

Identifying New Hampshire Freshwater Fish Using A Key

Simulating a NH River Ecosystem

NHFG Watershed Education Program



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Using a Dichotomous Key to Identify Fish Species of New Hampshire

Identifying New Hampshire fish species can be very challenging for students. A **dichotomous key**, based on observable traits, is a useful tool for them to use. Each step in the key offers two contrasting numbered statements. One of these statements will best describe the specimen at hand or direct the user to a further pair of contrasting statements. The continued selection of alternatives that best fit that specimen will lead to an identification.

In order to identify a fish species that has been collected, this guide provides:

- A **Glossary** on page 3.
- A **Generalized Fish Showing External Features** on page 4.
- The dichotomous **Key to the Families of Freshwater Fish of NH** on pages 5 and 6.
- A list of **Fish Families and Species** on page 7.
- An **Illustrated Guide to the Genus and Species** on pages 8-17.

Using the **Glossary, Generalized Fish Showing External Features**, and the dichotomous **Key to the Families of Freshwater Fish of NH**, the first step is to determine the family to which the fish belongs.

Once in the correct family, consult the list of **Fish Families and Species** to get the possible list of genus and species that are in that family.

Once that has been narrowed down, it will be easier to use the **Illustrated Guide to the Genus and Species** to determine which genus and species is being identified. The illustrated guide describes the physical characteristics and the habitat of a given species. The additional information may help narrow down two species that look alike but live in different habitats.

Note: This guide does not describe every species in NH, just the ones that students are more likely to encounter.

The information in this key is based on the “Freshwater Fishes of New Hampshire” by John Scarola. Using that book will offer additional information but this key can be used without having a copy of it.

References:

Scarola, John F.

1987. “Freshwater Fishes of New Hampshire”. New Hampshire Fish and Game Department.

NHF&G Website: “Fish Fact Sheets”: www.wildlife.state.nh.us/fishing/species.html

GLOSSARY

Adipose fin – a small fleshy rayless fin on the back between the dorsal and caudal fins.

Air bladder – a membranous gas-filled sac in the upper part of the body cavity.

Anadromous – ascending rivers from the sea to spawn.

Anal fin – the unpaired fin on the underside of the fish just in front of the caudal fin.

Barbel – a fleshy projection about the mouth.

Canine teeth – large conical teeth in the front part of the jaws.

Carnivorous – eating or living on flesh.

Caudal fin – the tail fin.

Caudal peduncle – the slender region of the fish's body between the anal fin and the base of the caudal fin.

Compressed – flattened from side to side.

Crustaceans – members of the group of animals to which belong shrimps, crayfish and water fleas.

Dorsal fin – a fin composed of either spines, rays, or both, on the back of the fish.

Gill arch – the bony support to which the gills and gill rakers are attached.

Gill rakers – the projections along the inner edge of the gill arches.

Herbivorous – eating or living on plant material.

Insertion of fins – the line of attachment of the paired fins to the body.

Larva (plural larvae) – the immature stage of an animal that must undergo certain structural changes before acquiring the appearance of an adult.

Lateral band – a band of color running horizontally along the sides of a fish.

Lateral line – a series of pores along the sides of a fish's body. The lateral line is incomplete when the row of pores does not extend as far back as the base of the caudal fin; it is complete when the pores do extend as far back as the base of the caudal fin.

Laterally compressed – flattened from side to side.

Maxilla – the bone lying on each side of the upper jaw.

Mollusks – animals belonging to the group in which clams, mussels, and snails are included.

Omnivorous – eating and living on foods of all kinds.

Opercle – the large, rearmost bone on each side of the upper jaw.

Opercular flap – the soft tab extending backward from the rear margin of the opercle, in sunfishes.

Origin of fins – the foremost points at which the dorsal and anal fins are in contact with the body.

Paired fins – the pectoral and pelvic fins.

Papillae – small fleshy projections.

Parr marks – the dark vertical bars on the sides of young salmonids.

Pectoral fins – the upper paired fins just behind the head.

Pelvic axillary process – a fleshy triangular projection lying at the base of the pelvic fins.

Pelvic fins – the paired fins lying beneath the fish and usually behind the pectoral fins.

Peritoneum – the membranous lining of the body cavity.

Pharyngeal teeth – the teeth on the pharyngeal bones, located deep in the throat. These teeth are in 1 to 3 rows on each side. The formula gives the number of teeth in each of the rows from left to right. Thus the formula 2, 5-4, 1 indicates that the pharyngeal bone on the left side has 2 teeth in the outer row and 5 in the inner, while the right bone has 4 in the inner row and 1 in the outer.

Piscivorous – fish-eating.

Plankton – tiny free-floating plants and animals.

Preopercle – the J-shaped bone lying immediately ahead of the opercle.

Pseudobranchiae – gill-like structures on the inner surfaces of the gill covers.

