

## NOTES ON THE DISTRIBUTION, NATURAL HISTORY AND VARIATION OF *HEMIDACTYLUS PRASHADI* SMITH, 1935

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(with three text-figures)

**ABSTRACT.**– A recently collected specimen of the gecko *Hemidactylus prashadi* from Dorle extends the known range of this gecko significantly northwards in Maharashtra. Observations of *H. prashadi* in Maharashtra and Goa provide new insights into the habitat of this poorly known species. Data from these specimens and others in the collection of the Bombay Natural History Society permit the assessment of morphological variation with respect to published information on the species.

**KEY WORDS.**– *Hemidactylus prashadi*, Gekkonidae, habitat, range extension, colouration.

### INTRODUCTION

Despite its large size (at least 95 mm SVL, fide Sharma, 2002) and distinctive colouration, *Hemidactylus prashadi* is one of the most poorly known species of Indian geckos. Smith (1935) described the species on the basis of a series of specimens “collected by Drs. Prashad and Rao in November 1928, in the neighborhood of Jog, N. Kanara district, Bombay Presidency” (now part of Karnataka). Later, Tikader and Sharma (1992) and Sharma (2002) gave the distribution as Goa, Karwar and Jog. According to these authors, specimens from Nayavada village (near Mollem, Goa) were found in deserted buildings, where they shared crevices in the walls with wolf snakes, *Lycodon aulicus* and pit vipers, *Trimeresurus gramineus*. Jadhav et al. (1991) documented the first specimens from Maharashtra, from a high elevation (1500 m) forest at Amboli, in the extreme southern part of the state.

Recently, specimens of *Hemidactylus prashadi* were collected from Dorle in the Ratnagiri District and Amboli in the Sindhudurg District of Maharashtra and deposited in the collection of Bombay Natural History Society (BNHS) as

BNHS 1577 and BNHS 1491-1494, 1540, respectively. The BNHS collection also houses nine older specimens of this species, of which four (BNHS 146, [three specimens] 146/2 [a single specimen]) were collected from Gersoppa Falls, North Kanara, Karnataka and five (BNHS 147 [two specimens], 147/1 [two specimens] and 147/2 [a single specimen]) from Shirol forest bungalow, Belgaum, Karnataka. As the information about the natural history and morphological variation in this species is meager, we take this opportunity to provide some data derived both from the newly acquired specimens and the older museum material in Mumbai.

### METHODS

Specimens of *Hemidactylus prashadi* were collected by hand, euthanised, fixed in 10% formalin, and transferred into 70% ethanol. Measurements were taken with a Mitutoyo dial caliper (to the nearest 0.05 mm). The following measurements were recorded for each specimen: snout-vent length (SVL); tail length (TL); axilla-groin length (AG); head length from posterior edge of mandible to snout tip (HL); maximal head width (HW); maximal head depth (HD); eye diameter



**Figure 1.** Adult specimen of *Hemidactylus prashadi* from Dorle, Maharashtra (BNHS 1577). Note the distinctiveness of the dorsal spots and the greyish-yellow background colour. Photo by Varad Giri and Sameer Kehimkar.

(ED); distance from posterior border of orbit to anterior margin of ear (EE); the distance from anterior border of orbit to tip of snout (ES). Characteristics of femoral pores (FP), number of supralabials (SL) and infralabials (IL) and number of lamellae under first toe (L 1st) and fourth toe (L 4th) were also recorded.

