MYCT

1982

FAO SPECIES IDENTIFICATION SHEETS

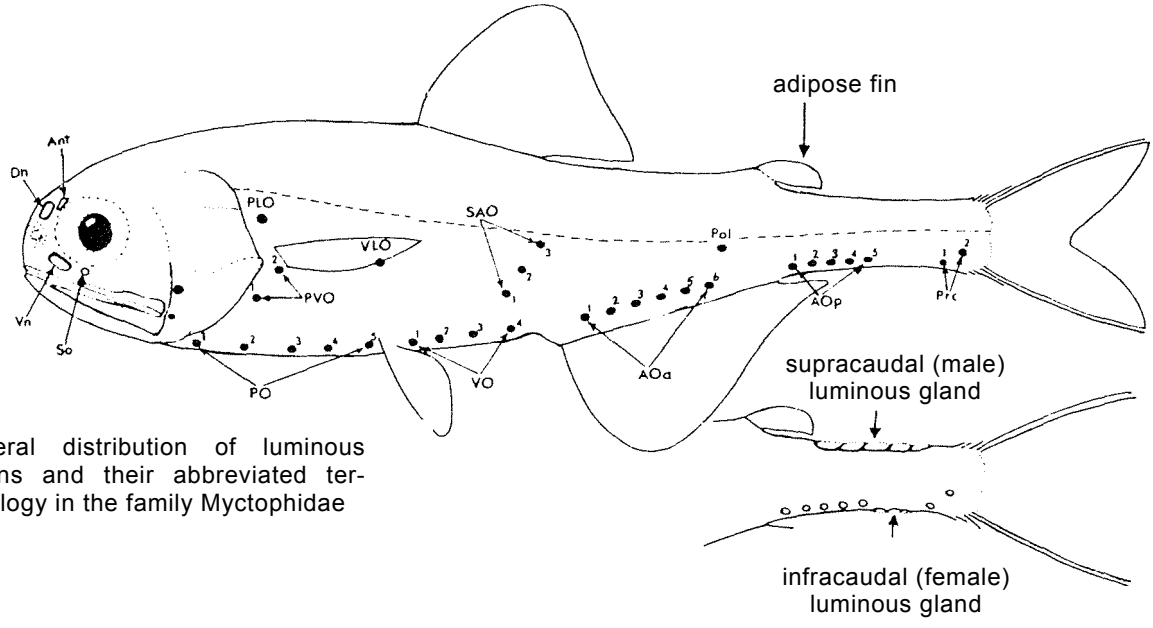
FISHING AREA 51
(W. Indian Ocean)

MYCTOPHIDAE

Lanternfishes

Head and trunk compressed. Eyes large. Mouth usually terminal (inferior in Loweina, Gonichthys and Centrobranchus); jaws extending to or far beyond vertical through posterior margin of eye. Jaws (premaxillaries in upper, and dentaries in lower jaws) with bands of closely-set teeth, the inner ones of which may be enlarged; posterior teeth on jaws broad-based and strongly hooked forward in some species of Diaphus. Teeth also present on roof of mouth (palatines with a long, narrow band of closely-set small teeth or with one or two rows of enlarged, widely-spaced ones; mesopterygoids with a patch of closely-set and small or widely-spaced and enlarged teeth; most species with a cluster of minute teeth on each side of vomer). Branchiostegal rays 7 to 11, but there may be as few as 6 and as many as 12. Well developed gill rakers present in all genera except Centrobranchus. All fins lacking spines; adipose fin present; origin of anal fin under or close behind base of dorsal fin. Pelvic fins with 8 rays, except in Notolychnus (6) and Gonichthys (sometimes 7); caudal fin with 10 dorsal and 9 ventral principal rays. Discrete, round or kidney-shaped photophores in distinct groups on trunk and head of all species except Taaningichthys paurolychnus. Much smaller, secondary photophores on trunk and head in some species. Additional luminous organs of various shapes and sizes present on head, caudal peduncle, or on both. Scales usually cycloid or smooth to touch (ctenoid or comb-like in a few species of Myctophum), firm in forms found in relatively shallow depths, loose and easily lost in deeper-dwelling species.

Colour: the majority of lanternfishes are brown to nearly black. Those that live in relatively shallow depths (e.g., Gonichthys Centrohranchus) are silvery, and members of the genera Diaphus and Lobianchia have bluish iridescens scales, especially along the lateral line.



