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This handbook has been published to mark the second seminar on 'Nature Conservation & Environmental Protection' held at Islamabad, Pakistan, on March 12, 1991.

Front cover : The SNOW LEOPARD.
This graceful animal is now almost extinct and is protected by law in Pakistan.

Back cover : The SINDH IBEX. This rare species was also near extinction. Establishment of Kirthar National Park has helped it survive.

ENDANGERED SPECIES OF REPTILES OF PAKISTAN AND SUGGESTED CONSERVATION MEASURES

by Prof. M S Khan

Reptiles have always been rather unpopular since they include some species which are thought to be dangerous to man. Crocodiles and certain types of lizards and snakes may injure or kill human beings or prey upon domestic animals. Potential danger from reptiles has also been exaggerated by folklore.

Paradoxically, some of the notoriously dangerous reptilian species like varanids, crocodiles, and large snakes such as python, naja naja etc, are enthusiastically sought for their skins, as these fetch a highly profitable price in the market.

Local poisonous snakes like naja naja, N. oxiana, Bungarus caeruleus, Echis carinatus and Vipera russelli, are collected from different parts of Pakistan, by people in the trade and sold at hadsome prices to Biology Production Section of National Institute of Health, Islamabad. In the institute the snakes are used for poison collection. The snakes are kept in crowded conditions - several dying daily. The snake venom is used for production of antivenom serum. Commo spiny tailed ground lizard Uromastyx hardwickii is extracted from its burrows in large numbers. During the process, lizard's spine is broken to prevent escape. Hundereds of the lizards are roasted alive by roadside hakims, to extract the "lizard oil" which is said to have aphrodisiac properties. Moreover this lizard is used in college laboratories fro demonstration of lizard morphology to students, throughout Pakistan. In this way several thousands of these lizards are killed every year.

Fig. 1

Scincid lizards form a considerable part of our herpetofauna. They are represented by species: Eumesces taeniolatus, E. Schneiderii, Mabuya dissimilis, M. macularia, Ophiomorous blanfordi, O. breviceps, O. raithmai and O. tridactylus. These species are found throughout our sand deserts and grass fields. Dry bodies of these lizards are used as "raig mahai", an important ingredient of a recipe considered to be effective in impotency and causes the birth of a male child. Professionals collect these lizards from Thal, Cholistan, Thar and Chagi deserts. The lizards are dried in the sun and sold at very high price in the market.

Rapid increase in population of Pakistan is pressing hard on the already fast diminishing natural habitat of the various reptiles. Land reclamation for agricultural and industrial use has destroyed natural habitats of animals and plants over large areas. Similarly mining and quarrying activities have caused great destruction to mountain reptiles like Tenuidactylus montiumsalsorum. T. indusoani, T. rohtasfortai, Eublepharus macularius, coluber rhodorachis, Agama melanura and A. agrorensis.

Several lizards and snakes are exported in pet trade. These animals are displaced from their natural habitat which is a big loss to the ecosystem.