### RESULTS AND DISCUSSION

**Locality and habitat.**— Specimens of *Hemidactylus prashadi* were collected from Dorle village, Ratnagiri District, Maharashtra ( $16^{\circ} 46' 14''\text{N}$ ;  $73^{\circ} 20' 48''\text{E}$ ; altitude 15 m) on 18 October 2003 at ca. 2200 h and at Amboli, Kolhapur District, Maharashtra ( $15^{\circ} 57' 37''\text{N}$ ;  $73^{\circ} 59' 58''\text{E}$ ; altitude 711 m) on several occasions between 2000



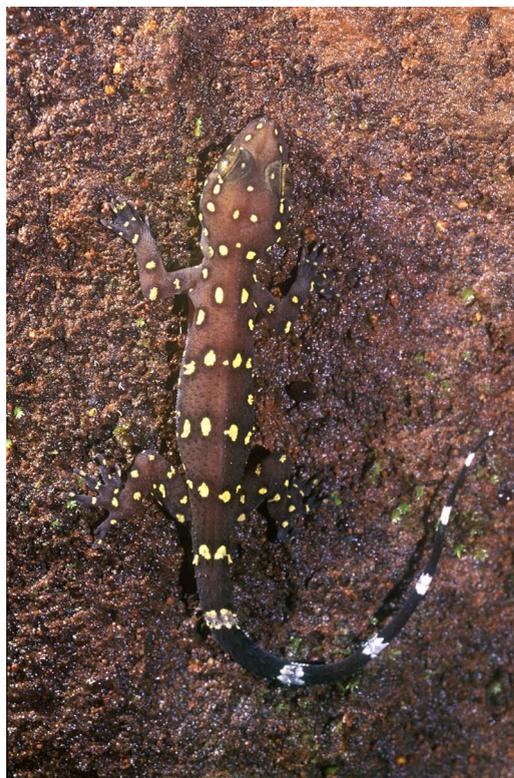
**Figure 2.** Adult specimen of *Hemidactylus prashadi* from Castle Rock, Karnataka, illustrating the colour pattern of the original tail. Photo by Ashok Captain, S. Mukherjee and N. Irani.

and 2003. This species had previously been recorded chiefly from a few localities in Karnataka and Goa (Smith, 1935; Murthy, 1985, 1990; Tikader and Sharma, 1992; Daniels, 2000), and from Amboli and Narendra ( $15^{\circ}54'\text{N}$ ,  $73^{\circ}49'\text{E}$ ) in Maharashtra (Jadhav et al., 1991). Amboli is located in the northern Western Ghats, close to the border of Goa, Maharashtra and Karnataka in an area of semi-evergreen type forest. Dorle village is ca. 120 km north of Amboli and is surrounded by semi-evergreen forest with a coconut plantation in the village itself. The specimen from Dorle represents the northernmost locality for *H. prashadi*.

*Hemidactylus prashadi* is a nocturnal species. The single specimen from Dorle (Fig. 1) is an adult and was collected from hanging roots of a *Ficus* sp. in the village. In Amboli, this is one of the commonest gecko species. The specimens collected from Amboli include adults (BNHS 1492, 1494 and 1540) and juveniles (BNHS 1491 and 1493). The first specimen

**Table 1.** Mensural and meristic data for *Hemiodactylus prashadi* from Karnataka and Maharashtra in the collection of the Bombay Natural History Society (see text for localities). Abbreviations as in Materials and Methods. All mensural data in mm. Abbreviations: \* = Tail regenerated; TB = Tail broken; \*\* = Approximately 60 mm of tail regenerated.

