Costs associated with declaring organisms through the Biological Control Act when conflicts of interest threaten weed biological control projects

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Summary The Commonwealth Biological Control Act 1984 (CBCA) was developed to resolve conflicts of interest in Australian government jurisdictions between the proponents of biological control and those potentially adversely affected by the proposed biological control project. Mirror legislation was then enacted by all state and territory governments so that all areas in Australia are covered by a Biological Control Act (BCA). Declaring a target weed/agent through a BCA prevents legal injunctions to stop agent releases and provides legal protection for state and commonwealth agencies making the releases from litigation arising from any negative effects that were anticipated and identified. The Act does not protect against unforeseen negative impacts of the biological control. Some state agencies recently suggested that all potential biological control targets/agents should be put through a BCA to reduce potential state liability. This paper assessed the potential costs of declaring a weed/agent through the CBCA for minor and major conflict scenarios. It determined that declaring a target/agent through the CBCA could cost as little as $29,000 (minor conflict not resolved but benefits versus adverse impacts are highly favourable) to nearly $500,000 (major conflict unresolved). It also showed that declaring all agents through the CBCA would potentially delay implementation of biological control programs by three months to two years. Because a BCA does not provide protection against unforeseen negative impacts, it can utilise significant financial resources of a project and delay the implementation of the project, it is recommended that a BCA be implemented only where major conflicts are identified.

Keywords Biological Control Act, estimated costs, conflict resolution.

INTRODUCTION
In September 2003, the Australian Natural Resource Management Standing Committee (NRMSC) agreed to a procedure for approving non-controversial weed species to be targets for biocontrol by NRMSC after appropriate consultation and for approving non-controversial agent organisms for release by the Australian government approval processes of AQIS and the Department of Environment and Heritage (DEH). The procedure also indicated that controversial issues be referred to a Biological Control Act (BCA) such as the Commonwealth Biological Control Act 1984 (CBCA) where ‘minor conflict not resolved but benefits versus adverse impacts are very favourable’ and also for cases where there is ‘a major conflict unresolved’. There are currently targets and agents that may require approval under a BCA, but the cost associated with its use is unknown. This paper seeks to address this issue.

HISTORY AND DESCRIPTION OF THE BIOLOGICAL CONTROL ACT
The CBCA was established to resolve conflicts of interest between industries/groups potentially impacted negatively and positively by biological control programs against pests (Industries Assistance Commission Report 1985). It provided for the establishment of a Biological Control Authority (the Authority) consisting of the Commonwealth Minister administering the Act or a designated State Minister. Each state also has a BCA that mirrors the CBCA. In practice, a target or agent might be declared under a state BCA and not the CBCA. However, for the purpose of this discussion paper and to enable referencing to particular clauses of the Act, the case studies and discussion are framed as if they were to be declared under the Commonwealth Act. The process for declaration under the CBCA is shown in Figure 1.

Under the CBCA (S15, S24), an application to have an organism declared as a target or an agent is referred to the Natural Resource Management Ministerial Council (NRMMC). Where NRMMC unanimously recommends that the organism should be a target or release of the agent, the Authority may, on the unanimous recommendation of NRMMC, direct that an inquiry be held (S19(1)f, S28(1)f). An agent cannot be approved without the target also being approved under the Act, and the Department of Environment and Heritage (DEH). The procedure also indicated that controversial issues be referred to a Biological Control Act (BCA) such as the Commonwealth Biological Control Act 1984 (CBCA) where ‘minor conflict not resolved but benefits versus adverse impacts are very favourable’ and also for cases where there is ‘a major conflict unresolved’. There are currently targets and agents that may require approval under a BCA, but the cost associated with its use is unknown. This paper seeks to address this issue.

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Under the CBCA (S15, S24), an application to have an organism declared as a target or an agent is referred to the Natural Resource Management Ministerial Council (NRMMC). Where NRMMC unanimously recommends that the organism should be a target or agent for biological control, the appointed Authority is required to seek public comment (S17, S26).