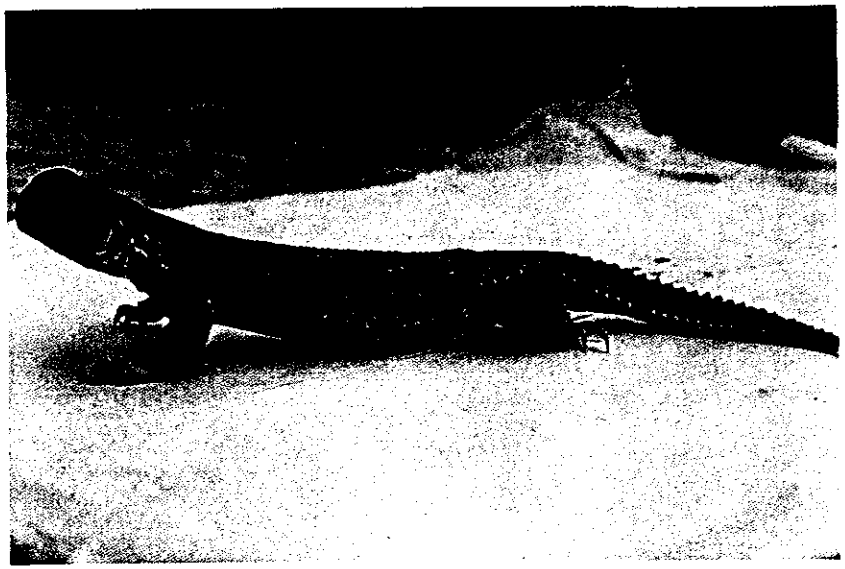

Fig. 2

We have been harvesting our natural resources, without planning to replenish the lost population of animals and plants. Several species of reptiles which were quite common around us, like Crocodylus palustris, Gavialis gangeticus, and Python molurus, are now lost for ever from our environs. There is a need that we must realise the fact that our fast deteriorating ecosystem will cause further loss of many more species. Following conservation measures are suggested to boost up natural population of our herpetofauna:

— Major problem of conservation lies in the social, economic and political setup of our country. Most of our conservation measures fail because they hurt economic interests of some highly placed people who consequently sabotage such measures. They are making money out of diminishing wildlife and habitat. They harvest the benefits of nature without paying back environmental costs which are passed on to the society to be paid by all of us now or in future.

— We need to persuade these peoples about long term benefits of conservation activities.

— A conservation movement can hardly be successful without participation of local people. They have the best knowledge of the habits and ecology of the local species. If importance of preservation of local fauna and flora is explained to the people, they prove to be great conservationists.

— "Student power" if deployed, can play a key role in our conservation efforts. If our youth know that the beautiful species which captivated their attention during childhood, are fast diminsihing and are at the verge of extinction, their reaction will be positive.

Awareness in our students can be created in following ways:

i. Information on natural history of our common animals and plants and importance of their conservation may be included not only in science text books but also in literature and liberal arts.

ii. Natural History clubs should be initiated at high school as well as college level. All students, arts and science, may become members. They may be encouraged to develop interest in the natural history of their common local animals.

iii. Features on habits and natural history of our various common species of animals, should appear regularly in our daily newspapers and magazines, with a theme to conserve these animals. These regular features may play an important role in our conservation effort.

— Our current knowledge of local herpetofauna, and the role of different component species in ecosystem is dangerously inadequate. We do not know the composition of our herpetofauna. We do not yet know the range of various species. We cannot plan conservation effectively without this type fo basic knowledge.

— Herpetology is being neglected in Pakistan, and still the neglect is continuing. In none of our universities it is being offered as a subject. There is a need to encourage an interest in the students at college and university level to study herpetology.

— Special large tracts of land, in each natural habitat, be preserved, in different parts of Pakistan. These protected refuges must be guarded by a buffer zone, discouraging encroachment. Local species of animals and plant will grow here without interference, allowing

harvesting of the species according to our needs without a loss to the balance.

- Artificial forests maintained by forest department in upper and lower Indus valleys may also help in maintaining population of local species, if human intervention in these areas is restricted.

- For effective conservation of animals in Pakistan, departments like forest, agriculture, education, game, Wildlife Conservation as well as international agencies like IUCN, SSC and WWF must cooperate in formulation of different measures and should help each other in implementation.

- More challenging times for a conservationist are ahead. Rapid increase in human population and abuse of our atmosphere is adversely affecting our climate. Now is the time to fight and win the battle for conservation of our fauna, flora and earth.

