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**Department of Sustainability
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&
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Report:
**Threatened Species and Farming
Farmer Case Studies**

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Executive Summary

Background and methodology

The primary aim of this project is to assist the Departments of Sustainability and Environment (DSE) and Primary Industries (DPI) to better understand factors surrounding primary producers' decision making processes and implementation of threatened species management within their farming systems.

Information for the project was sourced from a series of interviews with 14 farmers known to have threatened species populations or suitable habitat for threatened species on their property. These interviews formed the basis of case studies developed for each farm (see Appendix 1).

Primary producers selected for interview represent a cross section of seven threatened species occurring in different farming enterprises in four regions across Victoria, split as follows:

| | | |
|----------------------------|---------------------------|--------------------------------|
| Red-tailed Black Cockatoo: | Wimmera | Bull beef; wool |
| Brolga: | Victorian Riverina | Dairy; cropping; grazing; wool |
| Chariot Wheels: | Victorian Riverina | Cropping; sheepmeat |
| Small Scurf Pea: | Victorian Volcanic Plains | Sheepmeat |
| Corangamite Water Skink: | Victorian Volcanic Plains | Cropping; wool; dairy |
| Giant Gippsland Earthworm: | Gippsland Plains | Dairy |
| Strzelecki Gum: | Gippsland Plains | Dairy |

The key findings

For most case study participants, protecting or providing habitat for threatened species is not an isolated practice, but part of an overall conservation plan for the farm. As such, it proved difficult to discuss threatened species protection without including other conservation activities and readers should note this when reading the report.

Awareness of threatened species status

Among study participants, although a variety of sources have created awareness of threatened species status, DSE and DPI being the most common. Mentions for this measure include the following:

- DSE and DPI staff or allied personnel (eg. scientists)
- DSE field day
- local media
- publications such as wildlife magazines
- local council roadside walks and native vegetation surveys
- bird surveys
- association with specific groups, eg. the Australian Plant Society

Several instances of threatened species identification on farm have been the result of pure chance, as demonstrated by one respondent's experience:

"About two years ago, I was poisoning rabbits and Ken Harrison ... who works for DNR ... he was driving around checking that I was doing the right thing and he noticed that I had that plant (Chariot Wheels) in the paddock."

Study results suggest that in many cases, consistent contact with knowledgeable personnel from DSE has resulted in greater awareness and understanding of the needs and idiosyncrasies of threatened species and an increased sense of responsibility to protect them.

Conversely, lack of input can result in misunderstanding and misconceptions. Notably, there is doubt in some respondents' minds over the need for threatened species status for the Red-tailed Black Cockatoo, Brolga and Strzelecki Gum. In the case of the Red-tailed Black Cockatoo and Brolga, misconceptions about specific needs of the species or the decline in populations are the basis for doubt. The high rate of success of 'artificial' propagation and tube stock plantings for the Strzelecki Gum is also a basis for this doubt.

Motivation or stimulus to undertake conservation activities

A variety of drivers have motivated case study participants to undertake conservation activities. A strong sense of stewardship towards land, flora and fauna (particularly threatened species) is a key stimulus, as is the sense of satisfaction in seeing indigenous flora and fauna on the property. Several comments similar to the following were made during interviews with farmers:

"Your heart still skips a beat when you see them starting to nest and you see the little Brolga chicks – it's really something special. I really like it that they come up here and nest."

Of note, there is evidence in the study results to suggest that farmers undertaking conservation activities can create interest among their peers by their enthusiasm for protecting threatened or rare species.

The visual aesthetics resulting from broader conservation activities – such as preservation of remnant vegetation areas and creation of shelterbelts - is also a key driver, as is the resultant improved level of comfort for stock.

Barriers to undertaking conservation activities

It should be noted that not all case study participants identified barriers to undertaking conservation activities, nor are barriers perceived to be insurmountable.

Areas perceived to be barriers to undertaking threatened species protection and other conservation activities on farm include the following:

- lack of awareness of the species' status
- cost and availability of irrigation water to maintain appropriate water levels in wetlands
- lack of finance or funding available to purchase fencing materials, tube stock, etc.

- the loss of feed for stock when remnant vegetation paddocks are taken out of production
- lack of labour resources to erect fences, control weeds and plant tube stock
- complexity of paperwork and level of compliance required in funding applications

Barriers perceived to be an issue for case study participants' peers include:

- lack of value placed on indigenous flora and fauna
- property size – greater economic pressure to utilise every hectare on smaller farms
- farming systems which tend to be incompatible with conservation (eg. centre pivots)
- ageing population of primary producers, close to retirement and/or less interested in conservation

Catalysts to overcome barriers to undertaking conservation activities

Although several perceived barriers were identified in this project, case study participants were able to suggest a number of solutions, including:

- wider and more frequent personal contact with DSE or other knowledgeable personnel to assist in identification of sites where threatened species exist and to provide information and support
- assistance to secure access to environmental water flows as required
- compensation for farmers losing productivity or profitability
- broader promotion of the availability of funding and labour assistance
- simplified funding application processes or provision of a contact person to assist with applications (identified as a key catalyst for some case study participants):

"If you go through DSE or your Catchment Authorities, you've got to do so much work for it ... it's that's too hard and too time consuming – into the too hard basket. Sam (from Greening Australia) works it all out – it's really easy. That is what has been the biggest thing that's got us happening over the past year."

- provision of support and information, delivered by people with local knowledge

Conservation activities undertaken

Results of the case studies suggest that participants can be classified into three categories relating to threatened species conservation, namely:

Actives: Those actively implementing measures to protect threatened species or to protect or provide habitat.

Included in this category are farmers who are actively conserving areas of remnant vegetation by implementing rotational grazing systems or taking farm areas out of production to prevent foraging on particular species or reduction in the amount of camouflage vegetation.

Accidentals: Those who have accidentally provided habitat, but are satisfied with the result.

This category includes case study farmers who have undertaken an activity to benefit the management of the farm but which has later proven to benefit threatened species:

“The wetland area was naturally wet and the topography of the land made it the perfect site for an irrigation recycle dam. So we put a bank around it and that’s what it became. A bit of water went into it and about five million birds turned up, including a pair of Brolgas.”

Passives: Those not actively undertaking activities, but whose farming systems have proven harmonious with the needs of threatened species.

Case study farmers with threatened species populations co-existing on their farm mainly due to being located on steep or unproductive areas or which suit the grazing regime are included in this category.

Of note, case study respondents who have accidentally or unwittingly protected threatened species or created habitat have shown strong inclinations to conserve them once they realise their significance.

Perceived success of activities undertaken

In the main, case study participants believe they have undertaken practices which have resulted in positive outcomes for threatened species.

Those who have implemented rotational grazing are convinced these systems can deliver an acceptable balance for most indigenous flora species as well as for stock in most situations.

Wetlands have proven to be both a useful irrigation water management tool as well as providing habitat for a variety of species. It should be noted however, that most Brolga hatchlings on case study farms have fallen prey to foxes before reaching fledgling stage.

Threatened species which colonise less productive areas of the farm appear to be viable, even in ‘traditional’ farming systems.

“The farm was fertilised with super and lime and the like until recently, but the back of the farm where the Earthworms are wouldn’t have had as much of that stuff because it’s so steep. It didn’t get the fertiliser that this half of the farm had, because you never milk cows off it.”

Perceived impact of activities on financial or production costs

For most case study participants, managing their property in a way that allows threatened and other species to co-exist has not impacted productivity or profitability and in fact, some suggest productivity gains have resulted. Productivity gains have been realised in the following areas:

- wetlands acting as an important water management tool as well as habitat

- remnant vegetation areas and shelterbelts providing increased comfort and shelter for stock and crops during weather extremes
- fewer stock losses due to fencing off areas where threatened species populations exist which are potentially hazardous to stock (eg. muddy lake fringes)

One person suggests that taking an holistic approach to farming with a view to increasing biodiversity has been proven to double productivity within five years on a neighbouring farm.

In some situations, only the less productive areas of the farm have been conserved, ie. swampy areas, steep sections of the farm or corners of paddocks where crops cannot be sown or harvested easily. This is a key finding and suggests that landholders currently not undertaking any conservation activities could potentially be encouraged to focus on these areas (particularly if they believe productivity will be negatively impacted).

Other case study participants however, believe taking areas out of production and conserving remnant vegetation can have a significant impact on a farm's potential profitability. There is some feeling that the community in general is responsible for this cost:

"The community has to realise and appreciate what farmers are foregoing in terms of financial returns when they lock paddocks up. If the community wants the environment to be protected, then perhaps they need to support farmers financially to do it."

Attitudes of neighbours towards conservation activities

As expected, respondents point out that polarised views towards conservation currently exist among primary producers. While most case study respondents believe conservation activities will never appeal to some of their neighbours, others have shown some desire to implement practices. Wetlands appear to have stimulated local interest and there is some evidence of co-operative conservation programs being undertaken or considered for the future:

"The people near us have got a lot of bush on their place and they've actually done a lot of fencing off of that. They've got grants to fence it off and they're doing shelterbelts and eventually we would like to join our shelterbelts up and that will go down to their bush then, so that will encourage wildlife to come all the way through the farm."

By overcoming some of the barriers identified earlier, potentially more farmers could be encouraged to undertake threatened species management and general conservation activities in future. As suggested previously, this may result in a more rapid 'trickle down' effect.

Information and support requirements

Several key suggestions to improve information and support available was provided by case study participants. Their suggestions specifically relating to threatened species include the following:

- provide more in-depth information on threatened species management (eg. the impact of revegetation on Giant Gippsland Earthworm colonies)
- assist with fox baiting programs or provide fox fencing in Brolga wetland areas

- ensure environmental flows are made available to wetlands and lakes as required
- place an economic value, or a value to the community on protecting threatened species
- provide information and support at a local level to assist with funding and covenant applications
- provide a central library of local threatened species and conservation information

On a broader conservation level, the following suggestions were made:

- enforce legislation more strongly
- conduct research into suitable systems for specific primary industries which result in positive environmental outcomes
- continue to provide funding and labour resources and promote their availability more widely
- simplify funding application procedures for materials and labour
- ensure consistency of information is provided by various government departments

Farm succession planning

Four of the case study participants anticipate passing their farm on to their children when they retire. The children of these families appear to demonstrate a similar or greater sense of land stewardship than their parents and are likely to continue the conservation activities they have begun.

Most of the case study participants are keen to preserve the environment they have created for threatened and other indigenous species and while most show an interest in covenanting these areas, many are reluctant to do so until they are ready to retire or sell the property. In the main, this is due to concern that parameters may change over time or a perception that greater government control or intervention will result. The comment below is typical of this mindset:

“Why would you (covenant)? Bureaucracy has enough of a foothold in my life. It’s not about control, it’s about giving remote control to people who don’t have an appreciation of that particular environment. Why would you give bureaucracy another stick to beat you with? That’s all we’re doing with covenants, because if they want to put a powerline through a covenanted area, they’ll do it.”

Characteristics of case study participants

While there are few demographic similarities between the case study participants in the area of education, group participation, farming systems, community spirit, etc., they share a common pride in the conservation activities they have implemented.

Conclusions and recommendations

- ➔ On-going personal contact with knowledgeable DSE/DPI staff or scientists appears to result in greater awareness, knowledge and desire to protect threatened species among farmers. Although personal contact requires considerable resources, it clearly overcomes lack of awareness, misinformation and misconceptions currently existing.
- ➔ Farmer passion for protecting threatened species can influence some neighbours and peers. Consequently, supporting farmer 'champions' could be considered as an option.
- ➔ A central library of **local** information relating to threatened species would be helpful to ensure appropriate activities are undertaken and could also be considered as an option.
- ➔ Many barriers to protecting threatened species and undertaking other conservation activities can be overcome, but may require additional funding and resources.
- ➔ Simplified applications for funding and labour support may activate latent desire to undertake conservation practices.
- ➔ More widespread promotion of funding and support available may stimulate conservation activities.
- ➔ Providing **local** support and information encourages activities and should be a key focus for the future.
- ➔ Implementing conservation activities on farm can positively impact productivity and profitability and instances where this can be clearly demonstrated should be well publicised.
- ➔ Conservation activities can potentially be focussed on less productive areas of the farm and this fact could be highlighted further.
- ➔ There is some belief that the broader community is responsible for conservation on private land and this mindset may become more widespread in future.
- ➔ Perceptions of government control and concerns over potential future changes to legislation deter some farmers from applying for covenants and may be an area requiring altered promotional strategies to facilitate greater understanding.

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Appendix 1: Farmer case studies

Appendix 2: Case study interview topic guideline

Main report

Section 1:

Introduction and objectives

1. Introduction and objectives

The main aim of this project is to provide the Department of Sustainability and Environment (DSE) and the Department of Primary Industries (DPI) with insight into farmers' motivations and experiences in implementing threatened species conservation management within their farming systems. The project also explores the level of farmer knowledge of relevant issues and the perceived financial and productivity impact of undertaking conservation activities.

The project provides insight into the following key issues:

- source of initial awareness of threatened species status and subsequent level of knowledge
- initial motivation or stimulus to undertake conservation activities
- perceived barriers to undertake activities and suggested means of overcoming these barriers
- type of activities undertaken
- perceived success of activities undertaken
- perceived impact of activities on financial and production costs
- attitudes of neighbours towards threatened species protection and other conservation activities
- information/support utilised
- perceived gaps in information/support available
- farm succession issues
- characteristics of case study participants

The outcomes of the project will assist DSE/DPI to identify stimuli, actions and support likely to result in successful implementation of threatened species conservation at farmer level as well as assess financial and productivity cost implications compared to benefits.

Section 2:
Research Methodology

2. Research methodology

Data for the project was collected in two stages. Initially, a consultant from Down To Earth Research (DTER) attended two field days (Durham Ox - Brolga and Chariot Wheels, Jumbunna - Giant Gippsland Earthworm and Strzelecki Gum) to obtain insight into the type of trials being undertaken on farm by DSE scientists and to experience first hand the issues raised by farmers attending the days. Attendance at these days served as a 'scoping' exercise to ensure the relevance of questions posed to case study participants in the second stage of the project.

A series of 14 case study interviews was subsequently conducted with farmers known to have threatened species or suitable habitat for threatened species on their property. While 12 of these farmers are known to DSE and DPI staff through their involvement with scientific trials being conducted on their properties, two had no contact with the Threatened Species & Farming team prior to attending a field day.

Farmers participating in the project represent a cross section of seven threatened species, found in the following locations and within the farming enterprises outlined:

| Species | Region/location | Farming enterprise |
|---------------------------|---|-------------------------|
| Red-tailed Black Cockatoo | Wimmera – Apsley | Bull beef |
| | Wimmera - Bringalbert | Sheep (wool) |
| Brolga | Victorian Riverina - Yarrawalla | Dairy |
| | Victorian Riverina - Yarrawonga | Cropping & grazing |
| | Victorian Riverina - Rutherglen | Sheep (wool) |
| Chariot Wheels | Victorian Riverina - Warmur | Cropping & sheep (meat) |
| | Victorian Riverina – Watchem | Cropping & sheep (meat) |
| Small Scurf Pea | Victorian Volcanic Plains - Shelford | Sheep (meat) |
| Corangamite Water Skink | Victorian Volcanic Plains – Nerrin Nerrin | Cropping & sheep (wool) |
| | Victorian Volcanic Plains - Ballintore | Dairy |
| Giant Gippsland Earthworm | Gippsland Plains - Jumbunna | Dairy |
| | Gippsland Plains - Ellinbank | Organic dairy |
| Strzelecki Gum | Gippsland Plains - Outtrim | Dairy |
| | Gippsland Plains - Koonwarra | Dairy |

Interviews with farmers were conducted on a face-to-face basis by a senior consultant from DTER. Case study participants were given a booklet *How to plan wildlife landscapes – a guide for community organisations* as thanks from DSE for their participation. A bottle of wine from DTER was also offered.

Although the interviews were conducted in an informal fashion to make the respondents feel at ease, questions asked followed a semi-structured Topic Guideline (see Appendix 2) to ensure all relevant issues were covered.

The duration of the interviews varied substantially - between one and three hours. Regardless of the time taken however, a high level of co-operation and interaction was provided by farmers and their families. Thirteen of the fourteen case study participants agreed to being personally identified for the purposes of this report, provided their details are not made public.

Interviews were tape recorded to assist the consultants to recall the exact content of each interview. Case study participants were assured these tape recordings would not be made available to third parties to protect their confidentiality.

All information gathered via the in-depth interviews was carefully analysed by senior consultants utilising hand tab methods to ensure the meaning behind each comment was fully understood and taken in the correct context (which is often incorrectly analysed by many of the software packages currently available for this task).

Case studies were submitted to participants for their review and approval and are included in this report as Appendix 1.

Sections 3 - 13:

Summary of case study interviews

3. Awareness of threatened species status

Key findings

Awareness

- All case study participants appear to have a reasonable level of local flora and fauna species knowledge, with many having historical information. All but one case study family are descended from 'farming dynasties', taking over and expanding the family farm or purchasing another in the local area. The one family which took up farming in their mid twenties has a keen interest in conservation and indigenous species and consequently have expanded their knowledge over the years.
- As expected, at the time of interview all case study participants were aware of the threatened status of the particular species found on their property due to their link with DSE scientists or attendance at a field day.
- It is notable that the Corangamite Water Skink, Small Scurf Pea and Chariot Wheels⁽¹⁾ were not well known to respondents until recently.

Case study participants knew of Skinks or 'lizards' on their property, but were unable to identify them as the Corangamite Water Skink:

"I used to go down to the lake fishing and I was aware there were two different types. During the mating season, the eastern one ... the male ... has a bright red belly, whereas the other one is a more bland looking creature. I should have thought that given the variant sizes, the bland ones could have been a different type of male, but we'd always just written them off as being female. So I wasn't surprised to hear they were a separate species."

Identification of Chariot Wheels and Small Scurf Pea was accidental among respondents, with chance sightings occurring:

"About two years ago, I was poisoning rabbits and Ken Harrison ... who works for DNR ... he was driving around checking that I was doing the right thing and he noticed that I had that plant (Chariot Wheels) in the paddock. It's funny, because a couple of years before that, another person from the Department came out and had a look at that paddock and he was fascinated by the plants and the bird life, but he never noticed the Chariot Wheels."

⁽¹⁾ *E. Strzeleckii* is not included due to only being recognised in 1990

- While the stimuli for awareness have been quite varied, it is notable that several case study participants learnt about threatened species through contact with DSE or DPI personnel. The various sources mentioned by respondents include the following:
 - DSE/DPI staff or allied personnel (eg. scientists)
 - DSE field day
 - local media
 - wildlife magazine
 - roadside walk conducted by local council
 - council native vegetation survey
 - bird survey
 - association with Australian Plant Society
 - association with Parrot Association

Reaction

- Almost all case study participants expressed positive reactions to learning that a species found on their property was classed as threatened. For most, discovery of threatened species status enhanced or developed their sense of land stewardship and encouraged continuation or implementation of farming practices harmonious to the species' needs. Several comments similar to the following were made:

"You feel obliged to make sure something you're doing is not detrimental to the Earthworms because they're endangered. I feel obliged to look after them unless it's going to impact drastically on what we do. Even if it took 5% or 10% of your property out of action, I think you'd still look after them."

