

2. SYSTEMATIC CATALOGUE

2.1 Illustrated Key to Genera and Species

1a. No pelvic fins; a large median keel on each side of caudal peduncle region; snout extremely long, forming a sword-like bill, depressed in cross-section; first dorsal fin short-based, well separated from second dorsal fin in adults (Fig. 21); no scales on body nor teeth in jaws in adults; right and left branchiostegal membrane separated distally (Fig.22a); vertebrae 26

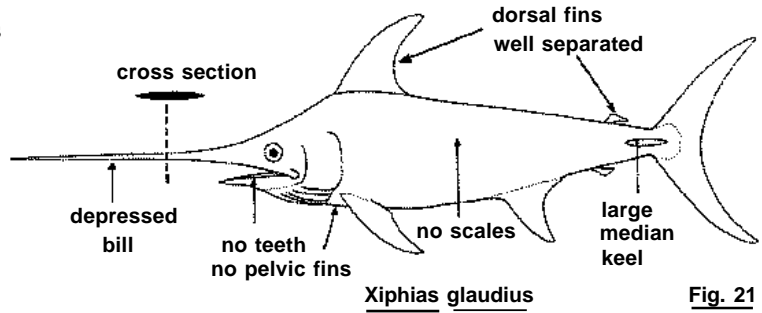


Fig. 21

Xiphias gladius
Worldwide in tropical and temperate waters

1b. Rigid, tapering pelvic fin present; a pair of caudal keels on each side of caudal peduncle region; snout long to somewhat shorter, round in cross-section; first dorsal fin long-based, close to second dorsal fin (Fig.23); body covered with small, elongate bony scales; rasp-like small jaw teeth present in adults; right and left branchiostegal membranes united broadly (Fig. 22b); vertebrae 24

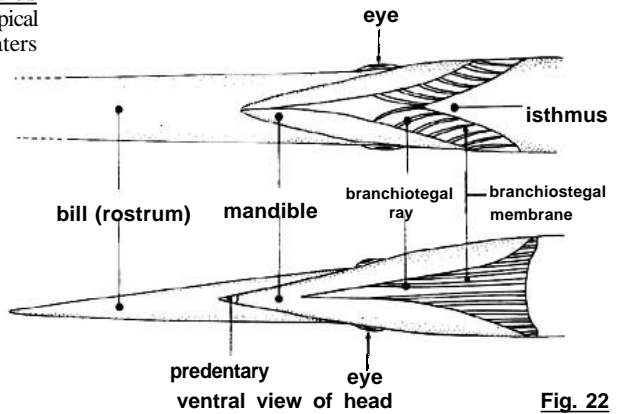


Fig. 22

2a. First dorsal fin (X) sail-like and remarkably higher than body depth (Y) at level of midbody; pelvic fin rays very long, nearly reaching to anal fin origin, with well developed membrane (Fig.24)

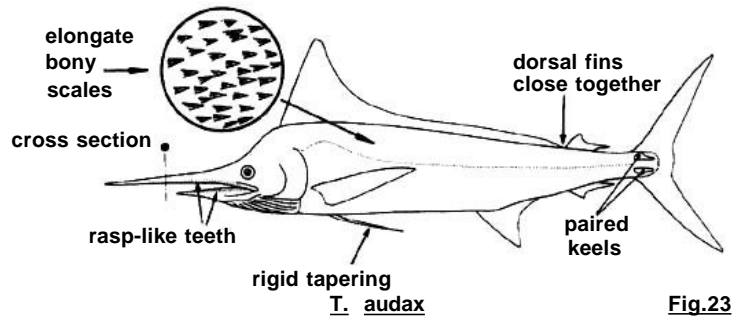


Fig.23

3a. Pectoral fins and caudal fin short in immature specimens up to about 90 cm body length (Fig.25); attains greater, size (about 100 kg maximum body weight) than Atlantic sailfish

Istiophorus platypterus
Pacific and Indian oceans

3b. Pectoral fins and caudal fin long in immature specimens to about 90 cm body length (Fig. 26); attains smaller size (about 60 kg maximum body weight) than Indo-Pacific sailfish

