



Unusual Morphs of Russell's Viper, *Daboia russelii* (Shaw and Nodder 1797), from Goa, India

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Russell's Viper, *Daboia russelii* (Shaw and Nodder 1797), belongs to the family Viperidae and is widely distributed throughout the Indian Subcontinent (Daniel 2002; Uetz et al. 2018). Usually it occurs in plains but has been recorded at elevations to 2,100 m in southern India and to 1,800 m in the western Himalayas. It is abundant throughout India, except in the Ganga Valley, North Bengal, and Assam (Daniel 2002).

Ground color is generally brown or yellowish brown, with three longitudinal series of prominent, large dark oval spots that usually are brown with black and white or buff margins (Smith 1946; Daniel 2001; Whitaker and Captain 2004; Uetz et al. 2018). The dorsal spots may coalesce and the lateral spots may be broken. The spots may be pointed and can meet to form a chain-like pattern (Fig. 1). The venter is yellowish with black or brown markings on the sides of



Fig. 1. A normally colored and patterned Russell's Viper (*Daboia russelii*) from Goa, India. Photograph by Kedar Marathe.



Fig. 2. A juvenile Russell's Viper (*Daboia russelii*) with an unusual pattern rescued in 2016 in Margoa. Photograph by Krunal Trivedi.

the ventral scales. The top of the head usually has a narrow, white arrow-shaped mark and a pair of oval or triangular dark brown markings.

We recently encountered two unusual Russell's Vipers from Goa, India. The first (Fig. 2) was a juvenile (381 mm total length) rescued on 10 March 2016 by Suresh Chodankar and Amrut Singh of the Animal Rescue Squad from the ASC Supply Depot of Margoa, Goa (15°16'18.929"N, 73°57'30.027"E). It was pale brown with a middorsal stripe extending from the neck onto the tail. An oval mark on the head, which was slightly darker than the ground color, was the only other pattern element. The second snake (Fig. 3), a juvenile male (280 mm total length), was rescued from Khandola, North Goa (15°31'20.11"N, 73°57'40.772"E), 36 km from the site where the first snake was encountered, on 7 April 2017 by Kanak Bakre of SAWE (Study and Awareness of Wildlife and Environment). It had a prominent middorsal stripe extending from the neck onto the tail. A triangular mark, slightly darker than the ground color, between the eyes and a pair of brown sub-oval marks on the head were the only other pattern elements. Ventrals of both snakes were white and without markings. Both snakes were released close to their rescue sites. Benhail Antao (pers. comm.) rescued three similar snakes (an adult in 2014 from Bondorim Village and

two juveniles in 2015 from Monte Hill, Margoa). No data were collected from those three snakes.



Fig. 3. A juvenile Russell's Viper (*Daboia russelii*) with an unusual pattern rescued in 2017 in Khandola. Photograph by Shricharan Desai.

Patel and Tank (2014) described two unusual Russell's Vipers from Navsari, Gujarat with pale ground color and lateral brown-black oval spots and two light middorsal stripes extending from the neck onto the tail. Whitaker and Captain (2004) reported a color variant with a reddish-brown ground color and a very indistinct to entirely absent pattern from Mangalore.

Such unusual color morphs usually are the result of some genetic anomaly in pigmentation (e.g., Bechtel 1995). Aberrant individuals rarely survive in nature since normal coloration typically has been selected for camouflage (e.g., Norris and Lowe 1964), to facilitate thermoregulation (Gibson and Fall 1979), or reflect locality and habitat use (Kark et al. 1997).

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