

A NEW KATYDID FOR LONG ISLAND, NY: FIRST RECORD OF *ORCHELIMUM SILVATICUM* EAST OF OHIO, WITH NOTES ON TWO ADVENTIVE KATYDIDS FROM LONG ISLAND

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Abstract.—A population of *Orchelimum silvaticum* (Tettigoniidae: Conocephalinae), previously unknown east of Ohio, was discovered on Long Island, Suffolk Co., NY. Available information on disjunct distributions for the entire genus *Orchelimum* is briefly summarized and discussed. Information on the history and current status of two introduced katydids previously reported from Long Island is also summarized.

In this note, I report the discovery of a population of *Orchelimum silvaticum* on Long Island, NY, some 700 km east of its previously known distribution, and discuss the significance of disjunct distributions of *Orchelimum* species. In addition, I report on the status on Long Island of two adventive katydids, *Metrioptera roeselii* and *Meconema thalassinum*.

ORCHELIMUM SILVATICUM

*Orchelimum silvaticum*¹ was described by McNeill in 1891. The synonymy of *O. silvaticum* with *O. calcaratum* (Rehn and Hebard, 1915; Blatchley, 1920) was established by Hebard (1934). In an important paper on the North American genus *Orchelimum*, Morris and Walker (1976) included maps (based on published records, museum specimens, recorded songs, and personal observations) showing the known distributions of all 18 *Orchelimum* species found north of Mexico (two additional species are known from Mexico). Based on 102 site records for *O. silvaticum*, they presented a distribution extending from South Dakota south to Texas and east to Ohio, Kentucky, Tennessee, and Alabama.

On 27 August 1990, while driving just east of Middle Island, Suffolk Co., NY, I heard what sounded like a weak *Orchelimum* song. Upon stopping to investigate, I realized there were many singers in the trees along the roadside and recognized the song as that of *O. silvaticum*. I collected three males and confirmed this identification. Returning to this site on 21 September and 14 October 1990 and 3 October 1992, I collected a total of 12 additional adult males (an adult female collected as she crossed the road later escaped). Three specimens have been deposited in the Florida State Collection of Arthropods. On a visit to the site on 6 October 1993 I heard only a few singers and collected no specimens. This is the only known site for *O. silvaticum* east of Ohio. In preliminary surveys of several similar sites in

¹ The specific epithet "*silvaticum*" was incorrectly spelled "*sylvaticum*" once by Blatchley (1920) and consistently by Morris and Walker (1976).

central Suffolk Co. in 1992 and 1993, I was unable to locate any additional populations.

O. silvaticum is a semiarboreal member of a genus almost entirely associated with herbaceous vegetation, usually in or around fresh water (Morris and Walker, 1976; pers. obs.). At the Middle Island site, a roadside at the edge of a pitch pine-oak-heath woodland typical of the area (Reschke, 1990), singers were generally found in trees 2 m or more above the ground, although some were singing closer to the ground from tall herbaceous plants (e.g., *Oenothera* sp.).

The Middle Island site almost surely represents a dramatic disjunct. Given the relatively high quality of our knowledge of *Orchelimum* distributions (see below), it is very unlikely that this population simply represents the eastern limit of a poorly known continuous distribution. Indeed, apparently disjunct distributions have been documented for at least six other *Orchelimum* species (see Morris and Walker, 1976): (1) *O. concinnum* occurs nearly continuously along the Atlantic and Gulf Coasts, as well as in widely scattered populations in Indiana, southern Michigan, and western Ohio. This distribution may be the result of colonization of the Great Lakes region and subsequent relictualization in marl bogs in the early post-Wisconsin. Similar distributions have been described for a variety of plants and animals (Thomas, 1933, 1951; Reznicek, 1994). (2) *O. delicatum* is found in a broad north-south band across the central U.S. and in scattered populations extending eastward along the southern edge of the Great Lakes to Buffalo, NY (the "Prairie Peninsula," Transeau, 1935; Smith, 1957), with apparently disjunct populations in southeastern Louisiana, New Mexico, Arizona, and California (Thomas and Alexander, 1962; Morris and Walker, 1976; T. J. Walker, 1994 in litt.). (3) *O. volantum* has a fairly broad distribution in the Midwest, but has otherwise been collected only along the Delaware River in New Jersey (Fox, 1921, 1928; Morris and Walker, 1976). (4) *O. nigripes* is abundant in the Midwest and the western portion of the deep South, but is known east of the Appalachians only from the Potomac River basin in the Washington, D.C. area, where it has apparently replaced its putative sister species, *O. pulchellum*, during this century (Morris and Walker, 1976; Shapiro, in prep.), and from two single specimens collected in 1964 and 1993 in Amherst, MA (which may or may not represent an established population). In addition, I have examined three *nigripes* specimens, and Dr. T. J. Walker has examined at least two others, collected at Tappahannock, VA in 1913 (although five specimens collected at Tappahannock in 1915 and 1916 are clearly *pulchellum*). As of this writing, no extant *nigripes* population has been located at Tappahannock, although *pulchellum* occurs here in abundance. (5) *O. carinatum* has been collected in Tennessee, Louisiana, and extreme western Florida (probably a more or less continuous distribution), with additional records known only from Virginia. (6) *O. bullatum* is known only from Texas and Louisiana (many sites) and from single sites in Indiana and Missouri.