Istiophorus albicans
Atlantic Ocean

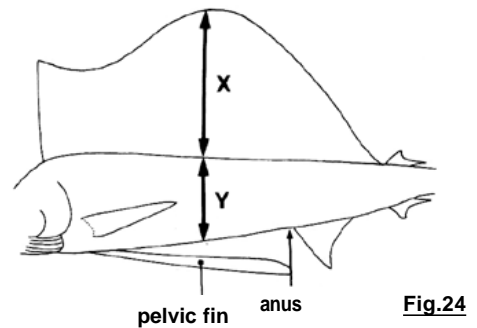
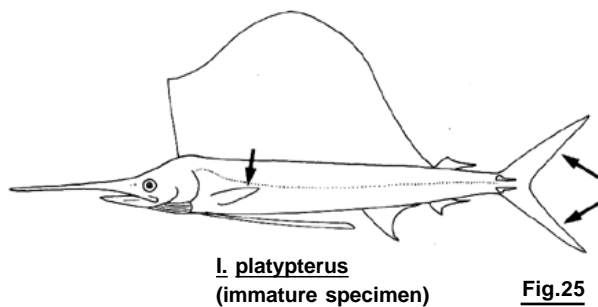
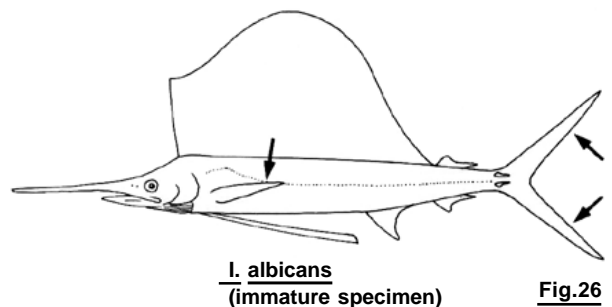


Fig.24



I. platypterus
(immature specimen)

Fig.25



I. albicans
(immature specimen)

Fig.26

2b. First dorsal fin (X) lower than body depth (Y) at level of midbody, not sail-like; pelvicfin rays short, well separate from origin of anal fin, with moderately developed membrane (Fig. 27)

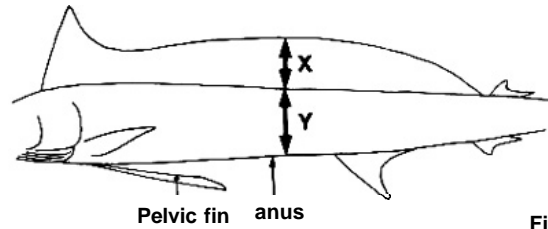


Fig. 27

4a. Height of anterior lobe of first dorsal fin (X) slightly greater than, or nearly equal to, body depth (Y); nape slightly elevated or not elevated (Fig.28); body well compressed laterally; vertebrae 12+12=24

5a. Anterior lobe of first dorsal fin slightly higher than rest of fin which remains of about equal height almost to the end (Figs 27,30,31,32); anus situated far anterior to first anal fin origin (Fig.29), the distance between them (X) greater than height of first anal fin (Y)

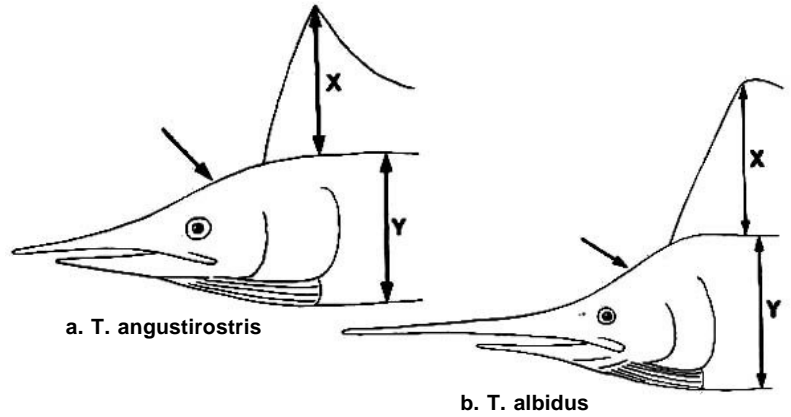


Fig. 28

6a. Bill short, its length (X) usually equal to, or shorter than, head length (Y); pectoral fins narrow and short, less than 18% of body length (Figs 30, 31)

