



Critiques: On the first sighting report of Mugger Crocodile from the Purna River, South Gujarat, India.

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Recently, Chaudhari et al. (2022) published a report of a Mugger Crocodile (*Crocodylus palustris*) from the Purna River, District Tapi, Gujarat, claiming it as the first confirmed record of the species. It was based on a sighting of a three-meter-long adult Mugger observed at the banks of the Purna River at Mordevi Village, Valod, Tapi District, Gujarat, India. However, this is not the first record of Mugger Crocodiles from the Purna River, in South Gujarat, India.

This entire area is known as Dang Forests, South Gujarat. It is one of the most pristine forest habitats in

Gujarat and supports a rich biodiversity (Singh et al. 2000; Pandey et al. 2004). This forest was the erstwhile abode of many different species, including the Sloth Bear (*Mehirsus ursinus*), Smooth Indian Otter (*Lutra perspicillata*), Malabar Giant Squirrel (*Ratufa indica dealbatus*), Dhole (*Cuon alpinus*), Tiger (*Panthera tigris*), and Mugger Crocodile, the rare Rusty-spotted Cat (*Felis rubiginosa*), and ungulates such as the Spotted Deer (*Axis axis*), Sambar (*Cervus unicolor*), Barking Deer (*Muntiacus muntjak*), and Four-horned Antelope (*Tetracerus quadricornis*) (Worah 1991).

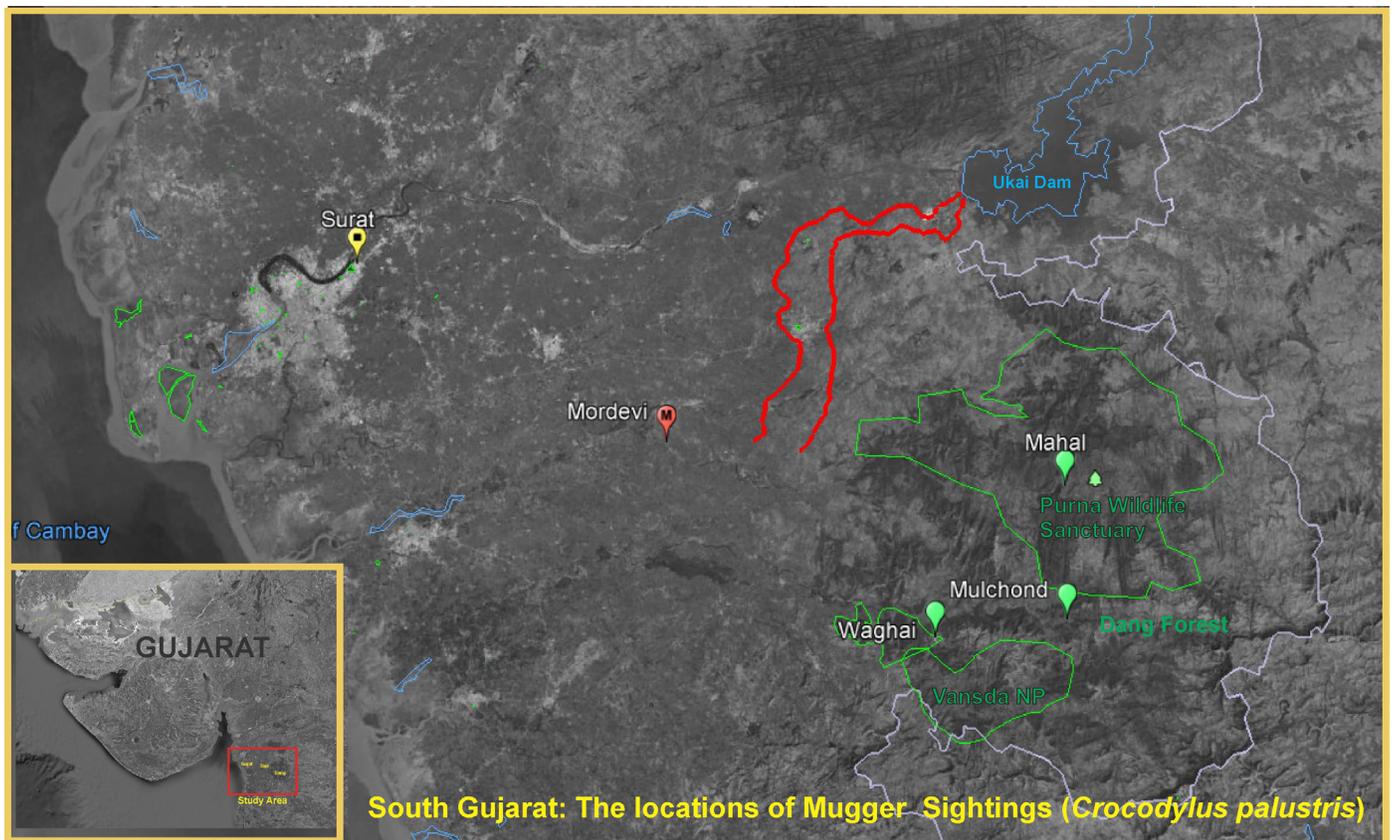


Fig. 1. A map of sites where Mugger Crocodiles (*Crocodylus palustris*) have been sighted in southern Gujarat: the green markers indicate historical sightings of the species, the red marker indicates the site of a recent report of the species, and the red line is the location of a network of the Ukai irrigation canals.

