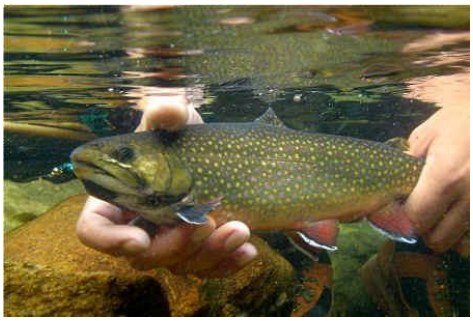
Brook Buddies

In nature, as in society, relationships exist in which everybody wins. One example of this occurs in the Lamprey River. Both brook trout and brook floater mussels are native to the river and rely on clean, cold water to survive and thrive. Brook floater mussels rely on brook trout. Brook trout benefit from having mussels as neighbors.

Fresh water mussels have a unique adaptation that has co-evolved with certain species of fresh water fish. When mussels reproduce, the males release their sperm into the water and the females filter the water through their bodies. The females then release the fertilized eggs into the water. The eggs hatch into larvae which attach themselves to specific fish. The larvae travel with the fish for a time, and then drop to the bottom where they will continue to mature into adults. They will spend the rest of their lives, usually 10-15 years but up to 100 years, living in the sediment. The larvae do not seem to harm the fish, so they are not parasitic, but the mussels derive a dispersal benefit from the fish. The fish derive a respiratory benefit from the mussels as they filter the water, cleaning it of debris.

Brook trout are popular with sportsmen, so NH Fish & Game breeds and stocks them. Some "brookies" still breed in the river, but most are stocked at present. Brook trout are susceptible to pressures from fishermen, but they are also vulnerable to pressures caused by impaired water quality. Additional and likely more significant pressure comes from nutrient pollution, siltation, and increased temperatures caused by removal of shade trees along the river or warm run-off from paved surfaces. The same impairments that affect trout also encumber fresh water mussels.



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The brook trout is New Hampshire's State Fresh Water Fish. It is easily recognized by the white band on the leading edge of the fins. This species spawns in fall and eggs hatch 2-3 months later as "fry". Most will spend their entire lives in the stream in which they hatch, but some head to sea, returning to their natal stream to spawn.

The brook floater mussel is currently listed as an endangered species in New Hampshire and most New England states. It is losing habitat as greater loads of sediment and pollutants reach the river and water temperatures rise. The water quality in most rivers is declining as the human population increases, putting greater demands on rivers and their watersheds. The presence of brook floater mussels is a very good sign and usually means that water quality is excellent. The Lamprey has historically supported healthy populations of the mussel.

 outside shell  inside shell www.ct.gov/dep/cwp/view.asp	The brook floater is a small mussel that rarely exceeds 3" in length. It has a unique habit of "gaping" (relaxing its adductor muscles and opening its valves) when out of water, exposing the cantaloupe-colored foot and mantle cavity. It is easily mistaken for similar species, so an expert should be consulted to verify identification.

In the summer of 2010, the Lamprey River Advisory Committee commissioned two studies that will help determine if the river is doing well or if it is showing signs of stress. One study will survey fresh water mussel populations. Brook floater mussels and their historic locations will receive extra scrutiny. A second study will investigate what fish species live in the river and the tributaries. A special focus will be determining whether brook trout are breeding in the river or if the river's brook trout are all from NH Fish and Game. Separately these studies will yield interesting and valuable information. Together, they could yield something very big. Is the Lamprey holding its own or it is succumbing to an impaired status? Like canaries in the coal mine, brook trout and brook floater mussels are indicator species of the health of their environment.

As you explore the Lamprey and its watershed, keep your eyes open to the variety of fresh water mussels and fish that you find. They are all integral parts of the ecosystems that define the river. Potentially, you might find six of the nine species of fresh water mussels that inhabit New Hampshire's rivers. You should find many different kinds of fish, and more specifically, three species of trout. Grab a rod and a buddy to see what fish you can catch!