General distribution of luminous organs and their abbreviated terminology in the family Myctophidae

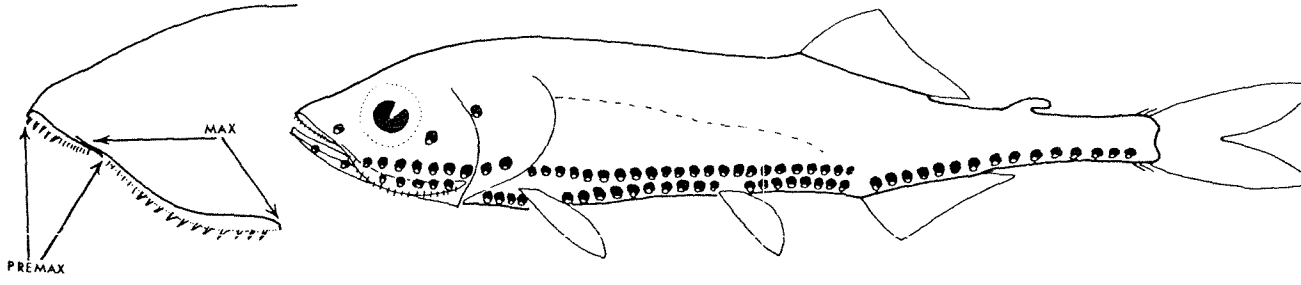
Myctophids range in size (adults) from about 2 cm to 30 cm. They are very common and occur in all oceans, from arctic to antarctic waters, and from the very surface at night to depths exceeding 2 000 m. They have been collected predominantly in open oceanic waters but are also found over continental and island shelves. The adults of a number of species have been observed and/or taken very near the bottom. With few exceptions, myctophids migrate from their daytime depths to the upper, mixed layer at night. While many spend the night at depths between 30 and 100 m, a good number of species enter the uppermost 10 m. Several of the latter are commonly dipnetted at the surface or taken with neuston nets.

Although abundant and widespread, mvctophids are only now beginning to draw attention as a potentially exploitable source of animal protein. Some 15 t of a single species, Diaphus dumeriiii, were taken in a single haul at a depth of 260 to 265 m off Uruguay (R/V WALTHER HERWIG sta. 208/1966, Institut für Seefischerei, Hamburg). Myctophids (mostly Lampanyctodes hectoris) have accounted for 0.30 percent to 10.45 percent of the total fish catch landed by South African pelagic fishing boats during the years 1969-73. Results of recent biochemical experiments in the Soviet Union do not preclude the use of the southern hemisphere myctophid, Gymnoscopelus nicholsi, for human consumption.

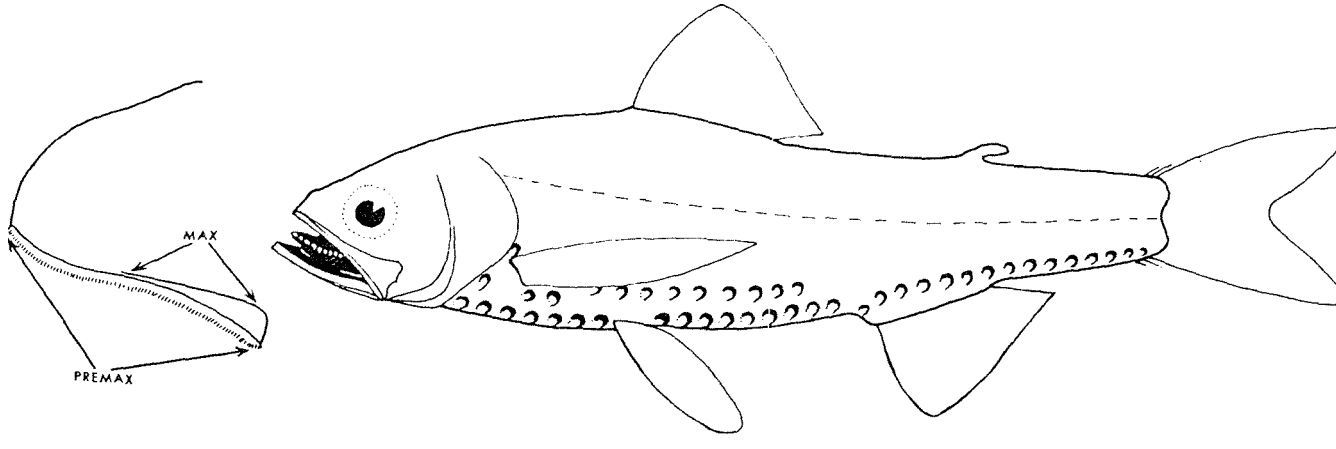
To date, more than 340 species of myctophids have been described. These have been assigned to some 50 genera. Of the approximately 240 species (30 genera) currently recognized. 83 species (21 genera) occur in the Western Indian Ocean (Fishing Area 51)

