

## ABSTRACT

The trap-nesting technique was used to study the biology and population dynamics of solitary aculeates in St. Catherine, Jamaica. Of 9158 traps placed from January, 1973 to January, 1975, 2705 out of 6063 recovered were used by eleven species of aculeate Hymenoptera. Pachodynerus nasidens (Latr.) (Eumenidae), Trypoxylon (Trypargilum) texense Saussure (Sphecidae) and the megachilid bees Megachile zapt-lana Cresson and M. concinna Smith were the most numerous species. Although most species preferred the warm, dry lowlands, several were also trapped in the cool, mountainous regions.

The biology of all the eleven species is given with special reference to Pachodynerus nasidens. In Jamaica, P. nasidens nested in disused cells of the solitary mud wasp Sceliphron assimile Dahlbom (Sphecidae) and Zeta abdominale (Drury) (Eumenidae). Its essential resources for nesting were water, leaf-mining or leaf-rolling caterpillars for provisions and shaded situations. It was virtually absent in dry limestone area of St. Catherine, and was widespread in the coastal plain. In the wetter regions of this parish P. nasidens fecundity was increased but the wasp was more localized. A new hypothesis is proposed regarding provisioning of more food to female-producing cells. The significance of the cell volume and the intercalary cell is explained.

The population dynamics and life-tables of seven species are given with special reference to Pachodynerus nasidens. The developmental mortality of the latter averaged 81.64% in Sceliphron cells, 92.81% in Zeta cells, but only 53.22% in trapped-nests. Mean fecundi-

at a favourable site was  $14.75 \pm 3.94$  eggs per female, but drought reduced longevity and rate of oviposition. The mechanism of regulation of numbers of Pachodynerus nasidens in different life situation is considered. Melittobia sp. (hawaiiensis complex) was the chief predator of solitary Aculeata in Jamaica. The overall low developmental mortality of these aculeates indicate that each female does not realize her full egg-laying potential due to lack of suitable nesting-sites or most of them die in their search for it.