REPTILES & AMPHIBIANS

Indian Rock Pythons (*Python molurus*) Rescued from Fishing Nets

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The Indian Rock Python (*Python molurus*) is widely distributed across India, Pakistan, Nepal, Bhutan, Bangladesh, and Sri Lanka (Smith 1943; Das 2002; Whitaker and Captain 2008; O'Shea 2011). In India, this species is legally protected under the Indian Wildlife Protection Act (IWPA) – 1972 as a Schedule-I species (Anon 2003). It also is listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (CITES 2020). Using IUCN Red List criteria, Molur and Walker (1998) categorized it as Lower Risk-Near Threatened; however, that assessment predates the recognition of the Burmese Python (*P. bivittatus*), which was previously considered a subspecies of *P. molurus* (Jacobs et al. 2009).

The Indian Rock Python is a nocturnally active snake that inhabits diverse habitats, including estuarine mangrove forests, rainforests, deciduous forests, arid scrub forests, grasslands, and agricultural fields (Whitaker and Captain 2008). Sinha (2010) considered it one of the most threatened snake species in India, with threats including habitat loss and alteration, road mortality, human persecution, and hunting for the illegal skin trade and international trade in live animals (Vyas 2007; Kasterine et al. 2012; Guptha 2013; Babar et al. 2019).

The eastern undulating hilly areas and the industrial and agricultural development along the Malabar Plain of Valsad District in southern Gujarat, India, mark the northern boundaries of the Western Ghats and the western coastal plains, respectively (Champion and Seth 1964). The district has an abundance of surface water, comprised of perennial river systems and 300 bodies of water, small and large, natural and manmade, including waterlogged plains and catchment basins and a 65-km long network of irrigation canals (Gupte 2013), that provide habitat for many reptilian species, including Indian Rock Pythons (Fig. 1). These favorable habitats extend seamlessly into industrialized and urbanized areas. Consequently, the second author (AP) runs an animal rescue organization that deals with large numbers of rescue requests for snakes. After rescuing animals, they are released into relatively safer and remote forest habitats under the guidance and direction of the local forest department. An average of one thousand snakes of twenty different species, including an average of 76 Indian Rock Pythons, are rescued from different parts of the city per year (Vyas 2007, 2013).

During a span of six months, from October 2019 through the end of March 2020, this organization rescued a

Fig. 1. A large adult Indian Rock Python (*Python molurus*) in Valsad, Gujarat, India. Photograph by Aadit Patel.

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total of eight Indian Rock Pythons of various sizes entangled in discarded fishing nets in and around the city (Table 1; Figs. 2–3). Although one snake had suffered minor injuries and two severe injuries requiring medical treatment, all of the pythons were released into suitable natural habitat when deemed sufficiently healthy.

Net-entangled Indian Rock Pythons also have been noted from the Chambal Wildlife Sanctuary in Rajasthan (Vyas 2004) and rural areas of Bharuch, Gujarat (Sindha et al. 2020). Other accounts from multiple Indian states have surfaced in newspapers and tabloids, including Anonymous (2011) from the Tirunelveli-Kerala border in Tamil Nadu,

Table 1. Rescued Indian Rock Pythons (*Python molurus*) entangled in fishing nets in and around Valsad, Gujarat, India. The asterisk (*) indicates a snake for which sex was not determined.

Date	Location (Geocoordinates)	Size (cm) and Sex	Remarks
17 October 2019	Kundi, Bhinar (20°39'48.47"N; 72°57'23.01"E)	180*	Severely injured
22 October 2019	Jespore,Vankdifalia (20°42'48.21"N; 72°56'44.50"E)	222 (F)	Not injured
24 November 2019	Dharashana,Bhandarfalia (20°41'27.69"N; 72°55'39.73"E)	126 (M)	Not injured
02 December 2019	Nani Saron (20°38'29.41"N; 72°57'45.64"E)	225 (F)	Not injured
05 January 2020	Kampri, Valsad (20°39'20.75"N; 72°56'7.87"E)	240 (F)	Severely injured
13 January 2020	Kundi, Valsad (20°40'31.33"N; 72°57'34.43"E)	185 (M)	Minor Injury
05 March 2020	Kundi, Atul Falia (20°39'39.60"N; 72°58'7.14"E)	90 (M)	Not injured
20 March 2020	Charwada, Dandi Falia (20°22'58.65"N; 72°55'49.33"E)	158 (M)	Not injured

Fig. 2. Indian Rock Pythons (*Python molurus*) trapped in fishnets in Kundi, Bhinar (A); Jespore,Vankdifalia (B); Dharashana, Bhandarfalia (C), and Kundi, Atulfaliafa (D), Valsad District, Gujarat, India. Photographs by Aadit Patel.

Fig. 3. An Indian Rock Python (*Python molurus*) rescued from a fishnet near Nani Saron, Valsad, Gujarat, India. Photograph by Aadit Patel.

Anonymous (2018a) from Agra in Uttar Pradesh, Anonymous (2018b) from Sambalpur in Orrisa, Anonymous (2016) and Naiana (2019) from Mandya and Udupi in Karnataka, Anonymous (2019) from Puttaparthi in Andhra Pradesh, and Singh (2020) from Mumbai, Maharashtra.

Fishing nets and mesh used to control erosion or exclude animals have been implicated in trapping other wildlife as well (Stuart et al. 2001; Kapfer and Paloski 2011). Butterworth et al. (2012) noted the difficulty in recovering animals from these nets, especially when the net is made of woven fine-line monofilament strands.

During the same six-month period in which we documented trapped Indian Rock Pythons, small numbers of other species of Indian snakes also were rescued from fishnets in Valsad. These included the Indian Ratsnake (*Ptyas mucosa*), Chequered Keelback (*Fowlea piscator*), Indian Spectacled Cobra (*Naja naja*), and Russel's Viper (*Daboia russelii*) (Fig. 4). Additional reports of fishnet victims have been recorded

Fig. 4. Indian Spectacled Cobras (*Naja naja*) (A–C) and a Russel's Viper (*Daboia russelii*) (D) found entangled in fishnets at Valsad and Vadodara, Gujarat, India. Photographs by Aadit Patel.

Fig. 5. A juvenile Mugger Crocodile (*Crocodylus palustris*) entangled in a fishnet at Petli, Kheda, Gujarat, India. Photograph by Vishal Mistry.

in other parts of the state (Naria et al 2019) and elsewhere in India (Alexander 2010).

Vyas et al. (2020) recently described Mugger Crocodiles (*Crocodylus palustris*) found alive (Fig. 5) and dead in fishing nets in different parts of India. Accounts of other crocodilians entangled in fishing nets include the Nile Crocodile (*Crocodylus niloticus*) (Hutton and Child 1989), Saltwater Crocodile (*Crocodylus porosus*) (De Silva 2008; Gunn et al. 2010; Amarasinghe et al. 2015), and False Gharial (*Tomistoma schlegelii*) (Hassan et al. 2016). Fishing nets also have been identified as a major threat to the world's most critically endangered crocodilian, the Indian Gharial (*Gavialis gangeticus*) (Hussain 1999; Sharma and Basu 2004; Bhatta 2009; Katdare et al. 2011; Lang et al. 2019).

This survey and a growing volume of literature clearly identify fishnets as a substantial threat to many reptiles, including protected Indian species like the Indian Gharial, Mugger Crocodile, and the Indian Rock Python. This threat also points to the need to educate local fishing communities about the repercussions of using and discarding fishnets and how to safely dispose of them.

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