

BIOLOGY OF FRUIT FLIES^{1,2}

BY L. D. CHRISTENSON AND RICHARD H. FOOTE

*Entomology Research Division, Agricultural Research Service,
U. S. Department of Agriculture*

INTRODUCTION

The family Tephritidae (Trypetidae according to European and early American authors) is moderately large, with about 4000 species distributed throughout the temperate, subtropical, and tropical areas of the world. Individual flies vary in body length from 1 to over 20 mm. The wings of most species are pictured with yellow, brown, or black stripes or spots, or a combination of both, in characteristic positions or with light or hyaline spots in a darker field. The females of most species insert their eggs in living, healthy plant tissue. The larvae live and feed in the stalks, leaves, fruit, flower heads, or seeds. Some form galls and others are leaf miners. The fruit flies yearly take a heavy toll of fruits and vegetables in many regions of the world. Barriers to trade in fresh-food commodities, difficult quarantine and regulatory problems, prevention of development of desirable crop, and costly survey, control, and eradication programs are undesirable by-products of the depredations of these pests.

The species of the family Tephritidae fall into two broad morphological categories, one of which contains *Dacus* and its relatives (including *Toxotrypana*), the other comprising all other genera. Almost without exception, larvae of members of the former group live in, and often seriously damage, all kinds of fleshy tropical and subtropical fruits and some vegetables. The second group contains an extremely wide range of morphological characters and biological habits. It may be subdivided into two important parts—one of these is essentially the subfamily Tephritinae, which is distinctive morphologically and composed of species almost all of which habitually oviposit in the flower heads of composites and other plants. The larvae of these flies attack the ovaries and seeds of their host plants; little is known about the extent of their economic importance. The species of the second category outside the Tephritinae present an extremely wide range of habit and appearance and have been grouped in various ways by taxonomists. Their attempts to

¹ The survey of the literature pertaining to this review was completed in June, 1959.

² Unpublished biological data developed by K. L. Maehler, N. E. Flitters, C. J. Davis, L. F. Steiner, Susumu Nakagawa, Shizuko Maeda Mitchell, and their associates, United States Department of Agriculture, Fruit Fly Laboratory, H.