

## Carpet pythons and Biodiversity Action Planning: using an icon species to deliver extension in an agricultural and environmental context

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**Abstract.** Victoria's Biodiversity Action Planning (BAP) was developed to provide comprehensive and scientifically sound data for the purpose of protecting, enhancing and restoring biodiversity across specified zones. The challenge for the extension officer is to use this data in a proactive and innovative manner, whilst remaining sympathetic to the agricultural practices of the zone. By using the endangered icon species *Morelia spilota metcalfei* (Inland Carpet Python) in the predominantly sheep and cropping Chesney BAP zone of north-east Victoria to engage the community is one way to meet this challenge. Careful portrayal of this python has attracted interest from landholders, local community, project stakeholders and the media, therefore assisting communication of the projects' objectives. In addition to the traditional extension activities, a fox baiting program and a *Pythons, Pastures, Production* workshop provides practical benefits and builds community capacity, serving to link environment and agriculture in an interactive manner ultimately affecting landscape change.

### Introduction

The development of the Biodiversity Action Planning (BAP) system virtually hands a guide book to extension practitioners to identify the areas in most need of on-ground attention such as fencing, revegetation and connecting remnant vegetation. BAP was developed in response to the State Government's *Victoria's Biodiversity Strategy (1997)* and has been applied across Victoria to plan for native biodiversity conservation at a landscape level.

The principles of BAP for on-ground actions across a landscape to preserve and enhance biodiversity are:

- protection of remnant habitats including flora and fauna populations,
- enhancement of the condition of these habitats and populations,
- restoration to former habitats, at least some extent by revegetation or reintroduction.

BAP aims to achieve broad-scale conservation of native biodiversity, and identifies priorities for conservation as part of the implementation of the Victorian Biodiversity Strategy 1997 (Department of Sustainability and Environment 2005).

The receipt of the BAP document by the extension officer does not automatically guarantee the smooth delivery of services to landholders that result in effective on-ground results within a BAP zone. This is despite the documents comprehensive coverage of landscape and vegetation, associated and significant species, summary of priority sites, conservation assets and priority actions required for key biodiversity assets.

The BAP process requires the extension officer to be proactive rather than reactive; to direct and drive the community to embrace practice change for the benefit of local biodiversity. For an extension officer the key to delivering BAP is to create a sustained relationship with landholders and operates in a way that facilitates community capacity building and provides the community with a framework for autonomy. To do this, a 'hook' or an item of key interest such as an icon species can be used by the extension officer to serve as a conduit between agricultural and environmental outcomes.

### Biodiversity Action Planning: An innovation for extension

BAP is an innovative process to guide and influence extension practice. It is a 'big picture' mechanism designed to enhance biodiversity and landscape health. Priority sites are quickly identified for their significant natural biodiversity and conservation action is directed towards these sites. Many of these sites are situated on private agricultural land, therefore BAP provides the extension officer with the tools to mediate a balance between agriculture and biodiversity when approaching and consulting with the community.

BAP employs a uniform approach for biodiversity conservation, such as size and quality of remnant vegetation, and the distance from other quality patches of vegetation. A map is produced of the zone, with the very high, high, medium and low sites outlined in colour. An accompanying document called a Conservation Plan discusses the various issues pertaining to the BAP zone, such as for example assets, threats, bird surveys, priority actions for key

biodiversity assets, and significant flora and fauna. Sites on a BAP zone map need to be under continual scrutiny; on a weekly or monthly basis, from extension officers who may question the inclusion or exclusion of sites on the BAP map. This constant examination ensures that BAP plans operate as 'living' documents, subject to questioning and change. As well as directing extension officers to initiate on-ground environmental works, data from BAP may be used to inform and assist community groups such as Landcare and local government in planning.

