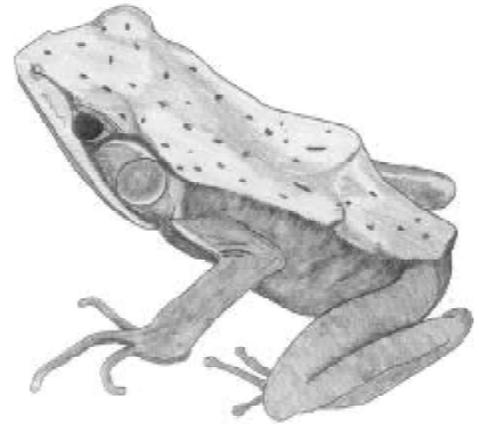


frog leg

**Newsletter of the Declining Amphibian Populations
Task Force - South Asia**

No. 12, August 2005



**Record of the Ornate Microhylid
Microhyla ornata (Duméril &
Bibron) at Timbi (Vadodara dis-
trict) and at Hathipura (Anand
district) in central Gujarat**

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Microhylids, collectively referred to as narrow-mouthed frogs, are not uncommon, but being fossorial forms they are rarely seen except during the breeding season. The family is widely distributed and occurs in the tropics of both hemispheres (Daniel, 2002).

Tadpoles and adult frogs of *Microhyla ornata* were collected from both the above mentioned areas during monsoon. External identifying characters were compared with taxonomic description by Duméril and Bibron (1841). The animal exhibited following characters:

Tadpoles: They are transparent in appearance and have a diamond shaped mark on the head. The tail ends in a short terminal flagellum. Eyes are present on the lateral side. Nares are very small. The interorbital space is very large compared to the internarial space. They were seen moving in shoals. The toes were webbed unlike that in adult. The gut content analysis supported the view of Rao (1917) that the tadpoles are microphagous. Different species of rotifers belonging to the genus *Lecane* and *Lepedella* were observed in the gut of these tadpoles.

Adults: They have a characteristic pattern on the back, which is metallic brown, with a large, dark marking extending from between the eyes backwards and widening posteriorly. How-

ever, the colour rapidly diminishes as the animal is preserved. The limbs are conspicuously marked with dark cross-bars. The snout to vent length is 22mm. The body is comparatively more slender. The snout is obtuse and broadly rounded. The pupil is circular and the tongue is elliptical. The inter-orbital width is nearly twice as broad as the upper eyelid. Toes are with a rudiment of web. Presence of two normal metatarsal tubercles distinguishes it from *M. rubra*.

Distribution in India

This species is widely distributed all over India. Recorded from Kashmir, Assam and Darjeeling. From southern India it has been recorded in Tirunelveli district. Ferguson (1904) has recorded this species specifically from Travancore and states that it is fairly common in Trivandrum. Acharji and Kirpalani (1951) have recorded this species from Eastern Himalaya. Mc Cann (1940) has recorded it from Andheri in Mumbai.

Distribution in Gujarat

Microhyla ornata was recorded earlier from southern Gujarat (Shoolpaneshwar Wildlife Sanctuary), northern Gujarat (Palanpur, Bhuj) and northeastern Gujarat (Panchmahal) (Naik & Vinod, 1993). Vyas (2004) has recorded it from Barda Wildlife Sanctuary which falls in Porbandar and Jamnagar districts of Gujarat. However, from central Gujarat it is not yet recorded. They are being reported for the first time from two new localities in central Gujarat viz., Timbi (73°18'E & 22°19'N) and Hathipura (73°21'E & 22°1'N), with our finding of specimens of this species.

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Deformed frogs – An ecological alarm?

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Amphibians have long been regarded as sensitive indicators of environmental health. Malformations in amphibian population have been reported in more than 60 species and field studies indicate that deformities have become more prevalent in recent times. Anatomical deformities recorded in anurans include the presence of extra limbs and eyes or the total absence of limbs and eyes (Blaustein & Johnson, 2003).

Number of theories have been put forth to explain the occurrence of these deformities, the prime suspects include UV radiation, chemical contamination of water, parasitic infestation or combination of these factors.

The present report records a one-eyed frog (having only the left eye) collected from the Botanical arboretum (Map 1) situated within Mangalore University Campus (12°48'39"-12°49'28"N & 74°54'44"-74°56'21"E, 100m) Konaje, Mangalore in October 2003.

The major characteristic features (Fig. 1) of the collected frog (*Indirana* sp.) includes the presence of smooth skin with folds, circular pupil, vomerine teeth, upper jaw with teeth, finger and toe tips dilated into discs with circum marginal groove, arms, legs and lower lip cross-barred, first and second finger equal in size, bifid tongue with a papilla. Some important morphometric measurements are given in Table 1.

