR localization *of Chalcides bedriagai* (Bosca 1880) (Sauria: Scincidae). Amphibia-Reptilia 11: 67-70.

Caputo, V., B. Lanza and R. Palmieri. 1995. Body elongation and limb reductions in the genus *Chalcides* Laurenti 1768 (Squamata Scincidae): a comparative study. Tropical Zoology 8: 95-152.

Caputo, V., M. Sorice and L. Crescimbent. 1999. A molecular taxonomy of some Mediterranean scincid lizards, Genus *Chalcides* Laurenti 1768 (Reptilia, Scincidae). Russian Journal of Herpetology 6: 23-32.

Carranza, S., E.N. Arnold, P. Geniez, J. Roca and J.A. Mateo. 2008. Radiation, multiple dispersal and parallelism in the skinks, *Chalcides* and *Sphenops* (Squamata: Scincidae), with comments on *Scincus* and *Scincopus* and the age of the Sahara Desert. Molecular Phylogenetics and Evolution 46: 1071-1094.

Galán, P. 2003. Female reproductive characteristics of the viviparous skink *Chalcides bedriagai pistaciae* (Reptilia, Squamata, Scincidae) from an Atlantic beach in north-west Spain. Amphibia-Reptilia 24: 79-85.

Greer, A.E., V. Caputo, B. Lanza and R. Palmieri. 1998. Observations on limb reduction in the scincid lizard genus *Chalcides*. Journal of Herpetology 32: 244-252.

López-Jurado, L. F., P. Jordano and M. Ruiz. 1978. Ecología de una población insular mediterránea del eslizón ibérico, *Chalcides bedriagai* (Sauria, Scincidae). Doñana, Acta Vertebr., 5: 19-34.

Pasteur, G. 1981. A survey of the species groups of the Old World scincid genus Chalcides. Journal of Herpetology 15: 1-16.

Pleguezuelos, J., P. Sá-Sousa, V. Pérez-Mellado and R. Marquez. 2006. *Chalcides bedriagai*. In: IUCN. 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/61472</u>

Valverde, J.A. 1966. Notas sobre vertebrados II. Sobre las subespecies de *Chalcides bedriagai* (Bosca 1880). Bol. R. Soc. Esp. Hist. Nat. (Biol.) 64: 169-170.

4.2.12. Schneider's Skink Eumeces schneideri

Subspecies. Six species are currently recognised, of which the nominate form *Eumeces schneideri schneideri* occurs on Cyprus.

Taxonomic Notes. Depending on the author, this species may also be assigned to the genus Novoeumeces.

Wordwide Distribution. North Africa, Cyprus, Turkey, southwest Russia, the Caucasus, the Middle East, Saudi Arabia, Central Asia, Afghanistan, Pakistan and northwest India.

Distribution in the UK Overseas Territories and Dependencies. Cyprus

Conservation Status. Not listed on the IUCN Red List or any CITES appendices. This species faces a serious threat of extinction on Cyprus. The occurrence of this species in the Sovereign Base Areas has not been confirmed.

Current Conservation Action. No specific conservation actions known.

Recommendations. A distribution survey to search for *Eumeces schneideri* in the Cyprus Sovereign Base Areas is urgently required, ideally as part of a wider herpetological survey. If discovered, this should be followed if necessary by a more detailed population status and habitat assessment for this species in the Sovereign Base Areas.

References (also see general references for the Cyprus Sovereign Base Areas)

Bischoff, W. 1978. Beiträge zur Kenntnis der Echsen des Kaukasus. Salamandra 14: 178-202.

Geißler, L. 1981. Die Skinke der Insel Zypern. Herpetofauna 3 (14): 22-24.

Göçmen, B., A. Senol and A. Mermer. 2002. A new record of Schneider's skink, *Eumeces schneideri* Daudin, 1802 (Sauria: Scincidae) from Cyprus. Zoology of the Middle East 27: 19-22.

Griffith, H., A. Ngo and R.W. Murphy. 2000. A cladistic evaluation of the cosmopolitan genus *Eumeces* Wiegmann (Reptilia, Squamata, Scincidae). Russ. J. Herpetol. 7: 1-16.

Holfert, T. 1995. Haltungserfahrungen beim berberskink (Eumeces schneideri). Elaphe 3: 8-12.

Mertens, R. 1920. Über die geographischen Formen von Eumeces schneiderii Daudin. Senckenbergiana 2: 176-179.

Mertens, R. 1924a. Herpetologische Mitteilungen: V. Zweiter Beitrag zur Kenntnis der geographischen Formen von *Eumeces schneiderii* Daudin. Senckenbergiana 6: 182-184.

Mertens, R. 1924b. Dritte Mitteilung über die Rassen der Glattechse Eumeces schneiderii. Senckenbergiana 7: 53-62.

Schmidt, K.P. 1939. Reptiles and amphibians from southwestern Asia. Zoological Series Field Museum of Natural History 24: 49-92.

Schmitz, A., P. Mausfeld and D. Embert. 2004. Molecular studies on the genus *Eumeces* Wiegmann, 1834: phylogenetic relationships and taxonomic implications. Hamadryad 28: 73-89.

Taylor, E.H. 1936. A taxonomic study of the cosmopolitan lizards of the genus *Eumeces* with an account of the distribution and relationship of its species. Univ. Kansas Sci. Bull. 23: 1-643.

4.2.13. Puerto Rican Racer Borikenophis portoricensis

Subspecies. Seven subspecies have been described, of which two, *Borikenophis portoricensis anegadae* and *Borikenophis portoricensis richardi* occur in the British Virgin Islands. The first of the subspecies listed is endemic to the British Virgin Islands while the second also occurs in the U.S. Virgin Islands and on Isla Culebra, east of Puerto Rico.

Wordwide Distribution. Puerto Rico and nearby islands, Isla Mona, Isla Desecheo, U.S. Virgin Islands, British Virgin Islands.

Distribution in the UK Overseas Territories and Dependencies. British Virgin Islands only, where *Borikenophis portoricensis anegadae* is found on Anegada, Guana, Mosquito Island, Necker, Tortola and Virgin Gorda and *Borikenophis portoricensis richardi* on Peter Island and Salt Island.

Conservation Status. Not listed on the IUCN Red List or any CITES appendices. The status of this species on the British Virgin Islands is unknown although, like many racer snakes on Caribbean islands, it is likely to be declining.

Current Conservation Action. No specific conservation actions known.

Recommendations. A distribution survey and population status assessment of *Borikenophis portoricensis* on the British Virgin Islands is required, followed if necessary by appropriate conservation actions for this species.

References (also see general references for the British Virgin Islands)

Barun, A., G. Perry, R.W. Henderson and R. Powell. 2007. *Alsophis portoricensis anegadae* (Squamata: Colubridae): morphometric characteristics, activity patterns, and habitat use. Copeia 2007: 93-100.

Grant, C. 1932. The genus *Alsophis* in the Puerto Rico area. Journal of the Department of Agriculture of Porto Rico 16: 149-151.

Heatwole, H. and I.B. Banuchi. 1966. Envenomation by the colubrid snake, Alsophis portoricensis. Herpetologica 22: 132-134.

Hedges, S.B., A. Couloux and N. Vidal. 2009. Molecular phylogeny, classification, and biogeography of West Indian racer snakes of the Tribe Alsophiini (Squamata, Dipsadidae, Xenodontinae). Zootaxa 2067: 1-28.

Hegemann, G. 1961. Enzymatic constitution of Alsophis saliva and its biological implications. Breviora 134: 1-8.

Henderson, R.W. and R.A. Sajdak. 1986. West Indian racers: disappearing act or a second chance? Lore (Milwaukee Public Museum) 36: 13-18.

Henderson, R.W. and R.A. Sajdak. 1996. Diets of West Indian racers (Colubridae: *Alsophis*): composition and biogeographic implications. Contrib. Herpetol. 12: 327–338.

Leal, M. and R. Thomas. 1994. Notes on the feeding behavior and caudal luring by juvenile *Alsophis portoricensis* (Serpentes: Colubridae). Journal of Herpetology 28: 126-128.

Leal, M. and J.A. Rodríguez-Robles. 1995. Antipredator responses of *Anolis cristatellus* (Sauria: Polychrotidae). Copeia 1995: 155-161.

Neill, W.T. 1954. Evidence of venom in snakes of the genera Alsophis and Rhadinaea. Copeia 1954: 59-60.

Norton, R.L. 1993. Alsophis portoricensis richardi (ground snake). Feeding. Herpetological Review 24: 34.

Powell, R., G. Perry, R.W. Henderson and A. Barun. 2006. *Alsophis portoricensis anegadae*. Aquatic activity. Herpetological Review 37: 228-229.

Rios-López, N. and T.M. Aide. 2007. Herpetofaunal dynamics during secondary succession. Herpetologica 63: 35-50.

Rodríguez-Robles, J.A. 1992. Notes on the feeding behavior of the Puerto Rican racer, *Alsophis portoricensis* (Serpentes: Colubridae). Journal of Herpetology 26: 100-102.

Rodríguez-Robles, J. A. and M. Leal. 1993a. *Alsophis portoricensis* (Puerto Rican racer). Diet. Herpetological Review 24: 150-151.

Rodríguez-Robles, J. A. and M. Leal. 1993b. Effects of prey type on the feeding behavior of *Alsophis portoricensis* (Serpentes: Colubridae). Journal of Herpetology 27: 163-168.

Rodríguez-Robles, J. A. and R. Thomas. 1992. Venom function in the Puerto Rican racer, *Alsophis portoricensis* (Serpentes: Colubridae). Copeia 1992: 62-68.

Schwartz, A. 1966. Snakes of the genus *Alsophis* in Puerto Rico and the Virgin Islands. Stud. Fauna Curaçao and Carib. Is. 23 (90): 175-227.

Stejneger, L. 1904. The herpetology of Porto Rico. Rept. United States Natl. Mus. 1902: 549-724.

4.2.14. Cayman Island Racers *Cubophis* species

Grand Cayman Racer *Cubophis caymanus* Cayman Brac Racer *Cubophis fuscicaudus* Little Cayman Racer *Cubophis ruttyi*

Subspecies. None described for the taxonomic arrangement used here (all three were formerly subspecies of the Cuban racer *Alsophis cantherigerus*).

Wordwide Distribution. This species group is endemic to the Cayman Islands – all three are treated here together.

Distribution in the UK Overseas Territories and Dependencies. Cayman Islands only, where *Cubophis caymanus* is endemic to Grand Cayman, *Cubophis fuscicauda* to Cayman Brac and *Cubophis ruttyi* to Little Cayman.

Conservation Status. Not listed on the IUCN Red List or any CITES appendices. The status of this species on the Cayman Islands is unknown although none of the three are thought to be under any immediate threat.

Current Conservation Action. No specific conservation actions known.

Recommendations. A distribution survey and population status assessment of all three *Cubophis* species in all remaining areas of suitable habitat throughout the Cayman Islands, followed if necessary by appropriate conservation actions.

References (also see general references for the Cayman Islands)

Domínguez, M. and L.V. Moreno. 2006. *Alsophis cantherigerus* (Jubo, Jubo de Sabana, Jubo Sabanero). Size record. Herpetological Review 37: 349.

Fong G.A. and G. Garcés. 2002. Alsophis cantherigerus. Reptilia. 21: 55-57.

Garman, S. 1887. On West Indian reptiles in the Museum of Comparative Zoology at Cambridge, Mass. Proc. Amer. Philos. Soc. 24: 278-286.

Hedges, S.B., A. Couloux and N. Vidal. 2009. Molecular phylogeny, classification, and biogeography of West Indian racer snakes of the Tribe Alsophiini (Squamata, Dipsadidae, Xenodontinae). Zootaxa 2067: 1-28.

Hegeman, G. 1961. Enzymatic constitution of Alsophis saliva and its biological implications. Breviora 134: 1-8.

Henderson, R.W. and R.A. Sajdak. 1986. West Indian racers: disappearing act or a second chance? Lore (Milwaukee Public Museum) 36: 13-18.

Henderson, R.W. and R.A. Sajdak. 1996. Diets of West Indian racers (Colubridae: *Alsophis*): composition and biogeographic implications. Contrib. Herpetol. 12: 327–338.

Maglio, V. J. 1970. West Indian Xenodontine colubrid snakes: their probable origin, phylogeny, and zoogeography. Bulletin of the Museum of Comparative Zoology 141: 1-54.

Neill, W.T. 1954. Evidence of venom in snakes of the genera Alsophis and Rhadinaea. Copeia 1954: 59-60.

Petzold, H.G. 1978. Zur Haltung und Fortpflanzungsbiologie der Kuba-Schlanknatter, *Alsophis cantherigerus* (Bibron 1840), im Terrarium. Zool. Garten N.F., Jena 48:155-63.

4.2.15. Puerto Rican Ground Snake Magliophis exiguus

Subspecies. Three subspecies have been described, the nominate form *Magliophis exiguus exiguus* from the U.S. and British Virgin Islands, plus M.e. stahli and M.e. subspadix from Puerto Rico.

Wordwide Distribution. Puerto Rico, U.S. Virgin Islands, British Virgin Islands.

Distribution in the UK Overseas Territories and Dependencies. British Virgin Islands.

Conservation Status. Not listed on the IUCN Red List or any CITES appendices. The status of this species on the British Virgin Islands is unknown although it is likely to be declining.

Current Conservation Action. No specific conservation actions known.

Recommendations. A distribution survey and population status assessment of *Magliophis exiguus* on the British Virgin Islands is required, followed if necessary by appropriate conservation actions for this species.

References (also see general references for the British Virgin Islands)

Campbell, T. and K.R. Campbell. 1999. Geographic distribution. Arrhyton exiguum exiguum. Herpetological Review 30: 112.

Cope, E.D. 1862. Synopsis of the species of *Holcosus* and *Ameiva*, with diagnoses of new West Indian and South American Colubridae. Proc. Acad. Nat. Sci. Philadelphia 14 (1862): 60-82.

Garman, S. 1887. On West Indian reptiles in the Museum of Comparative Zoology at Cambridge, Mass. Proc. Amer. Philos. Soc. 24: 278-286.

Hedges, S.B., A. Couloux and N. Vidal. 2009. Molecular phylogeny, classification, and biogeography of West Indian racer snakes of the Tribe Alsophiini (Squamata, Dipsadidae, Xenodontinae). Zootaxa 2067: 1-28.

Maglio, V. J. 1970. West Indian Xenodontine colubrid snakes: their probable origin, phylogeny, and zoogeography. Bulletin of the Museum of Comparative Zoology 141: 1-54.

Puente-Rolón, A. R. 2001. Arrhyton exiguum (Puerto Rican garden snake). Diet. Herpetological Review 32: 261.

Rios-López, N. and T.M. Aide. 2007. Herpetofaunal dynamics during secondary succession. Herpetologica 63: 35-50.

Schwartz, A. 1967. A review of the genus Dromicus in Puerto Rico and the Virgin Islands. Stahlia 9: 1-14.

Stejneger, L. 1904. The herpetology of Porto Rico. Rept. United States Natl. Mus. 1902: 549-724.

Thomas, R. and M. Leal. 1993. Feeding envenomation by *Arrhyton exiguum* (Serpentes: Colubridae). Journal of Herpetology 27: 107-109.

4.2.16. Grass Snake Natrix natrix

Subspecies. Depending on the author, from four to 15 subspecies are recognised. The latter arrangement is used here and accordingly *Natrix natrix helvetica* occurs in the Bailiwick of Jersey (where a distinct form is often found that lacks the brightly coloured collar typical of this subspecies), *Natrix natrix astreptophora* in Gibraltar and *Natrix natrix cypriaca* on Cyprus.

Wordwide Distribution. This species has a very wide distribution and occurs from Portugal east to Mongolia and from Scandinavia south to the Balkans and Turkey.

Distribution in the UK Overseas Territories and Dependencies. Occurs in the Bailiwick of Jersey, Gibraltar and (probably) the Cyprus Sovereign Base Areas.



