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ADDITIONAL RECORDS OF *ICHTHYOPHIS BOMBAYENSIS* TAYLOR, 1960 IN AND AROUND DANGS, GUJARAT

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web supplement

A recent publication on distribution of *Ichthyophis bombayensis* Taylor, 1960 was published by Vyas (2004) lists collection data from three districts in Gujarat -- Dangs, Navsari and Surat. As part of the "Conservation of the Rare and Endangered Biodiversity of Gujarat" (CREB) project sponsored by Gujarat Ecological Commission, our team recorded this species in parts of Dangs, Navsari and Valsad districts.

Preliminary survey about the presence or absence of this species in the study area was carried out through questionnaires. Next, selected road stretches were chosen to check for the presence of *Ichthyophis* sp. for the next seven nights from 10 to 16 June 2001 (Table 3). Each night, select stretches of roads passing through varied habitats in the study area were surveyed using a vehicle moving at a steady speed of 20-30 km/h (Table 1 & 3) and about 1,500km were covered during the survey period. Width of the road varied between 6 to 9m. During the survey, the team comprising of eight members used four powerful torches (300V) and vehicle headlights to scan the road thoroughly for the presence of *Ichthyophis* sp.

When a specimen was sighted, it was identified following Taylor (1961), Bhatta (1998) and, Pillai and Ravichandran (1999). The surrounding areas with all probable habitats of the taxon such as under logs and stones, debris, decomposing leaf litter, beneath the top layer of soil and, near seasonal and perennial water bodies were thoroughly searched for the presence of more individuals. Separate records of live and dead specimens encountered in each road transect were maintained (Table 1). Ecological parameters like temperature, humidity, habitat description and characteristics were noted down for each dead or live animal encountered during the survey. A few roadkill specimens were collected for species confirmation. They are deposited with M.S. University, Department of Zoology Museum, under the charge of Dr. B. Suresh. The team did not record morphometric measurements of live specimens. Morphometry of all dead specimens was not possible as they were either badly damaged or decayed. Only two roadkills in relatively good condition were measured.

Morphometric measurements of the two roadkill specimens are presented in Table 2. The maximum number of individuals were sighted on Navtad-Ahwa-Navtad route (180km). Considering the rarity of this animal, the numbers encountered during the present study are very significant. The subterranean habit of this animal makes it difficult to estimate their actual numbers. All the individuals were sighted in a span of seven days during the first monsoon showers in the study area.

Habit and habitat: The habitat in all the 11 localities, where *Ichthyophis bombayensis* were found was moist deciduous forest patches interspersed with agricultural lands. Daniel (1963), Bhatta (1997, 1998), Hofer (2000), and, Vyas (2004) report the presence of *Ichthyophis* sp. from varied microhabitats including under rocks, fallen tree trunks, decaying vegetation, dilapidated houses, under hayracks, dumping areas, cleared land used for paddy cropping, coffee and tea plantations.

Out of the 32 sightings of *Ichthyophis bombayensis*, 18 were on roads passing through the forests, of which five individuals were found near Kilaad Village that had paddy fields on one side and forest patches of Vansda National Park (VNP) on the other. At Pimpri, Kilaad, Chichigoantha, *Ichthyophis bombayensis* was observed entering decaying vegetation, under rocks and in paddy fields, respectively. Live individuals of *Ichthyophis bombayensis* were sighted on roads only during nights after heavy rains or during continuous drizzle between 2000h and 0200h but maximum individuals (seven) were observed between 2100 to 2200h. Even when the roads were wet without drizzle, the animals could not be seen on the road indicating that continuous wet surface was preferred in order to move out of the burrows to feed or migrate from one place to another. Vijaykumar *et al.* (2001) also observed that caecilians are found more on rainy nights.

Threats: Eighteen dead individuals (roadkills) of *Ichthyophis bombayensis* were observed from 11 localities of study area (Images 1 & 2[w], Table 1). As State Highways number 14 and 15 pass through the villages Kilaad and Waghai (adjoining the Vansda National Park area), they could be considered one of the major threats to *Ichthyophis bombayensis* in this region.

Srinivasulu *et al.* (1995) and Vijaykumar *et al.* (2001) have also reported vehicular traffic as a major threat to herpetofauna including caecilians in semi urban and forested tracts of southern India. Vijaykumar *et al.* (2001) in their study say that because the caecilians are found commonly in roadkills in coffee plantations, probably they are more adapted to habitat alterations. We do not agree with them in this view as we feel that natural forest provide better habitat condition for caecilians and therefore are seldom seen. We do agree with them that vehicular traffic/ roadkill can deplete local herpetofauna population.

