



New record of spot-tail sleeper ray *Narke dipterygia* (Bloch and Schneider, 1801) (Elasmobranchii, Torpediniformes, Narkidae) from the coast of Gujarat, India

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Abstract

Narke dipterygia (Bloch and Schneider, 1801), commonly known as numb ray, is a widely distributed species in the Arabian Sea and South-East Asian countries. It has been recorded from Oman, Pakistan, Sri Lanka, Malaysia, Singapore, Indonesia, Thailand, Viet Nam, China, Taiwan Province of China and Japan. In India, majority of the findings of the species is from east and west coasts of India, only two records were reported namely Bombay of Maharashtra and Kerala. The present paper confirms the presence of *N. dipterygia* for the first time from Gujarat coast located on the west coast of India. The diagnostic characteristics and remarks on the taxonomy and distribution of *N. dipterygia* have been described in this paper.

Keywords: Batoid fish; first record; Gujarat; *Narke dipterygia*; numb ray

1 | INTRODUCTION

Class Elasmobranchii – cartilaginous fishes consists of about 13 orders, 63 families, 245 valid genera and 1417 valid species cosmopolitan (Fricke *et al.* 2021). Torpediniformes is one of the four orders of Batoid fishes which consists five families, 15 valid genera and 68 species (Fricke *et al.* 2021). Batoid fishes or rays include a range of more or less flattened fishes that differs from the closely related sharks in having ventral gill or gill slits opening and pectoral fins enlarged and fused to the sides of the head over the gill openings (Compagno 1999). Batoids consist of fishes between 10 cm and 6 – 7 m long (some species of *Pristis*, *Pristidae*), and weighing between 10 – 20 g and 1 – 3 t (Compagno 1999). Species belonging to family Narkidae of Torpediniformes are the smallest, having narrow snout, rod-shaped rostral cartilage; a shallow

groove around mouth and genera with a single dorsal fin (Narke) or none (Temera) (Compagno and Last 1999). Narkidae comprises of five valid genera and ten valid species and are found in tropical and temperate waters (Fricke *et al.* 2021).

The numb ray *Narke dipterygia* (Bloch and Schneider, 1801) is one of the three species of *Narke* genus Kaup, 1826 found in tropical marine demersal water habitats (Froese and Pauly 2021). It is distributed from Oman and the Arabian Sea to Sumatra, Borneo and Philippines, north to southern Japan and Indo- West Pacific (Misra 1969; Fricke *et al.* 2021; Froese and Pauly 2021). In India, this species has been recorded in the eastern coast (Bloch and Schneider 1801; Annandale 1909; Menon 1961). From western coast of India, only two records of occurrence from Bombay and Kerala coast are available

(Fowler 1927; Pillay 1929). In the present study, *N. dipterygia* (Bloch and Schneider, 1801) was recorded for the first time from the coast of Gujarat, India, which adds one more species to the diversity of Elasmobranchs of Gujarat, India. The range extension record will be useful for researchers and may contribute to IUCN red data list as the status of the species is Data Deficient.

2 | SPECIMEN COLLECTION

As a part of regular field surveys in December 2020, a single male specimen of *Narke dipterygia* (Bloch and Schneider, 1801) (Figure 1) was recorded in Sutrapada landing centre, Gir-Somnath district, Gujarat, India. As per the information provided by the fishermen, it was captured by the out boat motors (OBM) gillnetters using bottom set gillnet (400 – 450 mm mesh size) from the Arabian sea (20°49'14.8"N 70°27'18.1"E) near Sutrapada of Gujarat. The specimen was preserved in 10% formalin and transferred to the Fresh and Marine water Biology laboratory. The specimen was photographed and the identification was done using appropriate identification keys (Day 1878; Misra 1969; Monkolprasit 1990; Compagno and Last 1999). The morphological and morphometric characters as well as meristic features were noted down and specimen was deposited in Zoological Reference Collection at Division of Fresh and Marine water Biology Laboratory (Ref. ZRC-DFMWBL-01), Department of Zoology, The Maharaja Sayajirao University of Baroda, Vadodara.

