

REPORT ON FAUNA OF AMPHIBIANS AND REPTILES FROM EASTERN KOPET DAG IN TURKMENISTAN

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First report on herpetofauna of Turkmenian Eastern Kopet Dag is present.

Key words: Herpetofauna, eastern Kopet Dag, Turkmenistan.

INTRODUCTION

Northern slope of the Eastern Kopet Dag is a “terra incognita” in herpetological aspect, though other parts of Turkmeno-Khorasan mountains were investigated very poorly too. Western and Central Kopet Dag were examined comparatively complete (Moriz, 1929; Nikolsky, 1915; 1916; Bogdanov, 1962; Shammakov, 1968; Atayev, 1985; Shcherbak et al., 1986). Only single works are known about non-Turkmenistan part of western Kopet Dag (Zarudny, 1897; Anderson, 1968) and its vicinity (Mertens, 1957; Nilson, Andr n, 1981). Anderson (1974) reported list of 39 species of reptiles (except snakes) for province Khorasan (Iran). Kral (1969) pointed out 7 species from Herat province (Afghanistan), which is connected with Eastern Kopet Dag. Materials about herpetofauna of Herat were included into big articles of Clark et al. (1969) and Anderson and Leviton (1969). Some animals were pointed out from the border between Herat and Iran (Clark et al., 1966).

MATERIAL AND METHODS

Data for this article were collected in 1990 – 1992 on the northern macroslope of the Eastern Kopet Dag from Iranian border northward to foothills near Karakum Desert. Necessary to note that we use definition of Eastern Kopet Dag in Turkmenistan after Nikitin and Geldikhanov (1988): from the valley of Keltechinar River eastward to village Chaacha.

Eastern Kopet Dag looks like hills near Chaacha River. It reaches about 1000 m altitude near Iranian border. From village Karatiken it becomes higher and consists of several chains. And finally it reaches about 2000 m on the Zerakev Range close to Keltechinar River.

Up to the mountains vegetation is changing from clay desert and semidesert formations through shibliaks and *Juniperetum* light forests to mountain-steppes. Not far of rivers and springs there are bushes and groves, or hydrophilous grass vegetation. Deserts and semideserts go up to 700 – 1000 m. Dominant species are *Poa bulbosa* and *Carex physodes*. Very common plants of semideserts are *Ixiolirion tataricum*, *Papaver pavonimum*, *Delphinium semibarbatum*, *Hordeum bulbosum*, *Tulipa lehmanniana*, *Romeria refracta*, and such shrubs as *Zygophyllum atriplicoides*, *Lycium depressum*, *Amygdalus brahuica*, *Hulthemia persica*, etc. Shibliaks and *Juniperetum* forests are known from 700 m up to 1600 (2000) m above sea level. Prevalent species of plants are *Juniperus turcomanica*, *Acer turcomanicum*, *Pistacia vera*, *Cercis griffithii*, *Cerasus mahaleb*, *Colutea buhsei*, *C. atabajevii*, *Lonicera bracteolaris*, *Hulthemosia kopetdaghensis*, etc. Mountain-steppe belt takes place on the altitudes from 1200 to 2000 m. Corresponding plants are *Crambe kotschyana*, *Gentiana olivieri*, *Ferula ovina*, *Gladiolus atroviolaceus*, and grasses (Graminea). Near water-courses intrazonal vegetation is present which forms by *Phragmites australis*, *Tamarix* sp., *Salix acmophylla*, *S. songarica*, *Populus pruinosa*, *Rubus anatolicus*, *Ficus carica*, and *Ulmus carpinifolia*. Rocky and talus places in the gorges are often covered by *Ephedra ciliata*, *E. botschantzevii*, *Hymenocrater bituminosus*, *Rhemedon turcestanicum*, etc.

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RESULTS

Class AMPHIBIA

Order Anura

Family Bufonidae

1. *Bufo viridis* Laurenti, 1768

This toad inhabits upper parts of Eastern Kopet Dag chains, where it is locally common in the gorges with constantly rivers.

Adults and larvae were seen along the Kelatchay River. Single specimens were pointed out at the Zerakev Range (vicinity of post Yashlyk) near a spring with short creek. Big number population were seen in Kalininsky Reservation along the Sherlovka River and near Stefanovich spring (Kishi-Meri Range).

