A Strategy for Limiting the Impact of Old Man's Beard in Golden Bay

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Summary

Project and Client

Landcare Research was requested by Tasman District Council to assist them in developing the best strategy for controlling old man's beard (OMB) in Golden Bay. Comment was also requested on banana passionfruit.

Objective

- To determine the best strategy for minimising the impact of OMB in Golden Bay and associated areas, taking into consideration the size of the potential problem and the resources and institutions (including the public) presently involved.

Sources of Information

- A meeting was held with the Council and DOC where the two organisations presented species distribution maps and where the different approaches of the two organisations were discussed.
- A short visit was made to view the OMB along the coast and on the western flanks of the Pikikiruna Range.

Main Finding

- OMB increases in abundance from west to east within Golden Bay and is particularly abundant on the Pikikiruna Range.

Recommendations

- The council and DOC should produce a combined database and map at appropriate scales for OMB in Golden Bay.
- The current strategic approach to OMB in Golden Bay should continue, but with greater emphasis on eliminating the westernmost populations.
- On the eastern side of the Takaka Valley, efforts to control the spread of OMB should be confined to high-value areas unless additional resources become available.
- Here, as elsewhere, DOC should cooperate with the council to ensure the Regional Pest Management Strategy rules are brought to bear on the most compelling situations for OMB removal.
- The council should pressure people to control banana passionfruit only at outlying infestations and where these directly threaten conservation land.

1. Introduction

Old man's beard (OMB) has been recognised as one of the worst environmental weeds in New Zealand for about 30 years (Syrett 1984; Williams & Timmins 1990). It is widely controlled by DOC and is included in many regional pest management strategies (RPMS), including that of Tasman District Council.

Old man's beard is too well established and abundant over most of Tasman District to warrant a concerted community intervention for the whole district. However, it is relatively much less common in the Upper Buller Catchment, Golden Bay, and the portion of Tasman Bay from Kaiteriteri to Separation Point. This includes much of the Takaka Hill Road on the eastern side and all land north of the road including Abel Tasman National Park. If we consider just the land below c. 750 m, this amounts to an area in the order of several hundred square kilometres.

In these areas OMB is classed as a Progressive Control plant in the Tasman District Council RPMS and the Strategy rule for controlling it requires occupiers to destroy all adult and juvenile OMB plants.

The Department of Conservation (DOC) controls OMB on Conservation land through its own work programme but it is not bound by the Strategy. It also controls OMB on other public land such as riverbeds through contracts with LINZ. While undertaking these operations it also controls OMB on some private lands which directly threaten Conservation land. Unlike the council however, DOC cannot enter private land to control OMB without the permission of the landowner. This has the potential for conflict between the council demanding landowners control their OMB and DOC offering to undertake the work at no cost to the landowner.

The issue, then, is what is the best overall strategy for minimising the impact of OMB in Golden Bay and adjacent areas?

2. Objective

- To determine the best strategy for minimising the impact of OMB in Golden Bay and associated areas, taking into consideration the size of the potential problem and the resources and institutions (including the public) presently involved.

3. Source of Information

A meeting was held at DOC Takaka on 10 May 2007 involving council and DOC staff from Takaka and Nelson. Council and DOC maps were presented and staff from both organisations presented their historical control strategies, a rough estimate of the resources used, and ideas of how the present strategic approach could be improved. While the meeting focused on OMB, the issue of banana passionfruit (*Passiflora* spp.) in Golden Bay was also discussed.

A short visit was made to view the OMB along the coast and on the western flanks of the Pikikiruna Range.

4. Results and Discussion

4.1 Data storage

DOC and the council have different methods of storing data on the location of OMB. DOC tends to record the presence (using GPS) of every plant. These data can be aggregated upwards, i.e. to present a point at the centre of a 50-m square to include all plants within that square. The council, on the other hand, prefers to record the general vicinity of the infestation. In this way, a single point may represent a single outlying plant or a whole property with innumerable plants. This reflects the slightly different control approaches. DOC has staff in the field all the time with very tight feedback between detection and control, and they undertake most work themselves. In this way, they are able to 'track' plants individually. The council, on the other hand, often relies on contractors to undertake work and it is important that when someone goes looking for a plant to control they also do surveillance in the general vicinity. In the sections that follow, the expression 'controlled by TDC' means either that the property owner undertakes the work at the request of the council or the council has the work undertaken by contractors; very small infestations are dealt with by council staff on the spot.

4.2 Distribution of OMB

On the western side of the Pikikiruna range, in Golden Bay, the density of OMB decreases dramatically toward the west. In fact, its density follows pretty closely the density of human habitations – which is a pattern shown by most environmental weeds. The distribution of OMB can be divided into several subregions.

1. West Wanganui and Farewell Spit
There are only a very few infestations west of Puponga. These infestations are controlled/monitored by both TDC and DOC

2. Aorere Valley
Here there are scattered sites between Puponga and Collingwood, but the major infestation is near Rockville. This site is monitored by TDC but DOC undertakes control adjacent to the Aorere River and along the eastern margins of the Burnett Range.