- Of note however, some case study participants made statements which reveal misconceptions exist relating to species habitat requirements and true population numbers. These respondents queried the need for the threatened status bestowed on the Red-tailed Black Cockatoo, the Brolga and Strzelecki Gum and their misconceptions are detailed below:
 - Red-tailed Black Cockatoo: belief that birds are not dependent on Buloke seeds as feed source⁽²⁾
 - Brolga: belief that local numbers have not varied over many years and abundant numbers found in northern Australia⁽³⁾
 - Strzelecki Gum: belief that species is abundant in local area due to ease of propagation and high success rate of tube stock⁽⁴⁾

⁽²⁾ Other subspecies of Red-tailed Black Cockatoos and captive hybrid birds can eat a variety of foods
Martine Maron

⁽³⁾ The Brolga in southern Australia has substantially declined in numbers and has a very low breeding success rate
Matt Herring

⁽⁴⁾ Very little natural regeneration of Strzelecki Gum has been observed
Claire Moxham

Knowledge

- Knowledge of the needs of threatened species varies among respondents, with some clear links obvious with the degree of contact and interaction with DSE staff and scientists.

This is evidenced by comments made by one landholder having very limited contact with DSE field officers or scientists who has erroneous beliefs about the needs of the Red-tailed Black Cockatoo:

"I think the Buloke is only minor feed for them really. I think the scrub is where they mainly feed. Last year there was no Buloke seed at all, so they can't be too reliant on it. We had a fellow staying here a couple of years ago who bred the Red-tails and he said not to be too worried about their feed, they won't starve. If they run out of one thing, they'll eat something else. They'll even eat bird seed. So he said it was not quite correct about preserving the Bulokes and that – they'll eat other things around."

In comparison, other landholders show proof that the greater the contact with DSE or scientists, the more extensive their knowledge and understanding of the needs of threatened species. The following quote was provided by a neighbour of the above farmer who has had substantially more contact with the scientist conducting trials and studies:

"Martine's been great. She's put me straight on a few things that I should and shouldn't be doing because there are some subtle things there that I wasn't aware of. She's been terrific. With the Bulokes, there's a really good pool of knowledge there, but farmers like me don't have ready access to it. It's there, but I don't know how to find it."

Implications

A variety of methods have created awareness of the seven threatened species examined in this study, highlighting the importance of disseminating information through a number of channels.

Consistent contact and discussion with knowledgeable personnel from DSE has resulted in greater understanding of the needs and idiosyncrasies of threatened species in a number of cases and is an important finding.

4. Motivation or stimulus to undertake conservation activities

Key findings

- The case study interviews uncovered a variety of drivers to undertake conservation activities – some focussing on species protection, others focussing on farming benefits. Readers should note that for most respondents, it was difficult for them to separate threatened species protection from other conservation activities – conservation in general is seen as part of their overall farm plan.
- Several case study participants have undertaken practices or altered farm management to protect threatened species due to a sense of responsibility to these species, with comments similar to the following common:

“Being that way inclined, I was obviously concerned (after discovering the threatened status of the Red-tailed Black Cockatoo). We had some great stands of Buloke here and I would have protected them anyway, because there was some other stuff in them ... a lot of other bird life occurs in them as well.”

“It’s the uniqueness of them (ephemeral grasslands where Small Scurf-pea is found). It’s something special and it’s bigger than any of us. It’s a bit like the philosophy of the Koori people who have a wonderful relationship with the land and I think all of us are capable of having that – it’s just being able to identify it.”

Of note, one farmer is so focussed on protecting habitat that he has agreed to swap approximately 15 hectares of arable land (out of a total 630 hectares) for a similar size of his neighbour’s remnant vegetation to ensure its preservation.

- Passion for wildlife and a sense of satisfaction in seeing indigenous flora and fauna on the property was also mentioned:

“Your heart still skips a beat when you see them start to nest and you see the little Brolga chicks – it’s really something special. I really like it that they come up here and nest.”

“The motivation for doing that is the environment, the animals. These animals aren’t going to survive unless we do something. We have noticed on the Powlett River, where we started planting seven years ago, you are deafened by the birds. It’s fantastic ... it’s a feel good thing. Ross is really happy because he’s spotted a couple of birds we haven’t seen before and the wedge tailed eagles are hanging around. We’ve planted she-oaks for the cockatoos that come around once per year because we think they’re pretty cool. We’re hearing owls ... so it all helps. I saw a baby echidna the other day and you never see baby echidnas and I thought how cool is that!”

- Provision of wildlife corridors is also a key driver to undertake conservation activities among respondents:

“With the shelterbelts, we’re trying to create a wildlife corridor that connects the creek to the river in more ways than one and have connecting parts where the animals can travel and not just have patches here and there like what it is at the moment. We’re trying to connect up the vegetation that’s been there for hundreds of years - the big old trees (Strzelecki Gum) we’ve got in the paddocks - trying to connect them up with other vegetation.”

- A desire to rehabilitate areas of the farm to an original state and to create a balance between farming activities and the natural environment was also mentioned:

“We know what it should look like and we want it to get back to that and we want to keep it that way. I drove up to Mt Worth the other day and saw all the tree ferns and that in the gullies – so you know what used to be here. We’ve got lots of tree fern stumps – the cows love to eat the new shoots on tree ferns – and you see all the dead tree fern stumps and that and you think, no, this is stupid.”

- Some of the case study participants declared an interest in increasing biodiversity on their farm (although the term *biodiversity* was not commonly used).

- Riparian zones have been revegetated in one instance to improve creek water quality.

- Another driver to undertake replanting activities is linked to farm aesthetics:

“The key driver to plant is aesthetics. I think there is nothing more beautiful than changing the landscape back to something you like.”

- Of course a key driver to planting shelterbelts is the creation of a more comfortable environment for stock (and also farm workers).

“I can remember one really wet lambing time where our paddocks were aflood and the ewes were lambing and if you went out spotlighting, it would be ewes and lambs all along the fence line under the trees, We didn’t have the losses as was reportedly locally and we talked to producers that lost 300 sheep.”

Implications

Case study participants are driven by a variety of factors to undertake conservation activities, namely:

- a strong sense of stewardship towards land, flora and fauna, particularly threatened species
- maintaining a balance between farming activities and environmental management
- visual aesthetics
- protection from adverse weather for stock and farm in general

5. Barriers to undertaking conservation activities

Key findings

- Several barriers to undertaking threatened species protection and other conservation activities were highlighted during the case study interviews. While some barriers have prevented initial activities, others slow the rate at which planned activities are undertaken. Barriers mentioned include the following:
 - Lack of awareness that a particular fauna or flora species is threatened.
 - Climate variation, particularly the impact of availability and cost of irrigation water to maintain flows into wetlands and lakes as required.
 - Lack of labour resources, particularly among those feeling increasingly pressured by the business demands of their farming enterprise:

“Time has been an issue lately. You’re hand feeding cattle 10 months of the year now and we never used to do that ... and then there’s all the regulatory requirements. We spend hours a week on paperwork for quality assurance and all the other things.”
 - The lack of labour resources for ongoing maintenance, in particular to control weeds in vegetated areas.
 - The financial impact of purchasing fencing materials, tube stock, etc., with comments similar to the following being made:

“It costs about a dollar a tube for the plants and then there’s the fencing cost. Funding for the tube stock would be helpful. If we got funding, we’d put them in sooner. Instead of doing 1,000 per year, which is what we’ve planned, we could do 4,000 a year, so we could put them in quicker.”
 - The complexity of paperwork and level of compliance required to be completed to apply for grants or funding.
- Case study participants were also able to identify some other barriers to undertaking conservation activities which they believe influence their peers. These include:
 - Lack of value placed on indigenous flora and fauna:

“Some people just don’t value what they’ve got.”

- Small property size for the type of farming enterprise undertaken, which tends to result in a belief that every part of the farm must be productive.
- The ageing population of primary producers, with less inclination to change current practices due to impending sale of property and/or difficulty in accepting conservation activities when they were encouraged to clear land in earlier times.
- Difficulty in growing and maintaining Buloke seedlings to provide feed source for the Red-tailed Black Cockatoo.
- Concerns over legislation impacts and government interference or control.
- Farming activities which are not compatible with conservation activities generally, including use of centre pivots for irrigation purposes and the needs of some cropping enterprises.

Implications

There are many barriers to undertaking threatened species protection and other conservation activities on farm, most of which however have a potential solution (see Section 6 of this report).

Lack of awareness, finance and labour resources are key factors, as are property size, age and failure to understand conservation benefits.

6. Catalysts to overcome barriers to undertaking conservation activities

Key findings

- During the course of the case study interviews, some key catalysts or stimuli to overcome barriers to undertaking conservation activities were identified.
- Contact with local DSE personnel or others with knowledge of threatened species to assist in identification and encouragement to conserve was raised by respondents as important to ensure these species are protected. For case study participants who were initially unaware of the threatened species population on their property, contact with DSE personnel or a scientist created awareness and was enough of a prompt to undertake activities to protect the species:

“Myself and several neighbours have fenced off around the lakes due to finding out about the Skinks. I think we’ve all done that because Gary came and talked to us about them.”

- Future assistance to access affordable environmental flows into wetlands and lakes when required would ensure wetlands are maintained.
- Some case study participants believe their interest and enthusiasm in protecting and providing habitat for threatened and other indigenous species has had a positive influence on their neighbours:

“The Brolgas have got one of my neighbours in. I think a lot of it has to do with us, because we started talking and got him a little bit interested and now as soon as he hears the Brolgas, he’s ringing us to ask if we heard them. He’s also become very interested in a wider range of wildlife. I’ve had quite a few other people too ring me up and ask me what sort of bird they’ve just seen and these are people I didn’t think had any interest at all.”

- The tactic employed by Greening Australia, of simplifying or providing assistance to access funding and grants was highlighted as a major catalyst:

“If you go through DSE or your Catchment Authorities, you’ve got to do so much work for it ... you’ve got to draw maps and this sort of thing and you just think oh, that’s too hard and too time consuming – into the too hard basket. We’ve been doing that for ten years. I’ve had forms in there that are ten years old because it’s too hard, whereas Sam (from Greening Australia) came out and told us just to get an aerial map that you can get straight from the maps place in Warragul and then he works it all out – it’s really easy. That is what has been the biggest thing that’s got us happening over the past year – it’s Sam and the way Greening Australia have managed it I guess.”

- Providing access to labour resources has also encouraged farmers to undertake activities:

"We got help through the CMA ... without them, I wouldn't have planted any trees. My intentions were good, but I just wouldn't have got around to it. Green Corps had some young people who came and helped with a fence in one area and I've also used the Council – they do the roadsides. Without that help, I never would have done it."

- Support offered at a local level, delivered by people who know the local area has acted as a catalyst:

"There was an ad in the local paper. Greening Australia and the National Heritage Trust were in the ad together and they had Sam's number, which is a local number, and I prefer to work through somebody who knows the area at least and takes an interest and Sam is really keen – he's really good."

Implications

Although there are numerous barriers to implementing threatened species protection and other conservation activities, there appears to be a number of solutions.

Creating greater awareness of the value of threatened and other indigenous species as well as better promotion of grants and labour resources available is likely to have a positive outcome.

Providing a local contact point – either a well respected organisational representative or 'farmer champion' with good knowledge of local fauna and flora and able to streamline applications for assistance is also likely to engender positive results.

7. Conservation activities undertaken

Key findings

- While the farmers participating in this study are protecting or providing habitat for a single threatened species, most have undertaken other conservation activities as well.
- Several case study participants are actively conserving areas of remnant vegetation by implementing the following:

- Rotational stock grazing regimes where stock are excluded at specific times of the year to protect plant species. These plants may be threatened flora or they may provide a food source for threatened fauna.

“On some of our grassland blocks as early as eight years ago, we began to take off our stock in spring because we had feed elsewhere and we rested the grasslands and then really scarce and vulnerable plants became far more prolific on our property ... the legumes, the Cullen Parvum and others ... and purely that resting mechanism allows plants to flourish.”

- Excluding stock altogether to prevent foraging on particular species:

“I just want the understorey to grow on. The sheep love Buloke seedlings. We can have lots of feed, but Buloke seedlings – mmm – sweets!”

- Excluding stock to prevent foraging on plants which provide camouflage or protection from predators:

“Gary told me that the idea of fencing off the lake area was to keep the sheep from grazing it to provide a bit of grass as shelter for the Skinks so they can hide from the birds that come down and eat them.”

- Retaining paddocks initially earmarked for future cropping programs as grazing paddocks.

Of note, some respondents are actively ‘setting aside’ land for conservation, aiming to take 5%, 10% and in one case potentially 20% of their farm out of production.

- Wetlands which provide habitat for nesting Brolgas, among other birds, have been created on three case study participants’ properties. It is notable that in two of the cases, the creation of wetlands which suit the specific needs of Brolgas have been created accidentally rather than by design (the other has occurred naturally in a disused goldmine). Both wetlands are important irrigation water management tools, serving the needs of both landholders and threatened species:

“The wetland area was naturally wet and the topography of the land made it the perfect site for an irrigation recycle dam. So we put a bank around it and that’s what it became. A bit of water went into it and about five million birds turned up, including a pair of Brolgas.”

Despite the accidental creation of wetlands, respondents have realised the significance of the wildlife habitat created:

“It was the following year ... you’d be going through the middle of the property and you’d come across the (Brolga) mum and two chicks ... and that made us say ‘hey, we’ve got something special here’.”

- Interviews with case study participants revealed that Giant Gippsland Earthworm and Corangamite Water Skink have survived on their properties due to habitat location and harmonious farming practices rather than intervention:

“The farm was fertilised with super and lime and the like until recently, but the back of the farm where the Earthworms are wouldn’t have had as much of that stuff because it’s so steep. It didn’t get the fertiliser that this half of the farm had, because you would never milk cows off it.”

Similar to respondents who have accidentally created Brolga nesting wetlands, these case study respondents are keen to protect the Earthworms and Skinks due to their threatened status and consequently are keen to minimise activities which may reduce their numbers.

Both the case study respondents protecting Skinks are managing grass growth to ensure the Skinks can be camouflaged from predators.

- Almost all case study participants have planted shelterbelts on their farm (or plan to) and most with properties adjoining waterways have revegetated riparian zones. In the case of the Strzelecki Gum, respondents have planted tube stock sourced from local seed in shelterbelt and riparian zones. While the majority of case study participants have planted only indigenous stock (with a couple harvesting and growing local seeds themselves), some have included non-indigenous species. In one case non-indigenous varieties were planted through lack of knowledge, while in a couple of instances, this has been the preference of the landholder.

Future activities planned

- Several respondents suggest their conservation activities will continue or be expanded in the future. Discussions reveal however, that future activities are mostly dependent on two key factors:
 - Stage in farm development. Where the overall farm plan has not yet been achieved, further activities are likely.

- Succession planning. Where the farm has the possibility of being passed on to a family member, the likelihood of further activities is greater.

Implications

Results of the case studies suggest that participants can be classified into three categories relating to threatened species conservation:

Actives: those actively undertaking activities to protect threatened species or protecting or providing habitat

Accidentals: those who have accidentally provided habitat, but are satisfied with the result

Passives: those not actively undertaking activities, but whose farming systems have proven harmonious with the needs of threatened species

Section 8 of this report details findings which reveal that conservation activities can be incorporated into a farm management plan to provide benefits to both landholders and threatened species.

Plans for continued conservation activities can be linked in some cases to succession planning for the farm.

8. Perceived success of activities undertaken

Key findings

- It should be noted that not all the case study participants have *actively* undertaken activities to protect threatened species – some have done so accidentally, while others can be said to merely have had farming systems which have not impacted negatively.

Grazing systems:

- In the experience of case study participants who have implemented a style of rotational grazing, this system has proven successful in allowing indigenous plant species to persist and in some cases to regenerate, regardless of stocking rates:

“The interesting thing (about techno grazing⁽⁵⁾) is that some of the natives that are there actually do better in that system, I have native grasses in some places – most of it’s ‘improved’ – but when Martine (scientist) was here, she was having a look around and finding little things like chocolate lilies and things like that growing in an intensive grazing system. I think the key to it is that they get rested for so long, where there’s nothing disturbing it at all.”

- Allowing cattle into paddocks where remnant vegetation exists can cause some problems however, due to damage caused by rubbing against trees or sheep preferring to eat particular types of vegetation, eg. Buloke seedlings.
- It is notable that some threatened species, eg. Chariot Wheels, have persisted on properties with low-intensity rotational grazing systems over long periods despite the landholders not knowing of their existence until recently.
- Fencing off areas to encourage camouflage growth for a particular species (eg. Water Skinks) is believed to have been effective.

Wetland creation:

- Although the creation of wetlands has been accidental among two case study participants, their success as a dual management tool and provision of habitat is evident. One respondent provided insight into the wetland management which clearly suits the farm’s needs as well as that of nesting Brolgas:

“The wetland is a recycle dam and a very important management tool on this farm. We can raise the level and drop the level at will and it’s particularly helpful because we’re on a private irrigation scheme and we control our own flows out of the river. If we get an

⁽⁵⁾ Techno grazing is a method originating from New Zealand which involves short and intense grazing systems where cattle are encouraged to eat all available pasture, followed by long periods where the country is rested.

unexpected storm, I can dump the water in there and then pull it out later on. Irrigation people come and have a look at the wetland and they see that as a Rolls Royce irrigation system."

- Foxes however, have been a substantial issue, with most Brolga chicks falling prey to them. Once case study participant undertook an intensive baiting program which has resulted in a chick successfully reaching fledgling stage. Another respondent who is not comfortable using poison believes a fox proof fence would be the only answer for his farm.

Natural regeneration:

- Case study participants have observed difficulties with encouraging natural regeneration of Buloke and Strzelecki Gums. Seeds collected from Strzelecki Gums however have been successfully harvested, with a high proportion of seedlings persisting.

Harmonious farming systems:

- For some threatened species, in particular the Giant Gippsland Earthworm and the Corangamite Water Skink, the location of their habitat appears to have had a fundamental bearing on their persistence. While these species may not have been actively protected in the past, awareness of their status and needs among case study respondents appears likely to influence their future practices to ensure they are not detrimental.

Implications

There is much evidence that case study participants have undertaken practices which have resulted in positive outcomes for threatened species.

In general, respondents believe that rotational grazing systems can deliver an acceptable balance for most indigenous flora species as well as for stock.

Wetlands have proven to be both a useful irrigation water management tool as well as providing habitat for a variety of species.

Threatened species which colonise less productive areas of the farm appear to be viable in 'traditional' farming systems.

9. Perceived impact of activities on financial or production costs

Key findings

- In general, case study participants believe undertaking conservation activities on their farm results in positive impacts on productivity and profitability, be it with specific threatened species in mind, or broader conservation.