Pyloric caeca – finger-like projections coming off the digestive tract at the junction of the stomach and the intestine.

Ray – a jointed, usually flexible rod-like structure that supports a fin.

Redd – the gravel nest of a salmon or trout.

Smolts – young salmon that have acquired a silvery coloration just before migrating from fresh water to the sea.

Spine – a needle-like supporting structure of a fin that is unjointed and usually rigid and sharp.

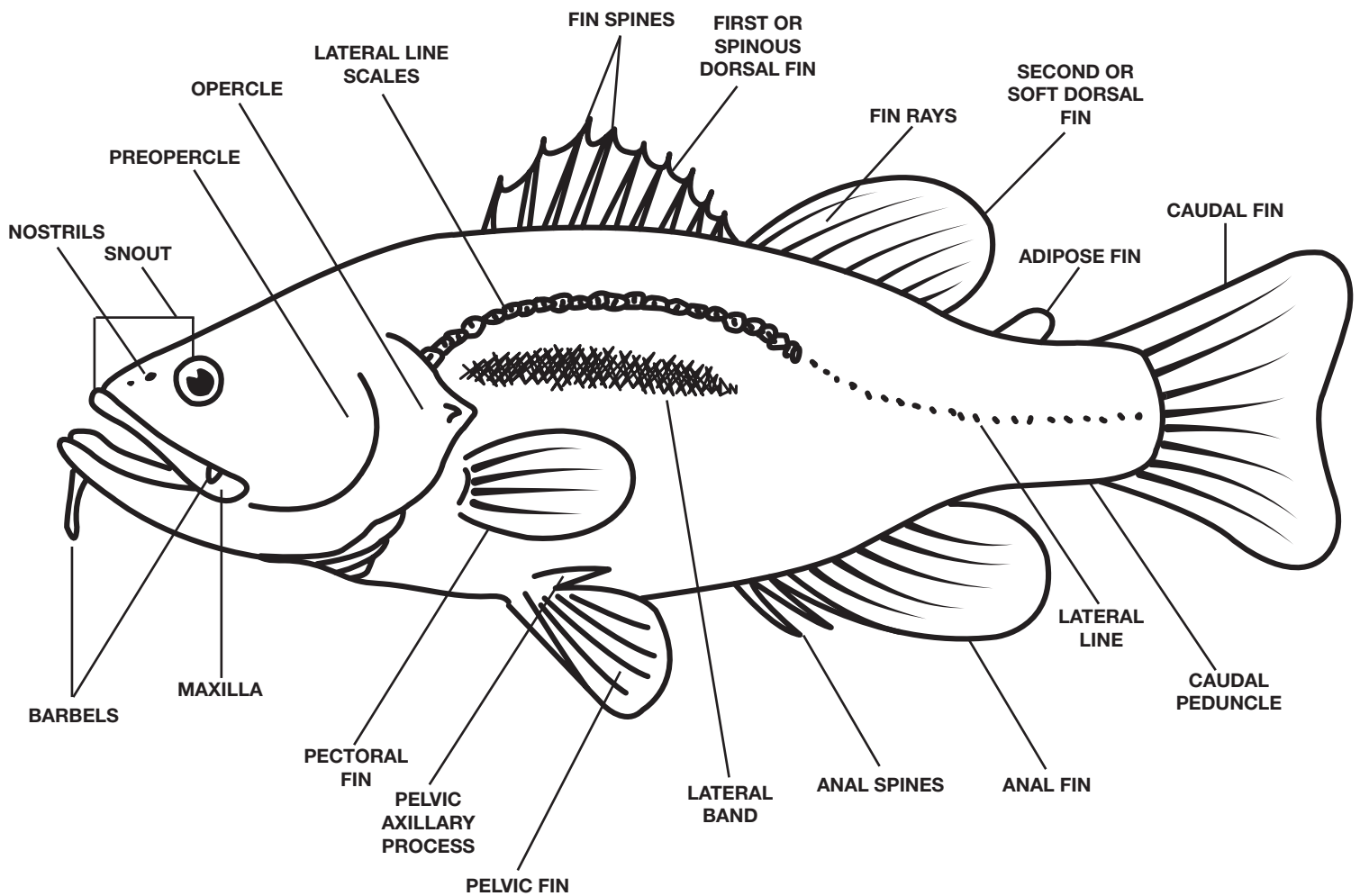
Thermocline – the middle layer of water in a lake that drops markedly in temperature from its upper to lower limit.

Tubercles – small hardened projections that develop in the skin and fins of some fishes during their breeding period, particularly in adult males (also called nuptial tubercles or pearl organs).

Verticle fins – the dorsal, adipose, anal, and caudal fins.

Yolk sac – the sac of nutrients attached to very young fish, which serves as a source of food before they begin active feeding.

