

A MARK-RECAPTURE STUDY OF COEXISTING ZYGOPTERAN POPULATIONS

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An analysis is presented of the coexistence of 8 spring spp. in an area in Eastern Flanders, Belgium. By counting exuviae and by the mark-recapture method, the behaviour of the different spp. in space and time was followed. The data include estimates of the translocation within the area and estimates of population size and survival rate using the method of Jolly and Seber and a new regression method. — Between spp. (of different genera), differences in spatial and temporal performance were noted which result in a reduction of interaction, whether or not truly competitive. However, between the coexisting sibling spp., *Coenagrion puella* and *C. pulchellum*, no major differences in utilisation of the environment could be found. There are indications that ♀♀ of *C. puella* were driven out of their favored areas, but in spite of this they continued to oviposit at the peak density of *C. pulchellum*. This observation leads to a reconsideration of the competitive exclusion principle.

INTRODUCTION

DUMONT (1971) described the history of the Odonata of the "Wellemeersen", an area in the lower part of Belgium with a variety of artificial waters: bomb-craters transformed into fishing ponds, medium sized ponds (surface area ≥ 0.25 ha) and a large pool of 20 ha. Between 1957 and 1969 he visited the area regularly and during this period several new species entered the area. If the intrusion was successful, there was often an effect on the species already present. The most striking example concerns the closely related species *Coenagrion puella* and *C. pulchellum*. Up to 1960, when *C. pulchellum* was first seen, *C. puella* was abundant on all types of water. After that time *C. puella* gradually became restricted to the bomb-craters (not populated by *C. pulchellum*), save for a small