

**Additional tabular details of
distributional, meristic and
morphometric data for the paper:**

A review of the morid fish genus
Lepidion of the North Atlantic with first records
of *Lepidion eques* from the western North
Atlantic (Templeman, 1970).

**Also, weights, food and parasites of
*Lepidion***

by **Wilfred Templeman**



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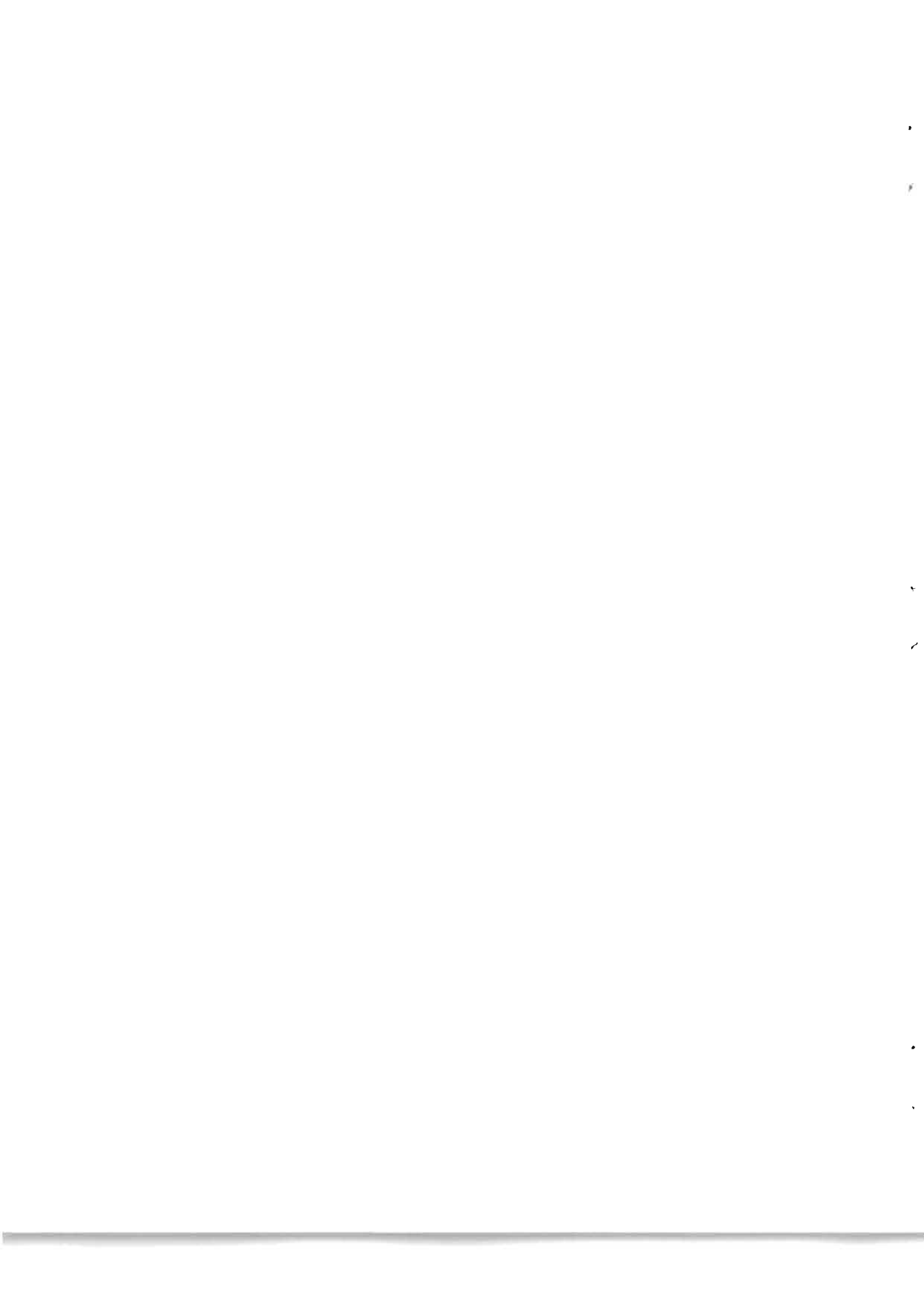
ADDITIONAL TABULAR DETAILS OF DISTRIBUTIONAL, MERISTIC AND MORPHOMETRIC DATA FOR THE PAPER: A REVIEW OF THE MORID FISH GENUS *LEPIDION* OF THE NORTH ATLANTIC WITH FIRST RECORDS OF *LEPIDION EQUES*, FROM THE WESTERN NORTH ATLANTIC (TEMPLEMAN, 1970). ALSO, WEIGHTS, FOOD AND PARASITES OF *LEPIDION*

by

Wilfred Templeman

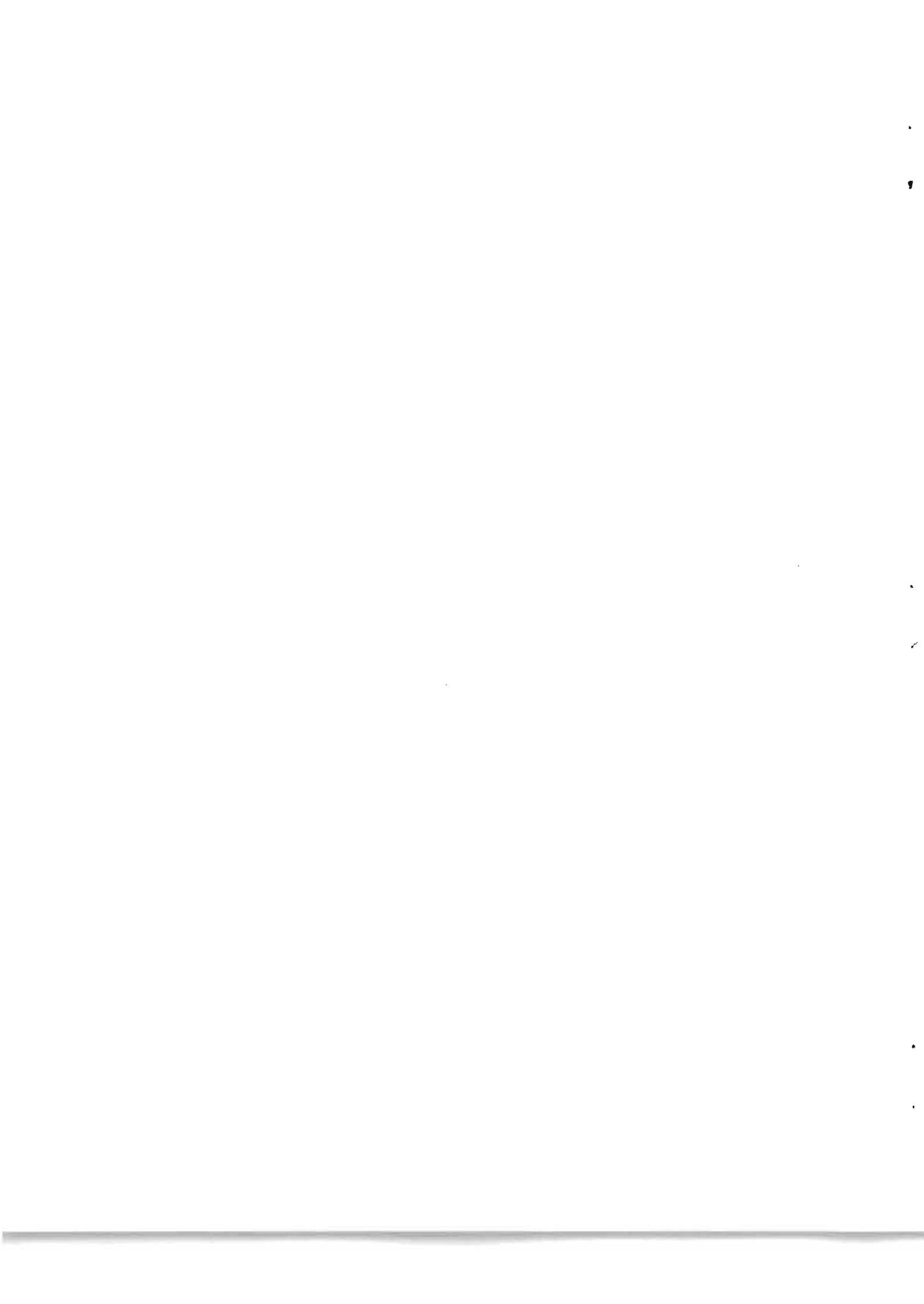
This is the eighteenth FRB Technical Report from the
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INTRODUCTION

This report includes tabular distributional meristic and morphometric data on North Atlantic species of Lepidion: L. eques (Günther, 1887), L. lepidion (Risso, 1810), L. güntneri (Giglioli, 1880) and Forster's large lepidions (L. guentheri of Forster, 1968) tentatively identified (Templeman, 1970) as L. schmidtii Svetovidov, 1936. Data on L. schmidtii from Japan are added for comparison.

Except where otherwise noted, morphometric and meristic data were obtained by the methods of Hubbs and Lagler (1958). Apart from total lengths and standard lengths, which are the shortest distances between parallel perpendicular planes, and any other distances especially noted, all measurements are direct distances between points. Where suitable the left side of the head and body were used for morphometric and meristic purposes. If the left side was unsuitable the right side was used.

These data were used in the preparation of the review of Lepidion spp. of the North Atlantic (Templeman, 1970) but for reasons of economy were not included with the paper.

This report also includes some information on weights, food and parasites of Lepidion spp. of the North Atlantic.

Table 1. Records of Lepidion eques, L. lepidion and L. guentheri other than those of the St. John's Station. (All records known to the author are included.)

| Capture Year | Date | Locality | Position Lat. | Long. | Depth, <u>m</u> | Bottom temp., <u>C</u> | No. specimens | Total length (average), <u>mm</u> | Reference | Remarks (Ship and gear, etc.) |
|---------------------------------------|------------|--|---------------|---------|----------------------|------------------------|--------------------|-----------------------------------|--|--|
| <u>Lepidion eques</u> (Günther, 1887) | | | | | | | | | | |
| 1880, 1882 | August | Faroe Channel | ... | ... | 970 | ... | Numerous | ca. 140-310 ^a | Günther, 1887; author | <u>Knight Errant</u> , presumably bottom trawl ^b . |
| 1888 | May 29 | W of Ireland | 51°01'N | 11°50'W | 1,370 | ... | 1 | 318 | Scharff, 1891; C. E. O'Riordan, letter, 1967 | <u>Flying Falcon</u> , Agassiz trawl. Specimen in National Museum of Ireland. |
| 1889 | July 11 | " | 50°29'26"N | 11°04'W | ... | ... | 1 | ... | Bourne, 1890 | <u>Research</u> , beam trawl. |
| 1890 | July 10 | " | 54°20'N | 11°45'W | 915 | 9 | 5 | 111-330 | Holt, 1892; Holt and Calderwood, 1895; C. E. O'Riordan, letter, 1967 | <u>Fingal</u> , 5.5 m beam trawl. Two specimens in National Museum of Ireland. |
| 1895 | May 20 | Denmark Strait | 64°18'N | 27°00'W | 555 | 5.8 | 2 | 190-210 | Lütken, 1898; J. Nielsen, letter, 1968 | <u>Ingolf</u> , bottom trawl. |
| 1895 | Aug.-Sept. | Bay of Biscay | ... | ... | 800 (1) 1,410 (7) | ... | 8 | <200-310 | Koehler, 1896 | <u>Caudan</u> , presumably bottom trawl. |
| 1396 | June 14 | SW of Iceland | 61°44'N | 27°00'W | 912 | 6.1 | ca. 6 ^c | 90-280 | Lütken, 1898; J. Nielsen, letter, 1968 | <u>Ingolf</u> , bottom trawl. |
| 1896 | June 24 | Denmark Strait | 64°45'N | 27°20'W | 583 | 8.4 | 1 | 280 | Lütken, 1898; J. Nielsen, letter, 1968 | <u>Ingolf</u> , bottom trawl. |
| 1902 | Aug. 12 | S slope Faroe Bank | 59°28'N | 8°01'W | 1,061-1,256 | 8.07 | 16 | ... | Hjort, 1909; Koefoed, 1927 ^d | <u>Michael Sars</u> , bottom trawl. |
| 1902 | Aug. 12 | " " | 59°23'N | 7°50'W | 1,074 | 8.07 | 24 | ... | " | " " |
| 1902 | Aug. 14 | " " | 61°07'N | 9°33'W | 777-841 | ... | 73 | ... | " | " " |
| 1902 | Aug. 11 | Faroe Slope | ... | ... | 1,100-1,300 | 8.07 | 18) | 155-290 | Collett, 1905 | <u>Michael Sars</u> , bottom trawl ^e . |
| 1902 | Aug. 14 | " | ... | ... | 750 | ... | 2) | ... | " | " " |
| 1903 | July 24 | Bay of Biscay | 45°09'N | 3°18'W | 1,804 | ... | 1 | ... | Roule, 1919 | <u>Princesse-Alice</u> , bottom trawl. |
| 1903 | July 14 | S of Iceland | 62°57'N | 19°58'W | 957 | ... | 40 | 160-390 | Schmidt, 1904 | <u>Thor</u> , bottom trawl. |
| 1903 | July | S of Iceland 9 miles SSE from Vestmann Islands | ... | ... | 395 | ... | 3 or 4 | ... | Saemundsson, 1908 | <u>Thor</u> , bottom trawl. |
| 1903 | July 14 | S of Iceland | 63°12'30"N | 20°06'W | 510 | ... | 1 | 326 ^a | J. Nielsen, letter, 1968 | <u>Thor</u> . Specimens in Universitetets Zoologiske Museum, Copenhagen. |
| 1904 | May 22 | SW of Faroes | 61°15'N | 9°35'W | 872-970 | ... | 4 | 135-175 | " " | " " |
| 1905 | June 25 | SW of Ireland | 49°25'N | 12°20'W | 1,270-1,880 | ... | 37 | 150-250 | " " | " " |
| 1906 | June 9 | " | 49°23'N | 12°13'W | 1,170-1,298 | ... | 1 | 240 | " " | " " |
| 1906 | June 16 | " | 51°34'N | 11°50'W | 960-1,140 | ... | 1 | 230 | " " | " " |

(cont'd.)

