


Status of the hammerhead shark (Carcharhiniformes: Sphyrnidae) fishery in Indian waters with observations on the biology of scalloped hammerhead *Sphyrna lewini* (Griffith & Smith, 1834)

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Funding information

Indian Council of Agricultural Research

Abstract

1. Hammerhead sharks are represented by four species in India's marine fishery - *Sphyrna lewini*, *Sphyrna mokarran*, *Sphyrna zygaena* and *Eusphyrna blochii*. This paper describes the hammerhead shark fishery in India during 2007-2018 and summarizes observations on the biology of *S. lewini* exploited along the Indian coast.
2. Hammerhead sharks are caught by trawl nets, gillnets, seines and line gear, mostly as bycatch. Annual average landing of hammerhead sharks during 2007-18 was 639 t, with a low of 290 t in 2018, of which *S. lewini* was the dominant species, comprising 95% of landings. Hammerhead sharks formed nearly 1.31% of the total elasmobranch landings. About 54% of hammerhead sharks were landed by trawlers.
3. Length range of *S. lewini* in regular landings was 36-300 cm total length (TL). The dominant size class was 30-100 cm TL; 79.5% of males and 83.2% of females measured between 40 and 100 cm TL. Length-weight relationship was derived as $W = 0.0218*(L)^{2.634}$ and $W = 0.0131*(L)^{2.769}$ for males and females, respectively.
4. Overall sex ratio (F: M) was 1.3:1; below 100 cm TL, the sex ratio was skewed in favour of females. The length at first maturity of males was estimated as 168 cm. The length at first maturity of females was estimated at 239.6 cm. Fecundity ranged from 12-40, size at birth was 36-45 cm TL. Bony fishes were the preferred prey, followed by cephalopods.
5. The *S. lewini* landings in India are dominated by juveniles and threatens sustainability of the stock. Capture of juvenile sharks can be excluded to a considerable extent through strict implementation of minimum legal size of capture, and a conservative minimum legal size of 220 cm is suggested for this species in Indian waters. Identification of recurring juvenile aggregation grounds, their spatio-temporal closures, gear restrictions and greater stakeholder awareness could lead to conservation of the resource and a sustainable fishery.