



Water Shrews – Their ecology and conservation

The water shrew (*Neomys fodiens*)

There are three species of shrew native to the British mainland: Water shrew (*Neomys fodiens*), Common shrew (*Sorex araneus*) and Pygmy shrew (*Sorex minutus*). *Neomys fodiens* (the European water shrew) is the largest of the British shrews.

Water Shrew © Geoffrey Kinns



Water shrew facts

- Water shrews are semi-aquatic mammals which use water for their survival – in this case, feeding.
- Adult water shrews are around 15cm long - Head/body: 67-96mm: Tail: 45-77mm (Churchfield, 1986).
- Unlike the other two UK shrews, the water shrews tail is almost as long as its body.
- Water shrews can weigh between 8 - 23g with an average of 12 – 18g. Pygmy and common shrews generally weigh less than 12g (Macdonald and Barrett, 1993; Perrow & Jowitt, 2003).
- They have black, velvety fur on their back and a pale, silvery white stomach.
- The fur is denser than in other shrews, efficiently insulating them against cold and wet.
- Their ears are only visible as tufts of white hairs.
- They can close their ears when under water (Macdonald and Barrett, 1993).
- They have red tipped teeth and their saliva is slightly venomous and is used to stun larger prey.
- The feet have a fringe of stiff, silvery hairs which help them to swim, and the tail has a hairy 'keel' on the ventral surface (Carter & Churchfield, 2006).
- They possess sensitive whiskers which they use to detect prey whilst swimming (Churchfield, 1986).

Water shrew distribution

Water shrews are thought to be widespread in the UK. However, they tend to be localised and sporadic (Harris *et al.* 1995). Prior to 2003, little was known about water shrew ecology and habitat requirements in the UK and it was feared that they may have suffered similar declines in numbers to the Water vole. Only 71 records of water shrew were recorded for Sussex at this time. Surveys since then have shown that they are probably locally frequent and relatively common. There are still huge data gaps within the county and a serious lack in the quality and continuity of records.

Where do water shrews live?

Water shrews will often have a territory of under 300m in size. Unlike common and pygmy shrews which specialise in dryer terrestrial habitats, water shrews have been found in most types of wetland. A recent study by Southgate et al (2006) showed that they appear to like sites such as reedbeds and tussock sedge bed, with deep plant litter layers and the presence of tussocky sedges and grasses. They were also found on vegetated shingle and at a heathland site (although their presence on heathland is thought to be unusual). They have been found as far as 3km away from water but it is thought that mostly they stay near to water.



A healthy wetland with reeds – a likely place to find water shrews

What do water shrews eat?

Water shrews specialise in eating aquatic invertebrates and will dive to around 2m in water to find food. They prefer sites with abundant aquatic prey, particularly of their preferred foods. They also eat terrestrial invertebrates and occasionally even carrion but they appear to prefer aquatic snails, caddis fly, mayfly, dragonfly and damselfly larvae and some water beetles (preferred scientific families include *Trichoptera*, *Ephemeroptera*, *Hydrobiidae*, *Lymnaeidae*, *Physidae*, *Caloptergidae*, and *Chironomidae*).

What else affects water shrews?

It is thought that because they rely on aquatic invertebrates for food, water quality may affect water shrews. Research in this area is limited however. Intensive management of watercourses is also likely to affect them.

Likely locations to find water shrews

- Healthy wetland sites with high reed cover and a good plant litter layer, tussocky sedges or grasses, good water quality, water less than 2m deep and a high diversity of aquatic insects.
- They appear to be absent from places with extensive tree cover and leaf litter, bracken stands, high water temperatures, intensive grazing/ bankside vegetation cutting, and sites with highly fluctuating water levels.
- They have been found on ponds, lakes, reservoirs, rivers, streams, ditches, canals, vegetated shingle etc.

Unlikely locations to find water shrews

- Polluted sites (particularly those with low oxygen levels and high temperatures)
- Heathland, dense woodland and other dry habitats away from water
- Dry and drained sites with no water or only sporadic seasonal water
- Sites which are heavily grazed and trampled by stock (sheep and cows)
- Concreted, and highly maintained watercourses
- Watercourses which flood frequently and to high levels

Why worry about water shrews?

Like water voles, which suffered one of the most catastrophic declines of any native mammal in the 20th century, it was feared that water shrews might have been affected by the same things such as habitat destruction and the introduction of the non-native American mink. Fortunately for water shrews they have scent and poison glands which make them taste bad to predators. However, there is still not enough known about this species to know if it is declining or stable.

What can I do to help water shrews?

- Give your cat a bell and keep it in at night! Many small mammal and water shrew records come from cat kills
- Help create and restore wetlands. It doesn't have to be fancy, a pond is incredibly good for wildlife
- Think about what you pour down the toilet and the drain. Chemicals and other substances which end up in our rivers can adversely affect wetland plants and aquatic invertebrates
- Manage land non-intensively and sympathetically. Consider reducing stock poaching and grazing of river banks, and try and create a mosaic of different interconnected habitats including some wet areas
- Don't over drain your land. Even a damp patch of ground where a spring rises may provide valuable linking habitat for water shrews
- Use less water – that way we have more left over to store in our wetlands

References and further Information

Carter; P. & Churchfield; S. (2006). *The Water Shrew Handbook*. Mammal Society UK.
Churchfield; S. (1985). *The feeding ecology of the European water shrew*. *Mammal Review*. 15; 1, pp13 – 21.
Churchfield; S. (1997). *Management Guidelines: Water shrews*. Species and Habitats Handbook. Environment Agency.
Churchfield; S. (1998). *Habitat use by water shrews, the smallest of amphibious mammals*. Zoological Society of London Symposium. 71: pp49-68.
Churchfield; S., Barber; J. & Quinn. C. (2000). *A new survey method for Water shrews (Neomys fodiens) using bait tubes*. *Mammal Review* 2000. 30; 3 & 4: pp249-254.
Greenwood; A-M., Churchfield; S., & Hickey; C. (2002). *Geographical distribution and habitat occurrence of the Water shrew (Neomys fodiens) in the Weald of South-East England*. *Mammal Review* 2002. 32: 1; pp40-50. Mammal Society.
Macdonald; D. & Barrett; P. (1993). *Field Guide. Mammals of Britain and Europe*. Collins.
Perrow; M & Jowitt; A. (Feb 2003). *Wetlands as an important habitat for small mammals*. 14: 3; pp171. British Wildlife.
Southgate; F. (2006). *An analysis of the impact of wetland habitat and water quality on the distribution of the Northern water shrew (Neomys fodiens) in Sussex.*

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Mammal Society – National Water Shrew Survey

www.abdn.ac.uk/mammal/index.shtml

Mammals Trust UK

www.ptes.org/mammals/

SORP promotes the sustainable management of Sussex rivers and the restoration of wetland habitats for people and wildlife, and in particular the Otter, Water vole and Black poplar tree. SORP is a partnership between Sussex Wildlife Trust, South East Water, Environment Agency and Southern Water Services