Table 1 (cont'd.)

| Year | Capture Date | | Position | | Depth, m | Bottom temp., C | No. specimens | Total length (average), mm | Reference | Remarks (Ship and gear, etc.) |
|------|--------------|---|----------|------------|-------------|------------------|------------------------|----------------------------|---|---|
| | Date | Locality | Lat. | Long. | | | | | | |
| 1905 | Feb. 3 | Irish Atlantic Slope Tearaght (County Kerry) trawling ground | 51°53'N | 11°59'W | 585-680 | 10.13 (550 m) | Common (at least 8) | 239-365 ^a | Holt and Byrne, 1906; C. E. O'Riordan, letter, 1967 | <u>Helga</u> , 9.2 m beam trawl ^b . |
| 1909 | ... | Davis Strait | 63°54'N | 53°15'W | 1,040-1,474 | ... | 1 | 246 | Jensen, 1948 | <u>Tjalfe</u> , bottom trawl. |
| 1909 | ... | " | 63°24'N | 53°10'W | 940 | ... | 1 | 217 | " | " |
| 1910 | Apr. 11 | SW of Ireland | 49°38'N | 11°35'W | 923 | ca. 8.5 | ca. 40 ^f | 90-230 | Murray and Hjort, 1912; Koefoed, 1927 | <u>Michael Sars</u> , bottom trawl. |
| 1910 | Aug. 6-7 | W of Scotland | 57°41'N | 11°48'W | 1,853 | ca. 3.2 | 1 | 72 | Koefoed, 1927 | <u>Michael Sars</u> , pelagically, 3/4 m plankton net with 1500 m wire. Longline. |
| 1924 | June-July | Off S Iceland in Háfadjúp SE from Vestmann Islands | ... | ... | 340-400 | ... | 1 | 390 | Saemundsson, 1927, 1949 | |
| 1927 | April-May | Scottish Atlantic Slope | ... | ... | ... | ... | | ... | Hickling, 1928 | <u>Florence Brierley</u> , bottom otter trawl. |
| 1927 | July 6 | Off S Iceland on Kötlugrunn | ... | ... | 127 | ... | 1 | 50-60 | Saemundsson, 1939, 1949 | <u>Dana</u> . |
| 1951 | July 1-5 | Rose-Garden (Iceland-Faroe Ridge) | ... | ... | ... | ... | ca. 50 | ... | Brandes, Kotthaus and Krefft, 1953 | <u>Lepidion</u> sp. ^h |
| 1955 | June 17 | SW coast Iceland | 62°41'N | 23°56'W | 440-450 | 6.5 | 1 | 170 | Kotthaus and Krefft, 1957; Kotthaus, 1957; Brandes et al., 1957 | <u>Anton Dohrn</u> , bottom otter trawl. |
| 1955 | June 26 | " " | 63°33'N | 25°51'W | 470-500 | 6.8 | 1 | 210 | " " | " " " |
| 1955 | June 27 | " " | 64°41'N | 27°14'30"W | 430-450 | ca. 6.2 | 7 | 150-290 | " " | " " " |
| 1957 | Apr. 15 | E of Greenland | 64°59'N | 34°28'W | 470 | ... | 2 | 175, 216 | Brandes and Kotthaus, 1959 | ... |
| 1957 | Apr. 20 | SW of Iceland | 63°03'N | 23°57'W | 450 | ... | 6 | 200-290 | " | ... |
| 1958 | Oct. 4 | W of Iceland | 64°26'N | 27°00'W | 440 | ... | 1 | 226 | Krefft, 1960 | |
| 1961 | April | W of Ireland, George Bligh Bank | ... | ... | 435-550 | ... | 7 ⁱ | 129-234 S.L. ^a | Blacker, 1962 | <u>Ernest Holt</u> , bottom otter trawl. |
| 1963 | June 4 | E of Greenland | 63°20'N | 39°21'W | 330 | ... | 17 | 90-440 | Konstantinov, 1968 | <u>Anton Dohrn</u> , bottom otter trawl. |
| 1959 | May 1 | Iceland-Faroe Ridge | 63°43'N | 13°00'W | 650 | 3.6 | 5) | | Kotthaus and Krefft, 1967 | <u>Anton Dohrn</u> . ^j |
| 1959 | May 3 | " " | 63°09'N | 13°18'W | 735-760 | 4.2 | 1) | 240-390(293) | " | " 30 |
| 1960 | June 21 | " " | 63°22'N | 12°33'W | 500 | 5 | 1 | 290 | " | " 60 |
| 1963 | Mar. 18 | Icelandic Slope | 63°45'N | 26°40'W | 760-810 | 5.80 | 13 | 200-330(286) | Information from G. Krefft, letter, 1966 | " 15 |
| 1963 | Mar. 21 | " " | 63°07'N | 23°46'W | 450 | 7.09 | 1 | 250 | " " | " 60 |
| 1963 | Mar. 21 | " " | 63°03'N | 23°37'W | 550 | 7.20 | 11 | 230-310(280) | " " | " 30 |
| 1963 | Mar. 21 | " " | 62°58'N | 23°40'W | 640-650 | 7.14 | 20 | 180-440(340) | " " | " 30 |
| 1963 | Mar. 23 | " " | 63°08'N | 21°35'W | 650 | 6.65 | 21 | 220-410(313) | " " | " 30 |
| 1963 | Mar. 29 | <u>Anton Dohrn</u> Seamount | 57°27'N | 11°03'W | 620-630 | 9.40 | 22 | 210-300(249) | " " | " 30 |
| 1963 | Mar. 29 | " " | 57°26'N | 11°10'W | 600-610 | 9.40 | 11 | 200-280(248) | " " | " 30 |
| 1964 | Jan. 22 | Rosemary Bank | 59°07'N | 10°03'W | 630-640 | 8.8 | 46 | 180-330(261) | " " | " 60 |

(cont'd.)

Table 1 (cont'd.)

| Year | Capture Date | Locality | Position | | Depth, m | Bottom temp., °C | No. specimens | Total length (average), mm | Reference | Remarks (Ship and gear, etc.) | No. minutes towing on bottom |
|--|--------------|--------------------------|-------------|---------|----------|------------------|--------------------|----------------------------|---|--|------------------------------|
| | | | Lat. | Long. | | | | | | | |
| 1964 | Jan. 22 | Rosemary Bank | 59°21'N | 10°22'W | 720-730 | 8.7 | 29 | 90-310(219) | Information from G. Krefft, letter, 1966 | Anton Dohrn. ^J | 60 |
| 1964 | Jan. 24 | Lousy Bank | 60°21'N | 11°54'W | 710-740 | 8.6 | 67 | 90-390(266) | " " | " | 40 |
| 1964 | Jan. 26 | Bill Bailey Bank | 60°49'N | 9°56'W | 730 | 8.3 | 79 | 80-360(140) | " " | " | 30 |
| 1964 | Mar. 13 | Porcupine Bank | 52°22'N | 12°52'W | 600 | 10.23 | 3 | 230-320(283) | " " | " | 60 |
| 1964 | Mar. 17 | Icelandic Slope | 63°13'N | 25°50'W | 810 | 6.50 | 40 | 90-340(204) | " " | " | 60 |
| 1964 | Mar. 18 | " | 65°22'N | 27°24'W | 510 | 6.47 | 41 | 140-330(241) | " " | " | 25 |
| 1964 | Mar. 18 | " | 65°19'N | 27°49'W | 800-840 | 5.92 | 33 | 130-340(252) | " " | " | 60 |
| 1964 | Apr. 2 | Gauss Bank (E Greenland) | 65°02'N | 34°10'W | 600 | 3.65 | 1 | 350 | " " | " | 30 |
| 1964 | Apr. 5 | Icelandic Slope | 65°20'N | 27°31'W | 475-490 | 6.58 | 3 | 130-170(143) | " " | " | 60 |
| 1964 | Apr. 5 | " | 65°13'N | 27°38'W | 650 | 6.34 | 29 | 100-340(226) | " " | " | 60 |
| 1964 | Apr. 9 | " | 63°06'N | 21°33'W | 750-800 | ca. 7.0 | 19 | 110-360(288) | " " | " | 30 |
| 1965 | Apr. 20 | " | 64°07'N | 27°16'W | 800 | 5.89 | 53 | 110-330(235) | " " | " | 60 |
| 1965 | Apr. 20 | " | 64°14'N | 27°10'W | 600 | 6.32 | 83 | 110-330(262) | " " | " | 60 |
| 1965 | Apr. 24 | " | 62°43'N | 24°30'W | 730-780 | 5.43 | 70 | 130-380(256) | " " | " | 60 |
| 1965 | Apr. 24 | " | 62°49'N | 24°36'W | 575 | 6.70 | 29 | 100-330(228) | " " | " | 60 |
| 1965 | Apr. 26 | " | 62°45'N | 25°30'W | 800 | 6.14 | 20 | 130-330(229) | " " | " | 50 |
| 1965 | Apr. 26 | " | 62°54'N | 25°20'W | 570 | 6.90 | 58 | 110-350(268) | " " | " | 60 |
| 1965 | Apr. 27 | " | 63°28'N | 26°16'W | 750-780 | 5.77 | 18 | 200-330(268) | " " | " | 45 |
| 1965 | Apr. 27 | " | 63°27'N | 26°11'W | 550 | 6.51 | 73 | 110-300(240) | " " | " | 60 |
| 1965 | Apr. 27 | " | 63°22'N | 25°45'W | 470 | 6.07 | 5 | 170-220(190) | " " | " | 15 |
| 1965 | Apr. 28 | " | 63°05'N | 23°38'W | 700 | 5.90 | 49 | 140-420(304) | " " | " | 60 |
| 1965 | Apr. 28 | " | 63°10'N | 23°50'W | 550 | 6.28 | 44 | 130-330(265) | " " | " | 60 |
| 1965 | Apr. 29 | " | 63°00'N | 22°06'W | 800 | ... | 26 | 150-350(291) | " " | " | 60 |
| 1965 | Apr. 29 | " | 63°04'N | 22°05'W | 580-600 | 7.11 | 42 | 150-350(281) | " " | " | 60 |
| 1965 | Apr. 30 | " | 63°03'N | 20°30'W | 700-750 | 5.19 | 54 | 130-410(302) | " " | " | 60 |
| 1965 | Apr. 30 | " | 63°06'N | 20°33'W | 500 | 7.22 | 102 | 120-340(249) | " " | " | 55 |
| 1965 | May 2 | " | 63°15'N | 17°14'W | 770 | 6.2 | 1 | ... | " " | " | k |
| 1965 | May 5 | Iceland-Faroe Ridge | 63°22'N | 12°18'W | 440 | 2.1 | 3 | 130-170(153) | " " | " | 120 |
| 1965 | May 6 | " | 62°39'N | 12°47'W | 570-620 | ... | 22 | 140-350(259) | " " | " | 60 |
| 1965 | March | NW of Hebrides | ca. 59°20'N | 7°30'W | 700-800 | ... | ca. 4 ¹ | 250-300 | Postel and Du Buit, 1965 | French otter trawler <u>Richelieu</u> . | |
| 1967 | July 4 | N of Hebrides | 59°39'N | 6°37'W | 512-695 | 9.4 | 18 ^m | 250-370 | Blacker, 1968 | <u>Ernest Holt</u> , bottom otter trawl. | |
| 1967 | July 10 | NW of Hebrides | 58°23'N | 9°20'W | 530-567 | ca. 9.6 | 1 ^m | 270 | " | " | |
| <u>Lepidion lepidion</u> (Risso, 1810) | | | | | | | | | | | |
| 1810 or earlier | August | Nice | ... | ... | ... | ... | Very rare | ca. 300 | Risso, 1810 | Now in Muséum National, Paris. | |
| 1879 | July 26 | Gulf of Genoa | ... | ... | 800 | ... | 1 | 260 | Vinciguerra, 1883; E. Tortonese, letter, 1968 | <u>Violante</u> . Deep-sea lines (palamiti) Mus. Civ. Stor. Nat. Genova, No. 7702. | |

(cont'd.)

Table 1 (cont'd.)

| Year | Capture | | Locality | Position | | Depth, m | Bottom temp., C | No. specimens | Total length (average), mm | Reference | Remarks (Ship and gear, etc.) |
|--------------------|----------------|--|--|------------|-----------|----------------------|--------------------|-----------------------|-------------------------------|---|---|
| | Date | | | Lat. | Long. | | | | | | |
| 1879 | Sept. 1 | | Nice | ... | ... | Deep water | ... | 2 | 230 S.L. ^a ; n | Giglioli, 1880; E. Tortonese, letter, 1968 | Mus. Civ. Stor. Nat. Genova, No. 7703 ^o . |
| 1879 | July | | Ligurian Sea | ... | ... | 500 | ... | 1 | ... | Tortonese and Trotti, 1950 | Deep-sea lines (palamiti) Mus. Civ. Stor. Nat. Genova, No. 41161. |
| 1880 | ... | | Nice | ... | ... | ... | ... | 1 | 247 ^a | Letter from M. Blanc, 1968 | Examined by author from Muséum National d'histoire naturelle, Paris. No. A2225. |
| 1886 | ... | | Mediterranean | ... | ... | ... | ... | 1 | 247 S.L. ^a | " | " 86-275 |
| ... | ... | | Messina | ... | ... | 1,200 | ... | 1 | 254 S.L. ^a | " | " 96-30 |
| ... | ... | | Nice | ... | ... | ... | ... | 1 | 221 S.L. ^a | " | " 98-913 |
| ... | ... | | Nice | ... | ... | ... | ... | 1 | 281 ^a | " | " 4293 |
| 1957 | May | | 25 miles Est Rosas, Catalonia (Spain) | ... | ... | 300-500 | ... | 1 | 116 S.L. ^a | " | " 57-106 |
| 1884 or earlier | ... | | W Mediterranean | 39°21'50"N | 9°40'08"E | 1,125 | ... | 1 | 209 S.L. | D. M. Cohen, letter, 1968 | In natural No. 2041 history museum, Florence, Italy. (Also Giglioli and Issel, 1884). |
| ... | ... | | Nice | ... | ... | ... | ... | 2 | 229 & 248 S.L. | " | " No. 1362. |
| ... | ... | | " | ... | ... | ... | ... | 2 | 209 & 247 S.L. | " | " No. 1827. |
| 1886 or earlier | ... | | " | ... | ... | ... | ... | 1 | 230 S.L. ^a | Günther, 1887; Norman, 1936 | Specimen in British Museum 25460, 86.8.4.6. |
| 1894 | Mar. 28-Apr. 1 | | W Mediterranean | 43°33'N | 7°36'45"E | 2,230 | ... | 2 | ... | Roule, 1919 (Appendix by Vaillant) | <u>Princesse-Alice</u> , trap. |
| 1894 | Apr. 23-26 | | " | 43°37'15"N | 7°33'35"E | 1,474 | ... | 3 | 163 & 237 S.L. ^a | " | <u>Princesse-Alice</u> , trap. Now in Musée Océanographique, Monaco. |
| 1896 | May 5 | | " | 43°32'43"N | 7°35'15"E | 2,170 | ... | 2 | 263 S.L. ^a (1) | " | " " |
| 1902 | Mar. 20-21 | | " | 42°50'30"N | 8°55'15"E | 1,350 | ... | 1 | 229 S.L. ^a | Richard, 1934 | " " |
| Before 1905 | ... | | Nice | ... | ... | ... | ... | 1 | ... | Collett, 1905 | Specimen Christiania Museum. |
| 1931 | ... | | Gulf of Genoa | ... | ... | ... | ... | 1 ^p | 235 S.L. ^a | Vinciguerra, 1932; E. Tortonese, letter, 1968 | Mus. Civ. Stor. Nat. Genova, No. 31898. |
| ... | ... | | Strait of Messina | ... | ... | ... | ... | 1 | 236 | Torchio, 1961 | |
| 1955-58 | ... | | Off Nice | ... | ... | 700-1,000 | ca. 13 | Not rare ^q | ... | Motais, 1960 | Longline. |
| ca. 1959 | ... | | Minorca (in market) | ... | ... | ... | ... | ... | ... | Oliver, 1959 | ... |
| 1957 | ... | | E of Corsica | ... | ... | 150-175 ^r | ... | 2 | <100 | Raimbault, 1963; C. Maurin, letter, 1968 | French research vessels, trawl. |
| 1957 | July 24 | | NW Mediterranean | 42°32'54"N | 3°55'30"E | 700-1,100 | ... | 1 ^s | ... | C. Maurin, letter, 1968 ^t | " " |
| 1957 | July 26 | | " | 42°37'57"N | 3°52'42"E | 510-730 | ... | 1 ^s | ... | " | " " |
| 1957 | July 31 | | " | 42°35'54"N | 3°53'48"E | 625-725 | ... | 1 ^s | ... | " | " " |

(cont'd.)

