

TRANSACTIONS  
OF THE  
ROYAL SOCIETY OF NEW ZEALAND  

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BIOLOGICAL SCIENCES

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VOL. 12

No. 11

10 JUNE 1970

Seasonal Changes in Populations of Corixidae and Notonectidae  
(Hemiptera: Heteroptera) in New Zealand

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[Received by the Editor, 20 July 1969]

*Abstract*

THE life cycles and changing population structure of flight polymorphic species of Corixidae and Notonectidae are described. The two families have very similar life cycles with one and a part second generation each year, and respond similarly to changing habitat conditions in the development of the different morphs. Normal bugs develop in early and mid-summer and flightless ones predominantly towards the end of summer.

INTRODUCTION

THERE are surprisingly few published accounts of the biology of the Corixidae and Notonectidae in New Zealand although there is a large literature from studies in other parts of the world, especially Europe where they have been a popular group. Myers (1926) has given brief notes on the habits of the two families in New Zealand in an account of the biology of the Heteroptera. The paper by Marples (1962) gives little new information, but that by Barclay (1966) is valuable for showing precisely when larvae first appeared in a temporary pond near Auckland. The most complete study of the Corixidae is still that of Young (1959) which considered the habitats of the various species, growth, life cycles and some anatomy, especially in relation to flight polymorphism. Parts of this thesis have appeared in papers on migration (Young 1962a) and taxonomy (Young 1962b).

Polymorphism for flight with a normal flying morph and one or more flightless morphs in which at least the indirect flight musculature is reduced and often the wings also modified is widespread in the aquatic and semi-aquatic Heteroptera and is often related to habitat stability. Within the Corixidae and Notonectidae flightlessness most commonly results from failure of the flight muscles to develop, but in a few species the wings are also reduced. The flightless morph has reduced thoracic pigmentation and may be smaller than the normal morph but is otherwise similar. Young (1965b) described the several morphs of the polymorphic species of British Corixidae and much of this account applies equally well to both the Corixidae and Notonectidae in New Zealand. The descriptions of the morphs used in the present paper follows the scheme outlined there.

The polymorphism is environmentally determined, at least to the extent that larvae, and in some species newly moulted imagines, developing to the flightless morph can be switched back to normal development. In the laboratory moderate temperatures have been found effective in controlling development in this way and

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*Published by the Royal Society of New Zealand, c/o Victoria University of Wellington, P.O. Box 196, Wellington.*

*Trans. R. Soc. N.Z., Biol. Sci., Vol. 12, No. 11, pp. 113-130, 4 figs.*