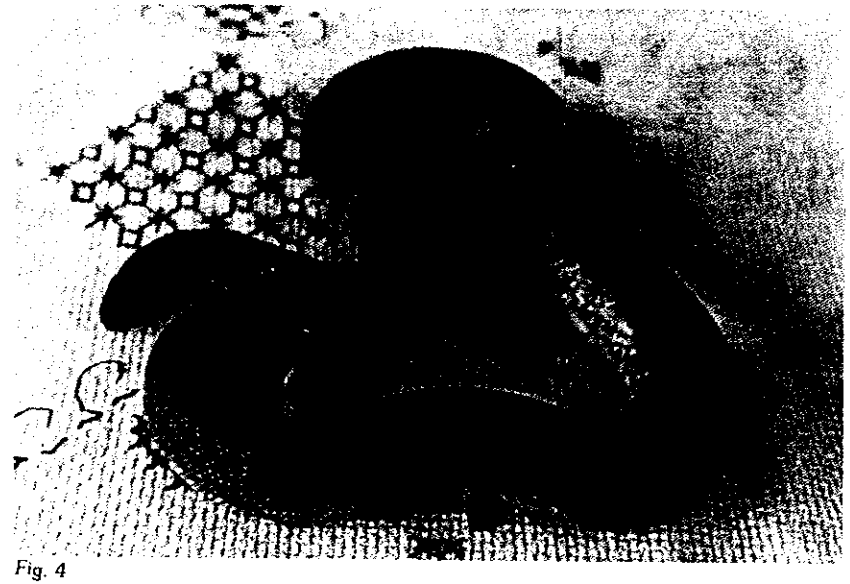

Fig. 4

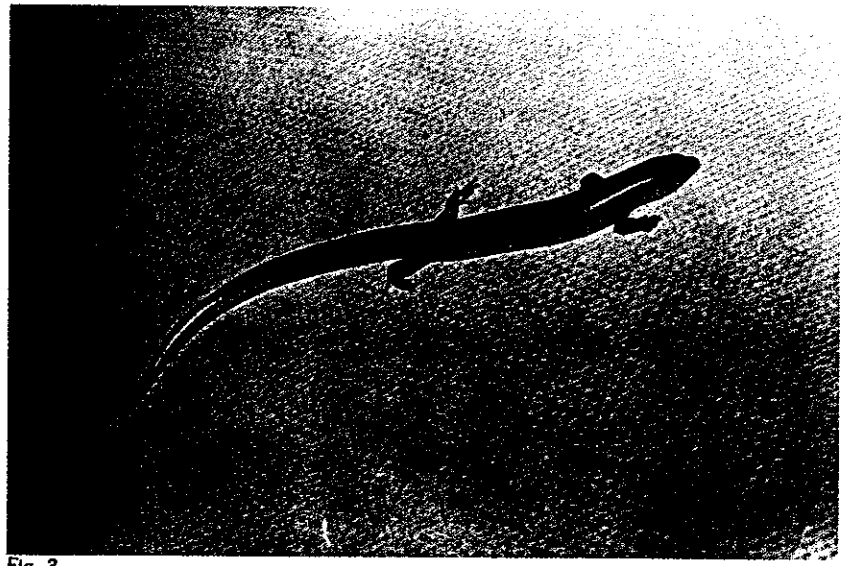

Fig. 3

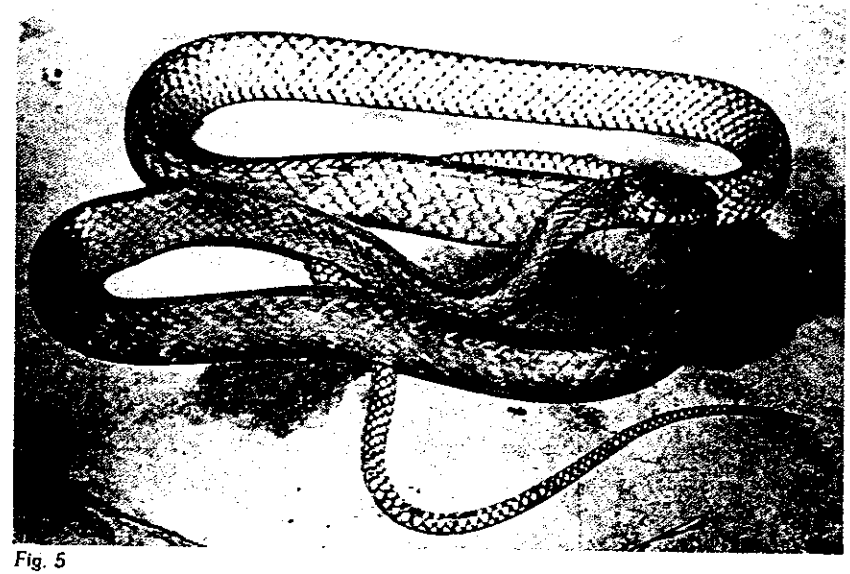

Fig. 5