3 | SYSTEMATICS

Class: Elasmobranchii

Order: Torpediniformes

Family: Narkidae

Genus: *Narke* Kaup, 1826

Narke dipterygia (Bloch and Schneider, 1801) (Figure 1)

Raja dipterygia Bloch and Schneider, 1801, pp. 359 – 360 (type locality: Tharangambadi, Tamilnadu)

Astrape dipterygia Jerdon 1851, 17: pp. 149; Day, 1878: pp. 734, pl. 192, Fig. 4 (Seas of India to the Malay Archipelago, China and Japan); Day, 1889, 1, pp. 46, Fig. 19; Annandale, 1909, 2: pp. 46, pl. 3, Fig. 6 (off Orissa Coast); Zugmayer 1913, 26, pp. 8 (Mekran); Pillay, 1929, 33: pp. 355 (Kerala); Suvatti 1936, pp. 4 (Gulf of Siam); Anonymous 1955, pp. 7 (Coasts of Sind and Makran).

Bengalichthys impennis Annandale, 1909, pl. 3A, Figure 7 (Balasore Bay, Odisha).

Narke impennis (Annandale, 1909), Ravali *et al.* 2018, 60(2): 75–85 (Visakhapatnam, Andhra-Pradesh).

Narke dipterygia (Bloch and Schneider, 1801): pl. A, Fig. 2;

Garman 1913, 36: pp. 313 (Penang; Singapore; Malay Peninsula; Malacca; Hindustan; Canton); Prasad 1920, 19: pp. 100, pl. 6, Figs. 1, 2 (Puri, Odisha); Fowler, 1927, 32: pp. 253 (Bombay); Chu 1931, 1: pp. 8 (China); Fowler 1938, pp. 15 (Malacca, Penang, Singapore); Fowler 1941, 100(13): 350; Misra 1949, 47(1947): pp. 45; Misra 1952, 49(1951): pp. 134; Munro 1955, 17 (Ceylon); Misra and Menon 1955, 53: pp. 85; Scott 1959, pp. 1–180 (Malaysia); Menon, 1961, pp. 373 (topotypes, Tharangambadi, Tamilnadu; Karaikal, Puducherry); Lindberg and Legeza 1967, 1: 158; Misra, 1969, 1: 223; Murty, 1969, 10, pp. 3 (Nagapattinam, Tamil Nadu); Monkolprasit 1984, pp. 1–175 (Thailand); Krishnan and Misra, 1993, 93(1–2): 201–240 (Pentakota, Andhra-Pradesh); Sujatha, 2002, 44(1 and 2): 155–162 (Visakhapatnam, Andhra-Pradesh); Mishra and Krishnan, 2003, 216: 1–52 (Puducherry); Ravi and Veeramani, 2007, 22(1): 55–58 (Parangipettai and Nagapattinam coasts, Tamil Nadu); Momeninejad *et al.* 2014, 1(4): 298–301 (Iran); Behera *et al.* 2017, 46(10): 2037–2045 (Andhra-Pradesh); Kar *et al.* 2017, 16: pp. 56–66

Narke dipterygia (Bloch and Schneider, 1801) – numb ray / spot tail sleeper ray

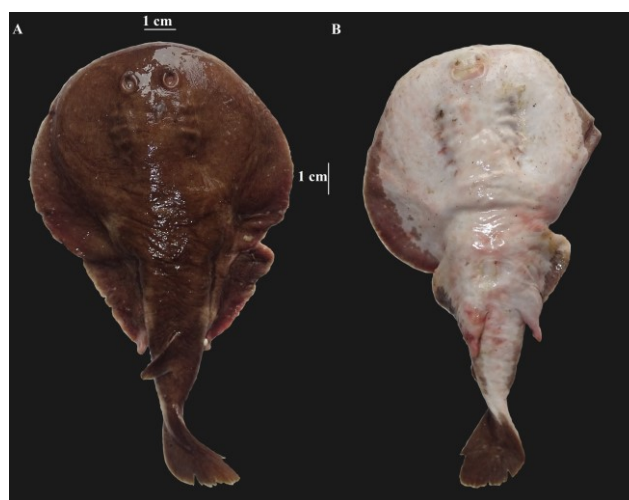


FIGURE 1 *Narke dipterygia* (Bloch and Schneider, 1801), male (ZRC-DFMWBL-01) recorded from the coast of Gujarat, India. A, dorsal view; B, ventral view.

4 | MATERIAL EXAMINED

One male (total length, TL: 175 mm; disc width, DW: 73 mm; disc length, DL: 86 mm); ZRC-DFMWBL-01; Sutrapada (20°50'09.24"N 70°29'08.00"E), Gir-Somnath district, Gujarat, India; bottom trawler – bycatch; collector: Santosh Kumar Singh and Dhaval Bhatt.