There are several reasons for this, including the following:

- Areas 'set aside' or taken out of production to conserve remnant vegetation or create shelterbelts are often areas of low productivity, ie. swampy, wet areas, steep sections of the farm or corners of paddocks where crops cannot be sown or harvested:

"Most of the gullies that we've pulled out have either been really wet, boggy spots or steep, dry areas that grew very little pasture anyway, so as well as protecting the gullies (from erosion), so to speak, it's not been super productive. They've been more productive as a shelterbelt than as a little bit of pasture."

"It does affect production, but it's all about balance. To set aside 10% of 600 hectares – that's 60 hectares. That's a fair chunk when you think about it, but there are areas here that were natural set asides anyway and all I've done is fence them off. Then there are other areas that were always grazed, but you think, well that's got to be looked after. There's quite a bit of swamp land on this farm ... it used to be very wet, but of course we drained a lot of it. So there are swamp areas that are not too painful from a production point of view to set aside. A lot of this stuff you're fencing off is not terribly productive anyway. To be honest, if you fence off 10% on this particular farm, I doubt if you would lose more than 5% of your productivity and at a guess I'd say it's more like 1% or 2% ... and if it's covered in timber, well, you can't knock it down anyway."

Among some case study participants, there is a belief that taking between 10% and 20% of their land out of production for conservation purposes may in fact have a positive effect:

"Actually, we're pretty keen observers of the Potter farms down near Hamilton and some of them fell in love with tree growing ... because you do ... and they took it to 20% and they were saying that it could be even more and it has no effect on productivity, it's just plus, plus, plus."

- Wetlands, particularly if used as an irrigation management tool, have a positive effect on the whole farm plan.
- Shelterbelts (which include indigenous species) have had a noticeably positive effect on the productivity of cattle in that they provide shelter and shade from inclement weather and can improve pasture growth.

- Shelterbelts have also been observed to improve crop growth:

"It's funny, but sometimes you see that the crops are a little bit better close to the trees. It's the wind factor and this is very frost prone country and I think the trees keep the frost off the crops close to them. The effect only goes out about twenty or thirty metres, but I guess there's not so much sunshine so there's not as much evaporation."

- Conserved remnant vegetation and replanted areas are aesthetically pleasing and have the potential to improve the overall value of a property.
- One case study participant who takes an holistic approach to farming believes he has been able to measure the net gain of focussing on improved soil health and increased biodiversity created by re-introducing indigenous species, including Strzelecki Gum. He suggests productivity can be doubled over a five year period.
- For some interviewees, the financial and productivity impact of undertaking conservation activities often does not come into consideration, with a few comments similar to the following made:

"Profitability is one thing, doing what we want is another. As long as we're happy and we've got enough money to live, the profitability of it doesn't mean a huge amount to us, I don't believe that at this stage it costs a huge amount of money and I think it's better to look at it this way rather than whether it affects profitability."

- Among a couple of case study participants however, the cost of implementing conservation activities is substantial, particularly if areas are taken out of production. There is some thought that the community in general is responsible for this cost:
- "The community has to realise and appreciate what farmers are foregoing in terms of financial returns when they lock paddocks up. If the community wants the environment to be protected, then perhaps they need to support farmers financially to do so."*
- The cost of undertaking conservation activities is identified as a greater issue during difficult financial times (drought, low commodity prices, high input costs, etc.) or in the early stages of building their farming enterprise:

"All these things cost money and you can't be green when you're in the red ... just to put water in there (Brolga nesting wetland) at the moment is \$70, \$80 a megalitre. In the drought years ... we wouldn't be able to afford the \$500 a megalitre."

"I was young then and I couldn't afford it, or I wouldn't give up the land – I believed I needed more land to do that (plant a wide strip of shelterbelt vegetation) so I just had a narrow, two row strip to do it with."

Implications

For most case study participants, managing their property in a way that allows threatened and other species to co-exist has not impacted negatively on their productivity or profitability. For others however, the cost is perceived to be substantial and one they believe should be borne by the wider community.

There is clear evidence that if farmers can initially be encouraged to focus on their less productive areas for conservation activities, they will not incur production losses in most seasons and may in fact realise a positive gain to their bottom line.

Results from this study also reveal that once farmers undertake even one conservation activity, their interest in the environment may increase and eventually influence their neighbours' attitudes.

The case studies reveal that wetland areas can be an important management tool, particularly in irrigation regions and rotational grazing systems can benefit both the threatened species and the farm enterprise

10. Attitudes of neighbours towards conservation activities

Key findings

- In most situations, case study participants believe substantial variation exists in the attitudes of their neighbours towards threatened species protection and conservation activities generally.
- Wetland areas which provide habitat for a variety of birds, not just Brolga, appear to have stimulated local interest to create something similar among some respondents' neighbours.
- There is evidence of active co-operation to create stands of habitat or wildlife corridors in some communities:

"The people just near us have got a lot of bush on their place and they've actually done a lot of fencing off of that. They've got grants to fence it off and they're doing shelterbelts and eventually we would like to join our shelterbelts up and that will go down to their bush then, so that will encourage wildlife to come all the way through the farm."

- As mentioned in Section 6 of this report, some of the case study respondents believe their interest in indigenous species has increased the awareness of neighbours and resulted in a greater level of local interest in conservation activities.
- Almost all respondents suggest they have some neighbours who have demonstrated latent interest in undertaking conservation activities, but who believe barriers to implementing activities are too great to overcome, while others are unlikely to ever show any interest at all.

Implications

As expected, case study participants point out that polarised views towards conservation currently exist among primary producers.

There is evidence however, of further interest and co-operation which may become more widespread if some of the barriers outlined in Section 5 of this report can be overcome.

11. Information and support requirements

Key findings

- Respondents nominated several key areas where they believe further information or support could be provided to encourage and support landholders interested in undertaking threatened species protection and other conservation activities. Suggestions made are detailed below:

Information and knowledge support:

- Provide information on how best to deal with issues arising in threatened species management. For example, the impact of revegetation in close proximity of Giant Gippsland Earthworm colonies.
- Ensure knowledgeable personnel from DSE or similar organisations continue to service local communities:

“Ken (local DSE representative) is great. You can ring him up and ask him ‘what sort of spray should I be using for box thorns?’ and he will say to use this or that. Now that will all go and you can’t say Landcare will take it over, because the Landcare co-ordinator wouldn’t know anything about sprays and the Ag supply people don’t necessarily know about it in terms of their effect on the environment. Ken would say ‘well, use this spray, it will only take that out and it won’t affect native grasses and stuff underneath it’. All that knowledge is going to go when he leaves.”

“The best way to protect the Skinks is to have someone like Gary (DSE scientist) who has an absolutely brilliant relationship ... to work through him and get things down on a local level. Without him, the Skinks have got two out and loaded bases and the game’s going to be lost. He has an ability to work with every group. Gary is an incredibly supportive person. He’s got the contacts.”

- Provide a local contact person who can assist with funding and covenant application processes.
- Provide a central library of local threatened species and conservation information.
- Ensure consistency of information provided by various government departments.

Financial or material support:

- Provide assistance with fox baiting programs or provide fox proof fencing to improve the chance of Brolga chick survival.
- Ensure environmental flows are made available to wetland areas and lakes as required.

- Ensure funding is available for programs which have synergy with the future vision of farmers:

“What they’re giving funding for one year, they’re canning you for ten years down the track. The government push in Pete’s father’s time was to clear as much land as possible – and they paid you to do it. Now, of course, they’ve turned around and they’re paying you to plant trees. There’s always a government push to head in a particular direction because that’s what their scientists at the moment are telling you what should be done ... but five, then years down the track, all that’s out the window. So you need to get funding for doing something that you truly believe is where you need to go ahead and if you feel wholeheartedly that what you are doing is going to save a species, improve the farm aspects and looks, but also production, then it’s meaningful.”

- Place an economic value, or a value to the community, on protecting threatened species:

“There’s financial issues and it would be very interesting if, out of this exercise, we could say ‘What is the real cost or where does the community put a value on it (protecting or providing habitat for threatened species)? How much is a Brolga chick worth if the species is threatened?’.”

“I don’t believe the Brolga is threatened because nobody has put a value on it. They talk about it, but when it comes to putting money on the table, there is nothing there. I asked the girl who was running the Landcare group here if I could access money to put a (fox proof) fence around the Brolgas and she told me that if she did that, it would take half her budget.”

- Continue to provide funding and labour resources and make sure their availability is widely known:

“Green Corps is a fantastic thing, The cost is one thing, putting them (trees) in is another. If we can do the fencing and get everything ready and grow trees ... if we can just get someone to put them in, that means more than anything. If we could just fence the area every year and just have someone to come in and just plant 3000 or 4000 trees, it’s a great help.”

“There needs to be more publicity about the fact that if you get involved in a Landcare group, they can arrange big planting days with people from the city ... more communication about the fact that we can get people to come down and help you plant those trees ... like Green Corps.”

Research programs:

- Conduct research into suitable systems for cropping and grazing which provide positive environmental outcomes.
- Conduct research into soil health and structure and then develop economic models to describe benefits.

Enforcement:

- Prosecute landholders not complying with environmental legislations:

"That's my issue with DSE – they are absolutely a toothless tiger. He (a local farmer) can go and get his bulldozer out and knock down a heap of trees and no one will do anything about it and he knows that."

- Several suggestions regarding the simplification or streamlining of funding applications procedures for materials and labour were also made:

"The red tape attached to the DSE contracts is ridiculous, especially when you compare it to the ones available through Greening Australia, where there's no strings attached. They'll give you the timber to do the fencing and the carbon rights are yours ... The Greening Australia format is simple and straightforward. They'll give you the trees and all you have to do is fence it off and manage it for two or three years, I would do that a thousand times before I filled in the contract with DSE."

Implications

Information and support services provided at a local and personal level is well received according to case study participants.

Provision of easily accessed support can provide the stimulus to undertake conservation activities and is highly regarded.

More widespread information and support on meeting the needs of threatened species (eg. environmental flows) could be considered.

Further research programs in environmental management are perceived as a need.

DSE could also consider greater promotion of its activities in the area of prosecution.

12. Farm succession planning

Key findings

- Only four case study participants believe it is likely their farm will be passed on to a family member when they retire. The sons or daughters likely to take over the farm demonstrate a similar or greater sense of land stewardship than their parents and appear keen to remain focussed on conservation activities:

"To see the birds (on the wetland) and the fish that jump out of the water every now and then ... I think it's fantastic to think of what it was and where it is now ... it's an active wildlife environment and I think that's pretty good stuff."

- Among those who are unlikely to pass the farm to a family member, most suggest they will explore the possibility of covenanting areas of conservation significance on their farm prior to selling. There is also some interest in investigating the potential sale of parcels of land to schemes such as Trust For Nature.
- Of note however, some case study participants have some reservations about covenants, mainly due to concerns over government control or intervention on their property:

"Why would you (covenant)? Bureaucracy has enough of a foothold in my life. It's not about control, it's about giving remote control to people who don't have an appreciation of that particular environment. Why would you give bureaucracy another stick to beat you with? That's all we're doing with covenants because if they want to put a powerline through a covenanted area, they'll do it."

Some of the reservations on covenants are based on policy or legislative changes experienced in the past, but there is also evidence of some misinformation or lack of knowledge that covenanting does not involve loss of ownership:

"In relinquishing that ownership, we have to understand what we are allowed to do. What are the parameters? Who is allowed in there? If there is ownership, is it a Clayton's ownership? We may have a relationship with people within DSE at the time of covenanting, but let's move on ten or twelve years and all of a sudden it may be 'oh, you've got your cows in there for half the year and because of that, you'll have to pay a lease for it'."

Implications

Most of the case study participants are keen to preserve the environment they have created or protected on their farm. There is however, some reluctance due to concerns over possible bureaucratic intervention and restrictions of farming practices.

13. Characteristics of case study participants

Key findings

- Half the case study participants are current members of Landcare. Some are lapsed members, while others have never participated in a Landcare group.
- Few participate in other groups such as Target 10, Bestwool 2010, TopCrop, etc.
- Many cite animal husbandry as their main area of interest in their farming enterprise.
- Some of the respondents implement a low input system, while others are medium to high users of fertilisers, chemicals and additional feed.
- A few study participants have strong neighbourhood and community ties, others tend to keep to themselves with little interaction with their neighbours.
- The level of education achieved by case study participants varies significantly, from very little secondary education through to tertiary degrees or diplomas.
- All express pride in the fact they are protecting or providing habitat for threatened species as well as indigenous species.

Implications

While there are few demographic similarities between the case study participants they share a common pride in the conservation activities they have implemented.

Appendix 1:

Case studies

Red-tailed Black Cockatoo

Introduction



Red-tailed Black Cockatoos frequent the widespread stands of Bulokes on a farm in West Wimmera. The owner of the property, Bill Wallace, is a true conservationist who believes it is important to provide a balanced approach to land management, including protecting habitat for indigenous species. Consequently, he actively conserves the Bulokes and other areas of native vegetation on the land he farms.

Background

Bill owns a 630 hectare property in Apsley, where sheep were traditionally grazed, but is now used to grow 800 bull beef. The farm is grazed using a New Zealand method termed *techno grazing*, which involves short and intense grazing periods where the cattle are encouraged to eat all the available pasture, following by quite long periods where the country is rested. In Bill's experience, this system has provided successful outcomes for both farm productivity and environmental aspects.

A person who is keen to put his energy into activities rather than discussions, Bill finds many farmer and landholder groups such as Landcare slightly frustrating. As a result, many of Bill's environmental activities are self funded and much of his extensive knowledge has been obtained through private study and discussions with professionals and other knowledgeable people.

In recent years, scientist Martine Maron (USQ) has been granted access to the Wallace farm to undertake studies and trials relating to the Red-tailed Black Cockatoo and its habitat requirements. Martine has shared her results and knowledge with Bill, for which he is appreciative.

Initial awareness

Being brought up on the property, Bill has always been aware of the Red-tailed Black Cockatoo. It was not until Bill read of their endangered species status however that he realised their existence was potentially under threat. He has since learnt a great deal more about the idiosyncrasies of the Cockatoo through discussions with Martine:

"I've always been aware of the Cockatoos ... they've certainly always been there ... but it wasn't until the recovery team thing got going and it was publicised quite a bit that I took more notice. Suddenly there were people coming around here and there were various surveys being done and Martine came along and spent some time here studying. At the time I didn't realise the Cockatoos were so species specific to Buloke and Stringybark."

Once Bill was aware of the threat to the Cockatoo, he ensured the trees remaining on his property were protected, although he suggests this would have been done anyway as part of his management plan to set aside land for environmental purposes:

“Being that way inclined, I was obviously concerned. We had some great stands of Buloke here and I would have protected them anyway, because there was some other stuff in them ... a lot of other bird life occurs in them as well. I’m prepared to set aside ... well, I aim to set aside 10% of land.”

Activities undertaken in the past and planned for the future

As a result of setting aside 10% of his land, Bill has fenced off certain areas, but has found that certain species thrive better when cattle are allowed to graze these areas. Bill has learnt that foraging birds like Curlews and Robins dislike long grass and consequently he has attempted to create a balanced grazing system which is beneficial to both his stock and indigenous species.

In the past, when Bill ran sheep in paddocks with stands of Buloke, the impact was negligible. Cattle however tend to rub against the trees and this has proven a difficult issue to remedy:

“The biggest issue for me is the cattle and their impact on Buloke, which is not good. They rub a lot – they ringbark them in fact and I’m yet to work out how to handle that. It’s not feasible to fence off every tree – there’s probably 1500 trees on this farm. I’ve tried a few things with marginal results. I’ve tried barbed wire around the tree itself – that doesn’t work. I’ve tried fencing trees off, which does work, but it’s impractical. I think in the end it will be something ... maybe wire netting, that seemed to work the best. So I might go ahead with that this summer and see if I can do a few because they seem to pick on particular trees for some reason. If I can target those first and see how it goes ...”

As part of Martine’s trials, some trees on Bill’s property have been fenced off to assess stock impact. Others have been root stripped to study sucker activity while individual trees have been marked where the Red-tailed Black Cockatoo has been observed feeding in an attempt to identify why they prefer the seeds of certain trees to others.

Bill’s desire to conserve indigenous species and habitat has driven him to make a substantial business sacrifice. He has recently agreed to trade 30 acres of arable land for a similar parcel of his neighbour’s land which has a significant stand of native vegetation. Bill is not seeking or receiving any financial compensation for this trade – he has agreed to the deal solely to ensure the vegetation is well maintained and preserved.

Perceived success of activities undertaken

The grazing regime Bill has implemented appears to have been relatively successful for both cattle and indigenous species, although the damage caused by bulls rubbing themselves on the bark of some Buloke trees continues to be a problem. In Bill’s experience, the success of the techno grazing regime is evident in the number of native grasses, forbs and herbs persisting:

“The interesting thing (about techno grazing) is that some of the natives that are there actually do better in that system. I have native grasses in some places ... other areas have been improved ... and when Martine was here, she was having a look around and finding little things like chocolate lilies and things like that growing in those areas despite being part of an intensive grazing system, so it's quite interesting. I think the key to it is that they get rested for so long, where there's nothing disturbing it at all.”

Although setting aside 10% of his land is a medium to long term plan, Bill believes it is achievable and he expects to have accomplished part of this goal over the next couple of years.

Impact of activities undertaken

While there is clearly some effect on production when land is set aside, Bill acknowledges that it is probably less than it first appears due to the low production value of much of this land:

“It does affect production, but it's all about balance. To set aside 10% of 600 hectares – that's 60 hectares. That's a fair chunk when you think about it, but there are areas here that were natural set asides anyway and all I've done is fence them off. Then there are other areas that were always grazed, but you think, well, that's got to be looked after. There's quite a bit of swamp land on this farm ... it used to be very wet, but of course we drained a lot of it. So there are swamp areas that are not too painful from a production point of view to set aside. A lot of the stuff you're fencing off is not terribly productive anyway. To be honest, if you fence off 10% on this particular farm, I doubt if you would lose more than 5% of your productivity and at a guess I'd say it's more like 1 or 2%. And if it's covered in timber, well, you can't knock it down anyway.”

Bill also points out the benefit to production by providing shelter to stock through the creation of shelter belts:

“There's plenty of studies to show that we could probably do with a lot more shelter in this country for stock health and stress in the winter. I think that people don't realise how much stress that stock in this part of the world are under.”

Reactions of peers and neighbours

Several of Bill's neighbours have shown interest in protecting wildlife habitat in the area, with some having substantial knowledge of and interest in various indigenous species and their key requirements. Others however prefer to have *“every square inch of land arable and productive”*, particularly those who have relatively small acreages and where cropping is the main business focus.

One of the barriers to planting and growing Buloke is the length of time it takes for the trees to reach maturity and the high maintenance required during this time. Bill suggests this is even a problem for 'green' people like himself and is a substantial hindrance for others in the local area who are less interested.

Support or information requirements

Information on the Red-tailed Black Cockatoo has been freely available in Bill's experience, with Martine providing some excellent information:

"Martine's been great. She's put me straight on a few things that I should and shouldn't be doing because there are some subtle things there that I wasn't aware of. She's been terrific. With the Bulokes, there's a really good pool of knowledge there, but farmers like me don't have ready access to it. It's there, but I don't know how to find it."

