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## OCCURRENCE AND HABITS OF *SOMATOCHLORA* *INCURVATA*, NEW FOR PENNSYLVANIA (ODONATA: CORDULIINAE)

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On July 21, 1969, two males and three females of the little-known species *Somatochlora incurvata* Walker were taken by the author at a tamarack bog in Clinton County, Pennsylvania. The bog, called "Tamarack Swamp" on the Pennsylvania State Geologic Survey map (15 minute series, topographic, Renovo West Quadrangle) is situated east and southeast of the small village of Tamarack. Three additional males were collected on July 26, 1969, and four females on August 9, 1969. Other individuals, mostly males, were seen on each occasion.

The species has not previously been reported from Pennsylvania (Beatty and Beatty, 1968). This state is now the southernmost known locality for *incurvata*, and is only the third state in the United States from which it has been reported. The first specimens taken in this country were collected in Chippewa County, Michigan by A. F. Combs in 1916 (Walker, 1925). From that time until 1968, no United States records were reported. Then on August 30, 1968, Harold B. White III took this species in Maine (White, 1969).

I can add the following observations to those of White. The tamarack bog in Clinton County, Pennsylvania is somewhat similar in character to parts of the better-known Bear Meadows bog in Centre County (White, Beatty and Beatty, 1968) but the dominant conifers at the Clinton County bog are white pine and tamarack. The above specimens were captured where a low, very dense growth consisting primarily of leatherleaf, interspersed with blueberries, sedges, ferns, and young alders, spread extensively beneath the taller conifers. This open area is traversed by an old log tramroad, which crosses the bog in an east-west direction, passing through a thick growth of alders, some conifers, and scattered clumps of cattails located near the bog's margin. A small stream meanders through the bog some distance from this site. The only water present in the open area is found in small, shallow sphagnum-bordered depressions among the leatherleaf bushes.

The males flew in a random manner within several feet of the low growth. Occasionally they paused in their line of flight to hover, usually over the small pools, or to perch in an oblique position on some bare twig. Their manner of flight was similar to the smaller species *Somatochlora forcipata* Scudder, which also inhabits this Central Pennsylvania bog, although *incurvata* seemed somewhat warier. On July 21, males of both species were observed flying high over the bog. (One male specimen of *forcipata* was also captured on this date.) Judged by the difference in size, the majority of these individuals were *incurvata*.

Two of the three females taken on July 21 were teneral. The mature female was observed ovipositing alone in one of the small pools beneath the leatherleaf bushes. She flew furtively, close to the water, turning slowly about in an irregular fashion, and dipped her abdomen to the surface at closely spaced intervals. She visited several of these small pools before being netted.

Three of the four females taken on August 9 were ovipositing when captured. All were taken at a small, nearly dry pool. The process was similar to that observed on July 21, but two of these specimens oviposited in wet mud. The fourth female was taken while she was descending into a small, sphagnum-bordered depression with a bottom of wet mud, presumably to oviposit. At no time did the ovipositing females strike the sphagnum moss, but dipped the abdomen only to the wet mud or water.

The flight season of *S. incurvata* appeared to be near its beginning on July 21, while that

of *S. forcipata* was apparently nearly finished. At any rate, no more individuals of *forcipata* were seen after that date. In most years at this locality, the flight season of these two species probably overlaps by 1-2 weeks at most, this period being at the beginning of the season for *incurvata*. *S. incurvata* can be expected to fly well into August, and possibly the first half of September. The known flight period of *S. forcipata* in Pennsylvania begins in early June, the earliest recorded date of capture being June 7 (Beatty, Beatty and Shiffer, 1969).

The collection of *incurvata* raises to eight the number of species of the genus *Somatochlora* which are recorded from Pennsylvania (Beatty and Beatty, 1968).

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A scene of the chase. Maurice Sand, *Le monde des papillons* (Paris, 1867), 44.