2. *Bufo danatensis* Pisanetz, 1978

Animals are very common at the eastern hills of Eastern Kopet Dag. This species is a vicariant of *Bufo viridis*. Specimens were found along the rivers Chaacha, Laen-Suv, along the agricultural canals near village Khiveabad, at the mouth of gorge Harchinnan, toads were abundant in the gorges Kambarov and Zarmi.

Thus *Bufo danatensis* were recorded actually along the whole foothills belt of Eastern Kopet Dag, where animals inhabit semidesert and near-water habitats both of constant and unstable water-courses. Along the rivers (like Chaacha and Laen-Suv), this species goes down on the inclined clay lowland.

Family Ranidae

3. *Rana ridibunda* Pallas, 1771

Adults and juveniles were locally common near rivers Sherlovka, Keltechinar, Kelatchay, Laen-Suv (and its artificial canal), Harchinnan. All these populations are isolated from each other.

Class REPTILIA

Order Testudines

Family Testudinidae

4. *Agrionemys horsfieldi* (Gray, 1884)

This species is very common along the whole Eastern Kopet Dag, but density of micropopulations is enough various. Tortoise were extremely abundant near gorge Harchinnan where during morning excursion we counted more than 100 specimens. At the vicinity of village Khiveabad they were seen on the clay hills and in the depressions and ravines. During



Fig. 1. *Eublepharis turkmenicus* Darevsky, 1978.

daily excursion we saw more than 50 specimens there. The same number was recorded closely to village Karatiken (gorge Tsentralnyi Razlom) and in Kambarov gorge. Tortoise are common but have not more finds than 10 – 15 per day at the valley of Chaacha River, Karatiken gorge (Meanachay River), in the valley of river Kelatchay, near spring “Saint Hoja,” in the Kelat’s pistachio grove, on the ranges Kishi-Meri and Zerakev (from gorge Ak-El westward to Kalininsky Reservation).

During 3 years in the 3rd decade of April our investigations coincided with beginning-peak of reproductive behavior (depend on altitude dissemination).

A. horsfieldi has vertical distribution in the Eastern Kopet Dag up to 1200 m, including steep and narrow gorges, talus slopes with blocks and big stones.

Order Squamata

Family Gekkonidae

5. *Eublepharis turkmenicus* Darevsky, 1978

This specimen from the gorge Ak-El was the first record from the Eastern Kopet Dag in Turkmenistan (Fig. 1) that is not surprising in view of its record from southern slope of Eastern Kopet Dag, near Meshed (Darevsky, 1977).

Specimen was seen in twilight on the steep slope with rocky outcrops covered by shrubs.

6. *Cyrtopodion longipes microlepis* Lantz, 1918

Three specimens were caught at place Daragbent (15 km southward from ruins of castle Mahmal) on the stony slope. They inhabit sand-stone outcrops together with *C. caspius*. One specimen was found in similar habitat at the valley of Chaacha River. These



Fig. 2. *Cyrtopodion caspius* (Eichwald, 1831).

first records of *C. longipes* from Eastern Kopet Dag move distribution limits of this species to the west for about 200 km.

7. *Cyrtopodion caspius* (Eichwald, 1831)

It is very common along the whole investigated area from inclined lowland up to Iranian border in the mountains (Fig. 2). Geckos were collected near Chaacha River (hills and ruins of clay-walled houses, steep banks of river, ravines and mud flows; burrows of rodents (*Rhombomys opimus*, *Meriones erythourus*); among *Tamarix* groves), at the vicinity of village Khiveabad (ravines-net with tomillares-steppe association; mud flows bad among high hills, steep banks of artificial canal from Laen-Suv River, burrows of rodents in the semidesert landscape), gorge Zarmi (in the cracks of rocks), gorge Karatiken (on the rocks and blocks), at the vicinity of village Karatiken (postwater holes in the lowland with wormwood — *Artemisia*). Near post Yashlyk it was pointed out the largest density: during 1.5-h excursion in the first half of night we found more than 30 specimens at the rodent colonies on the hills. Single specimens were taken in gorge Ak-El, from rocks along the Sherlovka River and range Kishi-Meri (Kalininsky Reservation).