Furthermore, Bhatta *et al.* (1998) and Hofer (2000) reported change in the soil pH from acidic to alkaline due to the use of lime as fertilizer as one of the reasons for the decline in the population of *Ichthyophis* sp. in cultivable land. However, such change in soil pH (acidic to alkaline) was not found to be a threat in our study area because the tribals still practice traditional methods of agriculture, without use of artificial chemicals.

[w] see Image 1 & 2 on the web at www.zoosprint.org

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Table 1. Distribution of* Ichthyophis bombayensis *Taylor, 1960 in Dangs and nearby areas in Gujarat

Date	Time	Locations	Habitat	No. sighted Live	Dead	Total
10.vi.2001	2130	Chichigoantha Village (20°48'N, 73°32'E; elevation: 188m), Dangs	Agriculture fields on either side of the road	1	0	1
	2140	1km away from Chichigoantha Village towards Ahwa, Dangs	Dry deciduous forest with few patches of bamboo on both sides of the road.	1	1	2
	2200	3km away from Chichigoantha (20°48'N, 73°32'E; elevation: 200m), towards Ahwa, Dangs	Dry deciduous forest on both sides of the road.	0	2	2
11.vi.2001	2100	Near Kilaad bridge, (20°35'N, 73°14'E; elevation: 101m) Kilaad, Navsari	Forest on one side with adjacent paddy fields and other side forest.	1	2	3
	2120	3km away from Chikar village towards Waghai, Dangs	Reserve forest with bamboo plants on both sides	1	0	1
	2130	Chikar Village, Dangs	Agriculture fields	1	0	1
	2150	5km away from Chikar Village towards Waghai, Dangs	Reserve forest on both sides	1	0	1
	2230	Purna Wildlife Sanctuary, from Bheskatri towards Pimpri Village, Dangs	Dry deciduous forest on both sides, with few patches of bamboo plants	1	0	1
12.vi.2001	2214	On Vansda-Dharampur Highway (20°48'N, 73°32'E; elevation: 184m), Valsad	Agricultural fields on both sides	1	0	1
13.vi.2001	0014	Nani Gira Fall, Dangs	Riparian area in the Reserve Forest	1	0	1
	2115	On Vansda-Dharampur Highway, Valsad	Agricultural fields on both sides.	0	3	3
14.vi.2001	0045	2km away from Chichigoantha towards Ahwa, Dangs	Agricultural fields on both sides.	0	1	1
15.vi.2001	0045	Near Kudas Village, Dangs	Agricultural fields on both sides	1	0	1
	0120	1km away from Kudas Village towards Waghai, Dangs	Teak plantations on both sides with dense bamboo plants.	0	1	1
	0145	Near Kilaad Village (20°35'N, 73°14'E; elevation: 101m), Navsari	Forest of VNP on either side of the road.	1	0	1
	0155	Kilaad Bridge (20°35'N, 73°14'E; elevation: 101m), Navsari	Forest of VNP on either side of the road with one side paddy field adjacent to VNP.	0	1	1
16.vi.2001	2015	Waghai check post (20°35'N, 73°14'E; elevation: 89m), Dangs	Dry deciduous forest on either side of the road.	0	3	3
	2145	4km away from Pimpri Guest House towards Ahwa, Dangs	Dry deciduous forest on either side of the road.	1	0	1
	2215	Near Narsari Village, 7km before Ahwa, Dangs	Dry deciduous forest on both sides of the road.	1	1	2
	2310	Muchond Village, Dangs	Agricultural lands on both sides of the road.	0	1	1
	2320	1km away from Muchond Village towards Ahwa, Dangs	Dry deciduous forest on both sides of road.	0	1	1
	2335	2km away from Pimpri Village towards Ahwa, Dangs	Dry deciduous forest less of bamboo on both sides of the road.	0	1	1

Owing to the paucity of information on this taxon, further intensive studies relating to its systematic, anatomical, histological, ecological, behavioral and phylogenetic aspects are urgently needed. Any added information would certainly help us understand this taxon much better.