SIMILAR FAMILIES OCCURRING IN THE AREA:

Gonostomatidae: posterior portion of upper jaw contributed by toothed maxilla (MAX); dorsal and anal fins generally displaced posteriorly; one or more horizontal rows of photophores on ventral part of body and head.



Neoscopelidae: maxilla (MAX) greatly expanded posteriorly and, as in Myctophidae, completely excluded from gape by toothed premaxilla (PREMAX); dorsal fin well in advance of anal fin; large, oval-shaped, superficial photophores arranged linearly in horizontal series on ventral part of body and along periphery of tongue.



KEY TO GENERA OCCURR G IN THE AREA.:

1 a. Minute, "secondary" photophores on head, on body under each scale, and on fin membranes; "primary" body photophores (i.e., PLO, PO, VO, etc.) indistinct (=ig. 1)..... Scopelopsis

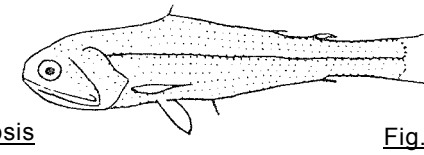


Fig.1

1 b. "Secondary" photophores absent or, if present, clearly distinct from "primary" body photophores

2 a. Three photophores (VLO, SAO_3 and Pot very close to dorsal contour of body; 2 Prc; Prc_2 well above midlateral line (Fig. 2) ..... Notoiychnus

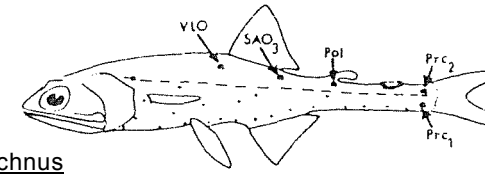


Fig.2

2 b. No photophores close to dorsal contour of body; 2 or more Prc; Prc_2 never above horizontal septum or lateral line

3a. PLO (see Figs. 4 to 6) from less than its diameter above to well below level of upper end of base of pectoral fin

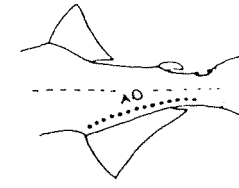


Fig.3

4 a. PLO well below level of upper end of base of pectoral fin; AO not distinctly divided into AOa and AOp; Pol not differentiated; mouth terminal, snout no', protruding; caudal peduncle not markedly slender, its least depth less than 2.5 times in its length (Fig. 3)

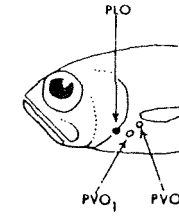


Fig.4

5 a. PLO in front of and, often, slightly higher than PVO_1; PLC), PVO_1 and PVO_2 on a somewhat angulated line (Fig. 4) ..... Protomyctophum

5 b. PLO over PVC_1; PLO, PVO_1, and PVO_2 forming a triangle (Fig. 5)..... Electrona

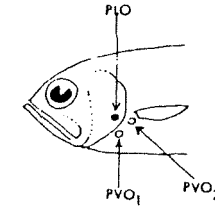


Fig.5

4 b. PLO at or slightly above level of upper end of base of pectoral fin; AO divided into AOa and AOp; Pol well differentiated; mouth subterminal, snout more or less protruding; caudal peduncle markedly slender, its least depth 2.5 times or more in its length (Fig. 6)

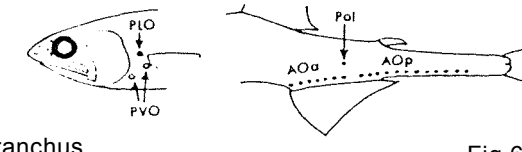


Fig.6

6 a. Gill rakers absent ..... Centrobranchus

6 b. Gill rakers present

7 a. Origin of anal fin about under middle of base of dorsal fin; none or only one AOp over base of anal fin; least depth of caudal peduncle about 2.5 times in its length (Fig. 7)..... Loweina

