

## *Hippoglossoides kumaishi*, a New Miocene Righteye Flounder from Oshima Peninsula, Hokkaido, Japan

By

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**Abstract** A righteye flounder fossil was found in the Miocene Esashi Formation, Kumaishi, Oshima Peninsula, Hokkaido, Japan. It is designated as the holotype for a new species of the genus *Hippoglossoides* in the family Pleuronectidae of the order Pleuronectiformes on the basis of its 13 abdominal and 41 caudal vertebrae, and about 3.5 upper jaw length of the ocular side included in the head length.

### Introduction

A righteye flounder fossil was found at Kumaishi, Oshima Peninsula, southern Hokkaido. The fossil was discovered in the Miocene rock belonging to the Esashi Formation. It is described as a new species of the genus *Hippoglossoides* in the family Pleuronectidae of the Pleuronectiformes.

In the present paper, the fossil is described in detail and compared with all species of the genus *Hippoglossoides* known to date.

### Locality

The specimen was collected by Messrs. Tomoyuki SHIBATA and Kenji KIZAKI at the upstream of the Seishido River, Kumaishi-cho in Oshima Peninsula, Hokkaido (Fig. 1). It was yielded from the bed belonging to the Esashi Formation of the Miocene (HATA, 1975).

### Systematic Paleontology

Class Osteichthyes

Order Pleuronectiformes

Suborder Pleuronectoidei

Family Pleuronectidae

Subfamily Pleuronectinae

Genus *Hippoglossoides* GOTTSCHKE, 1835

*Hippoglossoides kumaishi* sp. nov.

(Figs. 2–6)

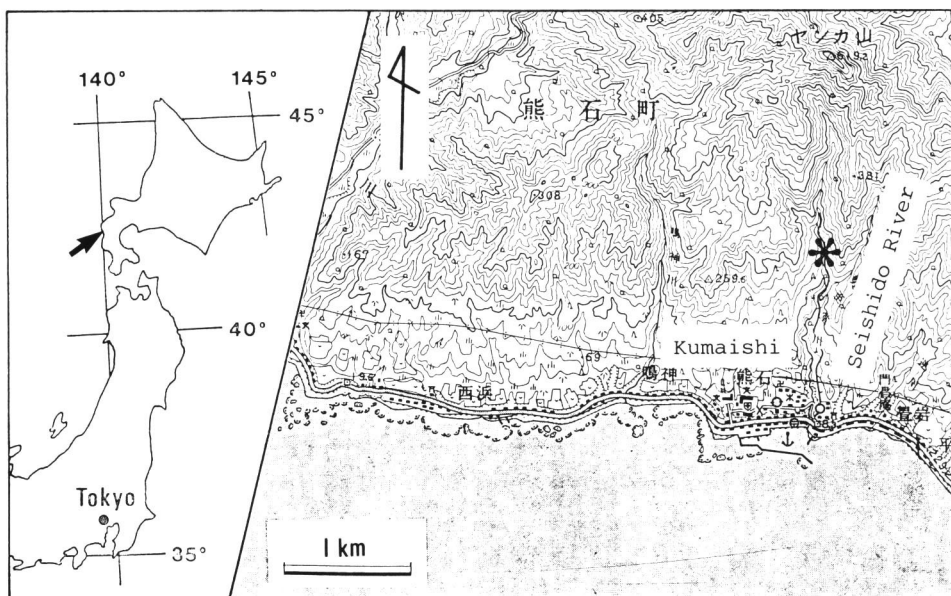


Fig. 1. A map of the locality yielded a new Miocene righteye flounder *Hippoglossoides kumaishi* sp. nov.

**Holotype:** National Science Museum catalogue number NSM PV-19654. Standard length is about 15 cm.

**Diagnosis:** A species of *Hippoglossoides* with 13 abdominal and 41 caudal vertebrae, and about 3.5 times of the upper jaw length of the ocular side included in the head length.