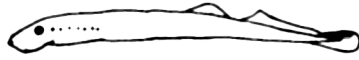
GENERALIZED FISH SHOWING EXTERNAL FEATURES



KEY TO THE FAMILIES OF FRESHWATER FISH OF NH

Page numbers refer to the "Freshwater Fishes of New Hampshire" by John F. Scarola

1. Jaws absent, mouth a circular sucking disc; seven gill openings in a line on each side behind head; no paired fins.

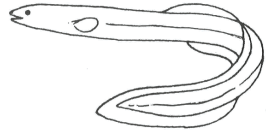


Lamprey Family,
Petromyzintidae
Page 10

Jaws present, gill opening single, slit-like, cover by a boney flap (opercle); paired fins present.

2

2. Body snake-like in shape; dorsal, caudal, and anal fins continuous; pelvic fins absent.



Freshwater Eel Family,
Anguillidae, Page 13

Body more or less typically fish-shaped; pelvic fins present.

3

3. Pelvic fins inserted a considerable distance behind pectoral fins.

4

Pelvic fins inserted in close proximity to pectoral fins.

11

4. Adipose fin present (sometimes continuous with caudal fin).

5

Adipose fin absent.

7

5. Eight long barbels about mouth; body scaleless; dorsal and pectoral fins each with a stout spine.

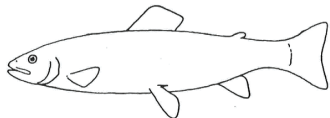


Freshwater Catfish Family,
Ictaluridae, Page 74

No barbels; body with scales; no spines in fins.

6

6. Pelvic axillary process present.



Trout Family
Salmonidae, Page 19

Pelvic axillary process absent.



Smelt Family
Osmeridae, Page 39

7. Belly compressed to a thin edge, midline with a row of strong scales forming a saw-like margin.



Herring Family
Clupeidae, Page 15

Belly rounded-over, without a row of saw-tooth-like scales along midline.

8

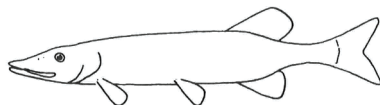
8. Head at least partly scaled

9

Head scaleless

10

9. Jaws elongate, "duck-bill" in appearance; teeth large; caudal fin forked.



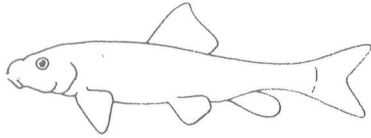
Pike Family
Esocidae, Page 42

Jaws not elongate; teeth inconspicuous; caudal fin rounded, not forked.



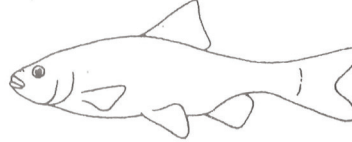
Killifish Family
Cyprinodontidae, Page 83

10. Mouth directed downward, adapted for sucking, with thick fleshy lips having either pleats or papillae; dorsal fin with 10 or more rays, never with a stout spine at front.



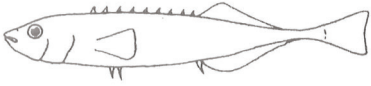
Sucker Family
Catostomidae, Page 69

Mouth directed toward the front (except in Rhinichthys), lips thin, without pleats or papillae; dorsal fin with less than 10 rays or, if with more, having a strong saw-toothed spine at front.



Minnow Family
Cyprinidae, Page 48

11. Soft dorsal fin preceded by three or more isolated spines, the spines not connected to each other by a membrane.



Stickleback Family
Gasterosteidae, Page 86

Soft dorsal fin not preceded by isolated spines .

12

12. Chin with a single barbel near tip.



Codfish Family
Gadidae, Page 81

Chin without a barbel.

13

13. Body scaleless; head large and flattened; pectoral fins large and wing-like.

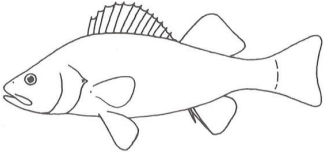


Sculpin Family
Cottidae, Page 116

Body with scales; head not flattened; pectoral fins not large and wing-like.

14

14. Anal fin with one or two spines (spines very weak in Etheostoma)

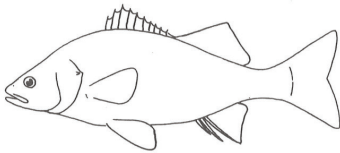


Perch Family
Percidae, Page 109

Anal fin with three or more spines (the first spine is sometimes very short, being easily overlooked)

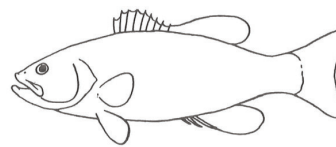
15

15. Pseudobranchiae (on inner surface of gill cover) well developed and completely exposed; opercle with a small, strong, shark spine; anal fin with only three spines.



Temperate Bass Family
Percichthyidae, Page 90

Pseudobranchiae absent or poorly developed and partly concealed by a membrane; opercle without a spine; anal fin with three or more spines.



