Meligethinae as Possible Pollinators
(Coleoptera: Nitidulidae)

Roy A. Crowson

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As far as known, all species of Meligethes and Pria develop in the flowers of Angiospermae, and are primarily pollen-eaters in both adult and larval stages. Those species which have been investigated, have shown more or less strong host-plant specificity for breeding purposes, though adults may feed in flowers of species in which they do not breed.

A marked feature of both genera is the presence in the adult mandibles of dorsal setiferous pits. Similarly placed pits in Dendrophagus crenatus [Silvanidae] were shown by Crowson & Ellis [1962] to serve as mycangia, in the transport of spores of a fungus serving as larval nutrition. The mandible pits of Meligethinae have never been seen to contain fungal spores, and there is no evidence that fungi play any part in the life of species of the group. Pits rather like those of Meligethinae in the mandibles of adults of an exotic group, Boganiiidae, have been observed by me to contain pollen grains; both adults and larvae of Boganiiidae, as indicated by gut-contents, feed mainly on pollen grains.

It was suggested in 1920 by Faber, Fischer & Kalth that adult Meligethes aeneus were effective pollinators of their Brassica type Cruciferae hosts, on the basis of field and experimental evidence. But their work has been ignored by almost all subsequent writers on the subject. The species they were concerned with were mostly annual plants, so that pollination by beetles in one year might significantly affect the availability of breeding habitats for their progeny in the next year. In such circumstances it is conceivable that natural selection could operate to improve adaptations for pollen carriage in the beetles. It is notable that, according to Scherney [1953], adults of M. aeneus were regularly observed to chew at the stigmas as well as the anthers in host flowers, so that any pollen grains in their mandibular pits would be well situated to achieve pollination.

Nearly all other recorded hosts of European Meligethinae are herbaceous, though not always producing flowers from seed in the following year. Some of the exotic Meligethinae, such as the African species of Microporum Waterh. and Palmopria [Endrödy-Younga 1978], have been reported to occur in large numbers in the inflorescences of Pandanaceae (Microporum) or of Elaeis palms (Palmopria). Both Elaeis and Pandanaceae are long-lived and dioecious, with male and female inflorescences borne on separate plants. At least in Microporum popei, collected from male inflorescences of Pandanus, the mandibular pits are considerably less well developed than in European Meligethes or Pria. This might be taken as an incipient stage in the development of the pits, or as a degenerative non-functional one. I have seen no evidence that M. popei adults visit female inflorescences.

Most botanists have considered Pandanaceae to be generally windpollinated, but it is to be noted that in Micronesia, Gillogly 1962 records at least 3 spp. of his new genus Haptognathus as occurring in Pandanus “blossom”, and larvae of one of them as occurring in the same habitat. He attributed his genus to Meligethinae, and compared it particularly with the Neotropical Mystrops. Species of this last genus [Gillogly 1955] have been found in both adult and larval stages in male inflorescences of species of Cocos palms. Mandibular pits seem to be lacking in Mystrops and Haptognathus, and the larva of Mystrops lacks