8. *Cyrtopodion spinicauda* (Strauch, 1887)

According to our investigation this species is comparatively stenotopic. It prefers small-detritus gray shale badlands on slopes of high hills up to middle-mountains (Fig. 3). This species was recorded earlier also from limited altitude scope in Iran (Anderson, 1968). Apparently, rare finds of *C. spinicauda* are result of sporadical presence of suitable habi-



Fig. 3. *Cyrtopodion spinicauda* (Strauch, 1887).

tats in the Kopet Dag, but locally it is common in corresponding biotopes.

These geckos were found 10 km southward from post Karatiken and in the gorge of Sherlovka River.

Family Agamidae

9. *Trapelus sanguinelentus* (Pallas, 1814)

Species is very common along the all Eastern Kopet Dag, but in the high-mountain belts it becomes rare and it gives up main position to representatives of genus *Laudakia*.

Specimens were seen along the Chaacha River (from inclined lowland up to border ranges) in different habitats, like old vineyard, shrubs of *Tamarix* and wormwood semideserts. At the vicinity of village Khiveabad it presents on the hills and ravines. Here in October we counted up to 4–9 specimens along 2 km itinerary, in April — by single specimens, but on long distance this species was enough common.

Seasonal distinction in population's density is demonstrated by autumn concentration of animals near places of hibernation and hatchings of new-born lizards. *T. sanguinelentus* is common on the clay hills near mouth of gorge Harchinnan and in Kamarov gorge, along the detritus slopes of the hills near Keltachay River. Finds of animals are not usual in the narrow rocky canyons and on the ranges exceeding 1000 m above sea level (in the mountain-steppe belt of range Zerakev near post Yashlyk and Kalininsky Reservation, in the gorges Karatiken and Sredinnyi Razlom).

10. *Laudakia caucasia* Eichwald, 1831

It depends on low altitude and extraarid conditions of Eastern Kopet Dag in Turkmenistan, where limited part of species distribution is situated which is stretched along the high mountains to the south in

Iran and then eastward before south-west Tajikistan, Afghanistan, Vaziristan, and Baluchistan, Western Pakistan (Leviton and Anderson, 1970).

Many specimens were found in Kalininsky Reservation (gorge of Sherlovka River, range Kishi-Meri, range Zerakev, vicinity of spring Vinogradnyi) and near post Yashlyk at 900 – 1300 m altitude. Eastward it was observed in gorge Harchinnan where its density is still high (8 specimens/km). After gorges Harchinnan and Mahmal *L. caucasia* substituted by ecologically close *L. erythrogastra*.

12. *Laudakia erythrogastra nurgeldievi* Tuniyev, Atayev, Shammakov, 1991

It is a common species in the suitable habitats of Eastern Kopet Dag. Animals live on the hills with conglomerate outcrops and gorges among high foothills. It is vicariant with *L. caucasia* along the area and altitude dissemination.

Places of finds were left bank of Chaacha River, gorges Harchinnan, Zarmi, Sredinnyi Razlom and Karatiken, hills on the left bank of Kelatchay River, Kelat's pistachio grove and type locality of subspecies *L. e. nurgeldievi* — vicinity of village Khiveabad. This last habitat is big ravines-system among the hills, stony slopes of gorges and mountains covered by *Juniperetum* light forests.

Species doesn't form high-dense populations like *L. caucasia* and usually it is possible to find 2 – 5 specimens during 2 – 3 h.

Family Varanidae

13. *Varanus griseus caspius* Eichwald, 1831

On the Eastern Kopet Dag desert monitor is very common along the Chaacha River. By single specimens it was seen among high hills eastward from Laen-Suv River, in Daragbent and in the mouth of gorge Harchinnan (upper limit of altitude distribution).

Wide valleys are main way of spreading of this species inside Eastern Kopet Dag and as a rule it doesn't live higher than 700 m whereas in Iran it is distributed twice higher (Anderson, 1968).

Family Anguidae

14. *Pseudopus apodus* Pallas, 1775

As a xero-mesophilous species it inhabits the upper belts of the Eastern Kopet Dag and it goes down on lowland only along the valleys of constant rivers, where it finds corresponding habitats.