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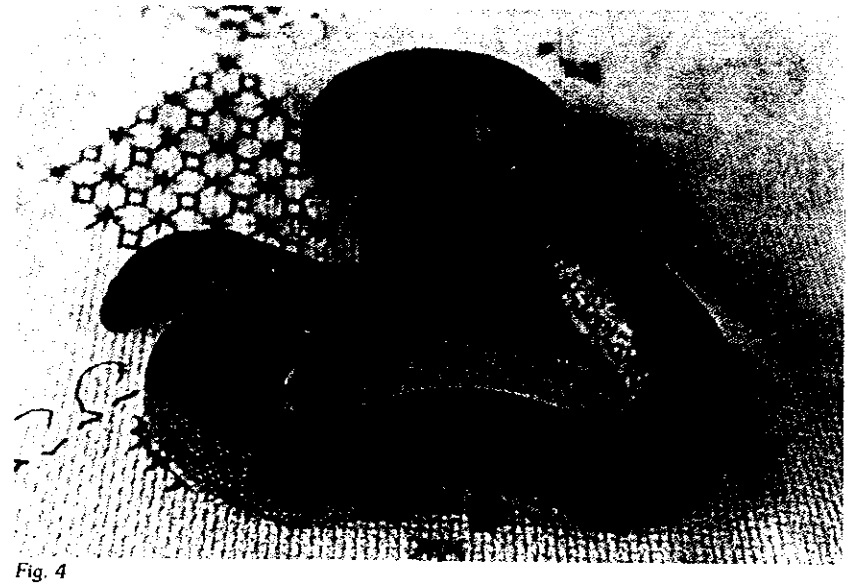

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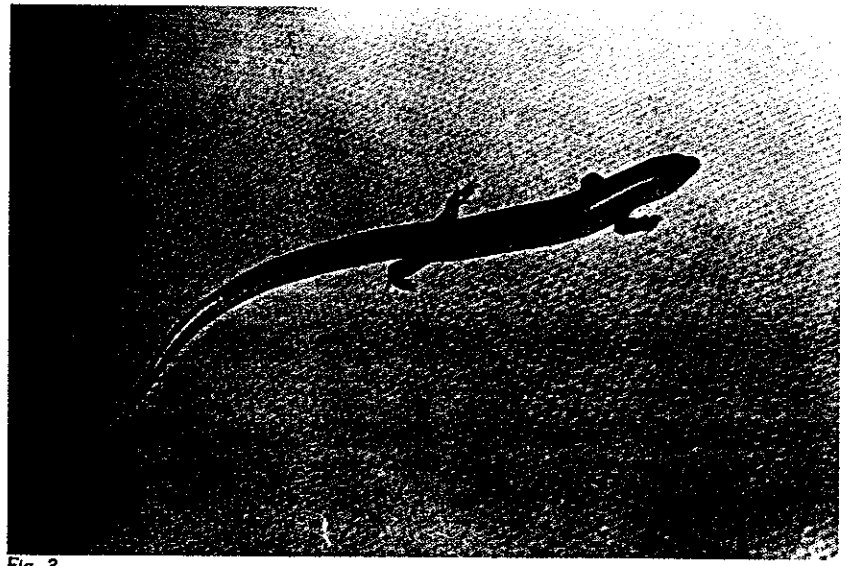

