

Research Note

ADDITIONAL OBSERVATIONS ON THE LIFE HISTORY OF THE *OEDIONYCHINA FLEABEETLES: ALAGOASA JANUARIA BECHYNÉ*¹

Except for *Alagoasa bicolor* (L.)², the life history and ecology of the fleabeetles *Oedionychina* have received little attention. Eleven papers³⁻¹³ deal with these matters more or less fragmentarily.

Some additional data were provided by a Brazilian species, *Alagoasa januarua*, kept in petri dish cultures at the Instituto de Biociências, Departamento de Biología, Universidade Estadual Paulista, Rio Claro, São Paulo, Brazil¹⁴. The cultures were established and maintained as before in Puerto Rico², with the natural hostplant as food.

A. januarua was collected in the Horto Florestal of Rio Claro, where it feeds on *Stachytarpheta* sp.

1. Oviposition. All eggs were laid in clusters on the soil. Number of eggs per cluster, and intervals between ovipositions (days in parentheses)

¹ Manuscript submitted to Editorial Board December 8, 1982.

² Virkki, N. and Zambrana, I., Life history of *Alagoasa bicolor* (L.) (Coleoptera), Entom. Arb. Mus. Frey (in press).

³ Blake, D., A revision of the beetles of the genus *Oedionychis* occurring in America north of Mexico, Proc. U.S. Nat. Mus. 70: 1-44, 1927.

⁴ Böving, A. G. and Craighead, F. C., An illustrated synopsis of the principal larval forms of the order Coleoptera, Entomol. Am. 11: 1-351, 1931.

⁵ Rockwood, L. L., Seasonal changes in the susceptibility of *Crescentia alata* leaves to the flea beetle, *Oedionychus* sp., Ecology 55: 142-45, 1974.

⁶ Winder, J. A., Biological control of weeds: *Lantana*: Activities in South America, pp. 95-96 in: Dallwitz, M.J. (ed), C.S.I.R.O. Div. Entomol. Annu. Rep. 1975-76, Australia, 1976.

⁷ Winder, J. A., Factors affecting the growth of lantana in Brazil, Ph.D. Thesis, Univ. of Reading, U.K., 1980.

⁸ Virkki, N., Ovariole numbers in two Puerto Rican *Oedionychina* (Coleoptera), J. Agric. Univ. P.R. 63: 50-6, 1979.

⁹ Virkki, N., Fleabeetles, especially *Oedionychina*, of a Puerto Rican marshland in 1969-72, J. Agric. Univ. P.R. 64: 63-92, 1980.

¹⁰ Virkki, N., On the biology of *Oedionychina* (Chrysomelidae, Alticinae), Tribolium Inf. Bull. 22: 172-73, 1982.

¹¹ Virkki, N. and Zambrana, I., Demes of a Puerto Rican fleabeetle, *Alagoasa bicolor* (L.), differing in mean body size and foodplant association, J. Agric. Univ. P.R. 64: 264-74, 1980.

¹² Balsbough, E. U., Possible mimicry between certain Carabidae and Chrysomelidae, Colcopt. Bull. 21:139-40, 1967.

¹³ Begossi, A., Master's Thesis, Department of Zoology, University of Campinas, 13,500 Campinas—S. P., Brasil, 1984.

¹⁴ Thanks are due to Prof. Dra. Carminda da Cruz Landim and Srta. Ana Maria Costa Leonardo for assistance, and to the following institutions, which arranged my sabbatical leave in Brazil: Fundação de Amparo à Pesquisa do Estado de São Paulo, Universidade Estadual Paulista em Rio Claro, and University of Puerto Rico.

of the four females observed were as follows:

<i>Female</i> No.	<i>First</i> <i>cluster</i>	
1	30.XII.80	16-(3)-24-(3)-24-(3)-24-(1)-24-(2)-26-(3)-24
2	13.I.81	24-(3)-24-(23)-24-(10)-24-(5)-24-(2)-24-(9)-24
3	13.II.81	29-(4)-?(2)-19-(5)-25
4	16.II.81	29-(6)-25-(3)-24

The average number of eggs was 23.9 per oviposition (cluster). Although the internal genitals were not checked, the egg numbers predict ovariole numbers around 12+12, which would be significantly higher than the 8 to 12 ovarioles per ovary in the Puerto Rican *A. bicolor*⁸. The average interval between ovipositions was about 5 days. An interval as short as 1 day means either that the vitellogenesis can take place in such a short time, or that, contrary to observations made in Puerto Rico, another set of oocytes enters vitellogenesis before the former set of eggs has been laid. The notable plumpness of the females suggests the latter alternative.

2. Metamorphosis. Most of the eggs laid later flattened and died. They were obviously not fertilized, despite the presence of a male in each culture, and observed copulations. Only one complete series from eggs to adults was observed; it started from the 16 eggs laid in 30.XII.80. Average duration of the metamorphic steps in this series was as follows (larvae II and prepupa escaped observation):

- Eggs to larvae I: 13 days
- Larvae I to larvae III: 17 days
- Larvae III to pupae: 12 days
- Pupae to fully pigmented adults: 13 days

This totals 55 days, i.e., 5 days more than estimated for *A. bicolor*². The 9 days of pupal life can be characterized by the following steps:

<i>Age in</i> <i>days</i>	
3	Pigmentation of eyes starts
6	Eyes black
7	Mandibulae brownish and move if touched
9	Eclosion

Coloration of the larvae II much resembles that of *A. bicolor*, but the prothoracic shield is black, the anal one is of the main body color. An oesophageal chitin exuvium was drawn out at the larval moultings just as described for *A. bicolor*². The pigmentation of the adult took more

time than in *A. bicolor*. The 1-day-old subterranean adult turns from olive to black elytra in 5 hours, but the pronotum may remain yellow until the fourth day of adult life.

This fleabeetle common in Rio Claro would make an interesting object for genetics studies, because it is polymorphous for the karotype as well as for the phenotype. Non-chiasmate arms of each of three autosome pairs vary in length, although they are not heterochromatic by C-banding criteria¹⁵; they could, however, be composed of "cryptic heterochromatin"¹⁶. The number and shape of the white to violet spots on the black elytra vary notably in the deme. The female is larger than the male. The species also has the giant, nonchiasmate sex chromosomes typical for *Oedionychina*.

The present observations show that rearing of *Alagoasa januarina* in laboratory conditions is possible. Larger containers or cages would enhance survival and fecundity from the low levels of the present preliminary technique.

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¹⁵ Virkki, N., 1983. Banding of *Oedionychina* (Coleoptera) chromosomes: C- and Ag-bands, *J. Agric. Univ. P.R.* 67 (3): 1221-1256.

¹⁶ Smith, S. G. and Virkki, N., *Animal Cytogenetics: Coleoptera*. Ed. B. John, Borntreger, Stuttgart-Berlin, 366 pp., 1978.