A plywood industry is situated (altitude of 110m) in proximity to the botanical arboretum. Several chemicals being used in this industry to ward off fungal or algal growth and the infestation by insect pests like termites probably get leached through rainwater into puddles, where these frogs live. Frogs spend a major portion of their lives in water, specifically the organogenesis stage during the process of their development, and thus may be vulnerable particularly to the ill effects stemming from the chemical contaminants of water. Chemicals suspected of causing deformities appear to affect the thyroid gland responsible for growth, maturation and development in most animals (Rittman *et al.*, 2003). The malformation recorded in the present study could be the result of a developmental abnormality or a natural genetic mutation.

The frog was dissected to overrule the possibility of the deformity due to injury. The absence of a well formed optic chiasma, eye orbit and the optic nerve connecting to the left and the right eye, in the case of a deformed frog (Fig. 2) points that the missing eye (right) was not perhaps formed at all and also perhaps some loss in the total functional ability of the left eye too. A detailed follow up study needs to be taken up.



Map 1. Map of Mangalore University Campus

Table1. Morphometric measurements (in mm) of the normal and deformed frog (*Indirana* sp.).

Character	Normal frog	Deformed frog
Snout-vent length	23.0	20.0
Head length	9.0	7.0
Head width	10.0	9.0
Snout length	4.0	3.5
Nostril to eye	2.5	2.0
Nostrils to the tip of snout	1.5	1.5
Eye diameter	4.0	3.0
Width of upper eyelid	2.0	1.5
Interorbital width	2.0	2.0
Internarial distance	3.0	2.0
Tympanum diameter	2.0	1.5
Length of forelimb	16.0	10.5
Length of first finger	3.0	2.0
Length of second finger	3.0	2.0
Length of third finger	5.0	3.0
Length of fourth finger	3.0	2.0
Length of hind limb	43.0	33.0
Length of thigh	12.0	10.0
Length of tibia	13.0	10.0
Length of foot	12.5	9.0
Length of first toe	3.5	2.5
Length of second toe	5.5	4.5
Length of third toe	8.5	6.5
Length of fourth toe	12.5	9.0
Length of fifth toe	8.5	6.5

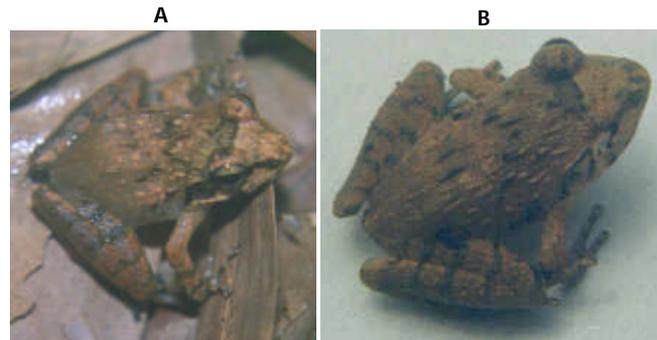


Figure 1. Normal (A) and Deformed (B) *Indirana* sp.

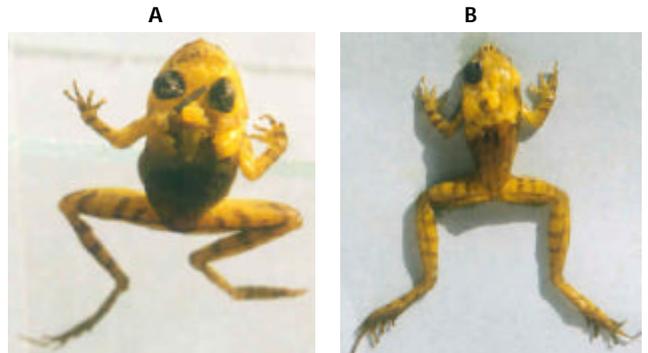


Figure 2. The optic chiasma and the optic nerve are seen clearly in the frog with two eyes (A) compared to the frog with one eye (B).

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Distribution of Common Tree Frog *Polypedates maculatus* in Rajasthan

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Common Tree Frog *Polypedates maculatus* (Gray) is generally found to occur in the plains throughout the Indian region and Sri Lanka (Chanda, 2002). According to Daniel (2002) the Common Tree Frog is present throughout peninsular India except Haryana, Punjab and Rajasthan. Literature reveals that this species is very much present in Rajasthan. Sharma (1997) has recorded this species from Banswa town at the outskirts of Sitamata Wildlife Sanctuary for the first time in Rajasthan. Sharma & Agnihotri (2002) have recorded this species inside Banswara town, one of southern most districts of the state. This species is also present in the southeastern part of Rajasthan, popularly known as "Hadoti" region. Four high rainfall districts of southeastern Rajasthan, namely Kota, Bundi, Baran and Jhalawar are called "Hadoti". Recently, during the month of August 2004, an adult *Polypedates maculatus* was seen inside a house clinging on a vertical wall during the night, near an electric bulb, and was feeding on insects hovering around the bulb. Three Northern House Geckos (*Hemidactylus flaviviridis*) were also present there feeding on insects.

Dorsum was brownish Prominent yellow spots were present on sides of the thighs. A dark strip was present behind each eye.