Table 1 (cont'd.)

| Year | Capture | | Position | | Depth, m | Bottom temp., °C | No. specimens | Total length (average), mm | Reference | Remarks (Ship and gear, etc.) |
|--|-----------|-------------------------------|------------|------------|-----------------|---------------------|------------------|-------------------------------|--|--|
| | Date | Locality | Lat. | Long. | | | | | | |
| 1957 | July 31 | NW Mediterranean | 42°36'33"N | 3°50'39"E | 535-632 | ... | 1 ^s | ... | C. Maurin, letter, 1968 ^c | French research vessels, trawl |
| 1958 | Nov. 1 | " | 42°22'18"N | 9°47'18"E | 660-800 | ... | 13 ^s | 150-220(190) | " | " " |
| 1958 | Nov. 5 | " | 41°18'45"N | 8°36'51"E | 400-885 | ... | 1 ^s | 210 | " | " , shrimp trawl. |
| 1958 | Nov. 11 | " | 43°18'48"N | 6°50'27"E | 660-860 | ... | 2 ^s | ... | " | " , trawl. |
| 1958 | Dec. 1 | " | 42°05'45"N | 3°41'21"E | 660-760 | ... | 1 ^s | ... | " | " " |
| 1958 | Dec. 1 | " | 42°06'51"N | 3°42'39"E | 795 | ... | 60 ^s | 90-220(175) | " | " " |
| 1958 | Dec. 1 | " | 42°02'09"N | 3°37'09"E | 880-1,200 | ... | 61 ^s | 110-340(265) | " | " " |
| 1958 | Dec. 5 | " | 42°01'N | 3°43'39"E | 935-1,070 | ... | 37 ^s | ... | " | " " |
| <u>Lepidion guentheri</u> (Giglioli, 1880) | | | | | | | | | | |
| 1862 | Jan.-Mar. | Madeira | ... | ... | ... | ... | 3 | ca. 546-889 ^u | Johnson, 1862 | ... |
| 1870 | ... | W coast Spain and Portugal | ... | ... | ... | ... | 1 | 519 ^a | Günther, 1887 | British Museum specimen ^v . |
| 1895 | July 14 | The Azores | 38°26'N | 26°30'45"W | 1,165 | ... | 1 | 121 S.L. ^a | Roule, 1919 (and appendix by Vaillant) | <u>Princesse-Alice</u> , bottom trawl. Now in Monaco Museum. |
| 1913 | July 30 | Off Ponta Delgada, Azores | 38°03'N | 26°47'W | 1,650 | ... | 1 ^w | ca. 600 S.L. | Richard, 1934; Guiart, 1935 | <u>Hirondelle II</u> , longline. |
| 1939 | Nov. 23 | Madeira | ... | ... | At least 500 | ... | 1 | 734 S.L. | Maul, 1952; letter, 1967 | From Funchal fish market. Caught on longline. <u>Funchal Museum No.</u> 953 |
| 1952 | July 3 | " | ... | ... | " | ... | 1 | 540 | " | " 3483 |
| 1952 | Aug. 6 | " | ... | ... | " | ... | 1 | 452 ^a | " | " 3516 |
| 1952 | Aug. 13 | " | ... | ... | " | ... | 1 | 531 ^a | " | " 3520 |
| 1952 | Aug. 16 | " | ... | ... | " | ... | 1 | 625 | " | " 3522 |
| 1952 | Oct. 3 | " | ... | ... | " | ... | 1 | 393 S.L. | G. E. Maul, letter, 1967 | From fish market either in Funchal or Camara de Lobos. Caught on longline 3534 |
| 1952-53 | ... | " | ... | ... | " | ... | 1 | ... | " | " 3552 |
| 1953 | Feb. 6 | " | ... | ... | " | ... | 1 | 505 ^a | " | " 3604 |
| 1953 | Sept. 27 | " | ... | ... | " | ... | 1 | 810 S.L. | " | " 3880 |
| 1954 | May 21 | " | ... | ... | " | ... | 1 | 436 S.L. | " | " 4462 |
| 1965 | Sept. 2 | " | ... | ... | " | ... | 1 | 478 ^a | " | " 21507 |
| 1966 | July 7 | " | ... | ... | " | ... | 1 | 584 ^a | " | " 22049 |
| ... | ... | " | ... | ... | ... | ... | 1 | 471 S.L. | D. M. Cohen, letter, 1967 | Specimen from Funchal market, now in museum at Monaco. |
| ... | ... | " | ... | ... | ... | ... | 1 | 411 S.L. | " | Specimen in Muséum National, Paris. No. 55-26. |
| <u>Lepidion schmidti</u> Svetovidov, 1936 | | | | | | | | | | |
| 1966 | June 22 | Mouth of Bay of Biscay | 47°36'N | 8°07'W | 2,058 | ... | 1 ^x | 1,230 | Forster (1968) | <u>Sarsia</u> , longline. British Museum (N.H.) |
| 1967 | June 13 | " | 47°53'N | 8°40'W | 2,002 | ... | 1 ^x | 1,150 | " | " " |

(cont'd.)

Table 1 (cont'd.)

^aLength measurements by the author.

^bSeventeen specimens from these Knight Errant cruises are in the British Museum (N.H.)

^cNumber uncertain. Seven small, 90-135 mm L. eques, are catalogued in one group at the Copenhagen Museum from this Station (81) 1896 + Station 9 (555 m) 1895 above, and two larger, separately for Station 81. Lütken (1898) records two from Station 9 and these two larger fish are recorded separately at the Copenhagen Museum from Station 9. Several small specimens of L. eques from Station 9 may have been put together with other small specimens from Station 81.

^dAlthough Koefoed (1927) indicates that the largest L. eques captured by the Michael Sars in 1910 was 23 cm, he says in his detailed account that 15 of the largest specimens ranged from 25 to 31 cm. These were presumably from the collections of the Michael Sars in 1902.

^eThese sets of Collett's appear to be the same as the 1st and 3rd of Hjort and Koefoed above. The latter two authors agree in all details. Consequently for Fig. 15 (Templeman, 1970) I have accepted their account of numbers caught rather than Collett's.

^fMurray and Hjort say 31 specimens, Koefoed ca. 40.

^gSix specimens from this station (SR 188) are in the British Museum (N.H.) and two in the National Museum of Ireland. The measurements are of the six British Museum specimens.

^hPresumably these are L. eques because subsequent reports by these authors for the general North Atlantic area were for this species.

ⁱSeven at the British Museum (N.H.). Named L. guentheri by Blacker but actually L. eques. See text, Templeman (1970).

^jBottom otter trawl, 43 m footrope and ca. 30 m headline, with a small meshed codend liner. Speed ca. 3 knots.

^kNet badly damaged.

^lNamed Haloporphyrus guentheri by Postal and Du Buit, but evidently L. eques. See text, Templeman (1970). Four examined by the authors. The numbers caught are not stated.

^mNamed L. guentheri by Blacker, but presumably L. eques. See text, Templeman (1970). In the earlier set 18 were taken but 9 retained. Measurements are from the 9 retained. Temperatures for these sets from R. W. Blacker by letter January 1969.

ⁿTail broken but about the same size as the other specimen. Giglioli mentions only one specimen but there are two under the same number and information at the museum.

^oVinciguerra (1883) says that in the same summer (1879) and the following one, a few L. lepidion were caught at Nice and some were purchased by the Civic Museum of Genoa.

^pThis is the third specimen that to Vinciguerra's knowledge has been taken in the Gulf of Genoa.

^qFish named Haloporphyrus eques but evidently L. lepidion. Apparently not scarce since fishermen at Nice have a common name for it: "Mostelle à plumet".

^rRaimbault (1963) indicates depths of 115-175 m but Maurin, letter, 1968, 150-175 m.

^sRaimbault (1963) and Maurin, letter, 1968, say that 220 L. lepidion were caught in these sets. Only 179 are recorded here as information was not available on the remainder.

^tAdditional general information is found in Maurin (1968).

^uOne of these is a 605 mm specimen, the lectotype, presently at the British Museum and examined by Johnson (1862), Günther (1862, 1887) and recently by the author.

^vNorma Exped., 1870. Collected by W. Kent.

^wThis specimen was recorded as Lota lepidion by Richard (1934) and as Haloporphyrus lepidion var. eques by Guiart (1935). No description was provided beyond the statement that the weight was 3 kg. It was eaten. From its size and location this specimen was probably L. guentheri.

^xNamed L. guentheri by Forster but in this paper, Lepidion sp. or L. ?schmidtii.

Table 2. Meristic characteristics of North Atlantic (including Mediterranean) specimens of Lepidion.

| Item no. | Location of capture | Year of capture | Reference | Total length, mm | Standard length, mm | No. of 1st dorsal rays | No. of 2nd dorsal rays ^a | No. of anal rays ^b | No. of pectoral rays | No. of pelvic rays | No. of vertebrae ^c | No. of branchiostegal rays | No. of gill rakers, 1st arch ^d | No. of pyloric caeca | Source and identification of specimens examined by the author, 1966-68 |
|--|-----------------------|-----------------|----------------|----------------------|---------------------|------------------------|-------------------------------------|-------------------------------|----------------------|---------------------|-------------------------------|----------------------------|---|----------------------|--|
| <u>Lepidion eques</u> (Günther) syntypes | | | | | | | | | | | | | | | |
| 1 | Faroe Channel | 1880, 1882 | Günther, 1887 | 152-350 | ... | 4 | 56-62 ^e | 49-54 ^e | ... | 7 ^a | ... | 7(8) | ... | 10-11 | ... |
| 1a | " | " | Author | 139+ | 129 | 1+4 | 59 | 54 | 23 | 8 | ... | 7 | 5+13 | 10 | B.M.N.H. <u>Haloporphyrus eques</u> |
| 1b | " | " | " | 148+ | 138 | 1+4 | 60 | 54 | 24 | 8 | 60 | 7 | 6+15 | 12 | (types), Faroe Channel, Knight |
| 1c | " | " | " | 153+ | 138 | 1+4 | 57 | 50 | 23 | 8 | 60 | 7 | 6+15 | 11 | Errant, 1887, 12.9.58-67. |
| 1d | " | " | " | 150+ | 139 | 1+4 | 58 | 54 | 23 | 8 | 60 | 7 | 5+14 | 9 | " |
| 1e | " | " | " | 174+? | 157 | 1+4 | 57 | 52 | 22 | 8 | 59 | 7 | 5+15 | 10 | " |
| 1f | " | " | " | 172+ | 160 | 1+4 | 57 | 53 | 22 | 8 | 59 | 7 | 6+14 | 11 | " |
| 1g | " | " | " | 247+ | 230 | 1+4 | 56 | 51 | 25 | 8 | 59 | 7 | 6+15 | 10 | " |
| 1h | " | " | " | 257+ | 235 | 1+4 | 55 | 50 | 22 | 8 | 57 | 7 | 5+16 | 12 | " |
| 1i | " | " | " | 253+ | 236 | 1+4 | 59 | 54 | 23 | 8 | 60 | 7 | 6+15 | 10 | " |
| 1j | " | " | " | 269+ | 248 | 1+4 | 58 | 53 | 23 | 8 | 61 | 7 | 6+16 | 11 | " |
| 1k | " | " | " | 293+ | 271 | 1+4 | 57 | 52 | 23 | 8 | 62 | 7 | 5+13 | 10 | " |
| <u>Lepidion eques</u> (Günther) | | | | | | | | | | | | | | | |
| 2 | Bay of Biscay | 1895 | Koehler, 1896 | ... | ... | 4 | 54 ^g | 44 ^g | ca. 20 ^g | 4 or 5 ^g | ... | ... | ... | ... | ... |
| 3 | Faroe Slope | 1902 | Collett, 1905 | 155-290 ^h | ... | ... | ... | ... | ... | 8 | ... | 7 | 16 | 9-11 ^h | ... |
| 4a | W of Ireland | 1905 | Author | 289+ | 264 | 1+4 | 57 | 50 | 22 | 8 | 60 | 7 | 5+15 | 10 | B.M.N.H., <u>Haloporphyrus eques</u> , |
| 4b | " | " | " | 309 | 284 | 1+4 | 56 | 52 | 23 | 8 | 59 | 7 | 5+15 | f | Ireland SR 188, E.W.L. Holt, |
| 4c | " | " | " | 311+ | 288 | 1+4 | 58 | 53 | 24 | 8 | 59 | 7 | 6+14 | 13 | 1905, 4.8.16-21. |
| 4d | " | " | " | 313+ | 288 | 1+4 | 57 | 53 | 22 | 8 | 59 | 7 | 6+16 | 11 | " |
| 4e | " | " | " | 368 | 336 | 1+4 | 56 | 52 | 24 | 8 | 59 ⁱ | 7 | 6+14 | 8 | " |
| 5 | W of Scotland | 1910 | Koesfoed, 1927 | 72 | ... | 1+5 | 56 | ... | 21 | 8 | ... | 7 | ... | ... | ... |
| 6a | W of Ireland, Rockall | 1961 | Author | 143 | 129 | 1+4 | 57 | 53 | 22 | 8 | 61 | 7 | 5+16 | 10 | B.M.N.H. <u>Lepidion guentheri</u> , |
| 6b | " | " | " | 145+ | 135 | 1+4 | 58 | 53 | 23 | 8 | 61 | 7 | 5+15 | 11 | Ernest Holt Cru. 3/61 Sta. 42, |
| 6c | " | " | " | 166+ | 152 | 1+4 | 57 | 52 | 22 | 8 | 61 | 7 | 5+13 | 11 | Rockall, R.W. Elacker, 1965, 6.22.21-27. |

(cont'd.)