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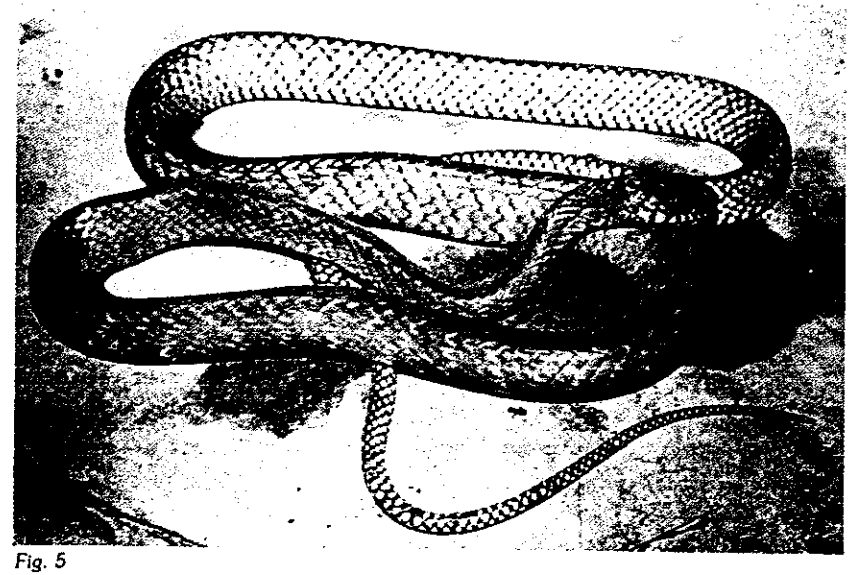

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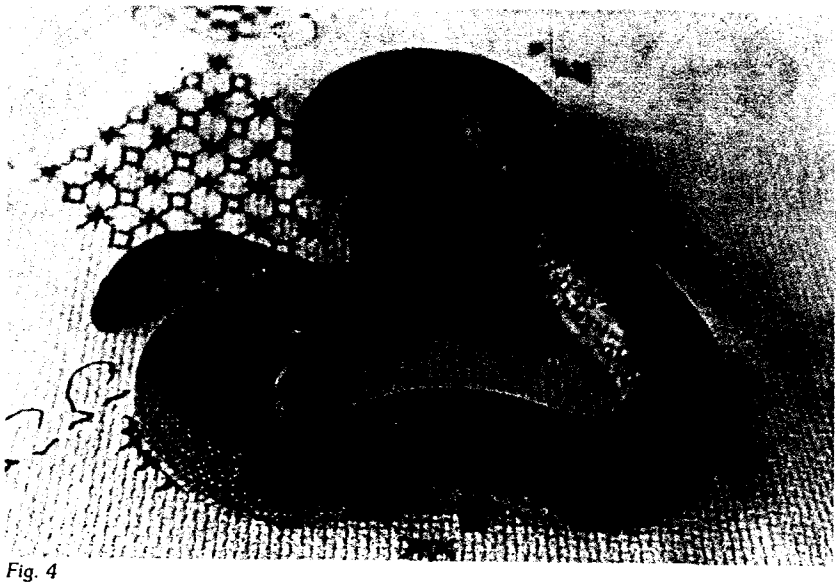

