ALBERTA invasive species COUNCIL

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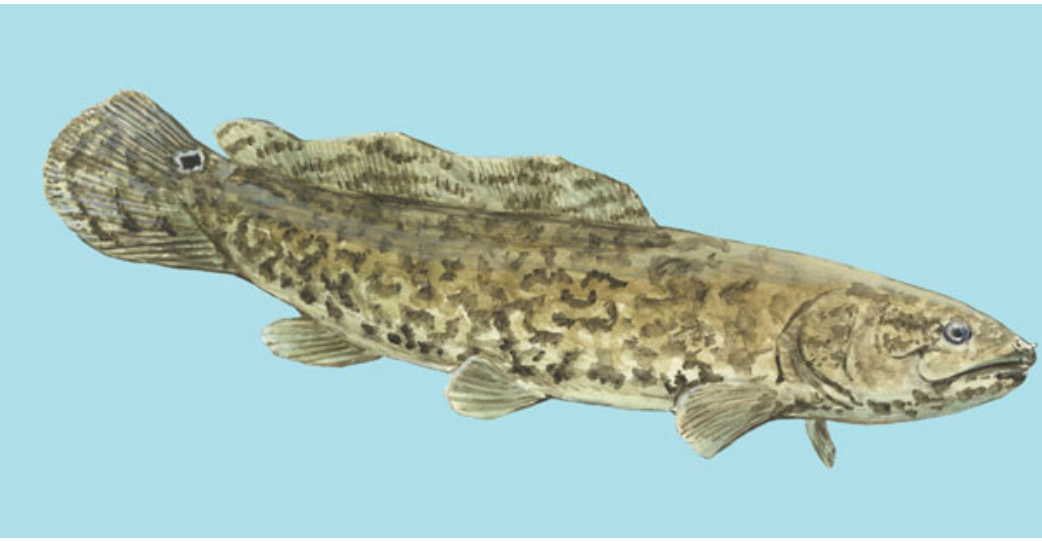
Bowfin

Amia calva (Linnaeus, 1766)

ALBERTA REGULATION: FISHERIES ACT

Last Updated: January 2018



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Overview:

The bowfin is a ray-finned fish native to Eastern North America: St. Lawrence-Great Lakes and Mississippi River drainages South to the Gulf of Mexico.[1] Bowfin introductions are mainly attributed to intentional stocking of lakes and ponds, and subsequent escape into rivers during periods of flooding.[1]

Bowfin are a primitive fish and the lone surviving species of the Family Amiidae.[2] They are voracious feeders, which will consume almost any animal small enough to fit in their mouth.[1] They use sight and scent to locate food, and capture prey by gulping water.

Bowfin have a well-vascularized swim bladder and efficient gills. They are capable of air-breathing when activity and water temperature increases.[3] At high water temperatures, almost three times the amount of oxygen is taken from the than from water.[3] This enables bowfins to survive in stagnant water and withstand high temperatures - lethal temperature is 35.2°C.[2]

Bowfin can be confused with snakeheads, another voracious feeder, but can be easily differentiated by the length of the anal fin; the bowfin's is much shorter while the snakehead's is more than half the length of its dorsal fin.

As of January 1, 2016, the possession, sale, or transport of this species in Alberta is illegal under the Fisheries Act.

Habitat:

Bowfin inhabit swampy, vegetated lakes and rivers.[2]

Identification:

The bowfin body is elongate and almost cylindrical. The head is conic and the mouth is large with the jaw extending well past the eye.[2] Jaws are strong and bear conical teeth. Nostrils are at the front of the snout at the base of short barbels.[2]

Body colour is dark olive on the back and lighter coloured on the sides. The ventral surface is cream coloured or greenish, and the head is yellow to brown with dark horizontal bars.[2] The lower fins are vivid green and the caudal fin is light olive with irregular dark vertical bars.[2]

Adult males have a prominent black spot with a yellow to orange halo placed at the upper base of the caudal fin. In females this spot is less intense or absent.[2]

