Fossil Lake fish profiles.
Florissant Fossil Beds National Monument
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Fossil Lake Fish Profiles
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Knightia
True Bony Fishes
- Order: Clupeiformes
- Family: Clupeidae
- Suborder: Clupeoidei Herrings

The *Knightia* is the most common fish found in the Fossil Lake sediments, with millions of them preserved. Because of its abundance throughout the area the *Knightia* became Wyoming's state fossil in 1987. *Knightia* can be found in the Green River Formation, Wyoming, Colorado and Utah and throughout South America with a known geologic time ranging from the Early Eocene to Mid-Eocene.

Knightia were small fish, while ranging in size from small minnows to rare 10 inches, are generally found four to five inches long. These herring-like fish probably fed on algae, diatoms, small crustaceans and insects. *Knightia* themselves played an important part in the food chain food as a food source for the larger fish in Fossil Lake.

In 1907 Doctor Jordan created a new genus, *Knightia*, naming the fish after Wilbur Clinton Knight, of the University of Wyoming. Knight was Wyoming's first state geologist and paleontologist at the University. Originally the *Knightia* was in "Section II" of the genus *Diplomystus* Cope, 1877, because *Knightia* and *Diplomystus* were in the same genus and due to the fact that their physiology was poorly understood at that time. Because the specific name of the type species was already taken by *Clupea humilis* Leidy Jordan renamed it *eocena*. With a greater knowledge of both species gathered over time it has been concluded that the *Knightia* and *Diplomystus* are actually more different than they are alike.

Priscacara
Higher Bony Fish
- Order: Perciformes
- Family Priscacaridae
- Genus Priscacara Cope, 1877

First described in 1877, by Cope, and found in Green River Formation, the genus *Priscacara* is found throughout the northern hemisphere. Although the *Priscacara* seems to closely resemble the Sunfish, there are no relatives of *Priscacara* living today, nor has the genus been found in the fossil record past the Eocene era.

Priscacara most likely used the bones in its throat to crush up the crustaceans and snails it fed on. Its major predators were probably the *Phareodus. Priscacara* remains have been found in *Phareodus* guts as well as the *Lepisosteum*. *Priscacara* has been found in mass mortality layers, a fact which indicates this was probably a schooling fish.

Priscacara have an average length of 4 to 6 inches, but some have been found as small as 7/8 of an inch and as long as 15 inches. *Priscacara* have distinct dorsal rays, and three anal spines as well as small conical teeth in the margins of both jaws. The genus is divided into two groups: one group has a strong ventral spine and fewer soft dorsal rays, and the other has a weak ventral spine and many soft rays in the dorsal fin.

Phareodus
Bony Tongues
- Order: Osteogossiformes
- Family: Osteogossidae
- Soborder Osteglossoidei

Described in 1873 by Leidy the *Phareodus* can be in found in North America and Australia. This large carnivorous fish ranged in geological time from the Middle Eocene to Oligocene.

The *Phareodus* is a middle sized fish with an oval-like outline. The species found in Fossil Lake generally range from 15-30 inches in length. It has a small head, a pointed snout, relatively large eyes, and a mouth full of sharp teeth. Smaller fish parts are frequently found in the stomachs of the fossilized *Phareodus's.* The *Pharedous* is a distant relative of the butterfly fish *Pantodon*.

Dioplomystus
True Bony Fishes
- Order: Ellimmichthyiformes
- Family: Ellimmichthyidae

The *Dioplomystus* ranged in time from the Upper Cretaceous to the Miocene and can be found in Europe, North and South America and Africa. The genus was described by Cope in 1877 and is currently the most cited fossil telosts in the literature. There are no living relatives of the *Dioplomystus* as they all died out in the Miocene. *Dioplomystus* fed on plants as well as smaller fish including schools of *Knightia*.

This middle-sized fish had a laterally compressed body and a dorsal fin approximately in the middle of its body. The *Dioplomystus* has a short deep head with a slightly pointed snout and a deeply divided caudal fin.

Eohiodon
Moon Eyes
- Order: Osteigkissufirnes
- Family: Hiodontidae
- Suborder: Notopteroidea

Known for their large moon-like eyes, the genus *Eohiodon* was described by Caverder in 1966 and is only found in North America. The *Eohiodon* is a small fish, with long pointy teeth and a strongly forked caudal fin.

Notogoneus
Higher Bony Fishes
- Order: Gonorhynchiformes
- Family: Gonorhychidae
- Suborder: Gonorhychoidei

The *Notogoneus* is a middle-sized fish with a long slender shape. Indicated by its sucker-like toothless mouth, this fished was a bottom feeder, eating prey that lived in the sand. *Notogoneus* ranged in time from the Paleocene to the Oligocene and can be found in Europe, North America and Australia. In the Fossil Lake sediment *Notogoneus's* are only found in the mid-lake deposits, and are typically over ten inches long or under ¾- 1 ½ inches long; there have been no *Notogoneus's* found in between these lengths.

Mioplosus
Higher Bony Fishes
- Order: Perciformes
- Family: Percidae

First described by Cope in 1877, the *Mioplosus* was from the Eocene and is only found in North America. This genus is extinct, but may be related to modern pike perches.

This fish is middle sized, with a range in length of 8 to 12 inches, although a 20 inch *Mioplosus* has been found. With a shallow head, large eyes and slender shape, the *Mioplosus* was one of the predators of Fossil Lake. It had a mouth packed full of sharp teeth and there have been several *Mioplosus* found in the Fossil Lake basin, in which the fish is eating another fish half of its own length. One of its distinctive characteristics is a soft-rayed triangular posterior dorsal fin, which is opposite the triangular anal fin.

Sources:
Ambrose, P. D., 1996. Fossil Butte National Monument: Along the Shores of Time. Dinosaur Nature Association, NPS.

Baensch, 1995., Fossil Atlas: Fishes. Tetra Press, Blacksburg, VA.

Grande, L. 1982. *A Revision of the Fossil Genus* Diplomystus *With Comments on the Interrelationships of Clupeomorph Fishes.* American Museum of Natural History. N. 2728, p 1-34.

Grande, L. 1982. *A Revision of the Fossil Genus* Knightia *With a Description of a New Genus From the Green River Formation (Teleostei, Clupeidae.* American Museum of Natural History. N. 2731, p 1-22.

Jackson, R. W., 1980. The Fish of Fossil Lake. Dinosaur Nature Association, Jensen, UT.

Loewen, A. M, and Buchhiem, P. H., *Paleontology and Paleocology of the Culminating Phase of Eocene Fossil Lake, Fossil Butte National Monument, Wyoming.* www.nature.nps.gov.

Thorpe, R. M., 1838. *Wyoming Eocene Fishes in the Marsh Collection.* American Journal of Science. V. 36, p 279-295.