Notes on *Bomarea* - a new threat to native vegetation

Introduction

My first encounter with the South American vine *Bomarea* was in a sheltered gully in Broad Bay, Otago Peninsula. The clusters of bright orange and yellow flowers were 10cm in diameter, and growing at a height of 3 – 4 m up a hawthorn tree. I cut some of the thin stems to prevent the flowers from setting seed, but did bot know how to kill this plant with 30 or more spindly stems each not more than 2 mm thick. My usual technique for dealing with problem climbers such as banana passion fruit or old man's beard is to trace the vine back to the main root, cut and then apply herbicide to the cut stump. But this technique will not work with this new weed.

My second encounter with this plant was on the top of Pudding Island (Titeremoana Scenic Reserve), in Otago Harbour off Portobello. Not just one vine this time but a carpet of *Bomarea* blanketing an area of approximately 50 square metres. Sometime later I learned of the thousands of starlings that roost for the night on Pudding Island and realised they might be an important means of dispersal.

Bomarea species

The Pest Management Strategy for Otago, (May 2001), includes both *Bomarea caldasii* and *Bomarea multiflora* as pest plant organisms. *Bomarea* growing at Colinswood Bush was identified by Janice Lord in May 2002 as the species *caldasii*, by the outer whorl of shorter petals and the inner whorl of longer petals. All the petals (technically tepals) are the same length in the species *multiflora*. I do not know if both species are present in the Dunedin area and will use the generic name in the following notes - a name originating from Jaques de Bomare, a French naturalist.

Description of *Bomarea* (Family Liliaceae)

Bomarea climbs by narrow twisting stems and has alternate pale green leaves. The thin leaves are approximately 60mm long, elongated and tapering towards the tip, with fine longitudinal leaf veins. Many of the leaves are twisted so they face downwards. The old stems die back to a pale tangle of stems, but green stems with green leaves are found all year round. *Bomarea* vines can climb through and over other vegetation to a height of 8 m. The flowers are tubular in shape, red at the base, shading to orange then yellow. The inside of each flower is yellow with dark speckles and there may be up to 40 tubular flowers hanging in a single cluster. Each flower matures into a 2 cm diameter capsule, green at first, then ripening to expose sticky pink seeds. Old capsules dry out and remain on the vine empty of seeds - presumably the seeds have all been eaten by birds and maybe by possums. Nigel McPherson, of Macandrew Bay, who has a keen interest in *Bomarea*, has counted 76 flowers in a particularly large cluster and 50 seeds in an average size capsule. He has observed the vine flowering all year round, with the main flowering period from November to May.

Bomarea seedlings grow in both light and shade and the first stems grow rapidly towards the light. Juvenile leaves are similar in shape to the adult leaves, but smaller. *Bomarea* is a perennial. The bases of the stems are fleshy, pink in colour and arise from horizontal rhizomes, lying just below the surface of the ground, and about the thickness

of a finger. Numerous roots also arise from the rhizome and the two form a dense mat in the soil. Some roots end in round tubers, which tend to be situated below the main mass of roots and rhizomes. These tubers can easily be mistaken for potatoes and are produced in abundance. A one metre tall *Bomarea* vine covering about 2 square metres of ground on the road edge near Hoopers Inlet produced half a sack of tubers.

How did it get here?

Bomarea is one of the many plant pests that has jumped the garden fence, and as far as I know is not a problem in any other part of New Zealand. Nigel McPherson recorded it growing in his Howard St, Macandrew Bay garden in 1952. Peter Johnson recorded *Bomarea caldasii* at only one Peninsula bush site in 1982 and that was Colinswood Bush, Macandrew Bay. So the plant has been around for quite awhile, but within the past 2 - 3 years it has started to appear in many different locations. In Aug 2000 Tom Myers, Dunedin Botanic Gardens, in an article titled *"Beautiful climber has potential to become weed"* reported that the species *Bomarea caldasii* was gradually establishing in Dunedin. The seeds are dispersed by birds and human dispersal may also play a part. Two of the Portobello *Bomarea* infestations are in the sort of places where people dump their garden rubbish.

