BFA SEMINAR SERIES NO. 19

The Reptiles of the East African Coastal Mosaic

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Held at the Ulwazi Institute, Suburbs, Bulawayo, Thursday 13 February 2003. 13 people attended.

Introduction

The East African coastal mosaic is of great interest to biogeographers, but its definition has changed repeatedly over the past 50 years. The vegetation map of Africa south of the Tropic of Cancer (Keay 1959), showed a broad strip of coastal forest mosaic extending from southern Somalia south to the Rovuma River, a wedge between Quelimane and Beira, bordering the Zambezi Delta, and a narrow strip extending from the Limpopo mouth into the Eastern Cape Province. In the UNESCO vegetation map of Africa (White 1983), Frank White recognised a Zanzibar-Inhambane regional mosaic extending from Gelib in southern Somalia to the Limpopo mouth, where it contacted the Tongaland- Pondoland regional mosaic, which reached almost to Port Elizabeth. In the 2001 WWF Map of the Terrestrial Ecoregions of Africa, White's Zanzibar-Inhambane coastal mosaic was divided into northern and southern regions, separated at the Mbemkuru River, north of Lindi in southeastern Tanzania.

In 1998 Phil Clarke proposed the recognition of a Swahelian regional centre of endemism, which consisted of the northern part of White's Zanzibar-Inhambane regional mosaic, terminating at Mozambique Island. The southern part of White's regional mosaic was renamed the Swahelian/Maputaland regional transition zone. Clarke estimated a total of 4000 vascular plant species in the Swahelian regional centre, with at least 1356 (34 %) endemic, while there are at least 33 endemic genera. The greatest concentration of endemic species was in southern Tanzania (c.190), followed by coastal Kenya (c.170), while the number of endemics in areas south of Mozambique Island drops to below 20. Clarke's terminology was adopted in the definitive work Coastal Forests of Eastern Africa (Burgess & Clarke 2000).

I have taken 132 species of reptiles which are endemic or near-endemic to White's original Zanzibar-Inhambane regional mosaic and allocated them to the two new regions proposed by Clarke (1998). 73 species (56.5 %) are endemic to the Swahelian regional centre of endemism, 35 species (26.5 %) are endemic to the Swahelian/Maputaland transition zone, and 24 species (18 %) are common to both areas. However, five of the southern endemics are restricted to southern Malawi and three of the species common to both areas do not occur south of the Zambezi. Consequently, extending the southern limit of the Swahelian regional centre to Quelimane would increase the number of endemic reptiles to 81 (61.5 %) and reduce the number of endemics in the transition zone to 30 (22.5 %), with 21 species (16 %) common to both. As northern Mozambique is geologically complex and is very poorly known, it is anticipated that many additional endemic species remain to discovered in this area. In particular, the Cretaceous strata of the Macondes Plateau in the Cabo Delgado Province are similar to those of the Rondo Plateau in southeastern Tanzania and probably harbour some sister species of the Rondo endemics.

Reptiles of the East African Coastal Mosaic

The majority of the reptiles endemic to the East African coastal mosaic are either forest forms or fossorial species inhabiting sandy substrates.

The Yellow-bellied Hinged Terrapin (*Pelusios castanoides*) occurs along the East African coast and most of the offshore islands from Kenya south to Kwazulu, whereas the Zambezi Flap-shelled Turtle (*Cycloderma frenatum*) ranges from the Kilombero River in S Tanzania to the Save River in

Mozambique, extending west into Malawi and SE Zimbabwe. The Mozambique Agama (*Agama mossambica*) is a semi-arboreal lizard found throughout SE Tanzania south to central Mozambique and adjacent parts of Zimbabwe.

Of the large chameleons of the genus *Chamaeleo*, five species are endemic to the forests of the East Usambara Mountains, *C. mlanjensis* is endemic to Mulanje Mountain in S Malawi, and the Giant One-horned Chameleon (*C. melleri*) occurs in savanna along the east coast from NE Tanzania nearly to the Zambezi and extends inland to S Malawi. The pigmy chameleons of the genus *Rhampholeon* are represented by three species in Tanzanian coastal forests, two in S Malawi - *R. platyceps* on Mulanje and *R. chapmanorum* on the Malawi Hills, while *R. brachyurus* ranges from S Malawi through N Mozambique to SE Tanzania. There are two primitive species south of the Zambezi, *R. marshalli* on the eastern escarpment of Zimbabwe and *R. gorongosae* on Gorongosa Mountain in Mozambique.