Each BAP plan has a list of notable species present in the zone, in the Chesney zone this includes the Inland Carpet Python. The Land Conservation Council (1987) describes the Inland Carpet Python as once a widespread species in woodlands that is now in decline. The species is considered to be endangered within Victoria warranting action for its preservation (Department of Sustainability and Environment 2003). The BAP together with a recovery plan for the chosen species allows the extension officer to build a picture of possibilities for the zone, such as a fox baiting program, community awareness campaign or on-ground works for habitat restoration. The Goulburn Broken Catchment BAP has been completed up to 22 zone plans, one of which is the Chesney zone, the most southerly ranging home of the endangered Victorian Inland Carpet Python. Teamed with the Chesney zone BAP map this provides the ideal vehicle to deliver environmental actions within a traditional sheep and cropping setting using the python as the hook.

### **Enhancing extension collaborations using an icon species**

Lambeck (1997) states that a suite of focal species identified as being the most demanding can be used to define various attributes that must be present in the landscape to ensure their persistence. Because the most demanding species are selected, a landscape designed and managed to meet their needs will encompass the requirements of all other species. Lambeck (1997) comments that it seems unlikely that any single species could serve as an umbrella for all others.

I developed the project using the carpet python as an iconic rather than a focal species due to the complexities of using that approach, The Carpet Python Project (CPP) began in 2005 in collaboration with original project partners the Warby Range Landcare Group, Department of Primary Industries, Department of Sustainability and Environment and Parks Victoria. By using the BAP map of the Chesney zone the majority of the 'biodiversity hotspots' were readily identifiable and an area of approximately 50,000 hectares was selected as the area where on-ground environmental works would benefit biodiversity the most including the carpet python. Previous research describes the habitat used by the Inland Carpet Python in rural landscapes that adjoin Mt Meg Nature Conservation Reserve in north east Victoria (Heard et al. 2004).

The carpet python was an easy choice as the icon species to deliver BAP in the Chesney zone in the form of the CPP. It is a non-venomous, easily recognised, a welcome predator of mice, rats and rabbits, and attracts attention be it fascination or fright. The long-term residents of the Chesney zone are familiar with its presence and are keen to share stories of 'their' pythons. The endangered species has the benefit of rarity allowing it to be elevated as a status symbol. The media favour a story of a 'quirky' nature, and the python provides unusual visual imagery and material to guarantee stimulating media coverage for the project.

However a quirky subject alone cannot be the only driver of the principles of BAP. Establishing two-way communication and strong partnerships with key landholders and stakeholders operating within the Chesney zone was the first priority for the CPP. The linking of respected farmers with the Goulburn Broken Catchment Management Authority, Warby Range Landcare Group, Parks Victoria, Goulburn Murray Water, Department of Sustainability and Environment, Broken Boosey Conservation Management Network and five local primary schools was vital to establishing a sustained connection within the community and government.

Over the years each of these groups has seen a myriad of environmental extension activities occur in the region such as community meetings, Landcare tree planting days and field days. The difference with the CPP was that for the first time, by taking a 'marketing approach' with extension, the various agencies were linked by the overarching aim of preserving the carpet python. Examples of the extension activities of the CPP that involved the stakeholders to varying extents were:

- large multi-faceted field days (100+ attendees) with the Warby Range Landcare Group;
- quality speakers from the various stakeholder groups;
- Department of Primary Industries funded fencing and revegetation projects on strategic BAP sites on private land;
- fox baiting program funded by the Broken Boosey Conservation Management Network;
- educational reptile displays;

- strong primary and secondary schools interaction including environmental education days;
- information evenings with project partners Parks Victoria presenting research;
- regular publication and distribution of the *Carpet Python Courier* newsletter;
- many community group presentations;
- development and distribution of four different types of signage (funded by the Department of Primary Industries, the Broken Boosey Conservation Management Network and Parks Victoria);
- production of quality information notes and printed materials;
- promotional 'gimmicks' such as calico bags, stickers and 'How to Pick a Python' laminated fact sheets.

All these activities are not new, but the unique way they have been strategically marketed across the BAP project area means they have been instrumental in raising community awareness, understanding and acceptance of the carpet python in the Chesney BAP zone. The CPP also achieved recognition within the community by winning the 2007 National Tidy Towns *Protection of the Environment* award as part of the Benalla Rural City's entry.

