

## HERPETOFAUNA OBSERVATIONS IN PALAS VALLEY, NORTH-WEST FRONTIER PROVINCE, PAKISTAN

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### INTRODUCTION

In the Spring of 1994 from 15 May to 23 June, under the auspices of Bird Life International and the Himalayan Jungle Project (HJP), a team of four British ornithologists working with Pakistani counterparts from HJP and the Department of Forestry (Wildlife), visited Palas, North-West Frontier Province (NWFP) in northern Pakistan. The primary objective was to undertake surveys of the Western Tragopan *Tragopan melanocephalus*, a threatened montane pheasant endemic to the western Himalayas. I was subsequently involved with a further Western Tragopan survey in the winter of 1995-1996. During these surveys Naeem Ashraf (then HJP) and myself were able to make some observations of amphibians and reptiles. No herpetofauna studies had previously been undertaken in Palas, and this region of the extreme west Himalayas is relatively poorly known to herpetologists.

#### **The Himalayan Jungle Project and Palas Valley**

Commercial timber extraction and local pressure on forest resources has resulted in large scale deforestation in northern Pakistan. Palas supports one of the largest areas of remaining Himalayan temperate and subalpine forests in Pakistan. The Himalayan Jungle Project, established in 1991, aims to conserve the remaining forest and other important wildlife habitats within Palas. Its approach is to enable local people to tackle the linked causes of poverty and incipient natural resource degradation through establishment of sustainable integrated natural resource management. Very simply the project promotes conservation of the forest and associated wildlife whilst undertaking ventures such as bridge building, introducing new and higher yielding crops appropriate to the low-intensity agriculture practised in the area, constructing water mills to grind locally produced maize, *Zea mays*, and other initiatives to benefit the local people.

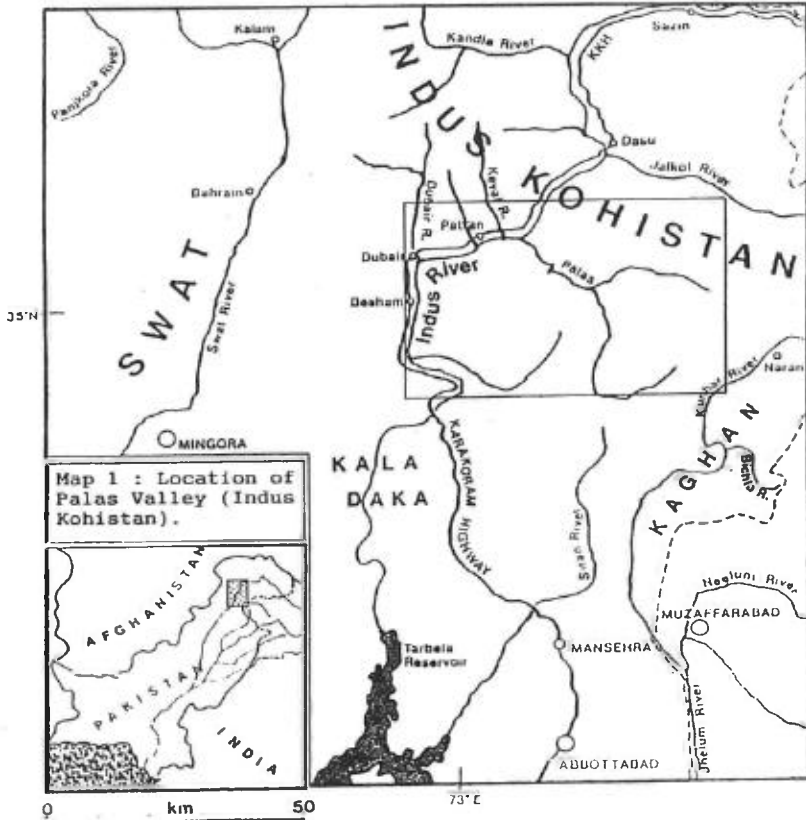
An important component of the project is to elaborate base-line data on the biodiversity of Palas, in particular on the status and distribution of the threatened Western Tragopan and other species endemic to the western Himalayas.

#### **Location**

Palas is situated within District Kohistan, NWFP, in northern Pakistan. Palas lies immediately to the east of the River Indus and covers an area of 1413 km<sup>2</sup>.

It is located between 34°52'E to 35°16'E and 72°52'N to 73°35'N (see Map 1).

The valley entrance is close to the small town of Pattan 35°12'N 73°02'E. Pattan is located alongside the Karakoram highway on the west bank of the Indus.