Additional labour resources would assist Bill to plant more trees and Martine has already suggested to him that Green Corps may be an option for consideration in future.

Bill expresses some frustration over the lack of enforcement on issues of illegal land clearing and suggests this is an area of potential improvement for DSE:

"People go around knocking down trees left, right and centre, but nothing is done about it – the law isn't enforced."

Bill believes that some of the local farmers who are keen to plant trees may be lacking knowledge and guidance on appropriate indigenous species to plant. He suggests that more detailed information could be provided to locals and also private contractors working in this field, with emphasis on the balance required to attract indigenous birds while deterring others such as Noisy Miners.

The benefit to the wider community of protecting threatened species is an issue which Bill believes needs to come into consideration for future planning, with a shared responsibility for direct and indirect costs involved:

"If the community in general wants to preserve this sort of land, then I suppose eventually they are going to have to pay for it one way or another."

Farm succession planning

At this point in time, Bill has no plans to sell his property. He intends to covenant the areas which qualify to ensure they remain protected:

"I intend to stay here. Whether I'm here full time or not is another thing – there are other things I'd like to do. But whatever is put in place here in terms of conservation is set in concrete. I will covenant what I can covenant. Some of it's unsuitable for covenant ... ah, well, it could be I suppose as it regenerates a bit ... but if it was just fenced now, they would say no to covenanting because it doesn't have a high enough conservation value. If I left the farm, I would probably put a manager on – it depends on how the business goes, but I would be very careful about who it was."

Red-tailed Black Cockatoo

Introduction



Stands of Bulokes on a West Wimmera property are a food source for the Red-tailed Black Cockatoo. The property, owned by Barry and Maureen Reader, has been in Barry's family since 1869, when free selection first started in Australia. The Readers epitomise the 'traditional' primary producer in this country – a long farming history with a strong family and community focus and involvement.

Background

Barry and Maureen's property consists of almost 420 hectares, including a lake which occupies approximately 14 hectares. Fine merino wool has been the main enterprise on the farm, although beef cattle have also been grazed and yabbies are farmed from the lake. Currently Barry and Maureen are semi-retired, leasing out the majority of the property to a neighbour who uses their paddocks as well as his own to implement a cell grazing regime for sheep.

Active community members, the Readers are involved in many groups, including the local committee to promote the Commonwealth games, for which the Red-tailed Black Cockatoo is the mascot.

Maureen is quick to point out that Barry has substantial knowledge of local fauna and flora and Barry attributes much of this to his background:

"I've always lived in the bush and there wasn't much to do as a kid. I was a member of the Gould League and learnt a lot through that."

Martine Maron (scientist, USQ) has been granted permission to run trials on the Reader property, and has some contact with both Barry and Maureen on her visits.

Initial awareness

Being residents of West Wimmera all their lives means that Barry and Maureen have always known of the Red-tailed Black Cockatoo's existence. Their awareness of the Cockatoo's threatened species status due to its dependence on depleted Buloke and Stringybark habitat initially came about through bird counts undertaken in the region and information supplied by the Parrot Association. Additional information was provided by NRE, an environmentally knowledgeable neighbour, Martine Maron and the local Shire's awareness campaign.

Barry's own observations and discussions with a bird breeder have led him to believe however, that Buloke is not the only feed source for the Cockatoo:

"I think the Buloke is only minor feed for them really. I think the scrub is where they mainly feed. Last year there was no Buloke seed at all, so they can't be too reliant on it. We had a fellow staying here a couple of years ago who bred the Red-tails and he said not to be too worried about their feed, they won't starve. If they run out of one thing, they'll eat something else. They'll even eat bird seed. So he said it was not quite correct about preserving the Bulokes and that – they'll eat other things around."

Barry also has some reservation about the claim that Bulokes take 40 or 50 years to reach maturity, noting that it has taken half that time for some of the local trees to flower and set seed:

"People say they take 40 or 50 years before they flower and seed and that, but I don't think that's quite right because there are little ones up here on the highway and two years ago they had masses and masses of seeds on them and these have grown in the last 20 years or so."

Activities undertaken in the past and planned for the future

As part of her trial on the Reader property, Martine has fenced off 5 or 6 Bulokes to monitor the effects of stock exclusion.

Over the past few years, the Readers have undertaken a planting program of native trees, particularly around the lake. Barry remembers that She-oaks and Moonah were common in the area when he was a boy, but are now quite rare:

"We plant ... not specifically Bulokes ... but native trees. We've done that around the lake – we've fenced off part of the lake area and put in ... more She-oaks actually, more than Bulokes. She-oaks and Moonah used to be common here and there's not a She-oak to be found now. I've got a little program of my own going where I started planting these Moonahs and in the last couple of years we've been planting She-oak. "

Barry's memory of the local landscape of his youth is the key driver to undertake these revegetation activities. Observing the difficulty of natural recruitment of these species and the effect of stock which find the seedlings very palatable, Barry and Maureen have undertaken a seed harvesting and propagation program for the Moonah. Some of the tube stock that has resulted has been planted on farm, while some has been planted on roadsides in the area. They have received a few local grants to assist them in their endeavours.

Perceived success of activities undertaken

The seed harvesting, propagation and planting regime undertaken by the Readers has proven to be successful, with many native revegetation sites established and thriving. This has proved satisfying to Barry, who has seen attitudes to bushland change over the years:

"I'm trying to re-introduce the native trees that were here I suppose. When you realise that it's gone, you start to think if it's the right thing. Your life changes. I've had the bulldozer out and pushed a lot of trees over back when we had tax incentives to do it ... and it wasn't too long ago!"

Impact of activities undertaken

Revegetating areas of the farm has not had a great impact on production or profitability in the Reader's experience. Barry states that the impact is only felt early on when the stock have to be excluded from these areas:

"It probably hasn't (impacted on production). It's really only the first three years when it's totally fenced off when there's no grazing on it. But it's only a few acres really ... it's not a big area. It's only that first three years until the trees get up high enough so they can handle the stock and then I pull the fences down and let it do its own thing."

Reactions of peers and neighbours

In Barry and Maureen's experience, the local community is well aware of the status of the Cockatoos. Most are actively protecting habitat, while others, particularly those using centre pivot irrigation systems and some cropping enterprises have removed some of it.

The Readers also suggest that concern over the impact of tree removal legislation resulted in the removal of many dead trees prior to implementation. Barry believes that much of this timber would still be standing if a more consultative approach had been taken.

Barry also suggests the Cockatoo is more likely to nest in Stringybark trees which are close to scrub land. The Reader farm is approximately 15 km from the nearest scrub land and Barry and Maureen have yet to see a Red-tailed Black cockatoo nesting in tree hollows on their farm.

Support or information requirements

While Barry and Maureen have received some grants for work they have conducted on farm, they have been deterred from applying for many assistance schemes available due to the amount of paperwork and red tape involved. Barry compares the level of compliance required to obtain funding from DSE with that of Greening Australia, which he and Maureen have found substantially less restrictive:

"The red tape attached to the DSE contracts is ridiculous, especially when you compare it to the ones available through Greening Australia, where there's no strings attached. They'll give you the timber to do the fencing and the carbon rights are yours ... The Greening Australia format is simple and straight forward. They'll give you the trees and all you have to do is fence it off and manage it for two or three years. I would do that a thousand times before I filled in the contract with DSE."

One area where the Readers believe significant gains could be realised in Red-tailed Black Cockatoo numbers is through greater control of Galahs and Corellas. Barry and Maureen have noticed large numbers of Galahs and Corellas feeding on Buloke seed and believe this restricts the feed available to the Cockatoo:

"I've filmed a large number of Galahs and Corellas feeding in the Bulokes. We don't get on real well with the Corellas and we've campaigned to get rid of them ... and this is another reason to do so – they're eating the Red-tails' feed."

Receiving compensation for locking up areas of native vegetation is an issue Barry and Maureen feel strongly about. They believe that the regulations that are currently in place have the potential to severely restrict the farm production and subsequently the income potential of many landholders:

"I think the day will have to come when farmers will be compensated for locking up areas. I feel very strongly along those lines, especially now with the regulations with clearing land. There is no way now you will get a permit now to clear scrub, but people could have bought that land say, 10 year ago with the intention of clearing it and it could be calculated into their planning hat they are going to have another 200 or 300 acres going in 10 years time. Then the government comes along and says no more clearing of our native vegetation and it just stops the planning in its tracks. So if they want that, in those situations, those people should be compensated for the 100 acres or whatever it might be that they can't bring into production."

Farm succession planning

At present, the Readers intend to remain on the farm for as long as possible and lease out their paddocks. None of their children are likely to take over the farm in years to come.

For Barry and Maureen, covenanting areas of significant vegetation on their property is not a consideration at present, although they have explored this option in the past. Barry is reluctant to tie up the land long term, in case situations alter in future:

"I wouldn't like to tie it up for ever and a day. What we do today may not suit the needs of tomorrow."

Brolga

Introduction



A relatively unique wetland on the northern plains of Victoria has been a breeding site for Brolgas over the past few years. The wetlands occur on a property owned by Warren and Judy Miles who run a reasonably large irrigated dairying enterprise. Warren and Judy are very business focussed and ensuring their farm achieves peak efficiency is a key interest. They are however, keen to protect the wetland area to ensure habitat is provided not only for the Brolga, but also other wildlife species.

Background

The Miles' enterprise consists of 660 hectares, with 600 milking cows and an additional 370 heifers. Several years ago Warren and Judy expanded their farm by purchasing additional land nearby which is the site of the Brolga wetland. Neither the original owners nor the lessees of this land gave any indication they knew the wetland was a

Brolga breeding site and it was only after the second year of ownership that Warren and Judy realised its significance:

"It was the following year ... you'd be going through the middle of the property and you'd come across the mum and two chicks ... and that made us say 'hey we've got something special here'."

The formation of the wetland occurred partly by design, partly by irrigation farm practices and partly by accident:

"I would say it's come about half by accident and half management. The previous owners had half completed a turkey nest dam and that was the creation of the wetland. To have a wet spot in the northern plains means that you've over watered or you haven't pumped it out or the drains aren't working. The wetland has also had the benefit of the channel leak, which occurred before we owned that piece of land, but which has effectively really allowed the environment to grow. If you'd left it up to us, it would have dried out and of course it would be nowhere near as fruitful as what it is at the moment ... and we're talking cumbungi and rushes and all the other sedges and things."

Initial awareness

Several years ago, an article in a wildlife magazine alerted Warren and Judy to the Brolga's threatened species status and prompted them to seek assistance to ensure the chicks hatched on

their wetland reached maturity. Despite calling phone numbers provided in an article about bird counts and contacting several organisations, the Miles failed to find anyone who could offer them the assistance they required:

"I spent an afternoon on the phone. We tried to get help from CSIRO, I rang Healesville, Departments of Ag ... there was nothing on the ground in Victoria. There were two people who were doing some research on it, but it was all dead ends. No phone calls returned ..."

Due to the limited input from professionals, Warren and Judy have learnt about the idiosyncrasies of Brolga wetlands mainly through observation:

"We learnt a lot about the needs of Brolga wetlands by default. It really was the leak in the channel that caused it all. Irrigation water flowed into the dam regularly and we could see the benefits. The stilts and the ducks and the brolgas all said they liked it because they were there."

After attending the Brolga field day run by DSE at Durham Ox however, Warren believes information services have increased substantially since his earlier experiences.

Activities undertaken in the past and planned for the future

Although the Miles' Brolga wetland area was created partly by accidental seepage as well as irrigation run off, they are keen to preserve this area along with the other wetlands on their property. They have concerns however about the potential impact on their ability to maintain the required flooding regime of their wetlands due potential issues of price and availability of irrigation water in future.

Warren and Judy have also planted a number of shelterbelt areas as well as undertaking riparian planting. While they plan to continue these activities in future, they are restricted to a degree by financial and labour resources available:

"What we're doing here ... we've always had a tree interest ... we're always looking at layout and creating areas where we could always put trees in. But our ability to deliver and finance the projects has never really been fulfilled."

Due to their stage of life, Warren and Judy are not considering expanding the farm enterprise greatly in future and as a result, their environmental activities may increase:

"We want to live here and there are some decisions to be made and the environment has a big part to play. We have some areas that we want to restore and there will be more areas for more trees. I'm going to get a lot more satisfaction out of a copse of trees in 15 years time than what I will in trying to extract tonnes of grain off."

The key motivation for undertaking these activities is not only for habitat provision and preservation, but also for aesthetics.

Perceived success of activities undertaken

The wetland area is clearly successful, with Brolga pairs nesting and breeding there each year and a vast number of other water birds making use of the area. In the early years, the Miles noticed that most of the Brolga hatchlings did not survive through to fledgling stage, probably due to predatory foxes. Since then, they have undertaken a sizeable baiting program, which has resulted in higher survival rates of chicks and it is notable that even in the drought of 2002, two chicks were reared successfully on the wetland.

The creation of shelterbelts and re-vegetated riparian zones has successfully provided habitat to a variety of other species as well as providing the aesthetic qualities important to Warren and Judy.

Impact of activities undertaken

It is difficult for Warren and Judy to measure the impact of the conservation activities undertaken on their property in terms of productivity. Farm productivity has increased dramatically over the years, but it is difficult to determine how much is due to shelterbelt creation and how much is due to good management practices.

Warren highlighted the cost of undertaking various environmental activities and the difficulty in meeting community expectations in all areas, particularly during difficult times of drought, low commodity prices and other factors. He also stated that the community is often unaware of the progress that has been made in environmental management on farm:

"All these things cost money and you can't be green when you're in the red. There is an expectation in the wider community that landholders need to achieve best management practice in the areas of salinity, effluent, water use, etc. but the community often doesn't see where things are at with these issues. Take for instance, the huge interest the community has taken in the lack of water. All of a sudden we have it dumped on us as irrigators ... the mouth of the Murray, 'you robbers of environmental flow' ... and no one has understood that we are addressing this in our best management practices with layout and automatic irrigation and re-use and being water efficient."

Reactions of peers and neighbours

There has been quite a bit of interest among Warren and Judy's neighbours in their Brolga wetlands, with some expressing a desire to create wetland areas on their own properties, although as Warren points out this is not always feasible without low lying land and access to a sufficient and affordable supply of water – a potential problem in irrigation regions:

"We've already had people from that field day (Durham Ox) call in and have a look at the wetland and they're saying 'we want one of those'. Specifically on the wetland though, it's not so easy for someone one day to say 'I want one of those' because there is an education process that flows through the community that says we need to balance how we use water and to restore wetlands and manage them."

Support or information requirements

There are several areas for potential support according to Warren. As mentioned, one key issue affecting the future of the Brolga breeding wetlands on the Miles' property is the cost and availability of irrigation water to flood the area, particularly in times of drought. Consequently ensuring the availability of environmental flow at critical times is important:

"The availability of water is very important. Let's hope we never revisit the shortage we've had, although this is seven years of water rights and just to put water in there at the moment is \$70, \$80 a megalitre. In the drought years, if we had to put the water in we wouldn't have been able to afford the \$500 a megalitre. We would need financial support for that and it needs to be remembered that the water is needed when everybody else needs it. There's the timing factor as well."

Warren also suggests that future planning for threatened species could consider the cost to the individual landholder of protecting and providing habitat for the species compared to the value to the community as a whole:

"There's financial issues and it would be very interesting if, out of this exercise, we could say 'What is the real cost or where does the community put a value on it? How much is a Brolga chick worth if the species is threatened?'."

Warren points out that this concept is being trialed in the United Kingdom, where farmers are being granted to examine farming practices which align most successfully with best environmental practice and optimising biodiversity gains. \$1 million in financial support to trial various farming systems to maximise biodiversity gains.

Farm succession planning

Ownership of the property is likely to remain with Warren and Judy for several years yet. They are not currently considering covenanting their wetland areas, expressing some concerns not only about the restrictions which may arise as a result, but also potential changes to legislation and ideals in future:

"In relinquishing that ownership, we have to understand what we are allowed to do. What are the parameters? Who is allowed in there? If there is ownership, is it a Clayton's ownership? We may have a relationship with people within DSE at the time of covenanting, but let's move on 10 or 12 years and all of a sudden it may be 'oh, you've got your cows in there for half the year and because of that you'll have to pay a lease for it'."

Warren believes a more suitable option is to retain ownership of the wetland area while being provided with support in management education, financial and other management assistance.

Brolga

Introduction

A Yarrowonga wetland serves as an important farm management tool as well as providing habitat for a variety of native bird species including Brolgas. The wetland is found on a property belonging to Rod and Carmel O’Kane who, along with their children, have watched several Brolga chicks hatch there, although some have fallen prey to predators.



Background

The O’Kanes own 400 hectares of land which is used for cropping and grazing. The wetland area covers approximately three hectares of low lying swamp land and was originally created as a management tool for irrigation water, but has since been adopted by many birds:

“The wetland area was naturally wet and the topography of the land made it the perfect site for an irrigation recycle dam. So we put a bank around it and that’s what it became. A bit of water went into it and about five million birds turned up, including a pair of Brolgas.”

Matt Herring (scientist, DSE) has been monitoring the wetland for a number of years after being granted access to the O’Kane property to conduct Brolga research.

The O’Kanes are not members of Landcare or other producer groups, but Rod is clearly a very competent farmer, having won several awards for his crops. Rod has a strong focus on producing the best quality meat and crops possible.

Initial awareness

Rod has always seen Brolgas on the property, remembering them frequenting the local swamps during breeding season. The O’Kanes still see Brolgas regularly and consequently were unaware they had been classified as a threatened species. Rod is in fact surprised by this classification, believing that authorities cannot be too concerned about the Brolga’s status because there is little indication they are prepared to fund awareness and conservation activities.

Rod cites his recent experience trying to obtain funds from Landcare as an example of the lack of financial support available to landholders who have successfully created or protected a valuable ecosystem:

“I don’t believe the Brolga is threatened because nobody has put any value on it. They talk about it, but when it comes to putting money on the table, there is nothing there. I asked the

girl who was running the Landcare group here if I could access money to put a fence around the Brolgas and she told me that if she did that, it would take half of her budget."

Another example of the lack of interest in Brolgas among authorities according to Rod is their failure to accept his offer of making the wetland more accessible to the community in a bid to increase knowledge and awareness of the birds:

"I've spoken to people from Goulburn Broken Catchment Management Authority and the Shire ... told them I would be prepared to give them land if they wanted to make a lay-off there and put a little picnic area in or whatever so people could pull in there and look at all the birds. I'd want a big fence in there, because I wouldn't want anyone in the water and there would be some earthworks needed. They just put it in the too hard basket ... but people would be able to sit there, virtually in the middle of that area and watch the birds."

Activities undertaken in the past and planned for the future

Although the wetland on the O'Kane's property was primarily designed as an irrigation water management tool, the family has undertaken some planting around the site, resulting in a habitat which suits a number of different species.

Rod and Carmel have also planted shelterbelts on the farm after being encouraged to do so in the 1980s by the late Freddy Gill, an officer from the local Department. While the key reason for undertaking this activity was for stock comfort, providing them with shelter from prevailing winds and the sun, Rod relates how Freddy explained the benefits to wildlife of creating vegetation corridors. Myles, one of the O'Kanes sons, points out that their conservation program is still continuing:

"We do work at it all the time, whether it be planting trees or fencing off the natural surroundings – just making it a bit easier for the wildlife."