For some of these species, additional fieldwork may reveal apparent range disjunctions to be artifacts of ignorance (compounded by the tendency for even locally abundant and widespread *Orchelimum* species to occur in more or less discrete colonies). However, some of these disjunctions are undoubtedly real. *Orchelimum* katydids are unusually cooperative survey subjects in that they sing loudly and relentlessly in late summer and early fall, allowing a knowledgeable observer to quickly sample prospective collecting sites by simply walking and listening for a few min-

utes. In the early decades of this century, and again in the 1960s and 1970s, several orthopterists actively collected (and, in later years, recorded on tape) *Orchelimum* from around the eastern U.S. Thus, although the distribution maps provided by Morris and Walker are surely incomplete, they are probably close approximations to reality.

Orchelimum katydids are relatively weak fliers and most species (*O. silvaticum* and several others excepted) are closely associated with water. Thus, aside from movement along river drainages, opportunities for long distance dispersal are probably limited. Individuals (generally males, whether because of sampling bias or actual differences in dispersal behavior between the sexes) are occasionally found far from any suitable habitat, indicating the potential to travel long distances. However, the only way such long-distance dispersal can have a lasting effect on population structure or species distribution is by dispersal of already mated females, or by simultaneous dispersal of individuals of both sexes, which then find each other and mate. A further requirement for such dispersal to have any effect beyond the year in which it occurs, of course, is that a dispersed, mated female must find an appropriate place in which to leave eggs before the onset of winter. These events are probably quite infrequent. Nevertheless, given sufficient time such rare events could result in stepping stone range extensions, which could lead in turn to dramatically disjunct distributions following subsequent extinctions of some intervening populations, perhaps as lakes and ponds disappear. Some disjuncts (e.g., western *O. delicatum*) may represent relicts of once extensive distributions that were fragmented by climatic changes during the Pleistocene (Vickery, 1989). Allozyme work currently underway as part of a study of hybridization between *O. nigripes* and *O. pulchellum* (Shapiro, in prep.), as well as analyses of mtDNA from multiple populations (to be initiated presently), may provide some insight into population structure and patterns of gene flow in *Orchelimum* species (see, e.g., Avise, 1994).

In speculating on the origin of Long Island *O. silvaticum*, it is essential to consider the geological history of Long Island. Long Island was completely covered by ice during the Wisconsin stage of the Pleistocene glaciation, and deciduous forest was not established until about 9,000 years ago (Donner, 1964; Sirkin, 1977, 1994 pers. comm.). Thus, *O. silvaticum* must have reached Long Island some time within the last 9,000 years at most. The presence of *silvaticum* on Long Island may be the result of an inadvertent introduction by humans in the relatively recent past. There are no previous *silvaticum* records known from Long Island, nor from anywhere else in eastern North America. The type of habitat where the Long Island *silvaticum* were found is still fairly widespread on Long Island, and other kinds of habitat that are frequently utilized by *silvaticum* in the Midwest are also common on Long Island and the nearby mainland. Given these facts, a recent human introduction, perhaps eggs on nursery stock, seems to be the most likely explanation for the presence of *O. silvaticum* on Long Island. Of course, the possibility remains that the Long Island *silvaticum* are the result of dispersal from the Midwest or South (or from intervening populations, most or all of which have since disappeared) some time within the last 9,000 years.

A planned phylogenetic analysis of the genus *Orchelimum* across North America using mitochondrial DNA may shed light on the phylogeography of this group and help explain the intriguing distribution patterns we see today. By identifying the

historical relationships among populations and species, it may be possible to gain insight into the events leading to contemporary distributions.