If submissions from the public indicate that persons or the environment could be adversely affected by control of the target or release of the agent, the Authority may, on the unanimous recommendation of NRMMC, direct that an inquiry be held (S19(1)f, S28(1)f). An agent cannot be approved without the target also being approved under the Act, but inquiries
into intended targets and control agents may be run simultaneously.

The inquiry may be undertaken by a Commission appointed by the Authority itself, or by the Minister administering the Productivity Commission Act 1998. The recommendation of the inquiry is made to the Authority, which after consulting with NRMMC, can then make a target or control agent declaration. By declaring the target weed or biological control agents through a BCA, the state and federal governments avoid potential litigation liability, but this only gives protection for the identified conflicts addressed by the inquiry. It does not give general protection against every conceivable eventuality from introducing biological control agents.

The first target plant to be declared through the BCA was Paterson’s curse, *Echium plantagineum* L. The conflicts of interest were between beekeepers and some graziers in South Australia who benefited from Paterson’s curse versus a large number of graziers from the rest of Australia who considered Paterson’s curse a serious weed. Paterson’s curse (the target) and eight insect species (the agents) were declared under the BCA in 1987. This process took one year and resulted in a 312 page Industries Assistance Commission Report (Industries Assistance Commission 1985). Blackberry, also in 1987, is the only other weed species declared under the CBCA. However, an application to declare the rust fungus *Phragmidium violaceum* (Schultz) Winter, an agent for the biocontrol of blackberry was later rejected because of objections by Tasmania. The rabbit (target) and the rabbit calici virus (agent) were also declared under the CBCA in 1996.

**MATERIALS AND METHODS**

We estimated the potential costs of processing a target weed through the BCA for two scenarios. One is deemed a ‘minor conflict not resolved but benefits versus impacts are highly favourable’ (biological control of *Nassella* spp.) and the other is a case of ‘a major conflict not resolved’ (biological control of *Bryophyllum* spp.).

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1 Steps 7–9 are options the Authority may or may not decide are necessary
The issue for *Nassella* species was whether any of these grasses were perceived as beneficial. Although *N. trichotoma* (Nees) Hack. ex Arechav. and *N. neesiana* (Trin. & Rupr.) Barkworth were listed as Weeds of National Significance and the Department of Environment and Heritage placed *N. charruana* (Arechav.) Barkworth and *N. hyalina* (Nees) Barkworth on the national weed alert list, there were still indications that some landholders regarded *N. neesiana* as a beneficial plant. Victoria was therefore requested by Australian Weeds Committee (AWC) to undertake a survey of people’s attitudes to this plant when it applied to get *N. neesiana* declared a target for biological control by NRMSC. The subsequent survey showed that 139 (86%) of respondents considered *N. neesiana* a weed and eight (5%) considered it a beneficial plant. Interestingly, five of the eight respondents, who considered it a beneficial plant, supported targeting it for biological control (McLaren et al. 2002).

The *Bryophyllum* example was provided by the Queensland Department of Natural Resources, Mines and Water. The issue was that although these weeds were approved as targets for biological control by standing committee in 2001 and there was no dispute about their status, the two weevils, *Osphilia tenuipes* Fairmaire and *Alcidodes sedi* Marshall, proposed as biological control agents also attacked closely related exotic ornamental species such as *Kalanchoe blossfeldiana* Poelln. In the case of *K. blossfeldiana* the insects’ responses seemed similar to those on *Bryophyllum* spp. such that it is anticipated that *K. blossfeldiana* will be attacked by these insects. The value of the nursery

| Table 1. Cost estimates for the ‘low cost, low risk’ example using *Nassella* grasses and ‘high cost, high risk’ example using *Bryophyllum* sp. |
|---|---|---|---|
| Actions | Unit cost estimate/step | *Nassella* case | *Bryophyllum* case |
| | | FTE | Writing application | Assessing potential stakeholder impacts | FTE | Writing application | Assessing potential stakeholder impacts |
| 1. Application made to AWC, including initial assessments of potential stakeholder impacts | 0.11 | $11,000 | *$11,000 | 0.2 | $20,000 | *$60,000 |
| 2. Referred to BCA Authority | 0.3 | 30,000 | 30,000 |
| 3. Reviewed by NRMMC | | | |