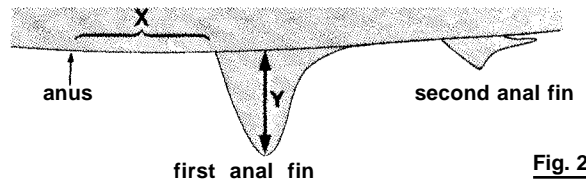


Fig. 29

7a. Bill very short, less than 15% of body length (Fig. 30) Tetrapturus angustirostris
Pacific and Indian oceans

7b. Bill moderately short, less than 18% of body length (Fig. 31) Tetrapturus belone
Mediterranean Sea

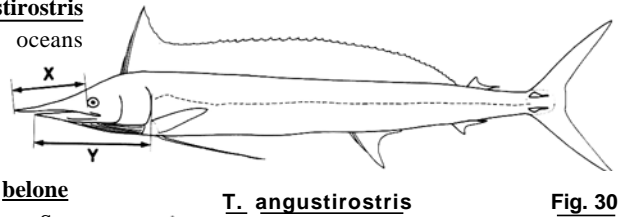


Fig. 30

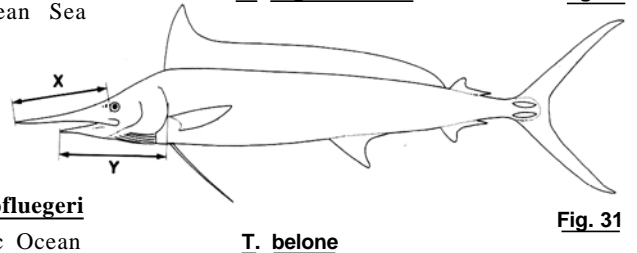


Fig. 31

6b. Bill long, its length (X) usually equal to, or longer than, head length (Y); pectoral fins wide and long, more than 18% of body length (Fig. 32). Tetrapturus pfluegeri
Atlantic Ocean

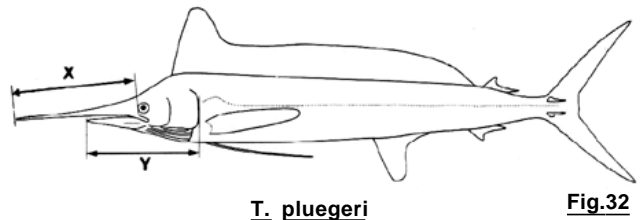


Fig.32

5b. Anterior lobe of first dorsal fin somewhat higher than remainder of the fin, the height decreasing gradually backward (Figs 34,35,36); anus situated near origin of first anal fin (Fig.33), the distance between them (X) smaller than height of first anal fin (Y)

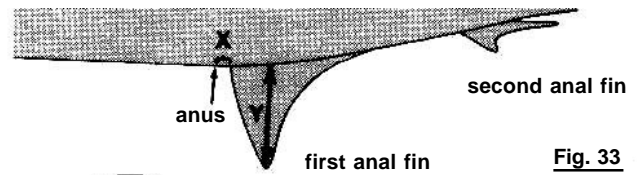
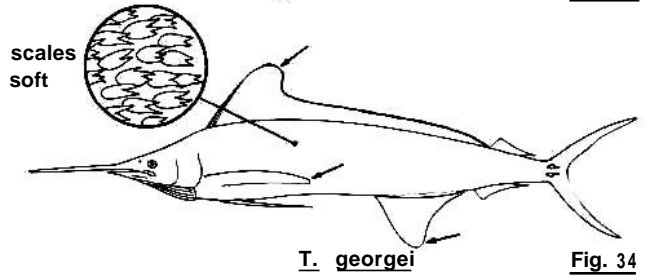


Fig. 33

8a. Tip of first dorsal fin, pectoral fins and first anal fin rounded (Figs 34,35)