The significance of Bomarea

Bomarea behaves in a similar way to old man's beard and banana passion fruit by cutting out the light from the supporting plants, which struggle and may eventually die. It poses a real threat to our remnants of native bush. To quote from the Otago Regional Council fact sheet on *Bomarea:*

> "*Bomarea* invades forest and shrub land interiors. Here the vines grow into the tree canopy and form large masses, which overtop and smother the supporting trees. Seedlings are able to establish in the shade of the forest interior, creeping along the ground, strangling saplings and smothering low growing species. Extensive infestations in the tree canopy alter light levels, which can kill mature trees and prevent the establishment of native species."

Colinswood Bush has been a timely warning to others involved in conservation of native vegetation. Colinswood Bush, fenced to exclude stock in the mid 1980's, and protected by a Department of Conservation covenant, has had a major problem with *Bomarea* for the past 12 years. A huge amount of work has, and still is being done to try to control this vine. Volunteers cut off the flower clusters and seed capsules and grub out the rhizomes. Earlier this year a group collected three sacks full of flowers and fruits.

In the past 2 years I have noticed a great increase in the number of *Bomarea* plants in Portobello. Examples of the places where it now grows are:- banks above the road, often in association with banana passion fruit; through apple trees; among the slash left after clearing under the power lines; among broom bushes; up into macrocarpa trees and through hedges. The netting fence surrounding the netball courts at the school provided a great support for this vine.

Bomarea seeds appear to be able to germinate and establish under the canopy of established trees, which is not surprising as the plant grows in forest in South America. *Bomarea* seedlings are popping up everywhere in dense shade in a planted area adjacent

to Portobello School. *Bomarea* can withstand frosts. Tom Myers notes that "This species grows from 1800-3500m altitude in the Andes region of Colombia and Equador in the forest and over hedges in grassland." So I suspect a Dunedin winter is not going to worry this pest plant. Tom Myers also refers to the plant's ability to survive dry periods by means of the underground tubers.

Control methods

Bomarea control is difficult because any pieces of rhizome left in the ground will grow. In some situations the rhizomes can be dug out of the soil and then killed by putting them in a black plastic bag and leaving the bag in the sun. But in a forest situation it is not possible to dig between the tree roots to get out all the rhizomes. I am pleased to learn from Peter Raal, Department of Conservation, that although the tubers look like potatoes, they do not sprout to form a new plant. So, the control is made slightly easier because the tubers do not have to be removed.

Nigel McPherson has had encouraging results by cutting all the stems and spraying the regrowth with the herbicides Touchdown and double strength Roundup. The Otago Regional Council recommend applying Escort herbicide directly to the cut ends of the vine. The new herbicide Vigilant (5% picloram in a gel) which has been developed for woody weed control is being tried on *Bomarea*. The technique is to cut the vine stems about 30cm above the ground, tie the bases of the stems together and paste with Vigilant gel. This summer will reveal if the method is successful. Vigilant comes in an easy to use pack and is sold by Wrightsons.- it is very handy to have for use on old man's beard , Darwin's barberry, gorse and banana passion fruit.

Control strategy

The Pest Management Strategy for Otago, (May 2001), includes *Bomarea caldasii* and *Bomarea multiflora* as pest plant organisms. The Regional Council believes it may be possible to eradicate this plant from Otago because *Bomarea* is currently only known to be present in the Dunedin area..

The strategy objectives (4.10.2) are:

i) Eradication of *Bomarea* from Otago Peninsula within 5 years.

ii) Eradication of *Bomarea* from Otago within 10 years.

The *Bomarea* rule (4.10.4) states that occupiers must destroy any *Bomarea* on their land. Any breach of this rule is an offence under the Biosecurity Act 1993

The Regional Council monitors retail outlets for plants that are banned from sale, propagation and distribution and is considering joining the National Pest Plant Accord which can assist in this area.

Action now, while the plant is not widespread, is sensible and could save a very expensive problem in the future

The listing of *Bomarea* as a pest plant and the obligation of occupiers to destroy the plant are two important first steps. However, this needs to be followed up by a lot of public education and community action. In general people I have talked to seem quite sympathetic to the view that *Bomarea* threatens native vegetation. But some keen gardeners are fond of their colourful climbers and are reluctant to get rid of them.

Peninsula Biodiversity Project

The Peninsula Biodiversity Project is a joint project between the local community and the Otago Regional Council aimed at preserving the valuable biodiversity features of the Otago Peninsula. Save the Otago Peninsula (STOP) and Otago Peninsula Trust members undertook a survey of 5 plants threatening biodiversity of bush remnants (*Bomarea*, Chilean flame creeper, banana passion fruit, old man's beard and Darwin's barberry) and were horrified by the numbers found.