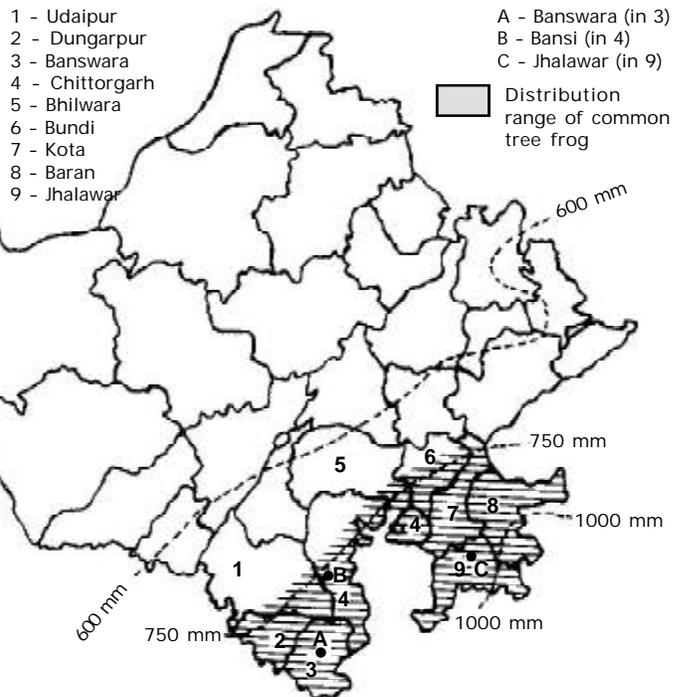
So far *P. maculatus* has been recorded inside human habitation in Banswa, Banswara and Jhalawar towns of Rajasthan. Presence of this species in these localities indicate that since identical habitats are present in many other pockets of Udaipur, Chittorgarh, Banswara, Dungarpur, Bundi, Kota, Jhalawar and Baran districts, it is probable that the distribution range of this species in Rajasthan is in the southern parts of Udaipur, Chittorgarh and Bundi districts, southeastern part of Bhilwara and whole of Dungarpur, Banswara, Kota, Baran and Jhalawar districts (Map 1). This is the zone, which gets an annual normal rainfall between 750mm and 1000mm (Ramaswamy, 1975). Forests in this zone are denser than the rest of the state. Many perennial streams and water bodies occur in this zone which play an important role in post egg laying stage of breeding. As one moves towards northern and western side, aridity increases in the state making the rest of Rajasthan unsuitable for this species.

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Map 1. Common Tree Frog is confined from 750 to 1000mm rainfall zone in Rajasthan.

Observation on amplexus between two species of frogs in Maharashtra

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A nature resort at Chorla Ghat is a hub of activity. Then be it man, animal or amphibian pre-monsoon showers had made their presence felt in the month of June transforming the environs into a modern day Eden. Several frog species have made this home. Some of the species noted here are *Rhachophorus malabaricus*, *Rana temporalis*, *Nictibatrachus* species and *Philautus* species. The pre-monsoon showers had led to lot of activity among the amphibians and several *Rhachophorids* were noted in amplexus.

On 31 June at 1015hr on a nature trail through the resort, a peculiar amphibian pair was noted.

Rana temporalis and a male *Rhachophorus malabaricus* were noted in singular amplexus position, in a depression in an earth cutting. The *Rhachophorus malabaricus* was identified positively as male as he was calling even in amplexus.

The depression was at the edge of a pool of stagnant water. The height was measured to be 1m above water.

They appeared to remain in amplexus overnight until the next afternoon, but had shifted to a nearby depression in the same earth cutting. This depression was at a height of 1.35m above water level. They had traveled a total distance of 6.5m.

Male frogs of different species emit advertisement calls of varying amplitude (Kuramoto & Joshy, 2001). Female frogs are attracted by these calls and accept a male of like species. The behavior exhibited in this case is yet to be ex-



Photo by Vimal Kolte / Nirmal Kulkarni

plained.

The location of this incident was noted as 15°39'210"N & 74°7'011"E in Maharashtra bordering Goa and Karnataka. The altitude was measured 614m. The dominant tree species of this habitat are *Karvia kalosa* (Karvi), *Zhyzizium cumini* (Jambul) and Stinging nettle.

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Advt. No. WII/RES/A.3.6(3)-2005

Engagement of Research Personnel for various Research Projects/Cells

The Wildlife Institute of India (WII), a premier national autonomous Institute of the Ministry of Environment and Forests (MoE&F), Government of India, wishes to engage 18 research personnel (4-Research Associates, 9-Junior Research Fellows & 5-Technical Assistants) for its various research projects/cells. The last date for receiving the duly filled-in applications is 26th August, 2005 and the interview is likely to be held during the third week of September, 2005 at WII. Details of the available positions along with their essential and desirable qualifications, terms & conditions, and how to apply are hosted on the Institute's website <http://www.wii.gov.in/>.

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