### **Mechanisms for capacity building - fox baiting and community workshops**

By far the most influential extension activity of all was the fox baiting program because it reaches those landholders who may not normally prioritise biodiversity within their farming practice. Being a predator of the carpet python is vital to address the fox population for its persistence (Heard et al. 2004). Hearths' research was the main driver behind the fox baiting program in the Chesney zone. Whilst sheep farmers did bait for foxes in the area, it was done on an ad hoc basis, with little or no coordination between landholders. Funded by the Broken Boosey Conservation Management Network, the fox control program offers landholders within the project area the opportunity to undertake the accredited Farm Chemical Users Certificate and 1080 endorsement course to gain their Australian Chemical Users Permit. Participants then obtain 1080 fox baits to bait in a coordinated manner on their land across the project area. The timing of the baiting was done to complement baiting on public land by Parks Victoria. This is community capacity building at its best as each landholder, approximately 130, is trained to bait for foxes long after the CPP ceases to exist. Irrelevant of the motivation, whether it be for financial or biodiversity benefit, the Chesney community united to address the fox issue in their region. Lifestyle landholders and traditional farmers were brought together for training days where comments such as: "We don't have any sheep at the moment, but I'll bait for your little pythons" from a traditional sheep farmer and long-time resident to "We're new, we just want to fit in (with the farming community) and do the right thing" from a new lifestyle landholder, indicate the diversity and differing rationale of those participating in the fox baiting program – driven by the survival of an iconic species. Since the baiting program began, Goulburn-Murray Water joined the project by contributing funds towards baiting an area of approximately 3000 hectares along the southern side of Lake Mokoan, further enhancing the efforts of landholders.

The need for a rigorous and scientifically sound monitoring program to track the impact of the fox baiting program was identified a gap and a key lesson of the project. In the first two years of the program pre and post baiting spotlight monitoring was done but it was not carried out to a rigorous standard. The program was a success in a social sense as landholders revealed they are not operating in isolation to tackling the fox population; they are part of a well organised coordinated program which they play their part in addressing a local problem. Early monitoring showed in 2006 (first year of baiting) 54 foxes were sighted on the pre-baiting survey and 36 sighted on the post-baiting spotlight survey. This indicates a potential 34% decrease in the fox population in the Chesney zone but this is limited in accuracy. Only a efficient, well funded monitoring program will be able to tell the true impact on the fox population and this remains a deficiency in the project.

The fox baiting program has received positive feedback from local people largely due to the benefit to agriculture in this predominantly sheep production district. This is despite its original reason for operating was to help address the problem of fox predation on carpet pythons. One farmer reported a 10-15% increase in lamb survival (James, D. 2009, pers. comm., March 18). It links biodiversity and agriculture by showing empathy for the primary producer in their battle against the fox.

The CPP also involved farmers in a fox DNA project conducted by Oliver Berry from The University of Western Australia which provided landholders with sampling kits so they could send away samples of fox tissue found as a result of baiting on their property. A permanent bait station trial was also established, and three remote sensing cameras are set up on landholders

properties within the Chesney BAP zone and producing photographs to 'prove' the success of a permanent fox baiting station.

In October 2008 two evening sessions called *Foxpo Expo* were held, with guest speaker and PhD fox behaviour researcher Andrew Carter from Charles Sturt University presenting his research findings on the behaviours and movements of foxes throughout the landscape and bait taking preferences to 80 local attendees. The fox baiting program is a prime example of how an everyday farming practice has been innovatively challenged, improved and then coordinated via extension to provide agricultural and biodiversity benefits to a region.

Within three to four years a community should be well enough versed on the icon species needs and threats to be able to take the 'next step' in actions towards sustained biodiversity in the landscape. In the case of the CPP and Chesney BAP, the next step is one which definitively brings together elements of pythons, biodiversity and agricultural production via a one and a half day workshop called *Pythons, Pastures, Production*.