BNHS No.	SVL	TL	AG	HL	HW	HD	ED	EE	ES	FM	SL	IL	L1	L4
1577	92.00	102.00*	37.70	26.10	18.20	11.40	5.40	7.40	10.50	9-L 13-R	12	11	8	10
1491	31.20	45.00	14.50	12.10	7.40	3.90	3.00	3.10	4.40	-	11	10	9	10
1492	86.80	115.00	36.60	25.00	17.80	9.30	5.00	6.80	10.00	-	12	11	9	10
1493	42.00	62.00	17.50	14.60	9.50	5.90	3.30	4.00	6.10	-	11	10	9	11
1494	79.50	105.00	35.70	23.40	15.80	8.40	5.00	6.40	9.40	-	12	10	9	10
1540	91.80	125.00	39.20	25.80	19.20	11.50	5.10	7.80	10.70	19/19	12	11	8	10
146	79.50	120.00	31.60	23.20	15.90	8.70	5.30	6.50	9.10	-	11	10	8	10
146	87.00	125.00	39.70	25.60	17.40	9.30	5.50	7.50	9.30	-	11	10	8	11
146	96.90	125.00	42.20	26.40	19.70	11.20	6.00	7.50	11.00	19/19	12	9	8	10
146/1	72.00	110.00	33.20	21.50	15.50	7.50	5.10	6.30	9.00	-	12	10	8	10
146/2	70.50	90.00	29.80	20.70	13.80	7.70	4.70	5.90	8.60	-	12	10	8	10
147	108.30	135.00**	46.70	30.80	23.10	13.70	6.00	9.50	12.50	18/18	12	10	9	11
147	92.30	TB	40.10	25.70	18.80	11.10	5.80	8.20	11.00	-	11	10	8	10
147/1	94.30	TB	36.20	27.20	20.10	11.00	5.90	8.50	11.10	-	11	9	8	10
147/1	89.50	110.00	40.50	24.50	18.30	11.30	5.90	8.10	10.40	-	11	10	9	11
147/2	100.20	125.00*	43.00	30.40	21.10	13.00	6.20	8.90	11.80	18/18	11	9	9	11



**Figure 3.** Juvenile specimen of *Hemidactylus prashadi* from Amboli, Maharashtra. Photo by Varad Giri and Sameer Kehimkar.

collected from Amboli was a juvenile (BNHS 1493), which was moving on a decaying tree in a semi-evergreen patch of forest near the village on 10 August 2000. The second specimen (BNHS 1494), an adult, was collected in October 2001 from a house in the village. This area was subsequently visited in different seasons. The juveniles were always seen during June to August, primarily on trees and only rarely in houses. Adults were seen in all seasons and inhabited abandoned houses in the forested areas and in the village, where they were mostly seen on walls, especially near light sources outside houses. In Goa, five adult specimens of this species were seen in a rest house inside the forest near Keri village in a single night during the first week on June 2003. Thus, apart from the crevices in the walls of abandoned houses, the microhabitat mentioned by Tikader and Sharma (1992), we can confirm that the juveniles of *H. prashadi* also utilise trees. Jadhav et al. (1991)

found adults on lichen-covered black granite rocks in thick forest at Amboli,

**Morphological features.**— Sharma (2002) reported the maximum adult length for *Hemidactylus prashadi* as 95 mm SVL, with the tail length as much as 123 mm. Several of our specimens exceed this, and one specimen has an appreciably larger size of 108.30 + 135.00 mm (Table 1). According to published reports, the digits in *H. prashadi* are distinctly webbed at the base and moderately dilated with obliquely oriented lamellae (8 under the first toe and 10 under the fourth) (Smith, 1935; Tikader and Sharma, 1992; Sharma, 2002). Our observations of material from the BNHS collection confirm these ranges (Table 1), but the lamellae in our specimens are in a straight transverse series rather than oblique. Smith (1935), Tikader and Sharma (1992), and Sharma (2002) described males of *Hemidactylus prashadi* as having 17-20 femoral pores per thigh, with the left and right series separated by three scales. The BNHS material is largely consistent with this description, but in BNHS 1577 there are only nine femoral pores on the left thigh and 13 on the right.

Apart from the distinct lateral skin folds, which are weakly denticulate, there is also a sagittal fold of skin above the vertebral column (Figs. 1, 2). The size of the subtriangular tubercles in the two most medial parasagittal rows is notably smaller than that of the tubercles on more lateral portions of the dorsum. Posterior to the sacrum, a shallow middorsal groove extends onto the basal one third of the tail.

