Adventure volunteering or volunteering for adventure: using volunteers for environmental management

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Summary Land management agencies are frequently caught between a rock and a hard place due to the increasing gap between the resources required to perform effective environmental management versus the resources actually available. Adventure volunteering, the explicit linking of effective and targeted environmental work with high value recreational experiences, has the potential to assist by providing land managers with a pool of effective, motivated and experienced workers. These volunteers drive the achievement of the environmental work programs, while at the same time the volunteer's high level recreational experiences results in their staying active in the program to perform long term, follow-up works. This paper reviews these issues, outlines criteria that need to be met for adventure volunteering programs to be effective and provides examples from a group doing remote area weed management in Tasmania.

Keywords Weed management, volunteers, adventure volunteering, sea spurge, *Euphorbia paralias*.

INTRODUCTION

Adventure volunteering is the explicit linking of effective and targeted environmental work with high value recreational experiences, resulting in the adventure volunteers driving the environmental work program and achieving high level outputs. This means that adventure volunteering has a niche position as a highly effective strategy for addressing complex and logistically difficult environmental problems, especially in remote areas. Adventure volunteering can also be used to solve what is probably the largest problem with performing remote area environmental management projects: ensuring projects are completed through to their final stages and hence, are finished.

Advantages and difficulties of using adventure volunteers For land managers there is an increasing gap between the resources available versus the resources required for effective environmental management. An all-too-common situation is that environmental problems are identified, resources allocated, projects started, the problem is reduced to low levels, then resources are reallocated to other 'more needy' problems, leaving a residual of the original problem being left unaddressed. A few years later the environmental problem has resurfaced, often back to similar or higher levels than before.

In many locations, volunteers are increasingly being seen as a resource that can be utilised for performing environmental management. This is reflected in the establishment of a range of semi-government, community and commercial organisations aiming to link volunteers with work sites. However, many of the strategies currently utilised do not maximise the amount and effectiveness of the work performed, nor the volunteer's satisfaction with doing the work. Adventure volunteering could be used to address this by enhancing and better targeting the strategies utilised. In doing so, adventure volunteering has the potential to increase work effectiveness, volunteer satisfaction and the pool of available volunteers whilst at the same time decreasing volunteer turnover, requirement for training and the risk of project stagnation.

In some situations, volunteers have been seen as a source of free labour. However, whilst volunteers are not paid a wage, there are real costs to utilising their labour. These costs can be considerable, particularly when the volunteers need to be transported to field sites, provided with shelter, supervised and/or trained (e.g. see Hunter and Rollins 2010). This means that it is just as important to ensure that the volunteer programs are performed efficiently and outputs maximised are as it is with paid workers.

Anecdotal evidence suggests that in many situations, the resources required to run conservation volunteer programs may be similar or greater than those required to employ professional personnel. In some situations concerns have also been raised as to the quality of the work performed by volunteers. This means that whilst conservation volunteering programs may be effective at environmental education (which may be a major goal in itself) they may have limited utility in maximising work output and effectiveness.

The most intractable environmental management challenges are typically in remote and/or isolated regions. The resources required for performing environmental work in these areas using paid personnel are often prohibitive due to the time, salary, travel

and training required. Moreover, in many situations, suitably skilled staff may not be available in-house in land management agencies, nor available from contractors. However, these skills may be available from volunteers, particularly where the volunteers had been previously employed by land management agencies (e.g. prior to retirement).

Structure and function of adventure volunteering The concept of adventure volunteering has been under development for a number of years. The initial concept was developed by the Friends of the Colo group working on willow (*Salix* spp.) removal from Wollemi National Park in New South Wales. Adventure volunteering was then taken up and adapted in Tasmania by Sea Spurge Remote Area Teams (SPRATS).

Adventure volunteering involves the explicit linking of high level recreational activities with effective and targeted environmental work. This means that adventure volunteering is both a bottom-up *and* top-down strategy be driven by *both* land managers and volunteers. It works by having land managers identify suitable environmental problems and then having the volunteers link their recreational activities with addressing the environmental problem.

The SPRATS group summarises the adventure volunteering philosophy as:

'*we concentrate on getting the work done, but work hard at having fun*'.

