Future Directions for Boneseed and Bitou Bush Biological Control

Boneseed rust
The boneseed rust, *Endophyllum osteospermi* is a highly promising biocontrol agent for boneseed. Host testing is partially completed, although there are many technical difficulties that must be overcome to enable host testing results to be analysed and techniques developed to import and clear the rust through quarantine. Priorities for research include:

- Analysis of host testing results
- Submission of application to release
- Development of quarantine rearing techniques or "direct release" protocol.

Boneseed leaf buckle mite, *Aceria* sp.
The boneseed leaf buckle mite has recently been approved for release into Australia. The current NHT-funded project (terminating in December 2006) seeks to select virulent populations of the mite from South Africa and to develop quarantine rearing procedures enabling a starter culture to be obtained. Priorities for funding include:

- Development of mass rearing procedures and supply starter colony to Tasmania.
- Mass release and monitor establishment.
- Initiate impact assessment studies.

Bitou leaf buckle mite, *Aceria* sp.
An *Aceria* species is known to attack bitou bush in South Africa, causing leaf distortions. This mite could have potential as an additional biocontrol agent for bitou bush, although it is not known if it is the same species as the leaf buckle mite currently under investigation for boneseed. Priorities for research include:

- Redescribe *Aceria neseri and c*ompare genetic variation between populations of *Aceria* sp *from C. m. monilifera* and *C. m. rotundata*.
- Assess effectiveness of boneseed strain on bitou bush.
- Determine host range testing requirements for importation and release of *C.m. rotundata* strain.

Tip wilt cerambycid, *Obereopsis pseudocapensis* (bitou bush)
This insect has considerable potential as a new biocontrol agent for bitou bush. Preliminary host testing has been conducted and its host specificity appears promising. Further research is required to:

- Complete host testing and apply for importation and release.
- Develop mass rearing and release techniques.

Tip wilt pyralid (boneseed)
The tip wilt moth has considerable potential as a new biocontrol agent for boneseed, as it is less likely to be vulnerable to predation as with the foliage-feeding agents. Research is required to:

- Conduct host range testing
- Apply for importation and release
- Develop mass rearing and release techniques

Stem-galling cecidomyiid (boneseed)

- Abundant in South Africa but does not cause significant damage.
- This insect has a low priority for biocontrol.

<u>Biocontrol Implementation and community engagement</u>
Bitou Bush
Tortrix is established at about 6 sites in NSW and is beginning to cause significant damage at some of these sites. Recent studies have indicated that Tortrix establishment is more successful on headland sites, where the nitrogen content of bitou bush is higher. Future priorities include:

- Strategic releases of Tortrix targeting headland bitou bush infestations.
- Development of strategies to integrate biocontrol with other management techniques.
- Monitor establishment and impact of *Tortrix* sp. and *Cassida* sp.

Weed Warriors
The National Weed Warriors program coordinated by the CRC Weeds in an excellent community engagement and education program. Current bitou bush and boneseed education programs should seek to link in with Weed Warriors to enhance community involvement in biocontrol. Priorities for funding include:
Support community groups to engage with schools to develop Weed Warriors programs for boneseed and bitou bush.

Priorities for Biocontrol Research, Implementation and Education.

National Strategy Actions:
Release and assess effectiveness of biocontrol agents. (2.2.3.2)
Reduce the impact of dense and large infestations (2.2.2.2)

Priority	Boneseed	Bitou Bush
1	Release and monitoring of leaf buckle mite and lacy winged seed fly.	Release of Tortrix, development of IWM and monitor establishment of Tortrix and Cassida.

National Strategy Action: Improve effectiveness of biocontrol programs (2.2.3.2)

Priority	**Boneseed**	**Bitou Bush**
1	Complete host testing of boneseed rust	Undertake host testing of tip wilt cerambycid.
1	Assess genetic variation between boneseed and bitou bush populations of Aceria, trial releases of boneseed strain on to bitou bush, and identify host testing requirements for bitou bush strain.	
2.	Undertake host testing of tip wilt pyralid moth	Conduct host testing (if required) of the bitou bush strain of *Aceria* sp.

National Strategy Action: Provide support for volunteers and expand the volunteer effort (2.2.4.2)

Priority	Boneseed	Bitou Bush
1/2	Develop Weed Warrior programs for boneseed (1) and bitou bush (2)	