Pseudopus apodus were seen near Chaacha River; at place with dense grass and near artificial canal in the vicinity of village Khiveabad; in the Kelat's pistachio grove; at crest zone of range Kishi-Meri near post Yashlyk; range Zerakev; hills near gorge Ak-El; in dense grass near Kambarov gorge and Kalininsky Reservation in the upper parts of gorges not far from springs with shibliaks ant bushes. Density of populations reaches 8 specimens per 1 km of itinerary.

Family Scincidae

15. *Mabuya aurata septemtaeniata* Reuss, 1834

Common but not numerous species in investigated region. Optimal habitats are gorges and mountain slopes with conglomeration of blocks covered by shrubs. Vertical distribution lies from inclined lowland up to border ranges.

Near Chaacha River we counted up to 4 specimens per 1 km of dry river-bed. Also here we digged up from mounds 3 specimens in overcast day. Single specimens were taken from stony breaks of Kambarov gorge, gorge Zarmi, at different places of range Zerakev near post Yashlyk.

Mabuya were only abundant on the range Kishi-Meri near cordon Sherlovka (Kalininsky Reservation) and in gorge Sredinnyi Razlom, where during morning 2-h excursions it was taken by 6 specimens. In the autumn, in beginning of October 2 specimens were found in prehibernative condition from loess soil (village Khiveabad).

16. *Eumeces schneideri princeps* Eichwald, 1839

Sporadically distributed species in the Eastern Kopet Dag. In majority places of finds it is sympatric with *E. taeniolatus*, but it prefers soft soils covered by shrubs and plates or flood plain dense grassy places in the valleys and gorges. Generally species gravitates toward foothills and it presents very rare at the upper mountain belts of Eastern Kopet Dag.

Places of finds were Chaacha River, Kambarov gorge, mouth of gorge Zarmi, gorge Karatiken, hills near post Kelat, ranges Zerakev, and Kishi-Meri (from post Yashlyk to Kalininsky Reservation), Kelat's pistachio grove. Biggest number were seen on the flood plain meadow of gorge Sherlovka (6 specimens per 50 m²).

17. *Eumeces taeniolatus* (Blyth, 1854)

It is dominant species which reaches high number at stony places (Fig. 4). Unlike *E. schneideri* it



Fig. 4. *Eumeces taeniolatus* (Blyth, 1854).

prefers rocky and talus habitats at high foothills and ranges. Actually, *E. taeniolatus* doesn't live on inclined clay lowland. We observed it in hills of Chaacha River, gorges Zarmi, Karatiken, and Sredinnyi Razlom; at the vicinity of post Kelat (hills on the left bank of Kelat River; spring "Saint Hoja"); rocks in Kelat's pistachio grove. Very many skins we saw near post Yashlyk, lower number at range Zerakev. In the Kalininsky Reservation it is common on the ranges Zerakev and Kishi-Meri and in the gorge of Sherlovka River, where it inhabits talus and rocky places inside shibliaks, bushes associations, mountain-steppes, and *Juniperetum* light forests.

Family Lacertidae

18. *Mesalina guttulata watsonana* Stoliczka, 1872

It is practically absent in the Eastern Kopet Dag and only on the extreme east it reaches zone of hills along the river valleys. We recorded it only from valley of Chaacha River (from inclined lowland up to first line of chains of hills).

19. *Eremias velox* (Pallas, 1771)

Widely distributed species of Eastern Kopet Dag which number decreases up to mountains. From Iranian part it was recorded not higher than 900 m (Anderson, 1968). In Turkmenistan it goes up to 1200 m.

Lizards were found from Chaacha River, gorges Karatiken, Zarmi, Sredinnyi Razlom, vicinity of post Kelat, mouth of gorge Harchinnan near village Khiveabad, near post Yashlyk and Kalininsky Reservation: ranges Kishi-Meri, Zerakev and gorge of Sherlovka River.

Eurytopic species. Among its habitats are grass and shrubs semideserts, stony slopes, ravines, shibliaks, intrasonal nearwater humid cenocis, mountain steppes and meadows. Biggest density were seen at the vicinity of Khiveabad where during 2-h excursion we counted up to 10 specimens in April and till 20 — in October.

Family Typhlopidae

20. *Typhlops vermicularis* Merrem, 1820

Species is common but it doesn't form dense populations in the Eastern Kopet Dag. Altitude distribution is also wide from clay lowland up to mountain-steppe belt.