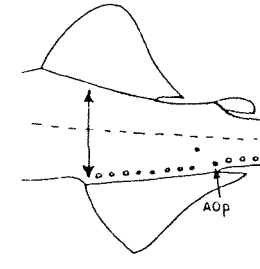


Fig .7

*Abbreviations correspond to designations of luminous organs

7 b. Origin of anal fin on or slightly in front of vertical through end of base of dorsal fin; 5 to 7 AOp over base of anal fin; least depth of caudal peduncle 3.5 times or more in its length (Fig. 8) ..... Gonichthys

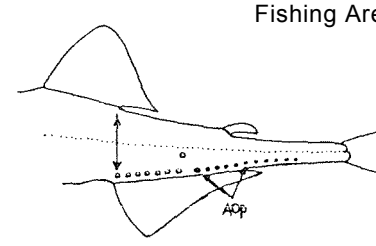


Fig.8

3 b. PLO More than its diameter above level of upper end of base of pectoral fin

8 a. PVO_2 well above level of upper end of base of PLO pectoral fin

9 a. Two, sometimes 3, Pol horizontally arranged; AO_1 not elevated; 3 (2+1) Prc (Fig. 9) ..... Notoscopelus

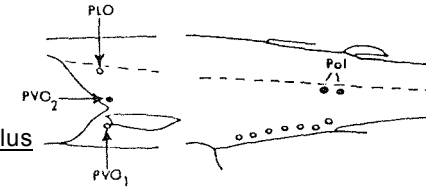


Fig.9

9 b. Two Pol vertically or subvertically arranged; AO_1 elevated; 5 (4+1) Prc (Fig.10) ..... Gyrnnoscopelus (subgenus Nasolychnus)

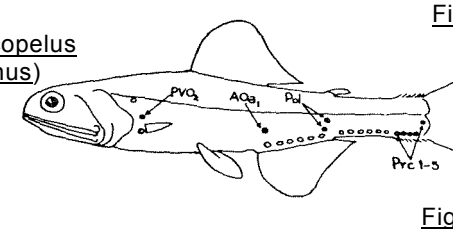


Fig.10

8 b. PVO_2 at or below level of upper end of base of pectoral fin

10 a. Two Prc

11a. PVO arranged horizontally or nearly so, with PVO_1 not more than its diameter below level of PVO_2; VO_2 more or less elevate

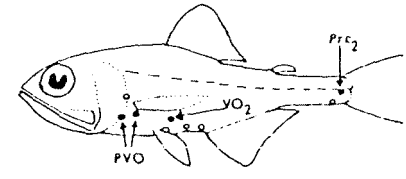


Fig.11

12a. Prc_2, much higher than Prc_1, lying twice its own diameter or less below lateral line; small, simple teeth on premaxillaries and dentaries (Fig.11)..... Benthosema

12b. Pre_2 slightly higher than Prc_1; premaxillary teeth flattened, lanceolate, many with minute denticle on each edge at widest point; outer anterior teeth on dentary close-set and flattened, posterior ones broad-based and sharply hooked forward (Fig. 12) ..... Diogenichthys

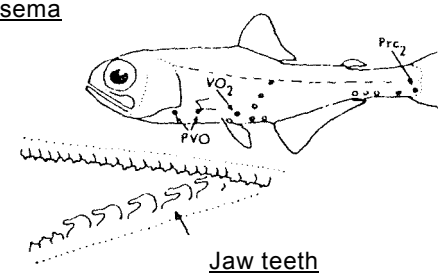


Fig.12

Jaw teeth

11b. PVO on an inclined line, with $PV0_1$ more than its own diameter below level of PVO_2; all VO at same level

13 a. Two Pol (Fig. 13) ..... Hygophum

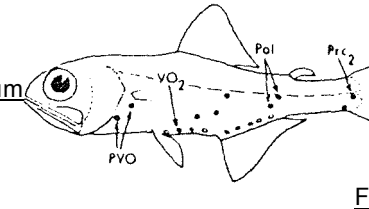


Fig.13

13 b. One Pol

14 a. SAO strongly angulated; SAO_1 in advance of, seldom directly over VO_3 (Fig. 14)..... Symbolophorus