METRIOPTERA ROESELII

In 1953, Urquhart and Beaudry published a note reporting the first North American records of the Palaearctic decticine *Metrioptera roeselii*²: seven specimens taken in 1952 at two sites in Québec, Canada, near Montreal. Noting that this species is common and widely distributed in Europe, they predicted that it would eventually extend its range over much of eastern North America. Kevan (1961), Kevan et al. (1962), and Vickery (1965) reported additional Québec records, including numerous macropterous individuals (generally quite uncommon in Europe) in addition to those already reported by Beaudry (1955). G. K. Morris (1994 in litt.) collected *M. roeselii* around Ithaca, NY, in 1965 and believes it was truly absent before then. In the mid-1960s he collected it at numerous sites in western and central New York (more recently, S. J. Scheffer collected several specimens at the E. N. Huyck Preserve near Albany in August, 1990). Morris also reports that westward moving *M. roeselii* reached Seeley's Bay, ON, in 1970 and Kingston, ON, around 1972. Vickery and Kerr (1974) reported numerous records for 1972–1974 of *M. roeselii* that had apparently spread north from New York via the Niagara Peninsula (i.e., around the western end of Lake Ontario). By 1975, *M. roeselii* had reached Kendal, ON, about 70 km east of Toronto, either from the east or via the Niagara Peninsula (G. K. Morris, 1994 in litt.). Ede (1974) reported records for 1971, 1972, and 1973 from Maine, Vermont, New Hampshire, and Massachusetts. Nickle (1984) reported what he believed to be the first record of *M. roeselii* from Pennsylvania, collected in 1982 in Wayne Co. in northeastern Pennsylvania. However, Morris (1994 in litt.) collected *M. roeselii* at several sites in Tioga Co. in northcentral Pennsylvania in 1965. I am aware of no published distribution records subsequent to Nickle's.

On 1 June 1990, I collected about a dozen nymphs of *M. roeselii* in an old field at the Brookhaven National Labs in Upton, Suffolk Co., NY, but no specimens were retained. On a return visit to the site on 26 June 1990, I found the field, and several adjacent fields, abuzz with the long, monotonous song of *M. roeselii*. One medium-winged adult male (wings reaching tip of abdomen) and one long-winged adult female (wings much surpassing abdomen) were collected, but no systematic survey of wing length in the population was attempted. On 29 June 1993, I revisited the site and collected 24 medium-winged adult males, one short-winged adult male (wings barely half length of abdomen), and three short-winged adult females. Three males have been deposited in the Florida State Collection of Arthropods. On 28 June 1994 two additional males were observed in an old field at Manorville (at least one of them long-winged) and on 29 June 1994 a male was observed at Stony Brook, both in Suffolk Co.. This species is apparently established on Long Island.

² As noted by Marshall and Haes (1988), the specific epithet of this katydid should be written as *roeselii*, following Hagenbach's (1822) original description, although it is often written as *roeseli*, which would be linguistically correct.

MECONEMA THALASSINUM

In 1960, Gurney (1960a, b) reported the first North American records of the Palearctic katydid *Meconema thalassinum*: six specimens collected at Little Neck in Nassau Co., NY, in 1957 and 1959. Johnstone (1970) reported one additional North American specimen, collected at King's Park, Suffolk Co., NY, in 1968. Sismondo (1978) reported taking multiple specimens (with the help of a colony of *Sphex ichneumoneus* in his driveway) at Scarsdale and Larchmont in Westchester Co., NY, from 1974 through 1977. Smith (1979) reported thirteen *M. thalassinum* collected at Garden City, Nassau Co., NY, in 1977. Most recently, Hoebeke (1981) reported single records from Ithaca, NY, and Middletown, RI, in 1974 and 1980, respectively.

On 24 July 1992, an adult female *M. thalassinum* was collected indoors at Port Jefferson Station, Suffolk Co., NY. On 5 August 1992, I collected two adult males at a porch light at night at Stony Brook, Suffolk Co., and collected an additional adult male from my car windshield on 7 August 1992 at Port Jefferson. One male has been deposited in the Florida State Collection of Arthropods. Individuals have also been observed at East Setauket (15 July 1993), at Nissequoque (6 July 1994), and on Shelter Island (11 July 1994), all in Suffolk Co.. *M. thalassinum* appears to be well established on Long Island.

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