Table 2 (cont'd.)

| Item no. | Location of capture | Year of capture | Reference | Total length, mm | Standard length, mm | No. of 1st dorsal rays | No. of 2nd dorsal rays ^a | No. of anal rays ^b | No. of pectoral rays | No. of pelvic rays | No. of vertebrae ^c | No. of branchiostegal rays | No. of gill rakers, 1st arch ^d | No. of pyloric caeca | Source and identification of specimens examined by the author, 1966-68 |
|---|---------------------------|-----------------|-----------|------------------|---------------------|------------------------|-------------------------------------|-------------------------------|----------------------|--------------------|-------------------------------|----------------------------|---|----------------------|--|
| 6d | W of Ireland, Rockall | 1961 | Author | 228+ | 210 | 14 | 56 | 51 | 23 | 8 | 59 | 7 | 6+16 | 9 | B.M.N.H. <u>Lepidion guentheri</u> , Ernest Holt Cru. 3/61 Sta. 42, Rockall, R.W. Blacker, 1965, 6.22.21-27. |
| 6e | " | " | " | 250+ | 229 | 14 | 57 | 53 | 22 | 8 | 60 | 7 | 5+14 | 11 | " " " |
| 6f | " | " | " | 252 | 231 | 14 | 56 | 53 | 24 | 8 | 60 | 7 | 6+15 | 11 | " " " |
| 6g | " | " | " | 251+ | 234 | 14 | 56 | 52 | 22 | 8 | 59 | 7 | 6+14 | 11 | " " " |
| 7 | W of Iceland | 1962 | " | 226 | 205 | 14 | 58 | 52 | 24 | 8 | 61 | 7 | 5+14 | 12 | St. John's Station, <u>A.T. Cameron</u> . |
| <u>Lepidion eques</u> (Günther) from the Northwest Atlantic | | | | | | | | | | | | | | | |
| 8a | E of Funk I. Bank | 1953 | Author | 242 | 221 | 14 | 57 | 52 | 24 | 8 | 58 | 7 | 6+15 | 9 | St. John's Station; specimens from cruises of <u>A.T. Cameron</u> and <u>Investigator II</u> . |
| 8b | " | " | " | 282 | 252 | 14 | 58 | 53 | 23 | 8 | 62 | 7 | 6+14 | 9 | " " " |
| 8c | Mouth of Hawke Channel | 1958 | " | 283 | 260 | 14 | 59 | 53 | 24 | 8 | 61 | 7 | 6+15 | 11 | " " " |
| 8d | SE of C. Chidley | 1959 | " | 155 | 139 | 14 | 57 | f | 21 | 8 | 60 | 7 | 5+15 | 9 | " " " |
| 8e | E of Belle Isle | " | " | 220 | 198 | 14 | 60 | 53 | 22 | 8 | 60 | 7 | 5+15 | 10 | " " " |
| 8f | " | " | " | 265 | 246 | 14 | 58 | 54 | 22 | 8 | 61 | 7 | 6+14 | 9 | " " " |
| 8g | SE of Hamilton Inlet Bank | 1960 | " | 309 | 280 | 14 | 58 | 53 | 22 | 8 | 60 | 7 | 6+15 | 10 | " " " |
| 8h | Mouth of Hawke Channel | 1963 | " | 188 | 170 | 14 | 56 | 51 | 23 | 8 | 60 | 7 | 5+15 | 10 | " " " |
| 8i | E slope Funk I. Bank | " | " | 197 | 179 | 4 | 57 | 52 | 23 | 8 | 60 | 7 | 6+16 | 11 | " " " |
| 8j | " | " | " | 227 | 206 | 4 | 58 | 53 | 25 | 8 | 61 | 7 | 6+14 | 9 | " " " |
| 8k | NE Nfld. Shelf | " | " | 332 | 305 | 14 | 59 | 52 | 23 | 8 | 62 | 7 | 5+15 | 11 | " " " |
| 8l | SE Grand Bank | 1964 | " | 227 | 198 | 4 | 56 | 53 | 23 | 8 | 60 | 7 | 6+14 | 11 | " " " |
| 8m | Funk I. Bank | " | " | 317 | 287 | 14 | 60 | 52 | 23 | 8 | 60 | 7 | 6+15 | 12 | " " " |
| 8n | " | 1967 | " | 290 | 264 | 14 | 55 | 52 | 23 | 8 | 61 | 7 | 5+16 | 9 | " " " |
| 8o | " | " | " | 309 | 277 | 14 | 57 | 53 | 23 | 8 | 61 | 7 | 6+14 | 9 | " " " |

(cont'd.)

Table 2 (cont'd.)

| Item no. | Location of capture | Year of capture | Reference | Total length, mm | Standard length, mm | No. of 1st dorsal rays | No. of 2nd dorsal rays ^a | No. of anal rays ^b | No. of pectoral rays | No. of pelvic rays | No. of vertebrae ^c | No. of branchiostegal rays | No. of gill rakers, 1st arch ^d | No. of pyloric caeca | Source and identification of specimens examined by the author, 1966-68 |
|--------------------------------------|--|-----------------|-------------------|--|---------------------|------------------------|-------------------------------------|-------------------------------|----------------------|--------------------|-------------------------------|----------------------------|---|----------------------|--|
| <u>Lepidion lepidion</u> (Risso) | | | | | | | | | | | | | | | |
| 9 | Nice | ... | Günther, 1887 | ... | ... | 4(5) | 52 | 46-48 | ... | 6 ^e | ... | ... | ... | 10 | The counts of 5, 6, and 46 are probably from Vinciguerra, 1883. |
| 9a | " j | ... | Author | 249 | 230 | 1+4 | 54 | 48 | 22 | 8 | 56 | 7 | 6+14 | 10 | B.M.N.H., <u>Lota lepidion</u> , 86.8. 4.6. |
| 9b | " | 1879 | " | 251+ | 230 | 1+4 | 55 | 50 | 24 | 8 | 57 | 7 | 6+15 | 9 | Museo Civico Genova, MSNG 7703. |
| 9c | Gulf of Genoa | 1886 | " | 261+ | 235 | 1+4 | 55 | 49 | 22 | 8 | 56 | 7 | 6+18 | 10 | " " " " 31898. |
| 9d | Nice | ... | " | 281 | 256 | 1+4 | 57 | 50 | 22 | 8 | 58 | 7 | 6+15 | 10 | Muséum National, Paris 4293. |
| 9e | " | ... | " | 247 | 228 | 1+4 | 58 | 51 | 22 | 8 | 58 | 7 | 6+14 | ... | " " " " A2225. |
| 9f | W Mediterranean | 1886 | " | 264+ | 247 | 1+4 | 59 | 51 | 23 | 8 | 58 | 7 | 6+16 | f | " " " " 86-275. |
| 9g | Messina | 1896 | " | f | 254 | 1+4 | 55 | 49 | 22 | 8 | 58 | 7 | 6+14 | ... | " " " " 96-30. |
| 9h | Nice | 1898 | " | 240+ | 221 | 1+4 | 55 | 51 | 23 | 8 | 58 | 7 | 6+15 | 10 | " " " " 98-913. |
| 9i | Catalonia, Spain | ... | " | ... | 116 | 1+4 | 54 | 49 | 23 | 8 | ... | ... | 6+16 | 8 | " " " " 57-106. |
| 9j | Mediterranean | 1894 | " | f | 163 | 1+4 | 54 | 50 | 21 | 8 | 57 | 7 | 6+13 | 9 | Musée Oceanogr., Monaco, Sta. 392. |
| 9k | " | " | " | 258+ | 237 | 1+4 | 54 | 49 | 23 | 8 | 56 | 7 | 6+15 | 9 | " " " " " " |
| 9l | " | 1896 | " | 284+ | 263 | 1+4 | 54 | 49 | 22 | 8 | 57 | 7 | 5+15 | f | " " " " 632. |
| 9m | " | 1902 | " | 251+ | 229 | 1+4 | 55 | 48 | 22 | 7 | 52 ^k | 7 | 6+16 | 9 | " " " " 1252. |
| 9n | Gulf of Genoa | 1879 | Vinciguerra, 1883 | 260 | ... | 1+4 | 52 | 46 | ... | 6 | ... | ... | ... | ... | ... |
| 9o | Nice | 1810 or earlier | Risso, 1810 | ca. 300 | ... | 4 | 54 | 48 | 20 | 6 | ... | 7 | ... | ... | ... |
| <u>Lepidion guentheri</u> (Giglioli) | | | | | | | | | | | | | | | |
| 10 | Madeira | 1862 | Johnson, 1862 | ca. 635 ^l | ... | 4 | 55 | 49 | 21 | 7 ^e | ... | 7 ^m | ... | 16 | Günther's lectotype, B.M.N.H. |
| 10 | " | " | Günther, 1862 | ca. 610 ^l | ... | 4 | 54 | 49 | ... | 6 ^e | ... | 7 | ... | 15 | <u>Haloporphyrus lepidion</u> , Madeira, |
| 10 | " | " | Author | 605 ^l | 554 | 1+5 | 55 | 50 | 21 | 7 | 58 | 7 | 5+17 | 15 | presented by J. Y. Johnson, Esq., 4,22.9. |
| 10a | " | " | Johnson, 1862 | ca. 546 | ... | 4 | 52 | 48 | 20 | 7 | ... | 7 ^m | ... | ... | ... |
| 10b | " | " | " | ca. 889 | ... | 4 | 56 | 52 | 21 | 7 | ... | 7 ^m | ... | ... | ... |
| 10c | Madeira and W coast Spain and Portugal | ... | Günther, 1887 | ca. 508 ⁿ ca. 610 ^l | ... | 4 ^m | 52-56 ^m | 49-52 ^m | 21 ^m | 6 ^{a,m} | ... | 7 ^m | ... | 15 | ... |

(cont'd.)

Table 2 (cont'd.)

| Item no. | Location of capture | Year of capture | Reference | Total length, <u>mm</u> | Standard length, <u>mm</u> | No. of 1st dorsal rays | No. of 2nd dorsal rays ^a | No. of anal rays ^b | No. of pectoral rays | No. of pelvic rays | No. of vertebrae ^c | No. of branchiostegal rays | No. of gill rakers, 1st arch ^d | No. of pyloric caeca | Source and identification of specimens examined by the author, 1966-68 |
|-------------------------------------|----------------------------|-----------------|---------------------------|-------------------------|----------------------------------|------------------------|-------------------------------------|-------------------------------|----------------------|--------------------|-------------------------------|----------------------------|---|----------------------|--|
| 10d | W coast Spain and Portugal | 1870 | Author | 519 ⁿ | 474 | 1+5 | 58 | 51 | 21 | 7 | 57 | 7 | 5+17 | 15 | B.M.N.H. <u>Haloporphyrus lepidion</u> , 72.2.6.10. |
| 10e | The Azores | 1895 | " | ... | 121 | 5 | 56 | 53 | 21 | 8 | 57 | 7 | 5+16 | ca. 17 | Musée Océanogr., Monaco (Roule, 1919). |
| 10f | Madeira | 1939-52 | Maul, 1952 | ... | 415- ₇₃₄ ^o | 4(5) ^{o,p} | 51-56 ^o | 46-50 ^o | 21 ^o | 6 ^o | ... | 7 ^o | 9-10 ^{o,q} and 6-8 | 17 ^r | ... |
| 10g | " | 1952 | Author | 452 ^s | 413 | 1+5 | 56 | 49 | 22 | 7 | 58 | 7 | 5+16 | 15 | Museu Mun. Funchal, No. 3516. |
| 10h | " | " | " | 531 ^s | 483 | 1+4 | 54 | 52 | 19 ^t | 7 | 57 | 7 | 5+16 | 17 | " " " " 3520. |
| 10i | " | 1953 | " | 505 | 462 | 1+5 | 56 | 50 | 21 | 7 | 58 | 7 | 6+16 | 16 | " " " " 3604. |
| 10j | " | 1965 | " | 478 | 437 | 1+4 | 56 | 52 | 22 | 7 | 58 | 7 | 5+16 | 15 | " " " " 21507. |
| 10k | " | 1966 | " | 584 | 536 | 1+5 | 57 | 50 | 20 | 7 | 59 | 7 | 4+18 | 15 | " " " " 22049. |
| <u>Lepidion sp. (L. ?schmidti)</u> | | | | | | | | | | | | | | | |
| 11a | Mouth Bay of Biscay | 1966 | Author | 1,230 | 1,127 | 1+5 | 48 | 40 | 24 | 7 | 54 | 7 | +12 | ... | B.M.N.H. <u>L. guentheri</u> , (Forster, 1968). |
| 11b | " " | 1967 | " | 1,150 | 1,045 | 1+5 | 47 | 41 ^u | 23 | 7 | 56 | 7 | 6+14 | 16 | " " |
| <u>Lepidion schmidti</u> Svetovidov | | | | | | | | | | | | | | | |
| 12 | Sagami Bay, Japan | 1901 | Svetovidov, 1936 | 497 | 450 | 5 | 48 | 41 | 22 ⁿ | 7 ^v | 55 ^v | 7 | 15-16 ^{v,w} | ... | ... |
| 12 | " " | " | D. M. Cohen, letter, 1968 | ... | ... | 1+5 | 47 | 42 | 22 | 7 | 55 ^x | ... | 4 ^y +9 ^z | ... | ... |

^{a,b} In author's counts, last 2 rays separate and counted separately.

^c In author's counts, including urostylar half-vertebra + hypural as 1 vertebra.

^d In author's counts, including rudimentary rakers.

^e Günther's range for 2nd dorsal is 56-62, but I have examined all 11 of his syntypes with the resulting range of 55-60. For the anal, Günther is 49-54 against my 50-54. Judging from Günther (1862, 1887) and Maul (1952) these authors counted the 2 outer pelvic rays as 1. Hence these counts should be increased by 1 to agree with my counts.

(cont'd)

Table 2 (cont'd).