Sunfish Family
Centrarchidae, Page 92

FISH FAMILIES AND SPECIES

Families	Abbreviation	
• Species		
Lamprey Family (<i>Petromyzontidae</i>)		
• Sea lamprey, <i>Petromyzon marinus</i>	SL	
• American brook lamprey, <i>Lethenteron appendix</i>	ABL	
Freshwater Eel Family (<i>Anguillidae</i>)		
• American eel, <i>Anguilla rostrata</i>	AE	
Herring Family (<i>Clupeidae</i>)		
• Alewife, <i>Alosa pseudoharengus</i>	AW	
• Blueback herring, <i>Alosa aestivalis</i>	BB	
• American shad, <i>Alosa sapidissima</i>	AS	
Trout Family (<i>Salmonidae</i>)		
• Rainbow trout, <i>Oncorhynchus mykiss</i>	RT	
• Brown trout, <i>Salmo trutta</i>	BT	
• Atlantic salmon, <i>Salmo salar</i>	ATS	
• Brook trout, <i>Salvelinus fontinalis</i>	EBT	
• Lake trout, <i>Salvelinus namaycush</i>	LT	
• Round whitefish, <i>Prosopium cylindraceum</i>	RW	
• Lake whitefish, <i>Coregonus clupeaformis</i>	LW	
Smelt Family (<i>Osmeridae</i>)		
• Rainbow smelt, <i>Osmerus mordax</i>	RS	
Pike Family (<i>Esocidae</i>)		
• Chain pickerel, <i>Esox niger</i>	ECP	
• Redfin pickerel, <i>Esox americanus</i>	RFP	
• Northern pike, <i>Esox Lucius</i>	NP	
Minnnow Family (<i>Cyprinidae</i>)		
• Common carp, <i>Cyprinus carpio</i>	CRP	
• Goldfish, <i>Carassius auratus</i>	GF	
• Longnose dace, <i>Rhinichthys cataractae</i>	LND	
• Blacknose dace, <i>Rhynchichthys atratulus</i>	BND	
• Lake chub, <i>Couesius plumbeus</i>	LC	
• Creek chub, <i>Semotilus atromaculatus</i>	CC	
• Fallfish, <i>Semotilus corporalis</i>	FF	
• Northern redbelly dace, <i>Chrosomus eos</i>	NRD	
• Finescale dace, <i>Phoxinus neogaeus</i>	FD	
• Golden shiner, <i>Notemigonus crysoleucas</i>	GS	
• Fathead minnow, <i>Pimephales promelas</i>	FHM	
• Common shiner, <i>Notropis cornutus</i>	CS	
• Bridle shiner, <i>Notropis bifrenatus</i>	BS	
• Spottail shiner, <i>Notropis hudsonius</i>	STS	
Sucker Family (<i>Catostomidae</i>)		
• Common white sucker, <i>Catostomus commersoni</i>	CWS	
• Longnose sucker, <i>Catostomus catostomus</i>	LNS	
• Creek chubsucker, <i>Erimyzon oblongus</i>	CCS	
Freshwater Catfish Family (<i>Ictaluridae</i>)		
• Brown bullhead, <i>Ameiurus nebulosus</i>	BBH	
• Yellow bullhead, <i>Ameiurus natalis</i>	YBH	
• Margined madtom, <i>Noturus insignis</i>	MMT	
Codfish Family (<i>Gadidae</i>)		
• Burbot, <i>Lota lota</i>	BRB	
Killifish Family (<i>Cyprinodontidae</i>)		
• Banded killifish, <i>Fundulus diaphanous</i>	BDK	
Stickleback Family (<i>Gasterosteidae</i>)		
Temperate Bass Family (<i>Percichthyidae</i>)		
• White perch, <i>Morone Americana</i>	WP	
Sunfish Family (<i>Centrarchidae</i>)		
• Smallmouth bass, <i>Micropterus dolomieu</i>	SMB	
• Largemouth bass, <i>Micropterus salmoides</i>	LMB	
• Banded sunfish, <i>Enneacanthus obesus</i>	BDS	
• Redbreast sunfish, <i>Lepomis auritus</i>	RBS	
• Pumpkinseed, <i>Lepomis gibbosus</i>	CSF	
• Bluegill, <i>Lepomis macrochirus</i>	BG	
• Rock bass, <i>Ambloplites rupestris</i>	RB	
• Black crappie, <i>Pomoxis nigromaculatus</i>	BC	
Perch Family (<i>Percidae</i>)		
• Walleye, <i>Sander vitreus</i>	WLE	
• Yellow perch, <i>Perca flavescens</i>	YP	
• Tessellated darter, <i>Etheostoma olmstedti</i>	TD	
• Swamp darter, <i>Etheostoma fusiforme</i>	SD	
Sculpin Family (<i>Cottidae</i>)		
• Slimy sculpin, <i>Cottus cognatus</i>	SS	

ILLUSTRATED GUIDE TO THE GENUS AND SPECIES

TROUT FAMILY (*Salmonidae*)



Rainbow Trout (*Oncorhynchus mykiss*)

Description: With a body shape typical of all trout, coloration is generally blue-green or yellow-green with a pink streak along their sides, white underbelly, and small black spots on their back and fins. Color patterns may differ greatly in relation to location, age, and spawning condition. Juvenile fish will have parr markings on both sides.

