

NOTES ON THE BEHAVIOR OF THE LATE INSTAR NYMPHS OF FOUR *MACROMIA* SPECIES UNDER NATURAL AND LABORATORY CONDITIONS (ANISOPTERA: MACROMIIDAE)

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Abstract – *M. annulata* (Hag.) is almost always a climber, some *georgina* (Sel.) nymphs are climbers, others are bottom-dwellers, *taeniolata* (Ramb.) lives usually on the bottom, and *pacifica* (Hag.) always does so. The older nymphs of the latter 2 spp. usually burrow, though *taeniolata* less regularly than *pacifica*. The feeding behavior of the bottom-dwellers and climbers is described and a note is furnished on the emergence

site choice.

Observations

In January, 1974 I collected 14 nymphs of *Macromia georgina* (Sel.), 3 of *M. annulata* (Hag.), and 3 of *M. taeniolata* (Ramb.) from the South Bosque River and the stream from the spillway of Lake Creek Res., McLennan County, Texas, United States. All *annulata* and *georgina* nymphs were taken

from long grasses overhanging the banks into the water. The *taeniolata* were taken from the bottom where mud and debris were present. Most were last-instar, and a few were in L-1 and L-2 instars.

All nymphs were placed in a 10 gallon aquarium fitted with filter and aerator. In the aquarium were several emergence supports, moss hanging into the water, and a large rock which extended 3-4 inches above the surface. The bottom was gravel with spots of deep sand. Almost always *annulata* was on the moss or one of the emergence supports. The *georgina* were about equally divided as climbers and bottom dwellers. Usually *taeniolata* was on the bottom, and sometimes burrowed.

In August, 1977 three nymphs were collected from the mud bottom of a pond-like area of Hog Creek, McLennan County, Texas. Two were in L-2 instar, and one was in L-4. These were placed in the aquarium, and May 21, 1978 one emerged as *M. pacifica* (Hag.). Another was found dead after metamorphosis was complete, and it too appeared to be *pacifica*. These three specimens, including the younger nymph now in L-1 instar, were sent to Dr. Minter J. Westfall, University of Florida. He wrote that the live nymph had molted to L-instar, and that he thought it too was *pacifica*. In aquaria the *pacifica* nymphs were always on the bottom. In the daytime, when the two older nymphs were in L-instar, they covered themselves with sand to the extent that only their outlines were visible. At night they came out to feed, but remained on the bottom. During the three days prior to

emergence, *pacifica* did not burrow.

During daylight hours the *Macromia* nymphs fed very little. Those that burrowed retained that position. The other bottom-dwellers spread their legs and flattened their bodies against the sand or gravel. The climbers spread their legs and flattened their bodies against the emergence supports, the rock, or the moss. At night they retract their legs slightly and elevate their bodies. Apparently this is a feeding attitude. I have observed *M. annulata* and *georgina* catch prey while in that position. When the prey crawled across or touched one of the nymphs front legs, the nymph, in one movement, swung its body around so as to face the prey and caught it without moving any of the feet.

During the emergence period, nymphs often climbed to the top of the large rock and moved about with surprising speed, searching for a suitable site for transformation. Sometimes one climbed the rock, went back into the water, and repeated this performance several times before hunting for another way out of the water. Usually it would find one of the emergence sticks, however several waited too long and drowned. None of the *Macromia* emerged on the rock. It was put in the aquarium for the convenience of certain gomphids and Zygoptera. *Erpetogomphus designatus* (Hag.) and *Argia sedula* (Hag.) did emerge there, but *Gomphus militaris* (Hag.) chose one of the sticks.

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