Perceived success of activities undertaken

The wetland on the O'Kane property has been described by Matt Herring as a model site and Rod believes it is extremely successful:

"We can guarantee a Brolga chick every year. They nest and they produce a chick every year and some years they produce more than one if they lose the first one."

Impact of activities undertaken

As a useful farm and irrigation water management tool, the wetland has a positive effect on the farm's profitability and productivity.

Rod believes the shelterbelts have also had a positive impact on production due to the windbreak provided for his stock. Of note, to save money on fencing, Rod implemented a clever approach to planting:

"I received a bit of money to help with the purchase of the whole farm plan, but the fencing (for tree plantations) was going to be a huge cost and I didn't get any assistance with that, so I

actually didn't fence it. I prepared the soil, planted the trees, cropped the paddock and kept the stock off it for 18 months and the trees grew about six feet in the first year and I didn't have to worry about fencing it. They lived happily with the livestock after that."

Farm profitability tends to govern the extent of conservation activities undertaken on any farm according to Rod and this is particularly the case when people first start out:

"If you're young and trying to develop a farm, there's no money for this sort of thing. It doesn't improve much as you get older, but you can drop off a small percentage towards it when it starts to do a bit. When you're young, every cent counts. I had to start off doing it pretty hard."

Reactions of peers and neighbours

According to Rod, the majority of his neighbours show an interest in environmental issues and undertake at least some activities. Rod points out that the local Landcare group has been very successful and many of his neighbours have some involvement in it.

Support or information requirements

The O'Kane family has received a great deal of insight from Matt Herring (of whom they speak highly) into the needs and idiosyncrasies of Brolgas.

At a request from Rod during the drought, Matt attempted – albeit unsuccessfully - to access water to maintain acceptable levels in the recycle dam. Secure access to an environmental flow when required is an area where Rod believes support could be given in future.

Rod also suggests the success rate of Brolga chicks reaching fledgling stage would be improved if funding for suitable fox fencing was provided:

"There's two things I need. One is an environmental water flow to keep water in that dam in the spring time and the other is a fox proof fence around what is their habitat area. I don't like baiting, I'm personally not in favour of it because it's non target specific, so there has to be other things that take those baits that become collateral damage, including the native birds and animals."

Farm succession planning

At this point in time, it appears likely that the O'Kane farm will remain in the family due to the interest shown by seventeen year old Myles, who suggests that if he did take over the farm, he would probably run a similar enterprise to that of his father.

Myles believes wildlife are an important part of the landscape and enjoys witnessing their activities:

"To see the birds (on the wetland) and the fish that jump out of the water every now and then ... I think it's fantastic to think of what it was and where it is now ... it's an active wildlife environment and I think that's pretty good stuff."

Should Myles decide not to be involved in the farm, Rod would consider selling the wetland area to Trust for Nature or another group, but only if he was paid an appropriate sum of money. He does stress however, that the wetland is a management tool that is important to the rest of the property and consequently is unlikely to be interfered with in future.

Brolga

Introduction



For the past few years, Brolgas have nested in a wetland area on a Rutherglen property. While several chicks have hatched, few have reached fledgling stage due to predation by foxes. The landholders, Keith and Rhonda Buckingham, have strived to provide wildlife corridors and habitat while remaining a profitable farming enterprise. They feel great satisfaction when wildlife visit their property, whether to nest and raise young or simply to feed or shelter.

Background

The Buckingham property is currently heavily stocked, running approximately 6000 fine wool wethers on 520 hectares and a leased area of 90 hectares. The sheep are grazed on a rotational grazing system. Wheat, oats and triticale are grown on 100 hectares, some of which provides feed for the sheep, while the remainder is sold commercially.

Keith and Rhonda are members of Landcare and their property is registered with the Land for Wildlife scheme.

Matt Herring (DSE) is a constant visitor to the Buckingham farm during the Brolga breeding season, undertaking studies and observations of the birds. Keith and Rhonda enjoy their discussions with Matt and have found him to be extremely knowledgeable and enthusiastic about Brolgas.

Initial awareness

Having spent most of his life in the Rutherglen area, Keith has witnessed Brolgas breeding in the area for many years. He believes that while Brolga numbers are low in the region compared to the country's north, they have remained at a consistent population over many years and consequently he queries why they have been bestowed with 'threatened species' status:

"Well, I don't think they are a threatened species because there are hundreds and hundreds of them in the north of Australia. Their numbers are low in this part of Australia ... perhaps they are threatened in this area ... but there's probably as many Brolgas around now as when I was a kid ... their numbers haven't really changed."

Despite having watched Brolgas all his life, Keith still admits to a certain satisfaction when they appear each year:

"Your heart still skips a beat when you see them start to nest and you see the little chicks – it's really something special. I really like it that they come up and nest here."

Activities undertaken in the past and planned for the future

The wetland area on the Buckingham farm has occurred naturally in a disused gold mine, without any intervention from Keith and Rhonda. Keith deliberately removes sheep from the wetland paddock when Brolgas nest there to ensure the area retains enough cover to act as camouflage for new born chicks.

Foxes have proven to be a problem in the past, with most of the hatchlings falling prey to them prior to reaching fledgling stage. Keith does not have a chemical handlers certificate and consequently has been unable to lay baits. He did however purchase a pair of Alpacas in an unsuccessful attempt to protect the Brolgas:

“When we lost the first chicks to foxes, I bought two Alpacas to protect them, but it didn’t work. Alpacas are really good, but they didn’t bond with the Brolgas, even though I had been told they do a good job with poultry. They cost me \$1100 too mind you!”

The Buckinghams have undertaken revegetation activities in an attempt to provide wildlife corridors and habitat. Nine areas on the farm have been planted with indigenous species and Keith is quick to point out the value of assistance he received from various bodies:

“We got help through the CMA ... I didn’t know anything about them – hadn’t even heard of them until one of my neighbours told me they were coming to help him plant some trees for salinity and that sort of thing rather than wildlife. But I thought it might be useful to get in touch with them. Without them, I wouldn’t have planted any trees. My intentions were good, but I just wouldn’t have got around to it. Green Corps had some young people who came and helped with a fence in another area and I’ve also used the council – they do the roadsides. Without that help, I never would have done it.”

Perceived success of activities undertaken

Clearly, Keith and Rhonda’s experiment with the Alpacas was not a great success. Keith believes that if an extensive baiting program was carried out in the local area, it would have a significant impact on fox numbers. Many of the Buckingham’s neighbours however are “lifestylers” on relatively small properties who do not possess chemical handlers certificates.

While many of the plantations on the Buckingham farm are not yet fully grown, Keith has noticed they are already having the desired effect:

“You can see what’s going to happen, because you can see some of the birds already starting to come back into some of the planted areas ... it’s already happening. I’ve even seen a Chough in one of the plantations.”

Impact of activities undertaken

According to Keith, preserving the wetland area on his farm has had very little impact on productivity or profitability, but has provided substantial personal satisfaction and enjoyment in bird watching.

While the Buckingham's key motivation for planting shelterbelts has been habitat provision rather than increasing productivity or profitability, they do believe gains can be realised in both these areas through increased biodiversity:

"I haven't given productivity gains much thought, because that wasn't the reason I planted them – I planted them basically for wildlife. Some of the experiments that have been done show productivity gains from planting trees. I think the more you get into it, the more you realise how important every little aspect of it is – the interactions between species."

Keith also points out that his plantation areas are typically on less productive, wetter areas of the farm.

Reactions of peers and neighbours

While Keith suggests most of his neighbours show no great outward interest in conservation, he believes some are beginning to be influenced by his own and Rhonda's passion:

"The Brolgas have got one of my neighbours in. I think a lot of it has to do with us, because we started talking and got him a little bit interested and now as soon as he hears the Brolgas, he's ringing us to ask if we heard them. He's also become very interested in a wider range of wildlife. I've had quite a few other people too ring me up and ask me what sort of bird they've just seen and these are people I didn't think had any interest at all."

Despite this evidence of growing interest and awareness among some neighbours, Keith believes many locals still have an old fashioned mindset, with a preference for clearing vegetation rather than preserving it.

Support or information requirements

Due to the impact of foxes on the number of Brolga chicks reaching maturity, Keith strongly believes that DSE could assist those landholders who do not hold a chemical handlers certificate with baiting programs:

"What has been disappointing ... I don't have a chemical handlers certificate and in the first year, I tried very hard to get the government departments to help with fox poisoning and no one was really interested even though I told them about the Brolgas. I really think that hobby farmers in particular need to be able to get hold of Fox-Off more easily than they can at present – they're not going to spend \$300 on a course to poison foxes if they've only got 10 acres, but we need everyone to do it so we can control them."

Farm succession planning

Keith and Rhonda are currently planning to subdivide part of their farm, including the wetland area. To ensure the Brolga habitat is not disturbed, they are hoping to be able to sell this parcel of land to Trust for Nature or similar program.

It is likely that when the Buckingham's leave the Rutherglen property that it will be sold on the open market. Keith is keen to protect the wildlife corridors he and Rhonda have created and as such, is likely to explore the option of placing covenants on these areas.

Chariot Wheels

Introduction



Several populations of Chariot Wheels can be found on a privately owned property near Birchip. The owner of the property, Mary Fielding, has a keen interest in conserving the substantial proportion of remnant vegetation on her land. She takes pride in the fact that indigenous species proliferate, partly due to her family's 170 year history of first rate stock management on the property.

Background

The Fielding farm consists of 1900 hectares, which is used for cropping cereals and legumes and growing prime lamb. Sheep numbers have declined in recent years, from approximately 2000 to only 500. Remnant vegetation can be found on approximately 400 hectares - all of which, until recently, has been grazed by sheep.

Mary is a member of Landcare as well as the Birchip Cropping Group and her key passion on farm is animal welfare.

Paul Foreman (DSE) has been granted permission to undertake Chariot Wheels trials and studies on the property. He has had some interaction with Mary, who assisted him to set up the trial site.

Initial awareness

While Mary has been vaguely aware of the *"miserable little weedy things"* growing in some of her paddocks, it was not until she recently attended a field day at a neighbour's property that she realised they were Chariot Wheels. Having a threatened species on her property has excited Mary and has given her 'bragging rights' among friends:

"I had no idea until I went to Neil's place on a field day and I thought 'I've seen those things – I think I've got them.' I was particularly pleased because friends of mine live in North Birchip and they've got Curlews and I've been as jealous as all hell because they've got Curlews and I haven't. So I took great delight in ringing them and saying 'Guess what – I've got Chariot Wheels and you haven't!'. So they've gone off to try to find Chariot Wheels, but they haven't got any. So we have a bit of rivalry as to who has the most threatened species."

Activities undertaken in the past and planned for the future

Mary is keen to conserve remnant vegetation and due to her sheep's penchant for Buloke seedlings, a decision has been made to exclude them from approximately 140 hectares in an attempt to encourage greater understorey growth:

"I just want the understorey to grow on. The sheep love Buloke seedlings. We can have lots of feed, but Buloke seedlings – mmm – sweets!"

One of the paddocks where Chariot Wheels can be found will continue to be grazed, another will be fenced off from stock. While Mary's experience has made her believe that it is necessary to lock up paddocks to preserve most understorey growth, she points out that this is not the case for the hardy Chariot Wheels:

"I've had cattle stomping over them and sheep and it's been grazed down to bare boards and they're still there – they're remarkably tough."

As part of the Biolink Project, Mary has also fenced off and revegetated an old road which she leases. Mary received financial assistance for most of the fencing material and accessed some Green Corps labour to assist in erecting the fences. The Biolink Project funded the local football club to plant trees in the fenced area.

It is notable that Mary still pays lease fees on the old road, despite it being taken out of production and generating no income.

Perceived success of activities undertaken

It is clear that the grazing regime on the Fielding property has been harmonious with the needs of Chariot Wheels. Mary points out that her family have historically managed stocking rates and grazing systems to ensure sustainability of both pastures and animals.

The success or failure of Mary's trial of locking up remnant vegetation areas will not be known for some time. While others have suggested to Mary that weeds will become a problem, she disagrees:

"I want to try to keep sheep out of those paddocks forever. I'm not concerned about weeds. My theory is that because the ground has never been disturbed, there's a nice cover of mosses and things like that and I think that in the little bit where there are weeds, gradually the mosses will take over and the natural salt bushes and things like that will choke all the weeds out."

Impact of activities undertaken

Mary's own trial of excluding stock from 140 hectares of remnant vegetation however will have a significant impact on the farm's productivity and profitability. These areas typically provide feed as part of a rotational grazing system and sheep will have to be hand fed during times they would normally be turned out on the remnant vegetation paddocks:

"Well, it's taken 300 acres out of productivity because normally I'd have sheep in there. As an alternative, I have to feed them. We usually run out of feed in March to April ... that's when all

the stubble's gone and you have to anticipate feeding sheep through until we get the autumn break – which we haven't had for the last few years. Now, there's very good feed in those areas of remnant vegetation and I keep looking at them, but I think no, I mustn't – put a chain on the gate and throw the key away!"

Mary believes that conserving remnant vegetation has a significant impact on a farm's productivity and profitability in terms of lost cropping and grazing potential and perhaps the community in general needs to offer support for these activities:

"The community has to realise and appreciate what farmers are foregoing in terms of financial returns when they lock paddocks up. If the community wants the environment to be protected, then perhaps they need to support farmers financially to do so."

Reactions of peers and neighbours

Mary believes that the majority of her neighbours are like-minded, with many actively conserving remnant vegetation and working towards establishing wildlife corridors between properties. Grazing regimes which provide the best outcome for native vegetation are also being implemented. It is Mary's belief however that some of her neighbours would need to be reimbursed to take remnant vegetation out of production, but the benefits would outweigh the costs:

"One neighbour's remnant butts on to one section of my remnant, so if you put the two together, that's nearly 400 acres and it leads into other neighbours who have more remnant than mine, so in just a small area, there would be 500 or 600 acres of remnant. Some of these guys would have to get paid to take that remnant out of production ... A significant amount of our remnant vegetation is on private land and they (Government) either compulsorily acquire it or they pay the farmers or whoever owns that remnant vegetation to manage it."

Support or information requirements

To date, Mary has received some funding and labour assistance through the Biolink and Green Corps programs, but she identifies the local DSE officer as her most important source of support and information. She stresses that his upcoming retirement and subsequent closure of the local office will be a substantial loss in terms of environmental knowledge and information:

"Ken's great, you can ring him up and ask him 'what sort of spray should I be using for box thorns?' and he will say to use this or that. Now that will all go and you can't say Landcare will take it over, because the Landcare co-ordinator wouldn't know anything about sprays and the Ag supply people don't necessarily know about it in terms of their effect on the environment. Ken would say, 'well use this spray, it will only take that out and it won't affect native grasses and stuff underneath it'. All that knowledge is going to go when he leaves."

The importance of having a staffed DSE office in the region was highlighted by Mary. She believes that a representative with knowledge and insight into the attitudes and behaviour of people in the locality is critically important. Mary cites an incident where a local resident was responsible for killing Wedge-tailed Eagles and due to his extensive knowledge of the local population, the DSE

officer was able to quickly identify the offender. Having a centralised service means that this sort of incident is likely to go unprosecuted, with DSE losing credibility as a result.

Mary strongly believes that while it is relatively easy to source information on agricultural practices, the opposite is true for environmental issues. She suggests that if local human resources are going to be removed, then a suitable central repository of *local* information must be provided instead.

Research into suitable systems for cropping and grazing which provide positive environmental outcomes is an area of need according to Mary:

"I think if they want to promote conservation with agriculture, they need to conduct research into cropping systems and grazing systems which actually mesh with the environment ... protecting and enhancing the environment. I think they are starting to get the idea, but I think it needs to be a broad initiative on the government's part. The farming community has to be educated in dollars and cents that there is going to be a gain by doing this."

The issue of planned changes to the Wimmera Mallee channel pipe system was raised by Mary. She believes DSE could assist by exploring and researching potential effects of change on various habitats and ecosystems – particularly those that are closely linked to bodies of water, such as farm dams:

"There's about 22,000 dams in this region. Now, that's a huge water resource for wildlife and they don't really know what sort of effect that has had on our native animals and insects and bats and things – there's no research on the effect of those dams as it is. With the piping, they're going to take all that away and it's going to have a huge effect. The CMAs are starting to get interested, but they should have been engaged in this process a long time ago."

Farm succession planning

The Fielding farm is unlikely to remain in the family once Mary decides to leave. She is keen to see the remnant vegetation on her property conserved however and consequently has stipulated in her will that that the timber areas of the property be covenanted on her passing.

Mary is not completely sure of the legality of covenants and is unsure if the concept of Trust For Nature is completely workable or reliable and intends to explore her options more fully:

"I must admit, I haven't really gone into the legal side of covenants to find out exactly how binding they are. I've heard that Trust For Nature will take over ground and they will sell it to someone who is like-minded, but that doesn't actually mean they'll stay like-minded, so I don't know whether I like that much. The covenant is just a protection in case I get run over tomorrow or go out in the paddock and tip the ute over and die, but I've got to think more about it."

Chariot Wheels

Introduction

A population of Chariot Wheels has been identified on a private farm near Birchip. The paddock in which Chariot Wheels can be found is described by the property owner as 'the timber paddock' which is regularly grazed by lambs during summer. It has never been cultivated.

Background

The farm comprises a total of 910 hectares, with approximately 45 hectares covered by timber. The property, which has been in the same family for three generations, has traditionally been farmed for crops and sheepmeat. The current enterprise consists of cereal, canola and legume cropping, with lambs fattened on the property during most summers.

The property owner has been a member of Landcare in the past, but currently has little involvement with any groups – he is now more focussed on planning for retirement than on changing farming practices.

Paul Foreman (DSE) has been granted permission to undertake Chariot Wheels trials and studies on the property, but to date he has had little interaction with the owner.

Initial awareness

Chariot Wheels on the property were formally identified approximately two years ago when the local DSE representative – who is described as very knowledgeable - was on farm:

"About two years ago, I was poisoning rabbits and Ken Harrison ... who works for DNR ... he was just driving around checking that I was doing the right thing and he noticed that I had that plant in the paddock. It's funny, because a couple of years before that, another person from the Department came out and had a look at that paddock and he was fascinated by the plants and the birdlife and stuff, but he never noticed the Chariot Wheels."

Following identification of the Chariot Wheels, the owner was contacted by Paul Foreman to ask for permission to study the plants and conduct a trial. The property owner has not received any information on Chariot Wheels, but is not unduly concerned about this. He does however point out that a field day recently held on his farm was conducted without his knowledge or an invitation to participate.

Activities undertaken in the past and planned for the future

The paddock where Chariot Wheels are located is a timbered allotment which houses one of the few dams on the property. The current owner's father used it as a 'lambing paddock' due to its provision of water and shelter for new born lambs.

The property owner no longer runs sheep on the property all year round, but grows out lambs between November and March and consequently the paddock is rested for the majority of the year.

