Natural Heritage &
Endangered Species
Program

Commonwealth of Massachusetts
Division of Fisheries & Wildlife
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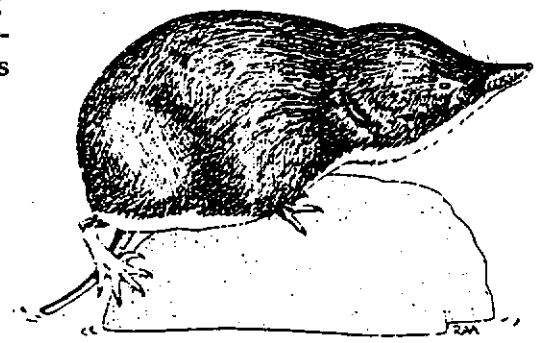
MASSACHUSETTS SPECIES OF SPECIAL CONCERN

Water Shrew
(Sorex palustris)



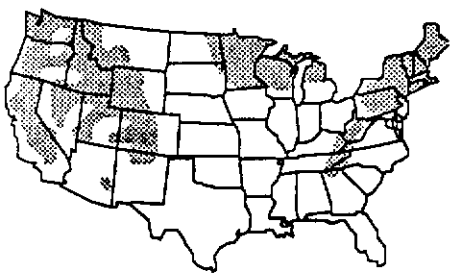
DeGraaf, Richard M. and Rudis, Deborah D. New England Wildlife: Habitat, Natural History, and Distribution. General Technical Report NE 108. Broomall, PA: U.S. Dept of Agriculture, Forest Service, Northeastern Forest Experiment Station, 1986.

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 hindfeet 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.

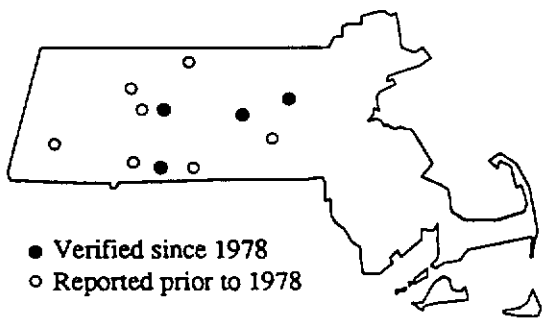
The male and female Water Shrew are colored alike, equal in size, and show slight seasonal color variation. In winter, the Water Shrew is glossy, gray black above tipped with silver, and silvery buff below, becoming lighter on the throat and chin. It has whitish hands and feet, and a long, bicolored (ie.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. The spring molt occurs during late May and early June; the autumn molt takes place in September. The color of immatures is much like that of adults. The body of 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 semiaquatic 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 acork. 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.

RANGE: The Water Shrew is found in the boreal 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



Range of the Water Shrew



Distribution in Massachusetts

southeastern Alaska; and extends south in the mountains to California, Arizona, New Mexico, Tennessee, and North Carolina. Historically, the Water Shrew has been found in all of the New England states, although in Massachusetts it has only been documented at eleven locations.

SIMILAR SPECIES IN MASSACHUSETTS: Five other species of shrews inhabit Massachusetts: the Masked Shrew (Sorex cinereus), Smoky Shrew (Sorex 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 aptly named, for seldom is it found more than a few yards from the nearest water - a spring, a mountain lake, or, most commonly, the banks of a swift rocky-bedded stream usually near boreal 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.

LIFECYCLE/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 it 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 females have been known to breed in their first summer in cases of low population density. 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.

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 and few deliberate searches 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. Since 1978, there have been only 5 sightings of the Water Shrew documented in 4 locations (Lancaster, Monson, New Salem, & Princeton).

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 roadbuilding; acid rain and its effects of the forests and waters that provide the shrew's habitat and food supply (Terwilliga, 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 must be protected by easements or outright acquisition. There also needs to be adherence to the Wetland's Protection Act 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 streambanks, protection of water quality at the level that fish and fauna remain intact, and the protection of the integrity of the shorelines.

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Water Shrew

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