



Daboia russelii (Reptilia: Squamata) in remote parts of Gujjar Village Miandam, Swat, Khyber Pakhtunkhwa, Pakistan

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Abstract.—Snakes are widely perceived with fear by the general public in Pakistan, and they are often killed on sight. The present study examines the range extension of *Daboia russelii* in remote parts of Gujjar village Miandam Swat, Pakistan. Seven snakes were collected, including three which were attacked and injured by the local men, and four others observed in the natural habitats in four localities: Karoo, Kalandori, Chharr, and Dhop, from June to September in both 2016 and 2017. Morphometric analysis, details of the coloration, and photographs of the snakes are provided. Russell's Vipers were seen frequently in grasslands, cultivated fields, and areas near human residences. These snakes were mostly seen after sunset. This species has also been reported from other parts of Pakistan, but the present records represent a new locality.

Keywords. Russell's Viper, Viperidae, morphometric analysis, range extension, snake, venomous

Citation: Khan W, Ahmad B. 2019. *Daboia russelii* (Reptilia: Squamata) in remote parts of Gujjar Village Miandam, Swat, Khyber Pakhtunkhwa, Pakistan. *Amphibian & Reptile Conservation* 13(2) [General Section]: 212–216 (e206).

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Received: 3 August 2018; **Accepted:** 25 March 2019; **Published:** 6 December 2019

Snakes are the most reviled of vertebrates, widely perceived by the public as dangerous and harmful. The 2,700 species of snakes known to science include 375–400 venomous species, of which approximately 200 species are considered life-threatening to man and other animals. Snakes of the families Elapidae, Crotalidae, and Viperidae are venomous (Durand 2004; Vidal et al. 2009).

Russell's Viper is named as *Daboia russelii* in honor of Patrick Russell (1726–1825). *Daboia russelii* is an infamous venomous snake of the Old World, found in Bangladesh, Cambodia, China, Indonesia, Myanmar, Nepal, Pakistan, Sri Lanka, Taiwan, and Thailand (McDiarmid et al. 1999). In Pakistan it occurs from the Indus Valley to the Kashmir, and east to Bengal. This snake is frequently found in Thatta District, Sindh, and at low elevations in Punjab, but no published report is yet available from the northwestern parts of Pakistan.

Relatively few studies have been conducted on the fauna of Swat, and even fewer studies are associated with the reptilian fauna of the region (Smith 1943; Minton 1962, 1965; Mertens 1969, 1970; Khan 1982, 1984, 1985). More than fifty species of terrestrial snakes are known from Pakistan (Khan 1980, 1982, 1997). Khan (2002) conducted an extensive survey of different climatic zones in Pakistan for herpetofaunal diversity.

The present study reports the existence of Russell's Vipers in the hilly areas of Swat Valley, Pakistan.

Village council Miandam is located at 35°03'12"N, 72°33'39"E, about 57 km from Saidu Sharif, District Swat, Khyber Pakhtunkhwa, at an elevation of approximately 1,918 m asl. The study area (Fig. 1) falls under moist temperate forest, thus receiving summer monsoon and winter snow fall. Because of its cool climate and green hillsides, the area is frequented by tourists (Forest Working Plan 2013).

In village council Miandam, there are two sub-villages, namely Gujjar village and Swati village. Four sites of the Gujjar village were surveyed from June to September in 2016 and 2017 (Fig. 2). The snake specimens (Table 1) were either collected dead following their attack by the local people, or recorded with visual observations using the method of Campbell and Christman (1982).

The photographs of specimens shown here (Fig. 3) were taken using a Nikon Coolpix L330 camera. Morphometric analysis of the snake specimens collected dead were recorded using a digital caliper (Precision 145). The specimens observed were identified with the help of keys provided by Khan (2002). The general characteristics of *Daboia russelii* specimens from the four localities of Gujjar village Miandam, Swat (2016–2017) are as follows:

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Fig. 1. Map of Khyber Pakhtunkhwa, red circle shows the study area in the District Swat within the province.

Table 1. Records of the seven specimens observed by month and village.

| | 2016 | | | | 2017 | | | |
|-----------|------|--------|-------|-----------|------|--------|-------|-----------|
| | Dhop | Chharr | Karoo | Kalandori | Dhop | Chharr | Karoo | Kalandori |
| January | | | | | | | | |
| February | | | | | | | | |
| March | | | | | | | | |
| April | | | | | | | | |
| May | | | | | | | | |
| June | | live | | | | | | |
| July | dead | | | | | | | |
| August | | | dead | | live | | live | dead |
| September | | | | | | live | | |
| October | | | | | | | | |
| November | | | | | | | | |
| December | | | | | | | | |