**Colouration.**— Adult dorsal colouration of *Hemidactylus prashadi* has been described as brownish-grey, with faint narrow whitish bands on the trunk and tail (Smith 1935; Tikader and Sharma, 1992) or as dark brown to black with three to four rows of “medium sized white lunar shaped spots” (Jadhav et al., 1991). Smith (1935) described the colouration of juveniles as “marked with narrow, whitish, dark edged cross bars or series of spots, which are much narrower than their interspaces. The first mark is curved and upon the occiput, and extends forward through the eyes on to the snout. There is a second curved mark upon the nape and five or six, more or less straight ones on the back. Tail with black and white annuli; lower parts grey-

ish". Tikader and Sharma, (1992) and Sharma (2002) followed Smith (1935) in their discussion of juvenile pattern.

In most of the live specimens we examined adults are yellowish-grey above, with a series of dark edged whitish spots arranged in four, more or less uniform longitudinal lines, two on either side of the vertebral fold (Figs. 1, 2). Those adjacent to the vertebral skin fold run from the tip of the snout, through the eyes and along the dorsum to the level of the hind limb insertions. The more lateral lines of spots begin on the supralabials and terminate near the base of the hind limbs. In some specimens, there are some extra spots on the head and vertebral region. In some cases, adjacent spots may contact or coalesce, yielding an incomplete transverse band. The juveniles are dark brown with yellowish spots but the pattern is more or less the same as in adults (Fig. 3). In all the live and preserved specimens, no true cross bands or bars on the dorsum, as described by Smith (1935) and Tikader and Sharma (1992), were observed. Although Smith (1935) noted that the white dorsal marks were very faint or absent in adults, we found that these were clearly evident, though faded, even in large specimens (to > 108 mm SVL). In contrast to the black and white annuli described by Smith (1935), the original tail of living specimens has 8-10 dark-edged whitish bands in adults (Fig. 2). In juveniles, these bands are thinner and the anterior ones may be yellowish (Fig. 3).

*Hemidactylus prashadi* has generally been considered a rare and endangered species (Molur and Walker, 1998; Bambardeniya and Samarasekara, 2001), due to its restricted distribution. The new records from Dorle, Maharashtra supplement existing records from extreme southern Maharashtra, Goa and Karnataka and suggests that this species may yet be found even further north. In addition to having a more widespread distribution than previously supposed, *H. prashadi* appears to be a rather common species, at least in some sites, such as Amboli and Goa. The apparent rarity of *H. prashadi*, despite its large size and high local density, may be due to its superficial resemblance (particularly of adults) to the common gecko *H. flaviviridis* or other

large geckos, causing them to be overlooked in plain sight. Indeed, it is probable that records of *H. prashadi* from Srikakulam (Saratchandra and Narasimhamurti, 1980a), Visakhapatnam (Saratchandra and Narasimhamurti, 1981), and Waltair, Andhra Pradesh (Saratchandra and Narasimhamurti, 1980b; Lakshmi et al., 1985) are based on such confusion, perhaps with *H. leschenaulti*. This situation parallels that of the golden gecko, *Calodactylodes aureus*, a large, brightly coloured and highly vocal gecko of the Eastern Ghats and giant forest gecko *Hemidactylus giganteus*, another large, widespread gecko in Andhra Pradesh, Karnataka and Maharashtra. Despite their conspicuousness and occurrence near human settlements, these species were until recently considered as among the rarest of Indian geckos (Bauer and Das, 2001; Giri et al., 2003).

Our observations suggest that juvenile *Hemidactylus prashadi* are probably chiefly inhabitants of trees in the forest and sometimes villages, and that adults are crevice dwellers, occupying rocks in deep forest (Jadhav et al., 1991) and house walls in villages, which may serve as sites of concentrated insect prey. As some *Hemidactylus* are cannibalistic (Mahendra, 1936; Zamprogno and Teixeira, 1998), it is possible that juveniles choose a different microhabitat in order to avoid predation, although such segregation may also reflect differential prey selection by different age classes. Our data on morphology and life colouration suggest that earlier descriptions, some based on preserved material only, may have overlooked or misinterpreted some features. These data, however, are preliminary and it is hoped that additional information on natural history, distribution, and variation will be collected from throughout the range of this large, regionally endemic gecko.

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