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Deer Ked, *Lipoptena cervi* in New Hampshire

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The deer ked is a blood-feeding parasitic fly native to Europe. People sometimes mis-identify it as a tick, which it somewhat resembles. It attacks moose, red deer and other cervids. It was first reported in the United States in New Hampshire and Pennsylvania, in 1907. How they arrived from Europe is anyone's guess, but probably it involved shipment of live animals that were infested. Here in New Hampshire, Corbin Park was the site of numerous animal introductions (including 50 wild boar from the Black Forest, Germany in the early 1890's). Perhaps European deer were introduced there or elsewhere in the state before 1907. The insect now occurs in New Hampshire, Vermont, New York, Massachusetts, Connecticut and Pennsylvania. In Europe, moose, red deer and roe deer are parasitized, and the insect can be found (low prevalence) on white-tailed deer and reindeer.

The fly is in the family Hippoboscidae. All hippoboscids show adenotrophic vivipary: after mating on a host, a single egg hatches into a larva that grows inside the body of the female. She nourishes it until it is fully grown. Then she drops it, and the outer body covering of the larva hardens to form a dark protective covering of what is then called a puparium. The female then rears the next larva. Puparia lay on the ground in areas where their hosts live, especially at wallows and other places where the animals rub and shed their winter coats. The puparia are shiny, black, and slightly oval. The one in the photo on the next page was dropped by a female held in a vial in a refrigerator for several days, so it is probably smaller than average.

"Keds look a bit like ticks, since they are dorso-ventrally flattened, and are brown. But when you part the (deer) hair and discover one, it scurries through the hair quickly, while ticks move slowly."

The deer ked is a blood-sucking parasitic fly native to Europe. This one has shed its wings. Keds are about 5 mm (3/16 inch) long, and can be found on their hosts at any time of the year.
Photo: Alan T. Eaton

Did You Know?

The adults are attracted by large, dark, moving objects. Soon after landing on a host, both males and females drop their wings.

The winged adults emerge from their pupariae in September. They are most active on warm, clear afternoons. Photos: Alan T. Eaton

The puparia are shiny, black, and slightly oval. Photo: Alan T. Eaton

The winged adults emerge from their pupariae in September. They are most active on warm, clear afternoons. They are concentrated in low places protected from wind, in young deciduous forests. Vision is important in host-finding. The adults are attracted by large, dark, moving objects. Soon after landing on a host, both males and females drop their wings.