The diurnal dwarf geckos of the genus *Lygodactylus* are represented by 9 species in the Tanzanian coastal forests (Broadley & Howell 2000), one (*L. rex*) on Mulanje, and one widespread savanna species (*L. grotei*) in Tanzania and N Mozambique. The green day geckos of the genus *Phelsuma* have radiated on Madagascar and islands in the western Indian Ocean. They are represented by *P. parkeri* on Pemba Island and *P. dubia* on the Tanzanian coast and Mozambique Island. Three species of forest geckos of the genus *Cnemaspis* occur in scattered coastal forests of NE Tanzania (Broadley & Howell 2000). The tropical geckos of the genus *Hemidactylus* are represented by one species (*H. klauberi*) known only from S Somalia, one (*H. modestus*) restricted to the Tana Delta, and the Baobab Gecko (*H. platycephalus*) with a huge range from Kenya south to central Mozambique and adjacent parts of Zimbabwe.

The primitive fossorial skinks of the subfamily Scincinae show some interesting distribution patterns. The basal genus *Proscelotes* has one species on the N Mozambique coast (*P. aeneus*) and three others on mountains, *P. eggeli* on the Usambaras, *P. mlanjensis* on Mulanje and *P. arnoldi* on the eastern highlands of Zimbabwe. The genus *Sepsina* has one species (*P. tetradactylus*) with a wide range north of the Zambezi extending into S Malawi, but the other three species inhabit dry areas of Angola and N Namibia. The genus *Scelotes* has one species on the Uluguru Mountains and none in the coastal zone until *S. duttoni* and *S. insularis* on the Bazaruto Archipelago and *S. arenicola* on the mainland, extending south from Inhambane into N Maputaland. Then there is a radiation of 7 species in the Maputaland-Pondoland region. Two limbless species of *Melanoseps* inhabit coastal forests in Tanzania (*M. longicauda* and *M. rondoensis*), with two or three other species in the Eastern Arc Mountains. The genus *Scolecoseps* is endemic to the Swahelian regional centre, with an undescribed species on the Kenya coast, *S. acontias* described from Dar es Salaam, *S. litipoensis* from Litipo Forest in SE Tanzania, and the type species (*S. boulengeri*) on the N Mozambique coast from Pemba to Lumbo. The skinks of the subfamily Lygosomatinae are represented by two insular species of *Mabuya*, *M. albotaeniata* on Pemba and *M. casuarinae* on the Primeiras Archipelago off the N Mozambique coast south of Angoche, and a widespread species *M. boulengeri* ranging from SE Tanzania to Malawi, central Mozambique and adjacent Zimbabwe. One Writhing Skink, *Lygosoma afrum*, is widespread in the coastal mosaic as far south as central Mozambique, two species (*L. mabuiiforme* & *L. tanae*) inhabit the Tana Delta, and there are three insular forms on Pemba (*L. pembanum*) and Mafia (*L. mafianum*) Islands off the Tanzanian coast and *L. lanceolatum* on the Bazaruto Archipelago. The Coral Rag Skink (*Cryptoblepharus africanus*) has a patchy distribution along the East African coast from Somalia south to Black Rock in KwaZulu. Limbless skinks of the subfamily Acontinae occur on the S Mozambique coast, *Acontias plumbeus* and *Typhlosaurus aurantiacus* on the mainland extending south to Kwazulu, while there are insular endemics on the Bararuto Archipelago (*T. bazarutoensis*) and Santa Carolina Island (*T. carolinensis*).

The Eastern Serrate-toed Tree Lizard (*Holaspis laevis*) occurs in both coastal forest and miombo woodland from the Usambara Mountains south to central Mozambique, but two species of arboreal Keel-bellied Lizard (*Gastropholis prasina* and *G. vittata*) only range from SE Kenya to Lumbo. The small arboreal Girdled-Lizard *Cordylus tropidosternum* ranges through the coastal mosaic from Kenya south to C Mozambique, while the large rupicolous species *C. mossambicus* occurs from Gorongosa Mountain west to the lower slopes of the Chimanimani Mountains.

There are ten species of Worm Lizards or amphisbaenians found within the coastal mosaic. One (*Chirindia swynnertoni*) ranges from S Tanzania to C Mozambique and adjacent Zimbabwe. Five others (*Loveridgea ionidesi*, *Chirindia ewerbecki*, *C. rondoensis*, *Ancylocranium ionidesi* and *A. barkeri*) are restricted to SE Tanzania and four others (*Zygaspis arenicaola*, *Z. violacea*, *Monopeltis decosteri* and *M. sphenorhynchus*) are restricted to S Mozambique, extending westwards into the Limpopo basin.

The Flower-pot Snake (*Rhamphotyphlops braminus*) originates from SE Asia and has a spotty distribution on the East African coast due to its introduction at ports in ballast or potted plants. Most records are from Mozambique Island northwards, but it has also been recorded from Beira, Durban and Cape Town. It is a parthenogenetic species, so a colony can be established by a single founder. The other coastal mosaic blind snakes are *Typhlops platyrhynchus* (known only from the type series from Tanga), *T. rondoensis*, *Letheobia pallida*, *L. lumbriciformis* and *L. unitaeniatus* in Tanzania and *T. fornasinii* from Mozambique Island south to KwaZulu.