### **Pythons, pastures, production**

Landholders in the Chesney BAP zone are generally broad-acre established farmers, and it is widely accepted that to make significant on-ground changes, large areas of land must be managed sustainably in an attempt to achieve the highest possible biodiversity outcomes. Landholders with large areas of land will potentially provide the greatest biodiversity gains in terms of their capacity to protect large areas of habitat, or provide linkages between tracts of remnant vegetation. The *Pythons, Pastures, Production* workshop is a long-term concept; a BAP driven extension model which works on a landscape and landholder level in order to achieve significant long-term biodiversity changes within an agricultural context. It potentially has application to be used in any BAP zone using any icon species in any landscape.

Aligned with accredited training packages and funded by the Norman Wettenhall Foundation, *Pythons, Pastures, Production* fosters the land manager's understanding of the interrelation between environmental and production values. By using the Chesney zone BAP map, clusters of landholders (preferably adjoining neighbours) are targeted to attend the sessions, prior to which individual soil tests are taken and professionally analysed for discussion at the workshop. Broken into three sections, the *Pythons* session addresses the concept of BAP and the general biodiversity of the Chesney zone, which includes "hands on" introduction to several live local species of reptiles including the Inland Carpet Python, *Pastures* session which addresses native grasses and their role in a managed grazing system, and the *Production* session which focuses on soil health and agricultural productivity. All sessions encourage participants to pursue further capacity building activities such as participation in whole farm planning, BeefCheque, BestWool/BestLamb and Prograze courses.

Aerial photographs of each participant's property are supplied as they are an important tool to facilitate discussion and planning for complementary landscape wide agricultural and environmental actions between neighbouring properties. Actions such as pest plant and animal control, linking revegetation sites or establishing a chain of paddock trees across properties are discussed. Using BAP with specific clusters of landholders helps ensure the actions carried out will be of most benefit to the environment.

### **Conclusion**

By using an icon species as a tool to 'give life' to Biodiversity Action Planning gives the extension officer the science-based knowledge and insights to enable proactive coordination of activities within an agricultural community to achieve desired outcomes.

Proactive coordination of extension continues to be the cornerstone of the CPP's success. None of the extension methods used to engage the community are unique, however the manner in which they are 'marketed' and delivered is. A key difference or selling point for the CPP has been that for the first time, by taking a 'marketing approach' with extension, the various collaborators are linked by the overarching aim of preserving a single icon species. This 'marketing approach' includes activities such as using 'gimmicks', (for example signage, calico bags, stickers, and logos), using the media for strategic advertising of CPP events, elevating the profile of the project via visits to the five local primary schools to deliver talks and environmental-style activities, and linking with environmental activities and events across the Goulburn Broken Catchment.

My key learnings in developing this approach have been:

- Using an icon species is an effective way of engaging the community rather than trying to simultaneously address multiple species or issues.

- Monitoring and evaluation needs to be carried out to a rigorous standard; a procedure which has not been undertaken adequately within the fox baiting program. The key learning is the failure to plan for this.
- In an agricultural production area, extension staff need to have empathy with landholders, and an understanding that biodiversity conservation is not always a farmer's first priority. The key is being able to implement and encourage activities that address both agriculture and biodiversity, such as fox baiting, planting vegetation for stock shelter in strategic areas, land class fencing for native grasses management, and improving soil health.
- For best results BAP information needs to be used in a complementary manner with existing recovery plans, action statements and published research.
- The extension officer is wise to have local community (such as key landholders and the Landcare group) endorse the BAP plans and associated mapping identifying high priority sites as this assists with community ownership of the project and its objectives.
- Extension staff implementing the BAP plan must understand that often the highest priority actions may not be immediately possible. The key is to foster collaborations across time with a vision to achieving the desired outcomes.
- As an extension officer, one must ensure that communication between the stakeholders and the landholders is continuous to show commitment to achieving the goals BAP promotes.

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