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A gigantic lacustrine sockeye salmon *Oncorhynchus nerka* (kokanee or hime-masu) captured in Lake Toya, Hokkaido, Japan. (Short paper)

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An extremely large kokanee was captured in Lake Toya, Hokkaido, Japan. Since the previous two records of Tanakadate(1925, 1940), this is the third record of a gigantic kokanee specimen in over half a century.

Keywords: gigantic fish, lacustrine salmonid, Lake Toya, *Oncorhynchus nerka*.

During the spawning season of *Oncorhynchus nerka* (kokanee or hime-masu) in October 2009, among the broodstocks for artificial fertilization in Lake Toya, an extremely large male specimen was found (Fig. 1).

Data of this fish are shown in Table 1. The appearance of the specimen revealed typical features of breeding male of anadromous sockeye salmon, such as red back and sides, compressed head and body, hump in front of dorsal fin and embedded scales. (Scott and Crossman, 1973). The age could not be determined because scale erosion occurs with sexual maturity.

In Table 2, the maximum length of kokanee in previous papers is shown. In these localities, although the methods of measurement were different, the maximum length of each specimen did not exceed 60 cm except for in Lake Toya. In Lake Nachikinskoe, Berg(1962) described a relatively long

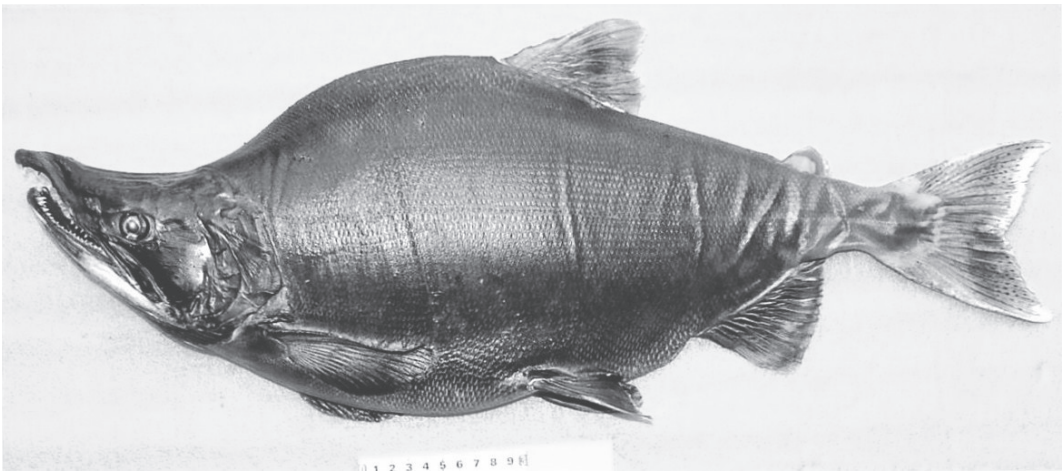

Fig. 1 Captured gigantic kokanee. 60.7cm TL.

Table 1 Data of the fish. All data were measured in frozen condition.

Total length (cm)	Fork length (cm)	Standard length (cm)	Head length (cm)	Body depth (cm)	Body weight (g)
60.7	56.4	52.1	14.9	19.5	2585.9

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Table 2 Maximum length of kokanee salmon in previous papers. Abbreviations are as follows, TL, total length; SL, standard length; FL, fork length; ?, uncertain.

Author	Tanakadate (1925)		Tanakadate (1940)	Berg (1962)		Nakamura (1963)	Scott and Crossman (1973)	Miyadi et al. (1976)	Mayama and Tokui (1992)
Locarity	Lake Toya	Lake Akan	Lake Toya	Russia	Lake Nachikinsko	Japan	Canada	Japan	Japan
Maximum length (cm)	78.8 (?)	39.3 (?)	63.6 (?)	28.0 (FL)	58.7 (?)	48.0 (TL)	22.3 (TL)	40.0 (?)	30.0 (TL)

length (58.7cm) as that of different form of kokanee, but there were no particular comments on the body size or any mention of distinctive features. Judging from recent information (Bugaev 2011), *Oncorhynchus nerka* in Lake Nachikinskoe should be an anadromous population, the data in Berg (1962) seemed to be that of an anadromous one.

The extremely large kokanee specimen in Lake Toya was first recorded by Tanakadate (1925) in a review of volcanic lakes in Hokkaido Island. Although he recorded kokanee in seven lakes, he reported the body size in only two lakes (Table 2). After 15 years, Tanakadate (1940) reported a large kokanee again, however, over the following half century no additional record was reported.

Tanakadate (1940) suggested that the large size was due to the richness of the food environment in the lake as a result of the limnology. He also stated that it looked like a "revival of anadromous form in size." Later Motoda(1950) agreed with the opinion in his review of Hokkaido lakes.

The exact origin of kokanee in Lake Toya is uncertain. Like other Japanese large cold water lakes, Lake Toya has been stocked with kokanee since 1909 from Lake Shikotsu along with national policy (Tokui 1963). According to Tokui (1963), the eggs to be introduced to Lake Toya originated from five localities, and the major two origins were Lake Shikotsu and Lake Urumobetsu, Etorofu Island of former Imperial Japan (Iturup Island of The Russian Federation) since 1926. The former was from eggs of a lacustrine population, whereas the latter was from an anadromous population.

Notabley, the gigantic kokanee was found prior to the introduction of an anadromous population from Lake Urumobetsu.

The present paper is the first substantial record of gigantic kokanee in Lake Toya, and indicates that the records in previous papers were neither myth nor misidentification.

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