SOME NOTES ON THE FEEDING HABITS OF ADULT CRANE-FLIES

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There are few recorded observations of adult crane-flies taking food. Knab\(^1\) quotes the few, scattered and casual records that he was able to find; some of which he questions; and gives a quite detailed account of his observations on the feeding habits of *Geranomyia canadensis* and *rostrata*, made in the vicinity of Washington, D. C. He states that on several occasions he found these two species feeding on the nectar of composite flowers, and that Mr. W. L. McAtee also had taken *Geranomyia diversa*, from the flower of a composite. Alexander\(^2\) states that *Geranomyia, Toxorhina, Elephantomyia* and other forms with elongate rostra feed on the nectar of tubular flowers and that it is probable that many other species feed in the adult state. Cuthbertson\(^3\) is of the opinion that few British species, outside of *Geranomyia*, take food in the adult condition.

Knab's observation that *Geranomyiae* were to be seen feeding only at twilight or on cloudy days and were absent from the flowers in full daylight gives a hint, as to one reason, so few adult crane-flies are known to feed. I have found that by visiting flowers at night with a "jack light" one can find crane-flies feeding far more freely than daytime or even twilight observations would suggest.

On the nights of December 31, 1924 and January 1, 1925, I visited a mango tree, growing near the banks of the Manatee River, Manatee Co., Florida. The tree bore hundreds of panicles, the florets varying from tightly closed buds at the tip of the panicle to fully opened blossoms near the base. The air for a considerable distance away from the tree was scented by the blossoms and a variety of insects were present. Besides crane-flies there were several species of moths and beetles, some abundant: two species of mosquitoes; and a number of lace-winged flies. Crane-flies were more abundant than any other feeding insects. The species present and feeding were: *Geranomyia canadensis* (?), few; *G. rostrata*, numerous; *G. virescens*, abundant; *G. canadensis*, few; *Rhipidia domestica*, abundant; *R. Schwarzi*, few; *Gonomymia pleuralis*, few; *G. puer*, few; *Erioptera caloptera*, two females. Both males and females of *G. virescens, G. rostrata*, and *R. domestica* were observed feeding, the females
the more numerous. In the other species, only females were seen. In all cases of the species listed above, specimens were taken from the flowers with forceps while feeding, were killed and later pinned and their identity made certain.

The *Geranomyia*ae went thru their characteristic bobbing motion over each blossom they visited. The rostrum, moved up and down by this motion, probed about each flower in what seemed a "trial and error" stabbing. When the insect suddenly ceased bobbing the rostrum could be seen to be inserted in the flower. One or two slight tremors, that might be called very faint bobbing followed this insertion of the rostrum and then the fly quietly fed for a brief time. Slightly opened buds seemed to yield the most nectar, for on these the *Geranomyia*ae remained feeding much longer than on the more fully opened blossoms and more *Geranomyia*ae were found about the tips of the panicles than about the bases.

All the species of other genera were found on the fully opened blossoms, only. In each species the procedure was very much the same, the mouth parts were closely applied to the inside of the base of the petals and the body was crouched down on the flower or its pedicel. In the latter case the head was inserted into the flower between two petals. The short mouthed forms remained at a single floret much longer than did any *Geranomyia* and were so intent on feeding that usually when their bodies were lightly touched with the forceps they slightly shifted their position without removing the mouth parts from the flower. All the *Geranomyia*ae were much more easily disturbed.

Apparently the feeding goes on all night, but whether the same flies remain about the blossoms or their places are taken by new-comers I did not ascertain. On the second night I remained at the tree from 9:30 until after midnight and the number of crane-flies about a panicle did not appreciably change, and this in spite of a cool, drifting fog that settled in tiny droplets on their wings and bodies.

All of these species come rather freely to light but altho my light was quite bright, none of the feeding flies left their blossoms or were in any way affected that I could detect. When a branch was beaten with a net handle the dislodged flies came about the light or my illuminated net bag, but most of them soon returned to the flowers.
Spiders and tree frogs were numerous about the tree. Both jumping spiders and small spider webs were common on and among the panicles and twigs, but no crane-flies were observed to have been captured by either. Many G. virescens were noted resting on strands of spider web, hanging from their prothoracic legs. Here they seemed particularly wary and difficult of approach. The tree frogs were all Hyla cinerea, both adults and juveniles, and were numerous and alert. They were usually perched near the base of a panicle and probably took a good many feeding insects but I failed to examine any stomachs.

At Gainesville, Florida, I have noted several other crane-fly species either feeding or presumably feeding, at night. Pseudotimnophila luteipennis has been taken from the flower spikes of lizard’s tail (Saururus cernuus.) but it is not certain that they were feeding. Rhipidia shannoni, I have, on two occasions, taken from the flowers of a wild honey suckle. In both cases the insect was within the mouth of the flower. Sweeping these flowers at night very frequently yields this species altho it is not common in this region.

I have never observed any Tipulinae on flowers but have taken two species, Nephrotoma okefenoke and Tipula longipes, both females, from sugar and molasses baits, at night, about Gainesville.

In Jefferson Co., Indiana, Brachypremna dispellsans was observed on one occasion drinking dew from the surface of a pebble. This was in the daytime, in quite deep shade. The top of a small pebble was covered with dew and the fly applied its mouthparts to the surface of the pebble for wall over a minute. The head was slightly moved about the surface of the pebble without losing contact with it but the feet were not moved. The amount of moisture on the pebble was appreciably diminished.

In early June of 1923, Geranomyia rostrata and G. canadensis were found feeding at dusk from the white flowers of a tall shrub along a brook in Bibb County, Georgia. The next morning no Geranomyiae were about the flowers. But bees and Syrphidae were numerous. About ten A. M. the sky became very cloudy and a light shower fell. During the shower a few G. rostrata were found feeding again. With the return of bright sunlight in about an hour not a specimen of Geranomyia could be found, even by sweeping the flowers and bushes. Much the same behavior was
noted as has been described by Knab. When a fly approached a flower cluster it flew in a shuttle-like movement back and forth in front of the blossoms. Each movement toward the flower seemed to bring the extended feet into contact with a floret. with each movement away from the flower the legs were flexed. This flying dance takes about a minute when the flower is still but is prolonged if the flower is moved. Finally, on one of the movements toward the flower the fly alights and the wings are folded or partly folded. A rapid bobbing motion continues by the extension and flexing of the legs, a movement like the “deep-knee-bend” of setting up exercises. Soon the rostrum is jabbed into a floret on one of the down motions and the bobbing ceases. A floret was soon exhausted and the bobbing was resumed, without the feet changing their holds. A new floret is quickly found and the bobbing ceases. Most of the florets within reach were tried before the feet were moved. from their position. The florets within reach were not systematically probed; the fly was just as apt to return to an already sampled floret as to a fresh one beside it. When most of the florets have been tried the Geranomyia flew to another flower or to a different area of the same cluster, there to repeat the whole behavior.