This regime is not one which is likely to change in the foreseeable future – the owner has no plans to cultivate the paddock and indeed believes it would not be economically viable to clear the block (even if granted a permit to do so):

“I’m planning to continue farming just as I always have. The timber paddock suits my needs as it is and even if I wanted to clear it, it’s not economical for me to put a bloke in there and knock every tree down, clean it up ... it costs an absolute fortune now to knock down trees ... so it’s not an issue.”

Shelterbelts have also been created on some areas of the farm to act as windbreaks and for shade and stock shelter.

Perceived success of activities undertaken

The fact that a substantial population of Chariot Wheels persists is proof to the landholder that the grazing regime implemented is harmonious with the plant’s needs and indicates to him that there is no need for change:

“It’s still there (the Chariot Wheels population) so why change it when it’s successful the way it is. If it’s survived this long ... and that ground has been used since around 1860 and it’s still there ... there’s hundreds of them still there ... so obviously I’m doing something right, or the family has done something right.”

It is notable, according to the farm owner, that Chariot Wheels have proven to be quite hardy even when the paddock has been very heavily grazed during the summer months. He is also surprised by the fact Chariot Wheels grow in areas where nothing else survives.

Impact of activities undertaken

Although it should be noted the landholder is not actively conserving Chariot Wheels as such – the population persists due to an harmonious farming system which is unlikely to change – he believes conserving the timbered paddock has had a slightly positive impact on productivity due to the shelter and amount of feed it provides:

“The sheep I bought this year had to go into that paddock first thing, because I didn’t have any other feed to put them on and the agent saw them two weeks later and said ‘they’re ready to go!’. Obviously the feed was good enough or better than where they’d been.”

The property owner also believes productivity gains can be realised from shelterbelt creation, particularly in areas prone to high winds, frost and/or extreme heat:

“We do have a bit of a corridor here – mostly for shade and windbreaks and everything like that. They have a benefit, even for a cropper. Farmers now are seeing a lot more benefits from trees ... probably in the last ten years, the younger farmers have become a bit more tree conscious than probably twenty or thirty years ago. It’s funny, but sometimes you see that the crops are a little bit better close to the trees. It’s the wind factor and this is a very frost prone country and I think the trees keep the frost off the crops close to them. The effect only goes out

about twenty or thirty metres, but I guess there's not so much sunshine so there's not as much evaporation."

Another factor raised relating to the impact of conservation activities was the location of plantations, which are often in areas where the potential for productivity is limited:

"The ones I plant in the corner of the paddock, I do that because I can't sow there anyway."

Reactions of peers and neighbours

Some of the landholder's neighbours are actively involved in conservation activities, with one in particular having some involvement with either a Trust For Nature or similar program. Another is less environmentally focussed, but has been granted a permit to remove trees on the proviso that he plant a wildlife corridor to the interviewee's timber paddock to compensate.

The property owner believes there is some local concern over stipulations and clauses included in TFN and other funding:

"With what they've done over here (TFN funding), there were a few stipulations and that scares most people off. I don't know what the stipulations are, I haven't followed it up, but when that type of thing gets around, that scares a lot of people off."

Support or information requirements

To date, the property owner has received no background information on Chariot Wheels, but suggests he would have little interest in anything sent due to the improbability of him changing from current practices:

"I don't really need anything because I wouldn't change anything that I'm doing. The Chariot Wheels have survived the things we've been doing over the years, so why change?"

He also suggests that the 'average' farmer will only utilise information or support available if it is in harmony with their business plans and takes into consideration issues such as modern machinery:

"I'm just a typical farmer. We do what we want to do and if anyone tries to tell us what we're going to do, we tell them to go jump type of thing. They bring in regulations to do things that show they don't understand. One of them was knocking down trees, I don't agree that you shouldn't be able to knock down a tree or two or do whatever you've got to do. I still believe that if you knock down one, then fair enough you plant ten in its place and most blokes are happy to do that. What the Department has to understand is that some of the machinery we use now is so wide that the location of some trees is a pain in the butt."

While the property owner does not have a great need for environmental information and support, he does highlight the importance of having a trusted local DSE representative with good knowledge of farms and farmers in the area and voices his concern over the current DSE representative's pending retirement:

“That’s the thing about Ken – he knows what’s going on and we’re going to lose him. They’re not bringing in anyone to replace him. He really needs to hand over to someone so that he can tell them the best way to run the local department. When he goes, there might be another special plant around that hasn’t been found yet and if he’s not around to identify it ...”

Farm succession planning

The property owner is hoping to retire in approximately ten years time and is keen to preserve the timber paddock where the Chariot Wheels are found. At some stage prior to his retirement, he intends to investigate the opportunities available to him and suggests that if DSE or other funding body was interested in purchasing the block, he would certainly consider this.

Small Scurf-pea

Introduction

A colony of Small Scurf-pea has been found in ephemeral grasslands on a property in the Basalt Plains region. The property is owned by Roger and Jeanette Bellchambers, who place great value on their “*little grassland community*” and believe it is an important area to protect.



Background

Roger and Jeanette were both brought up in the city and purchased their farm only after the birth of their

first child. The property they purchased did not quite live up to their view of an ‘ideal’ farm, but it was one they could afford. Today, the Bellchamber’s wool producing enterprise consists of approximately 450 hectares, with 3,500 sheep, grazed on a rotation system. Jeanette takes care of the day to day running of the farm and Roger has a full time position away from the property. They are however, like minded when it comes to the running of the farm, including environmental issues, and undertake many tasks together.

A few years ago Roger and Jeanette purchased a neighbouring property on which they discovered a grassland area “*with Kangaroo Grasses and Danthonia and herbs and forbs which are there during the spring, but which looks very ordinary at other times of the year*”. The original owners of the grassland areas gave no indication they knew of the significance of this site and it was only after exposure to a significant roadside location containing indigenous plant species that the Bellchambers realised its uniqueness.

Claire Moxham and Josh Dorrough have been granted access to the grasslands to conduct a three year project to explore the compatibility of grazing regimes.

Initial awareness

Jeanette’s interest in and knowledge of indigenous plants was expanded after attending a roadside walk held by the local Shire:

“The Shire has some really significant roadside areas and in the 80s, the Shire received a grant whereby they could educate local people involved in roadside work. Another local person had some interest and we went on a roadside walk where they had some really interesting botanists. They wrote a little companion book after that which I was most interested in.”

The knowledge Jeanette gained on this walk enabled her to identify the grassland on the property they had purchased and to realise that a plant she was not familiar with was worth further investigation:

"We bought our neighbour's land ... and we had three small children then and I must admit, I didn't have quite as big an input on the farm then as I do today ... and one spring day I went down there to where Roger was preparing a paddock for cropping and I can remember standing there amazed and saying to him 'this is amazing ... it's just like the roadside!' and we thought it was worth getting someone to have a look at it. Later, when we were planting trees for a fairly big plantation that we were putting in I noticed the Cullen Parvum vegetation and I thought 'this is not something that I'm really familiar with'. It wasn't a pasture species I was familiar with and it wasn't an introduced species. On enquiry, I found out what the plant was and that caused great interest because there are only a few plants known further up the roadside. So that was really the beginning – finding that awareness and exposure to the roadside and then finding those plants on the property. Once you're aware of them and familiar with them, I now notice them on the established farm in our conservation areas."

Activities undertaken in the past and planned for the future

The Bellchambers are keen conservationists and consequently they aim to have a balanced farming system which results in an acceptable level of production as well as conserving the grasslands on their property. A rotational grazing system which involves resting native grassland paddocks during spring is implemented to ensure these areas continue to flourish. Both Roger and Jeanette have a strong sense of land stewardship and believe it is important to protect the grasslands, with Jeanette summarising their feelings in the following way:

"It's the uniqueness of them. It's something special and it's bigger than any of us. It's a bit like the philosophy of the Koori people who have a wonderful relationship with the land and I think all of us are capable of having that – it's just being able to identify it."

For ease of management, the Bellchambers incorporate the grassland areas on their farm into the larger paddock structure:

"We actually incorporate it as part of the paddock structure for management, so ultimately we didn't believe it a good idea just to fence around that 25 acres or whatever and the point is that right through the paddock area, there are the same endangered or whatever species."

Roger and Jeanette are about to trial a changed grazing regime however, in an attempt to combat specific annual weeds which have become a problem in the grassland paddocks at the resting time. In line with their reluctance to use chemical applications, the Bellchambers plan to undertake a crash grazing regime early in the season and hope this will have the desired effect.

A substantial number of shelterbelts have been created on the Bellchambers' farm since they originally purchased the property 25 years ago and in excess of 25,000 trees have been planted, with a focus on indigenous varieties that provide wildlife corridors. In the main, Roger and Jeanette

have funded their tree planting activities themselves, with Jeanette growing most of the trees from locally obtained seed.

The Bellchambers have been keen observers of the Potter farms and believe that up to between 15% and 20% of their land can be covered by tree and understorey vegetation without negatively impacting farm productivity.

Perceived success of activities undertaken

The grazing regime implemented by Roger and Jeanette has successfully conserved and actually improved their native grasslands:

“On some of our grassland blocks as early as 8 years ago, we began to take off our stock in spring because we had feed elsewhere and we rested the grasslands and then really scarce and vulnerable plants became far more prolific on our property ... the legumes, the Cullen Parvum and others ... and purely that resting mechanism allows plants to flourish.”

Impact of activities undertaken

Apart from the satisfaction of seeing the ephemeral grasslands on the property continue to flourish and enjoying the aesthetics of a well vegetated farm, Roger and Jeanette have noticed other benefits of retaining native grasslands and planting shelterbelts. Stock health and wellbeing is an example:

“I can remember one really wet lambing time where our paddocks were afloat and the ewes were lambing and if you went out spotlighting it would be ewes and lambs all along the fence line under the trees. We didn't have losses as was reported locally and we talked to producers that lost 300 sheep.”

“We have other benefits that come with that too. We used to lamb in the autumn and we could put pregnant ewes down in the grassland around that time and we had the benefit of clean pasture for them – worms can be such a big problem for the sheep industry.”

The Bellchambers prefer not to consider whether their conservation activities are impacting profitability, believing that implementing a farming system which suits their principles is equally as important:

“Profitability is one thing, doing what we want and being satisfied is another. As long as we're happy and we've got enough money to live, the profitability of it doesn't mean a huge amount to us. I don't believe that at this stage it costs a huge amount of money and I think it's better to look at it this way rather than whether it affects profitability.”

Reactions of peers and neighbours

Many of Roger and Jeanette's neighbours have shown interest in undertaking some conservation activities – mainly tree planting – but Jeanette also believes there is a growing awareness of grasslands and the environment in general. The labour and time required to undertake conservation activities can be an initial deterrent for some farmers however and motivating them

to take on environmental projects can be difficult. Roger also points out the importance of both parties on farm sharing the interest and enthusiasm, suggesting that *“if you don’t have that dual commitment, it’s hard”*.

Support or information requirements

A key area of support for the Bellchambers has been the assistance of Green Corps who have helped to plant shelterbelts for the last two seasons. Roger outlined the value of this initiative:

“They’re really good. Green Corps is a fantastic thing. The cost is one thing, putting them in is another. If we can do the fencing and get everything ready and grow trees ... if we can just get someone to help put them in, that means more than anything. It’s more than the cost of fencing – they’re all in the ground in about a weekend. That would be the biggest achievement ever. If we could just fence the area every year and just have someone to come in and just plant 3000 or 4000 trees, it’s a great help.”

Farm succession planning

Roger and Jeanette have given quite a bit of thought to succession planning for the farm. At present there is no threat to their grassland areas, but they have considered applying covenants. The Bellchambers do however have some reservations about the effectiveness of covenants.

While they have no immediate plans to sell the property, if this did occur, their preference would be to sell to like minded people who would value the ephemeral grasslands and the aesthetic environment they have protected and enhanced on their farm.

Corangamite Water Skink

Introduction

The Corangamite Water Skink has been found on the banks of Deep Lake, which is part of a series of six lakes that form the Nerrin Nerrin wet lands, west of Ballarat. Deep Lake is situated on a property currently owned by Stuart Wills, who is aware of the Skinks' presence and has allowed Gary Peterson (DSE) unrestricted access to the Lake since 1998 to conduct trials to track population changes in the species.



Background

Stuart owns approximately 360 hectares of land which was originally part of his parents' farm. He was raised on the property and consequently has substantial historic knowledge of the land and Deep Lake. The majority of his land is used for wheat, barley and canola cropping programs, but Stuart also runs approximately 2,500 fine wool merinos on pasture paddocks at a reasonably high stocking rate. Stuart is a member of the Southern Farming Systems group and although he is not a member of Landcare, he does receive their newsletters.

Initial awareness

While Stuart knew 'lizards' could be found around Deep Lake, he was unaware of the Water Skink's endangered status until a discussion with Gary Peterson:

"I was quite surprised when I read the report. We saw the Skinks down there, but we always just thought they were common. I didn't realise they were actually endangered."

The information provided by Gary has been sufficient for Stuart's needs and consequently he has not attempted to source information from elsewhere.

Activities undertaken in the past and planned for the future

Prior to Gary Peterson's study, Deep Lake was ringed by an old fence which was in need of repair. The fence had originally been erected to exclude stock from the muddy outer regions of the lake where there is the potential for them to become stuck. Approximately two and a half years ago, Stuart replaced much of the old fence with new conventional fencing, while Gary Peterson provided about 100 metres of electric fencing. The sheep therefore do not graze the Lake boundaries at all and are completely excluded from the Skink habitat:

"Gary told me that the idea of fencing off the lake area was to keep the sheep from grazing it to provide a bit of grass as shelter for the Skinks so they can hide from the birds that come down and eat them."

Stuart has also planted a handful of trees on one bank of the Lake and hopes to plant more to create additional wildlife habitat. While the initial trees planted were not in the most suitable location due to creating too much shade in areas inhabited by the Skinks, future plantings will be along outer boundaries:

"I'm going to turn the area into a little bit of a wildlife sanctuary. I'll just be careful that I don't plant the trees where they'll create too much shade for the Skinks."

Perceived success of activities undertaken

With the main aim of erecting an electric fence being to provide grass as shelter for the Skinks, Stuart is not completely convinced of the success of the project due to the high number of weeds emerging:

"I don't know if the fencing has been really successful, because I don't know if they're really native a lot of those grasses that are growing down there. A lot of the native grasses around here would be the Kangaroo Grass and Blue Devil, that sort of thing and it seems there's not too many there. The weeds seem to have taken over. I don't know if that's impacted on the Water Skinks though – you'd have to ask Gary."

Impact of activities undertaken

The Skinks on Stuart's property are located in an area which is not conducive to cropping due to the slope and rockiness of the terrain and the muddy Lake perimeter has the potential to be dangerous for stock. While fencing the area around Deep Lake means there is a little less feed for sheep, it also saves them from becoming stuck in the mud at the Lake edge. Consequently, there is little impact overall on the profitability or productivity of Stuart's farming enterprise:

"In terms of impact, they're in the best spot on the farm down there. They just don't impact because of where they are ... they're just there."

Reactions of peers and neighbours

Several of Stuart's neighbours have also recently become aware of the Corangamite Water Skink's status, although Stuart is not certain if this is due to discussions with Gary Peterson or with neighbours or from other sources.

The perception that the Skinks occur in areas conducive to conservation is also common among Stuart's neighbours, some of whom have also undertaken Lake perimeter fencing and have been happy to do so due to the limited impact on farming systems:

"We do talk about it around here and they all seem to be quite happy to do a bit of fencing off because it's not impacting on their farm activities too much."

Support or information requirements

While Stuart believes he has received enough information on the Water Skink through informal discussions with Gary Peterson, he did suggest more assistance could be provided by DSE or other bodies to ensure environmental flows into the Nerrin Nerrin wetlands remain at a suitable level to ensure survival of the Water Skink and other fauna and flora species. Stuart expressed concern over current and potential reduced water flows into the system due to the following factors:

- drought and future climate change
- water being diverted to Lake Bolac to ensure it remains at a suitable level for water sport activities
- one neighbour threatening to influence the flow through a swamp on his property that will affect the Lakes further south

Farm succession planning

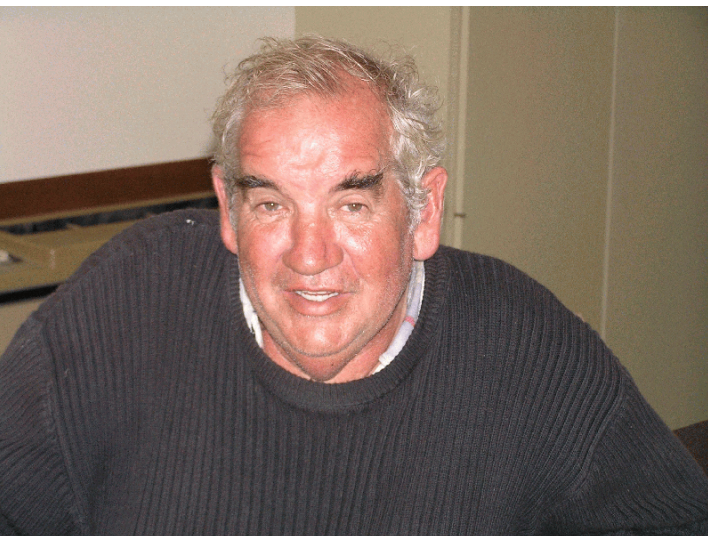
At present, Stuart has no plans to sell the farm and due to his relatively young age, no plans to retire. Consequently, there is little foreseeable change to the area set aside to provide habitat for the Corangamite Water Skinks along Deep Lake. Stuart also believes change would be unlikely, even if he left the property:

"I don't think you can do much with the land around the lake. I've already got it fenced, so if I sold, it would probably stay like that. It's too rocky to crop and you probably don't want stock in there too often because with the decreased depth of the lake, there's a lot of mud around it and the stock will get stuck in the mud."

Due to Stuart's intention of spending many more years farming the property, he has not considered covenanting the Lake area. He suggests it is a possible option, but is not currently in the realms of his thinking.

Corangamite Water Skink

Introduction



Colonies of Corangamite Water Skink can be found along the banks of the Corangamite Lake near Colac on a property currently used for dairying. The land is part of a farm purchased a few years ago by Greg Wisbey and Paula Dare, who have since developed a close working relationship with Gary Peterson (DSE). Gary is allowed full access to the property to study the Skink and conduct trials.

Background

Greg Wisbey's and Paula Dare's farming enterprise consists of 180 dairy cows of mixed ages, grazed on 81 hectares of pasture and 72 hectares of outpaddocks. A substantial amount of land along the Lake perimeter is Crown Land, which Greg leases. His stocking rate is relatively light at present and he avoids using fertilisers to prevent leaching into the water system. The only chemicals used on farm are herbicides, used to combat some of the more prolific weeds (a legacy of the previous owner).

