

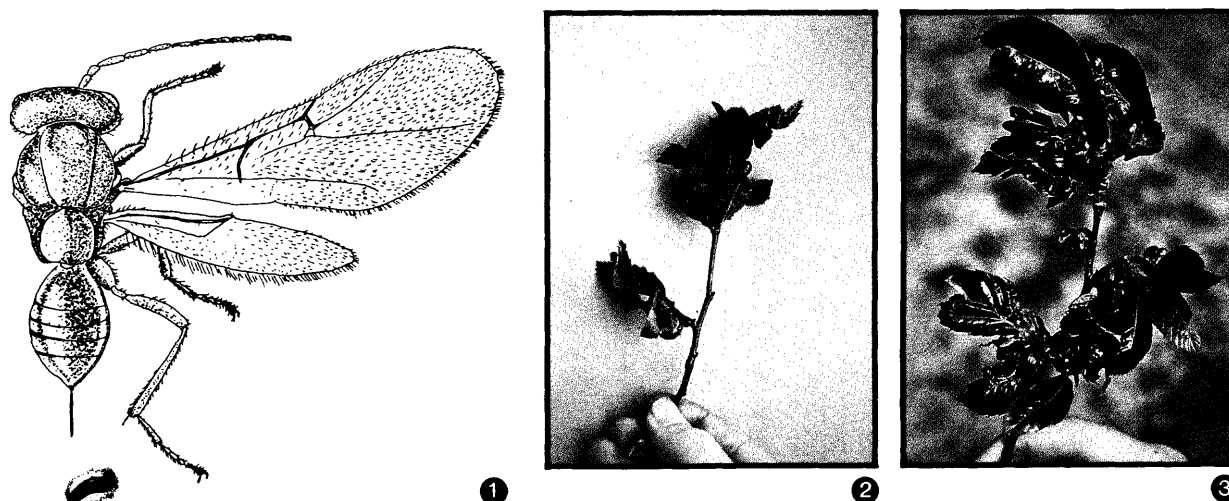
ORIENTAL CHESTNUT GALL WASP, *DRYOCOSMUS KURIPHILUS* YASUMATSU

(HYMENOPTERA: CYNIPIDAE)¹

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INTRODUCTION: The oriental chestnut gall wasp, *Dryocosmus kuriphilus* Yasumatsu, threatens the chestnut industry in southeastern United States. The wasps form galls in American chestnut, *Castanea dentata* (Marsh.) Bork., Chinese chestnut, *C. mollissima* Bl., and Japanese chestnut, *C. crenata* Sieb. & Zucc. The galls suppress shoot elongation and reduce fruiting. Trees with severe infestations lose their vigor and often die. Commercial growers may expect yield reductions of 50-70%. Severe infestations may result in the decline and death of chestnut trees. The oriental chestnut gall wasp is a severe pest to the chestnut industry in Japan and Korea (Payne 1978).

DESCRIPTION: Adult (female only) length 3 mm; body dark brown; legs (except last tarsal segment), scape and pedicel, clypeal apex, and middle of mandible yellowish brown; frons and vertex of head weakly shining, very finely sculptured; scutum, mesopleuron, and abdomen highly polished, impunctate; propodeum with 3 distinct longitudinal carinae; propodeum, pronotum (especially above) strongly sculptured; scutum with two uniformly impressed and pitted grooves (notaulices) that converge posteriorly; female antenna with 14 segments, apical segments not expanded into a club (Fig. 1). Pronotum narrowed in middle to less than 1/7 lateral length; pretarsal claw simple; abdomen longer than thorax. Egg 0.1-0.2 mm long, oval, and milky white. Newly hatched larva milky white; mature larva length 2.5 mm. Pupa length 2.5 mm, black. Gall diameter 8-15 mm, greenish, often containing portions of developing leaves, stems, and petioles (Fig. 2) (Payne 1978).



Figures. 1. Adult female oriental chestnut gall wasp, *Dryocosmus kuriphilus* (adapted from Yasumatsu 1951). 2. Rose-colored galls of *D. kuriphilus*. 3. "Big leaf - little leaf" caused by *D. kuriphilus*. Photo credits: J. A. Payne.

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DISTRIBUTION: The first infestation found in the United States was in 1974 in Peach County, Georgia (Payne et al. 1975). About 30 acres of commercial grove and scattered shade trees in Fort Valley, Georgia and 1-acre commercial grove in Byron, Georgia were infested by the oriental chestnut gall wasp. In 1976, the gall wasp was found in the adjacent counties of Houston, Crawford, and Bibb (Payne 1978).

HOSTS: Known hosts in Georgia and Auburn, Alabama include: American chestnut, Chinese chestnut, and Japanese chestnut (Payne 1978). Caged and natural introductions of the gall wasp on Florida or trailing chinkapin, *C. alnifolia* var. *floridana* Sarg. and Allegheny chinkapin, *C. pumila* (L.) Mill., failed to produce galls. The gall wasp does not attack young (1-2-yr-old) trees (Payne, personal communication).

BIOLOGY: The oriental chestnut gall wasp is univoltine in Georgia and Korea. Early instar larvae overwinter inside chestnut buds. At the time of bud burst in the spring, the gall wasp larvae induce the formation of a 8-15 mm strawberry- or rose-colored gall. The galls develop in mid-March on new shoots. The larvae feed 20-30 days within the galls before pupating. Adult wasps begin emerging from galls late May and early June. Only female wasps have been collected in Georgia and Korea. Females lay 3-5 eggs per cluster inside buds. Some buds contain 10-25 eggs. The eggs hatch in 40 days, i.e., late July. Larval growth is very slow throughout the rest of the year (Payne 1978).

SURVEY AND DETECTION: Strawberry- or rose-colored galls in buds in early spring (Fig. 2). The small leaves are deformed and harbor the gall. After wasp emergence, leaf dieback on infested shoots is readily apparent. As galls mature, a "big leaf - little leaf" symptom is common (Fig. 3). Old galls will remain on a tree for up to two years on dead stems.

CONTROL: Spread of the oriental chestnut gall wasp occurs by movement of infested twigs or shoots and flight of the adult wasps. The best control is destruction of all galls before emergence of adult wasps. This is a practical technique for owners of a few trees. Systemic insecticides are not effective, apparently because the galls block off translocation. Persistent insecticides (e.g., lindane, chlorpyrifos, bidrin) may prove effective, but there are certain environmental hazards. Research efforts have been directed to importation and release (in Georgia) of 2 exotic parasites (*Torymus* sp., *Megastimus* sp.), but only 1 species has proved promising. Parasitism of the oriental chestnut gall wasp by 2 native parasites (*Torymus tubicola* (Osten Sacken) and *Torymus advenus* (Osten Sacken)) is less than 1% (Payne 1978). Unfortunately, most wasp parasites discontinue utilization of chestnut host trees and confine pest searches to nearby oak trees which are natural hosts (Payne, personal communication). Greatest probability of introduction of the oriental chestnut gall wasp into Florida will be via nursery stock and grafting materials from nurseries and growers in Alabama and Georgia.

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