14 b. SAO on a straight or slightly angular line; SAO_1 behind VO_3 (Fig. 15) ..... Myctophum

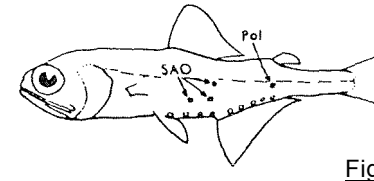


Fig.14

10 b. More than 2 Pre or Pre absent

15 a. More than 4 Pre

16 a. PVO arranged horizontally or nearly so; PO_3 elevated; Aoa_1, not elevated; 1 Pol; $SA0_3$ and Pol low (Fig. 16) .....Lampanyctodes

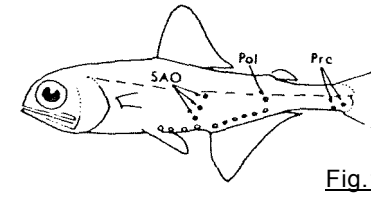


Fig.15

16 b. PVO arranged vertically or nearly so; $P0_3$ not elevated; Aoa_1 elevated; 2 Pol , SAO_3 and Pol_2 high (Fig. 17).....Gymnoscopelus (subgenus Gymnoscopelus)

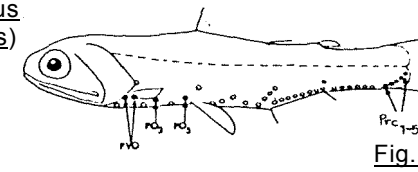


Fig.16

15b. Three to 4 Pre or Pre absent; PVO not arranged horizontally or nearly so; PO_3 and PO_5 not elevated

17 a. First PO and 2 PVO on a straight, ascending line; first 3 VO on a straight ascending line; males with supracaudal, females with infracaudal luminous glands or caudal glands absent; 4 Prc

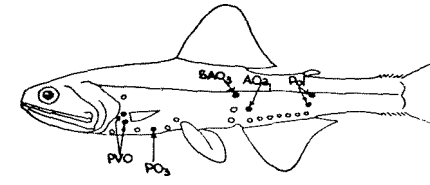


Fig.17

18 a. More than one pair of luminous organs on head; caudal luminous glands absent; usually a luminous scale at PLO (Fig. 18) ..... Diaphus

18 b. Only one pair (Dn) of luminous organs on head; supracaudal (males; and infracaudal (females) luminous glands well developed; no luminous scale at PLO (Fig. 19) .....Lobianchia

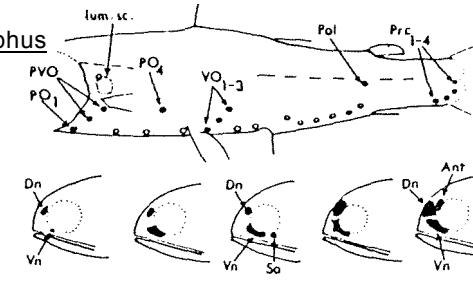


Fig.18

17 b. First PO and 2 PVO not on a straight line; first 3 VO not on a straight, ascending line; both sexes with supracaudal and infracaudal luminous glands; 3 to 4 Prc

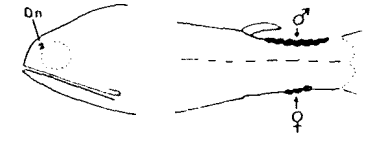


Fig.19

19 a. Caudal luminous glands large, undivided, bordered by black pigment; one Pol or none; 3 Pre or none (Fig. 20)

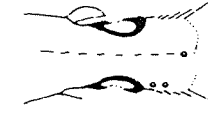


Fig.20

20 a. Origin of dorsal fin directly ever or somewhat in front of base of pelvic fin; photophores well developed; 3 SAO; lateral line well developed; no large crescent of whitish tissue on posterior half of iris (except for L. chavesi which has one on dorsal half of iris) (Fig. 21) ..... Lampadena

