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THE IMPORTANCE OF ASSOCIATING REARED ADULTS WITH THEIR IMMATURE STAGES

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Recent studies of a species complex in Larvaevoridae (Tachinidae) have highlighted the importance and usefulness of associating immature stages, hosts, and reared adults whenever possible. It seems worthy of a note to emphasize this for anyone who may have opportunities to rear hosts and their parasites. Only through the long and patient accumulation of such materials and information can the taxonomist build toward a truly natural classification of the adults, as well as toward more reliable identifications. The following remarks apply especially to parasitic flies, but undoubtedly they are pertinent for other orders as well.

Certain small, more or less shining black larvaevorids, usually parasitic on phalaenid larvae, are classified by some authors in the single genus Wagneria, by others in several genera under such names Wagneria, Polideosoma, Phoricheta, and Metachaeta, because of varying opinions of the taxonomic worth of certain adult characters. Puparia of five species are available, and examination of them reveals two such startlingly different types of structure, especially in the spiracular plates, that it is scarcely conceivable that all belong to one natural genus. Division of the five species into two groups on the basis of these two types of puparia cuts across the currently accepted generic limits of those authors who recognize more than one genus in the complex, and indicates that a different combination of characters may be of generic significance. Were our knowledge complete, or even somewhat more extensive, the work could be advanced considerably.

Parasite material submitted for identification often consists of adults only; and of course, for purposes of identification under current classifications, that is usually sufficient. But it would take only a little more effort to obtain the immature stages and thus contribute to the growing accumulation of information for future work.

Larvaevorid larvae are usually not noticed, but the puparia can generally be located, commonly inside the larval or pupal skin of the host. It is desirable to save the immature stages of both parasite and

host, so that the identities of both can be rechecked at any time if the identifications are questioned. The association of host material is perhaps not so vital when one is rearing common and well-known species. Even here, however, the general principle could well be observed, for the future may bring new problems from the standpoint of either host or parasite, or both, that would benefit immeasurably by having authentic material available for review. Obviously, for less common species all material is important.

A puparium is often glued to a paper point on the same pin as the adult, or sometimes pinned directly below the adult, but it is much better to place it in a gelatin capsule in which it will be protected against breakage and loss of parts during handling and shipping. Each capsule can either be pinned below the corresponding adult or, if space does not permit, be pinned separately with appropriate labels to associate the two. The remains of the host can be placed in another capsule and pinned with the parasite or its puparium. Even shriveled and apparently worthless larval exuviae may be worth saving, for they can be especially treated for study. Labels should bear not only the customary locality, date, and collector, but also the identity of the host, if already known.

Obviously, a puparium (or host remains, or any other stage of any insect) should be mounted with an adult only if it is positively associated with that particular specimen. If any factors, such as mass methods of rearing, do not permit a positive association, the various parts should be mounted or preserved separately with appropriate labels to indicate the general or probable association. In pure cultures, or even in mixed cultures with obvious differences in size or frequency of the species, mass association will be as useful to the taxonomist for practical purposes as if adults, puparia, or other stages were individually associated.

One point is often missed by those who do mount puparia with adults--that one or both halves of the cap at the anterior end may break off and be lost. If they are broken off, they should be located, if possible, and placed in the capsule along with the main body of the puparium. One-half of the cap bears the anterior spiracles, and adhering to the inside of the other half are the mouth parts of the mature third-instar larva. Both features are essential in identifying the immature stages and may be of importance in classification.