

## Status of Biological Control of Gorse in Hawaii

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In Hawaii biological control programs are currently being conducted for 5 species of weeds. Of these weed projects, most of the work has been done against the European shrub gorse, *Ulex europaeus*. An earlier program during the 1950s resulted in the establishment of only 1 insect, the gorse seed weevil, *Apion ulicis*. The programme was renewed in 1987 which resulted in the release of the gall weevil, *Apion scutellare*, and a defoliating caterpillar, *Agonopterix ulicetella*. Host-specificity tests were also completed for the gorse thrips, *Sericothrips staphylinus*, which is now approved for release. Most of our efforts have been directed towards the establishment of the gorse tip moth, *A. ulicetella*, which was first released in 1989. The moth has successfully overwintered and is now established on the islands of Hawaii and Maui but only at high elevations. Also the effectiveness of this defoliator has been restricted by local parasites. The egg and larval stages are nearly free of parasite attack, however, 3 species of pupal parasites have destroyed up to 95% of the puparia collected at various release sites. In cooperation with DSIR in New Zealand, additional insects are being evaluated for release in Hawaii, and these include the seed feeding moth, *Cydia succedana*, another defoliator, *Scythris gallicella* and *Anisoplaca ptyoptera*, a native New Zealand stem borer that also attacks gorse. The most promising control agent we hope to release in the near future is the gorse mite, *Tetranychus lintearius*, which also occurs in New Zealand.

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