



**NOAA**

**CHESAPEAKE BAY OFFICE**  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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## Invasive Catfish

An invasive species is defined as an "alien species whose introduction does or is likely to cause economic or environmental harm to human health" (Executive Order 13112).

Blue and flathead catfish are considered invasive species in the Chesapeake Bay; they have rapidly expanded into nearly every major tributary in the Chesapeake Bay watershed. Scientists are researching how and why these catfish are spreading so rapidly.

Blue and flathead catfish comprise a highly valued recreational fishery in some areas, but are likely negatively affecting native species and the Chesapeake Bay ecosystem.



### Status

**Biomass:** Blue catfish have the potential to dominate the fish populations in tributaries where they are present, representing up to 75% of total fish biomass from recent boat electrofishing collections in the tidal James and Rappahannock Rivers.

**Biological Reference Points:** Overfishing and overfished thresholds have not been set for these catfish. Total abundance is not known and formal fisheries management plans have not been developed because the commercial fishery has not reached critically high landings.

**Fishing and habitat:** Catfish are primarily fished using hook and line by recreational fishermen and landed commercially using a variety of nets, impoundments, and traps.

**By-catch:** Minimal.

**Aquaculture:** Not in the Chesapeake region.

### Fish Facts

- [Blue Crab](#)
- [Menhaden](#)
- [Oysters](#)
- [Striped Bass](#)
- [Alosines](#)
- [Invasive Catfish](#)

### Science and Management

The Chesapeake Bay [Sustainable Fisheries Goal Implementation Team](#) (Fisheries GIT) is a group of representatives from federal agencies, state fisheries managers, and other fishery stakeholders. In January 2012, the Fisheries GIT Executive Committee adopted an [Invasive Catfish Policy Adoption Statement](#), noting "the potential risk posed by blue catfish and flathead catfish on native species warrants action to examine potential measures to reduce densities and limit range expansion, and to evaluate possible negative ecological impacts."

The Invasive Catfish Policy outlines a specific need to control and lessen the effects of these invasive, nonnative fish on Bay tributaries and includes various agency perspectives as well as those of recreational and commercial fishermen who have come to enjoy the sport of catching blue catfish. Actions to be considered include exploring possible ways to reduce the high numbers of these fish, ways to limit their expansion into new rivers, and further evaluation of the possible negative ecological effects they may be causing. In addition to supporting current research to evaluate negative effects of these species, the Fisheries GIT, through its Invasive Catfish Task Force, is committed to developing policy options to mitigate their spread while keeping in mind their recreational and economic value.

Invasive catfish are also present in other areas of the Atlantic Coast. In 2011, the [Atlantic States Marine Fisheries Commission](#) (ASMFC) passed a resolution stating concerns about the increasing presence of blue and flathead catfish along the Atlantic Coast and the potential negative effects these catfish could have on other managed fish species including shad, river herring, and striped bass.

The NOAA Chesapeake Bay Office funds research on invasive catfish to help further understand their basic biology and potential negative effects on native species and human health. Research findings will help inform management and mitigation strategies. Current research focuses on several topics:

Estimating the **abundance** of blue catfish in the James River using a tagging study and mark-recapture analysis. This abundance estimate can verify other estimates, and can be used in ecological models to describe the role and ecological effects of blue catfish in the James River.

Determining the rate of **movement** of adult blue catfish between freshwater and estuarine reaches. This can provide a better understanding of the spread of catfish from across areas of varying salinities.

Conducting various studies to determine which fish species comprise **blue catfish diets**, and

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how diet varies according to certain parameters including specific tributary, season, and size. These results can provide a better understanding of the role of blue catfish in the food web depending on specific location and habitat conditions.

Estimating **predation** mortality by blue catfish on anadromous fish species such as American shad and blueback herring. These results can explain the effects of blue catfish on economically important resources in the Bay.

Evaluating the **contaminant** levels in blue catfish to determine if encouraging human consumption of blue catfish is a safe management option. This will help determine if promoting human consumption and expanding commercial markets for blue catfish are possible management strategies.

Developing and analyzing **blue catfish growth** data to describe their growth patterns. This will allow analysis of blue catfish growth specifically in Bay tributaries, and how patterns may differ among tributaries.

## Life History and Habitat

Life history, including information on habitat, growth, feeding, and reproduction of a species, is important because it affects how a fishery is managed.