Although widely distributed, grass snakes are rare and declining in all three of the territories and dependencies where they occur. Grass snakes from Jersey, as shown here, often lack the yellow collar typical of this species (Photograph: Paul Edgar)

Conservation Status. Listed as Least Concern overall on the IUCN Red List. Although two subspecies are currently listed as Critically Endangered, neither are present in any British territory or dependency (the Cyprus subspecies also qualifies for this

listing however). Not CITES listed. Although very widely distributed, this species is known to have suffered significant declines in many areas, primarily as a result of habitat loss and pollution. Grass snakes have declined severely and are increasingly rare on Jersey and in Gibraltar. The Cyprus subspecies, which has yet to be confirmed from the Sovereign Base Areas, is now in serious danger of extinction.

Current Conservation Action. No specific conservation actions known in Gibraltar or the Sovereign Base Areas. Survey work by the Jersey Amphibian and Reptile Group to determine the distribution and status of this species is underway on Jersey.

Recommendations. The survey work on Jersey, and the production of an action plan and subsequent conservation work for *Natrix natrix helvetica* on the island, needs to be continued and adequately supported. A distribution survey and population status assessment of *Natrix natrix astreptophora* in Gibraltar is urgently required, followed if necessary by appropriate conservation actions for this species. A distribution survey to search for *Natrix natrix cypriaca* in the Cyprus Sovereign Base Areas is urgently required, ideally as part of a wider herpetological survey. If discovered, this should be followed if necessary by a more detailed population status and habitat assessment for this species in the Sovereign Base Areas.

References (also see general references for the relevant territories)

Bull, D. 2004. Natural history notes: *Natrix n. helvetica* (grass snake): clutch size and female reproductive behaviour. British Herpetological Society Bulletin 88: 31-32.

Filippi, E., M. Capula, L. Luiselli and U. Agrimi. 1996. The prey spectrum of *Natrix natrix* (Linnaeus, 1758) and *Natrix tessellata* (Laurenti, 1768) in sympatric populations (Squamata: Serpentes: Colubridae). Herpetozoa 8: 155-164.

Gregory, P.T. 2004. Sexual dimorphism and allometric size variation in a population of grass snakes (Natrix natrix) in southern England. Journal of Herpetology 38: 231-240.

Gregory, P.T. and L.A. Isaac. 2004. Food habits of the grass snake in southeastern England: *is Natrix natrix* a generalist predator? Journal of Herpetology 38: 88-95.

Gregory, P.T. and L.A. Isaac. 2005. Close encounters of the worst kind: patterns of injury in a population of grass snakes (*Natrix natrix*). Herpetological Journal 15: 213-219.

Guicking, D., R. Lawson, U. Joger and M. Wink. 2006. Evolution and phylogeny of the genus *Natrix* (Serpentes: Colubridae). Biological Journal of the Linnean Society 87: 127-143.

Guskov, E.P. 1975. On phenotypic variations of colour in the grass snake subspecies (*Natrix natrix*). Zoologichesky Zhurnal 54: 1266-1267.

Hailey, A. and P.M.C. Davies. 1986a. Lifestyle, latitude and activity metabolism of natricine snakes. Journal of Zoology (London) 209: 461-476.

Hailey, A. and P.M.C. Davies. 1986b. Selection of prey from groups: water snakes and fish. Herpetological Journal 1: 71-77.

Hailey, A., P.M.C. Davies and E. Pulford. 1982. Lifestyle and thermal ecology of natricine snakes. British Journal of Herpetology 6: 261-268.

Lawson, R. 1986. Molecular systematics of some old world natricine snakes. Pp. 224-234 in: Z. Rocek (Ed.). Studies in Herpetology. Proceedings of the Third Ordinary General Meeting of the Societas Europaea Herpetologica, Charles University, Prague.

Madsen, T. and R. Shine. 1993. Male mating success and body size in European grass snakes. Copeia 1993: 561-564.

Meijide, M.W. 1981. Casos de melanismo en Natrix natrix y Malpolon monspessulanus. Doñana, Act. Vertebr., 8: 302-303.

Mertens, D. 1994. Some aspects of themoregulation and activity in free-ranging grass *snakes (Natrix natrix* L.). Amphibia-Reptilia 15: 322-326.

Nagy, Z.T. and Z. Korsós. 1999. Data on movements and thermal biology of grass snake (*Natrix natrix* L.) using radiotelemetry. Pp. 339-343 in: C. Miaud and R. Guyetant (Eds.). Current Studies in Herpetology. Proceedings of the 9th Ordinary General Meeting of the Societas Europaea Herpetologica 25-29 August 1998, Le Bourget du Lac, France.

Reese, D.S. 1994. The conservation of the endemic grass snake *Natrix natrix cypriaca* in Cyprus. British Herpetological Society Bulletin 50: 20-22.

Schmidtler, J.F. 1984. Zur Bestandsituation der Amphibien und hydrophilen Reptilien aus der Insel Zypern. Salamandra, 20: 43-49.

Thorpe, R.S. 1975. Quantitative handling of characters useful in snake systematics with particular reference to intraspecific variation in the ringed snake *Natrix natrix* (L.). Biological Journal of the Linnean Society 7: 27-43.

Thorpe, R.S. 1979. Multivariate analysis of the population systematics of the ringed snake *Natrix natrix* (L.). Proc. Roy. Soc. Edinburgh 78B: 1-62.

Thorpe, R.S. 1980a. A comparative study of ordination techniques in numerical taxonomy in relation to racial variation in the ringed snake *Natrix natrix* (L.). Biological Journal of the Linnean Society 13: 7-40.

Thorpe, R.S. 1980b. Microevolution and taxonomy of European reptiles with particular reference to the grass snake *Natrix natrix* and the wall lizards *Podarcis sicula*, *P. melisellensis*. Biological Journal of the Linnean Society 14: 215-233.

Thorpe, R. S. 1984. Primary and secondary transition zones in speciation and population differentiation: a phylogenetic analysis of range expansion. Evolution 38: 233-243.

Wiedl, H. and W. Böhme. 1992. Wiederentdeckung der Ringelnatter (*Natrix natrix* ssp.?) auf Zypern-vorlaufiger Bericht. Herpetofauna 14 (80): 6-10.

Wiedl, H.J. and F. Baier. 2008. Freilandforschung zur Ökologie der vom Aussterben bedrohten Zypriotischen Ringelnatter, *Natrix natrix cypriaca*. Elaphe 16: 24-26.

4.2.17. Dice Snake Natrix tessellata

Subspecies. Two subspecies have been described, of which the nominate form Natrix tessellata tessellata occurs on Cyprus.

Wordwide Distribution. Italy and Switzerland (with isolated populations in Germany) eastwards through the Caucasus and southwestern Russia to Pakistan, Central Asia and northwestern China, and south through the Middle East to Egypt. Has been recorded a few times on Cyprus.

Distribution in the UK Overseas Territories and Dependencies. As suitable habitat is present this species possibly occurs in the Cyprus Sovereign Base Areas, although this has not yet been confirmed.

Conservation Status. Not listed on the IUCN Red List or any CITES appendices. This species is common throughout most of its range but has declined in parts of its European range. Appears to be extremely rare on Cyprus.

Current Conservation Action. No specific conservation actions known.

Recommendations. A distribution survey to search for *Natrix tessellata* in the Cyprus Sovereign Base Areas is urgently required, ideally as part of a wider herpetological survey. If discovered, this should be followed if necessary by a more detailed population status and habitat assessment for this species in the Sovereign Base Areas.

References (also see general references for the Cyprus Sovereign Base Areas)

Dmiel, R., G. Perry, A. Belinsky and R.A. Ackerman. 1993. The effects of hydric and thermal properties of incubation substrate on embryonic development in the water snake, *Natrix tessellata*. Herpetological Journal 3: 60-64.

Filippi, E., M. Capula, L. Luiselli and U. Agrimi. 1996. The prey spectrum of *Natrix natrix* (Linnaeus, 1758) and *Natrix tessellata* (Laurenti, 1768) in sympatric populations (Squamata: Serpentes: Colubridae). Herpetozoa 8: 155-164.

Göçmen, B. and W. Böhme. 2002. New evidence for the occurrence of the dice snake, *Natrix tessellata* (Laurenti, 1768) on Cyprus. Zoology of the Middle East 27: 29-34.

Guicking, D., A. Herzberg and M. Wink. 2004. Population genetics of the dice snake (*Natrix tessellata*) in Germany: implications for conservation. Salamandra 40: 217-234.

Guicking, D., R. Lawson, U. Joger and M. Wink. 2006. Evolution and phylogeny of the genus *Natrix* (Serpentes: Colubridae). Biological Journal of the Linnean Society 87: 127-143.

Hailey, A. and P.M.C. Davies. 1986a. Lifestyle, latitude and activity metabolism of natricine snakes. Journal of Zoology (London) 209: 461-476.

Hailey, A. and P.M.C. Davies. 1986b. Selection of prey from groups: water snakes and fish. Herpetological Journal 1: 71-77.

Hailey, A., P.M.C. Davies and E. Pulford. 1982. Lifestyle and thermal ecology of natricine snakes. British Journal of Herpetology 6: 261-268.

Herczeg, G., K. Szabó and Z. Korsós. 2005. Asymmetry and population characteristics in dice snakes (*Natrix tessellata*): an interpopulation comparison. Amphibia- Reptilia 26: 422-426.

Lawson, R. 1986. Molecular systematics of some old world natricine snakes. Pp. 224-234 in: Z. Rocek (Ed.). Studies in Herpetology. Proceedings of the Third Ordinary General Meeting of the Societas Europaea Herpetologica, Charles University, Prague.

Mertens, R. 1969. Zur Synonymie und Variabilität der Würfelnatter (Natrix tessellata). Senckenbergiana Biologica 50: 125-131.

Van der Meijden, A. and Y. Chiari. 2006. Natrix tessellata. Marine habitat. Herpetological Review 37: 94.

4.2.18. Dahl's Whip Snake Platyceps najadum

Subspecies. Six subspecies have been described, of which the nominate form *Platyceps najadum najadum* occurs on Cyprus.

Taxonomic Notes. Formerly known as Coluber najadum.

Wordwide Distribution. The Balkans, Cyprus, Turkey, the Caucasus, southern Russia, parts of Central Asia, Iran and the Middle East.

Distribution in the UK Overseas Territories and Dependencies. Cyprus only, although not confirmed from the Sovereign Base Areas.

Conservation Status. Not listed on the IUCN Red List or any CITES appendices. This species is common throughout most of its range but is in serious danger of extinction on Cyprus.

Current Conservation Action. No specific conservation actions known.

Recommendations. A distribution survey of *Platyceps najadum* in the Cyprus Sovereign Base Areas is urgently required, ideally as part of a wider herpetological survey. This should be followed if necessary by a more detailed population status and habitat assessment for this species in the Sovereign Base Areas.

References (also see general references for the Cyprus Sovereign Base Areas)

Böhme, W. and H. Wiedl. 1994. Status and zoogeography of the herpetofauna of Cyprus with taxonomic and natural history notes on selected species (Genera *Rana, Coluber, Natrix, Vipera*). Amphibia and Reptilia. Zool. Mid. East 10: 31-52.

Darevsky, I.S. and N.N. Szczerbak. 1993. *Coluber najadum* - Schlanknatter. Pp. 131-144 in: W. Böhme (Ed.). Handbuch der Reptilien und Amphibien Europas, Band 3/I., Schlangen (Serpentes) I. Aula-Verlag, Wiesbaden.

Nagy, Z.T., R. Lawson, U. Joger and M. Wink. 2004. Molecular systematics of racers, whipsnakes and relatives (Reptilia: Colubridae) using mitochondrial and nuclear markers. Journal of Zoological Systematics and Evolutionary Research 42: 223-233.

Schätti, B. 1986a. Morphological evidence for a partition of the genus *Coluber* (Reptilia: Serpentes). Pp. 235-238 in: Z. Rocek (Ed.). Studies in Herpetology. Proceedings of the Third Ordinary General Meeting of the Societas Europaea Herpetologica, Charles University, Prague.

Schätti B. and P. Monsch. 2004. Systematics and phylogenetic relationships of Whip snakes (*Hierophis* Fitzinger) and *Zamenis andreana* Werner 1917 (Reptilia: Squamata: Colubrinae). Rev. Suisse Zool. 111: 239-256.

Utiger, U., B. Schätti and N. Helfenberger. 2005. The oriental colubrine genus *Coelognathus* Fitzinger, 1843 and classification of Old and New World racers and ratsnakes (Reptilia, Squamata, Colubridae, Colubrinae. Russ. J. Herpetol. 12: 39-60.

4.2.19. Levantine Viper Macrovipera lebetina

Subspecies. Six subspecies have been described, of which the nominate form *Macrovipera lebetina lebetina* occurs on, and is endemic to, Cyprus.

Taxonomic Notes. Formerly known as Vipera lebetina and by some authors as Daboia lebetina.

Wordwide Distribution. Cyprus, Turkey, the Caucasus, southern Russia, parts of Central Asia, Iran, Afghanistan, Pakistan, northwestern India, the Middle East and North Africa.

Distribution in the UK Overseas Territories and Dependencies.Cyprus only, where the presence of this species has beenconfirmed in the Sovereign Base Areas (Ian Davidson-Watts, pers. com.).July 2010Amphibian and Reptile Conservation105July 2010

Conservation Status. Not listed on the IUCN Red List or any CITES appendices. This species is heavily persecuted and is declining throughout much of its range, including on Cyprus.

Current Conservation Action. No specific conservation actions known.

Recommendations. A distribution survey of *Macrovipera lebetina* in the Cyprus Sovereign Base Areas is urgently required, ideally as part of a wider herpetological survey. This should be followed if necessary by a more detailed population status and habitat assessment for this species in the Sovereign Base Areas.

References (also see general references for the Cyprus Sovereign Base Areas)

Arikan, H., B. Göçmen, A. Mermer and H. Bahar. 2005. An electrophoretic comparison of the venoms of a colubrid and various viperid snakes from Turkey and Cyprus, with some taxonomic and phylogenetic implications. Zootaxa 1038: 1–10.

Billing, H. and B. Schätti. 1984. Vorläufige Mitteilung zum Subspezies-Problem bei Vipera lebetina. Salamandra 20: 65-69.

Böhme, W. 1987. Nachweis von *Vipera lebetina* (Linnaeus, 1758) (Serpentes: Viperidae) an der zentralen Südküste der Türkei. Salamandra 23: 173-175.

Garrigues, T., C. Dauga, E. Ferquel, V. Choumet and A.-B. Failloux. 2005. Molecular phylogeny of *Vipera* Laurenti, 1768 and the related genera *Macrovipera* (Reuss, 1927) and *Daboia* (Gray, 1842), with comments about neurotoxic *Vipera* aspis aspis populations. Molecular Phylogenetics and Evolution 35: 35-47.

Göçmen, B., H. Arikan, K. Cicek and Z. Yildiz. 2007. A serological comparison of the populations of the Levantine Viper, *Macrovipera lebetina* (Linnaeus, 1758) in Cyprus and Southern Turkey. North-Western Journal of Zoology 3: 75-80.

Göçmen, B., H. Arikan, A. Mermer, B. Langerwerf and H. Hahar. 2006. Morphological, hemipenial and venom electrophoresis comparisons of the Levantine viper, *Macrovipera lebetina* (Linnaeus, 1758), from Cyprus and Southern Anatolia. Turk. J. Zool. 30: 225-234.

Golay, P. H.M. Smith, D.G. Broadley, J.R. Dixon, C. McCarthy, P. Golray, J-C. Schatti and M. Toriba. 1993. Endoglyphs and other Major Venomous Snakes of the World: a Checklist. Springer-Verlag, New York.

Gumprecht, A. and U. Lauten. 1997. Zur Fortpflanzung und Haltung der Levante-Otter *Macrovipera lebetina lebetina* (Linnaeus, 1758). Sauria 19: 39-43.

Herrmann, H.W., U. Joger and G. Nilson. 1992. Phylogeny and systematics of viperine snakes. III: resurrection of the genus *Macrovipera* (Reuss, 1927) as suggested by biochemical evidence. Amphibia-Reptilia 13: 375-392.

Lenk, P., S. Kalyabina, M. Wink and U. Joger. 2001. Evolutionary relationships among the true vipers (Reptilia: Viperidae) inferred from mitochondrial DNA sequences. Molecular Phylogenetics and Evolution 19: 94-104.