Habitat: Preference is given to cool, clear rivers, streams, and lakes. Adults seem well adapted to deeper water while young fish thrive in swift sections of streams.



Brown Trout (*Salmo trutta*)

Description: With a body shape typical of other trout, the brown trout has a dark, olive-brown coloration with black and sometimes red spots on the body, fins, and tail. Immature brown trout have eight to ten parr marks on their sides and closely resemble Atlantic salmon.

Habitat: Typical of all salmonids, the brown trout thrives in cool, clean water. It favors the slower, deeper areas of lakes and ponds as well as those areas in rivers and streams. Prey abundance is a strong factor in habitat selection.



Brook Trout (*Salvelinus fontinalis*)

Description: The species can be quite variable in coloration but usually has several spots (red or pale in color) surrounded with blue halos (outer circles). The main background of the fish can vary between red, silver, black, green/olive, or brown. The underbelly can range from pink to red to yellow. Fins have distinct white borders on the outer edges. Typical of all fish in the salmonidae family, brook trout have an adipose fin. The species has a slight or very shallow forked tail.

Habitat: While brook trout can inhabit ponded waters, they are most commonly found in small to medium sized rivers and streams with high dissolved oxygen levels and cool water temperatures not exceeding 70°F. Generally, a river or stream with a mixture of pools, riffles, and runs enhanced by undercut banks and fallen trees will support wild brook trout. Other favorable habitat features include a well-established riparian buffer with shade, access to floodplains (to help dissipate erosive flows), and mature trees that can fall into the stream to enhance the in stream habitat.

PIKE FAMILY (*Esocidae*)



Chain Pickerel (*Esox niger*)

Description: The chain pickerel is a long, torpedo shaped fish with a large mouth filled with needle-like teeth. The large dorsal and anal fins positioned close to the tail are an adaptation for sudden bursts of speed. Adults have a characteristic pattern of dark chain-like markings over a dark green to yellowish green background. There is generally a dark bar beneath the eye that extends straight down or slightly forward, toward the lower jaw.

Habitat: Chain pickerel inhabit the shallow waters of lakes, ponds, and slow flowing sections of rivers and streams.



Redfin Pickerel (*Esox americanus*)

Description: Redfin pickerel look similar to the chain pickerel, except smaller, with a more blunt snout and an olive to yellowish green coloration compared to the deeper green color of the chain pickerel. Its most distinctive features are its reddish colored fins and a backwards slanting black vertical bar beneath the eye.

Habitat: The redfin pickerel prefers shallow weedy backwaters in stands of aquatic vegetation or thick overhanging grasses and shrubs. In New Hampshire it is frequently found in streams flowing through abandoned beaver ponds in very small watersheds that may dry up in some years.



Northern Pike (*Esox lucius*)

Description: The long, relatively thin body of the pike is olive-green to grey with white bar-like spots on the sides. The underside of the fish shades to pale yellow or white and fins are often marked with dark spots. They can be distinguished from pickerel by the absence of scales on the lower half of the opercle.

Habitat: In rivers and streams, pike can be found in sluggish, cool water, while in lakes they prefer weedy or cold, clear, rocky areas. Spawning takes place in flooded marshes, small streams, and backwater coves. Juvenile fish prefer the cover of submerged plants or other structure.

MINNOW FAMILY (*Cyprinidae*)



Longnose Dace (*Rhinichthys cataractae*)

Description: A streamlined minnow with an elongated snout that projects over a sucker-like mouth. Coloration ranges from dark brown to light tan, often mottled or speckled in appearance, with a white to yellowish underbelly. Some individuals may have a faded black lateral band; it is usually not as pronounced as that of the blacknose dace. The fins of breeding males may have a reddish tinge.

Habitat: Longnose dace inhabit swift flowing riffle sections of rivers and streams with boulder, cobble, and gravel substrate.



Blacknose Dace (*Rhinichthys atratulus*)

Description: Blacknose dace are a small minnow species with a black lateral band which extends from a slightly pointed snout to the base of the tail. The scales are very small. Coloration is dark gray, sometimes with mottle spots, above the lateral band and light gray to silver below. Breeding males turn reddish in color.

Habitat: Blacknose dace are found in rocky streams and rivers with moderate to swift current.



Lake Chub (*Couesius plumbeus*)

Description: The rounded body is elongate with a broad snout extending just past the lower lip which has two small barbells, one at each end. The back is olive-brown or dark brown, and the sides are silver with a lead colored band that extends along the side onto the cheek. They rarely exceed four inches in length.

