FOLIA PARASITOLOGICA (PRAHA) 31: 257—258, 1984.

NOTE TO THE LIFE CYCLE OF ORNITHODOROS DENMARKI

On 4 April 1980, during our stay in Cuba, we collected 1 450 specimens of the argasid tick *Ornithodoros denmarki* Kohls, Sonenshine et Clifford, 1965 at Cayo Mono Grande, the province of Matanzas. The little island is the only known locality in the Cuban territory where this species was already found in 1972 (Cruz de la J., Poeyana No. 129: 1—3, 1974). Fifty adults were transported to Prague.

Out of 1 400 specimens available for virological testing 13 strains of Hughes virus were isolated (Danielová V. et al., Acta virol. 26: 186—189, 1982). Apart from the said virus also isolations of Soldado and Raza viruses (serogroup Hughes), Johnston Atoll (serogroup Quaranfil) and Midway (serogroup Nyamanini) were reported from other localities from this tick species (Clifford C. M., In: E. Kurstak (Ed.), Arctic and Tropical Arboviruses. Academic Press, New York—San Francisco—London, pp. 83—100, 1979). Due to these facts and insufficient knowledge of the bionomy of this tick species we consider it expedient to present some data on its development, although obtained from scanty material.

Larvae were allowed to feed on one-day-old chicks, nymphs on chickens aged one week and adults — on a cock. The ticks were kept in glass tubes with gauze tampons at 26 ± ± 0.5 °C and relative humidity 75—80 % given by technical parameters of the rearing box, within a short-day photoperiod (8 hours of light and 16 hours of darkness). The larvae had been feeding for 6—10 days, moulted into nymphs I after 10—14 days. These nymphs I metamorphosed into nymphs II without feeding (after 27—31 days). The nymphs II had been feeding for 30—60 minutes and following 17 to 20 days moulted into nymphs III. Thirty three out of 50 unfed larvae which had hatched from egg batches laid by collected females during the transport, engorged at the beginning of May. Out of them 16 nymphs I, 10 nymphs II and 3 nymphs III were gradually obtained. Further development could not be accomplished. Out of 5 ♀, 5 ♂, allowed to feed at the end of July,

a single female oviposited after 13 days and larvae hatched within 14 days since the beginning of oviposition. The number of eggs produced was 137. Out of 8 ♀, 3 ♂ allowed to feed in September 1980, also a single female oviposited, namely as late as 12 May in the following year and larvae hatched on 28 May. The remaining 22 ♀ and 7 ♂ died until 20 September 1980, starting to die as early as July, probably due to the low relative humidity in the rearing box.

Among material collected in the USSR, Filippova (Fauna SSSR IV, 3. Argasidae, Nauka, Moskva—Leningrad, 255 pp., 1966) recorded 3—6 nymphal stages in a related species *O. capensis* Neum. Larvae had been feeding for 3—9 days at 26 °C and relative humidity close to saturation, after 4—8 days they moulted into nymphs I, which metamorphosed into nymphs II without feeding. Other data only referred to nymphs IV. The data show that the feeding of larvae and particularly their moulting into nymphs I took longer in our colonies of *O. denmarki*. Likewise, the period between the engorgement of females and the hatching of larvae, in our case 27 days and in *O. capensis* only 14—15 days, appeared to be longer.

During our visit to the locality we collected only adults in April. Cruz (in litt.) found females, males and nymphs at the ratio of 1 : 1 : 1 and encountered also larvae in July. In October no larvae occurred and there were few nymphs. The first date falls in the period prior to the arrival of avian hosts, the terns of various species, the second date is within their nesting period and the third date refers to the period after the nesting. Taking into account these facts and our findings concerning the dates of oviposition, the following scheme of developmental cycle appears to be probable. The females which become engorged after the arrival of hosts in their nesting site, lay eggs from which larvae hatch soon and attack young birds. The development through nymphal stages to adults of next generation covers the period of nesting. The females, so far as they become engorged in the autumn, oviposit as late as next spring. The egg batches laid by the females feeding either in the spring of the same year or in the autumn of the previous year, are synchronous, so that larvae should hatch in the period of the appearance of young birds. It is this synchronization that characterizes markedly the bionomy of *O. denmarki*. The entire development from egg to imago may consequently take place during a single year. A similar supposition was expressed by Pervomaysky et al. (Entomol. obozr. 37: 889—896, 1958) in reference to *O. capensis* from the region of the Aral Sea (mentioned in the paper as *O. coniceps*). The outlined course of the developmental cycle takes for granted the ability of adults to fast for several months after departure of the terns from their nesting site, this being nothing unusual in representatives of this family. Pavlovsky and Skrynnik (DAN SSSR 133: 734—736, 1960) presume that the fasting of *O. capensis* might be as long as one and a half year.

To make the characterization of *O. denmarki* bionomy more precise we can supply a few observations of our own. In the inter-nesting period the argasids take shelter in rock hollows or in the crevices of coral fragments where they are often very numerous. We collected 387 specimens of this species in one rock hollow measuring 3 × 2 × 1.8 cm. Another time we found in one piece of coral 8 × 6.5 × 3.2 cm large 188 specimens taking shelter in its crevices. These data are evidence that the numbers of *O. denmarki* in the whole bird colony of the little island amount to hundreds of thousands specimens.

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