While Greg and Paula purchased the property fairly recently, Greg is a long time resident of the region and has been aware of lizards inhabiting the Lake area for more than 50 years. While Greg is not a member of Landcare, he is actively involved in several conservation and action groups, including Friends of Corangamite Skink and West Lake Colac Action Group. His prime motivation for this involvement is a desire to protect local wildlife:

"The whole idea of the exercise is to preserve the wildlife of the area and counteract the proposed over-development of the Colac Lake system by the Shire. Their current plans are parklike and sterile – basically they're looking at extending the Botanic Gardens."

Initial awareness

While Greg has always been aware of two different 'types' of Skinks on the shores of the Lake with one type being more prolific than the other, it was not until Gary Peterson confirmed they were separate species that he realised the Corangamite Water Skink was actually a threatened species:

"I used to go down to the Lake fishing and I was aware that there were two different types. During the mating season, the eastern one ... the male ... has a bright red belly, whereas the other one is a more bland looking creature. I should have thought that given the variant sizes, the bland ones could have been a different type of male, but we'd always just written them off as being female. So I wasn't surprised to hear they were a separate species. I wasn't surprised to hear they were an endangered species either, because there is nothing around the other side of the Lake, there's only a few colonies on this side and also at Lake Corangamite and rock pools at Dreeite."

In one way, Greg was pleased to hear of the threatened species status, hoping this would prevent development of the Lake region and ensure the ecosystem is not affected:

"If they go ahead with the ring road or other possible development, they are going to totally destroy the ecosystem of the Lake ... and they're going to have to do something about avoiding the lagoon, which is a prime swan nesting area."

Activities undertaken in the past and planned for the future

The Skink habitat on Greg's property has been grazed by stock in the past and this is likely to continue in the future. Greg believes the grazing system utilised on the property probably assists the survival of the Skink and other species as well as encouraging biodiversity.

The grazing regime allows stock to lightly graze the Skin habitat, keeping grass to a manageable level and therefore lessening protection for Skink predators. Grass is however allowed to grow up to the rock verges to encourage the Skinks' prey to thrive:

"The grazing practices that have been undertaken on this place for the last 40 years – which is, if there's a blade of grass eat it – I believe may have actually worked in the Skinks' favour. You get rid of vermin, such as rabbits and snakes. A Skink, by definition, only lives on a small window of opportunity on the Lake. The water is there, the black basalt rocks are there, but if you've got 10 foot of grass coming right up to the rocks, then you actually provide foxes, blue tongues, crows, whatever, a good opportunity to sit there quietly and wait and pick up a feed. The lizards basically live in an area that's bare rock, but their food source is, to a large extent, dependent on the growth that's coming up to the rocks and that growth has to be maintained. "

In conjunction with Gary Peterson, grazing trials are being planned for 2005. One trial will consist of no grazing, while another trial will involve limited grazing, with 200 cows in an area to control the fire hazard and then removed after a few days.

Paula and Greg have begun to plant shelterbelts on the property and, subject to finance, they have major plans for the future. Their efforts will focus on planting strips of gum trees which could be commercially harvested in years to come as well as planting insect attracting plants and grasses on Crown verges to encourage good biodiversity:

"I do it to improve both the farm side and the environmental side. That's why you don't plant 20 foot wide commercial strips of gums. You plant 10 feet and on the other side, the Crown side, you plant a whole heap of insect attracting plants and grasses ... places where little creepy crawlies can hide and little birds can go and have a good feed."

Shelter belt creation is being undertaken with a great deal of thought regarding the needs of the wildlife in the area. Greg will ensure no trees are planted in areas where they would cast too much shade on the Skink habitat and he also plans to limit the height of vegetation planted in bird flight corridors to and from the Lake:

"I won't plant trees in the lizard habitat area because the last thing I want to do is shade it. I've got plans for tree planting around the lagoon ... now there are certain areas where you don't want to plant trees, because they're flight paths. You've got a swan coming in, the last thing he wants to do is have to lift over this great clump of gum trees before he can settle on a limited body of water."

Perceived success of activities undertaken

The continued survival of the Skink is testament to the success of the grazing regime utilised on the property, as is the number of birds breeding on and around the property.

Greg is confident his conservation activities will continue to prove successful. He does however point out that these activities need to fit in with farm profitability:

"Ninety percent of the management carried out on farm is aimed at ecological evenness. It's not aimed at generating an extra 500 hectares for the Skinks. It's aimed at saying 'well, okay, the Skinks live down there and if I perform these farming practices, I will maximise their ability to live within their window of opportunity'. If by maximising their opportunities and maximising mine, I make a dollar off my Crown Allotment ... which is why I pay the rent ... it's all even. That's conservation as opposed to preservation – the lock up and let it grow rank theory."

Impact of activities undertaken

The aim of Greg's activities is to provide habitat as well as improve the farm's productivity and aesthetics. In future, when the shelter belts have become established, Greg expects to realise some productivity gains:

"I'm going to put in a lot of shelter belts ... and they will include commercial trees. They perform the function of a wind break on your farm and they positively affect pasture growth, cattle comfort, etc. The wind off Lake Colac can be freezing."

When the farm has been developed in the manner Greg and Paula have planned, they hope to realise a healthy capital gain. In the interim however, the cost in personal financial and labour terms is substantial.

Reactions of peers and neighbours

Awareness of the Corangamite Water Skink is reasonably widespread in the Colac area according to Greg, with the local council using the Skink as a mascot. Greg believes however, that knowledge of what is required to protect Skink habitat is quite limited at present.

Support or information requirements

To date, Greg has received encouragement and information on the Skink from Gary Peterson, which he values greatly and suggests Gary is the key to encouraging conservation activities:

"The best way to protect the Skinks is to have someone like Gary who has an absolutely brilliant relationship and his raconteur is unbelievable ... to work through him and get things done on a local level. Without him, the Skinks have got two out and loaded bases and the game's going to

be lost. He has an ability to work with every group. Gary is an incredibly supportive person. He's got the contacts."

While Greg has managed to tap into some funding from the Corangamite Catchment Management Authority as well as financial and labour assistance from Greening Australia, he admits that additional resources would ensure his farm plans would be achieved much sooner. He suggests an ideal scenario would involve financial assistance to allow him to fast-track his conservation activities:

"I would like nothing better than to be told to cut my farming enterprise back to 120, 130 cows and to work my grazing on environmental requirements on Crown allotment. If they said 'we'll pay you \$50,000 per year and provide you with a vehicle to start your development and get it going – you're on our budget'. \$50,000 per year would mean that I would effectively spend one third of my time on an hour for dollar basis."

Farm succession planning

Much of the conservation work Greg has undertaken and is planning for the future will be on the Crown Land, which he believes is also a form of protection:

"If I get the plantings done under the DSE requirements, then anything that's on Crown Land can't be touched, so that's preserved. That's not a problem, that can't be touched and it's there for perpetuity."

Giant Gippsland Earthworm

Introduction



Six active colonies of Giant Gippsland Earthworm have been identified on one of the many dairy farms located in the Korumburra region. The owners of the property, Brian and Cheryl Enbom, have known of the existence of the colonies for many decades and have graciously allowed researchers, students and other interested people full access to their property to study the earthworm colonies. As true stewards of the land, they express substantial pride in the fact these colonies have persisted on their farm, mainly due to their care and interest.

Background

Brian and Cheryl own a 148 hectare dairy farm in Jumbunna, South Gippsland. Stocking rates are moderate, with only 215 dairy cows grazed on the property (1.45 cows per ha). Brian has lived in the local area all his life and has always known that Giant Gippsland Earthworms existed both on the home farm and neighbouring properties. Brian is a member of Landcare and cites animal husbandry as his passion.

In recent years, DSE scientist Bev van Praagh has formally identified six colonies of earthworms on Brian and Cheryl's property. The earthworm colonies tend to occur along minor stream banks and drainage channels, alluvial terraces and colluvial footslopes in areas not typically prone to heavy cattle traffic. Consequently, it has been fairly easy to ensure the colonies are relatively undisturbed.

One colony of earthworms was however unwittingly disturbed approximately 25 years ago when a stock track was constructed over a drainage channel. The colony appears to have since disappeared from this site.

Initial awareness

It is difficult for Brian and Cheryl to identify exactly where their knowledge of the Giant Gippsland Earthworm originated. They have no recollection of receiving formal information from DSE or other bodies relating to earthworms or activities to ensure their survival:

"We grew up with them. We used to hear them I suppose. I don't know how we knew. There wouldn't have been much information out about them back then I suppose."

Brian and Cheryl do however acknowledge that their understanding of earthworms has been enhanced to a degree by conversations with Bev van Praagh and other earthworm 'experts':

"You get in conversations with the scientists and you talk about things and I suppose some of it rubs off. One thing I learnt – but I suppose it's something I do anyway – we're a bit wary of heavy grazing on those areas."

Discussions on the Giant Gippsland Earthworm with neighbours and other landholders have been rather uncommon according to Brian – *"It's not something you really talk about much"*.

Activities undertaken in the past and planned for the future

The farming system implemented by Brian and Cheryl is generally harmonious with the needs of the Giant Gippsland Earthworm. Stocking rates are medium and the sites of earthworm colonies are grazed lightly, mostly by young stock. This regime is unlikely to change dramatically while the farm remains under the Enbom's ownership due to their interest in protecting the earthworms:

"You feel obliged to make sure something you're doing is not detrimental to the earthworms because they're endangered."

Brian and Cheryl have undertaken substantial replanting of riparian zones along the banks of Foster Creek and tributaries which run through their property and is an area with no obvious colonies of earthworms. These revegetation activities have been driven by a desire to improve the water quality of Foster Creek, which has been seen to be deteriorating over the years:

"We wanted to improve the streams and attract the birds – all those things. Some areas were getting a bit degraded. One thing that initiated a lot of it was the pollution of the main creek. All the pollution from the saleyard in Korumburra comes down the main creek and the water quality was shocking. I used to swim in the creek when we were kids and we used to see platypus in it – you don't see them anymore."

While further riparian revegetation is not being planned at this point in time due to the substantial labour input required, Brian admits that current lack of knowledge on the effects of dense vegetation on earthworm colonies has resulted in a degree of uncertainty on the best way forward. He also flagged this as an issue for others in the region:

"One fellow was horrified to hear (at the Jumbunna Field Day) of the possible effects of tree roots. He's planted out all of his worm areas. He doesn't know what to do now – nor do we."

Perceived success of activities undertaken

The fact that the earthworm colonies have persisted is proof to Brian and Cheryl that their efforts have been successful. This is a source of pride and seen as a reward for conservation activities undertaken.

Brian did however mention the difficulty in monitoring earthworm numbers to determine the impact of activities undertaken:

"We can't see them, so we don't know if there was 10 (earthworms) in that particular spot 20 years ago and we don't know if there's 10 in there now or 20 or none. We just don't know."

Impact of activities undertaken

Due in part to the compatibility of the current farming system and the location of sites with the needs of the earthworms, Brian and Cheryl believe that conserving the sites has resulted in little if any impact on either the productivity or profitability of the farm. They suggest that even if there was a slightly negative impact, they would be prepared to accept this:

"I feel obliged to look after them unless it's going to impact drastically on what we do. Even if it took 5% or 10% of your property out of action, I think you'd still look after them."

Reactions of peers and neighbours

While Brian and Cheryl are obviously stewards of the land and feel obliged to protect the earthworm sites on their property, they acknowledge that other farmers in the local area may not share their point of view, particularly if they stock heavily or grow crops:

"Not everyone is interested. A pea grower wouldn't be interested. Even if he knew the worms were there if he wanted to plough a paddock he would just plough over them."

It is Brian's belief that attempts to create awareness and interest in the earthworms would have minimal success and it would be of greater value to encourage those farmers who already appreciate the significance of the Giant Gippsland Earthworm:

"Some people don't value what they've got. There's a school of thought in Landcare that we should go around and identify what people have on their place, but I think you've got to work with the people that are already interested and do value what they've got. The only way some people would be interested in the worms is if we could prove that the worms improve the soil structure or something like that, but I don't think we can really say that."

Support or information requirements

As identified earlier, information relating to the potential impact of revegetation in close proximity of earthworm sites would be helpful for the Enboms – although they acknowledge there is currently no reliable data available on this matter.

Conflicting information disseminated by the Department is seen to be an issue by the Enboms. Brian points out that some of the recommendations made by DPI staff relating to farming systems may have a negative effect on earthworm populations – an issue which is a source of frustration for both himself and Cheryl:

"There is a conflict within the Department. To some extent they're promoting intensive farming, maximising stocking rates and fertiliser inputs and there's a conflict there. They're promoting sustainable agriculture by inputs and it's a problem (for earthworm colonies)."

Farm succession planning

While the Enbom family are actively protecting the habitat of earthworms, the future for the colonies existing on their property is uncertain. Their three children (two in their mid 20s and one 16 year old) currently show little interest in taking over the farm once Brian and Cheryl retire (hoped to be within the next eight years) and as a consequence the farm is likely to be sold if the children do not change their intentions.

If the property is sold in future, Brian and Cheryl will provide information to the new owners on the earthworms, but there is no guarantee the sites would continue to be protected:

"I would let potential buyers know that the earthworms are here, because it wouldn't impact on the sale. A lot of people wouldn't care less I suppose."

Giant Gippsland Earthworm

Introduction

The gurgling sounds heard in many areas of a Gippsland farm suggest several colonies of Giant Gippsland Earthworms are present. The property is owned by Peter and Wendy Wallace who, as long term residents of the property, have always been aware of the Earthworm's presence and are keen to protect them on their farm.



Background

The Wallaces run a 182 hectare dairy farm on two allotments. Their stocking rate is reasonably light for this country - the dairy herd consists of 160 cows and 105 heifers, some of which are currently off farm on agistment. The farm has been in Peter's family for over 100 years and until recently, was run as a conventional farm. Peter and Wendy have now converted to organic methods due to their concern over hormone and chemical usage as well as believing "it's the right way to go".

Peter and Wendy are members of Landcare as well as the Organic Dairy Farmers Association and both cite animal husbandry as their key area of interest on the farm.

Initial awareness

While the Wallaces have always known Earthworms inhabited sections of their property, it was not until fairly recently when Wendy attended a local Field Day that they became aware of the Earthworm's threatened species status.

Peter and Wendy are unsure exactly how many colonies of Earthworms exist on their property and have not paid a great deal of attention to their actual locations due to their lack of awareness of the Earthworm's status.

There is no indication of a declining population however, and there has only been one incidence of a colony being disturbed when the Wallaces upgraded an access track on a steep section of the farm.

Activities undertaken in the past and planned for the future

While conventional farming systems were used in the past on the Wallace farm, Wendy points out that areas where the Earthworm can be heard tend to be rather steep, unproductive areas of the

farm. These areas therefore would not have been exposed to fertilisers to the extent of better pasture areas:

“The farm was fertilised with super and lime and the like until recently, but the back of the farm where the Earthworms are wouldn't have had as much of that stuff because it's so steep. It didn't get the fertiliser that this half of the farm had, because you never milk cows off it.”

The Wallace's interest in conservation and revegetation has led them to plant shelterbelts and riparian zones, with more revegetation activities planned for the future. There are several drivers for these activities, including the provision of shelter for stock, wildlife corridors and biodiversity as well as returning some land to its original state:

“We know what it should look like and we want it to get back to that and we want to keep it that way. I drove up Mt Worth just the other day and saw all the tree ferns and that in the gullies – so you know what used to be here. We've got lots of tree fern stumps – the cows love to eat the new shoots on the tree ferns – and you see all the dead tree fern stumps and that and you think, no, this is stupid.”

Perceived success of activities undertaken

The fact that Earthworm colonies remain on the Wallace property is proof that the farming methods undertaken in past have been harmonious with the needs of the Earthworm. Peter's and Wendy's awareness of the Earthworm sites, their desire to conserve them and the location of the sites suggests the status quo is likely to remain.

Impact of activities undertaken

Due to the location of the Earthworm colonies and the farming system implemented, the Wallaces believe there has been little impact on their productivity or production.

It is too early for Peter and Wendy to validly assess whether the shelterbelts and riparian zone plantations will have an impact on production, but they are anticipating a positive return mainly due to stock health and wellbeing as well as through biodiversity gains:

“There's not enough shelter on this farm for the cows. It gets so windy and cold here and then it gets hot on other days. You see the cows as soon as it gets to about 25°, they head for a tree and if there's only two trees in the paddock, well ... It's also to get the bird numbers up for bugs and things like that.”

Reactions of peers and neighbours

There is some evidence of conservation interest and activity among the local community according to the Wallaces. One of their immediate neighbours has fenced off some of the bushland on their property and Peter and Wendy have plans to join their shelterbelts with those of their neighbour to provide a wildlife corridor to the bushland area.

Support or information requirements

To date, Peter and Wendy have been provided with very little information about the Giant Gippsland Earthworm. Wendy attended a local field day conducted by DSE which focussed on the Earthworm and Strzelecki Gum (also found on the Wallace farm), but would welcome further information if available.

Both Peter and Wendy believe the greatest assistance they have received to date has been provided by Greening Australia (GA). The local GA representative has assisted with funding applications and accessing labour resources such as the Green Corps. The value of these services cannot be underestimated according to the Wallaces and not only helped them to get started on their tree planting program, but also assisted them to achieve more than would have been possible without assistance:

"We've received assistance from Greening Australia. They've given us fencing, trees and planting. They planted 2,000 trees for us in 2004 and because we're close to Warragul, the Green Corps group came out. They did it in three days and they kids were really good. It would have been a huge chore for us alone and to fit it in with what we've got to do on the farm already, we would probably have lost half the trees before we got around to putting them in. It definitely helped us take the first step and it was great knowing that someone would come and help us plant trees. We would only have done about one quarter of what we have if we had to do it on our own."

Wendy also suggested that providing support at a local level stimulated them to respond:

"There was an ad in the local paper. Greening Australia and the National Heritage Trust were in the ad together and they had Sam's number, which is a local number, and I prefer to work through somebody who knows the area at least and takes an interest and Sam is really keen – he's really good."

The Wallaces provided some insight into issues which have previously prevented them from applying for funding and other assistance available. The amount of information required by DSE and Catchment Authorities has proven to be a substantial barrier for them in the past:

"If you go through DSE and your Catchment Authorities, you've got to do so much for it ... you've got to draw maps and this sort of thing and you just think oh, that's too hard and too time consuming – into the too hard basket. We've been doing that for 10 years. I've had forms in there that are 10 years old because it's too hard, whereas Sam (from GA) will come out and tell us just to get an aerial map that you can get straight from the maps place in Warragul and then he works it all out – it's really easy. And that is what has been the biggest thing that's got us happening over the past year – it's Sam and the way Greening Australia have managed it I guess."

Peter and Wendy also believe that some grants are only available for work which lacks synergy with their ideals and vision for their farming enterprise:

“What they’re giving funding for one year, they’re canning you for ten years down the track. The government push in Pete’s father’s time was to clear as much land as possible – and they paid you to do it. Now of course, they’ve turned around and they’re paying you to plant trees. There’s always a government push to head in a particular direction because that’s what their scientists at the moment are telling you what should be done ... but five, ten years down the track, all that’s out the window. So you need to get funding for doing something that you truly believe is where you need to go ahead and if you feel wholeheartedly that what you are doing is going to save species, improve the farm aspects and looks, but also production, then it’s meaningful.”

