

NEW RECORDS FOR THREE ILLINOISAN ORTHOPTERA*

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My paper concerns the giant walking stick, *Megaphasma dentricus* (Stal), Phasmidae, the slightly musical cone-head, *Neoconocephalus exiliscanorus* (Davis), Tettigoniidae, and the Carolina mantis,—our only native mantid, *Stagmomantis carolina* (Joh.), Mantidae.

The Giant Walking Stick. The wingless adult female specimen at hand seems to be the first of this species recorded from Illinois. It came to me through Mr. Roy E. Dively, instructor in high school biology at Red Bud, Randolph County, Illinois. Measuring 139 mm. in length, this individual was obtained alive at Red Bud late in October, 1941, on a portable water tank in a little-used private lane about a mile from a main road and 2.5 to 3.0 miles from a railroad.

The giant walking stick occurs largely in the southern states, being known from Alabama, Louisiana, Texas, New Mexico and Louisville, Kentucky (Blatchley), and from the Ozark region of Missouri (Somes). The northernmost points from which Somes recorded it were Hamburg and Clarinda, Iowa, near northern Missouri, between latitudes 40°, 30' and 41°. Inasmuch as Red Bud is situated considerably farther south,—or at latitude 38°, 14', and but slightly above Louisville, it may probably be supposed that southern Illinois falls fairly well within the natural distributional area of this phasmid. But since it has been taken but infrequently in this and higher latitudes, Red Bud seems to represent approximately the northernmost line at which the species may be expected to occur naturally without the aid of man-made agencies.

The Slightly Musical Cone-Head. So named by Davis (Blatchley) because so large a meadow grasshopper produces so very faint a call, this green long horn "has been very rarely encountered except on the Atlantic coast from Long Island to Virginia" (Hebard). Records cited by Blatchley indicate it occurs also in Ten-

nessee, as far west as Texas and as far north as New Harmony, Indiana. The first record for Illinois is credited by Hebard to Hunter who located "a considerable colony" of this species at Tower Hill,—latitude about 39°, 20'. This instance represented also the "northwestern limit record" within the United States. I am now able to extend this northern limit to latitude about 40°, 8' by virtue of an adult female specimen taken at night by Ruth Agate (Mrs. Garland Riegel) in Champaign on August 8, 1940.

The Carolina Mantis (see table I). Its front legs admirably fitted to seize living insects on which it feeds, this species of mantis occurs commonly in the southern states from Florida to Arizona (Rau and Rau), and northward in diminishing numbers to central Illinois. The principal papers describing its bionomics are by Riley (1869), Rau and Rau (1913) and Roberts (1928). The latter two cite many references to other literature.

Concerning its distribution in Illinois Hebard (1934) expressed his belief "that the northern limits must be given as Quincy, Olney and Centralia." This statement was made in part on the basis of 19 adults and several juveniles and egg masses in the collection of the State Natural History Survey. These communities lie between 38°, 32' and 39°, 57' latitude. I am presuming Hebard's statement is to be interpreted as signifying that those points form the northern limit at which the species occurs perennially. Perhaps a somewhat clearer picture of distribution will be obtained if we think of this, and any other insect species living under natural conditions, as varying its range from time to time within certain geographical limits. The factor regulating the direction and extent of the variation in range in the case of the mantis is perhaps winter temperature relation to the egg mass or oötheca which forms the only stage that passes the cold season in latitude of Illinois. V

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may, therefore visualize a strip of territory, extending east-west across the state, in which this mantis vacillates at irregular periods in accordance with variations in degree of winter cold above and below critical points. What the critical temperatures are may possibly be determined by experiment. This strip is bounded on the south by a line of latitude beyond which the species never retreats, because the winter temperatures are continuously tolerable to the eggs, and it is bounded on the north by another line beyond which the species never advances because sooner or later there comes a winter with such low temperatures as destroy the eggs and thereby set the species back southward again.

What the extreme boundaries of this area of vacillation are has, of course, not been learned. But that it involves Champaign county is suggested by the records of four living adult specimens taken in the city limits of Champaign in the early fall of 1940 and 1941. The individual secured in 1940 was brought to the Department of Entomology at the University by an unidentified citizen, and three females were taken in 1941 by Charles Hirsch in a vacant lot near the campus. How much farther north the year-around temperature is sometimes favorable to

the survival of the eggs, and therefore to the development of the cycle during the warmer seasons, can be determined only by securing additional records.

However, the potential range of natural distribution may not be accepted as being coextensive with known records of occurrence. Being large, and inspiring popular hope of aid in the war against hostile insects, this mantis is subject to deliberate dissemination by man. Moreover, the egg masses, nymphs and adults that chance to occur on man's vehicles that roll along highways and railroads, or are borne on nursery stock and manufactured articles of numerous kinds, obtain "lifts" that take them quickly far beyond their normal limits. The female taken at Chicago on a lumber car (Hebard), the Staley nymph which I discovered on weeds by a junction of two railroads whose southern terminal is Springfield, Illinois, and the two adults taken on box cars at a grain elevator at Peoria and made available to me by Frank Hasbrouck, are probably instances of such artificial transportation. In the older literature we find further evidence of such cases. Walsh and Riley (1868) reported an egg mass was sent to Lacon in Marshall County from a southern point in the state, and the pair described by

TABLE I.—ILLINOIS RECORDS OF *STAGMOMANTIS CAROLINA*

Locality	Specimens	County	Approximate Latitude	Sources of Records
etropolis.....	2	Massac	37° 8'	Hebard (1934)
laski.....	3	Pulaski	37° 13'	Hebard
ongola.....	2	Union	37° 22'	LeBaron (1870)
rbondale.....	1	Jackson	37° 45'	Hebard
ckneyville.....	1	Perry	38° 6'	Hebard
ubois.....	1 j. and egg mass	Washington	38° 12'	Hebard
hley.....	1	Washington	38° 20'	Hebard
ensburg.....	1	Wabash	38° 20'	Hebard
aterloo.....	1	Monroe	38° 20'	Hebard
irfield.....	2	Wayne	38° 20'	Coll. Dept. of Entom.
owns.....	1	Wabash	38° 22'	Hebard
entralia.....	1	Marion	38° 22'	Hebard
ney.....	1 ♀ and egg mass	Richland	38° 42'	Hebard
wardsville.....	1	Madison	38° 48'	Hebard
ndalia.....	1	Fayette	38° 58'	Hebard
atur.....	1	Macon	39° 50'	Coll. Dept. of Entom.
iney.....	1	Adams	39° 57'	Hebard
ley.....	1 j.	Champaign	40° 6'	Coll. of W. V. Balduf
ampaign.....	1	Champaign	40° 6'	Coll. Dept. of Entom.
ampaign.....	3	Champaign	40° 6'	Charles H. Hirsch
oria.....	2	Peoria	40° 44'	Frank Hasbrouck
on.....	Egg mass	Marshall	41° 4'	Walsh and Riley (1868)
icago.....	2	Cook	41° 50'	Hebard
.....	Egg mass	Ogle	42°	Riley (1867)

LeBaron (1870) was mailed to him, presumably at Chicago, by a friend at Dongola in Union County. The possibility of deliberate or accidental participation by man in the dissemination of the mantis therefore clearly renders it impossible to know with certainty whether specimens found in the central area of Illinois are normal residents or adventives. But if found considerably south of central Illinois they may usually be regarded as permanent residents, while if north, or in general decidedly beyond latitude 40°, they would seem to be artificially imported and therefore doomed to local extermination with the coming of the first critically cold winter.

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