**Description:** The specimen is well preserved, and consists of four blocks including its counterpart. The body is rather slender, and its depth is about 0.8 in the head length.

The head region is fairly well preserved and several bones are identifiable. The head length is about 4 cm. The mouth is rather large: the upper jaw length on the ocular side is about 3.5 in the head length. In the upper jaw, the premaxillary and maxillary on the ocular side are well preserved. The traces of the teeth arranged in a single row are observable on the premaxillary (Fig. 3). In the lower jaw, the dentary and articular of the ocular side are observed, and the traces of several teeth are recognizable on the dentary.

Both eyes with well preserved melanophores are located on the right side of body: the lower eye is in advance of the upper one.

Some elements of the cranium are preserved, but they are not identifiable because of the poor condition of the fossil.

Several bones in the suspensorial and opercular regions are observed, but it is difficult to identify each element due to its poor condition, excepting the quadrate and opercle.



Fig. 2. A new Miocene righteye flounder, *Hippoglossoides kumaishi* sp. nov., NSM PV-19654, from the Miocene Esashi Formation, Kumaishi, Hokkaido, Japan. About 15 cm in standard length.

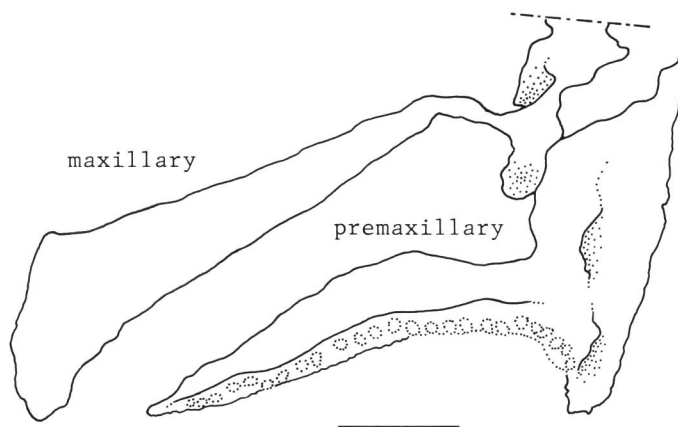


Fig. 3. Upper jaw of *Hippoglossoides kumaishi* sp. nov. Scale indicates 2 mm.

In the hyoid region, the hypohyal and the ceratohyal with three incomplete branchiostegal rays are observable, though their shapes are not clear.

The urohyal, which is fish-hook like in shape, is fairly well preserved. The angle between the main and sciatic parts is about 50 degree.