### Topography

The topography is characterised by deep, steep-sided valleys and precipitous slopes with many rocky crags and outcrops, and patches of boulder scree. The main valley known as Bar Palas is about 45 km long, running in an approximately south-east to north-west direction. In altitude it varies from 1000m at Karat (the Palas valley road-head) to 4500m over Ledi Pass at the south-eastern end. The surrounding snow-covered mountain peaks reach over 5000m, the highest being Bahader Ser at 5151m.

### Habitat

Through the main valley of Bar Palas flows the turbulent Mushaga River and along the numerous smaller adjoining side valleys there are numerous fast flowing, boulder strewn streams. In a few areas along these water courses there are slow flowing stretches and pools that provide breeding sites for anurans.

Palas supports large areas of Himalayan temperate and subalpine forest, herb-rich high alpine pastures and also cultivated terraced slopes in the vicinity of villages.

At the valley entrance at 1000m, evergreen *Quercus baloot* (a species similar to Holly Oak, *Quercus ilex*) woodland dominates boulder strewn slopes up to about 1900m. It occurs mostly in a somewhat degraded state due to lopping of trees to provide fodder for livestock and heavy grazing of the understorey, mainly by domestic goats. Wild Olive *Olea* sp. is an important constituent species at these lower altitudes.

Above 2000m the *Q. baloot* woodland gives way to West Himalayan temperate forest comprising a mix of coniferous and deciduous tree species. The dominant conifers on the drier ridges are Himalayan Cedar *Cedrus deodara*, Himalayan Blue Pine *Pinus wallichiana*, West Himalayan Silver Fir *Abies pindrow* and *Picea smithiana*, often mixed with *Q. baloot*. A variety of deciduous broadleaf species which predominate in damper gullies and ravines include Maples *Acer spp.*, *Parrotiopsis jacquemontiana*, Walnut *Juglans regia* etc. A small population of the endangered West Himalayan Elm *Ulmus wallichiana* also occurs in this vegetation zone.

In less heavily grazed areas a shrub layer persists composed of woody plants including *Berberis spp.*, *Cotoneaster spp.*, *Indigofera spp.*, *Lonicera spp.*, *Rosa webbiana* and *Viburnum spp.*

Above 3000m, patchy subalpine Himalayan Birch *Betula utilis* woodlands are found, grading into alpine scrub and pasture above 3300m. Higher still are rocky mountain ridges and peaks, with large areas of permanent snow and ice.

### **Persecution of Herpetofauna**

In Palas, as is the case almost worldwide, snakes are viewed with general fear and loathing by humans. Locals usually attempt to kill snakes on sight by beating them with a stick or stoning them with rocks. They do not attempt to distinguish between harmless and venomous species. Locally, around villages for instance, this may have a negative effect on snake populations but the indiscriminate killing probably has little effect in the valley as a whole.

Surprisingly perhaps, lizards, especially the conspicuous Agamas, are also feared. They are frequently the targets for stone-throwing children and teenagers. Despite questioning locals it could not be ascertained why they feared Agamas but this fear is obviously deep-seated in their folklore. They are quoted in poems/verse and apparently represent the 'ugly man'. Translation difficulties prevented any clarification of this! The head-bobbing display commonly exhibited by Agamas is interpreted by some Moslems as being an insult to Allah which appears to account for persecution of agamids in some regions.

Toads (and possibly frogs too) are also feared. A Green Toad *Bufo viridis* shown to two local porters was viewed with obvious fear. They refused to pick-up or even touch it and backed away when it was held towards them. However, unlike snakes and Agamas, no direct persecution of toads or frogs was observed. This fear of anurans too, is presumably passed on through local folklore.

## **HERPETOFAUNA OBSERVATIONS**

### **Survey Methods**

No particular survey methods were employed. Encounters with reptiles were usually made when walking between Tragopan survey sites during daylight hours. When time allowed a special effort was made to search likely looking areas for amphibians and reptiles. An attempt was made to describe the habitat at observation localities but frequently insufficient time was available to make more than brief notes as observations were often made when on the move between Tragopan survey sites.

On a few occasions, especially after rain, spot-lighting at night (usually in the early hours of the evening when it was still relatively warm) was undertaken to look for nocturnal species.

## Species Accounts

Three species of amphibian and five species of reptile were encountered in Palas. The most interesting observation was of a frog of the genus *Paa*, possibly a species new to science. A summary of these observations is given below.

### AMPHIBIA

#### FAMILY BUFONIDAE

*Bufo stomaticus* (Lutker) – Indus Toad

1- 11-12.6.94. Karat, Bar Palas road head. 1000m.

Female spot-lighted soon after dark at 20.00hrs and male spot-lighted at 03.00hrs.

*Bufo viridis* Laurenti – Green Toad

1- 17.6.94. Pichbela, Bar Palas. 2200m.