Snakes were caught near Chaacha River; gorges Harchinnan, Zarmi, Sredinnyi Razlom; vicinity of posts Kelat and Yashlyk; Kelat's pistachio grove; spring "Saint Hoja"; in Kalininsky Reservation on the range Zerakev and gorge of Sherlovka River.

Family Boidae

20. *Eryx miliaris* (Pallas, 1773)

It is rare species in the investigated area. *Eryx* spreads of hills zone along the river's valleys, 3 specimens were found on the hills covered by *Zygophyllum atriplicoides* near river Chaacha, 1 specimen — on the clay hills located on the left bank of Kelatchay River (wormwood semidesert) and 1 specimen was dugged out from the burrow of *Laudakia erythrogas-tra* in ravine near Khiveabad.

Family Colubridae

22. *Lycodon striatus bicolor* Nikolsky, 1903

This species was seen on the ridge of hill near village Khiveabad and on the hill near Daragbent.

23. *Coluber karelini* Brandt, 1838

Juvenile specimen was recorded from hills near village Khiveabad. It was belching *Cyrtopodion caspius*.

24. *Coluber rhodorhachis* (Jan, 1865)

Common species for lower-mountain belts, up 1000 m in Eastern Kopet Dag. Specimens were caught from Chaacha River (clay and loess steep banks of dry streams; walls with conglomerate outcrop on the hill), in Kelat's pistachio grove; on the talus slope covered by *Pistacia vera* near spring "Saint Hoja," at the vicinity of village Khiveabad (walls of

the hills, mud flood's bed, ravines); in the gorge of Keltechinar River.

It is necessary to point out that in all places we saw both color forms "*rhodorhachis*" and "*ladacensis*," but the second was more frequent.

It is difficult to form a correct estimate of real density of populations; near Khiveabad we dugged out from clay walls 5 specimens per 2.5 km.

25. *Coluber ravergieri* Menetries, 1832

Sporadically distributed species along the constant water-courses in the Eastern Kopet Dag. Specimens were taken from *Tamarix* grove near Chaacha River and from hills near Laen-Suv River.

26. *Spalerosophis diadema schiraziana* Jan, 1865

It is a widely distributed species on the inclined lowland and deserts of Turkmenistan. Specimen was collected from *Tamarix* grove near Chaacha River.

27. *Lytrohynchus ridgewayi* Boulenger, 1887

It doesn't go up to the mountains as a rule and spreads in semideserts on inclined lowland. Specimens were seen in wormwood semidesert near post Karatiken.

28. *Pseudocyclophis persicus* (Anderson, 1872)

Common species of foothills of the Eastern Kopet Dag. Specimens were found under stones on the clay hills covered by ephemeral vegetation near Chaacha River, village Khiveabad, post Kelat; on the talus slope of middle-mountain in Kalininsky Reservation and Gurgaudan. Biggest density was pointed out near Kelat (5 specimens per 2.5 km).

29. *Boiga trigonatum melanocephala* Annandale, 1904

The species is absent in the mountains and presents on inclined lowland. It was taken from semidesert valley of Chaacha River (Fig. 5).

30. *Psammophis lineolatum* (Brandt, 1838)

In the Eastern Kopet Dag species is absent and lives only on the inclined lowland. Specimen was caught from valley of the Chaacha River.

31. *Psammophis schokari* (Forsk., 1775)

The species is common in the hills and mountains along the whole Eastern Kopet Dag. It prefers steep walls and banks of the hills or ravines, stony gorges and ruins of the clay-walled houses.

Specimens were collected from Chaacha River, gorges Harchinnan, Zarmi, Karatiken; near posts Ke-



Fig. 5. *Boiga trigonatum melanocephala* Annandale, 1904.

lat, Yashlyk, Khiveabad. Highest density of population was pointed out at the valley of Chaacha River where we counted up to 5 specimens per daily excursion. Earlier this snake was known as rare but it is actually very common. Apparently, distribution's range coincides with border between Eastern and Central Kopet Dag. It is interesting to note that in Western Kopet Dag, where *P. schokari* is absent, *P. lineolatum* goes to the mountains probably up to 1000 m. At the same time on the Eastern Kopet Dag *P. lineolatum* actually is absent and corresponding habitats are occupied by *P. schokari*.