5 | DIAGNOSIS

Body entirely naked above and below, without dermal denticles or thorns (Figure 1A); disc round as wide as long, disc not notched and subdivided opposite eyes; snout short rounded. Eyes small prominent, about half

length of spiracles. Spiracles large close behind eyes (Figure 1A), Margins of spiracles not raised or little raised above level of disc; mouth small, protractile; oronasal groove present; cirri absent. Shallow groove around mouth (Figure 1B). Nostril small. Five small gill openings on underside of front half of pectoral-fin bases (Figure 1B), no gill sieves or rakers on internal gills; one spineless dorsal, rounded along margin, and with elongated base, behind end of pelvics (Figure 1A). Pelvics large subtriangular, not divided into anterior and posterior lobes. No anal fin. No barbed sting (stinger or stinging spine) on dorsal surface of tail behind dorsal fin, no electric organs in tail; no serrated caudal spine; caudal well developed, tail not whip-like, a low lateral keel along its lateral edge; Tail little longer than rest of the body.

6 | COLOUR

Skin smooth, brownish above with white circular patch on each side behind electric organ; another above the end of the pelvic and generally a third at the base of caudal. Pelvics with white edge. Lower surface of the body whitish.

7 | CONSERVATION STATUS

Data Deficient – DD (Ishihara and Wang 2009).

8 | HABITAT AND BIOLOGY

Narkidae are known as sleeper rays and consists few species and found inshore to deep-water habitat in the temperate and tropical Indo-West Pacific from South Africa to Japan and Indonesia (Compagno and Last 1999). *Narke dipterygia* (Bloch and Schneider, 1801) occurs primarily intertidal and subtidal zones to offshore on the outer shelf and upper slope on soft bottom down to 330 m (Compagno and Last 1999). Sleeper rays are slow-swimming bottom-dwellers, often found on soft mud or sand. Biology of the species is little known, but generally ovoviviparous in nature (Compagno and Last 1999). *Narke dipterygia* feed on small invertebrates which are present on the bottom; small soft-bottom invertebrates, polychaete worms and possibly small organisms inside mud pellets (Compagno and Last 1999). Maximum total length at least 18 cm (Compagno and Last 1999).

9 | GEOGRAPHICAL DISTRIBUTION

Occurs in the Indo-West Pacific from Oman and the Arabian Sea, India, Sri-Lanka, Malaysia (Pinang), Singapore, Indonesia (Malacca), Thailand, Viet Nam, China, Taiwan Province of China, Japan, and possibly the Philippines (Menon 1961; Misra 1969).

10 | FISHERIES INFORMATION

Narke dipterygia (Bloch and Schneider, 1801) is caught as minor bycatches of offshore trawl fisheries and probably inshore artisanal net fisheries. It can give a strong shock to the unaware person or disturbed, but is otherwise inof-

fensive to people. Commercial utilisation of these rays is uncertain (Compagno and Last 1999).

11 | VERNACULAR NAMES

India: Zinzina, Marathi; Tinlri tiki, Telegu. Pakistan: Mathan, Sind and Makran (Misra 1969); Myanmar: Nga Let Htone Hmee Set Pyauk (Psomadakis *et al.* 2019).

12 | REMARKS

Narke dipterygia (Bloch and Schneider, 1801) was previously included under the family Narkidae. *Bengulichthys impennis* Annandale, described from Orissa coast (Annandale 1909), is currently considered to be a junior synonym of *N. dipterygia* by Eschmeyer (1998). In *N. dipterygia* margins of spiracles not raised or little raised above level of disc while in *N. japonica*, are raised as a low rounded ridge above level of disc (Compagno and Last 1999). *Narke dipterygia* differs by having one dorsal fin from *Temera hardwickii* which lacks the dorsal fin. In *N. japonica*, dorsal surface plain or mottled with black spots and blotches or light spots, no light bars on sides of tail and above pelvic fins, no large paired spots on pectoral disc, ventral surface brownish. Whereas, *N. dipterygia* has dorsal surface plain brownish to greenish, with white bars on sides of tail extending anteriorly to above rear pelvic-fin bases and paired large white spots on rear of pectoral disc, ventral surface white. *Narke dipterygia* is having subtriangular pelvic fins in contrast to rounded pelvic fins in *N. japonica* (Compagno and Last 1999).

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHORS' CONTRIBUTION

SKS has collected the specimen. **DMB** and **SKS** have interacted with fishermen and fisheries officer. **DMB** and **PCM** identified the specimen. All the authors have contributed in manuscript preparation. **PCM** carried out the final review and approval for the submission.

DATA AVAILABILITY STATEMENT

The data supporting the highlights of this study are available within the article [and/or] its supplementary materials.

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