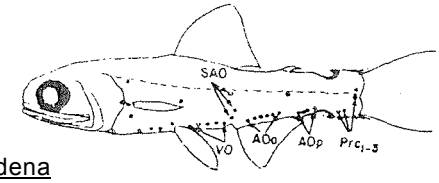


Fig.21

20 b. Origin of dorsal fin behind base of pelvic fin; photophores present or absent; if present, poorly developed; one SAO; lateral line very poorly developed or absent; a large crescent of whitish tissue on posterior half of iris (best seen in preserved specimens)(Fig.22)..... Taaningichthys

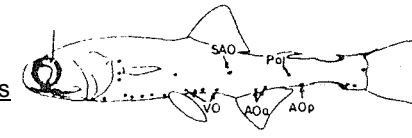


Fig.22

19 b. Caudal luminous glands consisting of a series of overlapping scale-like structures not bordered by black pigment; 2 Pol; 3 to 4 Pre (Fig. 23)

21a. PO_4 not elevated; luminous scale-like structures midventrally between bases of pelvic fins or between bases of pelvic fins and anus; 4 Pre (Fig. 24) ..... Ceratoscopelus

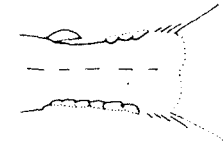


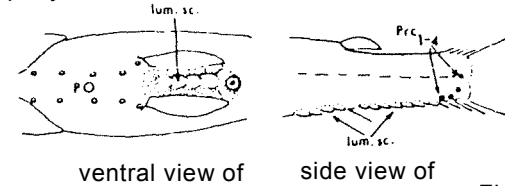
Fig.23

21b. PO_4 highly elevated; no luminous scale-like structures midventrally between bases of pelvic fins or between bases of pelvic fins and anus; 3 to 4 Prc

22 a. Four VO; 4 Prc (Fig.25) ..... Lampanyctus

22b. Five VO; 3 Prc

23a. SAO strongly angulated (as in Lampanyctus, Fig. 25), a line through SAO_1 and SAO_2 not intersecting VO series; 3 Prc evenly spaced or nearly so; luminous tissue, other than photophores, restricted to caudal glands (Fig. 26) ..... Triphoturus



ventral view of anterior part

side view of posterior part

Fig.24

23 b. SAO weakly angulated, a line through SAO_1 and SAO_2 intersecting VO series; 3 Prc in a 2 + 1 configuration; patches of luminous tissue at bases of median and, often, paired fins, anterior part of trunk and on top of head (Fig. 27)..... Bolinichthys

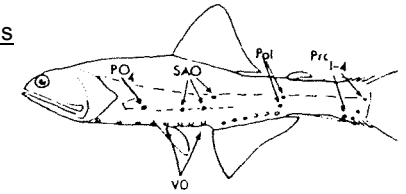


Fig.25

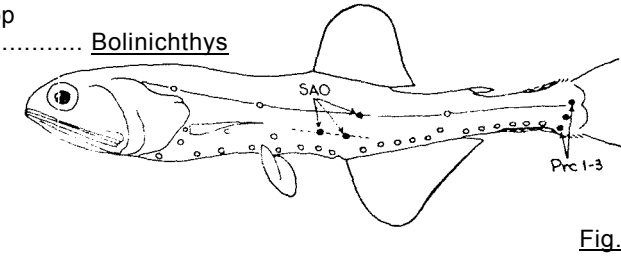


Fig.26

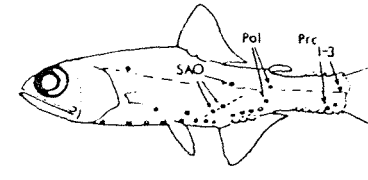


Fig.27

LIST OF SPECIES OCCURRING IN THE AREA:

Benthosema fibulatum (Gilbert & Cramer, 1897)
Benthosema pterotaa (Alcock, 1891)
Benthosema suborbitale (Gilbert, 1913)

Bolinichthys indicus (Nafpaktitis & Nafpaktitis, 1969)
Bolinichthys longipes (Brauer, 1906)
Bolinichthys photothorax (Parr, 1928)

Centrobranchus andreae (Lütken,1892)
Centrobranchus nigroocellatus (Günther, 1873)

Ceratoscopelus warmingii (Lütken, 1892)