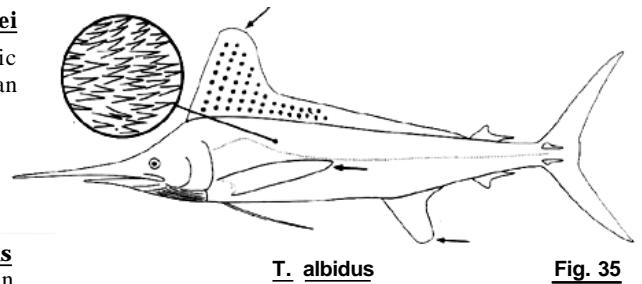
T. georgei **Fig. 34**

9a. First dorsal fin unspotted; scales on midbody soft and rounded (Fig.34).....**Tetrapturus georgei**

Eastern Atlantic and Mediterranean

9b. First dorsal fin spotted; scales on midbody pungent, each scale elongate with 1 or 2 spines (Fig. 35) **Tetrapturus albidus**

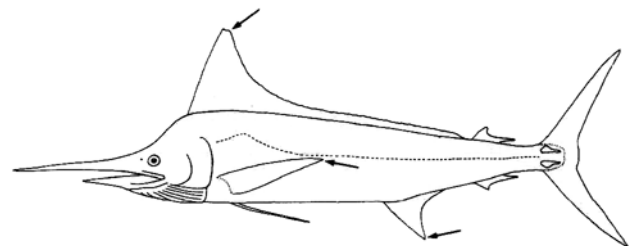
Atlantic Ocean



T. albidus **Fig. 35**

8b. Tip of first dorsal fin, pectoral fins and first anal fin pointed (Fig.36) **Tetrapturus audax**

Pacific and Indian oceans



T. audax **Fig. 36**

4b. Height of anterior lobe of first dorsal fin (X) lower than body depth (Y); nape highly elevated (Fig.37); body not compressed laterally; vertebrae 11+13=24

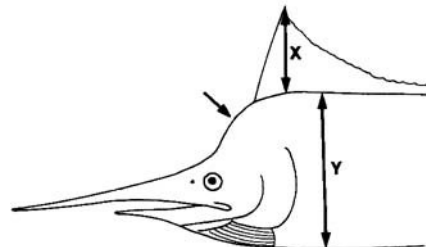


Fig. 37

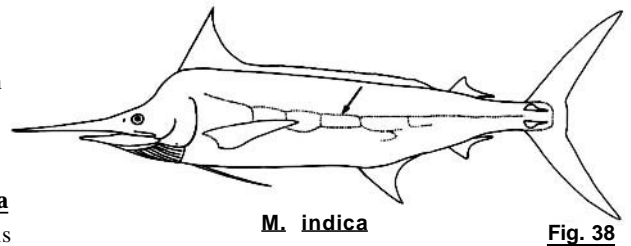
10a. Pectoral fins can be folded back against sides of body

11a. Lateral line system with simple loops (Fig.38) **Makaira mazara**

Pacific and Indian oceans

11b. Lateral line system reticulated (Fig.39) **Makaira nigricans**

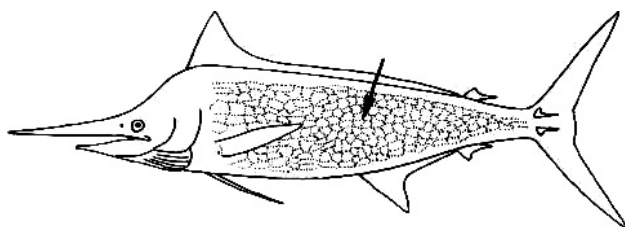
Atlantic Ocean



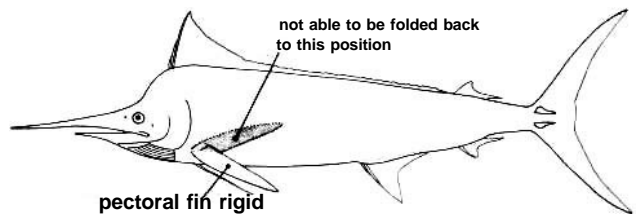
M. indica **Fig. 38**

10b. Pectoral fins rigid, cannot be folded back against sides of body (Fig.40) **Makaira indica**

