



Natural Heritage & Endangered Species Program

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Massachusetts Division of Fisheries & Wildlife

Water Shrew *Sorex palustris*

State Status: **Special Concern**
Federal Status: **None**

DESCRIPTION: The Water Shrew is the largest long-tailed shrew in New England. It measures 144-158 mm (5.7-6.2 in) in length, with its long tail accounting for more than half of its total length, and weighs from 10-16 g (approximately 1/3 oz). The unique feature of the Water Shrew is its big “feathered” hind foot. The third and fourth toes of the Water Shrew’s hind feet are slightly webbed, and all toes as well as the foot itself have conspicuous stiff hairs along the sides. Both the webbing and the fringe of hairs increase the Water Shrew’s swimming efficiency.

The male and female Water Shrew are colored alike, equal in size, and show slight seasonal color variation. In winter, the Water Shrew is glossy, gray-black above tipped with silver, and silvery buff below, becoming lighter on the throat and chin. It has whitish hands and feet, and a long, bicolored (i.e., lighter beneath, darker above) tail covered with short, brown bristles. In summer, its pelage (fur) is more brownish above and slightly paler below, with a less frosted appearance. They molt in late May through early June and again in September. The color of immatures is much like that of

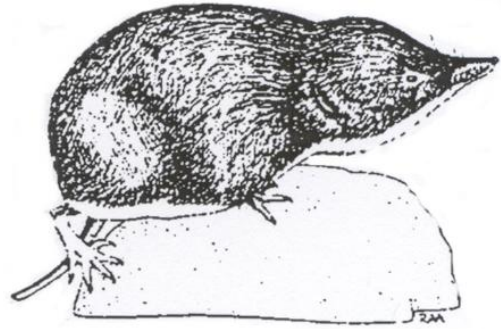
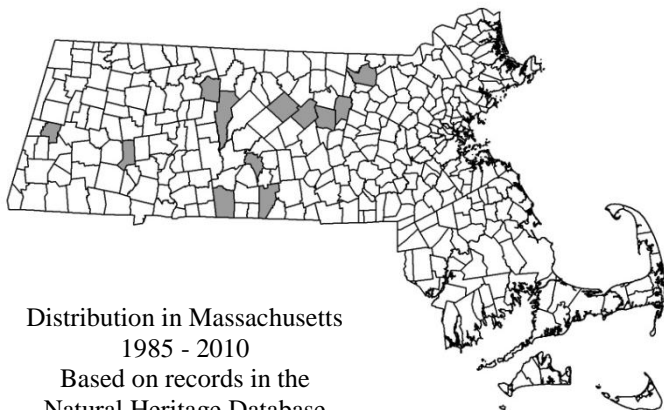


Illustration from DeGraaf and Rudis, 1986.

adults. The Water Shrew is slender with a long, narrow snout that is highly movable and incessantly rotating. Its eyes are minute but visible, and its ears are small and hidden in velvety fur. Females have six mammae.

This species is especially adapted for semi-aquatic life. Not only are the large webbed hind feet an adaptation for aquatic living, but the pelage of the Water Shrew is so dense that it is impenetrable by water and serves to trap air bubbles, retarding wetness and enhancing buoyancy. This trapped air also enables the Water Shrew to exhibit “water-walking” behavior. The Water Shrew can remain submerged for about 15 seconds but only while swimming vigorously. The air trapped in the fur makes it as buoyant as a cork. If it stops swimming, the little shrew will pop up to the surface like a beach ball. The Water Shrew depends upon its specialized hind feet for the major source of propulsion. The tail plays no part in swimming but may aid the animal in making quick turns while submerged.

SIMILAR SPECIES IN MASSACHUSETTS: Five other species of shrews are found in Massachusetts: the Masked Shrew (*Sorex cinereus*), Smoky Shrew (*Sorex*



Distribution in Massachusetts
1985 - 2010
Based on records in the
Natural Heritage Database

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fumeus), Rock Shrew (*Sorex dispar*), Pygmy Shrew (*Sorex hoyi*), and Short-tailed Shrew (*Blarina brevicauda*). The Water Shrew is distinguishable from all of these because it is the only long-tailed shrew that has long hairs along the margins of its hind feet.