Wendy suggested that a central repository for information relating to grants, funding and support services would be beneficial to many landholders, particularly if its existence was well publicised.

Farm succession planning

The Wallace farm has belonged to the family for over four generations and this seems likely to continue with one of Peter’s and Wendy’s sons, Ashleigh, currently working on the farm and keen to take over *“one day”*.

Ashleigh suggests he is likely to continue with organic farming and the conservation activities his parents have begun.

Peter and Wendy are currently in the process of covenanting two areas of the farm – a wetland and a bushland – but believe it would be impractical for them to do the same for the Earthworm sites due to the size of the area this would involve:

“They are on such a large scale on this farm, it would take out half the back production of a farm that we don’t get a lot off anyway.”

Strzelecki Gum

Introduction



A population of the Strzelecki Gum can be found on an Outtrim property adjacent to the Powlett River belonging to Ross and Jodie Olden. They have willingly allowed Claire Moxham (DSE) to conduct a field trial on their property, agreeing without hesitation to her request to fence off an isolated specimen of Strzelecki Gum and allowing her unconditional access to the trial site.

In the past, Ross and Jodie were members of the local Landcare group, but unfortunately the group has “fizzled out”.

Background

The Oldens own 67 hectares of land, with approximately 64 hectares used for farming. Ross and Jodie initially used the land for a dairy enterprise prior to changing to beef. When Ross took a full time job three years ago, the paddocks were leased to a neighbour for grazing dairy cattle. The land currently supports 200 lactating cows between morning and evening milking, while 40 heifers and 20 dry cows remain on the property day and night.

Strzelecki Gum not only occurs naturally on the Olden property, revegetated riparian zones feature Strzelecki Gums planted several years ago from tube stock sourced through the Powlett River project and Landcare.

Initial awareness

While the Oldens knew the Strzelecki Gum was indigenous to the Outtrim area, they were only made aware that the species was endangered following a community objection to a local council proposal:

“It came up that it was endangered ... and I didn’t know that ... when we had a community meeting when the council wanted to remove a lot of trees at the end of our property to make way for the new bridge. I suggested they should do a study on the types of trees there. They did and found out they were Strzeleckii and Canberra wouldn’t let them remove them.”

Discovering the threatened species status of Strzelecki Gum prompted Ross and Jodie to source further information on the species from the Internet and consequently, when they were approached by Claire Moxham, the Oldens were instantly supportive of conducting a trial on their property.

Claire has provided Ross and Jodie with copies of her research reports, which have been appreciated.

Activities undertaken in the past and planned for the future

The isolated Strzelecki Gum fenced off as part of Claire's trial is likely to remain fenced in the long term, due to the Oldens being keen to see if natural recruitment occurs in coming years.

Ross and Jodie plan to continue planting additional Strzelecki Gum specimens on their land, both in riparian zones and shelterbelts being developed. The shelterbelts are expected to serve a dual purpose - provision of wildlife corridors as well as improving pasture management and stock comfort:

"With the shelter belts, we're trying to create a wildlife corridor that connects the creek to the river in more ways than one and have connecting parts where the animals can travel and not just have patches here and there like what it is at the moment. We're trying to connect up the vegetation that's been here for hundreds of years, the big old trees we've got in the paddocks ... trying to connect them up with other vegetation."

The Oldens are prepared to review aspects of farm management which may be demonstrated to have a negative impact on the Strzelecki Gums, including activities such as fertiliser usage:

"If we were told that fertilisers affected the Strzelecki Gum – well, it depends. How close to the Gum does the fertiliser have to go before it's affected? If you're fertilising where the Gums are, you could keep the fertiliser 10 metres, 20 metres from the tree line, if that's what it takes. If it takes more than that, then if the people who lease the farm want to use fertilisers and it impacts on the gums, then we would suggest they use something else and we would pay the difference if it means saving those trees. Ross and I feel very lucky they they're here and that we've found them in time."

Perceived success of activities undertaken

Jodie believes the trial conducted by Claire has had limited success due to the low number of surviving seedlings. The Olden's planting of Strzelecki gum tube stock however has been extremely successful, with a survival rate of approximately 90% to 95%.

The resultant habitat provision has clearly met the Olden's original objectives of protecting native fauna species:

"The motivation for doing that is the environment, the animals. These animals aren't going to survive unless we do something. We have noticed on the Powlett River where we started planting seven years ago you are deafened by the birds. It's fantastic ... it's a feel good thing. Ross is really happy because he's spotted a couple of birds we haven't seen before and the wedge tailed eagles are hanging around. We've planted she-oaks for the cockatoos that come around once per year because we think they're pretty cool. We're hearing owls ... so it all helps. I saw a baby echidna the other day and you never see baby echidnas and I thought how cool is that!"

Impact of activities undertaken

Preserving existing Strzelecki Gums and planting tube stock in riparian zones and shelter belts has had little noticeable impact on production on the Olden property to date. Jodie does however

expect to see future increases in production due improved pasture and cow condition linked to the provision of shelter.

Prior to planting out riparian zones and fencing them off from stock, Ross and Jodie lost some cows in the creek, which is no longer a problem and is consequently a positive result of activities undertaken.

While there has been no financial impact of protecting existing Gums, the Oldens have spent a considerable sum on revegetating areas on their property. The cost of these activities is funded by the income received from leasing the farm and is part of their strong commitment to providing habitat:

“Financially it’s going to cost us \$1500, \$2000 per year. We can’t do it all at once, so we’ll commit a couple of grand each year forever ... maintaining it and putting in shelter belts and doing the fencing ... that’s what we’ve decided to do. The way we see it, the farm at the moment is making us money. As long as it’s not costing us money – as long as the income from the farm pays for the farm (insurance and rates and all those other things as well as trees, fencing and weed control), we’re happy.”

Reactions of peers and neighbours

Two of the Olden’s neighbours have also undertaken riparian revegetation and wildlife corridor creation, but Jodie pointed out the difficulty of encouraging an aging farming community as a whole to undertake similar programs when in years gone by they have been encouraged to clear vast tracts of land.

Support or information requirements

The direct cost involved in purchasing tube stock and fencing materials can be substantial and while the Oldens have borne these costs to date, it restricts the amount of revegetation they are able to undertake in a year:

“Funding for the tube stock would be helpful. If we got funding, we’d put them in sooner. Instead of doing 1000 per year, which is what we’ve planned, we could do 4000 a year. We couldn’t afford to spend \$4000 on plants in one year. But we have the friends in Melbourne that are quite happy to come down for the weekend and plant 4000 trees here, because that’s what we’ve been doing along the creek. We’ve got the workforce to do it and we’d be prepared to fence it off, but we can’t afford the \$4000 in one hit.”

Jodie also suggests there is a lack of information available to the wider farming community about labour support which is available for tree planting and this is an issue which could potentially be promoted more strongly:

“You can get 4000 trees from Landcare but how do you put them in when you’re working seven days a week milking cows or if you have a beef property that’s so massive and you’re running it yourself, or you’re working off farm to get income? I think that’s the daunting task. There needs to be more publicity about the fact that if you get involved in a Landcare group, they can

arrange big planting days with people from the city. More communication about the fact that we can get people to come down and help you plant those trees. Like Green Corps."

Farm succession planning

Although Ross is working in a full time job away from the farm, he and Jodie have no plans to leave their property. They expect that the riparian vegetation and shelter belts which they have created will remain long after they leave the property ... *"they'll already be there"*. Should they decide to sell their property in future however, Ross and Jodie would be likely to covenant these re-vegetated areas to ensure their conservation.

Strzelecki Gum

Introduction

Several specimens of Strzelecki can be found on a Koonwarra property in Gippsland. The property is owned by Kevin and Hughes but has recently been leased to their son and daughter-in-law, Chris and Sharon. The Hughes family is focussed on environmental farming and have witnessed the benefits of their system over the



Gum
Coral
very
years.

Background

Currently, Chris and Sharon run approximately 180 milking cows, 40 dairy heifers and 60 head of adult and young beef cattle on their 160 hectare property. A cell grazing regime is in place.

Chris and Sharon are members of Landcare and the property is registered with the Land for Wildlife scheme.

Claire Moxham (DSE) has been granted permission to undertake Strzelecki gum trials and studies on the Hughes property and consequently has had some interaction with the family. A Strzelecki Gum has been fenced off as part of Claire Moxham's trial and although better specimens can be found close to the creek, this specimen was selected because of ease of access.

Initial awareness

Coral has been associated with the Australian Plant Society for many years and consequently was aware that the Strzelecki Gum was only recognised as a separate species in 1990. Coral points out that they had always been aware that two very different species of swamp gum could be found in the local area:

"There seemed to be two strains of swamp gum – the decent looking one, which is a bit more like a blue gum ... which is E. strzeleckii ... and the scrappy looking one ... which is ovata. But until 1990, they were locked in together."

The Hughes family was quite surprised when they learnt that the Strzelecki Gum has been identified as a threatened species due in part to the number of trees in the local area, but also because of its characteristics:

"It's all along the river, it's from here to Drouin, Warragul ... all through the hills here. It's all up the back gully ... it's everywhere. It propagates very easily, it grows very easily. Obviously it's only found in a specific area and it's been heavily cleared, but it's very amenable to planting and growing on. It's a good tree. I think it's been listed as threatened because they don't have the

knowledge of it – it was only presented in 1990 – and it's only in this little area, but it probably was only ever in this little area.”

Activities undertaken in the past and planned for the future

When Kevin and Coral first took over the property, it was a “*fairly bleak farm*” with some Cyprus trees around the house and a few pockets of remnant vegetation in the gullies. Being keen to provide an environment they believed would increase productivity, Kevin and Coral embarked on a tree and shrub planting project to provide shelter to both stock and pastures.

For Coral, seed collection and tree propagation became a hobby and provided stock for the many shelterbelts that have been created on farm. Seeds from the Strzelecki Gum have also been collected (long before it was represented as a separate species) and these trees have been included in plantations and revegetated riparian zones.

Coral points out that provision of wildlife corridors was also an aim of planting shelterbelts:

“One of my things was getting Blue Wrens up here to the house, because you went down to one of the dams and they were there and you went down the road and everyone had Blue Wrens and I wanted them up here.”

In their early farming years, Kevin and Coral implemented conventional farming methods and pushed the land in an attempt to maximise productivity. During the 1970s however, several problems arose. Stock health declined, erosion became an issue, pastures began to thin out and weed numbers increased. While searching for an answer to these problems, Kevin became increasingly interested in soil biology and structure, convinced good soil health was a key to environmentally and economically sustainable farming. Increasing organic matter in the soil became his focus and while he believes there are reliable products available today to achieve the formation of stable humus, in the mid 70s he had to rely on what was naturally available – and indigenous trees and vegetation were an important part of creating the necessary biodiversity.

Their belief that productivity is inextricably linked to soil health meant that Kevin and Coral became more holistic in their approach to farming. While Chris and Sharon are “*free to take the farm in whatever direction they want*” they have continued to implement the system that made their parents very successful farmers.

Perceived success of activities undertaken

The success of conservation activities undertaken by the Hughes family is self evident. Revegetated areas have assisted with erosion control, provided shelter for pastures and stock now enjoy greater comfort:

“There are a couple of outstanding examples. One is on the hill and when we first bought that, nine times out of ten you would put the cows out there and it would turn lousy overnight and they'd all be hunched up on the fence. And now ... and we can look out over that paddock ... when the weather is howling up across here we can see that they're still out grazing – the cows are actually out grazing.”

Revegetated areas have also assisted in improving biodiversity and consequently soil biology and the result has been a generally more sustainable farming system.

An increase in bird life is also testament to the success of the Hughes' activities, with Blue Wrens now frequenting the homestead garden and Peregrine Falcons, Black Swans and many other birds nesting on the farm.

One of the Hughes' objectives for the farm was to increase its asset value and the aesthetics of the farm was an integral part of this. In Kevin's and Coral's view, the revegetated areas have successfully improved working conditions on the farm – both in terms of personal comfort and visually.

The Hughes believe Claire's trial has had limited success due to the tree selected to fence off. In the past the shady areas around the tree provided a popular refuge for stock seeking respite from the summer sun and high nutrient levels in the soil have resulted. Grass growth has been prolific and competed with Strzelecki Gum seedlings.

Impact of activities undertaken

In general, the Hughes family believes the conservation activities they have undertaken have provided a positive net gain to productivity and profitability. Chris pointed out that some of the land that has been taken out of production to revegetate was relatively unproductive as a pasture source anyway:

“Most of the gullies that we've pulled out have either been really wet, boggy spots or steep, dry areas that grew very little pastures anyway, so as well as protecting the gullies, so to speak, it's not been super productive. They've been more productive as a shelterbelt than as a little bit of pasture.”

Fencing of shelterbelts, gullies and riparian zones has occurred as Kevin and Coral replaced the old fences or created new paddocks – thus incorporating the cost and labour of conservation activities with farm activities.

The family firmly believes their holistic approach to farming has had a measurable positive impact on both productivity and profitability. While the impact is difficult to quantify on their farm because the system evolved over many years of trial and error, Kevin cites the example of one of his peers as proof:

“We can quantify the effect on productivity and profitability as well, because we took the scheme to an intensive dairy farmer about seven or eight years ago who saw what happened here and wanted that sort of advice for his own business. He was already a top performer, but he was at the limit of what he could do. He had a lot of problems with pasture permanence. He was over sowing his pastures, he was doing all the nitrogen things and animal health was deteriorating and in five years (after focussing on soil health), he virtually doubled his productivity. All those problems didn't disappear, but they receded dramatically by looking at his farm holistically rather than looking at a fertiliser program or an animal health program – he brought the whole thing together. His change in productivity is documented and over a five year period, it increased by 80%. This gave him a big advantage during the recent dry seasons and

low dairy prices. When all his mates were grizzling about going broke, he made enough profit to buy houses and he bought another farm."

Reactions of peers and neighbours

While some of the Hughes neighbours have planted windbreaks, fenced out and revegetated gullies, others have indicated an interest in planting trees on their property to achieve similar benefits. Coral highlighted the issue of weed control however as a key barrier:

"Our neighbours lease the place down below and that's got some nice Strzeleckiis along the creek, but it's not fenced out. I did say something to (the neighbour) at one time and her first remark was 'and who's going to do the weeds?'."

Support or information requirements

In the main, due to Coral's interest and proficiency, the Hughes family has been self sufficient in sourcing seeds and tube stock to revegetate farm areas. While they have managed to successfully apply for one grant to cover the cost of employing a person to assist with planting, Kevin and Chris have typically erected the fences required and Coral has planted the trees and shrubs herself. They recently were granted funding for fencing and planting the final section of the creek.

Kevin points out that they often failed to qualify for available grants due to their non-conventional farming system:

"The main problem we had was because we wanted to do things our own way and we were always thinking a bit differently, a bit out of the square, we never really qualified. There was always some reason."

In the future, the Hughes family would like to see organisations such as DSE invest in research into soil health and structure and to develop economic models exploring the benefits.

Farm succession planning

Chris and Sharon have only recently leased the farm from Kevin and Coral. They currently have no plans to change the farming system in place.

Kevin has considered covenanting some of the farm conservation areas, but has decided against it. He expresses concerns about limiting the ability to change focus should it be proven to be beneficial and feels it may be *"putting a chain around our neck"*.

Kevin also expresses some concern over the level of bureaucracy they would potentially be exposed to and suggests that covenants may not be entirely effective:

"Why would you? Bureaucracy has enough of a foothold in my life. It's not about control, it's about giving remote control to people who don't have an appreciation of that particular environment. Why would you give bureaucracy another stick to beat you with? That's all we're doing with covenants because if they want to put a powerline through a covenanted area, they'll do it."

Appendix 2:
Case study topic guideline

Threatened species and farming

Case study questions

Explore farm system

- Q1. What types of farming activities do undertake?
- Q2. Which is your main source of income?
- Q3. How many hectares do you own?
- Q4. How many hectares are used for farming?

Explore knowledge/awareness / information sources

- Q5. Where did you first learn about the threatened status of (species)?
- Q6. Have you received any information from DSE/DPI/CMA on (species) or habitat preservation?
- Q7. What sort of information did you receive?
- Q8. How useful was that information?
- Q9. Have you received information from any other sources?
- Q10. How useful has that information been?
- Q11. What has been the most useful information sourced?
- Q12. Is there any information you feel has been lacking? Anything else you need to know?

Explore activities undertaken

- Q13. What made you decide to undertake conservation activities or participate in a grazing trial?
- Q14. Where there any factors which initially prevented you from undertaking conservation activities or participating in a grazing trial?
- Q15. What prevented you?
- Q16. Would you say your main focus is on conservation activities relating only to (species) or more general indigenous species / habitat management?
- Q17. What were your main aims when you decided to undertake activities to protect or provide habitat for indigenous species?
- Q18. Can you describe the type of work you've undertaken in relation to (species) and protecting or providing habitat?
- Q19. What sorts of issues have you had to face when implementing these activities?

Explore support / assistance

- Q20. Where you offered any support or services to assist with the activities undertaken?
- Q21. What were they?
- Q22. Are there any services or support which would be helpful, but which haven't been available to you?

Explore financial and/or production impact

- Q23. Do you believe the activities you've undertaken have had an impact on farm production?
- Q24. What sort of an impact have the activities had?
- Q25. How does that production impact affect your future plans in relation to undertaking activities?
- Q26. Do you believe the activities you've undertaken have had an impact financially?

Q27. What sort of impact have they had?

Q28. How does that financial impact affect your future plans in relation to undertaking activities?

Explore perceived success of activities

Q29. How successful have your activities been in achieving your original aims?

Q30. Why do you say that?

Q31. Are you planning to alter any of your activities in the future?

Q32. In what way?

Q33. Does anything prevent you from making changes you think may achieve better outcomes?

Explore reactions of peers / neighbours

Q34. Can you describe the reactions of your peers or neighbours or family to the activities you have undertaken?

Q35. Would you recommend undertaking activities to protect or provide habitat for threatened species to other landholders?

Q36. Why do you say that?

Q37. Can you make any recommendations to encourage other farmers or landholders to undertake activities to protect and provide habitat for threatened species?

Explore any other issues arising

Q38. Is there anything we haven't discussed which you believe is important for me to know?

Demographics

Q39. Gender

Q40. Age

Q41. Education level achieved

Q42. Groups associated with

Landcare, Land for Wildlife, Beefcheque, Lambcheque, TopCrop, Target 10, Bestwool 2010, Grapecheque, Fruitcheque, Vegcheque, other)

Q43. Years farming

Q44. Succession planning

(passed on to family member, sold on open market, leased, left idle, subdivided, partially subject to Conservation Covenant)

Q45. Stocking rate

(heavy, medium, light)

Q46. Grazing management

(rotational grazing, cell grazing, set stocking rate, high fertiliser input, other)

Q47. Where do your key areas of interest on the farm lie?

(business, animal husbandry, pasture management, environmental sustainability, crop management, machinery, soil health, other)

Q48. Has the profitability of your farming enterprise had an impact on your decisions in terms of undertaking activities to protect or provide habitat?