Habitat: The lake chub is most commonly found in lakes, but can also live in clear, cold rivers and streams. It favors gravel or rocky substrate and is often found where a river or stream empties into a lake.



Creek Chub (*Semotilus atromaculatus*)

Description: The creek chub looks similar to the fallfish with a more prominent lateral band and smaller scales. Creek chubs may be distinguished from other small minnow species by a dark spot at the base of the dorsal fin. Males grow horny tubercles on their head and snout during the spawning season.

Habitat: Creek chubs prefer small, moderate to high gradient, clear streams and rivers with gravel and sand substrate. They may occasionally be found in small ponds or lakes with gravel or sandy shorelines.

MINNOW FAMILY (*Cyprinidae*)



Fallfish (*Semotilus corporalis*)

Description: A thick bodied minnow with large, silver, metallic looking scales that overlap in half circles. The snout extends slightly beyond the upper lip. The mouth terminates at the front end of the eye, which is relatively large. Young fallfish appear to have a dark lateral band which can make them difficult to distinguish from other juvenile minnows. Common shiners, unlike fallfish, have diamond shaped scales which slough off easily and become crowded just behind the gills.

Habitat: Fallfish are a habitat generalist and can be found in nearly any freshwater habitat, though they are most abundant in rivers and streams with a mix of rocky and gravel substrates.



Northern Redbelly Dace (*Chrosomus eos*)

NH Conservation Status: Special Concern

Description: The northern redbelly dace is a small to medium sized minnow species with two parallel, black lateral bands, a terminal mouth, and very small scales. The intestine of the redbelly dace is long and coiled. Male northern redbelly dace become brightly colored in red or yellow and grow tubercles during the breeding season.

Habitat: Northern redbelly dace prefer cool headwater streams and small ponds with sluggish flow and ample cover from over hanging shrubs or aquatic vegetation. They tend to thrive in areas with a history of beaver activity. Individuals may be found in rivers or streams with higher gradients and flow if washed out of or dispersed from areas of more suitable habitat.



Golden Shiner (*Notemigonus crysoleucas*)

Description: The golden shiner is a slab shaped minnow with golden colored scales and a lateral line that curves downward into the lower third of its body. Juvenile golden shiners have a dark lateral band and are easily confused with other minnow species when observed in the water.

Habitat: Golden shiners are usually associated with aquatic vegetation in lakes, ponds, or slow moving sections of rivers and streams.

MINNOW FAMILY (*Cyprinidae*)

Common Shiner (*Notropis cornutus*)



Description: Common shiners are a silvery minnow similar in appearance to the fallfish. Their scales are more laterally compressed, diamond shaped, and crowded toward the head. Scales slough off more easily than those of the fallfish, which are more rounded and plate-like. The fins of breeding males become reddish during spawning and their heads become covered with horny tubercles. For this reason, common shiners are sometimes referred to as redfin shiners.

Habitat: Common shiners are found in small streams to medium sized rivers with unvegetated, gravel to rubble bottoms. They tend to concentrate in pool habitat.

Bridle Shiner (*Notropis bifrenatus*)



NH Conservation Status: Threatened

Description: The bridle shiner is a small minnow species with a black lateral band that extends from the tip of the snout, through the eye, back to the base of the tail. It is golden in color, with large, diamond shaped scales and a white underbelly. The mouth of the bridle shiner is positioned just below the tip of the snout.

Habitat: Bridle shiners depend on dense communities of submerged aquatic vegetation for survival. This habitat may be found along the shorelines and coves of lakes and ponds, the backwaters of larger rivers, and in slow flowing streams.

Spottail Shiner (*Notropis hudsonius*)



Description: A medium-sized minnow from 2 to 5 inches in length. Streamlined body with silvery-bluish sides and a black spot at the base of the tail fin (spot sometimes not visible). Tail is deeply forked. Large loose scales come off easily. Anal and pelvic fins contain 8 rays. Sub-terminal mouth does not reach end of snout. The peritoneum (lining of the abdominal cavity) is silvery.

Habitat: Typically found in large lakes and rivers to small streams. They are often found in large schools and prefer sandy to silty areas with slower flows in rivers and streams.

SUCKER FAMILY (*Catostomidae*)



White Sucker (*Catostomus commersoni*)

Description: A cylindrical fish with a blunt snout and a downward pointed fleshy mouth adapted for bottom feeding. The scales are relatively large and visible, but not as large as those of the fallfish. Adults are black to brass colored on the back with a cream colored underbelly. Juvenile white suckers are more mottled in coloration. During spawning, males grow coarse tubercles on their fins and become reddish in color along their sides.

Habitat: Freshwater rivers, streams, lakes, and ponds of all sizes.