Mallow, D., D. Ludwig and G. Nilson. 2003. True Vipers: Natural History and Toxinology of Old World Vipers. Krieger Publishing Company, Florida.

Nilson, G., C. Andren and B. Flärdh. 1988. Die Vipern der Türkei. Salamandra 24: 215-247.

Shine, R. and T. Madsen. 1994. Sexual dichromatism in snakes of the genus *Vipera*: a review and a new evolutionary hypothesis. Journal of Herpetology 28: 114-117.

4.2.20. Lataste's Viper Vipera latastei

Subspecies. Two subspecies have been described: the nominate form *Vipera latastei latastei* occurs across most of the range while *Vipera latastei gaditana* is found in the south and southeast of the Iberian Peninsula, including Gibraltar.

Taxonomic Notes. The specific name may be spelled either *latastei* or *latasti*, since both were used in the original description of this species, although the former is now more widely accepted as the technically correct version.

Wordwide Distribution. Spain, Portugal, Gibraltar and parts of northwest Africa.

Distribution in the UK Overseas Territories and Dependencies. Gibraltar only.

Conservation Status. Listed as Near Threatened on the IUCN Red List. Not CITES listed. This species has suffered a significant decline in recent years, including in Gibraltar, and is increasingly rare and fragmented throughout its range.

Current Conservation Action.No specific conservation actions known.Amphibian and Reptile Conservation106

Recommendations. A distribution survey and population status assessment of *Vipera latastei* in Gibraltar is urgently required, followed by appropriate conservation actions for this species.

References (also see general references for Gibraltar)

Bea, A. and F. Brana. 1988. Nota sobre la alimentacion de *Vipera latastei*, Bosca, 1878 (Reptilia, Viperidae). Munibe 40: 121-124.

Billing, H. 2000. Haltung und Zucht der Cadiz-Stülpnasenotter *Vipera latasti gaditana* Saint Girons, 1977. Herpetofauna 22 (125): 5-8.

Brito, J. C. 2001. A record of melanism in Vipera latasti. British Herpetological Society Bulletin 76: 28-29.

Brito, J.C. and R. Rebelo. 2003. Differential growth and mortality affect sexual size dimorphism in *Vipera latastei*. Copeia. 2003: 865-871.

Brito, J.C., X. Santos, J.M. Pleguezuelos, S. Fahd, G.A. Llorente and X. Parellada. 2006. Morphological variability of the Lataste's viper (*Vipera latastei*) and the Atlas dwarf viper (*Vipera monticola*): patterns of biogeographical distribution and taxonomy. Amphibia-Reptilia 27: 219-240.

Busack, S.D. and A. Salvador. 1984. New data on the distribution of four reptile species in the Cadiz Province. Donana (Acta Vertebrata) 11: 322-325.

Garrigues, T., C. Dauga, E. Ferquel, V. Choumet and A.-B. Failloux. 2005. Molecular phylogeny of *Vipera* Laurenti, 1768 and the related genera *Macrovipera* (Reuss, 1927) and *Daboia* (Gray, 1842), with comments about neurotoxic *Vipera* aspis aspis populations. Molecular Phylogenetics and Evolution 35: 35-47.

Golay, P. H.M. Smith, D.G. Broadley, J.R. Dixon, C. McCarthy, P. Golray, J-C. Schatti and M. Toriba. 1993. Endoglyphs and other Major Venomous Snakes of the World: a Checklist. Springer-Verlag, New York.

Lenk, P., S. Kalyabina, M. Wink and U. Joger. 2001. Evolutionary relationships among the true vipers (Reptilia: Viperidae) inferred from mitochondrial DNA sequences. Molecular Phylogenetics and Evolution 19: 94-104.

Mallow, D., D. Ludwig and G. Nilson. 2003. True Vipers: Natural History and Toxinology of Old World Vipers. Krieger Publishing Company, Florida.

Martínez, F., J.C. Brito and M. Lizana Avia. 2006. Ophiophagy and cannibalism in *Vipera latastei* Bosca, 1878 (Reptilia, Viperidae). British Herpetological Society Bulletin 96: 26-28.

Miras, J.A.M., M. Cheylan, M.S. Nouira, U. Joger, P. Sá-Sousa and V. Pérez-Mellado. 2006. *Vipera latastei*. In: IUCN 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/61592</u>

Parellada, X. and X. Santos. 2002. Caudal luring in free-ranging adult Vipera latasti. Amphibia-Reptilia 23: 343-347.

Pleguezuelos, J.M., X. Santos, J.C. Brito, X. Parellada, G.A. Llorente and S. Fahd. 2007. Reproductive ecology of *Vipera latastei* in the Iberian Peninsula: implications for the conservation of a Mediterranean viper. Zoology 110: 9-19.

Saint Girons, H. 1955. Le cycle d'activité et ses facteurs chez Vipera latastei Bosca. Vie et Milieu 5: 513-528.

Saint-Girons, H. 1977. Systématique de *Vipera latastei latastei Boscà*, 1878 et description de *Vipera latastei gaditana*, subsp. n. (Reptilia, Viperidae). Revue Suisse de Zoologie 84: 599–607.

Santos, X., J.C. Brito, J.M. Pleguezuelos and G.A. Llorente. 2007. Comparing Filippi and Luiselli's (2000) method with a cartographic approach to assess the conservation status of secretive species: the case of the Iberian snake-fauna. Amphibia-Reptilia 28: 17-23.

Schwarzer, U. 1999. Zur Verbreitung der Stülpnasenotter, *Vipera latastei gaditana* (Saint-Girons, 1977) in Südwest-Portugal (Squamata: Serpentes: Viperidae). Herpetozoa 11: 181–184.

Shine, R. and T. Madsen. 1994. Sexual dichromatism in snakes of the genus *Vipera*: a review and a new evolutionary hypothesis. Journal of Herpetology 28: 114-117.

4.3. Introduced Species of Conservation Concern

4.3.1. Marine Toad *Rhinella marina*

Subspecies. None described.

Taxonomic Notes. Formerly known as Bufo marinus or Chaunus marinus.

Wordwide Distribution. Natural range: Central and South America. Now very widely introduced to many countries around the world, including six of the UK Overseas Territories.

Distribution in the UK Overseas Territories and Dependencies. Introduced to Anguilla, the British Virgin Islands, the Cayman Islands, Montserrat, Bermuda and the British Indian Ocean Territory, either from Central and/or South America or from previously introduced populations elsewhere.

Threat Posed. Competitive displacement of native amphibians. Potential spread of amphibian pathogens, especially the chytrid fungus, *Batrachochytrium dendrobatidis*, which this toad may carry with no ill effects. Damaging levels of predation on indigenous herpetofauna and many other forms of native wildlife. Lethal poisoning of indigenous predators and domestic pets that attempt to eat this species.

Recommendations. This is one of the world's worst invasive species and control measures should be implemented wherever possible, ideally as soon as possible after this species is first discovered. However, once *Rhinella marina* has become well established eradication will prove to be extremely difficult and costly to achieve on all but the smallest islands.



The marine toad *Rhinella marina*, one of the worst invasive species in the world, has been introduced to six UK Overseas Territories (Photograph: Paul Edgar)

References (also see general references for the relevant territories)

Brattstrom, B.H. 1962. Homing in the giant toad, *Bufo marinus*. Herpetologica 18: 176-180.

Carpenter, C.C. and J.C. Gillingham. 1987. Water hole fidelity in the marine toad, *Bufo marinus*. Journal of Herpetology 21: 158-161.

Cohen, M.P. and R.A. Alford. 1996. Factors affecting diurnal shelter use by the cane toad, *Bufo marinus*. Herpetologica 52: 172-181.
Crossland, M. 1998. Ontogenetic variation in toxicity of tadpoles of the introduced toad *Bufo marinus* to native Australian aquatic invertebrate predators. Herpetologica 54: 364-369.

Crossland, M.R. 2000. Direct and indirect effects of the introduced toad *Bufo marinus* (Anura: Bufonidae) on populations of native anuran larvae in Australia. Ecography 23:283-290.

Easteal, S. 1985. The ecological genetics of introduced populations of the giant toad *Bufo marinus*. III Geographical patterns of variation. Evolution 39: 1065-1075.

Easteal, S. 1986. Bufo marinus. Catalogue of American Amphibians and Reptiles No. 395: 1-4.

Ely, C.A. 1944. Development of Bufo marinus larvae in dilute sea water. Copeia 1944: 256.

Fitzgerald, M. 1990. *Rattus rattus*: the introduced black rat, a successful predator on the introduced cane toad *Bufo marinus* in northern New South Wales. Herpetofauna 20: 9-14.

Floyd, R.B. 1984. Variation in temperature preference with stage of development of *Bufo marinus* larvae. Journal Of Herpetology 18: 153-158.

Floyd, R.B. 1985. Effects of photoperiod and starvation on the temperature tolerance of larvae of the giant toad, *Bufo marinus*. Copeia 1985: 625-631.

Goldberg, S.R., C.R. Bursey and R. Tawil. 1995. Helminths of an introduced population of the giant toad, *Bufo marinus* (Anura: Bufonidae), from Bermuda. Journal of the Helminthological Society of Washington 62: 64-67.

Heatwole, H. and P.J. Suarez-Lazu. 1965. Supernumerary legs in *Bufo marinus* and abnormal regeneration of the tail in *Ameiva exsul*. Journal of the Ohio Herpetological Society 5: 30-31.

Hyatt, A. and J. Humphrey. 1995. Biological control of the cane toad *Bufo marinus* in Australia. Froglog. 15: 2-3.

Lampo, M. and G.A. de Leo. 1998. The invasion ecology of the toad *Bufo marinus*: from South America to Australia. Ecological Applications 8: 388-396.

Lewis, S. 1989. Cane Toads: An Unnatural History. Dolphin/Doubleday, New York.

Linzey, D.W., C.R. Bursey and J.B. Linzey. 1998. Seasonal occurrence of helminths of the giant toad, *Bufo marinus* (Amphibia: Bufonidae), in Bermuda. Journal of the Helminthological Society of Washington 65: 251-258.

Linzey, D.W., J.P. Bacon and J.B. Linzey. 2001. Limb deformities in the marine toad in Peru and Bermuda. Froglog 45: 2.

Lowe, S.J., M. Browne, S. Boudjelas and M. De Poorter. 2000. 100 of the World's Worst Invasive Alien Species. IUCN/SSC Invasive Specialist Group (ISSG), Auckland, New Zealand.

Nakajima, T., M. Toda, M. Aoki and M. Tatara. 2005. The project for control of the cane toad *Bufo marinus* on Iriomate Island, Okinawa prefecture. Bulletin of the Herpetological Society of Japan 2: 179-186.

Pemberton, C.E. 1949. Longevity of the tropical American toad, Bufo marinus L. Science 110: 512.

Punzo, F. and L. Lindstrom. 2001. The toxicity of eggs of the giant toad, *Bufo marinus*, to aquatic predators in a Florida retention pond. Journal of Herpetology 35: 693-697.

Savage, J.M. 1960. Geographic variation in the tadpole of the toad, Bufo marinus. Copeia 1960: 233-236.

Seebacher, F. and R.A. Alford. 1999. Movement and microhabitat use of a terrestrial amphibian (*Bufo marinus*) on a tropical island: seasonal variation and environmental correlates. Journal of Herpetology 33: 208-214.

Seebacher, F. and R.A. Alford. 2002. Shelter microhabitats determine body temperature and dehydration rates of a terrestrial amphibian (*Bufo marinus*). Journal of Herpetology 36: 69-75.

Wolcott, G.N. 1937. What the giant Surinam toad *Bufo marinus* L. is eating in Puerto Rico. Journal of Agriculture of the University of Puerto Rico 21: 79-84.

4.3.2. Cuban Tree Frog Osteopilus septentrionalis

Subspecies. None described.

Taxonomic Notes.Formerly known as *Hyla septentrionalis*.Amphibian and Reptile Conservation1

Wordwide Distribution. Indigenous to Cuba and its associated islands, the Cayman Islands and the Bahamas. Introduced to Puerto Rico, Anguilla and both the U.S. and British Virgin Islands.

Distribution in the UK Overseas Territories and Dependencies. Introduced to Anguilla and the British Virgin Islands from Cuba. Among other UK Overseas Territories, however, this species is indigenous to the Cayman Islands.

Threat Posed. Competitive displacement of native amphibians. Potential spread of amphibian pathogens (especially the chytrid fungus, *Batrachochytrium dendrobatidis*. Damaging levels of predation on indigenous herpetofauna, especially smaller frogs, and other forms of native wildlife.

Recommendations. Control measures will prove to be difficult once this species is well established but should be considered if an introduction is discovered early.

References (also see general references for Anguilla and the British Virgin Islands)

Allen, E.R., and W.T. Neill. 1953. The treefrog Hyla septentrionalis in Florida. Copeia 1953: 127-128.

Barbour, T. 1931. Another introduced frog in North America. Copeia 1931: 140.

Duellman, W.E. and R.I. Crombie. 1970. Hyla septentrionalis. Catalogue of American Amphibians and Reptiles No. 92: 1-4.

King, W. 1960. New populations of West Indian reptiles and amphibians in southeastern Florida. Quarterly Journal of the Florida Academy of Sciences 23: 71-73.

Myers, G.S. 1950. The systematic status of *Hyla septentrionalis*, the large tree frog of the Florida Keys, the Bahamas and Cuba. Copeia 1950: 204-214.

Myers, S. 1977. Geographic distribution: Osteopilus septentrionalis. Herpetological Review 8: 38.

Owen, J., G. Perry, J. Lazell, C. Petrovic and J. Egelhoff. 2006. *Osteopilus septentrionalis* colonization of the British Virgin Islands. Herpetological Review. 37: 74-75.

Townsend, J.H., J.M. Eaton, R. Powell, J.S. Parmerlee, Jr. and R.W. Henderson. 2000. Cuban treefrogs (*Osteopilus septentrionalis*) in Anguilla, Lesser Antilles. Caribbean Journal of Science 36: 326–328.

Wilson, L.D. and L. Porras. 1983. The Ecological Impact of Man on the South Florida Herpetofauna. University of Kansas Museum of Natural History Special Publication No. 9, Lawrence, Kansas.

Waddle, J.H., M.E. Crockett and K.G. Rice. 2005. *Osteopilus septentrionalis*. Geographic distribution. Herpetological Review 36: 333.

4.3.3. Florida Red-bellied Slider Pseudemys nelsoni

Subspecies. None described.

Taxonomic Notes. Formerly known as *Pseudemys rubriventris nelsoni* or *Chrysemys rubriventris nelsoni* or *Chrysemys nelsoni*.

Wordwide Distribution. Native to the southeastern USA (Georgia and Florida). Introduced to the British Virgin Islands.

Distribution in the UK Overseas Territories and Dependencies. Introduced to the British Virgin Islands from the United States, although it is not known if this species is breeding.

Threat Posed. Potentially damaging levels of predation on indigenous herpetofauna and other forms of native wildlife (although adults of this species are mostly herbivorous in the wild, a wide range of live prey is also consumed, especially by juveniles).

Recommendations. This species should be allowed to become established and eradication should therefore be considered if successful reproduction is observed on the British Virgin Islands.

References (also see general references for the British Virgin Islands)

Bjorndal, K. A. 1986. Effect of solitary vs. group feeding on intake in *Pseudemys nelsoni*. Copeia 1986: 234-235.

Bjorndal, K.A. and A.B. Bolten. 1993. Digestive efficiencies in herbivorous and omnivorous freshwater turtles on plant diets - do herbivores have a nutritional advantage? Physiol Zool. 66: 384-395.

Conant, R. and J.T. Collins. 1991. A Field Guide to Reptiles and Amphibians of Eastern/Central North America. Houghton Mifflin, Boston/New York.

Dunson, W.A. and M.E. Seidel. 1986. Salinity tolerance of estuarine and insular emydid turtles (*Pseudemys nelsoni* and *Trachemys decussata*). Journal of Herpetology 20: 237-245.

Ernst, C.H. and R.W. Barbour. 1989. Turtles of the World. Smithsonian Institution Press, Washington D.C.