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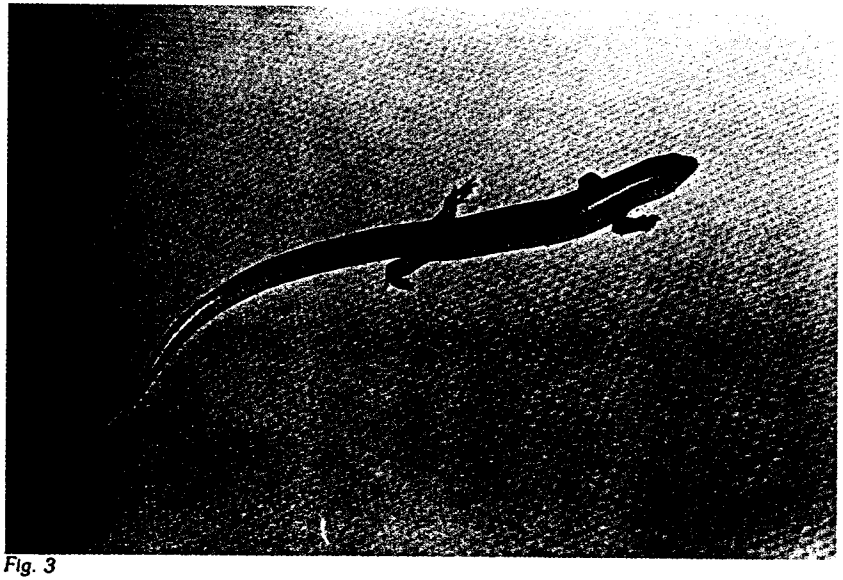

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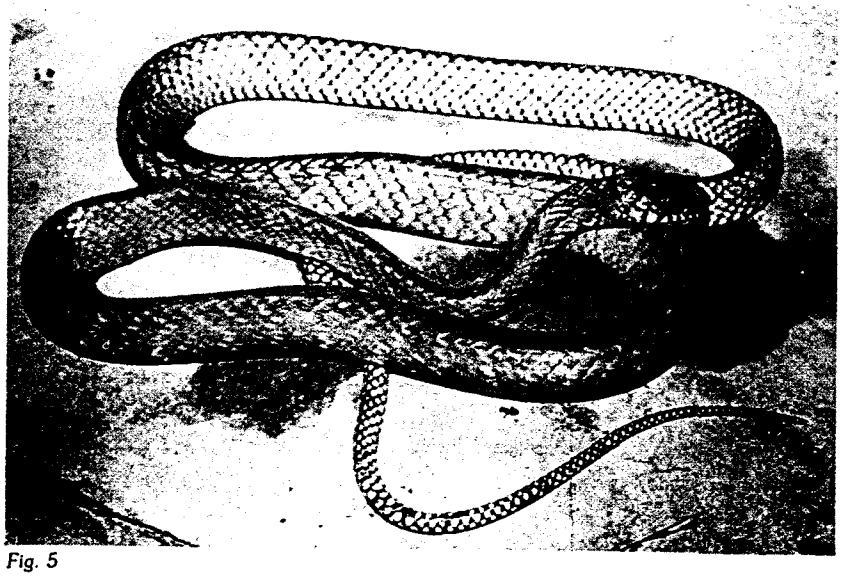

Fig. 5

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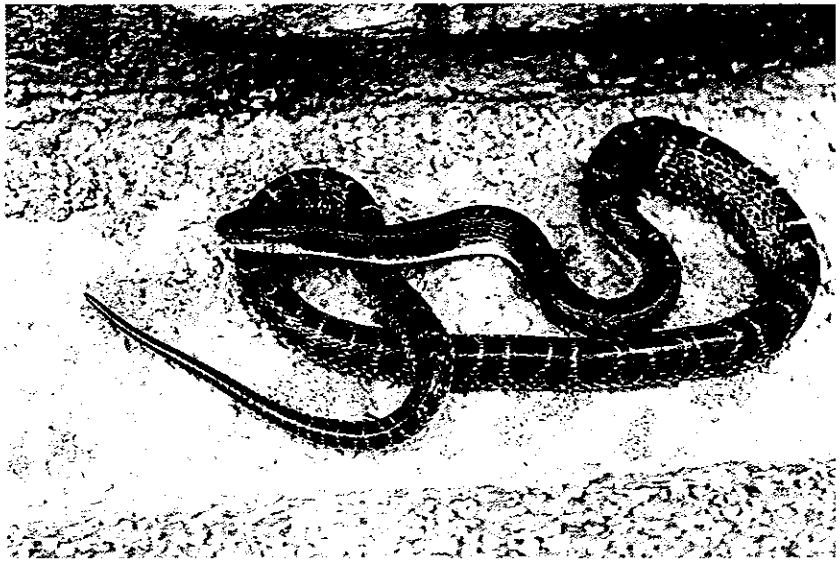