Longnose Sucker (*Catostomus catostomus*)

Description: Longnose suckers are similar in appearance to white suckers except for a protruding snout that extends past the upper lip. The lower lip on the longnose sucker is larger than that of the white sucker and its scales are smaller. Male longnose suckers become reddish in color with horny tubercles on their fins during the spawning season.

Habitat: Longnose suckers prefer cool, moderate gradient streams and rivers with gravel or rubble substrate. They may also be found in the deeper water of northern lakes.



Creek Chubsucker (*Erimyzon oblongus*)

Description: Adult creek chubsuckers are golden in color, with pleated sucker-like lips, large prominent scales, and no lateral line. Creek chubsuckers are more oblong and laterally compressed than the cylindrical body shape of common white suckers. Juvenile creek chubsuckers have a dark lateral band which makes them easy to confuse with bridle shiners.

Habitat: Creek chubsuckers are found in slow flowing rivers and streams with muddy bottoms and aquatic vegetation.

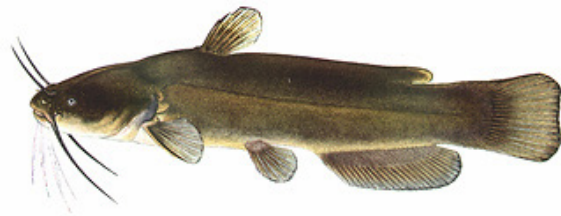
FRESHWATER CATFISH FAMILY (*Ictaluridae*)



Brown Bullhead (*Ameiurus nebulosus*)

Description: The brown bullhead, also known as horned pout, is a dark gray to brown colored catfish with a cream-colored belly. Its dark colored whiskers distinguish the brown bullhead from its close relative, the yellow bullhead, which gets its name from its yellowish underbelly and bottom two whiskers. Juvenile brown bullheads may be distinguished from margined madtoms by their prominent adipose fin. The adipose fin of the madtom is fused to the caudal fin.

Habitat: The brown bullhead prefers lakes, ponds, and slow moving sections of rivers and streams. However, brown bullheads are widespread throughout New Hampshire and may be found in almost any habitat, including faster flowing streams with rocky substrate.



Yellow Bullhead (*Ameiurus natalis*)

Description: The yellow bullhead is a species of catfish that has a similar appearance to that of the brown bullhead with the exception of two yellow bottom whiskers and a yellowish underbelly.

Habitat: Yellow bullheads are habitat generalists, but are most common in lakes, ponds, and slow flowing sections of medium sized to large rivers. In New Hampshire, the yellow bullhead is sometimes found in faster flowing, more riverine habitats than the brown bullhead, but there is much overlap between the two species.



Margined Madtom (*Noturus insignis*)

Description: A small species of catfish with blue eyes and an adipose fin that is fused to the caudal fin. Yellowish to grey in color, margined madtoms are lighter in appearance than the usually darker colored bullheads.

Habitat: Margined madtoms live in rocky sections of medium sized streams and small rivers, where they can be locally very abundant.

SUNFISH FAMILY (*Centrarchidae*)



Smallmouth Bass (*Micropterus dolomieu*)

Description: More streamlined than many of its relatives, the smallmouth is well adapted for living in either flowing or calm water. The mouth of the smallmouth bass does not extend past the eye. Smallmouth bass tend to be olive green to bronze in color, with vertical markings that become blotchy with age. There are small scales at the base of the dorsal and anal fins. Juvenile smallmouth bass have distinctive tri-colored tails: orange and black with white at the tip.

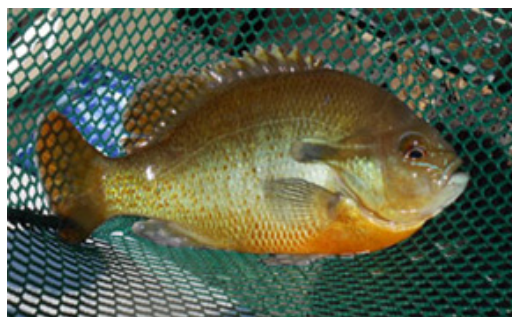
Habitat: Smallmouth bass prefer clear, rocky areas of lake and pond shores or medium sized to larger rivers.



Largemouth Bass (*Micropterus salmoides*)

Description: The largemouth bass is elongated and laterally compressed with a mouth that extends past the rear edge of the eye. It has a horizontal black streak, either continuous or broken into blotches, along each side and a large powerful tail. Its scales are larger than those of the smallmouth bass. Coloration is generally green along the back, fading to silvery white below. Unlike the smallmouth bass, there are no scales at the base of the anal and dorsal fins.

Habitat: Largemouth bass prefer weedy backwaters, ponds, and lake shores with aquatic vegetation and a muddy bottom. They are often associated with golden shiners, brown bullheads, chain pickerel, and bluegill.



