

# PRESERVING NATIVE CORAL TREES IN HAWAII: EFFICACY OF SYSTEMIC INSECTICIDES AGAINST THE ERYTHRINA GALL WASP

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## ABSTRACT

The erythrina gall wasp (EGW) (*Quadrastichus erythrinae* Kim) was described as a new species in 2004 from specimens collected in Singapore, Mauritius, and Reunion. Facilitated by a rapid life-cycle (~20 days) and inadvertent movement by humans, EGW is now widespread in Hong Kong, China, India, Thailand, American Samoa, Guam, Okinawa, and the Hawaiian Islands. In October 2006, EGW was detected on the continental U.S. in south Florida on *Erythrina variegata* L., a widely planted, non-native ornamental and a favorite host for EGW. *Erythrina* (coral trees) are found in tropical, subtropical, and warm temperate regions of the world and are the only known hosts for EGW.

The genus *Erythrina* includes >110 species worldwide, 24 of which are documented hosts of EGW. Most other species have not been evaluated. In North America, 18 species of *Erythrina* are native to Mexico and 2 to the U.S. mainland. Seventy species are native to the neotropics, and countless coral trees exist as high-value ornamentals in places such as San Diego and Los Angeles, CA. Many of these species are susceptible to EGW. In Hawaii EGW attacks the endemic *E. sandwicensis* O. Degener (wiliwili)

and two non-native species, *E. variegata* and *E. crista-galli*, L. *Erythrina*, in Hawaii are facultatively deciduous depending on availability of water, and seasonality differs among species, resulting in year-round host material for the wasp. EGW injury is so severe to wiliwili trees that their continued existence in Hawaii is in question.

Young tissues of *Erythrina*, especially leaves, shoots, and petioles, are preferred by EGW for oviposition. Severe infestations cause serial defoliation, physiological disruption, loss of seed production, and tree death. In April 2006, we began testing two chemicals (acephate and imidacloprid) and three injection systems (Arborjet, Sidewinder, and Wedgle) to evaluate their efficacy and effective duration for protecting native wiliwili trees from EGW. Trees continue to be evaluated monthly for changes in EGW infestation levels. Results of this study should aid the survival of selected wiliwili trees in Hawaii and in the development of prevention, detection, and response strategies in the face of rapid EGW range expansion in other areas of the world.