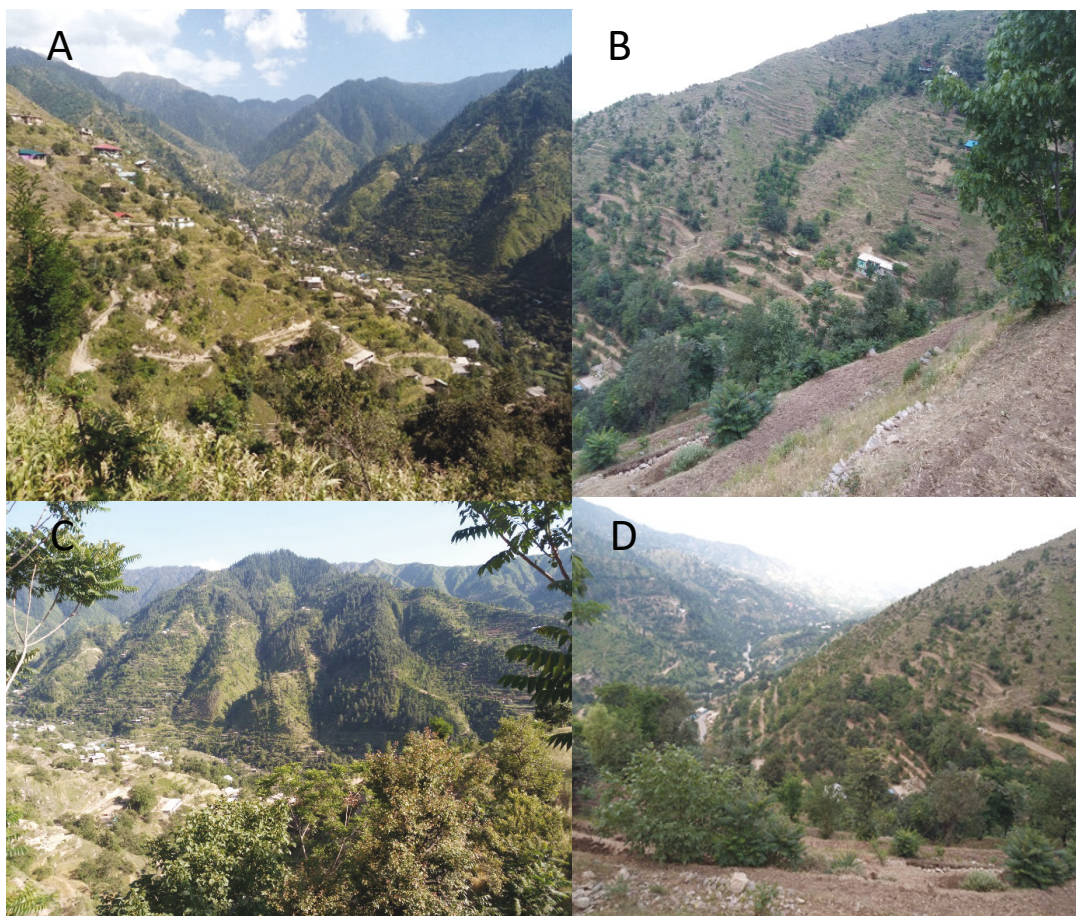


Fig. 2. Collection sites of *Daboia russelii* in Gujjar village Miandam, Swat, KP, Pakistan. (A) Karoo, 35°3'32"N 72°33'11"E; (B) Kaalandori, 35°3'31"N 72°32'21"E; (C) Chhar 35°3'34"N 72°33'12"E; (D) Doop, 35°3'23"N 72°32'58"E.

- **Head:** Longer rather than broad, distinctly wider than neck.
- **Body:** Stout, flattened dorsoventrally, tapering evenly both posteriorly and anteriorly.
- **Snout:** Bluntly pointed, snout-vent length 1,022–1,075 mm, tail 215–223 mm.
- **Rostral:** About twice as high as wide.
- **Nostril:** Large, crescent shaped in large nasal scale.
- **Supraocular scale:** Entire, not divided.
- **Supralabials:** 12, separated from eye by three or four rows of small scales.
- **Infralabials:** 14.
- **Anterior chin shield:** Short and wide, posterior not well differentiated from surrounding scales.
- **Dorsal scales:** Keeled except for lowest row, 29–31 rows at mid-body, reduction posteriorly to 23 or 21 rows, usually an anterior reduction of two or four rows.
- **Ventrals:** 165–173.
- **Total body length:** 76.2 cm, tail length 15.2 cm (16% of total body length).
- **Coloration:**
 - Dorsal ground color light tan to sandy.
 - Chest net spots with black or dark brown

borders and edge creamy, these spots fused to a greater or lesser extent, lateral series of similar but smaller spots below which are scattered dark flecks with light edges.

- Two large dark spots at base of head.
- A light V-shaped mark with its apex on top of snout.
- Labial sides of snout mottled with brown and cream.
- Belly whitish with black semilunar spots.
- Chin or throat white.
- Many scales topped with black.

The fauna and flora of Pakistan is Oriental, Palearctic, Ethiopian, and Central Asian in nature, with many endemic forms (Smith 1931; Khan 1980). In Pakistan the complex of habitats is diverse, including oceans, swamps, rivers, lakes, flood plains, arid plains, sand and rocky deserts; tropical thorn, tropical dry deciduous, subtropical dry, subtropical arid, subtropical pine, dry and moist temperate subalpine forests; grassy tundra and cold deserts. Moreover, most of the habitats are now heavily influenced by anthropogenic activities which negatively affect the fauna and flora of the country (Baig 1975).

The present study describes seven specimens of



Fig. 3. Photos of the dead *Daboia russellii* specimens from Gujjar village Miandam, Swat, KP, Pakistan. (A, B) Dorsal views, (C, D) Fangs, (E) Black spots on ventral side, (F) Anal orifice with tail showing a zip-like structure.

Russell's Vipers from four localities in the study area, including two specimens each from Dhoop, Chhar, and Karoo, and one specimen from Kalandori Gujjar Village Miandam, Swat, Pakistan. Russell's Viper is one of the most widespread of Asiatic venomous snakes. While surveying the literature no published records for this species are available in Swat Valley, Pakistan. Therefore, the present study documents the presence of this species in the hilly areas of Swat Valley.

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