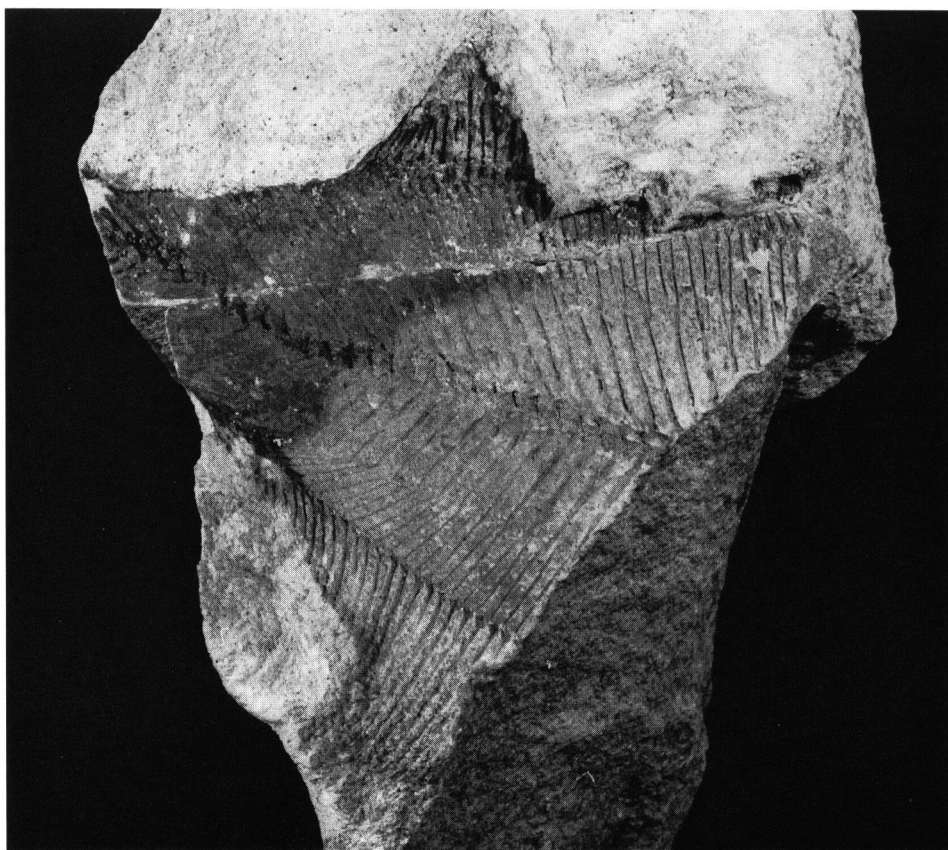


Fig. 4. Caudal region of *Hippoglossoides kumaishi* sp. nov.

Twenty-nine dorsal fin rays and 57 proximal pterygiophores are counted (their total numbers are not estimated). Two proximal pterygiophores are usually inserted between each of the adjacent neural spines excepting anterior eight. The first proximal pterygiophore bears two fin rays.

Sixty-three anal fin rays are countable, but the total number cannot be estimated. Of 58 proximal pterygiophores countable, the two are usually located between two adjacent haemal spines, excepting several anterior ones. The anteriormost anal proximal pterygiophore, which is enlarged and elongated, is attached to the anterior surface of the first haemal spine. Its anteroventral end curves forwardly.

In the shoulder girdle, the cleithrum and some pieces of fin rays are observed. Two incomplete postcleithra on both sides of body lacking their ventral ends are placed parallel in position.

Of the pelvic girdle, the incomplete basipterygiophore and two pieces of fin rays are observed.

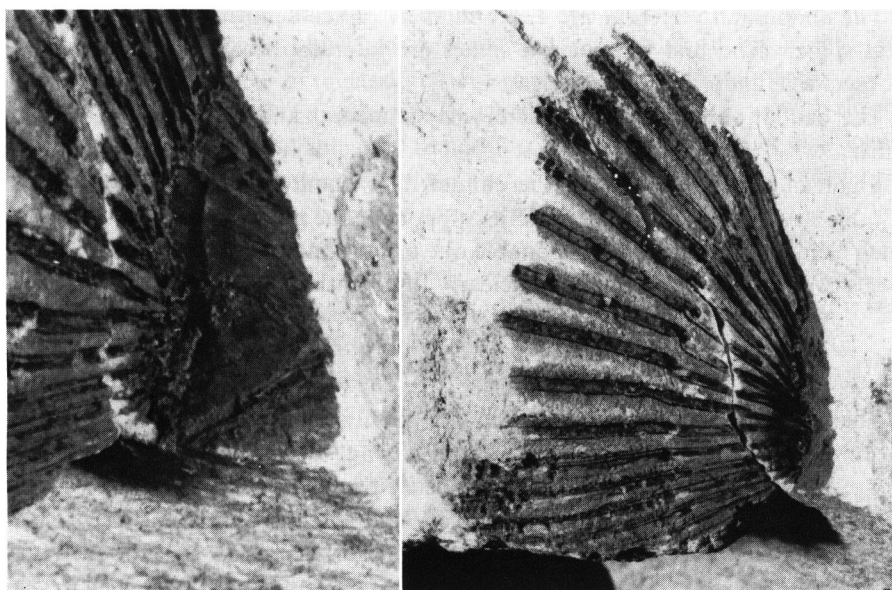


Fig. 5. Caudal skeleton and rays of *Hippoglossoides kumaishi* sp. nov. The left photograph shows that some hypurals are clearly fused with one another.

