

LIX.—*A Synopsis of the Myxinoids of the Genus Heptatretus or Bdellostoma.* By C. TATE REGAN, M.A.

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HEPTATRETUS.

*Eptatretus*, Cloquet, Dict. Sci. Nat. xv. p. 134 (1819).

*Homea*, Fleming, Philos. of Zool. ii. p. 375 (1822).

*Heptatrema*, Voigt, Thierr. ii. p. 529 (1832).

*Bdellostoma*, Müll. Abhandl. Akad. Berlin, 1834, p. 79.

*Polistotrema*, Gill, Proc. U.S. Nat. Mus. 1880, p. 30.

Myxinoids with 6 to 14 branchial apertures on each side and with the external branchial ducts subequal in length.

Pacific coast of America ; Japan ; New Zealand ; Cape of Good Hope.

The specimens enumerated are those in the British Museum Collection, on which this revision is based.

*Synopsis of the Species.*

I. 14 gill-openings .....	1. <i>polytrema</i> .
II. 11 to 13 gill-openings.	
Length of head, to first gill-opening, more than $\frac{1}{5}$ of the total length .....	2. <i>stouti</i> .
Length of head, to first gill-opening, less than $\frac{1}{5}$ of the total length .....	3. <i>deani</i> .
III. 10 gill-openings.....	4. <i>decatrema</i> .
IV. 8 gill-openings .....	5. <i>okinoseanus</i> .
V. 7 gill-openings.	
Teeth $\frac{12}{12} \mid \frac{12}{12}$ .....	6. <i>cirratus</i> .
Teeth $\frac{8}{8} \mid \frac{8}{8}$ .....	7. <i>banksii</i> .
VI. 6 gill-openings.	
Teeth $\frac{12}{11 \text{ or } 12} \mid \frac{12}{11 \text{ or } 12}$ .....	8. <i>hexatrema</i> .
Teeth $\frac{9}{10} \mid \frac{9}{9}$ .....	9. <i>buergeri</i> .

1. *Heptatrema polytrema*.

*Bdellostoma polytrema*, Girard, Proc. Ac. Philad. 1854, p. 199, and U.S. Nav. Astron. Exped., Zool. p. 252, pl. xxxiii. (1856) ; Günth. Cat. Fish. viii. p. 512 (1870).

14 gill-openings ; two rows of 12 teeth on each side, the 3

anterior teeth of each row united at the base; length of head, to first gill-opening,  $6\frac{1}{3}$  in the total length.

Chile.

1. 380 mm.

Valparaiso.

'Challenger.'

## 2. *Heptatretus stouti*.

*Bdellostoma stouti*, Lockington, Amer. Nat. 1878, p. 793.

*Polistotrema stouti*, Jord. & Everm. Bull. U.S. Nat. Mus. xlvi. 1896, p. 6; Everm. & Goldsborough, Bull. U.S. Fish. Bureau, xxvi. 1906, p. 226 (1907).

*Homea stouti*, Dean, Journ. Coll. Tokyo, xix. 1904, Art. 2, p. 11, fig. A, and p. 20.

11 to 13 gill-openings; length of head, to first gill-opening,  $3\frac{1}{2}$  to  $4\frac{2}{3}$  in the total length.

California.

## 3. *Heptatretus deani*.

*Polistotrema deani*, Everm. & Goldsborough, Bull. U.S. Fish Bureau, xxvi. 1906, p. 225, fig. 1 (1907).

11 or 12 gill-openings; two rows of 10 or 11 teeth on each side; length of head, to first gill-opening,  $5\frac{2}{3}$  to  $6\frac{2}{3}$  in the total length.

Alaska.

## 4. *Heptatretus decatrema*, sp. n.

*Bdellostoma polytrema* (non Girard), Putnam, Proc. Boston Nat. Hist. Soc. xvi. 1873, p. 160.

10 gill-openings; two rows of 12 teeth on each side, the 3 anterior teeth of each row united at the base; length of head, to first gill-opening,  $4\frac{1}{2}$  to 5 in the total length.

Chile.

1-2. 420 & 480 mm. (types of the species).

Chile.

Dr. Delfin.

## 5. *Heptatretus okinoseanus*.

*Homea okinoseana*, Dean, Journ. Coll. Tokyo, xix. 1904, Art. 2, p. 11, fig. B, p. 20, and pl. i. fig. 1.

8 gill-openings; on each side 12 teeth in the outer and 10 or 11 in the inner row; 3 anterior teeth of outer and 2 anterior teeth of inner rows united basally; length of head, to first gill-opening, about 4 in the total length.

Japan.

6. *Heptatretus cirratus.**Petromyzon cirrhatus*, Schneid. Bloch's Syst. Ichth. p. 532 (1801).*Bdellostoma forsteri*, Müll. Abhandl. Akad. Berlin, 1834, p. 80.*Bdellostoma cirrhatum* (part.), Günth. Cat. Fish. viii. p. 511 (1870).*Eptatretus cirrhatus*, Waite, Rec. Canterbury Mus. i. 1909, no. 2, p. 2, pl. xiii.

7 gill-openings; on each side two rows of 12 teeth, the 3 anterior teeth of each row united at the base; length of head, to first gill-opening, about  $3\frac{3}{4}$  in the total length.

New Zealand.

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|------------|---------------------------------------|---------------|
| 1. 530 mm. | D'Urville Is., Queen Charlotte Sound. | 'Challenger.' |
| 2. 400 mm. | New Zealand.                          | Capt. Stokes. |

7. *Heptatretus banksii.**Homea banksii*, Fleming, Philos. of Zool. ii. p. 375 (1822).*Bdellostoma heptatrema*, Müll. Abhandl. Akad. Berlin, 1834, p. 79.

7 gill-openings; on each side two rows of 8 teeth.  
Southern Pacific.

8. *Heptatretus hexatrema.**Bdellostoma hexatrema*, Müll. Abhandl. Akad. Berlin, 1834, p. 79.*Bdellostoma heterotrema*, Müll. l. c.*Bdellostoma cirrhatum* (part.), Günth. Cat. Fish. viii. p. 511 (1870).

6 gill-openings; on each side 12 teeth in the outer row and 11 or 12 in the inner; 3 anterior teeth of outer and 2 anterior teeth of inner rows united basally; length of head, to first gill-opening,  $3\frac{1}{3}$  to  $3\frac{1}{2}$  in the total length.

South Africa.

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|------------|--------------|-------------------------|
| 1. 700 mm. | Simon's Bay. | 'Challenger.'           |
| 2. 550 mm. | Table Bay.   | J. L. Stathan, Esq.     |
| 3. 430 mm. | False Bay.   | Dr. J. D. F. Gilchrist. |
| 4. 230 mm. | —            | Dr. Günther.            |

9. *Heptatretus buergeri.**Heptatrema cirrhatum* (non Schneid.), Schleg. Faun. Japon., Poiss. p. 310, pl. cxlii. (1850).*Bdellostoma burgeri*, Girard, Proc. Ac. Philad. 1854, p. 199.*Homea burgeri*, Dean, Journ. Coll. Tokyo, xix. 1904, Art. 2, p. 11, fig. C, and p. 21.

6 gill-openings; on each side 9 teeth in the outer and 9 or 10 in the inner row; 3 anterior teeth of outer and 2 anterior teeth of inner row united basally; length of head, to first gill opening,  $3\frac{1}{2}$  in the total length.

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|------------|---------------|------------------------|
| 1. 380 mm. | Yokohama Bay. | Prof. D'Arcy Thompson. |
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