Ernst, C.H., R.G.M. Altenberg and R.W. Barbour. 1997. Turtles of the World Online CD-ROM. Online at: <u>http://nlbif.eti.uva.nl/bis/turtles.php?menuentry=inleiding</u>

Fritz, U. 1981. Synonymie von *Chrysemys concinna* (Le Conte 1830) mit *Chrysemys floridana* (Le Conte 1830) mit Berücksichtigung von *Chrysemys rubriventris* (Le Conte 1830), Wermuth & Mertens 1961. Herpetofauna 3 (11): 31-33.

Jackson, D.R. 1978. Chrysemys nelsoni. Catalogue of American Amphibians and Reptiles No. 210: 1-2.

Kramer, M. and U. Fritz. 1989. Courtship of the turtle, Pseudemys nelsoni. Journal of Herpetology 23: 84-86.

Nebeker, A.V. and R.B. Bury. 2000. Temperature selection by hatchling and yearling Florida red-bellied turtles (*Pseudemys nelsoni*) in thermal gradients. Journal of Herpetology 34: 465-469.

Seidel, M.E. 1994. Morphometric analysis and taxonomy of cooter and red-bellied turtles in the North American genus *Pseudemys* (Emydidae). Chelonian Conservation and Biology 1: 117-130.

Stephens, P.R. and J.J. Wiens. 2003. Ecological diversification and phylogeny of emydid turtles. Biol. J. Linn. Soc. 79: 577-610.

4.3.4. Red-eared Slider Trachemys scripta elegans

Subspecies. Twelve subspecies currently recognised of which one, *Trachemys scripta elegans*, has been most widely introduced outside the native range.

Taxonomic Notes. Formerly known as Chrysemys scripta or Pseudemys scripta.

Wordwide Distribution. The species as a whole is widespread and native to eastern and central USA, Mexico, Central and northwest South America. The subspecies *Trachemys scripta elegans*, which is indigenous to the central USA, has been introduced to many areas of the world, including various Caribbean islands, many countries in Europe, South Africa, Thailand, Singapore, Malaysia, parts of Indochina and Japan.

Distribution in the UK Overseas Territories and Dependencies. Introduced to the British Virgin Islands, the Cayman Islands, Bermuda, the Bailiwick of Jersey and Gibraltar from the United States. Reproduction is not thought to be occur on Jersey, although would be potentially possible during a very hot summer.

Threat Posed. Competitive displacement of other chelonians, e.g. *Malaclemys terrapin* on Bermuda, and *Trachemys decussata* on the Cayman Islands, both of which are long established and the former at least may be indigenous. Damaging levels of predation on indigenous herpetofauna and other forms of native wildlife (although adults of this species are mostly herbivorous in the wild, a wide range of live prey is also consumed, especially by juveniles). Health risks to humans – this species is known to carry *Salmonella*, although the chances of infection by feral animals are very slight.

Recommendations. Eradication should be considered wherever this species has been introduced. However, *Trachemys scripta elegans* is one of the world's worst invasive species and control measures can be difficult once it is well established in an area with suitable habitats and climate.

References (also see general references for the relevant territories)

Adrados, L.C. and L. Briggs (Eds.). 2002. Study of application of EU Wildlife Trade regulations in relation to species which form an ecological threat to the EU fauna and flora, with case studies of American bullfrog (*Rana catesbeiana*) and red-eared slider (*Trachemys scripta elegans*). Study report to the European Commission, Amphi Consult, Denmark.

Bertolero, A. and A. Canicio. 2000. Nueva cita de nidificacion en libertad de *Trachemys scripta elegans* en Cataluña. Boletín de la Asociación Herpetológica Española 11: 84.

Capalleras, X. and M.A. Carretero. 2000. Evidencia de reproducción con éxito en libertad *de Trachemys scripta* en la Península Ibérica. Boletín de la Asociación Herpetológica Española 11: 34-35.

Conant, R. and J.T. Collins. 1991. A Field Guide to Reptiles and Amphibians of Eastern/Central North America. Houghton Mifflin, Boston/New York.

Da Silva, E. and M. Blasco. 1995. Trachemys scripta elegans in southwestern Spain. Herpetological Review 26: 133-134.

De Roa E. and J.M. Roig. 1997. Puesta en hábitat natural de la tortuga de Florida (*Trachemys scripta elegans*) en España. Boletín de la Asociación Herpetológica Española 8: 48-50.

Ernst, C.H. 1990. Systematics, taxonomy, variation and geographic distribution of the slider turtle. Pp. 57-67 in: Gibbons, J.W (Ed.). Life History and Ecology of the Slider Turtle. Smithsonian Institution Press, Washington D.C.

Ernst, C.H. and R.W. Barbour. 1989. Turtles of the World. Smithsonian Institution Press, Washington D.C.

Ernst, C.H., R.G.M. Altenberg and R.W. Barbour. 1997. Turtles of the World Online CD-ROM. Online at: <u>http://nlbif.eti.uva.nl/bis/turtles.php?menuentry=inleiding</u>

Herbold, B. and B.P. Moyle. 1986. Introduced species and vacant niches. American Naturalist 128: 751-760.

Lever, C. 2003. Naturalized Reptiles and Amphibians of the World. Oxford University Press, Oxford.

Lowe, S.J., M. Browne, S. Boudjelas and M. De Poorter. 2000. 100 of the World's Worst Invasive Alien Species. IUCN/SSC Invasive Specialist Group (ISSG), Auckland, New Zealand.

Meehan, S.K. 1996. Reptile-related salmonellosis. Journal of the American Veterinary Medicine Association 209: 531.

Nijs, J. 1996. Egg-laying at low temperature in a captive red-eared slider, *Trachemys scripta elegans*. Bulletin of the Chicago Herpetological Society 21: 202-203.

Nijs, J. and H. Janssen. 1993. Sexual activity and copulation at low temperature in the red-eared slider, *Trachemys scripta elegans* (Weid, 1839). Bulletin of the Chicago Herpetological Society 28: 102-103.

Parmenter, R.R. and H.W. Avery. 1990. The feeding ecology of the slider turtle. Pp. 257-266 in: J.W. Gibbons (Ed.). Life History and Ecology of the Slider Turtle. Smithsonian Institution Press, Washington, D.C

Perry, G., J.L. Owen, C. Petrovic, J. Lazell, and J. Egelhoff. 2007. The red-eared slider, *Trachemys scripta elegans*, in the British Virgin Islands. Applied Herpetology 4: 88-89

Seidel, M.E. 2002. Taxonomic observations on extant species and subspecies of slider turtles, genus *Trachemys*. Journal of Herpetology 36: 285-292.

Seidel, M.E. and C.H. Ernst. 2006. Trachemys scripta. Catalogue of American Amphibians and Reptiles 831: 1-94.

Tucker, J. K. 2001. Clutch frequency in the red-eared Slider (*Trachemys scripta elegans*). Journal of Herpetology 35: 664-668.

4.3.5. Green Iguana Iguana iguana

Subspecies. Two subspecies described, of which the nominate form is found in the Caribbean.

Wordwide Distribution. Indigenous to southern Mexico, Central and South America and some Caribbean islands. Introduced to further Caribbean islands, plus Florida and Hawaii.

Distribution in the UK Overseas Territories and Dependencies. Introduced to Anguilla, the British Virgin Islands, the Cayman Islands, Montserrat (although it may be native here) and the Turks and Caicos Islands from Central or South America.

Threat Posed. Competitive displacement and/or hybridisation with indigenous *Iguana delicatissima* on Anguilla. Potential competition with ground iguanas, *Cyclura* species, in the British Virgin Islands, Cayman Islands and the Turks and Caicos Islands. Increased levels of hunting of introduced green iguanas in some territories, e.g. by recent Central American immigrants on the Cayman Islands, may also increase the likelihood of endangered ground iguanas being killed as well.

Recommendations. Control of introduced green iguanas should be considered where there is a clear and serious threat to an endangered native species, as on Anguilla. The status of *Iguana iguana* in the Caribbean should be investigated further as it is not clear which populations are likely to be indigenous, e.g. on Montserrat, which may have arrived recently by natural means and which are either long-term or recent introductions by humans.

References (also see general references for the relevant territories)

Alberts, A.C., R.L. Carter, W.K. Hayes and E.P. Martins (Eds.). 2004. Iguanas - Biology and Conservation. University of California Press, Berkeley.

Bakhuis, W.L. 1982. Size and sexual differentiation in the lizard *Iguana iguana* on a semi-arid island. Journal of Herpetology 16: 322-325.

Bock, B.C. and G.F. McCracken. 1988. Genetic structure and variability in the green *iguana (Iguana iguana*). Journal of Herpetology 22: 316-322.

Böhme, W. 2000. When does a foreign species deserve a "permit of residence"? Non-indigenous species (NIS): examples of varying exoticness and varying immigration age, taken from herpetology. Ethology, Ecology and Evolution 12: 326-328.

Burghardt, G.M. and A.S. Rand (Eds.). 1982. Iguanas of the World: Their Behavior, Ecology, and Conservation. Noyes Publications, Park Ridge, New Jersey.

Greene, H.W., G.M. Burghardt, B.A. Dugan and A.S. Rand. 1978. Predation and the defensive behavior of green iguanas (Reptilia, Lacertilia, Iguanidae). Journal of Herpetology 12: 169-176.

Henderson, R.W. 1974. Aspects of the ecology of the juvenile common iguana (*Iguana iguana*). Herpetologica 30: 327-332.

Lazell, J.D., Jr. 1973. The lizard genus Iguana in the Lesser Antilles. Bulletin of the Museum of Comparative Zoology 145: 1-28.

McGinnis, S.M. and C.W. Brown. 1966. Thermal behavior of the green iguana, *Iguana iguana*. Herpetologica 22: 189-199.

Powell, R. 2004. Lesser Antillean iguanas, Iguana delicatissima and I. iguana. Iguana 11: 37.

Powell, R. 2004. Conservation of iguanas (Iguana delicatissima and I. iguana) in the Lesser Antilles. Iguana 11: 239-246.

Probst, J-M. 1999. L' Iguane vert *Iguana iguana* une nouvelle espèce de reptile naturalisé a la Réunion? Bulletin Phaethon 10: 110.

Schardt, M. 1998. Freilanduntersuchungen zur Lebensweise und Ökologie von *Iguana iguana* (Linnaeus, 1758) auf der Karibikinsel Terre de Haute, mit einer Bemerkung zum sympatrischen Vorkommen mit *Iguana delicatissima* Laurenti, 1768. Sauria 20 (3): 15-21.

Wilhoft, D.C. 1958. Observations on preferred body temperature and feeding habits of some selected tropical iguanas. Herpetologica 14: 161-164.

4.3.6. Green Anole Anolis carolinensis

Subspecies. Two subspecies described, of which the nominate form is found in the Caribbean.

Wordwide Distribution. Indigenous to the southeastern USA. Introduced to several Caribbean islands, plus Mexico, Belize, Hawaii and Japan.

Distribution in the UK Overseas Territories and Dependencies. Introduced to Anguilla and the Cayman Islands from the United States.

Threat Posed. Competitive displacement of indigenous anole species.

Recommendations. Interactions between this species and indigenous anoles should be monitored and control measures considered, if practical, if negative effects become apparent.

References (also see general references for Anguilla and the Cayman Islands)

Andrews, R.M. 1985. Oviposition frequency of Anolis carolinensis. Copeia 1985: 259-262.

Buth, D.G., G.C. Gorman and C.S. Lieb. 1980. Genetic divergence between *Anolis carolinensis* and its Cuban progenitor, *Anolis porcatus*. Journal of Herpetology 14: 279-284.

Eaton, J.M., K.G. Howard and R. Powell. 2001. Geographic distribution: Anolis carolinensis. Herpetological Review 32: 118.

Karube, H. 2005. The influence of the introduced lizard *Anolis carolinensis* on the native insect fauna of the Ogasawara. Bulletin of the Herpetological Society of Japan 2005: 163-168.

Jenssen, T.A., N. Greenberg and K.A. Hovde. 1995. Behavioral profile of free-ranging male lizards, *Anolis carolinensis*, across breeding and post-breeding seasons. Herpetological Monographs 9: 41-62.

McCoid, M.J. and R.A. Hensley. 1993. Shifts in activity patterns in lizards. Herpetological Review 24: 87-88.

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Poe, S. 2004. Phylogeny of anoles. Herpetological Monographs 18: 37-89.

Rauh, J. 2006. Der Rotkehlanolis (Anolis carolinensis). Natur und Tier Verlag, Münster.

Schmidt, J. 1979. Warum eigentlich immer Anolis carolinensis? Herpetofauna 1: 26-29.

Schoener, T.W. 1975. Presence and absence of habitat shift in some widespread lizard species. Ecological Monographs 45: 233-258.

Tokarz, R.R. and J.W. Beck, Jr. 1987. Behaviour of the suspected lizard competitors *Anolis sagrei* and *Anolis carolinensis*: an experimental test for behavioural interference. Animal Behaviour 35: 722-734.

Wade, J.K., A.C. Echternacht and G.F. McCracken. 1983. Genetic variation and similarity in *Anolis carolinensis* (Sauria: Iguanidae). Copeia 1983: 523-529.

4.3.7. Barbados Anole Anolis extremus

Subspecies. None described.

Taxonomic Notes. Formerly known as Anolis roquet or Anolis roquet extremus.

Wordwide Distribution. Indigenous to Barbados. Introduced to Bermuda, St. Lucia and Venezuela.

Distribution in the UK Overseas Territories and Dependencies. Introduced to Bermuda from Barbados.

Threat Posed. Competitive interactions with, and potential predation on, the critically endangered Bermuda skink, *Plestiodon longirostris*. This species tends to occupy somewhat different microhabitats to the Bermuda skink, however, so these threats may not be as serious as those posed by the similarly introduced *Anolis grahami*.

Recommendations. Interactions between this species and Bermuda skinks should be monitored and control measures considered, if practical, if negative effects become apparent. While such control measures will probably not be practical on the main islands of Bermuda, they could be considered on some of the smaller islands where Bermuda skinks survive.

References (also see general references for Bermuda)

Creer, D.A., K. de Queiroz, T.R. Jackman, J.B. Losos and A. Larson 2001. Systematics of the *Anolis roquet* series of the southern Lesser Antilles. Journal of Herpetology 35: 428-441.

Gorman, G.C. 1968. The relationships of *Anolis* of the *roquet* species group (Sauria: Iguanidae). III. Comparative study of display behavior. Breviora 284: 1-30.

Goldberg, S., C.R. Bursey and R. Tawil. 1995. Gastrointestinal helminths of three introduced anoles: *Anolis bimaculatus leachi*, *Anolis grahami*, and *Anolis roquet* (Polychrotidae) from Bermuda. Journal of the Helminthological Society of Washington 62: 62-64.

Gorman, G.C. 1976. Observations on the distribution of *Anolis extremus* (Sauria: Iguanidae) on St. Lucia, West Indies - a "colonizing" species. Herpetologica 32: 184-188.

Gorman, G.C. and L. Atkins. 1968. The relationships of the *Anolis* of the *roquet* species group (Sauria: Iguanidae). III. Comparative study of display behavior. Breviora 284: 1-31.

Lazell, J.D. 1972. The anoles (Sauria: Iguanidae) of the Lesser Antilles. Bull. Mus. Comp. Zool. Harvard 143: 1-115.

Losos, J.B. 1996. Dynamics of range expansion by three introduced species of *Anolis* lizards on Bermuda. Journal of Herpetology 30: 204-210.

Macedonia, J.M. and D.L. Clark. 2003. Headbob display structure in the naturalized *Anolis* lizards of Bermuda: sex, context, and population effects. Journal of Herpetology 37: 266-276.

Poe, S. 2004. Phylogeny of anoles. Herpetological Monographs 18: 37-89.

4.3.8. Jamaican Giant Anole Anolis garmani

Subspecies. None described.

Wordwide Distribution. Indigenous to Jamaica. Introduced to the Cayman Islands. Amphibian and Reptile Conservation 114

Distribution in the UK Overseas Territories and Dependencies. Introduced to the Cayman Islands (Grand Cayman) from Jamaica. Not known if this species has become established.

Threat Posed. Competitive displacement of, and/or predation on, indigenous anole species.

Recommendations. Interactions between this species and indigenous anoles should be monitored and control measures considered, if practical, if negative effects become apparent.