The last ruler of Vansda State, Maharaja Shri Digveerendrashinji Solanki, stated once that Mugger Crocodiles were found in many water bodies and river systems of the Ambika and Purna, up until 1942 (Acharya 1949; Singh et al. 2000). Maharaja Shri Digveerendrashinji of Vansda explains how Muggers were exterminated from the entire Dangs area after Independence and after the merger of Vansda State in the Indian Union. The government issued a special permit to people on a royalty basis to kill crocodiles primarily for their valuable skin (see: Singh et al. 2000). During the period when India was ruled by monarchs, at Vansda Hospital, Mr. Charles Tomas was appointed as ‘Shikar Officer’ by the government, responsible for shooting wild animals that caused any harm to local inhabitants and their livestock or crops. Records from the time show that 31 crocodiles and other wildlife were reported to have been killed between 1888 and 1917 (see: Singh et al. 2000).

Maharaja Shri Digveerendrashinji Solanki also elucidates the traditional method of poaching Mugger Crocodiles in the past, which is locally known as ‘*mugger khaya*.’ It was a very crude method used to kill the crocodile. A lure was usually prepared by tying a goat’s intestines to a wire hook or large fishing hook that was kept in the river that the Mugger inhabited. The Mugger Crocodile would be attracted to the lure and while trying to ingest the bait the sharp hook would stick in its throat. The next day the reptile would be collected by the poacher. During that period, within a single day, poachers captured and killed several crocodiles using this method (Singh et al. 2000).

Nevertheless, following independence and prior to the existence of the Wildlife Protection Act, many wild species declined in the forests of India. The simultaneous decline of many species in the forests of south Gujarat, with some of these species going extinct including the Sloth bear (*Mehirsus ursinus*), Smooth Indian otter (*Lutra perspicillata*), Malabar

Giant Squirrel (*Ratufa indica dealbatus*), Dhole (*Cuon alpinus*), Tiger (*Panthera tigris*), and Mugger Crocodile (Singh et al. 2000; Pandey et al. 2004).

The published literature shows Mugger Crocodiles were recorded as uncommon at a few a locations in the Mahal (site on Purna River), Waghai (site on Anmbika River), and Mulchond (site on Khapri River) of The Dangs District, Gujarat (Daniel and Shull 1963). In previous herpetofaunal studies of Vansda National Park (Vyas 2000, 2004) and Purna Wildlife Sanctuary (Vyas 2007a), the Mugger Crocodile was not recorded from the forests and is considered locally extinct from the area (Patel et al. 2018). The local extinction of species, especially Mugger Crocodiles, could be caused by dynamite fishing methods practiced by local tribes, as well as other encroachments, degradation, and habitat alterations (Vyas 2007b). Recently, the state forest department has preserved some tracts of forest which has resulted in recolonization of the area by previously extirpated species such as the Dhole (*Cuon alpinus*), which recently reappeared in Vansda, Gujarat after an absence of 70 years (Kazi et al. 2021).

Chaudhari et al. (2022) presented two possible reasons for the presence of the Mugger Crocodile. First, the animal may have been released by some unknown volunteer from a non-governmental organization (NGO) involved in wildlife rescue and protection. The second possibility is that some Muggers may have migrated from a habitat close by and settled in the Purna River. However, there is a third possibility. The crocodile may have come through the Ukai irrigation canal network, which passes through the area. The Ukai Left Main Irrigation Canal (from the Ukai Dam) passes through the Purna River within a 10 km distance from the site where the Mugger Crocodile was observed (Fig. 1). The Ukai water reservoir is one of the largest water reservoirs on the upper Tapi River. The Ukai Dam and Tapi River are the habitat of the Mugger Crocodile (Vyas 2008; Trivedi et al. 2022). The irrigation canal networks provide the safest and easiest migration route for the crocodiles (see: Vyas and Basu 2008) and there have been several examples of Mugger Crocodiles migrating through the canals and settling in new waterbodies of the state (Vyas et al. 2012, 2020; Vasava et al. 2015; Fig. 2). Earlier, similar cases had been noted in the Mahi and Narmada irrigation canal networks.

Thus, the present claim by Chaudhari et al. (2022) is not the first sighting record of the Mugger Crocodile at the banks of the Purna River, near Mordevi, Tapi District, but it is a reappearance of the Mugger Crocodile within its historical distribution range after 60 years.

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Fig. 2. A sub-adult Mugger Crocodile (*Crocodylus palustris*) basking on the banks of the Narmada irrigation canal at Gujarat. Photograph by Rakesh Vadhawana.

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