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ECO-ENTOMOLOGICAL OBSERVATIONS FROM THE AMAZON: II. CARABIDS ARE ADAPTED TO INUNDATION-FORESTS!

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Up to now, "true" adaptions of Carabidae to neotropical inundation-forests have rarely been recorded (Irmler 1979). During recent field observations in a black-water inundation-forest at the Río Tarumã Mirím (Adis 1981) near Manaus/Amazonas, adaptations in feeding and survival were shown during forest inundation (about 5 months) in April and June/July 1981.

Feeding. Ground-living Carabidae, especially non-flying ones, are forced up trees onto trunks or into canopy areas during inundation. Non-aestivating species (see below) then forage for food as "trunk dwellers" on trees. However, most arthropods found on tree trunks during the flooding period are predators (up to 70%; see Adis 1981). The aquatic invertebrate fauna seems to represent an alternative food source for carabids adapted to the biotope: Several individuals of *Stratiotes batesi* (Scaritini: Carabidae) were observed feeding on nymphs of *Asthenopus curtus* (Ephemeroptera). During forest inundation periods, this mayfly is found living in large numbers under loose bark (esp. of *Aldina latifolia*: Leguminosae) or in dead floating wood (Braga 1979). *Stratiotes batesi* (length 16.8 mm) has been found down to 30 cm below the water surface, feeding on the soft-bodied prey of up to 10 mm length (without caudal filaments). Apparently this carabid can remain under water for a long time. During the emersion period (Sept.–March) it forages in the humus layer of the forest floor.

Survival. Aside from feeding problems, Carabidae may escape flooding by running or flying to adjacent dry-land habitats (still to be proven) or by evolving an aestivation phase. For the first time, *Pachyteles* sp. 3 (length 3.6 mm), a flying species, has now been collected aestivating under bark of *Aldina latifolia* at 7 m and 14 m heights. Evidence of aestivation during inundation periods was also observed for Diplopoda (Epinannolenidae, Stemmiulidae) and seems to be regulated by abiotic factors, in particular microclimatic changes between the rainy-season and the dry-season (Adis MS).

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