3. Onekaka to Parapara
Here there are abundant infestations and 'intractable' infestations around to the head of Parapara Valley road on private land, and others south through Tukurua to the Onekaka estuary. TDC does most of the control here.

4. Pariwhakaoho Valley to Rangihaeata Head
This is last of the western areas before arriving at the Takaka Valley proper. There is a concentration of OMB in the head of the Pariwhakaoho Valley. DOC does a lot of control here although it is not on Conservation land but on covenanted land. TDC is more active over the remainder of this area and including the Onehau catchments.

5. Takaka Valley floor
This includes (a) the tree-lined river berms of the Takaka River, which are controlled by DOC from the Cobb Power Station down to the sea and (b) the flood plain floor with its numerous private property owners and small bush remnants that are controlled mainly by TDC. DOC controls OMB and other weeds in the Payne's Ford Reserve. Within Takaka township proper, there is very little OMB because, over the years, most of this has been identified and controlled by TDC.

6. Foothills of the Pikikiruna Range
This area extends from Wainui Inlet around and south to the west side of the Takaka Hill Road. It includes both highly fertile soils on limestone and extensive areas of very poor soils where pastoral farming has failed. Much of this is now in plantation forestry. There are a multitude of property owners exhibiting varying degrees of cooperation with the council.

DOC concentrates its efforts on several small areas nearer the coast, such as the Grove Reserve. It also attempts to control OMB in several valleys along the scarp, principally Dry River Creek, Rameka Creek, and The George Creek. These areas are threatened not only from the west, but also via the Takaka Hill Road and other access ways from the east.

It is this zone which vexes the control agencies the most because of its multilayered problems, including overseas ownership, complex land-use patterns including forestry, the difficulties of surveillance, and the overall huge size of the problems in this zone.

7. Takaka Hill Road
Old man's beard along the road is controlled mainly by TDC but only as far down on the eastern side as where the weed becomes very dense.

8. Wainui Inlet to Kaiteriteri
Within the Abel Tasman National Park there are only few infestations because of soil infertility. These are controlled by DOC but TDC has community programmes going around private batches within the park. TDC also controls infestations on the eastern end of this area.

Aside from these specific areas, both TDC and DOC control OMB on shingle dumps, quarries, and other places likely to be the dispersal points of seeds.

Private landowners also undertake some work on OMB on their own volition or through community groups.

4.3 Cost of OMB control

The overall density of OMB would today be many times worse without the sustained efforts dating back to the Noxious Plants Council days, the beginning of DOC, and OMB being declared under the RPMS. The money spent on OMB up to now has therefore been justified.

Some 'back of an envelope' figures were produced at the meeting to estimate the existing expenditure on OMB. It appears that at the moment, DOC is spending about $35,000 p.a. (from various sources including $16,000 from LINZ) and the council about $25,000, mainly in surveillance and issuing letters and so on. To undertake surveillance and control, including ground crews and helicopter time, to treat the entire area described as in (6) above would take about $100,000.

4.4 Banana passionfruit

This vine has a very similar distribution pattern overall to OMB and is present from Patarau to Totaranui, where it has been for at least 40 years in my experience. Through public pressure it is in the RPMS as a Progressive Control plant. However, unlike OMB, banana passionfruit has appeal to the public as a food and there is not quite the universal acceptance for its demise.

There are several important biological differences between OMB and BP (Table 1).

Table 1 Biological comparison of old mans's beard and banana passionfruit.

	Old man's beard	Banana passionfruit
Juvenile shade tolerance	High	Low
Relative seed production	Extremely high	Medium
Seed dispersal	Wind, water	Animals, birds
Seed bank life (yrs)	> 5	<5

Data from Baars & Kelly (1996) and Williams & Buxton (1996).

The most critical factor is that banana passionfruit is light demanding and therefore able to occupy a narrower range of sites. For this reason it is restricted to scrub and forest margins, although it will diffuse through damaged forest. Overall, the available habitat in Golden Bay is more limited. However, it can be controlled on a local scale and there are several successful examples of this in the Nelson region, i.e. the McKee Domain.

5. Discussion and Conclusions

The rate of expansion of OMB in Golden Bay is clearly being slowed by the combined actions of the council, DOC, and local groups in some places. However, the council discovered nine new sites last year and five more sites this year. In addition, the importance

of finding outlying infestations means the large and 'well-established' patches do not receive the attention they might warrant. Land-use changes and other issues, including invasion from the east, make it inevitable that OMB will increase in Golden Bay, particularly on the eastern side of the Takaka Valley.

The council and DOC have undertaken their respective operations against OMB somewhat independently of each other in the past. This independence has extended to data-gathering techniques. It transpires that these data could be combined in a single format that would give an overall view of OMB in Golden Bay that would be more complete than either existing set of distribution data. The resulting dataset could be used to produce maps of the current distribution. Such maps would aid in presenting the size of the OMB problem both to the public who often have unrealistic demands of weed control and to potential funding sources. They would also give a picture of the present situation against which future changes could be compared.