The Regional Council agreed to fund a Task Force Green Team, supervised on a voluntary basis by the four people who did the initial survey work. The team worked for 14 weeks, concentrating mainly on the weed infestations on road reserves and other public land on the Peninsula. The team did a tremendous job of tackling the five weeds listed above. The Council also initiated newspaper articles, produced fact sheets on the five weeds, and a coloured poster of "PEST FLOWERS - DELIGHTFUL BUT DESTRUCTIVE" as part of a campaign to encourage the community to assist in eradicating *Bomarea*. This plant will only be eradicated if private landowners recognise the plant, understand the damage it can do and get rid of it.

How can Botanical Society members help eradicate *Bomarea*?

1) Look out for this vine - the only other vine I know of which has similar foliage is *Parsonsia* (native jasmine) However mature *Parsonsia* leaves are broader, not as tapered, darker green and have a glossy upper surface. (see fig. next page)
2) Ask neighbours and friends if they have this plant on their section, and explain what damage it can do to our native plants. Inform them of the *Bomarea* rule
3) Contact Lisa Maria at the Otago Regional Council for advice on identification and control.
4) Contact the Otago Regional Council for a copy of the *Bomarea* fact sheet
5) Inform Neville Miller, Dunedin City Council Parks of any *Bomarea* growing on road reserve or other DCC land. As the landowner, the DCC has responsibility to eradicate the plants. To ignore this responsibility is an offence under section 154(r) of the Biosecurity Act 1993.

Every *Bomarea* plant is a seed source and needs to be targeted.

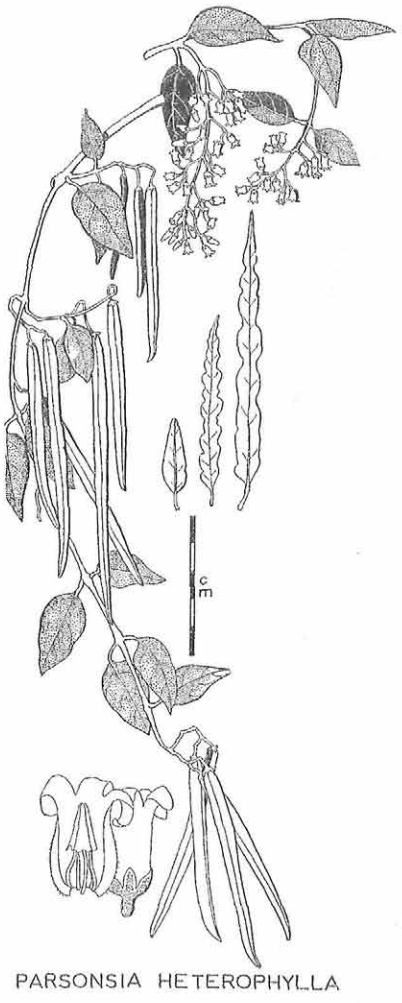
References

1) Angela Crompton 2/2/2001 Strangling beauty Otago Daily Times
2) Peter Johnson 1982. Forest and scrub vegetation on Otago Peninsula Botany Division DSIR
3) Tom Myers 11/8/2000. Beautiful climber has potential to become weed. Otago Daily Times
4) Pest Management Strategy for Otago. May 2001 Otago Regional Council
5) *Bomarea* factsheet 2002 Otago Regional Council
6) Peninsula Biodiversity Project fact sheet 2002 Otago Regional Council
7) Nigel McPherson (pers comm)

Moira Parker, conservationist

Botanical Definition: Tepal Used when the calyx (producing sepals) and the corolla (producing petals) of a flower are not readily distinguishable, as in the tubular flowers of *Bomarea caldasii* and *B multiflora*.

Fig. Leaves of *Bomarea caldasii* (photocopy) compared with *Parsonsia heterophylla* (From **Poole & Adams, *Trees and Shrubs of N.Z.***)



Reports and plant lists.

'Why weeds : Prioritising weeds for control and surveillance in Otago'

Presentation by Peter Raal (Department of Conservation) 19 June 2002

Peter began by outlining the various types of weeds, narrowing his talk to those invasive species that are a threat to species and ecosystems. About 250 fall into this