References (also see general references for the Cayman Islands)

Baum, T. 2008. Jamaika, seine Leguane und der Riesenanaolis Anolis garmani. Reptilia 13: 73-80.

Jackman, T.R., D.J. Irschick, K. de Queiroz, J. Losos and A. Larson. 2002. Molecular phylogenetic perspective on evolution of lizards of the *Anolis grahami* series. Journal of Experimental Zoology: Molecular and Developmental Evolution 294: 1-16.

Kolbe, J.J., R.E. Glor, L.R. Schettino, A.C. Lara, A. Larson and J.B. Losos. 2007. Multiple sources, admixture, and genetic variation in introduced *Anolis* lizard populations. Conservation Biology 21: 1612–1625.

Poe, S. 2004. Phylogeny of anoles. Herpetological Monographs 18: 37-89.

Russell, A.P. and A.M. Bauer. 1991a. Anolis garmani. Catalogue of American Amphibians and Reptiles No.513: 1-3.

Trivers, R.L. 1976. Sexual selection and resource-accruing abilities in Anolis garmani. Evolution 30: 253-69.

4.3.9. Graham's Anole Anolis grahami



Introduced Graham's anole Anolis grahami on Nonsuch Island, Bermuda (Photograph: Paul Edgar)

Subspecies. Two subspecies described, of which the nominate form has been introduced to Bermuda.

Wordwide Distribution. Indigenous to Jamaica.

Distribution in the UK Overseas Territories and Dependencies. Introduced to Bermuda from Jamaica.

Threat Posed. Competitive interactions with the critically endangered Bermuda skink, *Plestiodon longirostris*. This species has also been reported to definitely prey upon juvenile Bermuda skinks.

Recommendations. Interactions between this species and Bermuda skinks should be monitored and control measures considered, if practical, if negative effects become severe. While such control measures will probably not be practical on the main islands of Bermuda, they could be considered on some of the smaller islands where Bermuda skinks survive.

References (also see general references for Bermuda)

Baum, T. 2008. Jamaika, seine Leguane und der Riesenanaolis Anolis garmani. Reptilia 13: 73-80.

Blake, J.A. 1986. Complex chromosomal variation in natural populations of the Jamaican lizard *Anolis grahami*. Genetica 69: 3-17.

Chakravarti, A. 1977. Genetic differentiation in the colonising lizard Anolis grahami. Heredity 38: 121-123.

Goldberg, S., C.R. Bursey and R. Tawil. 1995. Gastrointestinal helminths of three introduced anoles: *Anolis bimaculatus leachi*, *Anolis grahami*, and *Anolis roquet* (Polychrotidae) from Bermuda. Journal of the Helminthological Society of Washington 62: 62-64.

Jackman, T.R., D.J. Irschick, K. de Queiroz, J. Losos and A. Larson. 2002. Molecular phylogenetic perspective on evolution of lizards of the *Anolis grahami* series. Journal of Experimental Zoology: Molecular and Developmental Evolution 294: 1-16.

Losos, J.B. 1996. Dynamics of range expansion by three introduced species of *Anolis* lizards on Bermuda. Journal of Herpetology 30: 204-210.

Macedonia, J.M. and D.L. Clark. 2003. Headbob display structure in the naturalized *Anolis* lizards of Bermuda: sex, context, and population effects. Journal of Herpetology 37: 266-276.

Macedonia, J.M. and J.A. Stamps. 1994. Species recognition in *Anolis grahami* (Sauria, Iguanidae): evidence from responses to video playbacks of conspecific and heterospecific displays. Ethology 98: 246-264.

Milton, T.H., and T.A. Jenssen. 1979. Description and significance of vocalizations by *Anolis grahami* (Sauria: Iguanidae). Copeia 1979: 481-489.

Poe, S. 2004. Phylogeny of anoles. Herpetological Monographs 18: 37-89. Russell, A. P. and A. M. Bauer. 1991. *Anolis grahami*. Catalogue of American Amphibians and Reptiles No.514.

Schoener, T.W. 1975. Presence and absence of habitat shift in some widespread lizard species. Ecological Monographs 45: 233-258.

4.3.10. Panther Anole Anolis leachii

Subspecies. None described.

Taxonomic Notes. Formerly known as Anolis bimaculatus leachii (or leachi).

Wordwide Distribution. Indigenous to Antigua and its satellites plus Barbuda. Introduced to Bermuda.

Distribution in the UK Overseas Territories and Dependencies. Introduced to Bermuda from Antigua or Barbuda.

Threat Posed. Competitive interactions with, and potential predation on, the critically endangered Bermuda skink, *Plestiodon longirostris*. This species tends to occupy somewhat different microhabitats to the Bermuda skink, however, so these threats may not be as serious as those posed by the similarly introduced *Anolis grahami*.

Recommendations. Interactions between this species and Bermuda skinks should be monitored and control measures considered, if practical, if negative effects become apparent. While such control measures will probably not be practical on the main islands of Bermuda, they could be considered on some of the smaller islands where Bermuda skinks survive.

References (also see general references for Bermuda)

Goldberg, S., C.R. Bursey and R. Tawil. 1995. Gastrointestinal helminths of three introduced anoles: *Anolis bimaculatus leachi*, *Anolis grahami*, and *Anolis roquet* (Polychrotidae) from Bermuda. Journal of the Helminthological Society of Washington 62: 62-64.

Goldberg, S.R., C.R. Bursey and L.N. Ajimine. 1996. Gastrointestinal helminths of the anole *Anolis bimaculatus* (Polychrotidae) the Lesser Antilles. Caribbean J. Sci. 32: 244-247.

Gorman, G.C. and Y.J. Kim. 1976. *Anolis* lizards of the eastern Caribbean: a case study in evolution. II. Genetic relationships and genetic variation of the *bimaculatus* group. Systematic Zoology 25: 62-77.

Losos, J.B. 1996. Dynamics of range expansion by three introduced species of *Anolis* lizards on Bermuda. Journal of Herpetology 30: 204-210.

Macedonia, J.M. and D.L. Clark. 2003. Headbob display structure in the naturalized *Anolis* lizards of Bermuda: sex, context, and population effects. Journal of Herpetology 37: 266-276.

McCoid, M.J. and R.A. Hensley. 1993. Shifts in activity patterns in lizards. Herpetological Review 24: 87-88.

Poe, S. 2004. Phylogeny of anoles. Herpetological Monographs 18: 37-89.

Schneider, C.J., J.B. Losos and K. de Queiroz. 2001. Evolutionary relationships of the *Anolis bimaculatus* group from the northern Lesser Antilles. Journal of Herpetology 35: 1-12.

Stenson, A.G., R.S. Thorpe and A. Malhotra. 2004. Evolutionary differentiation of *bimaculatus* group anoles based on analyses of mtDNA and microsatellite data. Molecular Phylogenetics and Evolution 32: 1–10.

4.3.11. Brown Anole Anolis sagrei



Brown anole *Anolis sagrei*, a species with both indigenous and introduced populations on the Cayman Islands (Photograph: Paul Edgar)

Subspecies. Six subspecies described. The nominate form *Anolis sagrei sagrei* has been introduced to the Cayman Islands (Grand Cayman), although this subspecies is also indigenous to Little Cayman.

Taxonomic Notes. The former subspecies *Anolis sagrei luteosignifer*, endemic to Cayman Brac in the Cayman Islands, has been elevated to full species status.

Wordwide Distribution. Indigenous to the Bahamas, Cuba and associated islands, Isla de la Juventud, Jamaica, the Cayman Islands (Little Cayman), Swan Island, Belize and the Caribbean coast of Mexico. Introduced to Florida where it has become very well established and from where it was subsequently introduced to Grand Cayman.

Distribution in the UK Overseas Territories and Dependencies. Cayman Islands - introduced to Grand Cayman from Florida.

Threat Posed. Competitive displacement by *Anolis sagrei* of the indigenous and endemic *Anolis conspersus* has been reported on Grand Cayman and the latter species appears to be declining as a result.

Recommendations. Interactions between this species and *Anolis conspersus* should be monitored on Grand Cayman and control measures considered, if practical, where negative effects have become severe.

References (also see general references for the Cayman Islands)

Brown, K.M. and O.J. Sexton. 1973. Stimulation of reproductive activity of female *Anolis sagrei* by moisture. Physiological Zoology 46:168-172.

Campbell, T.S. 2003. The introduced brown anole (*Anolis sagrei*) occurs in every county in Peninsular Florida. Herpetological Review 34: 173-174.

Evans, L.T. 1938. Cuban field studies on territoriality of the lizard, Anolis sagrei. J. Comp. Psych. 25: 97-125.

Goldberg, S.R., C.R. Bursey and H. Cheam. 1995. Helminth parasites of three sympatric lizards from Grand Cayman Island, *Anolis sagrei*, (Polychrotidae) and *Leiocephalus carinatus* (Tropiduridae). Caribbean J. Sci. 31: 339-340.

Greene, B.T., D.T. Yorks, J.S. Parmerlee, R. Powell and R.W. Henderson. 2002. Discovery of *Anolis sagrei* in Grenada with comments on its potential impact on native anoles. Caribbean Journal of Science 38: 270-272.

Hite, J.L.; C.A. Rodriguez Gomez, S.C. Larimer, A.M. Diaz-Lameiro and R. Powell. 2008. Anoles of St. Vincent (Squamata: Polychrotidae): population densities and structural habitat use. Caribbean Journal of Science 44: 102-115.

Kolbe, J.J., R.E. Glor, L. Rodríguez Schettino, A. Chamizo Lara, A. Larson and J.B. Losos. 2004. Genetic variation increases during biological invasion by a Cuban lizard. Nature 431: 177-181.

Losos, J.B., M. Leal, R.E. Glor, K. de Queiroz, P.E. Hertz, L. Rodríguez Schettino, A. Chamizo Lara, T.R. Jackman and A. Larson. 2003. Niche lability in the evolution of a Caribbean lizard community. Nature 424: 542-545.

McCoid, M.J. and R.A. Hensley. 1993. Shifts in activity patterns in lizards. Herpetological Review 24: 87-88.

Paterson, A.V. 2002. Effects of an individual's removal on space use and behavior in territorial neighborhoods of brown anoles (*Anolis sagrei*). Herpetologica 58: 382-393.

Rodríguez Schettino, L. and K. de Queiroz. 2002. *Anolis sagrei sagrei* (Cuban brown lizard; chino; torito). Habitat use and thermal biology. Herpetological Review 33: 305.

Schoener, T.W. 1975. Presence and absence of habitat shift in some widespread lizard species. Ecological Monographs 45: 233-258.

Schoener, T.W., J.B. Losos and D.A. Spiller. 2005. Island biogeography of populations: an introduced species transforms survival patterns. Science 310: 1807-1809.

Scott, M.P. 1984. Agnostic and courtship displays of male Anolis sagrei. Breviora 479: 1-22.

Stamps, J.A. 1999. Relationships between female density and sexual size dimorphism in samples of *Anolis sagrei*. Copeia 1999: 760-765.

Tokarz, R.R. and J.W. Beck, Jr. 1987. Behaviour of the suspected lizard competitors *Anolis sagrei* and *Anolis carolinensis*: an experimental test for behavioural interference. Animal Behaviour 35: 722-734.

4.3.12. Eastern Glass Lizard Ophisaurus ventralis

Subspecies. None described.

The Amphibians and Reptiles of the UK Overseas Territories

Wordwide Distribution. Indigenous to the southeastern USA. Introduced to the Cayman Islands in the 1990s.

Distribution in the UK Overseas Territories and Dependencies. Introduced to Cayman Islands (Grand Cayman) from the United States in the 1990s, although it is not known if this species has become established here.

Threat Posed. Potential competitive interactions with the indigenous and endemic anguid lizard Celestus maculatus.

Recommendations. The distribution and status of this species should be assessed on Grand Cayman and potential control measures considered if necessary.

References (also see general references for the Cayman Islands)

Conant, R. and J.T. Collins. 1991. A Field Guide to Reptiles and Amphibians of Eastern/Central North America. Houghton Mifflin, Boston/New York.

Holman, J.A. 1971. Ophisaurus ventralis. Catalogue of American Amphibians and Reptiles No.115: 1-2.

Krysko, K.L. and T.T. Reppas. 1998. *Ophisaurus ventralis* (eastern glass lizard). Nocturnal activity. Herpetological Review 29: 239.

Moore, J.A., H.T. Smith and R.M. Engeman. 2005. *Ophisaurus ventralis* (eastern glass lizard). Predation. Herpetological Review 36: 182.

Vinegar, A. 1968. Brooding of the eastern glass lizard, *Ophisaurus ventralis*. Bulletin of the Southern California Academy of Science 67: 65-68.

4.3.13. Corn Snake Pantherophis guttatus

Subspecies. None described.

Taxonomic Notes. Formerly known as Elaphe guttata. As Pantherophis is masculine the specific name is now guttatus.

Wordwide Distribution. Indigenous to the southeastern USA. Introduced to Anguilla, the Cayman Islands, the U.S. Virgin Islands, Antigua and St.-Bartélmy.

Distribution in the UK Overseas Territories and Dependencies. Introduced to Anguilla and the Cayman Islands from the United States.

Threat Posed. Potential competitive interactions with indigenous snake species, especially *Alsophis rijgersmaei* on Anguilla and *Tropidophis caymanensis* and *Alsophis cantherigerus caymanus* on Grand Cayman. Potential predation on other indigenous herpetofauna (corn snakes have been recorded eating the endemic *Anolis conspersus* on Grand Cayman). Potentially damaging levels of predation on other wildlife, especially birds. The corn snake is a superb climber and a powerful constrictor so few bird nests would be safe if this species ever became well established in either territory. The environmental disaster that followed the introduction of the ecologically similar brown tree snake *Boiga irregularis* to the Pacific island of Guam should be a salutary lesson.

Recommendations. The distribution and status of this species should be assessed on Anguilla and Grand Cayman and potential control measures considered if necessary.

References (also see general references for Anguilla and the Cayman Islands)

Barnard, S.M., T.G. Hollinger and T.A. Romaine. 1979. Growth and food consumption in the corn snake, *Elaphe guttata guttata* (Serpentes: Colubridae). Copeia 1979: 739-741.

Buckner, S.D. and R. Franz. 1994. Elaphe guttata (corn snake). Bahamas: Little Bahama Bank. Herpetological Review 25: 166.

Burbrink, F.T. 2002. Phylogeographic analysis of the cornsnake (*Elaphe guttata*) complex as inferred from maximum likelihood and Bayesian analyses. Molecular Phylogenetics and Evolution 25: 465-476.

Collins, J.T. and W.T. Travis. 2008. An alternative classification of the New World Rat Snakes (genus *Pantherophis* [Reptilia: Squamata: Colubridae]). Journal of Kansas Herpetology 26: 16-18.

Conant, R. and J.T. Collins. 1991. A Field Guide to Reptiles and Amphibians of Eastern/Central North America. Houghton Mifflin, Boston/New York.

Laposata, M.M. 1999. *Elaphe guttata guttata* (corn snake). Agnostic interactions with potential prey. Herpetological Review 30: 100.

MacMahon, J.A. 1957. Observations on the mating in the corn snake, Elaphe guttata guttata. Copeia 1957: 232.

Powell, R. and R.W. Henderson. 2003. A second set of addenda to the checklist of West Indian Amphibians and Reptiles. Herpetological Review 34: 341-345.

Schulz, K.-D. 1995. A Monograph of the Colubrid Snakes of the Genus *Elaphe* Fitzinger. With Contributions by Andre Entzeroth. Koeltz Scientific Books, Koenigstein, Germany.

Thomas, R. 1975. Taxonomic chaos: *Elaphe guttata* (Linnaeus), a case in point. Bulletin of the Maryland Herpetological Society 11: 171-176.

Utiger, U., N. Helfenberger, B. Schätti, C. Schmidt, M. Ruf and V. Ziswiler. 2002. Molecular systematics and phylogeny of Old World and New World ratsnakes, *Elaphe* Auct., and related genera (Reptilia, Squamata, Colubridae). Russ. J. Herpetol. 9: 105-124.

Utiger, U., B. Schätti and N. Helfenberger. 2005. The oriental colubrine genus *Coelognathus* Fitzinger, 1843 and classification of Old and New World racers and ratsnakes (Reptilia, Squamata, Colubridae, Colubrinae. Russ. J. Herpetol. 12: 39-60.

