

# Impacts of environmental pollution on the acipenser sinensis



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### Introduction:

Acipenser Sinensis is a large-scale upstream fish that is unique to ancient China. We say Acipenser is a “living fossil” because “One of the most primitive species of fish in the world. In the Zhou Dynasty, which was more than 1,000 years before BC”(Wang Wei, 2014). The Chinese sturgeon is type of bony fish and they are living in the Yangtze River valley of China. Recent year, due to the environmental pollution, overfishing, and construction are of large-scale water conservancy projects in the Yangtze River Basin, the migration routes and breeding sites of the Chinese sturgeon have been seriously affected. These factors are resulting in a sharp decline in the population the danger of extinction of the Chinese sturgeon. In this Biodiversity Literature article I am going to introduce this endangered species and discuss the relationship between current situations and human activities for the Acipenser Sinensis.

### Feeding habits:

The benthic species that feed the Chinese sturgeon include mollusks, crustaceans, annelids, small fish, and most of the group of benthic fauna near the Yangtze River estuary. These aquatic species and aquatic insects provided a reliable food source for the juveniles of Chinese sturgeon to grow. Although under the impact of human activities, the species of plankton and benthic organisms in the estuary area and the dilute water area of the Yangtze river have been greatly reduced. Because the benthic biomass has been reducing significantly, this area's community structure also become fragile and biodiversity also declining. But the changing of the

food chain doesn't really affect the estuary area's juvenile Chinese sturgeons' food intake. And the biology researchers found that " It may be because the Chinese sturgeon juvenile fish has a wide range of recipes and is highly adaptable to the bait environment. The main bait organisms are widely distributed in the Yangtze River estuary habitat and have a high density." (Wu Chuan, 2018) So the juveniles of Chinese sturgeon grew rapidly when they stay in the Yangtze River estuary. For another view, large amounts of food and energy accumulation is the sturgeon instinct because the Chinese sturgeon is a migratory fish that not only needs to meet its growth needs but also meets its feeding habits and the need to swim back into the sea. The importance of sensory organs in the feeding behavior of juveniles of Chinese sturgeon was studied by blocking the different sensory organs of juveniles of Chinese sturgeon.

Human effect:

Chinese sturgeon is a typical large river-sea spawning migratory fish. Under the natural ecological conditions, adult sturgeon enters the river from the ocean in April to June every year, and reaches the breeding area within four months. Sturgeon spawns at Gezhou dam from early October to mid-November. After spawning, adult sturgeon return to the ocean along the Yangtze river. Hatchling and young fish are stranded and foraging in the shallow water area of the river from the spawning ground to the river, and migrate 2 000~3 000 km to the river migration until June ~ July of the second year, when they enter the river area and enter the ocean fattening with the flow, and return to the spawning ground to reproduce after sexual

maturity. The whole process of migration from the Yangtze estuary to the inland is the living habit of sturgeon□

However, when the Gezhou Dam was established, the migratory route of the squid had to be destroyed. After the dam was built, it provided sufficient electricity for the surrounding residents and provided protection for the downstream flood prevention. However, when the people began to build the dam, they ignored the Chinese sturgeon need to return to the upper reaches of the Yangtze River to lay eggs. Now, it is very difficult for the Chinese sturgeon to cross the dam and continue swim to the upstream, also people wonder if the dam is opened, the amount of water will flood the lower plains. Scientists have found that many Chinese sturgeon have not reached sexual maturity when they arrive nearby Gezhou Dam, therefore, premature mating will cause a sharp decline in the quality and quantity of fertilized eggs, resulting in a lower hatching success rate of juvenile fish and poor development. So the influence is very serious, from 1981 to 1999, the total amount of Chinese sturgeons decreased by about 80%.

Fortunately, Scientists quickly realized the seriousness of the situation. If people did not take measures to protect the Chinese sturgeon, the special species would disappear soon. After the call of the animal protection organization and the support of the government, many Chinese sturgeon research and protection centers were established along the Yangtze River. For biologists, simulated the environment of the Chinese sturgeon is not a problem, but the timing of controlling is difficult to grasp. Since 1984, scientists began to artificially breed Chinese sturgeon, and it was not a success until 2009 that the artificial reproduction of Chinese sturgeon was <https://assignbuster.com/impacts-of-environmental-pollution-on-the-acipenser-sinensis/>

successfully achieved. This biological research result allows the Conservation Center to release about 6 million carp every year into the Yangtze River to supplement the number of wild Chinese carp. However, the release scale and specifications of the Chinese sturgeon still too small, and the actual effect of the spread and release of the Chinese sturgeon is not obvious. Fortunately, the Chinese sturgeon that are reared and reproduced also retains the habits of migration. In order to reduce human consumption of rare aquatic species, the government has also invested in supporting the construction of fisheries management stations along the Yangtze River in Hubei Province and Sichuan Province to help fishermen change the jobs.

#### Chemical pollution□

The fact that chemical substances pollute water quality has led to a sharp decline in the number of Chinese sturgeons is also an important topic. Since China did not pay much attention to the treatment of sewage in the early years, many communities' domestic sewage and a small amount of industrial wastewater are now discharged into the Yangtze River. Heavy metal pollution is difficult to be filtered out in the ecosystem, so heavy metal pollution at the Yangtze River has a tendency to increase. At the same time, due to the high nutritional level of Chinese sturgeon, heavy metal pollution has become the primary threat to Chinese sturgeon. Although the concentration of toxic pollutants in the Yangtze River is very low and within acceptable limits, the enrichment reaction produced by the food chain causes heavy metals to accumulate in fish eggs, fat and liver, resulting in less metabolism of Chinese sturgeon. " Due to differences in tissue

composition such as fat between male and female Chinese sturgeon, the  
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accumulation of contaminant species may be different. Lipophilic substances such as musk ketone, xylene musk metabolite, pesticide DDT ((p, p-DDE, p, p) -DDD), etc., easy to accumulate in fish eggs, fat and liver, and accumulate significantly in female Chinese sturgeons with increasing age” ( )

Summary;

At present, there are many reports on the breeding of Chinese sturgeon and the suitability of spawning grounds. The research on the culture, discharge, and migration of juveniles of Chinese sturgeon has attracted much attention. Fish swimming behavior plays an important role in the life history of fish, such as migration, feeding, escaping from predators, the stress response to polluted environment, etc., and physiological and ecological behaviors during the swimming process of Chinese sturgeon, especially Chinese sturgeon. Aspect research is relatively scarce. Through the study of physiological and ecological behaviors during the swimming process of juvenile Chinese sturgeon, it is important to explore the adaptive mechanism of Chinese sturgeon to environmental changes.

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