

Two seed-feeding beetles released in Queensland and Western Australia for the biological control of mesquite

Graham Donnelly

Department of Natural Resources and Mines, Alan Fletcher Research Station, PO Box 36, Sherwood, Queensland 4075, Australia. Email: graham.donnelly@nrm.qld.gov.au

Summary Mesquites (*Prosopis* spp.) are prickly trees that seriously affect rangelands in northern Australia, are declared noxious throughout mainland Australia, and are grouped together as one of the twenty Weeds of National Significance. Four species and several hybrids are naturalised in Australia. In Queensland the major infestations consist of *Prosopis pallida* around Hughenden, Cloncurry and Kynuna and hybrid mesquites near McKinlay and Quilpie. In Western Australia the major infestation at Mardie Station near Karratha consists of hybrid mesquite. *Prosopis glandulosa* var. *torreyana* is sometimes associated with the hybrid infestations.

Queensland and Western Australia collaborated to introduce two seed-feeding beetles *Algarobius bottimeri* and *Algarobius prosopis* as biological control agents. These North American beetles had previously been released in South Africa. In a mixed colony in the laboratory in South Africa *A. prosopis* outcompeted *A. bottimeri* and South African researchers recommended releasing the two species into separate infestations. In Queensland, *A. bottimeri* was released onto *P. pallida* near Cloncurry and Kynuna and onto hybrid mesquite near McKinlay and *A. prosopis* was released onto *P. pallida* at Hughenden and on hybrid mesquite at Quilpie. This provided a minimum separation of 350 km between releases of the two species. In Western Australia, both *A. bottimeri* and *A. prosopis* were released onto hybrid mesquite on Mardie Station with minimum site separation of 6 km.

From 1996 to 1998, approximately 99 000 *A. bottimeri* and 223 000 *A. prosopis* were released in Queensland and 10 000 *A. bottimeri* and 15 000 *A. prosopis* were released in Western Australia. Collections of mesquite pods from release sites subsequent to release confirmed establishment of both species. Pods collected from several sites in Queensland and one on Mardie Station in Western Australia were examined for emergence holes and held for sufficient time for one generation of beetles to emerge. Percentage of seeds attacked was estimated from the total number of *Algarobius* emergence holes and the total number of seeds in the sample. Only the Quilpie site was sampled regularly. In Queensland the latest recorded rates of seed attack by *A. bottimeri* at McKinlay, Kynuna and Cloncurry are 5%, 25% and 3.2% respectively and by *A. prosopis* at Hughenden and Quilpie are 17.9% and 13.7% respectively. At Quilpie an attack rate of 30% has been recorded. In the one sample of pods received from Mardie, beetles of both species emerged. The combined rate of seed attack was 11.2%. The pods were collected 5 km from the nearest *A. prosopis* release site and 7 km from the nearest *A. bottimeri* release site.

These rates of attack are not likely to increase greatly as vertebrates such as livestock, kangaroos, emus and feral pigs consume most of the pods and disperse the seeds before the beetles can oviposit on pods.

Keywords *Algarobius bottimeri*, *Algarobius prosopis*, bruchid, Bruchidae, *Prosopis*, rangeland weed.