

# The American Paddlefish



*Polyodon spathula*



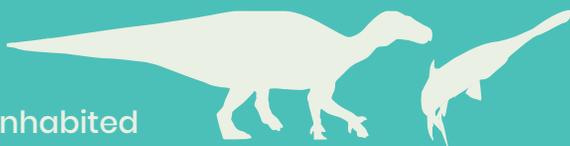
Native to the  
**Mississippi river system**



CONSERVATION  
STATUS:

**VULNERABLE**

Populations are **decreasing** due to migratory barriers (dams) and habitat loss



Inhabited  
North America since approximately  
**65 million** years ago



Female paddlefish can  
lay more than **2 million**  
eggs



Lifespan:

**60+**  
years



Can grow  
**2m**  
in length  
and weigh  
**45kg**



Can migrate  
over **2,400km**  
to spawn  
upstream

**2,400 km** is **36** days walking if  
you walked 16 hours a day  
non stop

# The American Paddlefish

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The uniquely-shaped **American Paddlefish** (*Polyodon spathula*) is a freshwater, migratory species native to the Mississippi River system, and historically ranged from Montana to the Great Lakes to New York to the Gulf of Mexico. This ancient animal (some call it a living fossil) has inhabited North America since the Cretaceous period approximately 65 million years ago and is related to the sturgeons— one of the most imperiled groups of fishes on Earth. Today, the American Paddlefish range has contracted due to migratory barriers (dams) and habitat loss in addition to overfishing; a key component of which is poaching for their roe, which is used to make expensive caviar. Despite these challenges, the American Paddlefish fares far better than the only other paddlefish species, the **Chinese Paddlefish** (*Psephurus gladius*), which is critically endangered and possibly extinct.

Unlike their sturgeon cousins or the Chinese Paddlefish, which mostly eat fish or bottom-dwelling organisms, the American Paddlefish is a mid-water zooplanktivore... this means they are a filter feeder and they eat tiny freshwater crustaceans. Named for their oversized paddle, or rostrum, the American Paddlefish has the ability to hunt for its prey by detecting the tiny electrical signals generated by plankton. Researchers have actually demonstrated that Paddlefish can detect and consume a single plankton in complete darkness.

Where abundant and managed sustainably, the American Paddlefish is popular among sport anglers, as it often exceeds 2 m in length and 45 kg in weight. Paddlefish are long-lived and can exceed 60 years old in northern populations. In addition to their prized roe as caviar, the meat also makes great table fare because the American Paddlefish is largely boneless. Aside from their head and jaw structure, the skeleton is composed of cartilage—a trait shared with sharks.

Paddlefish are known for great river journeys, as some have been documented to migrate upstream more than 2,433 km in a river system. They make these long migrations to locate gravel spawning habitat to deposit their eggs.

Once hatched, the larvae drift downstream as they mature and settle out in natural river oxbows or floodplains. In dammed or otherwise impacted rivers, Paddlefish might not experience adequate river conditions (like temperature and duration of flows), have access to the appropriate spawning habitats, or have nursery habitats for their larvae— all of which can contribute to recruitment failure and stock declines or collapse. Additional risks associated with dams are that downstream passage through dam structures often results in death or injury for Paddlefish. Common among these injuries is rostrum amputation, which has been shown to reduce their swimming ability and their success at finding plankton via electrosense, as evidenced by smaller fat reserves in amputees.

## Other interesting facts about Paddlefish:

1. Though they don't have protective scales or much of a protective slime layer like other fishes, Paddlefish have a thick layer of super-healing cells (white blood cells) in their flesh that allows them to heal quickly and survive from substantial wounds sustained by fishing, dam passage, or boat propeller strikes, among other sources.
2. A female Paddlefish can lay more than 2 million eggs in a single spawning event and for a fish at prime maturity, roe can comprise more than 25% of her body weight.
3. Paddlefish are known as a model organism valuable to industry and innovation. The endoskeleton of the rostrum has been studied by the US military for research and development of lightweight body armor. The gill rakers (filter-feeding structures) have been studied in the development of clog-free industrial filters. Researchers are examining compounds in paddlefish flesh that are derivatives of natural sunscreens.
4. Paddlefish can detect and avoid metal objects with their electrosense, which introduces challenges for development of fish passage structures in dammed waterways. They also have difficulty maneuvering around objects

in close quarters due to their straight-line swimming behavior. Traditional fish ladders and fishways (which have proved effective in upstream passage of numerous migratory fish species) are not effective for Paddlefish and much research is still needed on this topic.

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