- ^fUnsuitable for this character.
- ^gKoehler's pelvic and anal numbers are obviously low and therefore it is likely that his dorsal and pectoral counts are low also. Koehler says 1st ray of pelvic is double. Thus pelvic rays may be 5 or 6. (The 2 large outer rays of which the 2nd is the longer were counted as 2 in the author's pelvic ray counts.)
- ^hFive specimens.
- ⁱVertebra No. 57 is somewhat abnormal but the centrum is of the correct length for 1 vertebra and was counted as one.
- ^jBritish Museum (N.H.) specimen 1886.8.4.6 labelled Lota lepidion from Nice. This is apparently the only Lepidion lepidion in the museum and was presumably the specimen, 10 inches long, examined by Günther (1887). Judging by the ranges given for the 1st dorsal and the anal, however, Günther presumably also included information from the literature, especially from Vinciguerra (1883).
- ^kFrom radiograph at least 1 vertebra + hypural missing and judging from shape of caudal fin and relative lack of procurrent rays of caudal about 4-6 posterior vertebrae are missing. Presumably this is the result of an injury at an early stage with regeneration of caudal (Templeman, 1970, fig. 9C).
- ^lBritish Museum (N.H.) specimen labelled Haloporphyrus lepidion from Madeira, presented by J. Y. Johnson. 4.22.9. Lectotype of L. guentheri. (See introduction to this paper.) Length given is 25 inches by Johnson (1862) and two feet by Günther (1862).
- ^mGeneral statement, not applied to a particular fish.
- ⁿBritish Museum (N.H.) specimen labelled Haloporphyrus lepidion 72.2.6.10 from west coast of Spain and Portugal, Norma expedition 1870. Collected by W. Kent. This is evidently the smaller specimen of L. guentheri, 20 inches long, described by Günther (1887).
- ^o5 specimens examined.
- ^p1 of 5 had 5 rays.
- ^q9-10 long movable rakers and 6-8 small sessile ones on lower part of 1st gill arch.
- ^rIn 2 specimens which were not those examined by me.
- ^sThese 2 specimens were also included in Maul (1952) above.
- ^tThe right pectoral had 20 fin rays.
- ^uThere is additionally a small piece of bone or broken ray anterior to the 1st anal ray. This does not have the base of a typical ray and is not represented by a pterygiophore and was not counted as a ray.
- ^vSupplied by A. N. Svetovidov, letter, 1968.
- ^wNo., including vestiges, on whole of 1st arch.
- ^xIncluding urostylar half-vertebra + hypural as one vertebra.
- ^yIncludes only developed rakers.

Table 3. Morphometric characteristics of *Lepidion eques* from the Northwest Atlantic. (Measurements by the author. All percentages are of the standard length (S.L.) unless they are of the head length (H.L.) or otherwise noted.)

| Item no. | Body part | Specimen numbers refer to those of Table 2 | | | | | | | | | | | |
|----------|--|--|------|------|------|------|-------|------|------|------|------|------|------|
| | | 8d | 8h | 8e | 8a | 8f | 8b | 8c | 8n | 8o | 8g | 8m | 8k |
| 1 | Total length (greatest), mm | 155 | 188 | 220 | 242 | 265 | 282 | 283 | 290 | 309 | 309 | 317 | 332 |
| 2 | Standard length, mm ^a | 139 | 170 | 198 | 221 | 246 | 252 | 260 | 264 | 277 | 280 | 287 | 305 |
| 3 | Head: length, mm ^b | c | 38.5 | 49.4 | 51.0 | 53.6 | 58.3 | 58.8 | 61.2 | 63.0 | 61.2 | 66.7 | 70.2 |
| 4 | Head: length, % | c | 22.6 | 24.9 | 23.1 | 21.8 | 23.1 | 22.6 | 23.2 | 22.7 | 21.9 | 23.2 | 23.0 |
| 5 | Orbit: horizontal diam, % S.L. | 7.9 | 8.1 | 8.5 | 7.8 | 7.3 | 7.9 | 7.8 | 7.7 | 7.7 | 7.8 | 7.7 | 7.5 |
| 6 | " " " % H.L. | c | 35.6 | 34.0 | 33.7 | 33.6 | 34.0 | 34.4 | 33.3 | 34.0 | 35.6 | 33.0 | 32.8 |
| 7 | " " " % vertical diam | ... | 122 | 115 | 126 | 120 | 119 | 127 | ... | ... | 118 | 120 | 109 |
| 8 | Interorbital width, % S.L. ^d | 4.7 | 4.8 | 5.1 | 4.8 | 4.5 | 5.3 | 5.2 | 5.4 | 5.7 | 5.2 | 4.9 | 5.4 |
| 9 | " " " % H.L. ^d | c | 21.3 | 20.4 | 20.8 | 20.7 | 22.8 | 23.1 | 23.4 | 24.9 | 23.9 | 21.0 | 23.4 |
| 10 | " " " % horizontal diam orbit | 59 | 60 | 60 | 62 | 62 | 67 | 67 | 70 | 73 | 67 | 64 | 71 |
| 11 | Snout: length, % S.L. | 6.8 | 6.3 | 7.6 | 6.8 | 6.1 | 7.2 | 6.9 | 7.4 | 7.4 | 6.8 | 7.4 | 7.2 |
| 12 | " " " % H.L. | c | 27.8 | 30.4 | 29.4 | 27.8 | 31.2 | 30.6 | 31.9 | 32.4 | 31.0 | 31.8 | 31.3 |
| 13 | " " " % horizontal diam orbit | 86 | 78 | 89 | 87 | 83 | 92 | 89 | 96 | 95 | 87 | 96 | 95 |
| 14 | Postorbital length, % S.L. | ... | 9.3 | 9.8 | 8.4 | 8.6 | 9.2 | 8.7 | 9.1 | 8.8 | 8.5 | 9.1 | 9.1 |
| 15 | " " " % H.L. | ... | 41.2 | 39.2 | 36.5 | 39.6 | 39.7 | 38.5 | 39.2 | 38.7 | 38.9 | 39.0 | 39.5 |
| 16 | " " " % horizontal diam orbit | ... | 116 | 115 | 108 | 118 | 117 | 112 | 120 | 114 | 109 | 118 | 120 |
| 17 | Barbel length, % S.L. | 3.7 | 4.5 | 3.7 | 3.4 | 4.1 | 3.6 | 3.8 | 4.5 | c | 3.5 | 3.8 | 3.4 |
| 18 | " " " % H.L. | c | 19.7 | 14.8 | 14.7 | 18.7 | 15.4 | 17.0 | 19.3 | c | 16.0 | 16.5 | 15.0 |
| 19 | Maxillary extension backward relative to eye ^b | 1/3 | 1/3 | 4/9 | 2/5 | 1/2 | 1/2 | 2/3 | 1/2 | 2/3 | 1/2 | 1/4 | 1/3 |
| 20 | 1st dorsal: 1st long ray, length, % | 30.2 | 37.1 | 39.9 | 36.7 | 35.6 | 34.1+ | 26.5 | 34.1 | 41.5 | 34.0 | 37.6 | 31.1 |
| 21 | Pectoral: length, % | 14.7 | 15.3 | 17.7 | 16.7 | 16.3 | 16.7 | 15.8 | 17.4 | 16.7 | 16.1 | 16.7 | 15.7 |
| 22 | Pelvic: length to tip longest ray, % | 14.0 | 13.5 | 13.8 | 13.2 | 12.6 | 13.1 | 12.3 | 13.1 | 14.0 | 12.9 | 13.6 | 12.1 |
| 23 | Body: greatest height, % | 15.0 | 17.1 | 20.3 | 22.4 | 22.0 | 24.7 | 22.1 | 23.4 | 22.6 | 23.3 | 24.3 | 22.7 |
| 24 | Caudal peduncle: least height, % | 2.2 | 2.3 | 2.5 | 2.0 | 2.0 | 2.0 | 2.1 | 2.3 | 2.0 | 2.3 | 2.3 | 2.2 |
| 25 | Snout - ant. base 1st ray 1st dorsal, % | 22.2 | 22.5 | 25.5 | 23.3 | 23.0 | 24.8 | 23.6 | 23.9 | 24.1 | 23.4 | 24.6 | 23.7 |
| 26 | Snout - mid-amus, % | 38.1 | 36.8 | 39.9 | 39.5 | 37.9 | 43.1 | 39.7 | 41.1 | 41.4 | 41.1 | 42.6 | 42.4 |
| 27 | Snout - ant. insertion anal, % | ... | ... | ... | ... | ... | ... | ... | 43.3 | 43.4 | ... | ... | ... |
| 28 | Outer base pelvic - ant. insertion anal, % | 20.7 | 19.4 | 21.4 | 22.1 | 21.8 | 25.2 | 21.9 | 24.0 | 24.6 | 24.6 | 23.9 | 20.5 |
| 29 | Post. insertion 2nd dorsal - beginning upper procurrent rays caudal, % | 4.3 | 4.3 | c | 4.5 | 4.4 | 4.0 | 4.3 | ... | ... | 4.8 | 4.5 | 4.0 |
| 30 | Least height caudal peduncle as % distance between dorsal and caudal fins ⁱ | 51.7 | 53.4 | c | 44.0 | 40.7 | 51.0 | 49.5 | ... | ... | 47.8 | 51.2 | 55.3 |
| 31 | Pelvic length as % pectoral length | 95 | 89 | 78 | 79 | 78 | 79 | 78 | 75 | 84 | 80 | 81 | 77 |
| 32 | Post. base last anal ray ant. to post. base last ray 2nd dorsal, % ^g | ... | ... | ... | 3.0 | 2.0 | 2.1 | 2.7 | ... | ... | ... | 2.3 | 2.3 |

(cont'd.)

Table 3 (cont'd.)

| Item no. | Body part | Specimen numbers refer to those of Table 2 | | | | | | | | | | | |
|----------|--|--|-----|--------|--------|--------|-----|------|------|------|------|-----|--------|
| | | 8d | 8h | 8e | 8a | 8f | 8b | 8c | 8n | 8o | 8g | 8m | 8k |
| 33 | Post. base last ray 2nd dorsal - base mid-caudal, % | ... | ... | ... | 8.6 | 9.2 | 9.0 | 9.1 | ... | ... | 8.0 | 8.1 | 8.2 |
| 34 | Length longest pyloric caecum, % | ... | ... | ... | ... | ... | ... | 12.1 | ... | ... | 18.1 | ... | ... |
| 35 | Length longest gill raker 1st branchial arch, % | ... | ... | ... | ... | ... | ... | 2.3 | ... | ... | 2.2 | ... | ... |
| 36 | Length longest gill filament 1st branchial arch, % | ... | ... | ... | ... | ... | ... | 1.9 | ... | ... | 2.2 | ... | ... |
| 37 | Length longest gill raker 1st arch as % longest gill filament | ... | ... | ... | ... | ... | ... | 121 | ... | ... | 103 | ... | ... |
| 38 | Mid-anus below what ray 2nd dorsal | 10 | 10 | 12 | 11 | 11 | 12 | 11 | ... | ... | 12 | 12 | 9 |
| 40 | Ant. end steepest slope lat. line post. to ant. insertion anal, % ^g | ... | ... | ... | ... | ... | ... | ... | -7.6 | -5.1 | ... | ... | ... |
| 41 | Post. end steepest slope lat. line post. ant. insertion anal, % ^g | ... | ... | ... | ... | ... | ... | ... | 2.7 | 4.3 | ... | ... | ... |
| 42 | Point where lat. line first is equidistant from dorsal and anal fin-ray bases post. ant. insertion anal, % | ... | ... | ... | ... | ... | ... | ... | 6.8 | 7.6 | ... | ... | ... |
| 43 | Sex and maturity | ... | ♂ | ♀ imm. | ♀ imm. | ♀ imm. | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♀ imm. |

^aSnout - end hypural.

^bSnout - end bony operculum (to end of opercular spine if this is the greatest measurement). The postorbital is measured similarly posteriorly.

^cUnsuitable for this measurement.

^dLeast fleshy width.

^eWith mouth closed.

^fCaudal = beginning upper procurrent rays caudal fin.

^gShortest distance between parallel transverse lines.

General. All ex 10% formalin and in fair to good condition.

Table 4. Morphometric characteristics of *Lepidion aeques* from the Northeast Atlantic. (Measurements by the author. All percentages are of the standard length (S.L.) unless they are of the head length (H.L.) or otherwise noted.)

