

NEW RECORDS OF SPIDERS (ARANEAE) FROM CAPE COD, MASSACHUSETTS, INCLUDING TWO POSSIBLE EUROPEAN IMMIGRANTS¹

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ABSTRACT: *Trochosa ruricola* (Lycosidae) and *Lepthyphantes tenuis* (Linyphiidae), the former previously known only from Europe and Asia, the latter only from Europe and the west coast of North America, occur and appear to be well established on Cape Cod, Massachusetts, USA. Six southerly distributed species, *Gladicosa pulchra*, *Lycosa acompa*, *Drassylus dixinus*, *Thymoites expulsa*, *Grammonota vitatta*, and *Dictyne pixi* also are commonly found here.

This paper is presented as a reference to use in connection with Kaston's Spiders of Connecticut, revised in 1981, which is still a widely used volume and the only one of its kind. Kaston recorded 478 species of spiders in Connecticut. So far I have recorded 465 species from Cape Cod (Edwards, unpubl.). There are some uncertainties in the list, some are yet to be identified, and a few are almost certainly undescribed. After five years of intensive sampling, additions to the list continue to show up with regularity. The study area is on the southwestern tip of Cape Cod, township of Falmouth, and extends for 15 km north from the village of Woods Hole to Hatchville. The area is dominated by suburban developments, salt and brackish marshes and a few extensive tracts of second growth pine and deciduous woodland.

The widely distributed palearctic species, *Trochosa ruricola* (De Geer) is common here, with mature specimens found throughout the year. In the British Isles this species is regularly taken in the same habitats with *Trochosa terricola* Thorell (Roberts 1985). *Trochosa ruricola* and *T. terricola* are the most common of the four *Trochosa* species found in the British Isles. These two species are common on Cape Cod, occupying somewhat separate habitats. *Trochosa ruricola* and *T. terricola* are most abundant in open areas such as fields, lawns and gardens, marsh environments, and edges of woods. *Trochosa ruricola* is more abundant in wetter areas and closer to the shore.

Both sexes and all instars of *Trochosa ruricola* have a claw on their palp, including the cymbium; *T. terricola* does not. In addition, males of *T. ruricola* have a unique ridge on the fang, nearer the proximal end of the anterior margin. The male palp of *T. terricola* has a loop near the ter-

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minus of the embolus (Brady 1979, fig. 30); whereas that of *ruricola* is barely curved. The epigyna of *T. ruricola* and *T. terricola* are very much alike, but the presence or absence of a claw on the female palp suffices to separate the two species.

On Cape Cod, *T. ruricola* outnumbers *T. terricola* in pitfall traps by a factor of two or more. Adults of *T. ruricola* have been taken year round, with females carrying egg sacs taken May through July. During the day, females can be found in shallow, often silk-lined burrows in dry, matted grass, old mouse nests, and under boards and rocks. Four sacs of *T. ruricola* contained from 72 (July) to 171 (May) eggs. For further details on the diagnosis and ecology of *Trochosa terricola* see Brady 1979; for *T. ruricola*, see Roberts 1985.

Lepthyphantes tenuis (Blackwall) (Linyphiidae) is commonly taken in tall grass in wet boggy areas and around pools. It has been found in association with small (± 10 cm), horizontal sheet-like webs, usually well above ground level. Mature specimens have been taken July through October. Immatures could easily be mistaken for those of *Lepthyphantes zebra* (Emerton). The genitalia of the adults are well illustrated in Roberts 1985. This species also occurs on the west coast of North America. It has been recorded from the state of Washington by Crawford 1988, and from British Columbia, Canada by West *et al.* 1984.

There is a distinct southern element in the other species newly found on Cape Cod. The following six species illustrate this. B. J. Kaston's treatise (op. cit.) included all known New England species, but did not include these. All six species are well established on Cape Cod.

Gladicosa pulchra (Keyserling) (Lycosidae) is a handsome, strikingly marked lycosid found on tree trunks, especially the rough barked trunk of pitch pine (*Pinus rigida*). It is also found in holes and other protective shelters on the trunks of more smoothly barked trees, such as the scarlet oak. This lycosid matures late in the summer and descends to the ground in the fall where it is taken in pitfall traps during a brief period in October and early November. Young spiders appear on tree trunks in the spring, usually before the end of April. *Gladicosa pulchra* has been taken as far north as Long Island, but is generally found south of the Mason-Dixon line (Brady 1986).

Lycosa acompa Chamberlin is common on Cape Cod in open grassland, deciduous forest litter and old gravel pits where it is taken in pitfall traps. The few records of *L. acompa* in the literature suggest that it is typically a southern species. Young *et al.* 1989, note that it is a common species in Washington County, Mississippi.

Drassyllus dixinus Chamberlin (Gnaphosidae) is taken from June to August as adults in pitfall traps in old fields. The northernmost pub-

lished record is for Patrole, Maryland, (Platnick and Shadab, 1982).

Tymoites expulsa Gertsch and Mulaik (Theridiidae) is found on dune grass in the salt marsh near the ocean. Adults have been found in the spring and fall. When Levi (1957) revised the genus, the northernmost record was from North Carolina.

Grammonota vitatta Barrows (Linyphiidae) has been regularly collected as immatures and adults along the edges of brackish and freshwater marshes during the colder months of the year. Previously, the northernmost record was the type locality, Cape May, New Jersey, (Bishop *et al.* 1932).

Dictyna pixi Chamberlin and Gertsch (Dictynidae) adults have been taken in June by sweeping old fields dominated by such forbs as false indigo and sweet fern. Immatures and subadults have been taken in pit-fall traps in October. The type locality is Washington Crossing, New Jersey; and it has been recorded from North Carolina, Arkansas, and Michigan (Chamberlin and Gertsch, 1958).

The erigonines constitute about 20% of the total spider fauna in the study area (Edwards, unpubl.). One species Kaston considered ubiquitous and extremely common in Connecticut, *Ceraticelus fissiceps* (O. P.-Cambridge), has yet to be taken in the study area. On Cape Cod, apparently *C. fissiceps* has been replaced by *C. alticeps* (Fox). Sixteen species Kaston did not find in Connecticut but from Massachusetts or farther north have been taken on Cape Cod. And among the erigonines he recorded from Long Island and/or further south but not Connecticut or elsewhere in New England are *Grammonota maculata* Banks, *G. pallipes* Banks and *Ceraticelus laticeps* (Emerton). All are found on Cape Cod and are common. These data also suggest that there may be a tendency for more southerly distributed species to extend their range northward along the coast.

With regard to the possible immigrants from Europe, it is a matter of record that this region has been studied and collected by individuals interested in spiders for over 100 years. Earlier investigators might have missed *Lepthyphantes tenuis*. It is a small spider and could easily have been misidentified as one of the other two common *Lepthyphantes* species. The relatively large size and abundance today of *Trochosa ruricola*, as well as the lack of records elsewhere in New England, suggests a more recent arrival. Since the 1880's, Woods Hole, Cape Cod, has been an area of considerable activity, principally focused on the marine environment. The several institutions are often visited by scientists and research vessels from various parts of the world, especially from Europe, thus providing many opportunities for stowaways, including spiders.

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