

OBSERVATIONS ON THE BEHAVIOR OF THE NYMPH OF *NEUROCORDULIA XANTHOSOMA* (WILLIAMSON) UNDER LABORATORY CONDITIONS (ANISOPTERA: CORDULIIDAE)

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Abstract — Observations on the death feigning, diurnal habits, (nocturnal) feeding behavior, and on the emergence position, carried out on 10 specimens, are briefly stated, and a timetable of the main emergence events is presented (departure from water: 00:12-07:25, wings horizontal: 05:28-12:48). The total duration of the emergence period in aquaria (45 days) was nearly equal to that in nature (at least 46 days), but it occurred 3 weeks earlier.

Death feigning

In January 1976 the "death feigning" attitude of the *N. xanthosoma* nymphs, L-4 to L-1 instars, was studied briefly. When they were removed from the water and handled, they feigned death. If left undisturbed out of water, the duration of the attitude was 15 to 30 sec (WILLIAMS & DUNKLE, 1976). If they

were dropped back into the water, they revived within a few seconds after sinking to the bottom. About a week before the Spring emergence season began, three last-instar nymphs were tested. Each feigned death as it lay in my hand. When the first nymph was dropped into the aquarium, it sank to the bottom, and after 2 min it revived with a jet-propelled movement to a darker area. The second nymph revived suddenly after 21 min. The third landed on the bottom, dorsum up but leaning at a 45 degree angle against a small rock. With its legs drawn tightly against the body, it remained motionless for 35 min. Then it extended the legs so slowly that no movement could be detected. That required an additional 10 min. The nymph did not change position until an hour and 5 minutes had passed.

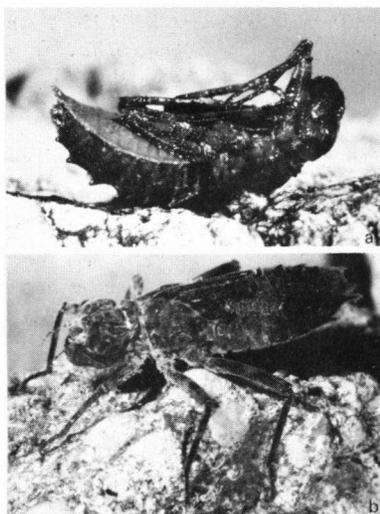


Fig. 1. The characteristic behavior of *Neurocordulia xanthosoma* (Willmsn) nymphs: (1) Death feigning; — (2) Nighttime attitude of alertness.

Hiding habits and feeding behavior

In the aquarium was a layer of gravel and sand which held the emergence support, a stump of a small tree with some short roots and several trunks about 2 feet in length. Resting on the gravel was a rock, 5 inches in diameter and 12 inches tall, with numerous holes and crevices. This provided many hiding places, and during the day it was often difficult to find a nymph. Daytime searches revealed that many had wedged themselves completely under the rock, and were clinging to its under-surface. Some were under the filter, and a few were in other dark areas, crevices and deep holes in the rock, underside of roots, and vertical surface of the rock.

At night the nymphs came out to feed. Like the *Macromia* nymphs, they elevate their bodies, and when their prey crosses over or touches one of their front legs, they pivot the body without moving any of the feet, and catch the prey.

Once I observed a nymph catch prey while completely out of the water. A piece of bark with a *xanthosoma* nymph on it was removed

from the aquarium. After the water had drained from the bark, a small mayfly nymph began to move directly in front of the *xanthosoma*. Immediately the *xanthosoma* nymph caught and ate it.

Emergence

The emergence supports were very irregular in shape, and made possible a variety of positions that the nymphs could choose for emergence. Usually they tested several positions and angles before making a choice. Sometimes a nymph tested several spots on a support, then descended into the water and climbed up another support.

Table I — Timetable of the main emergence events recorded under laboratory conditions in 10 specimens of *Neurocordulia xanthosoma*

Date (1976)	Sex	Left the water	First split of skin	Abdomen extracted	Wings fully expanded	Wings horizontal
April 13	♀	06:30	09:26	09:56	10:14	fell
April 14	♀	00:40	03:55	04:25	04:50	05:55
April 16	♀	02:05	04:05	04:44	05:10	fell
April 19	♀	02:10	06:48	09:22	10:00	11:07
April 24	♀	02:10	03:36	04:03	04:25	05:28
April 25	♂	01:30	03:38	04:16	04:45	07:05
April 26	♂	00:12	06:29	07:21		10:19
April 26	♀	07:25	09:46	10:34		12:48
May 6	♂	08:47	08:13	08:47	09:15	10:41
May 28	♂	06:25	08:21	08:59	09:25	10:48

April 13 to May 28, 1976 twenty-one *xanthosoma* emerged from the aquarium. Ten nymphs assumed the more usual position with the body inclined slightly backwards from vertical. Six chose an inclination of about 45 degrees backwards, and 5 a horizontal position with ventral side up. The horizontal position proved to be precarious. Three of the five newly emerged adults were unable to maintain a grip on the exuviae, and they fell into the water. A timetable of the main emergence events, recorded in 10 specimens, is given in Table I.

WILLIAMS (1976) reported an emergence period in nature of at least 46 days (May 6-June 21). In aquaria the emergence period covered 45 days, apparently three weeks earlier than it occurs in nature.

References — WILLIAMS, C.E., 1976, *Great*

Lakes Ent. 9 (1): 63-73; — WILLIAMS, C.E. Received October 12, 1978
& S.W. DUNKLE, 1976, *Fla Ent.* 59 (4): 429-
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