| Item no. | Body part | Specimen numbers refer to those of Table 2 | | | | | | | | | | | | | | |
|----------|---|--|------|------|------|----------|------|------|------|------|------|------|------|------|------|------|
| | | 6a | 1a | 1c | 6c | 1f | 7 | 1g | 6f | 1h | 1i | 1j | 1k | 4b | 4c | 4e |
| 1 | Total length (greatest), mm | 143 | 139+ | 153+ | 166+ | 172+ | 226 | 247+ | 252 | 257+ | 253+ | 269+ | 293+ | 309 | 311+ | 368 |
| 2 | Standard length, mm ^a | 129 | 129 | 138 | 152 | 160 | 205 | 230 | 231 | 235 | 236 | 248 | 271 | 284 | 288 | 336 |
| 3 | Head: length, mm ^b | 28.7 | 29.4 | 31.7 | 34.2 | 35.5 | 50.7 | 51.6 | 53.5 | 55.2 | 54.2 | 58.1 | 60.5 | 63.4 | 66.5 | 77.8 |
| 4 | Head: length, % | 22.2 | 22.8 | 23.0 | 22.6 | 22.2 | 24.7 | 22.4 | 23.2 | 23.5 | 23.0 | 23.4 | 22.3 | 22.3 | 23.1 | 23.2 |
| 5 | Orbit: horizontal diam, % S.L. | 8.6 | 8.1 | 8.5 | 8.5 | 8.3 | 8.8 | 8.3 | 8.9 | 8.3 | 7.8 | 8.3 | 7.6 | 7.9 | 8.1 | 7.6 |
| 6 | " " " % H.L. | 38.5 | 35.4 | 36.9 | 37.6 | 37.5 | 35.5 | 37.1 | 38.5 | 35.5 | 33.8 | 35.5 | 33.9 | 35.4 | 35.1 | 32.6 |
| 7 | " " " % vertical diam | 147 | ... | 117 | 125 | ... | 128 | 120 | 132 | 127 | ... | ... | 128 | 128 | 128 | 119 |
| 8 | Interorbital width, % S.L. ^d | 4.8 | 5.1 | 5.7 | 4.7 | 4.8 | 4.9 | 4.5 | 5.1 | 4.7 | 4.2 | 5.4 | 5.1 | 4.6 | 4.3 | 5.1 |
| 9 | " " " % H.L. ^d | 21.4 | 22.4 | 24.8 | 20.8 | 21.4 | 19.7 | 19.9 | 22.1 | 20.1 | 18.5 | 23.1 | 22.8 | 20.7 | 18.8 | 22.1 |
| 10 | " " " % horizontal diam orbit | 56 | 63 | 67 | 55 | 57 | 55 | 54 | 57 | 57 | 55 | 65 | 67 | 58 | 54 | 68 |
| 11 | Snout: length, % S.L. | 6.2 | 6.8 | 6.6 | 6.0 | 5.7 | 7.2 | 7.0 | 6.5 | 6.9 | 7.0 | 7.4 | 6.7 | 7.1 | 6.7 | 7.5 |
| 12 | " " " % H.L. | 27.7 | 29.9 | 28.7 | 26.6 | 25.6 | 29.0 | 31.0 | 28.0 | 29.2 | 30.6 | 31.7 | 30.2 | 31.9 | 28.9 | 32.5 |
| 13 | " " " % horizontal diam orbit | 72 | 85 | 78 | 71 | 68 | 82 | 84 | 73 | 82 | 91 | 89 | 89 | 90 | 82 | 100 |
| 14 | Postorbital length, % S.L. | 8.2 | 9.1 | 9.1 | 8.4 | 8.8 | ... | 8.1 | 8.4 | 9.4 | 9.0 | 9.2 | 9.0 | 8.7 | 9.4 | 9.5 |
| 15 | " " " % H.L. | 36.8 | 39.8 | 39.7 | 37.1 | 39.4 | ... | 36.2 | 36.3 | 39.9 | 39.1 | 39.2 | 40.5 | 38.9 | 40.8 | 41.2 |
| 16 | " " " % horizontal diam orbit | 96 | 113 | 108 | 99 | 105 | ... | 98 | 94 | 112 | 116 | 111 | 120 | 110 | 116 | 126 |
| 17 | Barbel length, % S.L. | 3.5 | 4.3 | 4.2 | 4.0 | c | 3.9 | 3.6 | 3.5 | 4.5 | 4.3 | 4.3 | 3.7 | 3.8 | 3.4 | 3.8 |
| 18 | " " " % H.L. | 15.7 | 19.0 | 18.5 | 17.7 | c | 15.8 | 15.9 | 15.3 | 19.0 | 18.8 | 18.2 | 16.5 | 16.9 | 14.6 | 16.3 |
| 19 | Maxillary extension backward relative to eye ^e | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 2/5 | 1/2 | 1/2 | 2/5 | 1/3 | 2/5 | 1/2 | 1/2 | 3/5 | 1/2 |
| 20 | 1st dorsal: 1st long ray, length, % | 34.9 | c | 50.9 | 39.6 | 52.5 | 38.0 | 49.1 | 42.4 | 57.4 | 50.8 | c | 51.7 | 50.4 | 39.7 | 47.6 |
| 21 | Pectoral: length, % | 16.9 | c | 15.1 | 16.0 | ca. 16.1 | 17.1 | 17.6 | 17.5 | 17.1 | 16.1 | 15.4 | 16.5 | 15.8 | 17.5 | 18.3 |
| 22 | Pelvic: length to tip longest ray, % | 15.3 | 15.2 | 14.1 | 14.5 | ca. 13.5 | 13.7 | 14.5 | 14.5 | 15.0 | 13.1 | 14.1 | 13.5 | c | 12.6 | 11.9 |
| 23 | Body: greatest height, % | 15.3 | 17.8 | 19.0 | 15.5 | ca. 18.9 | 23.2 | 19.2 | 21.5 | 20.0 | 21.2 | 20.5 | 20.7 | 23.8 | 23.5 | c |
| 24 | Caudal peduncle: least height, % | 2.0 | 1.9 | 1.7 | 1.8 | 1.9 | 2.1 | 1.7 | 2.0 | 2.0 | 1.8 | 1.8 | 2.0 | 2.0 | 2.1 | 2.0 |
| 25 | Snout - ant. base 1st ray 1st dorsal, % | 23.0 | 24.5 | 25.6 | 23.2 | 24.3 | 25.1 | 24.8 | 25.2 | 24.0 | 23.9 | 25.1 | 23.6 | 24.5 | 24.5 | 25.2 |
| 26 | Snout - mid-amus, % | 38.8 | 38.9 | 40.5 | 38.9 | 38.9 | 41.6 | 40.2 | 38.9 | 41.2 | 41.5 | 42.2 | 41.0 | 40.4 | 43.4 | 41.4 |
| 27 | " ant. insertion anal, % | ... | 39.6 | ... | ... | 40.4 | ... | ... | ... | 42.5 | 43.9 | 43.9 | ... | ... | ... | ... |
| 28 | Outer base pelvic - ant. insertion anal, % | 21.8 | 19.8 | 22.7 | 20.3 | 21.8 | 21.1 | 22.8 | 21.7 | 22.4 | 21.5 | 22.4 | 22.5 | 23.3 | 26.1 | 22.4 |
| 29 | Post. insertion 2nd dorsal - beginning upper procurrent ray caudal, % | 4.0 | ... | 4.3 | 5.3 | ... | 5.8 | 4.0 | 5.0 | 5.2 | ... | ... | 5.4 | 5.1 | 4.3 | 4.7 |

(cont'd.)

Table 4 (cont'd.)

| Item no. | Body part | Specimen numbers refer to those of Table 2 | | | | | | | | | | | | | | |
|----------|--|--|------|-------|-------|--------|--------|-------|--------|-------|------|------|-------|-------|--------|--------|
| | | 6a | 1a | 1c | 6c | 1f | 7 | 1g | 6f | 1h | 1i | 1j | 1k | 4b | 4c | 4e |
| 30 | Least height caudal peduncle as % distance between dorsal and caudal fins ^f | 49.4 | ... | 39.8 | 33.8 | ... | 37.0 | 42.5 | 40.0 | 38.9 | ... | ... | 36.9 | 38.9 | 48.8 | 42.4 |
| 31 | Pelvic length as % pectoral length | c | c | 94 | 91 | ca. 84 | 80 | 83 | 83 | 88 | 82 | 91 | 82 | c | 72 | 65 |
| 32 | Post. base last anal ray ant. to post. base last ray 2nd dorsal, % ^g | 3.0 | ... | 2.6 | 2.5 | ... | ... | 2.4 | 2.9 | 2.6 | ... | ... | 2.1 | 2.3 | 2.1 | 2.1 |
| 33 | Post. base last ray 2nd dorsal - base mid-caudal, % | 9.3 | ... | 8.3 | 9.1 | ... | ... | 7.8 | 9.2 | 8.4 | ... | ... | 9.5 | 7.7 | 7.8 | 8.2 |
| 34 | Length longest pyloric caecum, % | 10.9 | 10.1 | 12.2 | 10.9 | 11.9 | ... | 12.4 | 11.4 | 9.6 | 7.2 | 10.9 | 10.0 | c | 12.2 | 11.1 |
| 35 | Length longest gill raker 1st branchial arch, % | 2.9 | 2.9 | ... | 2.6 | 2.6 | ... | ... | 2.3 | 2.1 | 2.3 | 2.1 | 1.7 | 1.7 | ... | ... |
| 36 | Length longest gill filament 1st branchial arch, % | 2.0 | 2.0 | ... | 1.7 | 1.7 | ... | ... | 2.0 | 1.9 | 2.0 | 1.9 | 2.0 | 2.0 | ... | ... |
| 37 | Length longest gill raker 1st arch as % longest gill filament | 150 | 142 | ... | 152 | 152 | ... | ... | 113 | 106 | 113 | 106 | 85 | 85 | ... | ... |
| 38 | Mid-anus below what ray 2nd dorsal | 10-11 | ... | 10-11 | 9-10 | ... | ... | 10 | 9-10 | 10-11 | ... | ... | 10-11 | 10-11 | 10-11 | 10 |
| 39 | Origin anal below what ray 2nd dorsal | 11-12 | ... | 11-12 | 10-11 | ... | ... | 11-12 | 10-11 | 12 | ... | ... | 12-13 | 12 | 12 | 11-12 |
| 40 | Ant. end steepest slope lat. line post. ant. insertion anal, % ^g | ... | 4.5 | ... | ... | -1.3 | ... | ... | ... | ... | -3.0 | -3.2 | -3.3 | ... | ... | ... |
| 41 | Post. end steepest slope lat. line post. ant. insertion anal, % ^g | ... | 5.4 | ... | ... | 2.5 | ... | ... | ... | ... | 5.5 | 4.4 | 5.2 | ... | ... | ... |
| 42 | Point where lat. line first is equidistant from dorsal and anal fin-ray bases post. ant. insertion anal, % | ... | 9.5 | ... | ... | 7.2 | ... | ... | ... | ... | 9.3 | 8.5 | 8.1 | ... | ... | ... |
| 43 | Sex and maturity | ♀ imm. | ♂ | ♂ | ♂ | ♂ | ♀ imm. | ♂ | ♀ mat. | ♂ | ♂ | ♂ | ♂ | ♂ | ♀ mat. | ♂ mat. |

^{a-g} As in Table 3.

General. All ex alcohol except No. 7 which was ex 10% formalin. All in fair to good condition.

Table 5. Morphometric characteristics of *Lepidion lepidion* from the Mediterranean. (Measurements by the author. All percentages are of the standard length (S.L.) unless they are of the head length (H.L.) or otherwise noted.)

| Item no. | Body part | Specimen numbers refer to those of Table 2 | | | | | | | | | | | | MSNG No. 7703 caudal fin absent | |
|----------|--|--|-------|----------|-------|-------------------|------|-------|-------|------|-------------------|-------|----------|---------------------------------|------|
| | | 9i | 9j | 9h | 9e | 9m ^h | 9a | 9b | 9c | 9k | 9f | 9g | 9d | | 9l |
| 1 | Total length (greatest), mm | c | c | 240+ | 247 | 251+ | 249 | 251+ | 261+? | 258+ | 264+ | c | 281 | 284+ | c |
| 2 | Standard length, mm | 116 | 163 | 221 | 228 | 229 ^h | 230 | 230 | 235 | 237 | 247 | 254 | 256 | 263 | c |
| 3 | Head: length, mm ^d | 27.3 | 43.2 | 55.1 | 54.8 | 61.6 ^h | 57.8 | 57.4 | 59.7 | 59.7 | 62.1 ⁱ | 59.1 | 64.5 | 65.2 | 55.8 |
| 4 | Head: length, % | 23.5 | 26.5 | 24.9 | 24.0 | 26.9 | 25.1 | 25.0 | 25.4 | 25.2 | 25.1 ⁱ | 23.3 | 25.2 | 24.8 | c |
| 5 | Orbit: horizontal diam, % S.L. | 6.9 | 7.9 | 7.8 | 6.9 | 7.8 | 7.5 | 7.4 | 7.7 | 7.4 | 7.3 ⁱ | 6.5 | 7.4 | 7.1 | c |
| 6 | " " " % H.L. | 29.5 | 29.9 | 31.2 | 28.7 | 28.9 | 29.4 | 29.7 | 30.2 | 29.3 | 29.1 | 27.6 | 29.5 | 28.8 | 32.1 |
| 7 | " " " as % vertical diam | ... | 121 | 131 | 120 | 113 | 123 | 133 | 120 | 104 | 124 | 114 | 121 | 109 | ... |
| 8 | Interorbital width, % S.L. ^d | 5.3 | 5.2 | 5.7 | 5.7 | 6.3 | 5.5 | 5.4 | 5.3 | 5.4 | 5.9 | 5.3 | 5.9 | 5.8 | c |
| 9 | " " " % H.L. ^d | 22.3 | 19.4 | 22.8 | 23.6 | 23.5 | 21.8 | 21.5 | 20.8 | 21.4 | 23.3 | 22.7 | 23.4 | 23.5 | 23.1 |
| 10 | " " " horizontal diam orbit | 76 | 65 | 73 | 82 | 81 | 74 | 72 | 69 | 73 | 80 | 80 | 79 | 81 | 72 |
| 11 | Snout: length, % S.L. | 7.2 | 7.1 | 7.4 | 7.2 | 8.2 | 6.8 | 7.4 | 7.6 | 7.5 | 7.8 ⁱ | 7.0 | 7.9 | 7.5 | c |
| 12 | " " " % H.L. | 30.8 | 26.9 | 29.5 | 29.9 | 30.5 | 27.2 | 29.6 | 29.8 | 29.6 | 30.9 ⁱ | 30.0 | 31.3 | 30.1 | 29.9 |
| 13 | " " " horizontal diam orbit | 104 | 90 | 95 | 104 | 106 | 93 | 100 | 99 | 101 | 106 | 109 | 106 | 104 | 93 |
| 14 | Postorbital length, % S.L. | 10.6 | 11.9 | 11.0 | 10.9 | 11.7 | ... | 11.2 | 11.2 | 11.4 | 11.1 ⁱ | 10.6 | 11.2 | 11.0 | c |
| 15 | " " " % H.L. | 44.9 | 44.9 | 43.9 | 45.4 | 43.5 | ... | 45.0 | 44.2 | 45.1 | 44.3 ⁱ | 45.6 | 44.4 | 44.2 | 43.2 |
| 16 | " " " horizontal diam orbit | 152 | 150 | 141 | 158 | 151 | ... | 156 | 146 | 154 | 152 | 165 | 156 | 153 | 135 |
| 17 | Barbel length, % S.L. | 5.3 | 5.5 | 4.5 | 3.5 | 5.5 | c | 4.6 | 4.0 | 5.1 | 3.8 | 3.9 | 4.3 | 4.8 | ... |
| 18 | " " " % H.L. | 22.3 | 20.6 | 18.1 | 14.6 | 20.3 | c | 18.3 | 15.9 | 20.1 | 15.3 | 16.9 | 16.9 | 19.2 | ... |
| 19 | Maxillary extension backward relative to eye ^o | 2/3 | 1/2 | 3/5 | 2/3 | 1/2 | c | 2/5 | 2/3 | c | 2/3 | c | 2/3 | c | 3/5 |
| 20 | 1st dorsal: 1st long ray, length, % | 28.0 | 42.3+ | 45.7 | 39.0+ | 42.8 | 37.4 | 47.4 | c | 41.4 | c | 40.6 | c | c | ... |
| 21 | Pectoral: length, % | c | 15.6+ | 16.0+ | c | c | 17.3 | 16.7+ | 19.6 | 19.5 | c | 16.7+ | 16.4+ | c | ... |
| 22 | Pelvic: length to tip longest ray, % | c | 19.6 | ca. 18.1 | c | 20.5 | 14.3 | 18.7 | 18.7 | c | c | 16.1 | 20.3 | 16.3+ | ... |
| 23 | Body: greatest height, % | 17.2 | 20.7 | 21.0 | c | 22.9 | 20.5 | 23.7 | 22.3 | 22.9 | 20.9 | 21.0 | ca. 20.9 | c | ... |
| 24 | Caudal peduncle: least height, % | 2.1 | 2.1 | 2.0 | 2.1 | 2.4 | 2.0 | 2.5 | 2.4 | 2.2 | 2.4 | 2.3 | 2.1 | 2.2 | ... |
| 25 | Snout - ant. base 1st ray 1st dorsal, % | 25.2 | 27.4 | 26.5 | 26.3 | 29.0 | 25.4 | 26.4 | 26.9 | 26.2 | 26.9 | 24.1 | 26.1 | 25.5 | ... |
| 26 | Snout - mid-anus, % | 39.1 | 43.0 | 42.8 | c | 48.3 | 47.7 | 46.8 | 45.4 | 46.5 | 43.2 | 45.6 | 43.6 | c | ... |
| 27 | " ant. insertion anal, % | 41.4 | 45.0 | 45.1 | 47.2 | 50.8 | ... | 50.5 | 47.4 | 49.2 | 45.9 | 47.4 | 47.4 | 49.7 | ... |
| 28 | Outer base pelvic - ant. insertion anal, % | 24.8 | 24.0 | 23.8 | 25.8 | 25.3 | 26.9 | 27.0 | 22.6 | 25.9 | 25.6 | 26.1 | 25.7 | 26.1 | ... |
| 29 | Post. insertion 2nd dorsal - beginning upper procurent rays caudal, % | ... | 4.2 | 4.8 | 3.8 | 2.5 ^h | 4.5 | 4.9 | 3.5 | 4.1 | 4.3 | c | 4.6 | 4.3 | ... |
| 30 | Least height caudal peduncle as % distance between dorsal and caudal fins ^f | ... | 50.7 | 42.5 | 54.0 | 91.7 ^h | 47.6 | 51.8 | 68.3 | 52.0 | 55.7 | c | 47.0 | 50.0 | ... |
| 31 | Pelvic length as % pectoral length | c | c | c | c | c | 83 | c | 96 | c | c | c | c | c | ... |
| 32 | Post. base last anal ray ant. to post. base last ray 2nd dorsal, % ^g | ... | 1.8 | 2.3 | 2.2 | 2.4 | ... | 2.6 | 1.7 | 2.1 | 1.6 | 2.8 | 2.5 | 2.7 | ... |
| 33 | Post. base last ray 2nd dorsal - base mid-caudal, % | ... | 8.6 | 10.3 | 7.9 | 3.4 ^h | ... | 8.2 | 8.0 | 8.7 | 8.2 | 7.9 | 7.7 | 8.8 | ... |
| 34 | Length longest pyloric caecum, % | ... | 10.1 | 4.5 | c | 13.5 | ... | 10.4 | c | 11.8 | c | ... | 7.4 | c | ... |

(cont'd.)