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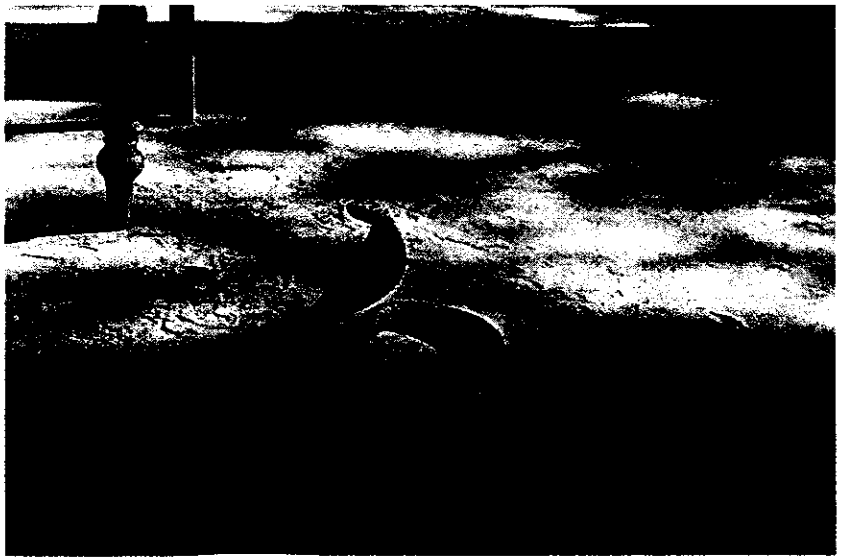

Fig. 7

Legend to the figures

Fig. 1. Varanus benglaensis

Common varanid lizard. Inhabits hard stony desert and wasteland. It abounds in vegetation growing along nullahs and canals. The lizard lives in burrows made in clumps of vegetation, crevices among rock, fissures in ground. It readily enters water. Natural habitat of this large lizard is being destoryed by land reclamation.

Fig. 2. Uromatyx hardwickii

Common ground lizard. Inhabits hard stony terrain with spurse vegetation. Burrows in hard soil, throughtout the plains of upper and lower Indus valley. It is hunted for its fat. Its habitat is disturbed due to reclamation of wasteland.

Fig. 3. Eumeces taeniolatus

Common scincid lizard. Inhabits relatively dry areas, taking refuge under stones and among roots of plants. Locally known as "Raig Mahi" used in some local medicines thought to cure impotence.

Fig. 4. Eryx johnii (non-poisonous)

Inhabits desert areas with sparse vegetation. Usually enters human habitations in search of mice. It burrows in sand and loose soil.

Fig. 5. Ptyas mucosus (non-poisonous)

Common "rope snake". One of the longest snakes of Pakistan. Inhabits damp grassland around villages, often extending in human dwellings. Sought for its skin.

Fig. 6. Bungarus caeruleus (poisonous)

Common karait. Inhabits grassland and moist places. Its venom is used for antivenom serum production.

Fig. 7. Naja oxiana (poisonous)

Common brown cobra, one of the most feared snakes. Inhabits damp grassland. Sought by snake charmers., since its hood commands attraction of sepctators during a display. Also sought for its skin.

Colour Transparencies : Courtesy M.S. Khan