The Worm Snakes of the genus *Leptotyphlops* are represented by five species in the north - *L. boulengeri* on Lamu Island, an undescribed species in the Tana Delta (Broadley & Wallach, in prep.), *L. macrops* in coastal forests of SE Kenya and NE Tanzania, *L. pembae* on Pemba Island, another new species from S Tanzania south to Lumbo (Broadley & Wallach, in prep.), while *L. pungwensis* was described from the Pungwe Flats in central Mozambique.

The Eye-brow Viper *Proatheris superciliaris* inhabits flood plains from the Rovuma River south to the Pungwe River at Beira and inland to Malawi. Günther's Centipede-eater (*Aparallactus guentheri*) occurs in forested areas from the East Usambaras south to S Mozambique and E Zimbabwe; *A. turneri* is endemic to SE Kenya and *A. werneri* is restricted to NE Tanzania. Two species of Quill-snout, *Xenocalamus lineatus* and *X. transvaalensis* are sympatric in southern Mozambique, extending westwards into the Limpopo basin. The former feeds on worm lizards, but the latter poorly known species may take limbless skinks. A Black and Yellow Burrowing Snake (*Chilorhinophis carpenteri*) of SE Tanzania and NE Mozambique also feeds on worm lizards.

The small Usambara Garter Snake *Elapsoidea nigra* inhabits lowland forests in NE Tanzania and feeds mainly on caecilians. *E. broadleyi*, described from S Somalia, appears to be closely related to *E. longicauda* of SE Zimbabwe, NE South Africa and adjacent Mozambique, reaching the coast at Inhambane. The Green Mamba (*Dendroaspis angusticeps*) has an extensive range throughout the coastal mosaic from Kenya to Pondoland. The Wolf Snakes of the genus *Lycophidion* have speciated in the coastal mosaic: *L. pembanum* on Pemba Island, *L. loveridgei* on Zanzibar Isalnd and in coastal forests of NE Tanzania, *L. acutirostre* inhabits SE Tanzania, N & C Mozambique and southern Malawi, *L. nanum* occurs from the Pungwe Flats west to E Zimbabwe at the foot of the Chimanimani Mountains and *L. semiannule* is known from the Bazaruto Archipelago and was probably originally described from Inhambane (the alleged type locality "Tete" lacks the necessary coastal thicket habitat). The Variegated Slug-eater *Duberria variegata* occurs on the coastal plain from Inhambane south to Kwazulu. The forest snakes *Buhoma vauerocegae* and *B. procterae* inhabit coastal forests of the Usambara and Uluguru Mountains respectively.

The small marsh snake *Natriciteres pembana* is endemic to Pemba Island, while *N. sylvatica*

inhabits coastal forests from SE Tanzania south to KwaZulu and inland to E Zimbabwe. The back-fanged Eastern Stripe-bellied Sand-Snake (*Psammophis orientalis*) ranges from coastal Kenya south to central Mozambique, Malawi and E Zimbabwe. The nocturnal tree snake *Dipsadoboa werneri* is endemic to the coastal forests of the eastern Usambaras. *D. flavida* occurs from Kenya south to southern Mozambique and *D. aulica* from S Tanzania south to KwaZulu. Four shovel-snouts occur in the coastal mosaic: *Prosymna semifascista* inhabits coastal forests in NE Tanzania, *P. stuhlmanni* inhabits savanna from S Kenya south to Kwazulu, *P. pitmani* ranges from SE Tanzania to S Malawi and *P. janii* inhabits coastal forests and savanna from the Bazaruto Archipelago south to KwaZulu.

A Smooth Snake *Meizodon krameri* is endemic to the Tana Delta. The Usambara Green Snake (Philothamnus macrops) inhabits coastal forests of the eastern Usambaras, Zanzibar Island, the Rufiji Delta and the Rondo Plateau, it is very variable in colour pattern. The Spotted Bush Snake (Philothamnus punctatus) inhabits the coastal mosaic from Somalia south to Lumbo, extending west to northern Malawi. The Natal Green Snake (P. natalensis) occurs from central Mozambique and adjacent Zimbabwe south to KwaZulu. The Eastern Vine Snake *Thelotornis mossambicanus* inhabits the coastal mosaic from S Somalia to central Mozambique, including the Bazaruto Archipelago, while *T. usambaricus* is restricted to the coastal forests of the eastern Usambaras. The East African Egg-eater *Dasypeltis medici* ranges from coastal Kenya south to KwaZulu, extending inland to S Malawi and E Zimbabwe.

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