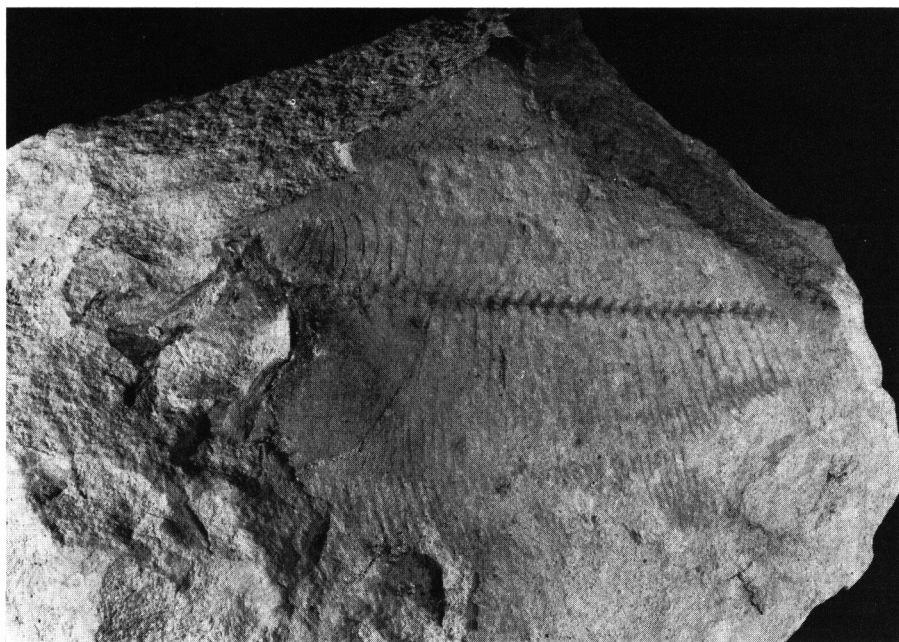


Fig. 6. Counterpart of the regions in Figs. 2 and 4 of *Hippoglossoides kumaishi* sp. nov.

[illegible]

ceratohyal, anterior dorsal fin rays, scales on eyes and supratemporal branch of the lateral line. However, all these characters are not observable in the fossil. Therefore, we used the number of the abdominal vertebrae into consideration for the assignment of this species. The abdominal vertebral number, 13, agrees with those of 5 species of *Hippoglossoides* (Table 1). In addition to this fact, no other characters are available to be considered adequate to establish a new genus, so it is most reasonable to classify the present species into the genus *Hippoglossoides*. Although no discriminative characters within the genus, as shown in Norman (1934), SAKAMOTO (1984a) and SAKAMOTO and UYENO (1989), are observed in the present specimen, it is clearly separable from all Recent species in its large number of the caudal vertebrae (41 in this new species vs. 28–35 in other species) (Table 1).

Concerning the fossil records of the present genus, the present species is distinguished from *Protopsetta* (synonym of *Hippoglossoides*) *kubotai* NIINO, 1951 reported from Gunma Prefecture, central Honshu, Japan in the Tertiary (NIINO, 1951) in the vertebral counts (13 abdominal+41 caudal vs. 10+31 in that species) (Table 1). Also, it is different from *H. naritai* SAKAMOTO and UYENO, 1989 from Tokoro, Okhotsk coast of Hokkaido, Japan in the Middle Miocene (SAKAMOTO and UYENO, 1989) in the size of the mouth (upper jaw length of ocular side in head length ca. 3.5 vs. 2.8 in that species).

On the basis of these considerations, we recognized the present species as a new species in the genus *Hippoglossoides*.

*Etymology*: The species name, *kumaishi*, is derived from the name of the locality which yielded the fossil.

### Acknowledgments

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