30 plus adults and sub-adults spot-lighted at dusk. Most were amongst boulder piles (providing daytime refuges) or moving quickly with short rapid hops across bare, alluvial sandy soil. Three to four calling sporadically from standing water and several thousand large tadpoles, some with limbs and approx. fifty recently metamorphosed toadlets were observed in and around shallow pools.

2- 18.6.94. Dumbela, Bar Palas. 2200m.

12 adults and one sub-adult spot-lighted soon after dark at 20.00hrs. Mostly seen on alluvial sand close to boulder piles with scant herbeaceous vegetation, but one was observed foraging amongst grass at the end of a small terraced field and three were in a small pond (2m x 3m x 0.4m deep) containing some emergent *Juncus*.

3- 14.6.94 Shaman and Chakal. 2000m.

Approximately 500 tadpoles in a small pond (1m x 3m x 0.3m deep) with a bare mud bottom, green algae coating a few submerged rocks and marginal vegetation of *Veronica beccabunga*, *Carex* sp and grasses.

4- 20.6.94. Pichbela and Pulbela. 2200-2250m.

A few tadpoles observed in shallow pools and small slow-flowing streams.

#### FAMILY RANIDAE

*Paa* sp. Three frogs and several tadpoles of this genus were seen at two localities (see below). I am indebted to Prof A. Dubois for his identification and comments with regards to this frog. He considers it clearly to be new to the region, resembling *Paa blanfordii* (from eastern Nepal, Darjeeling and Burma). It could be an atypical *P. polunini* (known from western Nepal) but it is possibly a new, undescribed species. It is hoped that some specimens of adults and tadpoles can be obtained to ascertain its identity.

1- 20.5.94. Pichmoru and Karo Ser, Bar Palas. 2000m.

One adult and two immatures spot-lighted shortly after dark at 20.00 hrs. The adult was in a small pool (3m x 2m x 0.3m deep) situated underneath a rock overhang. The pool contained clear water with a gravel and silt substrate with a little accumulated plant debris on the bottom. Marginal vegetation consisted of a few small ferns and grasses. The pool was heavily shaded by an overhanging rock face. The two immatures were in a wooden water trough (a hollowed out conifer trunk) adjoining the pool via a short wooden water chute. The surrounding habitat consisted of open *Q. baloot* woodland on a south-facing boulder strewn slope.

2- 26.12.95, Karo Ser, Bar Palas, 2050m.

Six to seven large tadpoles of the above species were observed in a small pool just above Karo Ser village. These were nocturnal, emerging after dark from day-time refuges under submerged rocks. They were between 60 to 65 mm in total length.

Water body description:

Dimensions: Approx. 70 cm x 200 cm x 12 cm deep.

Flow: Slow, up welling from a spring. Outflow over granitic boulders at opposite end of pool to inflow.

Shading: Approx. 25% shaded by overhanging rocks.

Water Clarity: Clear.

Substrate: Irregular shaped small granitic rocks <10 cm diameter and gravel, with fine accumulation of silt covering 70% of bottom. Occasional goat droppings in water and very sparse fragments of macrophytic plant remains.

Aquatic vegetation: None, except for slight epipelitic fern possibly *Dryopteris sp*, an *Epilobium sp*, *Cerastium sp*, *Veronica sp* and a grass.

## REPTILIA

### FAMILY: AGAMIDAE

*Laudakia tuberculatus* (Hardwicke and Grey) – Kashmir Rock Agama

In May and June 1994 *L. tuberculatus* was observed to be a common conspicuous species occurring throughout most of Bar Palas from the roadhead at Karat at 1000m up to 3000m. Many adults, predominantly males (identifiable by their blue marbled throats), lesser numbers of immatures and a few very small individuals (presumably 1994 hatchlings) were noted. This agama was encountered in open, rocky and boulder strewn areas and occasionally man-made drystone walls. When disturbed they retreated under rocks or into rock crevices. At one locality several were observed foraging in alpine pasture but only in the immediate vicinity of rock piles in which they took refuge when alarmed.

On 10.2.96 in Kuz Palas at 1500m, a *Laudakia sp* presumably *L. tuberculatus* recently emerged from hibernation, was seen being carried in the claws of a Large-billed Crow *Corvus macrorhynchos*.

### FAMILY: SCINCIDAE

*Eumeces taeniolatus* (Blyth) – Yellow-bellied Mole Skink

1- 16.5.94. Gorkhar, Bar Palas. 1900m.

One retreating into crevice in boulder pile.

2- 29.5.94. between Shambela and Shared. 1750m.

One adult observed taking refuge under boulder on ESE facing slope. Surrounding boulder scree with very sparse vegetation cover (<5%) of grasses, *Geranium sp*, *Rabdosia rugosa* scrub and a few *Quercus baloot* trees.