Family Elapidae

32. *Naja oxiana* (Eichwald, 1831)

Sporadically distributed species of the Eastern Kopet Dag (Fig. 6). Specimens were met in the hills near Karatiken River (ruins of clay-walled houses covered by *Hordeum bulbosum*); post Karatiken; on the mountain-steppe belt of range Zerakev not far from post Yashlyk.

Family Viperidae

33. *Vipera lebetina cernovi* Chikin & Szczerbak, 1992

Common but not numerous species (Fig. 7). Specimens were only abundant in habitats with constant or unstable water-courses in all mountain belts.



Fig. 6. *Naja oxiana* (Eichwald, 1831).



Fig. 7. *Vipera lebetina cernovi* Chikin & Szczerbak, 1992.

Places of finds are Chaacha River, gorges Sredinnyi Razlom, Harchinnan, Kambarov. Near post Yashlyk snakes were seen at 3 places of range Zera-kev (mix mountain-steppe-bushes association; *Acereto – Juniperetum* fruticans and on big talus slope covered by shrubs). In Kalininsky Reservation *V. lebetina* was found on stony slopes covered by high grass and shibliaks near spring Stefanovich (range Kishi-Meri) and on the Mt. Ak-Kaya (range Zera-kev). On the border of Eastern Kopet Dag snakes were seen in the canyon of Keltechinar River.

CONCLUSION

Despite the fact that new species were absent for Turkmenistan fauna, data of East Kopet Dag expeditions gave an interesting results. First, a list of herpetofauna from East Kopet Dag was prepared which includes 3 species of Amphibians and 29 — of Reptiles. But this list isn't complete.

Noted characteristics of changes of mountain belts (include phyto-landscapes) are limiting for the species composition and density of representatives in each belt and altitude. Species which were pointed out on the inclined lowland with slight irradiation along the river's valleys inside mountains are *Varanus griseus*, *Mesalina guttulata*, *Coluber karelini*, *Spalerosophis diadema*, *Lytorhynchus ridgeway*, *Boiga trigonatum*, and *Psammophis lineolatum*.

In the foothills and low-mountain belts (up to 1000 m above sea level) the common and numerous species are *Agrionemys horsfieldi*, *Cyrtopodion caspius*, and *Eumeces taeniolatus*; common but not so numerous are *Trapelus sanguinolentus*, *Laudakia*

erythrogastra, *Mabuya aurata*, *Eremias velox*, *Typhlops vermicularis*, *Coluber rhodorhachis*, *Pseudocyclophis persicus*, *Psammophis schokari*, and *Vipera lebetina*. Sporadically distributed species in this belt are *Bufo danatensis*, *Rana ridibunda*, *Cyrtopodion spinicauda*, *Eumeces shneideri*, *Pseudopus apodus*, *Coluber ravergieri*, and *Naja oxiana*; and rare species are *Eublepharis turkmenicus*, *Eryx miliaris*, and *Lycodon striatus*.

In the middle-mountain belt the common and more numerous are *Laudakia caucasia*, *Pseudopus apodus*, and *Vipera lebetina*; common but not dense — *Agrionemys horsfieldi*, *Cyrtopodion caspius*, and *Typhlops vermicularis*; sporadically distributed species are *Bufo viridis* and *Cyrtopodion spinicauda*; the rare species are *Eumeces taeniolatus*, *Trapelus sanguinolentus*, and *Eremias velox*.

Data about distribution and number of several species on the Eastern Kopet Dag permit to change an opinion about status of these species in Turkmenistan and to make corrections about its areas in Kopet Dag as a whole. For example, *Laudakia erythrogastra* was known only from Karabil and Badkhyz Hills and *Psammophis schokari* was known by single specimens from some mountain points of Turkmenistan. According the new data, these species are widely distributed and numerous along the whole Eastern Kopet Dag.

Geographical border between Eastern and Central Kopet Dag is the depression of Keltechinar River is at the same time the range of distributions of numerous species westward along the Kopet Dag.

Generally, species composition of the Eastern Kopet Dag is much closer to Badkhyz Hills than to Central and Western Kopet Dag.

These results might be basis for revision of the biogeographical constructions of the mountain part of Turkmenistan.

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