**Geographic range:** Blue catfish are native to the Mississippi, Missouri, and Ohio River basins. They were introduced into the James, Rappahannock, and York Rivers in Virginia during the 1970s and 1980s as a new recreational fishery. These catfish have quickly spread throughout the Bay into nearly every major tributary. Flathead catfish—also not native to the Chesapeake Bay—were introduced into the James River in the late 1960s. They have now been observed in the low-salinity upper sections of many Bay tributaries.

**Habitat:** These catfish prefer fresh water, but can thrive in higher salinities as well. Blue catfish in particular have a high tolerance for varying habitat and water conditions. This enables them to survive and move throughout different parts of the Bay with varying salinities, temperatures, and habitat types. This map shows the current observed range of blue catfish by researchers as the blue striped areas, and potential range expansion based on salinity tolerance in light brown.

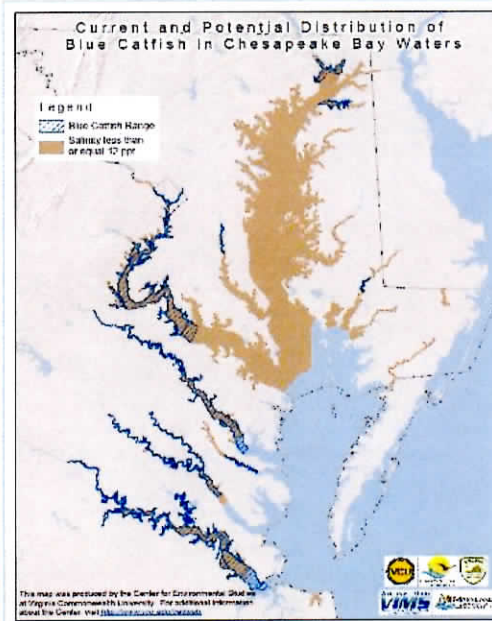
**Life Span:** Blue catfish have a relatively long lifespan; fish more than 20 years old have been observed in Missouri waters. A long lifespan combined with large maximum size, an expansive diet, and increasing population sizes have raised concern for the ecological effects of blue catfish on the Chesapeake Bay ecosystem.

**Food:** Blue and flathead catfish are apex predators of Bay watersheds; they consume at many different levels of the food chain. They are opportunistic and generalist predators. They have a varied diet that includes almost anything—crustaceans, worms, other fish, and even other catfish. As adults, both blue and flathead catfish feed primarily on other fish, including menhaden, shad, river herring, and blue crabs. As populations of these invasive catfish grow and become more widely distributed, their consumption of native fish species also increases.

**Growth Rate:** Growth rate is one of the areas of current research funded by the NOAA Chesapeake Bay Office. Once determined, this information could provide scientists and managers with a better idea of the effects of invasive catfish in the Chesapeake Bay.

**Maximum Size:** Both blue and flathead catfish can grow to be larger than 100 pounds. One blue catfish, caught in an inland lake on the Virginia-North Carolina border, weighed 143 pounds. The Chesapeake Bay record is 102 pounds, caught in the James River in 2009.

**Reproduction:** Blue and flathead catfish are highly productive and create extremely high numbers of



offspring in each reproductive cycle. They spawn once a year from late May into June, mostly in lower-salinity habitats in streams and smaller tributaries. Females produce 4,000 to 8,000 eggs per kilogram of body weight—so a 10-pound fish could produce more than 20,000 eggs.

**Migrations:** There is concern that the spread of invasive catfish is in part due to people moving fish from one tributary to another. Transporting fish from one body of water to another is illegal in both Maryland and Virginia, but transport by people and the resulting introduction of these fish to new areas is thought to contribute to population expansion into the Maryland portions of the Chesapeake Bay.

**Predators:** Adults of these species have few natural predators in the Bay.

**Commercial and Recreational Fishing Interest:** Popular recreational fishery and limited/isolated commercial harvest.

**Distinguishing Characteristics:** These catfish have a flat anal fin and a deeply forked tail; they are silvery-blue in color.

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## Role in the Ecosystem

Both blue and flathead catfish are invasive and potentially causing an unbalanced ecosystem. Although both species are considered invasive in the Chesapeake Bay, the threat of blue catfish is more concerning because of their increasing populations, rapid range expansion, and capacity to consume significant amounts of native fish species. This means that in those areas they may be competing with native fishes, including other ecologically and economically important living resources, for available food.

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## Did You Know?

Electrofishing efforts for invasive catfish have caught upwards of 6,000 fish in an hour.

The largest blue catfish caught in Maryland was 84 pounds—52 inches long—in the Potomac River in 2012. The largest caught in Virginia was 102 pounds and was caught in the James River in 2009.

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