**Communication I (S17, S26 BCA Act)**

- 5. Applicant writes public notice.
- 4b. Notice published that authority is contemplating declaring organisms under the Act
- Applicant collates submissions and writes summary for assessment by BCA
- 6. Submissions considered by BCA
- 7. Referral to environmental or other appropriate body
- 8. Seek consultation from NRMMC

**Communication II (S38.1 BCA Act)**

- 9. Referral to commission of inquiry
- 10. Consider submissions, review and Inquiry reports
- 11. Reports considered

**Scientific, Economic, Environmental analysis**

- 10. Consider submissions, review and Inquiry reports
- 11. Reports considered

* If application only goes to advertising for submissions and no commission of inquiry is required

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* If application only goes to advertising for submissions and no commission of inquiry is required

If application taken through commission of inquiry

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$29,000 | $89,000 |
$217,000– | $337,000– | $277,000– | $467,000– |
kalanchoe trade utilising cultivars of *K. blossfeldiana* or its hybrids has been estimated at up to $5 million per year. However, much of this trade is in the southern centres of Sydney and Melbourne where *Bryophyllum* spp. are not common or absent as weeds. Further, the plant is usually sold as a winter flowering plant when the insect would not be active. A significant proportion of the trade is also to the indoor ornamental market. Indoor plants would not be exposed to this insect. In summary, only a fraction of the total nursery kalanchoe market is anticipated to be at risk from this insect.

Several steps are involved in the declaration process under the CBCA and these were costed for the *Nassella* and *Bryophyllum* scenarios. A significant proportion of total costs are the salary or in-kind costs borne by the government making the proposal. For these analyses the 2004 salaries of the Victorian Government were used.

**RESULTS**

Indicative cost estimates for a ‘low cost, low risk’ scenario using *Nassella* grasses are presented in Table 1. It is assumed this requires the assessment of the target species only under the CBCA as a first step. If the target species are approved, the host testing of agents is completed and their assessment under the CBCA may not be required. The time and cost for the process will depend on whether a Commission of Enquiry is required.

Indicative costs for a ‘high cost, high risk’ scenario using *Bryophyllum* where a Commission of Enquiry would almost certainly be required are also presented in Table 1. Depending on the complexity of the Enquiry and the associated negotiations and submissions, the costs associated with using the BCA could approach $500,000.

**DISCUSSION**

The estimates presented in this paper depend on processes that cannot be accurately assessed until cases are actually submitted for process through the BCA. However, we believe that the figures presented in this study are broadly indicative and therefore of use to those contemplating use of the BCA. It was on this basis the estimates were submitted to AWC to facilitate discussion by that and higher level government committees.

Successful biological control programs against weeds such as prickly pear (Dodd 1940), skeleton weed (Cullen et al. 1973), Paterson’s curse (Nordblom et al. 2001) and salvinia (Room et al. 1981) have made significant contributions to reducing the economic and environmental impacts of weeds totalling $millions each year. Importantly, the overall benefit cost ratio for all weed biocontrol projects (failures and successes together) in Australia is at least 23:1 (Page and Lacey 2006).

Seen in the light of the very high economic returns from biological control, the costs of using the BCA may on occasion be justified despite the fact that it may well cost up to nearly $500,000 to use the Act. It is also evident that the routine use of the Act would place an unnecessary burden on the funding of biological control projects most of which are straightforward with no conflicts of interest.

Further, applications under the Act will be time consuming. The NRMMC, which meets biannually, is required to unanimously approve at three stages. Unless NRMMC were prepared to consider applications ‘out of session’ even the most straightforward applications would take at least 12 months to process and more difficult cases will most likely take at least two years.

**REFERENCES**