Table 5 (cont'd.)

| Item no. | Body part | Specimen numbers refer to those of Table 2 | | | | | | | | | | | | | MSNG No. 7703 caudal fin absent |
|----------|--|--|--------|--------|------|-----------------|-----|--------|--------|--------|-------|-------|-------|------|---------------------------------|
| | | 9i | 9j | 9h | 9e | 9m ^h | 9a | 9b | 9c | 9k | 9f | 9g | 9d | 9l | |
| 35 | Length longest gill raker 1st branchial arch, % | 2.8 | 2.9 | 2.7 | 2.3 | 2.2 | ... | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | c | 2.3 | ... |
| 36 | Length longest gill filament 1st branchial arch, % | 1.7 | 1.8 | 1.8 | 1.8 | 2.4 | ... | 2.0 | 2.2 | 2.0 | 1.8 | 2.0 | 2.0 | 1.9 | ... |
| 37 | Length longest gill raker 1st arch as % longest gill filament | 165 | 157 | 148 | 127 | 91 | ... | 116 | 104 | 115 | 127 | 112 | c | 120 | ... |
| 38 | Mid-anus below what ray 2nd dorsal | ... | 10 | 10-11 | c | 10-11 | ... | 10 | 10-11 | 10-11 | 10 | 10-11 | 10 | c | ... |
| 39 | Origin anal below what ray 2nd dorsal | ... | 11 | 12 | c | 12 | ... | 12 | 11-12 | 12 | 11-12 | 12 | 11-12 | 12 | ... |
| 40 | Ant. end steepest slope lat. line post. ant. insertion anal, % | c | 0.6 | -2.6 | -2.6 | -1.7 | ... | -5.7 | -3.4 | -2.5 | -1.8 | -1.6 | -2.0 | -6.5 | c |
| 41 | Post. end steepest slope lat. line post. ant. insertion anal, % | c | 4.3 | 3.6 | 6.1 | 4.4 | ... | 1.3 | 5.5 | 6.8 | 2.0 | 5.1 | 3.1 | 4.2 | c |
| 42 | Point where lat. line first is equidistant from dorsal and anal fin-ray bases post. ant. insertion anal, % | c | 8.0 | 6.3 | 10.5 | 9.2 | ... | 8.3 | 8.1 | 8.0 | 7.8 | 7.9 | 7.0 | 6.1 | c |
| 43 | Sex and maturity | ♀ imm. | ♀ imm. | ♂ mat. | ... | ♀ imm. | ♂ | ♀ imm. | ♀ imm. | ♀ imm. | ♂ | ♂ | ♂ | c | ... |

^{a-g} As in Table 3.

^h About 4-6 posterior vertebrae including the hypural are lacking in this specimen. (See footnote to Table 2 and Templeman, 1970, fig. 9C.) Consequently the standard length is too short and all body proportions calculated on this length too great. The head, for example, is too large relative to the standard length. Especially too small are the length measurements relating to the caudal peduncle region (Table 2, items 29 and 33) and the figure for item 30 is much too great because the distance between the dorsal and caudal fins is abnormally small. Except for head region measurements expressed as a percentage of head length, and body measurements not related to the standard length and not affected by the shortness of the caudal peduncle, no other measurements from this fish have been used in Templeman, 1970, fig. 10-14 or considered in the text.

ⁱ Average left and right.

MSNG = Museo Civico di Storia Naturale Genova.

General. All ex-alcohol in fair to good condition except as noted below. No. 9b, 9d, 9e, 9f, and 9h all snout related measurements with mouth closed except that in 9b mouth was open for items 26 and 27. No. 9c measured with mouth open but item 19 with mouth closed. No. 9a, 9g, 9l, and 9k measured with mouth wide open. No. 9g is very stiff and appears to have been dried out at some time.

Table 6. Morphometric characteristics of *Lepidion guentheri*, *Lepidion* sp. (*L. guentheri* of Forster, 1968 = *L. ?schmidti*) and *L. schmidti*. (All percentages are of the standard length (S.L.) unless they are of the head length (H.L.) or otherwise noted. Specimen numbers are from Table 2 and all measurements attributed to these numbered fish are the author's measurements. Percentages calculated from calculated standard lengths and these standard lengths themselves are in parentheses.)

| Item no. | Body part | <i>L. guentheri</i> | | | | | | | | Author <i>Lepidion</i> sp. (<i>L. ?schmidti</i>) | | <i>Lepidion schmidti</i> Svetovidov (1936) |
|----------|---|---------------------|-------|-------|-------|------------------|-------|------|------------------|--|----------|--|
| | | 10e | 10g | 10j | 10i | 10d | 10h | 10k | 10 | 11b | 11a | |
| 1 | Total length (greatest), mm | c | 452 | 478 | 505 | 519 ^h | 531 | 584 | 605 ⁱ | 1,150 | 1,230 | 497 |
| 2 | Standard length, mm ^a | 121 | 413 | 437 | 462 | 474 | 483 | 536 | 554 | 1,045 | 1,127 | 450 |
| 3 | Head: length, mm ^b | 28.9 | 102.1 | 104.7 | 116.5 | 114.8 | 116.1 | 141 | 133.3 | 275 | 287 | 123.2 |
| 4 | Head: length, % | 23.9 | 24.7 | 24.0 | 25.2 | 24.2 | 24.0 | 26.3 | 24.1 | 26.3 | 25.5 | 27.4 |
| 5 | Orbit: horizontal diam, % S.L. | 5.2 | 4.1 | 4.1 | 4.2 | 4.8 | 4.4 | 4.3 | 4.5 | 5.3 | ca. 4.6 | 5.0 |
| 6 | " " " % H.L. | 21.8 | 16.7 | 17.0 | 16.7 | 19.7 | 18.3 | 16.4 | 18.6 | 20.0 | 18.1 | 18.3 |
| 7 | " " " as % vertical diam | ... | 100 | 114 | 108 | ... | 105 | 111 | 118 | 149 | 124 | ... |
| 8 | Interorbital width, % S.L. ^d | 5.0 | 5.1 | 6.0 | 5.4 | 5.5 | 5.5 | 5.5 | 5.1 | 6.5 | 6.6 | 5.3 |
| 9 | " " " % H.L. ^d | 21.1 | 20.6 | 24.8 | 21.5 | 22.7 | 22.8 | 21.1 | 21.2 | 24.6 | 22.3 | 19.5 |
| 10 | " " " % horizontal diam orbit | 97 | 124 | 146 | 129 | 115 | 125 | 129 | 114 | 123 | 123 | 107 |
| 11 | Snout: length, % S.L. | 7.4 | 8.5 | 7.8 | 8.7 | 7.5 | 7.8 | 8.4 | 7.3 | 8.1 | 8.0 | 8.6 |
| 12 | " " " % H.L. | 31.1 | 34.6 | 32.5 | 34.5 | 30.9 | 32.6 | 31.9 | 30.5 | 30.9 | 31.4 | 31.5 |
| 13 | " " " % horizontal diam orbit | 143 | 208 | 191 | 206 | 157 | 178 | 195 | 164 | 155 | 173 | 172 |
| 14 | Postorbital length, % S.L. | 12.1 | 13.0 | 12.3 | 13.0 | ... | 12.7 | 13.5 | 12.0 | 13.3 | 13.8 | 14.1 ^j |
| 15 | " " " % H.L. | 50.9 | 52.4 | 51.4 | 51.5 | ... | 52.7 | 51.3 | 50.0 | 50.5 | 54.4 | 51.5 ^j |
| 16 | " " " % horizontal diam orbit | 232 | 315 | 302 | 308 | ... | 289 | 313 | 269 | 253 | 301 | 282 ^j |
| 17 | Barbel length, % S.L. | 10.3 | 6.3 | 5.7 | 6.9 | ... | 6.0 | 6.0 | 5.3 | 8.6 | 6.6 | 9.0 |
| 18 | " " " % H.L. | 43.3 | 25.5 | 23.9 | 27.5 | ... | 25.0 | 23.0 | 22.1 | 32.7 | 22.3 | 32.9 |
| 19 | Maxillary extension backward relative to eye ^o | 1/2 | 1/2 | 1/2 | 1/2 | c | 1/2 | 3/5 | 2/3 | 3/5 | 1/2 | ... |
| 20 | 1st dorsal: 1st long ray, length, % | 33.1 | 40.4 | 45.6 | 47.4 | c | 44.5 | 43.1 | 36.3 | 39.7 | c | 44.2 |
| 21 | Pectoral: length, % | 15.9 | 14.5 | 15.2 | 14.7 | ... | 14.5 | 15.0 | 15.0 | 16.1 | 14.0 | 16.4 |
| 22 | Pelvic: length to tip longest ray, % | 24.8 | 24.0 | 25.4 | 23.6 | ... | 27.3 | 24.8 | 24.3 | 18.6 | 16.3 | 19.0 |
| 23 | Body: greatest height, % | ca. 14.9 | 22.2 | 20.5 | 22.4 | ... | 26.1 | 23.9 | ca. 25.2 | ca. 23.9 | ca. 27.5 | 21.0 |
| 24 | Caudal peduncle: least height, % | 2.6 | 3.0 | 3.2 | 2.9 | 3.1 | 3.0 | 3.1 | ca. 3.2 | 3.1 | ca. 3.1 | 3.8 |
| 25 | Snout - ant. base 1st ray 1st dorsal, % | 25.5 | 27.0 | 26.3 | 27.9 | 26.5 | 26.1 | 26.9 | 26.9 | 29.9 | 28.6 | 28.8 |
| 26 | " " mid-anus, % | 42.4 | 46.4 | 46.1 | 47.6 | ... | 49.6 | 49.5 | 47.7 | 50.7 | 52.3 | ... |
| 27 | " " ant. insertion anal, % | 43.9 | 47.2 | 47.6 | 49.6 | ... | 50.2 | 51.2 | ... | 53.1 | 54.5 | 50.2 ^j |
| 28 | Outer base pelvic - ant. insertion anal, % | 25.0 | 27.0 | 25.7 | 28.3 | ... | 28.3 | 29.4 | ca. 29.4 | 30.5 | 32.3 | 25.4 ^j |
| 29 | Post. insertion 2nd dorsal - beginning upper procurent rays caudal, % | ... | 4.4 | 4.1 | 3.3 | ... | 3.8 | 4.8 | 4.9 | 3.9 | 3.7 | 4.6 |
| 30 | Least height caudal peduncle as % distance between dorsal and caudal fins | ... | 67.2 | 77.3 | 88.2 | ... | 77.3 | 64.3 | ca. 64.1 | 79.0 | 83.3 | 82.7 |
| 31 | Pelvic length as % pectoral length | 156 | 165 | 167 | 160 | ... | 189 | 165 | 162 | 116 | 117 | 116 |
| 32 | Post. base last anal ray ant. to post. base last ray 2nd dorsal, % ^s | ... | 1.2 | 1.5 | 2.4 | ... | 1.2 | 1.0 | 1.4 | 0.5 | 1.4 | ... |
| 33 | Post. base last ray 2nd dorsal - base mid-caudal, % | ... | 7.9 | 7.8 | 7.3 | ... | 7.9 | 8.2 | 8.4 | 8.2 | 7.5 | 8.9 ^k |

(cont'd.)

Table 6 (cont'd.)

| Item no. | Body part | <u>L. guentheri</u> | | | | | | | | Author <u>Lepidion sp.</u> <u>(L. ?schmidti)</u> | | <u>Lepidion schmidti</u> Svetovidov (1936) |
|----------|--|---------------------|----------|----------|----------|--------|-------|----------|------------------|--|--------|--|
| | | Author | | | | | | | | 11b | 11a | |
| | | 10e | 10g | 10j | 10i | 10d | 10h | 10k | 10 | | | |
| 34 | Length longest pyloric caecum, % | ... | ca. 15.0 | ca. 16.9 | ca. 15.2 | ... | ... | ca. 19.4 | 20.4 | 9.6 | ... | ... |
| 35 | Length longest gill raker 1st branchial arch, % | 3.8 | 1.9 | 1.6 | 1.9 | ... | 1.6 | 1.6 | 1.6 | 1.5 | 1.2 | 1.1 ^j |
| 36 | Length longest gill filament 1st branchial arch, % | c | 2.2 | 1.9 | 2.3 | ... | 2.1 | 2.1 | 1.9 | 2.2 | 2.7 | ... |
| 37 | Length longest gill raker 1st arch as % longest gill filament | c | 91 | 84 | 85 | ... | 76 | 78 | 79 | 65 | 44 | ... |
| 38 | Mid-anus below what ray 2nd dorsal | ... | 11-12 | 10-11 | 11 | ... | 11-12 | 11 | ... | 10-11 | 10-11 | ... |
| 39 | Origin anal below what ray 2nd dorsal | ... | 12-13 | 11-12 | 12-13 | ... | 12-13 | 12-13 | 12-13 | 12 | 12 | ... |
| 40 | Ant. end steepest slope lat. line post. ant. insertion anal, % ^g | ... | 1.7 | 3.7 | 2.3 | 1.2 | -0.4 | 1.5 | 1.9 ^l | ... | ... | ... |
| 41 | Post. end steepest slope lat. line post. ant. insertion anal, % ^g | ... | 10.4 | 8.5 | 8.7 | 10.5 | 7.2 | 6.7 | 8.9 ^l | ... | ... | ... |
| 42 | Point where lat. line first is equidistant from dorsal and anal fin-ray bases post. ant. insertion anal, % | ... | 18.6 | 15.3 | 16.9 | 14.8 | 14.3 | 14.9 | ... | ... | ... | ... |
| 43 | Sex and maturity | ... | ♀ imm. | ♂ mat. | ♀ imm. | ♀ imm. | ♂ | ♀ imm. | ♀ imm. | ♀ mat. | ♀ mat. | ♀ |

^{a-g}As in Table 3.