Adventure volunteering is not the only model which has been developed for using volunteers for environmental management, with various strategies being used by a range of organisations for many years. However, these previous strategies have been restricted by being primarily top-down in their organisational structure with minimal input from volunteers into the design and implementation of the work programs. A major downside of these programs is their very high levels of volunteer turnover resulting in the requirement for constant job training and low program continuity which acts to markedly increase the resources required to perform the works while also decreasing work outputs.

This is not to say that adventure volunteering will be suitable for addressing all environmental management problems. By its very nature, adventure volunteering requires adventure to be a component of its activities. This means that adventure volunteering will be best suited where activities such as bushwalking, rafting, rock climbing and/or caving are involved.

Adventure volunteering is therefore a partnership between land managers and volunteers where the volunteers take on ownership of the environmental problem and the land manager provides and/or facilitates provision of resources along with, critically, giving up some control of the problem to the volunteers. The volunteers in turn provide additional resources and/or skills, and take responsibility for meeting objectives. This means that good governance and project management are critical aspects of adventure volunteering. The objectives also need to be measurable and within the capacity of the group to achieve along with a democratic process along with full membership participation in planning and decision making.

The most import element of the adventure volunteering group is its volunteers. Since the key drivers for the adventure volunteers are fun, adventure, fulfilment, personal development and knowing that they are making a difference it is critical that volunteers are looked after, respect each other and achieve their own personal goals.

And finally, the key challenges to adventure volunteering are project administration, ensuring adequate resources and finances, avoiding burnout of key personnel along with team succession as the project matures and/or there is personnel change-over. This last issue, project succession, is a major issue because despite the best efforts of the people managing a project it may be hard for new people to come in and find their own space in the organisation.

Case Study: sea spurge remote area teams Sea spurge (*Euphorbia paralias* L.) (Figure 1) is a small leafy shrub native to Europe which has invaded coastal areas of southern Australia (Rudman 2003, Heyligers 2007). Sea spurge produces large numbers of saltwater-tolerant seeds which once shed, remain viable for at least seven years and can spread on ocean currents to infest new sites (Heyligers 2002, 2007). Data collected by SPRATS crews suggests that if conditions are suitable, there is little seed dormancy.

Along the Tasmanian Wilderness World Heritage Area and adjacent coastlines sea spurge has been identified as a major threat to geodiversity values, Aboriginal cultural sites, coastal herbfields, grasslands and shrublands, as well as habitats for rare and threatened shorebird species such as the little tern, fairy tern, hooded plover, red-capped plover, pied oyster catcher and orange-bellied parrot (see Bryant 2002 and Rudman 2003).

SPRATS is a self-managing group which was formed in 2007 to undertake remote area weeding on the about 600 km of coastline between Cape Sorell (near Strahan) and Cockle Creek on the west and south coasts of Tasmania (Figure 2). Most of this area is located within the Tasmanian Wilderness World Heritage Area and is managed by the Tasmanian Parks and Wildlife Service (PWS).

Figure 1. A sea spurge plant (above) mixed sea spurge and marram grass growing on a coastal dune (below).

SPRATS' first task was to survey the coastline and develop a 10-year plan (SPRATS 2007) for the control of sea spurge, and also the invasive weed marram grass (*Ammophila arenaria* (L.) Link). A major finding from the survey was that the majority of the weeds were located between Cape Sorell and Pennerowne Point (10% of the target coastline) and that there were markedly lower weed numbers between Pennerowne Point and Cockle Creek. Leading on from this survey, the coastline was divided into a series of sectors, each of which was treated by a volunteer work group (Figure 2).

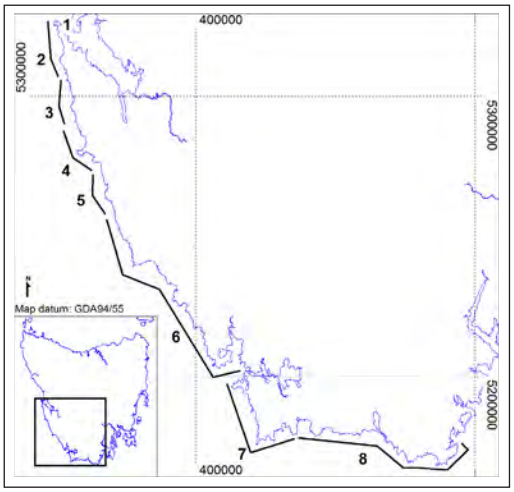

Figure 2. SPRATS sectors between Cape Sorell and Cockle Creek on Tasmania's south-west coast.

