

NOTES

A BISEXUAL STEELHEAD

Hermaphroditism in trout and salmon appears to be very rare and worthy of note, since published records are few in number.

A bisexual silver salmon (*Oncorhynchus kisutch*) was reported from the Chehalis River in Washington (Crawford, 1927), and a hermaphroditic cutthroat trout (*Salmo clarki*) was collected in Yellowstone Lake, Wyoming (Turner, 1946). A king salmon (*O. tshawytscha*) with reproductive organs showing both male and female characters was taken in 1954 near Fort Bragg, California, and is now being studied by O. H. Robertson at Stanford University. The published records known to the writer are listed in the references.

An adult sea-run steelhead rainbow trout (*Salmo g. gairdneri*) having both male and female reproductive organs was caught in the South Fork of the Eel River near the town of Garberville, Humboldt County, California, on January 7, 1955, by Mr. H. L. Kniveton of Farmington, California. The gonads were given to Warden Robert Perkins of Garberville, who gave them to the writer. Correspondence with Mr. Kniveton revealed that the steelhead weighed eight pounds and had the superficial appearance of a male fish.

The female portions of the two gonads differ considerably in size (Figure 1), one extending about two-thirds the length of the gonad, while the other is less than half the length of the gonad. Although the male and female portions of the gonads appear to be distinct, some eggs are embedded irregularly throughout the male tissue.

The eggs are much smaller than one would expect to find in a sexually mature female steelhead of the same size. The testes in a normal male steelhead of the same size would more nearly approach the size of the gonads in the fish under discussion.

REFERENCES

- Brunn, A. W. von
1896. Ueber die neueren die Entwicklung des Pancreas betreffenden Arbeiten. Arch. Ver. Freunde Naturg. Mecklenburg, 49. Jahrb., 2. Abth., p. xxix-xxxii.
- Couch, J.
1868. Irregularities of structure in fishes. Student and Intell. Observ., vol. 1, p. 328-336.
- Crawford, D. R.
1927. Notice of hermaphroditism in silver salmon, *Oncorhynchus kisutch*. Copeia, no. 163, p. 34.
- DeBeer, G. R.
1924. Note on a hermaphrodite trout. Anat. Rec. Philadelphia, vol. 27, p. 61-62.
- Simpson, J. Y.
1839. Hermaphroditism. In: Todd's Cyclopaedia of Anatomy and Physiology, London, 1836-39, vol. 2, p. 697.