4.4. Extinct Species

4.4.1. Western Spadefoot Pelobates cultripes

Subspecies. None described.

Wordwide Distribution. Portugal, Spain, Gibraltar (where it is now extinct), southeastern France and parts of western France.

Former Distribution in the UK Overseas Territories and Dependencies. Gibraltar.

Conservation Status. Listed as Near Threatened on the IUCN Red List. Not CITES listed. Although still common in some areas, this species has suffered population declines across most of its range.

Recommendations. Although this species has become extinct in Gibraltar there appears to be little prospect of a future reintroduction as its former breeding habitat has also disappeared. However, the limited alternative options could be examined with a view to restoring this species to the herpetofauna of the territory.

References (also see general references for Gibraltar)

Beja, P., J. Bosch, M. Tejedo, M. Lizana, I. Martínez-Solano, A. Salvador, M. García-París, E. Recuero Gil, V. Perez-Mellado, C. Diaz Paniagua, M. Cheylan, R. Marquez and P. Geniez. 2006. *Pelobates cultripes*. In: IUCN. 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/58052</u>

Busack, S.D. and G.R. Zug. 1976. Observations on the tadpoles of *Pelobates cultripes* from southern Spain. Herpetologica. 32: 130-137.

Cei, J.M. and E.G. Crespo. 1971. Remarks on some adaptive ecological trends of *Pelobates cultripes* from Portugal: thermal requirement, rate of development and water regulation. Arquivos do Museo Bocage., 2nd Ser., 3: 9-36.

Herrero, P. and R.R. Talavera. 1988. Cytotaxonomic studies on Iberian and Moroccan *Pelobates* (Anura: Pelobatidae). Acta Zoologica Cracoviensia 31: 505-508.

Lizana, M., R. Marquez and R. Martin-Sanchez. 1994. Reproductive biology of *Pelobates cultripes* (Anura: Pelobatidae) in Central Spain. Journal of Herpetology 28: 19-27.

Marangoni, F. and M. Tejedo. 2007. Pelobates cultripes (Iberian spadefoot toad). Predation. Herpetological Review 38: 190.

Martinez-Solano, I. 2000. Pelobates cultripes (Iberian spadefoot toad). Predation. Herpetological Review 31: 235.

4.4.2. Puerto Rican Crested Toad Peltophryne lemur

Subspecies. None described.

Taxonomic Notes. Formerly known as Bufo lemur.

Wordwide Distribution. Puerto Rico, where it previously occurred on the north and south coasts of the island, and the British Virgin Islands, where it was formerly known from Virgin Gorda.

Former Distribution in the UK Overseas Territories and Dependencies. British Virgin Islands only (Virgin Gorda).

Conservation Status. Listed as Critically Endangered on the IUCN Red List. Not CITES listed. *Peltophryne lemur* has suffered a catastrophic decline in recent decades, largely as a result of habitat loss, pesticide pollution and competition with introduced marine toads *Rhinella marina* (this species is not implicated in the disappearance of *Peltophryne lemur* from the British Virgin Islands, however, as it was not present on Virgin Gorda). The Puerto Rican crested toad was last recorded on Virgin Gorda in 1964 so can almost certainly be considered extirpated in the British Virgin Islands. This species has not been recorded on the north coast of Puerto Rico since 1992 and is similarly believed to be extinct there. Since then, the only known population left in the world has been on the south coast of Puerto Rico and is found entirely within the Guanica National Forest. However, this population has undergone a steady decline since it was first documented in the early 1980's, when about 2,000 adult toads were present. Some 900 adult toads were recorded here in 1984, in 1998 there were 215 (of which only 34 were females), by 2002 only 100 and in 2003 only 80 mature individuals were recorded. However, in October 2005 over 2,000 toads appeared at the breeding pond to reproduce so it is clear that many aspects of the population dynamics of this species remain unknown. In addition, captive breeding has been successful and a re-introduction programme seems to be showing some success, with captive-bred individuals now returning to the constructed ponds where they were first released.

Recommendations. In the first instance, a feasibility study should be carried out to into possibility of re-introducing *Peltophryne lemur* to the British Virgin Islands. Such an exercise would greatly benefit from the significant experience gained, and the important lessons learned, by those involved in the conservation of the Puerto Rican population.

References (also see general references for the British Virgin Islands)

Angulo, A. 2008. *Peltophryne lemur*. In: IUCN. 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/54345</u>

Barber, D. 2007. Action plan for the conservation of the Puerto Rican crested toad (*Peltophryne lemur*). Pp. 97-103 in: S. Grow and V.A. Poole. Amphibian Conservation Resource Manual. Association of Zoos and Aquariums.

Burrowes, P.A., R.L. Joglar and D.E. Green. 2004. Potential causes for amphibian declines in Puerto Rico. Herpetologica 60: 151-154.

Grandison, A.G.C. 1994. The proper spelling and dates for certain names associated with the endemic West Indian genus of toads (Amphibia: Bufonidae). Herpetological Review 25: 49-50.

Grant, C. 1932. Bufo lemur, a rare Porto Rican toad. Journal of the Department of Agriculture of Porto Rico 16: 41.

Miller, T.J. 1985. Husbandry and breeding of the Puerto Rican toad (*Peltophryne lemur*) with comments on its natural history. Zoo Biology 4: 281-286.

Norton, R.L. 1997. First report of *Peltophryne lemur* from St. John, U.S. Virgin Islands. Bulletin of the Chicago Herpetological Society 32: 106-107.

Norton, R.L. 1998. Comments on habitat and threats to populations of the Puerto Rican Crested Toad (*Peltophryne lemur*) in the Virgin Islands. British Herpetological Society Bulletin 62: 20-21.

4.4.3. Cuban Crocodile Crocodylus rhombifer

Subspecies. None described.

Wordwide Distribution. Cuba, including the Archipélago de los Canarreos and Isla de la Juventud.

Former Distribution in the UK Overseas Territories and Dependencies. Possibly the Cayman Islands (Grand Cayman).

Conservation Status. Listed as Critically Endangered on the IUCN Red List and on CITES Appendix I. This species is no longer found in most of its historic range and is currently restricted to two relatively small areas in Cuba. Its principal distribution is in the Zapata Swamp, where it occupies an area of 360 km². In the Lanier Swamp on Isla de la Juventud its present distribution is 35 km². Although this species is frequently cited as being formerly present on the Grand Cayman in Cayman Islands, it is unclear if this species was ever actually indigenous or not. There is no suitable habitat on the island and it is possible that wandering individuals of *Crocodylus acutus*, which readily cross open seas, may have led to this assumption.

Recommendations. The status of *Crocodylus rhombifer* in terms of its possible former presence on the Cayman Islands should be clarified one way or the other.

References (also see general references for the Cayman Islands) Amphibian and Reptile Conservation 121 Casas-Andreu, G. 1997. Dispersión o vicarianza en la distribución de *Crocodylus* en el continente Americano. Pp: 44-51 in: Memorias de las 4ta Reunión Regional del Grupo de Especialistas en Cocodrilos de América Latina y el Caribe. Centro Regional de Innovación Agroindustrial, S.C. Villahermosa, Tabasco.

Cayman Wildlife Connection. 2004. Wildlife (including a checklist of the indigenous and introduced species of amphibian and reptile of the Cayman Islands). Online at: <u>http://www.caymanwildlife.org/wildlife.html#frogs</u>

Franz, R., G.S. Morgan, N. Albury and S.D. Buckner. 1995. Fossil skeleton of a Cuban crocodile (*Crocodylus rhombifer*) from a blue hole on Abaco, Bahamas. Caribbean J. Sci. 31: 149-152.

Morgan, G.S. and T.H. Patton. 1979. On the occurrence of *Crocodylus* (Reptilia, Crocodylidae) in the Cayman Islands, British West Indies. Journal of Herpetology 13: 289-292.

Morgan, G.S., R. Franz and R.I. Crombie. 1993. The Cuban crocodile, *Crocodylus rhombifer*, from late Quaternary fossil deposits on Grand Cayman. Caribbean J. Sci. 29: 153-164.

Ross, F.D. 1998. Crocodylus rhombifer. Catalogue of American Amphibians and Reptiles No. 680: 1-18.

Targarona, R.R., R.R. Soberón, L. Cotayo, M.A. Tabet and J. Thorbjarnarson. 2008. *Crocodylus rhombifer*. In: IUCN. 2008. 2008 IUCN Red List of Threatened Species.

Varona, L. S. 1986. Algunos datos sobre la etologia de Crocodylus rhombifer (Reptilia: Crocodylidae). Poeyana 313: 1-7.

Weaver, J.P., D. Rodriguez, M. Venegas-Anaya, J.R. Cedeño-Vázquez, M.R.J. Forstner and L.D. Densmore. 2008. Genetic characterization of captive Cuban crocodiles (*Crocodylus rhombifer*) and evidence of hybridization with the American crocodile (*Crocodylus acutus*). J. Exp. Zool. 309: 649-660.

4.4.4. Red-footed Lizard Acanthodactylus erythrurus

Subspecies. None described.

Taxonomic Notes. Formerly known as Acanthodactylus vulgaris.

Wordwide Distribution. Portugal, Spain, Gibraltar (where it is now extinct) and parts of northwestern Africa.

Former Distribution in the UK Overseas Territories and Dependencies. Gibraltar.

Conservation Status. Listed as Least Concern on the IUCN Red List. Not CITES Listed. Although generally still abundant in sandy areas with sparse vegetation throughout most of its range, this species has declined in some coastal regions of Spain and Portugal due to intensive development. It has become extinct in Gibraltar through development and also because most of the Great Sand Slopes on the east side of the Rock, one of the main habitats for this species, were formerly covered with tin sheeting to collect rainwater (see Map 13, page 49).

Recommendations. Since the tin sheeting has been removed and the process of restoring the natural vegetation of the Great Sand Slopes is now well underway, it should be possible to re-introduce this species to Gibraltar. A re-introduction programme should therefore be planned and implemented as appropriate.

References (also see general references for Gibraltar)

Bons, J. and P. Geniez. 1995. Contribution to the systematics of the lizard *Acanthodactylus erythrurus* (Sauria, Lacertidae) in Morocco. Herpetological Journal 5: 271-280.

Busack, S.D. 1987. Reproduction in a Spanish population of *Acanthodactylus erythrurus* (Reptilia: Lacertilia: Lacertilae). Annals of Carnegie Museum 56: 97-102.

Busack, S.D. and F. M. Jaksic. 1982. Autecological observations of *Acanthodactylus erythrurus* (Sauria: Lacertidae) in southern Spain. Amphibia-Reptilia 3: 237-255.

Castilla, A.M., L.J. Barbadillo and D. Bauwens. 1991. Annual variation in reproductive traits in the lizard *Acanthodactylus erythrurus*. Canadian Journal of Zoology 70: 395-402.

Franke, E. 1995. Beobachtungen am Europäischem Fransenfinger in Südspanien. Die Eidechse 6: 4-5.

Harris, D.J. and E.N. Arnold. 2000. Elucidation of the relationships of spiny-footed lizards, *Acanthodactylus* ssp. (Reptilia: Lacertidae) using mitochondrial DNA sequence, with comments on their biogeography and evolution. J. Zool. (London) 252: 351-362.

Harris, D. J., V. Batista and M. A. Carretero. 2004. Assessment of genetic diversity within *Acanthodactylus erythrurus* (Reptilia: Lacertidae) in Morocco and the Iberian Peninsula using mitochondrial DNA sequence data. Amphibia-Reptilia 25: 227-232.

Martín, J. and P. López. 2003. Changes in the escape responses of the lizard *Acanthodactylus erythrurus* under persistent predatory attacks. Copeia 2003: 408-413.

Pérez-Quintero, J. C. 1996. Reproductive characteristics of three Mediterranean lizards: *Psammodromus algirus* (L.), *Psammodromus hispanicus* Fitzinger and *Acanthodactylus erythrurus* (Schinz). Amphibia-Reptilia 17: 197-208.

Salvador, A. 1982. A revision of the lizards of the genus *Acanthodactylus* (Sauria: Lacertidae). Bonner Zoologische Monographien No. 16: 1–167.

Slimani, T., J.A.M Miras, U. Joger, H. El Mouden and P. Geniez. 2006. *Acanthodactylus erythrurus*. In: IUCN. 2008. 2008 IUCN Red List of Threatened Species. Online at: <u>http://www.iucnredlist.org/details/61456</u>

4.4.5. Anguilla Bush Bank Anole Anolis pogus

Subspecies. None described.

Taxonomic Notes. Formerly known as Anolis wattsi pogus.

Wordwide Distribution. Anguilla, where it is now apparently extinct, St. Martin and also possibly St. -Bartélémy.

Former Distribution in the UK Overseas Territories and Dependencies. Anguilla.

Conservation Status. Not listed on the IUCN Red List or any CITES appendices. This species is now apparently extinct on Anguilla. Its status on St. Martin and St. –Bartélémy is not known.

Recommendations. A feasibility study should be carried out into the possibility of re-introducing this species to Anguilla.

References (also see general references for Anguilla)

Breuil, H. 2002. Histoire naturelle des amphibiens et reptiles de l'Archipel Guadeloupéen: Guadeloupe, Saint-Martin, Saint-Barthélémy. Patrimoines naturels 54: 1-339.

Lazell, J.D. 1972. The anoles (Sauria: Iguanidae) of the lesser Antilles. Bull. Mus. comp. Zool. Harvard 143: 1-115.

Nicholson, K.E., R.E. Glor, J.J. Kolbe, A. Larson, S.B. Hedges and J.B. Losos. 2005. Mainland colonization by island lizards. Journal of Biogeography 32: 929–938.

Pacala, S. and J. Roughgarden. 1982. Resource partitioning and interspecific competition in two-species insular *Anolis* lizard communities. Science 217: 444-446.

Poe, S. 2004. Phylogeny of anoles. Herpetological Monographs 18: 37-89.

Powell, R., R.J. Passaro and R.W. Henderson. 1992. Noteworthy herpetological records from Saint Maarten, Netherlands Antilles. Carib. J. Sci. 28: 234-234.

Powell, R. and R.W. Henderson. 2001. On the taxonomic status of some lesser Antillean lizards. Carib. J. Sci. 37: 288-290.

Powell, R., R.W. Henderson and J.S. Parmerlee. 2005. The Reptiles and Amphibians of the Dutch Caribbean. St. Eustatius, Saba, and St Maarten. The St. Eustatius National Parks Foundation.

Schneider, C. J., J. B. Losos, and K. de Queiroz. 2001. Evolutionary relationships of the *Anolis bimaculatus* group from the northern Lesser Antilles. Journal of Herpetology 35: 1-12.

Stenson, A.G., R.S. Thorpe and A. Malhotra. 2004. Evolutionary differentiation of *bimaculatus* group anoles based on analyses of mtDNA and microsatellite data. Molecular Phylogenetics and Evolution 32: 1–10.

4.4.6. Roosevelt's Giant Anole Anolis roosevelti

Subspecies. None described.

Wordwide Distribution. The British Virgin Islands (Tortola) and the islands of Vieques and Culebra, east of Puerto Rico.

Former Distribution in the UK Overseas Territories and Dependencies. British Virgin Islands, where it has been reported from Tortola.

Conservation Status. Listed as Critically Endangered on the IUCN Red List. Not CITES listed. The status of this species is not known. It is only known from two specimens from Culebra and a handful of reports from Vieques and Tortola. It is possible that this species is extinct on any of these islands or none of them. It is also conceivable that some of the anecdotal reports of giant anoles on Vieques or Tortola could have actually have been examples of the Puerto Rican giant anole Anolis cuvieri, which is similar in size and appearance. Both also frequent forest canopies and such species are notoriously difficult to find.

Recommendations. A lot of uncertainties surround this species. It will not be possible to develop any kind of conservation strategy without first determining whether it is still extant on Tortola and, indeed, if the species previously reported here was Anolis roosevelti or Anolis cuvieri. A survey for this species using appropriate methodology (e.g. specialised canopy traps for reptiles) should therefore be conducted on Tortola.