*Liolopsima himalayanum* (Günther) – Himalayan Ground Skink

1- 23.5.94. Breathbeck, Bar Palas. 2550m.

At least ten including one feeding on a hunting spider (probably Family Lycosidae).

Inhabiting south-facing boulder scree slope with *Ephedera gerardiana* scrub (up to about 50cm in height).

2- 25.5.94. Sartoe, Bar Palas. 2400m.

One observed by summer inhabited shepherd hut adjacent to terraced fields on south-facing slope.

3- 26.5.94. Dahr, Bar Palas. 2750m.

Several observed in old overgrown drystone wall.

4- 16.6.94. Chakala. 2450m.

One observed on south-facing consolidated boulder scree slope with approx. 50% herbaceous vegetation cover of *Rumex sp*, *Euphorbia wallichii*, *Fragaria nubicola* and grasses.

5- 16.6.94. Wulbela, Bar Palas. 2300m.

One observed.

6- 18.6.94. Dumbela, Bar Palas. 2300m.

Two on south-facing mainly grass covered slope with other herbaceous vegetation including; *Fragaria nubicola*, *Artemesia* sp, and *Ranunculus* sp. Woody vegetation including; *Rosa* sp, *Viburnum* sp and small scattered *Juglans regia* trees.

7- 18.6.94. Gdar, Bar Palas. 3500m.

Several on south-facing rocky scree slopes with some grass/herbaceous vegetation cover.

8- 22.6.94. Ledi Pastures, Bar Palas. 3300m.

Five observed on well vegetated south-facing slope. The dominant plant was *Berginia* sp, the underlying, dry leaves of which the skinks took refuge when disturbed.

#### **FAMILY: COLUBRIDAE**

*Coluber ravergieri* Ménétriés – Mountain Racer

1- 23.5.94. Breathbeck, Bar Palas. 2600m.

One on boulder scree on north-west facing slope with areas of exposed soil and patches of melting snow. Herbaceous vegetation in the vicinity included; *Corydalis sutifolia* (dominant), *Ranunculus* sp, *Fragaria nubicola* and *Nepeta* sp. Woody species included; *Viburnum cottonifolium* (dominant), *Sambucus wightiana*, *Cotoneaster* sp and *Ribes* sp.

2- 17.6.94. Pichbela, Bar Palas. 2200m.

One taking refuge under large boulder on steep, grassy south-facing slope with some patches of scree and boulder piles.

#### **FAMILY: VIPERIDAE**

*Agkistrodon himalayanus* (Günther) – Himalayan Pit Viper

1- 23.5.94. Breathbeck, Bar Palas. 2550m.

One observed basking at 10.00hrs, taking refuge under large stone slab when disturbed. Situated on a south-facing slope of boulder scree with *Ephedra Gerardiana* scrub.

2- 23.5.94. Breathbeck, Bar Palas. 2650m.

Four observed on south-facing boulder scree slope.

3- 24.5.94. Breathbeck, Bar Palas. 2400 and 2500m.

Two on south-facing scree slope with some short herbaceous vegetation.

4- 24.5.94. Sartoe, Bar Palas. 2400m.

One observed during period of light rain in *Picea smithiana* dominated woodland with *Cedrus deodara*, *Pinus wallichiana* and *Acer* sp. Extremely well camouflaged against leaf/twig litter. Sparse ground flora in the woodland consisted of *Viola* sp, *Galium* sp, *Fragaria nubicola*, *Polygonum* sp and ferns.

5- 26-27.5.94. Dahr (above Kundal), Bar Palas. 2750m.

One immature on south-facing grass bank adjoining boulder scree slope on 26 and two on 27 May above Dahr village.

6- 13.6.94. Above Shukiser, Bar Palas. 2500m.

Two on consolidated boulder scree with patches of *Viburnum cottonifolium* scrub.

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In Pakistan I would like to thank the following: Guy Duke, the then HJP Director, and all the HJP staff especially Naeem Ashraf Raja (an enthusiastic herpetologist who was of great assistance in the field in 1994 and who unfortunately had to depart prematurely in the winter 1996-97 due to illness). Abdul Ghafoor who accompanied us during both surveys. Razwal Kohistani who oversaw liaison in Palas, Muhammad Arshad for organisation in Islamabad and Muhammad Ramzan our driver; Mumtaz Malik, Conservator (Wildlife Division) NWFP for arranging counterparts and clearances; all the Forestry Department staff who accompanied us, especially Mohammad Buzurg for his help during the winter survey and whose efforts enabled it to run smoothly after the early departure of Naeem Ashraf Raja; our two shikaris Autangzeb and Paloo and all our Palasi porters.

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