Pacific and Indian oceans



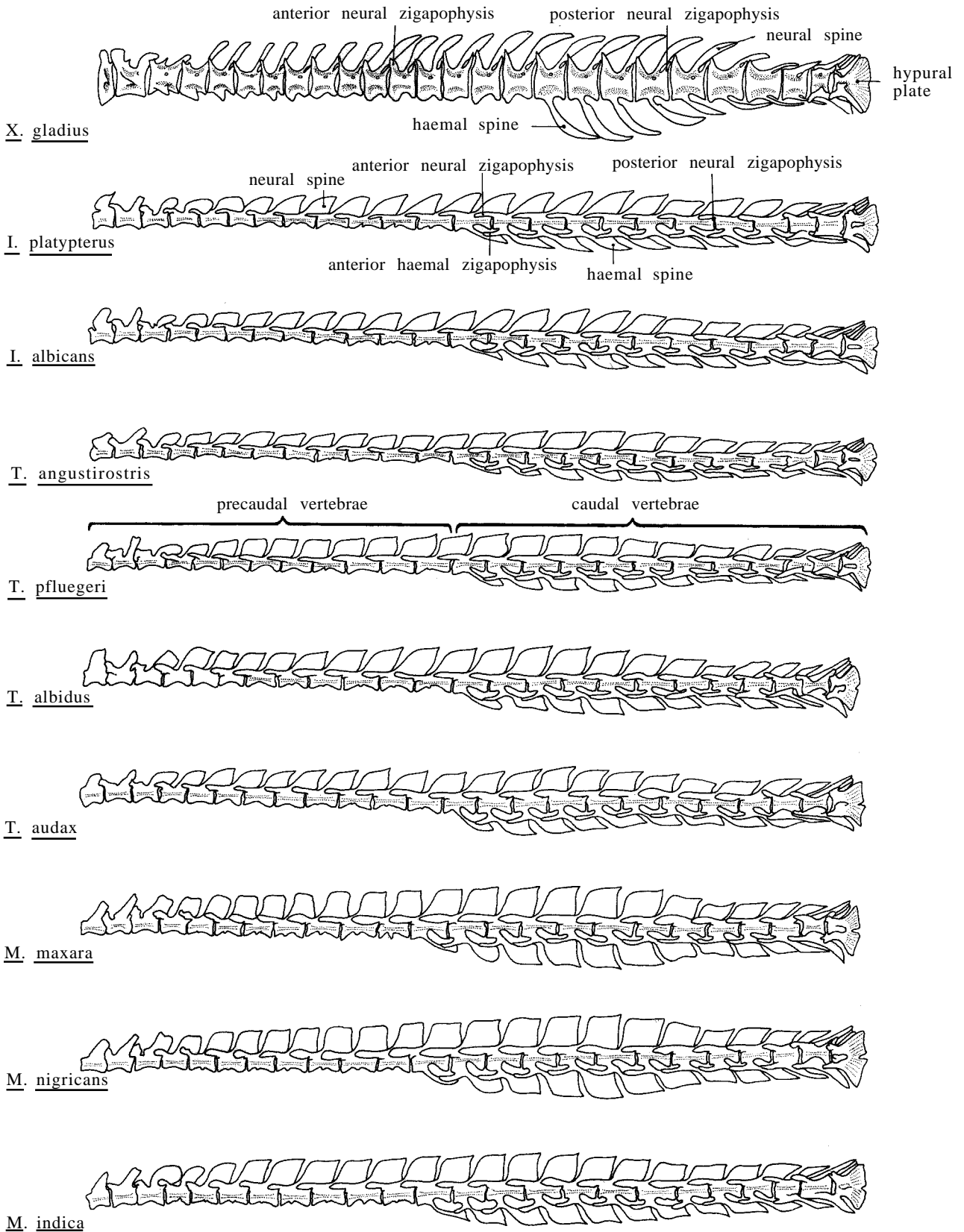
M. nigricans **Fig. 39**



M. indica **Fig. 40**

2.2 Additional Aids to Identification of Genera and Species

The shape of vertebrae of billfishes shows characteristic variations by species or genus and may be used as an additional aid to species identification, especially in the case of specimens that are damaged or cut (Fig.41)



Vertebrae of billfishes (modified after Nakamura, 1983, Fig. 10)

Fig.41