References (also see general references for the British Virgin Islands)

Conyers, J. & Wingate, D. 1996. Anolis roosevelti. In: IUCN. 2008. 2008 IUCN Red List of Threatened Species. Online at: http://www.iucnredlist.org/details/1319

Davis, C., P. Fleming, M. Craig, A. Grigg and G. Hardy. 2008. A funnel trap for capture of small arboreal reptiles. Amphibia-Reptilia 29: 413-423.

Dodd, C.K, Jr. and H.W. Campbell. 1982. Anolis roosevelti. Catalogue of American Amphibians and Reptiles No.300: 1-2.

Dodd, C.K., Jr. 1979. A bibliography of endangered and threatened amphibians and reptiles in the United States and its territories (conservation, distribution, natural history, status). Smithsonian Herpetological Information Service 46: 1-35.

Grant, C. 1931. A new species and two new sub-species of the genus Anolis. Jour. Dept. Agric. Puerto Rico 15: 219-222.

Poe, S. 2004. Phylogeny of anoles. Herpetological Monographs 18: 37-89.

4.4.7. Viperine Snake Natrix maura

Subspecies. None described.

Wordwide Distribution. The viperine snake is found in Portugal, Spain, Gibraltar (where it is now extinct), most of France (except the north), western Switzerland, northwestern Italy and parts of northwestern Africa. It also occurs on the Mediterranean islands of Sardinia (Italy), Corsica and Îles d'Hyéres (France) and La Galit (Tunisia). It has been introduced to the islands of Menorca and Mallorca in the Balearic Islands (Spain).

Former Distribution in the UK Overseas Territories and Dependencies. Gibraltar.

Conservation Status. Listed as Least Concern on the IUCN Red List. Not CITES Listed. Natrix maura is still an extremely abundant species in many parts of its range and is almost usually the most frequently encountered snake in the Iberian Peninsula. Nonetheless, it is threatened in parts of its European range by habitat loss, pollution and persecution and has become extinct in Gibraltar. It may also be declining locally in some parts of North Africa.

Recommendations. Since apparently introduced specimens of Natrix maura have been recorded in Gibraltar, the status of this species in the territory should be examined with a view to developing an appropriate conservation strategy.

References (also see general references for Gibraltar)

Blackwell, K. 1952. Notes on the viperine snake (Natrix maura). British Journal of Herpetology 1: 134-136.

Galán, P. 2004. Natrix maura (Viperine Snake). Marine inhabitation. Herpetological Review 35: 71.

Guicking, D., U. Joger and M. Wink. 2008. Molecular phylogeography of the viperine snake Natrix maura (Serpentes: Colubridae): evidence for strong intraspecific differentiation. Organisms Diversity & Evolution 8: 130-145.

Hailey, A. and P.M.C. Davies. 1986a. Effects of size, sex, temperature and condition on activity metabolism and defence behaviour of the viperine snake, Natrix maura. Journal of Zoology (London) 208: 541-558.

Hailey, A. and P.M.C. Davies. 1986b. Diet and foraging behaviour of Natrix maura. Herpetological Journal 1: 53-61.

Hailey, A. and P.M.C. Davies. 1987c. Activity and thermoregulation of the snake Natrix maura 1. R and K thermoregulation. Journal of Zoology (London) 213: 71-80. Amphibian and Reptile Conservation

Kühnel, D. 2002. Natrix maura (Linnaeus). Sauria (Suppl.) 24: 569-572.

Miras, J.A.M., M. Cheylan, M.S. Nouira, U. Joger, P. Sá-Sousa, P., V. Pérez-Mellado, B. Schmidt and A. Meyer. 2006. *Natrix maura*. In: IUCN. 2008. 2008 IUCN Red List of Threatened Species. Online at: http://www.iucnredlist.org/details/61538

Patterson, J.W., and P.M.C. Davies. 1982. Predatory behavior and temperature relations in the snake *Natrix maura*. Copeia 1982: 472-474.

Pleguezuelos, J. M. and M. Moreno. 1989. Alimentación primaveral de *Natrix maura* (Linné, 1758) (Ophidia, Colubridae) en el S.E. de la Península Ibérica. Rev. Esp. Herpetol. 3: 221-236.

Santos, X. 2004. Culebra viperina – *Natrix maura*. In: L.M. Carrascal and A. Salvador (Eds.). Enciclopedia Virtual de los Vertebrados Españoles. Museo Nacional de Ciencias Naturales, Madrid. Online at: <u>http://www.vertebradosibericos.org/reptiles/pdf/natmau.pdf</u>

Santos, X., G.A. Llorente, M. Feriche, J.M. Pleguezuelos, F. Casals and A. de Sostoa. 2005. Food availability induces geographic variation in reproductive timing of an aquatic oviparous snake (*Natrix maura*). Amphibia-Reptilia 26: 183-191.

Schätti, B. 1982. Bemerkungen zur Ökologie, Verbreitung und intraspezifische Variation der Vipernatter, *Natrix maura* (Linné 1758) (Reptilia, Serpentes). Rev. suisse Zool. 89: 521-542.

Schätti, B. 1999. *Natrix maura* (Linnaeus, 1758). Vipernatter. Pp. 483-503 in W. Böhme (Ed.). Handbuch der Reptilien und Amphibien Europas, Band 3/IIA: Schlangen II. Aula Verlag, Wiesbaden.

Willsch, J. 1984. Viermalige Eiablage von Natrix maura (Linnaeus 1758). Herpetofauna 6: 19-21.

5. Recommendations

Most of the following general recommendations are related to further scientific research, information gathering and other related activities that will enhance the conservation of amphibians and reptiles in the UK Overseas Territories and Dependencies. In particular, a huge amount of basic research information is still needed to help inform conservation planning, so many of these recommendations will be of particular interest to universities and other research institutions. It is beyond the scope of this report to suggest anything more than general conservation actions for individual protected areas or species of herpetofauna – specific recommendations are best formulated "in-country" and should based on detailed fieldwork, consultation and planning. At the very least, however, realising some of the recommendations below will ensure that herpetofauna conservation is carried out in an increasingly co-ordinated manner across the territories and, not least, that funding priorities become more obvious.

- **Survey**: Considerably more basic survey work for amphibians and reptiles is needed across all territories. In many cases, even simple distribution data is lacking, particularly for territories with numerous islands. Particular priorities for urgent herpetofauna survey work include the Cyprus Sovereign Base areas (where very few herpetological records exist) and the British Virgin Islands and Turks and Caicos Islands (where there are large knowledge gaps)
- Species occurrence: Further verification is needed about the presence of some species in the territories. For example, more thorough searches are required for some species, such as *Anolis roosevelti* on the British Virgin Islands, that are thought to be extinct. Anomalies such as the questionable presence of *Anolis cuvieri*, also on the BVI, need to be clarified. It should also be decided whether species like the Cuban crocodile, *Crocodylus rhombifer*, warrant continued inclusion on any herpetofauna lists for the territories when there is so much doubt about whether they were ever indigenous or not, in this case on the Cayman Islands.
- Status assessments and monitoring: Population status monitoring of more priority species is vital, either through direct study or by means of habitat proxies, and all regular existing work of this kind (e.g. for the sea turtles and ground iguanas) should be continued. While determining the status of some species, especially snakes, can be very difficult to achieve, other species lend themselves well to this sort of work. At any rate, it is easier to produce conservation strategies and to make decisions based on limited data than on no data at all.
- Ecological research: Basic life history, ecological and behavioural research is still required for most species. In particular, more detailed research into the specific habitat requirements of priority species would be extremely useful for those producing and implementing reserve management plans. In some cases, such research also has implications for other species of conservation concern. For example, it would be interesting to examine in more detail the relationship between the Bermuda skink and the even more endangered Bermuda petrel *Pterodoma cahow* (which was once thought to be extinct). It has been postulated that, when both species were much more abundant centuries ago, scavenging skinks helped to keep the burrow nests of petrels free of parasites and rotting organic matter, but it is simply not known if this had any significance for the survival of petrel chicks.
- **Mapping:** Species distribution and key herpetofauna habitats should be mapped using GIS for all territories and this information should be fed into the national GIS systems that exist in each territory and dependency. In many cases, adequate habitat information already exists "in-country" and simply needs to be interpreted from a herpetological viewpoint (that is, as far as the existing data on herpetofauna distribution and habitat use allows this to be done). Using standardised selection criteria, "Important Herpetofaunal Areas" should be identified for all UK Overseas Territories, Crown Dependencies and the Sovereign Base Areas and the information made available to all territory governments and through a central web-based database.
- **Taxonomy:** Continued taxonomic research is crucial, not only to further clarify the often-complex relationships among and between amphibian and reptile groups, but also to identify more examples of genetically distinct taxa that are likely to occur on many small islands. Regular updates on taxonomic changes, and their general acceptance or otherwise by the scientific community, need to be communicated to non-herpetologists since the identification of new species, particularly endemic ones, has significant implications for conservation planning.
- Indigenous status: More research is needed into the possible origins of a number of species in order to determine whether they are indigenous to certain territories or not. For example, if it were established beyond a reasonable doubt that the diamondback terrapin *Malaclemys terrapin* is in fact indigenous to Bermuda, as suspected, this would completely change the conservation status of this species. Similar species include *Chelonoides carbonaria* in three of the Caribbean territories, *Trachemys decussata* on the Cayman Islands, *Iguana iguana* on Montserrat and so on. It would be useful to agree on a standard checklist of indigenous and native species for the territories, rather than continually speculate on the category to which some species should be assigned. In the cases of some of the Caribbean islands, where species can move between islands by more than one means, a clear definition of what exactly is meant by indigenous is also required.
- Genetics and population viability: The fact that many of the territories are small islands adds significant urgency to the need for more population and habitat viability assessments and genetic research on many of their amphibian and reptile populations. Such research will facilitate decision making about conservation and funding priorities.

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- Introduced species: Although much has already been done, more research is needed on the impact of introduced species, one of the more insidious threats to the indigenous herpetofauna of the territories. This may include studies on competition, predation, genetic pollution or the spread of disease by introduced amphibians and reptiles, or the effects (both direct and indirect) of other introduced taxa such as invasive plants, mongooses, goats, and so on, on the indigenous herpetofauna. A standardised methodology has been produced by the UK Government (Defra) that enables risk assessments to be conducted for newly introduced species whose eventual impacts, and hence the necessity and urgency of implementing early control measures, are uncertain (http://www.nonnativespecies.org/). An important adjunct to such studies would be the investigation of the effectiveness of practical control methods for the "problem" species.
- **Disease:** A particularly pressing concern with regards to amphibians is the need for more research into the spread and effects of the chytrid fungus (*Batrachochytrium dendrobatidis*), which has decimated many amphibian populations around the world. While there are comparatively few amphibian species in the territories, several are of considerable conservation importance. The recent mass die off of the mountain chicken *Leptodactylus fallax* on Montserrat reported by the Durrell Wildlife Conservation Trust, lends even more urgency to the need to find an effective solution. Alongside direct studies on the spread of chytrid fungus, and the most appropriate responses to this problem, more research also needs to be carried out into some of the less obvious underlying environmental factors that may be acting in concert to influence the impacts of this enigmatic pathogen.
- **Captive breeding:** While in-situ conservation and habitat protection must remain the top priorities for the herpetofauna of the territories, more species should be assessed for their suitability for captive breeding programmes and, importantly, whether or not they met the criteria for re-introduction programmes or whether there is a benefit for other ex-situ measures (e.g. 'insurance' collections).
- **Climate change:** Research is required into the potential impacts of climate change on the territories this may soon become one of the most important factors affecting "cold blooded" amphibians and reptiles inhabiting so many small and often low-lying islands.
- **Training:** Capacity building, including increased training in herpetological research, survey and monitoring techniques, should be encouraged and supported as much as possible in the territories.
- **Database:** A central database about the amphibians and reptiles of the UK Overseas Territories, Crown Dependencies and Sovereign Bases Areas should be established that directly links to and supports the territory databases. This could include species distribution and population monitoring records, habitat details (using standardised GIS mapping), plus information about existing specimens, genetic material, captive animals, available literature, existing research and conservation efforts and the contact details of relevant people.
- Expert group: It would also be useful to establish an "Overseas Territories Herpetofauna Working Group", perhaps as a subgroup of the existing Overseas Territories Training and Research Programme. This should include government and NGO representatives from the various territories and the UK, plus any other interested herpetologists, conservationists or researchers. Such a group, which would obviously have to be largely co-ordinated by e-mail, would enable an easier exchange of information and ideas specifically relating to herpetofauna conservation in the territories. Given sufficient interest and contributions, a regular PDF-format newsletter could be produced fairly readily to keep members informed about issues of concern, progress made and lessons learned plus of course the inevitable future name changes.

Appendix: Summary of Recent Taxonomic Changes (to July 2010)

The tables below summarise the numerous taxonomic changes that have taken place in recent years and that affect many of the native and introduced amphibian and reptile species recorded in the UK Overseas Territories, Crown Dependencies and Sovereign Base Areas. All the names concerned in each change, former and current, are included and are cross-referenced with each other for easy location. Current species, generic and family names, as used in this report, are shown in **bold** for easier location. Common spelling errors that sometimes appear in species accounts, especially on the Internet, are also corrected here.

N.B. these are recent changes (most have occurred in the last 5 to 10 years) and synonyms and alternative names that were used prior to the 1980s are not included. In a few cases, name changes that appear likely to occur in the near future are indicated. This is meant to be a useful guide only – where appropriate, the relevant references are included in the species accounts. It should be borne in mind that amphibian and reptile taxonomy is presently in a state of considerable instability and that there is no single set of perfect names for all the species in a given country or taxon. As a result, not all of the changes reported here will be universally accepted or adopted and, even if they are, this summary will still be rapidly out of date. However, regular updates will be posted on the Amphibian and Reptile Conservation website at: http://www.arc-trust.org

Name	Taxonomic Notes
Ablepharus boutonii poecilopleurus	Former name – currently known as Cryptoblepharus poecilopleurus
Ablepharus budaki	Current name – formerly known as Ablepharus kitaibelii budaki
Ablepharus kitaibelii budaki	Former name – currently known as Ablepharus budaki
Acanthodactylus erythrurus	Current name – formerly known as Acanthodactylus vulgaris
Acanthodactylus vulgaris	Former name – currently known as Acanthodactylus erythrurus
Agama stellio	Former name – currently known as Laudakia stellio
Alsophis cantherigerus caymanus	Former name – currently known as Cubophis caymanus
Alsophis cantherigerus fuscicauda	Former name – currently known as Cubophis fuscicauda
Alsophis cantherigerus ruttyi	Former name – currently known as Cubophis ruttyi
Alsophis manselli	Current name – formerly known as Alsophis manselli antillensis
Alsophis manselli antillensis	Former name – currently known as Alsophis manselli
Alsophis portoricensis	Former name – currently known as Borikenophis portoricensis
Alsophis rijersmai	Published error – the correct name is Alsophis rijgersmaei
Alsophis rijgersmaei	Correct name – has been referred to in error as Alsophis rijersmai
Ameiva pleei	Published error – the correct name is Ameiva plei
Ameiva plei	Correct name – has been referred to in error as Ameiva pleei or pleii
Ameiva pleii	Published error – the correct name is Ameiva plei
Anolis bimaculatus leachii	Former name – currently known as Anolis leachii
Anolis cuvieri	Correct name – has been referred to in error as Semiurus cuvieri
Anolis extremus	Current name – formerly known as Anolis roquet extremus
Anolis leachi	Published error – the correct name is Anolis leachii
Anolis leachii	Current name - formerly known as Anolis bimaculatus leachii and sometimes in
	error as Anolis leachi
Anolis luteosignifer	Current name – formerly known as Anolis sagrei luteosignifer
Anolis pogus	Current name – formerly known as Anolis wattsi pogus
Anolis roquet extremus	Former name – currently known as Anolis extremus
Anolis sagrei luteosignifer	Former name – currently known as Anolis luteosignifer
	Current name – many of the Anolis lizards can also be referred to under the generic
Anolis species	name of Norops. The current taxonomic situation remains somewhat confused,
	however, so Anolis is used here for all species of the Family Polychrotidae
Anolis wattsi pogus	Former name – currently known as Anolis pogus
Arrhyton exiguum	Former name – currently known as Magliophis exiguus
Arrhyton exiguus	Published error – the correct name is <i>Magliophis exiguus</i>
Borikenophis portoricensis	Current name – formerly known as Alsophis portoricensis
Bufo calamita	Former name – currently known as Epidalea calamita
Bufo lemur	Former name – currently known as <i>Peltophryne lemur</i>
Bufo marinus	Former name – currently known as Rhinella marina
Bufo melanostictus	Former name – currently known as Duttaphrynus melanostictus
Bufo viridis	Former name – currently known as Epidalea viridis
Celestus crusculus maculatus	Former name – currently known as Celestus maculatus
Celestus maculatus	Current name – formerly known as Celestus crusculus maculatus
Chaunus marinus	Former name – currently known as Rhinella marina
Chelonoidis carbonaria	Current name – formerly known as Geochelone carbonaria or Testudo carbonaria