^hEvidently Gunther's (1887) "20 inch"-specimen of Haloporphyrus guentheri. See Table 2, footnote n.

ⁱThe lectotype of Lepidion guentheri. See Table 2, footnote l. Johnson's larger size may have been due to some difference in his method of measurement or more likely to measurements fresh or out of formalin with further shrinkage in alcohol occurring at the British Museum. (Newfoundland specimens of Lepidion eques preserved in 10% formalin were reduced in length after transfer to 70% ethyl alcohol.)

^jAdditional measurements from A. N. Svetovidov, letter, 1968.

^kMeasurement D. M. Cohen, letter, 1968 but S.L. according to Svetovidov as above.

^lFrom lateral view photograph.

Condition. No. 10d, 10j, 10k, mouth wide and 10h mouth open for all measurements except for item 19 for which the data are estimates for the mouth closed condition. No. 10 and 10d ex alcohol, remainder of L. guentheri ex 10% formalin. Lepidion sp. measured ex 1% phenoxetol. All except L. schmidti Svetovidov measured by author and in fair to good condition except No. 10d which is hard, stiff, somewhat distorted and must have dried out at some time. This specimen is not suitable for most morphometric measurements but the head measurements are probably not very much in error.

WEIGHTS

The following weights were obtained for fish from 10% formalin after soaking in water for about one day. Lengths are in standard lengths in millimetres and weights (in parentheses) in grams. For Lepidion eques from the Northwest Atlantic lengths and weights were: 139(19), 170(40), 198(75), 205(84, from Iceland), 221(106), 246(128), 252(191), 260(157), 280(217), 287(256), and 305(333). For L. guentheri from Madeira, lengths and weights were 413(680), 437(780), 462(1,020), 483(1,360), and 536(1,700).

FOOD

There is little published information on the food of Lepidion. Collett (1905) for Lepidion eques taken in the Faroe Channel and southwest of the Faroes found all the stomachs everted or nearly empty. In one fish stomach part of the tail of a cumacean, Lamprops testata, was found and in several others evidence of feeding on annelids (presumably polychaetes) and a deep water Calanus. Collett concluded that this species appears to obtain its food on or near the bottom.

Most of the stomachs in the L. eques examined by the author were everted into the mouth or throat cavity and thus all the food had been lost. In 13 out of 36 stomachs there was some food, only a small amount except in one stomach. In most of the specimens from the Northwest Atlantic the intestinal contents were also examined (Table 7).

The stomach food was 94.3% Crustacea with polychaetes (4.8%) the only other important food. The small amounts of food usually present in the stomachs and the fact that one shrimp made up 79% of the total food and two shrimp in two stomachs made up 87% of the total food point to the probability that even in the stomachs which were not everted most of the food was expelled during the upward journey from the deep water. Stomach food and the species present were examined carefully. Intestinal contents, however, were naturally in much worse condition for examination than stomach contents and intestinal contents could not be identified as readily as stomach contents. Hence small amounts of groups and species not mentioned in the list of intestinal contents could have been present. The lack of fish was notable both in stomach and intestine. As a rule if fish are important in the diet, vertebrae and otoliths are common in both stomach and intestine but none of these were noted. There were a few doubtfully identified tiny fish fin rays in one stomach. There is apparently some bottom and close to the bottom as well as pelagic feeding. It is very likely that this fish, with a large anterior bulk and a small and slim posterior tail and caudal fin area, does not swim very fast and hence is not especially suited to catching rapidly moving fish. The lower jaw not projecting as far forward as the upper makes it adaptable for bottom feeding but most of the food species taken were pelagic.

Table 7. Stomach and intestinal contents of Lepidion eques.

| Food group or species | No. stomachs containing food group or species | | | Total quantity in stomachs, cc | | | No. of intestines (NW Atlantic) containing food group or species |
|---|--|-------------|-------|-----------------------------------|-------------|--------|---|
| | NW Atlantic | NE Atlantic | Total | NW Atlantic | NE Atlantic | Total | |
| No. intestines examined | ... | ... | ... | ... | ... | ... | 13 |
| No. fish with stomach everted and empty | 10 | 13 | 23 | 10 | 13 | 23 | ... |
| No. fish with stomach not everted but empty | 1 | 1 | 2 | 1 | 1 | 2 | ... |
| No. stomachs containing food | 4 | 9 | 13 | 4 | 9 | 13 | ... |
| Foraminifera | 0 | 1 | 1 | 0 | 0.01 | 0.01 | 0 |
| Polychaetes | 2 | 5 | 7 | 0.06 | 0.57 | 0.63 | 5 |
| Cladocerans | 0 | 1 | 1 | 0 | 0.005 | 0.005 | 0 |
| Ostracods | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Copepods | 0 | 3 | 3 | 0 | 0.035 | 0.035 | 0 |
| Mysids | 1 | 0 | 1 | 0.1 | 0 | 0.1 | 0 |
| Cumaceans | 0 | 1 | 1 | 0 | 0.01 | 0.01 | 1 |
| Isopods | 0 | 1 | 1 | 0 | 0.02 | 0.02 | 0 |
| Amphipods (caprellid) | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Amphipods | 3 | 3 | 6 | 0.17 | 0.12 | 0.29 | 7 |
| Euphausiids | 1 | 1 | 2 | 0.1 | 0.01 | 0.11 | 1 |
| Parts of euphausiids or mysids | 0 | 2 | 2 | 0 | 0.05 | 0.05 | 8 |
| Shrimp, <u>Pandalus borealis</u> | 1 | 0 | 1 | 10.3 | 0 | 10.3 | 0 |
| Shrimp, <u>Pontophilus norvegicus</u> | 0 | 1 | 1 | 0 | 1.0 | 1.0 | 0 |
| Shrimp | 1 | 0 | 1 | 0.3 | 0 | 0.3 | 3 |
| Crustacean remnants | 0 | 1 | 1 | 0 | 0.04 | 0.04 | 2 |
| Chaetognath jaws | 0 | 1 | 1 | 0 | 0.002 | 0.002 | 3 |
| Fish fin rays ? | 0 | 1 | 1 | 0 | 0.005 | 0.005 | 0 |
| Lens of fish or cephalopod eye | 0 | 1 | 1 | 0 | 0.02 | 0.02 | 0 |
| Cephalopod beaks | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Unrecognizable animal remnants | 1 | 0 | 1 | 0.04 | 0 | 0.04 | ... |
| Sand grains | 1 | 3 | 4 | 0.01 | 0.03 | 0.04 | 1 |
| Total quantity in stomachs | ... | ... | ... | 11.08 | 1.927 | 13.007 | ... |
| Total Crustacea in stomachs | ... | ... | ... | 10.97 | 1.290 | 12.260 | ... |

The total lengths of L. eques examined for stomach contents (range of lengths containing food, in parentheses) were for the NW Atlantic 155-332 (242-290) mm, and for the NE Atlantic 139-368 (139-311) mm.

In nine L. lepidion from the Mediterranean, six had the stomach everted into the throat or mouth and one stomach was not everted but empty. In one of the specimens with an everted stomach there was a shrimp leg (0.02 cc) in the mouth. One stomach contained 3 segments of a fish vertebral column (0.6 cc) and one (the 163 mm S.L. specimen) was relatively full, containing 0.8 cc mysids, 0.2 cc isopods and 0.1 cc cephalopod beak.

In six L. guentheri from Madeira, one stomach contained 1.2 cc shrimp and 0.3 cc fish vertebrae and lenses and the other stomachs were either everted or empty.

Stomachs were everted in Forster's L. ?schmidti.

PARASITES

In examination of 13 specimens of Lepidion eques from the Northwest Atlantic and the single specimen from Iceland for intestinal food, a number of trematode, cestode, acanthocephalan and nematode intestinal parasites were found. The trematodes and cestodes were identified by Mr S. Prudhoe and the other two groups by Mr C. Ogden, both of the British Museum (Natural History).

Trematoda

Three species of trematodes were found. Two belonged to the Lepocreadiidae: Lepidapedon elongatum (Lebour, 1908), 7 specimens (Fig. 1A) and Podocotyle reflexa (Creplin, 1825), 21 specimens (Fig. 1B). One belonged to the Fellodistomatidae: Bacciger n. sp., 3 specimens (Fig. 1C).

The length range of these trematodes was from 0.6 to 3.8 mm. The numbers per fish were (no. of fish in parentheses): 0(6), 2(1 + 1 from Iceland), 4(2), 6(2), 11(1), 14(1).

Cestoda

In three of the 13 specimens of L. eques examined from the Northwest Atlantic, 8, 20, and 50 cestode larvae, ca. 0.3-0.4 mm long, with 4 suckers on the head were noted. None were seen in the remaining specimens nor in the specimen from West Iceland. These numbers were approximations of the actual number present as these larvae often appeared to be attached to the food material and the search although careful was not exhaustive.

These larvae (Fig. 1D) were identified as Scolex pleuronectis Müller, 1788 (larvae of tetraphyllidean cestodes).

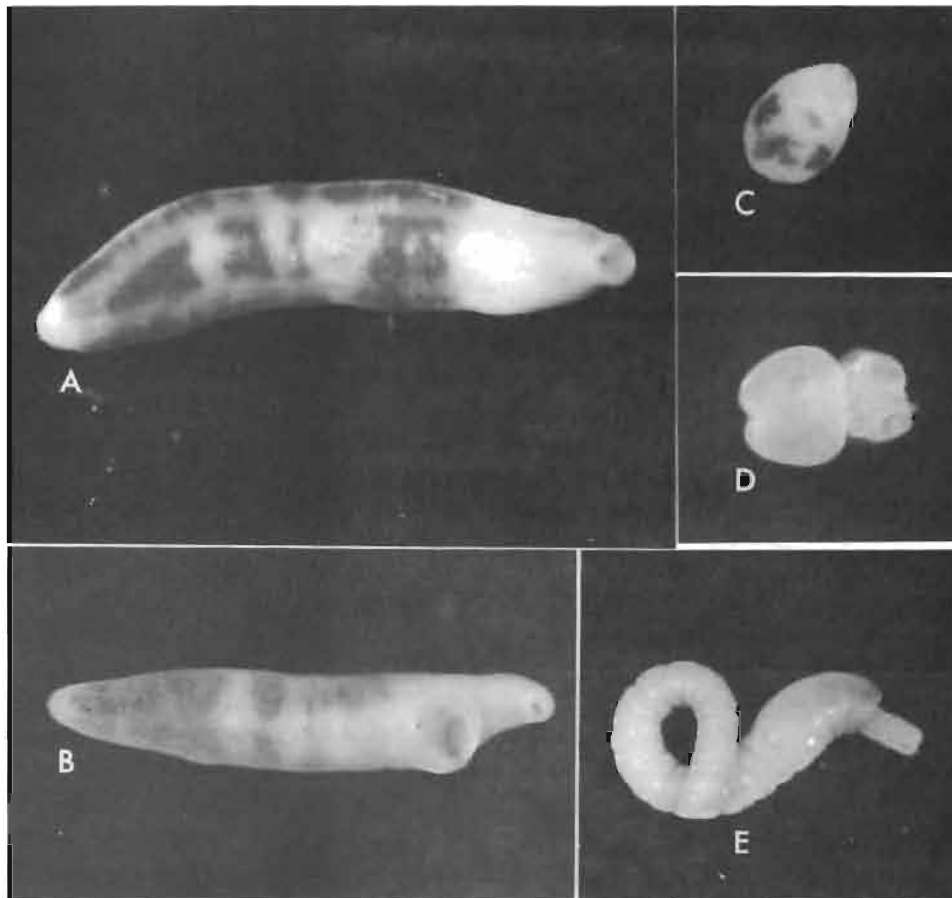


Fig. 1. The trematodes, A, Lepidapedon elongatum X50; B, Podocotyle reflexa X18; C, Bacciger n. sp. X18; D, tapeworm larva Scolex pleuronectis X18; E, Echinorhynchus gadi X18; from the intestine of Lepidion eques from the Northwest Atlantic.

Guiart (1935) reports the cestode Eubothrium rugosum (Batsch, 1786) from the intestine of a Haloporphyrus lepidion var. eques taken in 1913 in 1,650 m at the Azores. This fish was probably a L. guentheri (Templeman, 1970).

Nematoda

In three specimens of L. eques the intestines contained 1, 4 and 5 nematodes from 4 to 31 mm long. These intestinal nematodes belonged to the species Contracecum aduncum (Rudolphi, 1802) and Spinitectus oviflagellus Fourment, 1883.

Several larval Anisakinae were found among the mesenteries on the outer wall of the intestine. The search for these body cavity nematodes was not extensive and many more were probably present.

Acanthocephala

A total of 25 Acanthocephala was found in the intestines of 10 out of 13 L. eques from the Northwest Atlantic and 2 in the specimen from Iceland. These belonged to the species Echinorhynchus gadi Zoega, 1776 (Fig. 1E). These E. gadi ranged in length from 3 to 30 mm, all but 2 (of 29 and 30 mm) being 3-16 mm in length.

The numbers of E. gadi per fish were (no. of fish in parentheses): 0(3), 1(4), 2(2 + 1 from Iceland), 3(1), 4(2), 6(1).

Copepoda

A female copepod was found attached to the 14th ray of the anal fin of L. guentheri from Madeira, Funchal Museum No. 22049 (Table 1). Dr Z. Kabata says that it is a new species of Clavella which from lack of other specimens must for the present be described as Clavella sp.

Four adult female copepods, each with a male attached to the posterior trunk, and one juvenile female copepod were found attached to the gills of a Lepidion guentheri from Madeira (Table 2, No. 10i). Dr Kabata writes (1969) that these copepods resemble Acanthochondria lepidionis Barnard, 1955 from the gills of South African Lepidion capensis. Dr Kabata says, however, that the Atlantic individuals are a new species of Chondracanthus which he has named Chondracanthus lepidionis in order to stress their similarity with Acanthochondria lepidionis.

Nine large female copepods were taken from the two Lepidion ?schmidti taken by the Plymouth Laboratory. Four were attached to the inner face of the posterior dorsal part of the operculum, four to the dorsal part of the body wall covering the anterior part of the pectoral girdle, underneath the posterior part of the operculum, and one to the junction of the branchial arches dorsally with the body wall. Dr Kabata has written me (1969) that these copepods are Brachiochondrites longicollis Markevich, 1940.

These copepods will be described by Dr Kabata in the Journal of Parasitology.

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Mr E. L. Rowe was responsible for the photographs in Fig. 1.

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