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Bowfin *(continued)*

The dorsal fin is long, starting at one third of the body length and extending to the tail with 42-53 soft rays. Anal fin origin is at the midpoint of the dorsal fin and has 9-12 soft rays. Pelvic fins are inserted at the midpoint of the body.[2] The bony rays supporting the gill membranes behind the lower jaw (branchiostegal) have 10-12 rays. Bowfin have 80-90 vertebrae.[2]

Total length ranges from 38-68 cm. Maximum reported length is 109 cm, maximum weight 9.8 kg and maximum reported age is 30 years. Males are smaller than females and have shorter life spans.[2]

Ecology:

Males perform all of the parental care, such as building the nests, usually in colonies, and clearing out vegetation.[2] Spawning occurs in late spring and the eggs attach to any hard substrate (gravel, wood). The eggs hatch in 8-10 days[4] and the larvae (about 8 mm) remain attached to the bottom until the yolk sac is absorbed. Fry will then form a tight swarm over the nest, which is guarded by the male.[2]

Young bowfin feed on small invertebrates until they reach about 10 cm at which time they become piscivorous. The young can grow 30-35 cm in the first year. Bowfin will also consume crayfish and frogs.[4]

Bowfin inhabit deeper water during the day and migrate to shallower waters at night to feed.[4]

Economic Impacts:

Bowfin compete directly with native fish for food and also use them for food. The decline of native sportfish populations could have impacts on recreation and tourism.

Environmental Impacts:

The bowfin diet competes directly with native fish for food and habitat. Bowfin consumption of native fish negatively affects their populations and disrupts the trophic structure of aquatic communities.

Sociological Impacts:

The transformation of native aquatic communities results in the intrinsic loss of natural capital and enjoyment of natural areas.

Prevention:

Learn how to identify bowfin and how to prevent spread. Never empty your aquarium into natural water bodies.

Control:

Currently there are no established control options for bowfin other than preventing introduction and harvesting by fishing. If caught, bowfin should be killed and not released.

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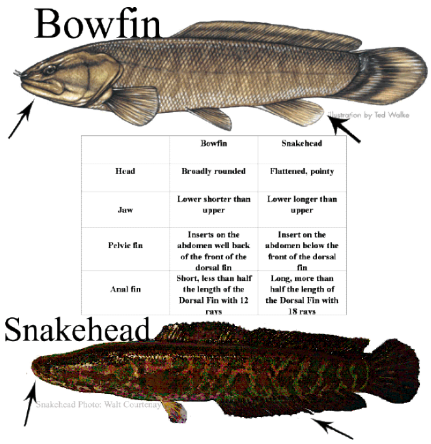
Bowfin *(continued)*



	Bowfin	Snakehead
Head	Broadly rounded	Flattened, pointy
Jaw	Lower shorter than upper	Lower longer than upper
Pelvic fin	Inserts on the abdomen well back of the front of the dorsal fin	Insert on the abdomen below the front of the dorsal fin
Anal fin	Short, less than half the length of the Dorsal Fin with 12 rays	Long, more than half the length of the Dorsal Fin with 18 rays

BowfinSnakeheadGLERI.NOAA.GOV

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REFERENCES:

1. Pam Fuller. 2016. *Amia calva*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. https://nas.er.usgs.gov/queries/factsheet.aspx?SpeciesID=305 Revision Date: 4/11/2006. Accessed December 23, 2016.

2. *Amia calva* (Linnaeus, 1766) Bowfin. FishBase. www.fishbase.ca/summary/2600. Accessed: December 23, 2016.

3. Kjell Johansen, David Hanson, Claude Lenfant. 1970. Respiration in a primitive air breather, *Amia calva. Respiration Physiology* Volume 9, Issue 2, May 1970, Pages 162-174.

4. Bowfin (*Amia calva*) - Texas Parks and Wildlife Department. http://tpwd.texas.gov/huntwild/wild/species/bowfin/ Accessed: December 12, 2016.