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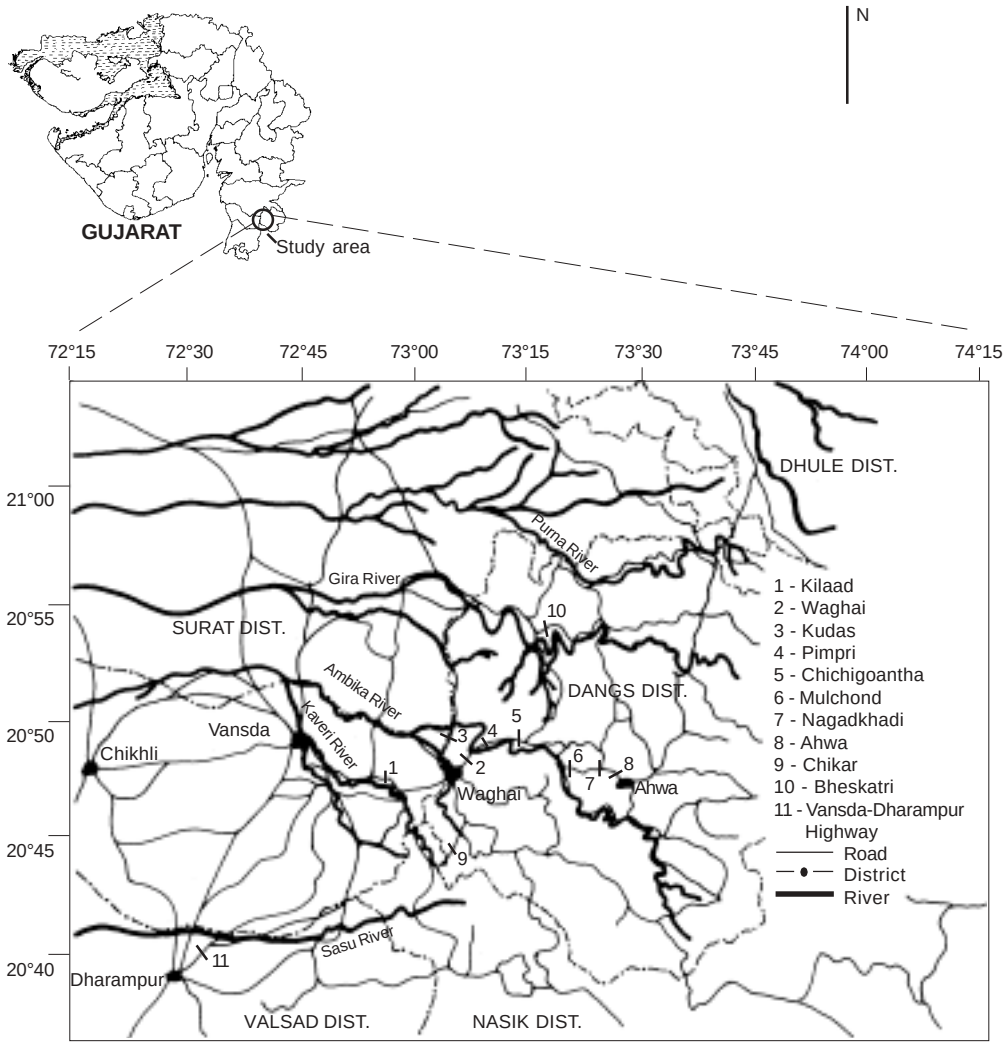

Figure 1. Localities where* Ichthyophis bombayensis *was found in the study area.

Table 2. Morphometric measurements (in mm) of two specimens of* Ichthyophis bombayensis *Taylor, 1960

Parameters	MSU-AMP-23-1[w]	MSU-AMP-23-2
Total length	370	415
Tail length	15	18
Head width	12	14
Snout length	15	18
Body width	15	16
Eye to tentacle	3	3
Tentacle to nostril	5.2	4
Eye to nostril	6.0	6
Eye to eye	9	9
Snout tip to 1st groove	16	19
Snout tip to 2nd groove	20	23
Snout tip to 3rd groove	25	28
Body folds	356	380
Tail folds	17	17
Premaxillary–maxillary	-	-
Prevemeropalatine	-	-
Dentary	-	-
Splenial	9-9	9-9

'-' We were unable to count the number of teeth because the head of the specimen was not in good condition.

Table 3. Road route for the night survey in Dangs and nearby areas

Date	Road route	D (km)	No.	Survey Time
10.vi.01	Navtad-Pimpri-Ahwa-Pimpri-Navtad	180	5	1930 to 0300h
11.vi.01	Navtad-Chikar-Waghai-Bheskatri (Purna WLS Sanctuary)-Navtad	240	7	2000 to 0430h
12.vi.01	Navtad-Dharmpur-Navtad	310	1	1900 to 0400h
13.vi.01	Navtad-Nani Gira Fall-Chikar-Waghai-Navtad-Dharampur-Navtad	360	4	2000 to 0530h
14.vi.01	Navtad-Pimpri-Ahwa-Pimpri-Navtad	180	1	2100 to 0500h
15.vi.01	Navtad-Chichinagaotha-Navtad	115	4	2030 to 0300h
16.vi.01	Navtad-Pimpri-Ahwa-Pimpri-Navtad	180	10	1930 to 0445h

D - Distance travelled; No. - Number of *I. bombayensis* sighted

[w] see photo image of specimen MSU-AMP-23-1 on the web at www.zoosprint.org