HABITAT IN MASSACHUSETTS: The Water Shrew is seldom found more than a few yards from the nearest water, most commonly the banks of a swift rocky-bedded stream usually near a conifer or mixed forest. It prefers heavily wooded areas and is rarely found in marshes that are devoid of bushes and trees. It may be found in beaver lodges and muskrat houses in winter.

LIFE CYCLE/BEHAVIOR: The Water Shrew is secretive and elusive, seeking cover along the waterways. It lives in bankside burrows, the entrance often concealed deep between boulders or between the gnarled roots of a leaning streamside hemlock. Small surface runways are usually found under cover of bank overhangs, fallen logs, brush piles or other debris. The Water Shrew makes its own runways but also uses those of mice and moles. The Water Shrew is active throughout the year at any time of the day or night, with peaks of activity at sunrise and sunset. It has periods of deep slumber, but during its waking hours it is extremely active, foraging excitedly for short periods, darting rapidly over the ground, traveling through subsurface tunnels, or burrowing through snow.

The Water Shrew feeds primarily on aquatic insects, chiefly mayflies, caddis flies, stone flies, and other flies and beetles and their larvae, although snails, flatworms, small fish, and fish eggs may also be eaten when available. Because the eyes of the Water Shrew are poorly developed, it uses its keen senses of touch, hearing, and smell when foraging. Foraging takes place both under and on top of the water. Prey is located underwater entirely by touch. The long whiskers located on either side of the shrew's head are extended stiffly out to the sides while the animal is casting for prey. It is speculated that water vibrations from the shrew's intended victim may also aid in guiding the Water Shrew to its prey.

There have been few studies focused on the reproduction of the Water Shrew. From the available data, it is believed that male Water Shrews breed in their second spring, but in cases of low population density females

have been known to breed in their first summer. Breeding activity usually begins in February and continues into August.

The nest of the Water Shrew is made from dried moss or other vegetation tucked away in a streamside burrow, rocky crevasse, or among the tangled roots of wetland trees. A female may rear 2 or 3 litters in the course of one breeding season. Litter size ranges from 5 to 8, with 6 being most common. Gestation is approximately 21 days. The young are weaned in about three weeks and then drift away for a solitary life. The life span of the Water Shrew is approximately 18 months. The average shrew lives less than a year.

RANGE: The Water Shrew is found in the north temperate forest belt from Labrador, Nova Scotia, and New England across Canada and New York, northern Michigan, Wisconsin, Minnesota, and the eastern edge of the Dakotas to southeastern Alaska, and extends south in the mountains to California, Arizona, New Mexico, Tennessee, and North Carolina. The Water Shrew is found in all of the New England states.

POPULATION STATUS IN MASSACHUSETTS: The Water Shrew is currently listed as a Species of Special Concern in Massachusetts. It has rarely been observed in the state, but few deliberate searches for it have been made. Its reclusive habits make it difficult to encounter by chance; therefore, very little is known about its actual distribution and abundance in the state. From 1986-2011, there were 17 reports of the Water Shrew throughout Massachusetts.

MANAGEMENT RECOMMENDATIONS: Current threats to the Water Shrew are many: fragmentation of suitable habitat which leaves little opportunity for movement of the shrew, even in relatively small areas; warming and siltation of headwater streams and ponds that result from logging, clearing for agriculture, and road building; acid rain and its effects on the forests and waters that provide the shrew's habitat and food supply (Terwilliger 1991); loss of wetland habitat; and potentially, the introduction of new predators such as small-mouth and large-mouth bass.

An intensive habitat inventory and small mammal survey is needed. Once occupied habitats are located, they should be protected when possible. There also needs to be adherence to the Wetland Protection Act

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under which this species is protected. The most important action that needs to take place in the management of this species is the maintenance of stream banks, protection of water quality, and the protection of the integrity of the shorelines.

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