Life cycle of the Meadow tick *Dermacentor reticulatus*

Also known as the ornate cow tick, marsh tick or winter tick, populations of *D. reticulatus* have extended across northern Europe over the past decades, but this tick remains relatively rare in the UK being at the limit of its geographic range. It is a three-host species: the parasitic life stages (larva, nymph and adult) feed once on an animal and then drop off to moult to the next stage, or in the case of the adult female, to lay eggs. *Dermacentor reticulatus* appears to be cold-weather adapted - activity of the adult stages in the UK peak from February and March/April, with little activity if any, between May and mid-October. Given appropriate conditions - with patterns of seasonal activity driven strongly by temperature - the life-cycle may be completed in only one or two years. It is a vector of many pathogens.

1. **Adult *Dermacentor reticulatus*** (6-7.0mm*)* have a distinctive silvery patterned scutum (S, above) situated below the false head in the female; this colourful area covers the entire dorsal surface of the male. The adult stages have a long lifespan and may survive for up to four years without taking a blood meal; this species possesses an extreme tolerance to the changing environments.

2. This coastal dune system at Gwynedd, Wales has a long established population of *D. reticulatus*. Previously considered a tick of coastal areas in the UK, this tick has become endemic in grassland habitats in recent years, e.g. near Harlow, Essex.

3. Adult *D. reticulatus* feed in the early months of the year for 7-15 days, on the blood of a wide range of wild and domesticated hosts, the latter including cattle, horses, sheep and dogs. Adult females adopt an ambush strategy to find their hosts, climbing onto weeds, grasses, bushes to wait for passing animals.

4. Observations in Europe have shown that when fully engorged, and having dropped off their host, females lay up to 7,200 eggs in vegetation in spring over 6–25 days, and that larvae hatch from the egg batch after 12–19 days. Little is known about the ecology and seasonal activity of the immatures stages of *D. reticulatus* in the UK.

5 Larvae (approx. 1.0mm) are thought to exhibit nidicolous behaviour i.e. they are closely associated with the nests or burrows of their small mammal hosts - mice and voles - and are most likely to be parasitic on rodents from May to July in temperate Europe.

6. Fed larvae drop off their host and moult to nymphs (approx. 3.0mm in size). Nymphs are also associated with rodents in burrows and are active between July and August in European countries. *D. reticulatus* nymphs and larvae are part of the same generation, maturing within the same summer. Fed Nymphs moult to the adult stage

A DISEASE VECTOR:

Tick-borne pathogens of dogs include *Babesia canis canis.* Prior to 2016, babesiosis confirmed transmission was unknown in the U.K. However, in March 2016, a cluster of cases was reported in Essex, in non-travelled dogs, indicating that for the first time this pathogen had become established. Meadow ticks are also a vector of tick-borne encephalitis virus, *Rickettsia* spp., *Anaplasma* spp. and many other organisms. Range expansion within the U.K. should be expected, bringing with it an elevated disease risk for animal and human hosts.