Diaphus aliciae Fowler, 1934
Diaphus antonbruuni Nafpaktitis, 1978
Diaphus arabicus Nafpaktitis, 1978
Diaphus brachycephalus Tdning,1928
Diaphus coeruleus (Klunzinger,1871)
Diaphus diadematus Tåning, 1932
Diaphus diademophilus Nafpaktitis, 1978
Diaphus drachmanni Tåning, 1932
Diaphus effulgens (Goode & Bean, 1896
Diaphus fragilis Tåning, 1928
Diaphus fulgens (Brauer, 1904)
Diaphus garmani Gilbert, 1906
Diaphus holti Tåning, 1918
Diaphus jenseni Tåning,1932
Diaphus knappi Nafpaktitis, 1978
Diaphus lobatus Nafpaktitis, 1978
Diaphus lucidus(Goode & Bean,1896)
Diaphus luetkeni (Brauer, 1904
Diaphus malayanus Weber, 1913
Diaphus meadi Nafpaktitis, 1978
Diaphus megalops Nafpaktitis, 1978
Diaphus metopoclampus (Cocco, 1829)
Diaphus mollis Tåning, 1928
Diaphus nielseni Nafpaktitis, 1978
Diaphus ostenfeldi Tåning, 1932
Diaphus pari Tåning, 1932
Diaphus perspicillatus (Ogilby, 1898)
Diaphus phillipsi Fowler, 1934
Diaphus problematicus Parr, 1928
Diaphus regani Tåning, 1932
Diaphus richardsoni Tåning, 1932
Diaphus signatus Gilbert, 1908
Diaphus splendidus (Brauer, 1904)
Diaphus suborbitalis Weber, 1913
Diaphus thiollierei Fowler, 1934
Diaphus watasei Jordan & Starks, 1904

Diogenichthys panurgus Bolin, 1946

Electrona paucirastra Bolin in Andriashev, 1962
Electrona risso (Cocco, 1829)
Electrona ventralis Becker, 1963

Gonichthys barnesi Whitley, 1943

Gymnoscopelus (Nasolychnus) fraseri (Fraser-Brunner, 1931)
Gymnoscopelus (Nasolychnus) microlampas Hulley, 1981

Hygophum hanseni (Tåning, 1932)
Hygophum hygomii (Lütken, 1892)
Hygophum proximum (Becker, 1965)

Lampadena anomala Parr, 1928
Lampadena chavesi Collette, 1905
Lampadena dea Fraser-Brunner, 1949
Lampadena luminosa (Garman, 1899)
Lampadena notialis Nafpaktitis & Paxton, 1968
Lampadena speculigera Goode & Bean, 1896

Lampanyctodes hectoris (Günther, 1876)

Lampanyctus achirus Andriashev, 1962
Lampanyctus alatus Goode & Bean, 1896
Lampanyctus ater Tåning, 1928
Lampanyctus australis Tåning, 1932
Lampanyctus intricarius Tåning, 1928
Lampanyctus lepidolychnus Becker, 1967
Lampanyctus lineatus Tåning, 1928
Lampanyctus macropterus (Brauer, 1904)
Lampanyctus nobilis Tåning, 1928
Lampanyctus pusillus (Johnson, 1890)
Lampanyctus steinbecki Bolin, 1939
Lampanyctus tenuiformis (Brauer, 1906)

Lobianchia dofleini (Zugmayer, 1911)
Lobianchia gemellarii (Cocco, 1838)

Loweina interrupta (Tåning, 1928)

Myctophum asperum Richards 7845
Myctophum aurolaternatum Garman, 1899
Myctophum nitidulum Garman, 1899
Myctophum obtusirostre Tåning, 1928
Myctophum phengodes (Lütken, 1892)
Myctophum spinosum (Steindachner, 1867)

Notolychnus valdiviae (Brauer, 1904)

Notoscopelus caudispinosus (Johnson, 1863)
Notoscopelus resplendens (Richardson, 1845)

Protomyctophum normani (Tåning, 1932)
Protomyctophum parallelum (Ldnnberg, 1905)
Protomyctophum subparallelum (Tåning, 1932)

Scopelopsis multipunctatus Brauer, 1906

Symbolophorus barnardi (Tåning, 1932)
Symbolophorus evermanni (Gilbert, 1905)
Symbolophorus rufinus (Tåning, 1928)

Taaningichthys bathyphilus (Tåning, 1928)
Taaningichthys minimus Tåning, 1928)
Taaningichthys paurolychnus Davy, 1972

Triphoturus nigrescens (Brauer, 1904)

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