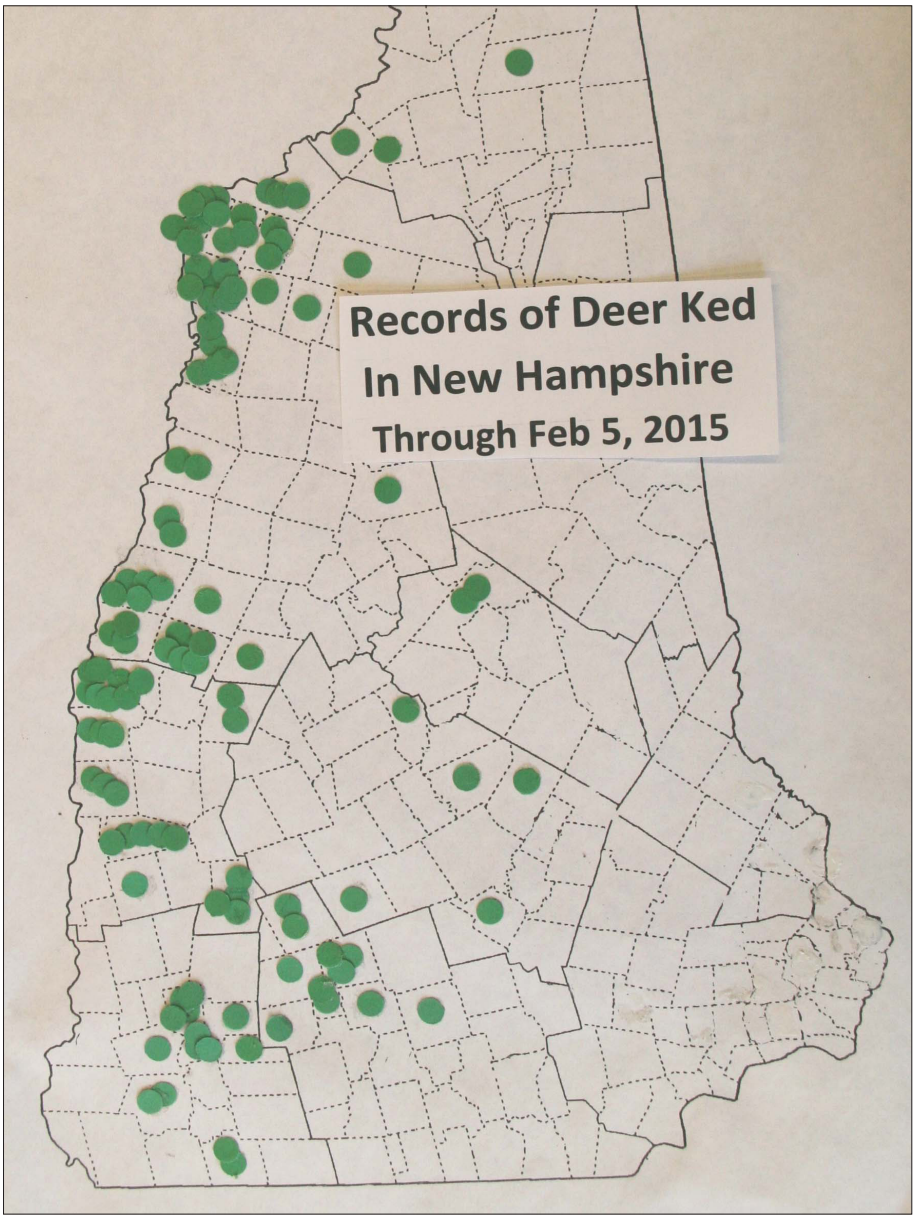
Wingless keds are about 5mm (3/16 inch) long and can be found on their hosts at any time of year. When on the host, they repeatedly bite and feed on blood. Given the opportunity, they will bite people.

I led statewide efforts to examine deer at hunter checking stations, to monitor ticks. In 1990 we looked at 360 deer and happened to find one ked (Hillsborough). In 1991, we examined 526 deer, and found two keds (in Plainfield and Unity). In 2013, we examined 150 deer, and found 134 keds! Some of the increase might have been from examining a greater number of deer from an area with relatively high ked populations (Grafton county), but comparing the figures for counties that were well represented in the 1990, 1991 and 2013 studies suggests that there was a large ked population increase since 1991. By dragging a large cloth over shrubs and young deciduous trees in deer and moose habitat, I collected a winged specimen in late September. It readily flew, even after being held in a refrigerator at 40°F. Hunter interviews

in November 2013 and capturing a winged adult on a Bennington deer on November 2nd, suggest that some adults are flying as late as early November. Scientific studies show that the winged adults prefer moose over white tailed deer, but the parasite is likely not a significant threat to either host's health. Since each ked feeds on just one host, it is unlikely that keds would spread diseases among deer and moose.

Recognition on the host: Keds look a bit like ticks, since they are dorso-ventrally flattened, and are brown. But when you part the hair and discover one, it scurries through the hair quickly, while ticks move slowly. They have six legs, while adult and nymphal ticks have eight legs. Keds also have three recognizable body regions: a head, thorax and abdomen. [ticks have only two: a head and body.] The body length for deer ked is about 3/16 inch (about 5 millimeters).

Plotting all of our ked data on a map, the insect seems to be most common in Grafton and Sullivan counties, with some found in Cheshire, western Hillsborough, and in Merrimack County as far east as Loudon and Bow.



We do find a few in Coos County. Despite examining hundreds of deer in Rockingham and Strafford Counties for many years, we have never found any there.

In Vermont, they appear to be more abundant in the CT River Valley and Champlain Valley, as compared to mountainous habitat. [John Buck, VT Fish & Wildlife Dept.] That seems to match our data…most NH records are from the Connecticut River Valley.

It is possible that you might encounter a winged one during a daytime walk in the woods between late September and early November, especially in the Connecticut River Valley. Given the chance, they may bite, but otherwise should not pose a risk.

Venison from a harvested deer that had keds is still safe to eat, since keds do not affect the meat in any way. If hunters are still concerned about keds on a hide, it can be frozen. Upon thawing, the keds should be dead, and can be brushed off.

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