Overall, OMB has been successfully kept from impacting severely on all areas of high natural values and important situations such as river berm plantings. Nevertheless, there are intractable situations on private land, and these are slowly increasing in density and extent. The money to control these infestations is unlikely to become available either from the public purse via DOC or the council, or from the collective contributions of private ratepayers. This situation dictates some prioritisation of efforts to control OMB in Golden Bay.

This prioritisation will need to be driven by the values of the areas being protected and the practicalities of undertaking control. These affect OMB control at differing scales within Golden Bay. There is also a need to take into consideration the public demand for control.

Throughout the region as whole there is a high priority for controlling OMB at potential sources of seed dispersal by human activities, particularly machinery yards and gravel dumps. Roadsides also fall into this category, in part because of the public perception of OMB and the kudos to be gained from keeping infestations away from the public eye. While the authorities will clearly not rely on this tactic alone, the support of the public is vital. If the citizens see OMB along the roadsides all the time they will not report isolated infestations and such observations are critical to the ongoing control of OMB (and other weeds).

At a regional scale, the least modified areas of natural vegetation below c. 750 m are in the west (Area 1 above). This area is particularly vulnerable because of the high soil fertility of parts of this region. Here there are very limited stands of OMB. Every effort should be made to contain all known stands of OMB in this area. Wherever possible, any new infestations should be dealt with immediately. In practice, this means preferably the year in which they are found, because such stands are usually detected only when they are flowering, and waiting until the next year will result in seed dispersal. These situations and similar outlying populations elsewhere near areas of high conservation value should be dealt with similarly. Close co-operation between Tasman District Council and DOC is required to ensure the timely extirpation of such outliers.

Area 2 (above), in the Aorere Valley, can be seen as an extension of Area 1 for the purposes of control, but there are more infestations here. Those on isolated pockets of high-fertility soil with high biodiversity values along the margins of the Burnett Range are the highest priority for OMB control. These along with Area 1 are the highest priority for control overall. Regular surveillance and control of the Aorere riverbed as currently undertaken by DOC for

LINZ is a significant programme that needs maintaining. Stands near Rockville and Bainham represent outliers to the OMB infestations in Golden Bay as a whole and these are of high priority. Fortunately the soil fertility of much of the uplands to the east is very low and so less area is vulnerable

Areas 3 and 4 can be seen as one management unit. Here the issues are more complex because of the increasing density of properties. Gaining the cooperation of property owners will be a critical part of maintaining the present relatively low density of OMB in these zones. OMB stands in headwater streams and near the conservation estate is the highest priority here.

Area 5, the floor of the Takaka Valley, is rather a mix of priorities and commitment and it includes the most heavily used section of the transport corridor through the region. Within this broad zone the ongoing (hopefully) funding from LINZ ensures that not only can the OMB be controlled in the mid–lower reaches of the Takaka River valley, but that the most southern outliers in the headwater tributaries can also be controlled. On the valley floor itself, the numerous smaller infestations threatening covenanted land and scenic reserves are often present as outliers in a 'sea' of farmland. Surveillance is relatively easy on the plain and also infestations are relatively easy for occupiers to control. The same can be said for the numerous properties within Takaka and north-east from East Takaka through to Abel Tasman Point. These areas are where the responsibilities of the landowners to the RMPS are most effectively monitored by TDC. However, here, as elsewhere, DOC and the council will need to work together to ensure control is undertaken effectively where private property abuts areas of high conservation or public-use value such as Payne's Ford.

Area 6, the Pikikiruna Range, is a hugely problematic area for OMB control, as described in the introduction. While the high-value gorges and the OMB infestations immediately threatening these areas require ongoing attention, the values over most of the frontal hills overlooking the Takaka Valley warrant much less attention. Unless further resources are available, this area should receive attention from the council and DOC only as a second order of priority. Here too though, it will require agreement between DOC and TDC to maximise the effectiveness of efforts by the council to ensure compliance with the RMPS.

Much of the work undertaken by DOC and TDC at the moment is conducted on an annual basis. This should be continued, particularly on high-priority areas, and such annual work should take priority over less important parts of Area 6.

While the council could act with a heavy hand on banana passionfruit, now that it is in the Strategy, this could be counterproductive from a public relations point of view. Also there are many situations where it would not achieve the objective of restoring or maintaining native biodiversity because of the plethora of other weeds. Given the already widespread distribution of banana passionfruit the best approach from the council's perspective would be to put maximum pressure on infestations, including cultivated plants, on plants in outlying situations, particularly in the west. In cooperation with DOC they should also focus on infestations near sites of high conservation value.

6. Recommendations

- The council and DOC should produce a combined database and map at appropriate scales for OMB in Golden Bay.
- The current strategic approach to OMB in Golden Bay should continue, but with greater emphasis on eliminating the westernmost populations.
- On the eastern side of the Takaka Valley, efforts to control the spread of OMB should be confined to high-value areas unless additional resources become available.
- Here, as elsewhere, DOC should cooperate with the council to ensure the Regional Pest Management Strategy rules are brought to bear on the most compelling situations for OMB removal.
- The council should pressure people to control banana passionfruit only at outlying infestations and where these directly threaten conservation land.

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