A key feature of the work performed is the collection of geo-referenced data on all sites with the data being stored in a geographic information system. This means that all of the weed survey and control work has detailed information on its location, site characteristics, techniques used, weeds removed, age profile and the time taken to treat sites (Tables 1 and 2). It also means that at the start of each season, the previous season's data is downloaded into GPS units and printed on maps so that all previously recorded sites are weeded.

SPRATS volunteers fit several demographics, including university students, professionals and retirees, all of whom have a common interest in environmental volunteering and outdoor adventure. A feature of the SPRATS program is that a range of trips are offered each season which vary from largely sedentary and physically easy sectors performing intensive weeding, through to physically very difficult sectors that involve long distance off-track bushwalking.

As a result of its collection of detailed data on the effectiveness of its weeding efforts, SPRATS has been able to demonstrate that the most effective methodology for weeding sea spurge is to simply hand pull and drop the plants. It needs to be noted that hand weeding sea spurge once per year (as utilised by SPRATS) is only viable in regions where sea spurge takes at least 12 months to produce significant seed crops and is unlikely to be effective in areas where sea spurge produces large amounts of seed at six to nine months of age (as occurs in eastern and northern Tasmania (SPRATS unpublished data)).

Table 1. Number of people involved and work days performed between 2006/07 and 2013/14.

Season	Project planning (days)	Macquarie Heads to Cape Sorell		Cape Sorell to Pennerowne Pt		Pennerowne Pt to Cockle Ck		Totals	
		People	Days	People	Days	People	Days	People	Days
2006/07	10	0	0	2	10	10	140	12	160
2007/08	65	0	0	10	20	18	390	28	475
2008/09	100	0	0	29	300	17	220	46	620
2009/10	120	0	0	23	275	21	325	44	720
2010/11	100	0	0	42	536	18	268	60	904
2011/12	100	0	0	33	396	25	298	58	794
2012/13	100	9	99	36	396	29	348	74	943
2013/14	100	7	77	15	195	8	128	30	400
Totals	695	16	176	190	2128	146	2117	352	5016

Table 2. Number of sea spurge plants weeded between 2006/07 and 2013/14.

Sector	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	Totals
1	*	*	1,150	5,630	860	40	5,182,670	1,228,100	6,418,450
2	*	*	10,554	620,802	136,648	84,254	15,122	4,507	871,887
3	31,910	*	323,417	2,243,033	1,285,393	241,996	94,869	34,441	4,255,059
4	852,172	96,793	325,808	966,351	64,995	19,104	6,776	5,005	2,337,004
5	56	73	41	27	15	2	88	0	302
6	61,151	21,315	1,578	156	1,419	644	757	1,223	88,243
7	8	3,559	371	97	312	9510	4,645	509	19,011
8	710	1,502	7	125	11	17	12	**	2384
Total	946,007	123,242	662,926	3836,221	1,489,653	355,567	5,304,939	1,273,785	13,992,340

Note: * = not weeded,
** = only sites at Cox Bight weeded and rest of sector unweeded

However, the pull and drop technique is not viable in large infestations due to the number of plants involved (up to 90,000 plants per hectare). In these sites we have found that the most effective strategy is to spray with glyphosate and penetrant followed by hand weeding of any plants that either survive the spraying or subsequently germinate. In most sites, the cover and height of native species recovers to pre-spraying levels within six to 12 months, with some native species appearing to be advantaged by herbicide spraying (e.g. grey saltbush (*Atriplex cinerea* Poir.), pigface (*Carpobrotus rossii* (Haw.) Schwantes)), probably due to these species having salt-resistant leaves (and hence resistant to herbicide penetration) and due to reduced competition from sea spurge (SPRATS unpublished data).

The use of volunteers by SPRATS has also been highly cost effective. To date, for an input of about $185,000 of state and federal grant money over $1,175,000 of volunteer labour has been performed, a ratio of over six to one (assumes 8 h day at $30 per h).

In summary, as a result of detailed data collection and analysis we have been able to demonstrate that the adventure volunteering model is highly effective and cost efficient for remote area environmental management. The model should have wide applicability provided groups are well directed, participants are inclusive and respectful of each other, utilise effective and targeted land management techniques and maintain an effective and directed partnership with the land manager. Above all, the adventure volunteers must have fun and adventure, they must know they are making a difference, and they must 'own' the project.

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