

Report on incidental catch of freshwater turtle, *Melanochelys trijuga* in gillnet from a reservoir in Kerala, India

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The term incidental catch or bycatch is widely used to refer to the part of the catch that is unintentionally caught during fishing operations other than the target species. Nowadays, bycatch is considered as an important international issue and has attracted the attention of global community as some of the bycatch includes marine mammals, sea birds, sea turtles, elasmobranchs and fin fishes etc. which are susceptible to over exploitation and population declines. However, freshwater bycatch concern has received less public attention. Knowledge of bycatch in the freshwater systems is important as many of the world's threatened species live in freshwaters. The few studies to date on freshwater bycatch have identified serious conservation issues (Collins et al., 1996, Koed and Dieperink 1999). Many reports point out that the use of different types of fishing gears, especially gillnets has led to a decrease in several types of aquatic marine life due to incidence of bycatches (Poonian, 2009; Lopez-Barrera et al., 2012). Though gillnets are the most size selective gear, incidental catch of non-targeted organisms in gillnet fishery is a growing concern and an important management issue. The incidental catches from gillnets in inland waters are rarely reported and studied (Anirudh et al., 2017; Santos et al., 2020).

During a study undertaken at Meenkara reservoir (10° 38' N and longitude 76° 48' E, area 2.59 km²), in Palakkad district, Kerala, India during June 2019 to February 2020, incidental catch of fresh water turtle, *Melanochelys trijuga* (Indian black turtle) was observed in gillnets (Fig. 1). The gillnets operated in the reservoir were of 25 m length and 4 m height and made of nylon multifilament (210 x1x3) and 120 mm mesh size. Nets generally operated as set net, are deployed by around 5

pm and hauled the succeeding day around 6 am. During one such operation in November 2019, two turtles got entangled in these gillnets. It was caught during night as this species shows crepuscular to nocturnal life style. The turtles, having a carapace length of 170 mm and 180 mm and weighed 350 g and 500 g respectively, were caught alive and were released back to reservoir by the fishermen. To the 'best of our knowledge, this is the first report of incidental catch of turtle in gillnets from a reservoir in India'. The exploitation of Indian black turtle, *Melanochelys trijuga* from Vembanad lake and associated wetlands in Punnamada, Kerala using encircling nets, gill nets (as bycatch), hand nets and hook and line have been reported by Kumar et al. (2009).

Melanochelys trijuga known as Indian black turtle is one of the most common freshwater turtles of India and is recorded as the most abundant species in South India including Western Ghats (Das and Bhupathy, 2009). This species has been exploited for food by the people of North-eastern India and the tribes of Western Ghats (Das and Bhupathy, 2009). The IUCN status shows the species as 'Least concern' as well as the current population shows a declining trend (Ahmed et al., 2020) indicating such incidental catches may be a problem in the near future.

Turtles are usually caught in the nets by their front or rear legs or their heads. Thus, they cannot emerge to breathe and drown (Santos et al., 2020). Incidental catch of freshwater turtles in gillnet is rarely studied and there is a need for additional data to advance the development of bycatch mitigation measures in the inland gillnet fishery. Moreover, turtles require special conservation strategy as its life history includes low reproductive output, late maturity, and habitat requirements of both aquatic and terrestrial

environments. Measures employed in ocean fisheries can probably be applied to freshwater fisheries for reducing such incidental catches of turtles. Modifying the spatio-temporal distribution of fishing effort to reduce encounters with non-target species, discarding incidentally caught turtles alive, monitoring of such incidences to ascertain their population status, making fishermen aware about the need of conservation of turtles and involvement of

fishermen themselves in conservation activities would help to reduce bycatches in gillnets in reservoirs. Further, the possibility of using visual deterrents like illumination of nets using LED lights which are successful in marine gillnets can be explored in the fresh water system to reduce turtle bycatch. General management measures and mechanism to record such incidental catches on a long-term basis would be required for sustainable inland fishing.



Fig. 1. Entangled Indian black turtle (*Melanochelys trijuga*) in gillnet

Reference:

- Ahmed, M.F., Praschag, P., de Silva, A., Das, I., Singh, S. & de Silva, P. 2020. *Melanochelys trijuga*. The IUCN Red List of Threatened Species 2020: e.T13039A511745. <https://dx.doi.org/10.2305/IUCN.UK.2020-2.RLTS.T13039A511745.en>. Downloaded on 31 May 2021.
- Anirudh, K., Jakhar, J., and Vardia, H.K. 2017. Bycatch associated with Gillnet fishery in Madamsilli Reservoir, Dhamatari District, Chhattisgarh (India). *Bioscan*, 12(1):671-676.
- Collins, M. R., Rogers SG, Smith TJJ. 1996. Bycatch of sturgeons along the southern Atlantic coast of the USA. *North American Journal of Fisheries Management*, 16: 24–29.
- Das, I. and Bhupathy, S. 2009. *Melanochelys trijuga* (Schweigger 1812) – Indian black turtle. In: Rhodin, A.G.J., Pritchard, P.C.H., van Dijk, P.P., Saumure, R.A., Buhlmann, K.A., Iverson, J.B., and Mittermeier, R.A. (Eds.). *Conservation Biology of Freshwater Turtles and Tortoises: A Compilation Project of the IUCN/SSC Tortoise and Freshwater Turtle Specialist Group*. Chelonian Research Monographs No. 5, pp. 038.1–038.9
- Koed A. and Dieperink, C. 1999. Otter guards in river fyke-net fisheries: Effectson catches of eels and salmonids. *Fisheries Management and Ecology* 6: 63–69.
- Kumar K., Raghavan, R. and Pereira, B. 2009. Protected on papers, hunted in wetlands: exploitation and trade of freshwater turtles (*Melanochelys trijuga coronata* and *Lissemys punctata punctata*) in Punnamada, Kerala, India. *Tropical Conservation Science*, 2 (3):363-373. Available online: www.tropicalconservationscience.org.
- Lopez-Barrera, E., Longo, G. O. and Monteiro-Filho, E. L. 2012. Incidental capture of green turtle (*Chelonia mydas*) in gillnets of small-scale fisheries in the Paranaguá Bay, Southern Brazil. *Ocean and Coastal Management*, 60:11–18.
- Poonian, C. N. S., Hauzer, M. D. and Allaoui, A. B. 2009. Artisanal Bycatch of Turtles in the Union of the Comoros, Western Indian Ocean - Are Gear restrictions Always Effective? Page 57 Project Global. 2009. *Workshop Proceedings: Tackling Fisheries Bycatch: Managing and reducing sea turtle bycatch in gillnets*. Project Global Memorandum no. 1.
- Santos, R.L., Bezerra, T.L., Correia, J. M. S., and dos Santos, E. M. 2020. Artisanal fisheries interactions and bycatch of freshwater turtles at the Tapacurá reservoir, Northeast Brazil. *Herpetology Notes*, 13: 249-252.