Name	Taxonomic Notes
Cryptoblepharus boutonii peocilopleurus	Former name – currently known as Cryptoblepharus poecilopleurus
Cryptoblepharus poecilopleurus	Current name – formerly known as Cryptoblepharus boutonii peocilopleurus or
	Ablepharus boutonii poecilopleurus
Chrysemys decussata	Published error – the correct name is Trachemys decussata
Chrysemys nelsoni	Former name – currently known as Pseudemys nelsoni
Chrysemys rubriventris nelsoni	Former name – currently known as Pseudemys nelsoni
Chrysemys scripta	Former name – currently known as <i>Trachemys scripta</i>
Coluber cypriensis	Former name – currently known as <i>Dolichophis cypriensis</i>
Coluber hippocrepis	Former name – currently known as <i>Hemorrhois hippocrepis</i>
Coluber jugularis	Former name – currently known as <i>Dolichophis jugularis</i>
Coluber najadum	Former name – currently known as <i>Platyceps najadum</i>
Coluber nummiter	Former name – currently known as <i>Hemorrhois nummiter</i>
Coluber ravergieri nummiter	Former name – currently known as <i>Hemorrhois nummiter</i>
Cubophis caymanus	Current name – formerly known as Alsophis cantherigerus caymanus
Cubophis fuscicauda	Current name – formerly known as Alsophis cantherigerus fuscicauda
Cubophis ruttyi	Current name – formerly known as Alsophis cantherigerus ruttyi
Cyclura lewisi	Current name – formerly known as Cyclura nubila lewisi
	Former name – currently known as Cyclura lewisi
Cyrtonadion kotochyl	Former name – currently known as Cyrlopodion kolschyl
Cyrtopodion Kotschyl	Current name – formeny known as Cyriodactylus kolschyl or Mediodactylus
Dabaja lobatina	Kolschyl of Tehuluaciylus Kolschyl
Dabola lebellilla Dolicophis cypriensis	Published error – the correct name is Dalichaphis cupriancis
Dolicophis cypriensis	Current name – formerly known as Coluber cypriensis or Hierophis cypriensis
Donenopina cyprienaia	sometimes in error as Dolicophis cypriensis
Dolichophis iugularis	Current name – formerly known as <i>Coluber jugularis</i> or <i>Hierophis jugularis</i>
Dromicus exiauum	Former name – currently known as Maaliophis exiguus
Duttaphrvnus melanostictus	Current name – formerly known as <i>Bufo melanostictus</i> (see BIOT account)
Eirenis levantinus	Current name – formerly known as <i>Eirenis modestus</i>
Eirenis modestus	Former name – currently known as Eirenis levantinus
Elaphe guttata	Former name – currently known as Pantherophis guttatus
Elaphe scalaris	Former name – currently known as Rhinechis scalaris
Eleutherodactylus gossei	Current name – but likely to be changed to Euhyas gossei. This species has also
	been known in error as Eleutherodactylus oligaulax
Eleutherodactylus lentus	Current name – but likely to be changed to Euhyas lenta
Eleutherodactylus planirostris	Current name – but likely to be changed to Euhyas planirostris
Eleutherodactylus oligaulax	Published error – the correct name is <i>Eleutherodactylus gossei</i>
Epidalea calamita	Current name – formerly known as Bufo calamita
Epidalea viridis	Current name – formerly known as Bufo viridis. May also be called Pseudepidalea
	viridis, although this name is not widely considered to be valid
Eumeces longirostris	Former name – currently known as Plestiodon longirostris
Eumeces schneideri	Current name – formerly known as <i>Novoeumeces schneideri</i> (N.B. this species is
	switched regularly between these two generic names)
Family, Durahasan halidaa	The members of this frog family in the Caribbean UK Overseas territories (all
Family Brachycephalidae	Eleventerodactylus species) were formerly included within the family Leptodactylidae
	enlarged family
	This lizard family is sometimes elevated from the Iquanidae but this arrangement is
Family Leiocephalidae	not used here – both <i>Leiocenhalus</i> species in the UK Overseas Territories are
	therefore included in the Tropiduridae
	This lizard family is sometimes elevated from the Iguanidae but this arrangement is
Family Liolaemidae	not used here – the single Liolaemus species in the UK Overseas Territories is
	therefore included in the Tropiduridae
	The members of this newly created frog family, including Strongylopus grayii
Family Pyxicephalidae	(introduced to St. Helena), were formerly included within the family Ranidae. Some
	additional genera were also added to the Pyxicephalidae from the family
	Petropedetidae, although none of these occur in the UK Overseas Territories.
Family Polychrotidae	This lizard family was formerly included within the family Iguanidae
Family Tropidophiidae	This snake family was formerly included within the family Boidae
Family Tropiduridae	I his lizard family was formerly included within the family Iguanidae and, as used
Carabalana agut an ania	nere, includes the genera Leiocephalus and Liolaemus
	Former name – currently known as <i>Chelonoidis carbonaria</i>
Geoemyda trijuga	Former name – currently known as <i>ivielanochelys trijuga</i>

Name	Taxonomic Notes
Haemorrhois hippocrepis	Published error – correct name is Hemorrhois hippocrepis
	Published error – correct name is Platyceps najadum (N.B. not only was this
Haemorrhois najadum	species placed in the wrong genus, but Haemorrhois was an incorrect spelling - it
	should be <i>Hemorrhois</i>)
Hierophis cypriensis	Former name – currently known as <i>Dolichophis cypriensis</i>
Hierophis jugularis	Former name – currently known as <i>Dolichophis jugularis</i>
Hemorrhois hippocrepis	Current name – formerly known as <i>Coluber hippocrepis</i> and sometimes in error as
	Haemorrhois hippocrepis
Hemorrhois nummifer	Current name – formerly known as Coluber nummiter or Coluber ravergieri
Llomorrhoia rovorgiari nummifor	nummiler of Hemorrhols ravergien hummiler
	Former name – currently known as Helioriniois numinier
Hyla abbiea savignyi	Current name – formerly known as Hyla arborea savignyi
Hyla sententrionalis	Former name – currently known as Osteopilus sententrionalis
Hylarana bedriagae	Former name – currently known as Pelophylay bedriagae
Hylarana perezi	Former name – currently known as Pelophylax perezi
l acerta bilineata	Current name – formerly known as Lacerta viridis bilineata
Lacerta hispanicus	Former name – currently known as <i>Podarcis hispanicus</i>
Lacerta laevis troodica	Former name – currently known as Phoenicolacerta troodica
Lacerta lepida	Former name – currently known as <i>Timon lepidus</i>
Lacerta muralis	Former name – currently known as <i>Podarcis muralis</i>
Lacerta viridis bilineata	Former name – currently known as Lacerta bilineata
Lacerta vivipara	Former name – currently known as Zootoca vivipara
Laudakia stellio	Current name – formerly known as Agama stellio or Placoderma stellio
Lissotriton helveticus	Current name – formerly known as Triturus helveticus
Lissotriton vulgaris	Current name – formerly known as Triturus vulgaris
Mabuya bistriata	Former name – see Mabuya sloanii complex
Mabuya mabouya	Former name – see Mabuya sloanii complex
Mabuya sloanii	Former name – see Mabuya sloanii complex
	The distribution and status of these skinks in the Caribbean is poorly understood.
<i>Mabuya sloanii</i> complex	This species complex, as used in this report, currently includes all former references
	to Mabuya bistriata, Mabuya mabouya and Mabuya sloanii in the Caribbean UK
	Overseas Territories (N.B. <i>Mabuya macleani</i> is not included)
Mabuya vittata	Former name – currently known as Trachylepis vittata
Macrovipera lebetina	Current name – formerly known as Vipera lebetina or Daboia lebetina
Magliophis exiguus	Current name – formerly known as <i>Dromicus exiguum</i> or <i>Arrhyton exiguus</i> and
	sometimes in error as Arrnyton exiguus
Malpalan incignitus	Current name – formerly known as <i>Malpolon monspessularus insignitus</i> (N.B. this
Maipolon insignitus	East and on Cyprus – Malnalan manspessulanus manspessulanus from southern
	and southwestern Europe including Gibraltar remains unchanged)
Malpolon monspessulanus insignitus	Former name – currently known as <i>Malpolon insignitus</i>
Mauremys caspica leprosa	Former name – currently known as <i>Mauremys leprosa</i>
Mauremys caspica rivulata	Former name – currently known as Mauremys rivulata
Mauremys leprosa	Current name – formerly known as <i>Mauremys caspica leprosa</i>
Mauremys rivulata	Current name – formerly known as <i>Mauremys caspica rivulata</i>
Mediodactylus kotschyi	Former name – currently known as Cyrtopodion kotschyi
Melanochelys trijuga	Current name – formerly known as Geoemyda trijuga
	Alternative name - Norops may be used for various species of lizard referred to
Norops species	here under the generic name of Anolis. The current taxonomic situation remains
	somewhat confused, however, so Anolis is used here for the time being for all
	species of the Family Polychrotidae in the Caribbean Overseas Territories.
Novoeumeces schneideri	Former name – currently known as Eumeces schneideri (N.B. over the years, this
	species has been switched regularly between these two generic names)
Usteopilus septentrionalis	Current name – tormerly known as <i>Hyla septentrionalis</i>
Pantherophis guttata	Published error – the correct name is Pantherophis guttatus
Pantneropnis guttatus	Current name – tormerly known as <i>Elaphe guttata</i> or <i>Pituophis guttatus</i> and
Polonbulov bodriggo	sometimes in error as Paninerophis guttata
геюрпунах веопадае	ourrent name – tormeny known as nana bedriagae of Kana esculenta bedriagae of
Pelophylax perezi	Current name – formerly known as Rana perezi or Rana esculenta perezi or Rana
i Siophylax polozi	ridibunda perezi or Hylarana perezi or Rana 'grafi' hybrid

Name	Taxonomic Notes
Peltaphryne lemur	Published error – the correct name is <i>Peltophryne lemur</i>
Peltophryne lemur	Current name – formerly known as <i>Bufo lemur</i> and sometimes in error as <i>Peltaphryne lemur</i>
Phoenicolacerta laevis troodica	Former name – currently known as Phoenicolacerta troodica
Phoenicolacerta troodica	Current name – formerly known as Lacerta laevis troodica or Phoenicolacerta laevis troodica
Pituophis guttatus	Former name – currently known as Pantherophis guttatus
Placoderma stellio	Former name – currently known as Laudakia stellio
Platyceps najadum	Current name – formerly known as <i>Coluber najadum</i> and sometimes in error as <i>Haemorrhois</i> (<i>sic</i> – should be <i>Hemorrhois</i>) <i>najadum</i>
Plestiodon longirostris	Current name – formerly known as Eumeces longirostris
Pleurodeles waltl	Correct name – has been referred to in error as Pleurodeles waltlii
Pleurodeles waltlii	Published error – the correct name is Pleurodeles waltl
Podarcis hispanica	Published error – the correct name is Podarcis hispanicus
Podarcis hispanicus	Current name – formerly known as <i>Lacerta hispanicus</i> and sometimes in error as <i>Podarcis hispanica</i>
Podarcis muralis	Current name – formerly known as Lacerta muralis
Pseudemys decussata	Former name – currently known as Trachemys decussata
Pseudemys nelsoni	Current name – formerly known as Pseudemys rubriventris nelsoni or Chrysemys
	rubriventris nelsoni or Chrysemys nelsoni
Pseudemys rubriventris nelsoni	Former name – currently known as Pseudemys nelsoni
Pseudemys scripta	Former name – currently known as Trachemys scripta
Pseudepidalea viridis	Alternative name - currently more frequently known as Epidalea viridis
Rana bedriagae	Former name – currently known as Pelophylax bedriagae
Rana dalmatina	Current name – but likely to be changed to Laurasiarana dalmatina
Rana esculenta bedriagae	Former name – currently known as Pelophylax bedriagae
Rana esculenta perezi	Former name – currently known as Pelophylax perezi
Rana grayii	Former name – currently known as <i>Strongylopus grayii</i> (as from 2006, this species has also been moved from the Ranidae to the newly created family Pyxicephalidae)
Rana 'grafi' hybrid	Alternative name – currently known as Pelophylax perezi
Rana levantina	Former name – currently known as Pelophylax bedriagae
Rana perezi	Former name – currently known as Pelophylax perezi
Rana ridibunda perezi	Former name – currently known as Pelophylax perezi
Rana temporaria	Current name – but likely to be changed to Laurasiarana temporaria
Rhinechis scalaris	Current name – formerly known as Elaphe scalaris
Rhinella marina	Current name – formerly known as Bufo marinus or Chaunus marinus and
	sometimes in error as Rhinella marinus
Rhinella marinus	Published error – the correct name is Rhinella marina
Semiurus cuvieri	Published error – the correct name is Anolis cuvieri
Sphaerodactylus macrolepis parvus	Former name – currently known as Sphaerodactylus parvus
Sphaerodactylus parvus	Current name – formerly known as <i>Sphaerodactylus macrolepis parvus</i> (N.B. this change only affected the former <i>parvus</i> subspecies of <i>Sphaerodactylus macrolepis</i> from the Anguilla Bank – the nominate subspecies from the British Virgin Islands and elsewhere, <i>Sphaerodactylus macrolepis macrolepis</i> , remains unchanged)
Strongylopus grayii	Current name – formerly known as <i>Rana grayii</i> (as from 2006, this species has also been moved from the Ranidae to the newly created family Pyxicephalidae)
Tenuidactylus kotschyi	Former name – currently known as Cyrtopodion kotschyi
Testudo carbonaria	Former name – currently known as Chelonoidis carbonaria
Timon lepida	Published error – the correct name is <i>Timon lepidus</i>
Timon lepidus	Current name – formerly known as Lacerta lepida and in error as Timon lepida
Trachemys decussata	Current name – formerly known as <i>Pseudemys decussata</i> and sometimes in error as <i>Chrysemys decussata</i>
Trachemys scripta	Current name – formerly known as Chrysemys scripta or Pseudemys scripta
Trachylepis vittata	Current name – formerly known as Mabuya vittata
Triturus helveticus	Former name – currently known as Lissotriton helveticus
Triturus vulgaris	Former name – currently known as Lissotriton vulgaris
Tropidophis caymanensis caymanensis	Former name – currently known as Tropidophis caymanensis
Tropidophis caymanensis parkeri	Former name – currently known as Tropidophis parkeri
Tropidophis caymanensis schwartzi	Former name – currently known as Tropidophis schwartzi
Tropidophis caymanensis	Current name – formerly known as Tropidophis caymanensis caymanensis
Tropidophis parkeri	Current name – formerly known as Tropidophis caymanensis parkeri
Tropidophis schwartzi	Current name – formerly known as Tropidophis caymanensis schwartzi

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Name	Taxonomic Notes
Typhlops epactia	Published error – the correct name is <i>Typhlops epactius</i>
Typhlops epactius	Correct name – has been referred to in error as Typhlops epactia
Typhlops catapontus	Current name – formerly known as Typhlops richardi catapontus
Typhlops naugus	Current name – formerly known as Typhlops richardi naugus
Typhlops richardi catapontus	Former name – currently known as Typhlops catapontus
Typhlops richardi naugus	Former name – currently known as <i>Typhlops naugus</i>
Vipera latastei	Name used here – the exact spelling is currently subject to taxonomic debate
Vipera latasti	Alternative name to Vipera latastei – either can currently be used
Vipera lebetina	Former name – currently known as Macrovipera lebetina
Zootoca vivipara	Current name – formerly known as Lacerta vivipara