Redbreast Sunfish (*Lepomis auritus*)

Description: The redbreast sunfish may be distinguished from other sunfish species by its narrow, black opercular flap and its small rounded pectoral fins. The caudal fin is concave in shape. Iridescent blue/green markings occur between the mouth and the eye, but usually do not extend to the gills. The back of the redbreast sunfish is dark green to blue, fading to a reddish orange underbelly.

Habitat: Unlike the other sunfish species found in New Hampshire, redbreast sunfish are less dependent on aquatic vegetation as habitat. They prefer slow to moderate flowing sections of medium to larger sized rivers, using fallen trees, overhanging shrubs, or large boulders for cover. They may also be found along the shorelines of lakes and ponds.

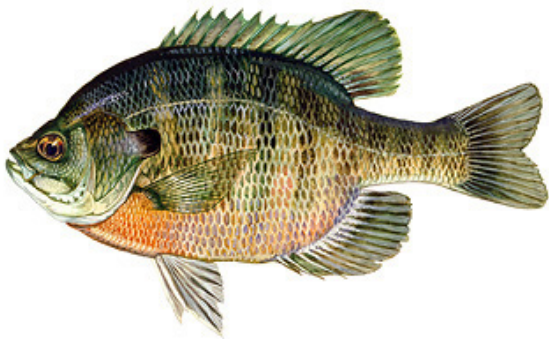
SUNFISH FAMILY (*Centrarchidae*)



Pumpkinseed (*Lepomis gibbosus*)

Description: Pumpkinseeds may be distinguished from other sunfish by a red spot on the rear margin of the operculum, just above the pectoral fin. The pectoral fins are long and pointed and the caudal fin is forked. Adult pumpkinseeds are often striking in color with a dark green back, rust colored spots, and a bright orange belly. There are bluish green streaks on the head radiating out from the mouth and eye.

Habitat: Pumpkinseed sunfish, also known as common sunfish, are an adaptable species capable of living in both lacustrine and riverine habitats. They are usually found associated with aquatic vegetation along the shorelines of lakes and ponds. In rivers and streams pumpkinseeds usually inhabit backwaters and deeper pools with little current.



Bluegill (*Lepomis macrochirus*)

Description: Bluegills are bluish green to gray colored sunfish with dark vertical bands. There is a dark spot on the operculum, above the pectoral fin, and also at the rear of the dorsal fin. The lower jaw and cheeks are slate blue in color.

Habitat: Bluegills inhabit ponds, lake shores, or slow flowing rivers with aquatic vegetation.



Black Crappie (*Pomoxis nigromaculatus*)

Description: Body is very deep and laterally compressed. Has a large mouth and when it is closed the upper jaw extends past the middle of the eye. There are 7-8 dorsal spines and 5-7 anal spines. Dark olive back with sides yellowish-green to silver and dark mottling.

Habitat: Often found in small schools near cover such as vegetation, fallen trees, or boulders. In the spring, black crappie are found in shallow water, but they tend to roam in deeper water during the summer and fall.

CODFISH FAMILY (*Gadidae*)

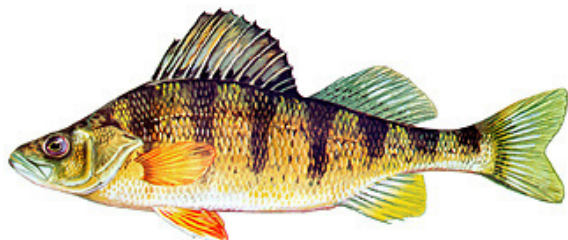


Burbot/Freshwater Cusk (*Lota lota*)

Description: The burbot is the only freshwater member of the cod family. It has an eel shaped body with a large mouth and a single barbell dangling from its lower jaw. The skin is smooth in appearance, with very small scales and olive brown to black mottled markings over a cream colored under body. The anal and second dorsal fins are elongated, extending from the midpoint of the body to the base of the caudal fin.

Habitat: : Large, deep lakes and cold water rivers and streams.

PERCH FAMILY (*Percidae*)



Yellow Perch (*Perca flavescens*)

Description: Yellow perch have a long, somewhat laterally compressed body with a large head and mouth, which is filled with small needle-like teeth. It is usually golden yellow to green in color, with dark vertical bands.

Habitat: The yellow perch is found in ponds, lakes, and slow flowing rivers throughout New Hampshire. It is usually abundant in stands of aquatic vegetation along shorelines in the summer.

SCULPIN FAMILY (*Cottidae*)



Slimy Sculpin (*Cottus cognatus*)

Description: A broad, flat head is found on a body that ranges from brown to mottled black with a white underside. The dorsal fin is spotted with orange on breeding males. There are 7 to 10 spines in the first dorsal fin and 14 to 19 in the elongated second one. Most adult fish grow to two or three inches in length.

Habitat: Sculpin prefer clear, cool streams or the rocky bottoms of cold lakes and ponds. When lying motionless in this type of substrate, they can be very difficult to see.