

Implications of listing the Grey-headed Flying-fox *Pteropus poliocephalus* as a vulnerable species in New South Wales under the provisions of the *Threatened Species Conservation Act 1995*

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ABSTRACT

The Grey-headed Flying-fox was listed in 2001 as a vulnerable species in NSW under the provisions of the *Threatened Species Conservation Act 1995*. This paper outlines the legal implications which arise from listing a species as vulnerable in NSW. These include legal protection from harm or damage to habitat, the requirement to undertake environmental assessment of any proposed developments which are likely to impact on the species and the requirement to prepare a recovery plan within 5 years. Problems related to the conservation management of the species are discussed and some potential approaches which may be utilised in development of a recovery plan, including key habitat restoration, are considered.

Introduction

This paper outlines the implications of listing the Grey-headed Flying-fox *Pteropus poliocephalus* as a vulnerable species in NSW under the provisions of the *Threatened Species Conservation Act 1995* (TSC Act).

The Grey-headed Flying-fox is a highly mobile and versatile forager, which continues to be abundant in many areas of eastern NSW, and which plays a vital role in the ecology of forest ecosystems. It also continues to be a significant pest of orchards. At the same time there is evidence of a long-term decline in its abundance which, if it continues, may lead to the species becoming endangered in NSW. Removal of habitat, particularly of lowland coastal forests in north-eastern NSW, appears to be the most significant cause of this decline. However, there is also concern that the culling of the species as a pest may be contributing to its decline.

The successful development of a conservation strategy for such a species will pose a major challenge for both the National Parks and

Wildlife Service and for the wider community as there are many different views and issues to be addressed. Such a conservation strategy will need actions to occur at a range of levels ranging from ecosystem conservation to threat reduction to individual animal protection. It will also need to gain broad community support and have a clear planning framework to ensure success. The TSC Act provides a range of tools to achieve this.

In order to understand how the TSC Act operates, its contents and major provisions are outlined. While this information is not flying-fox specific, most of the implications of listing Grey-headed Flying-foxes are the same as for other vulnerable species which are listed under the TSC Act (that is the general application of the provisions of the TSC Act for their protection). Specific requirements are to develop a recovery plan within 5 years for vulnerable species and to consider and assess the impacts on the species when developments in NSW are proposed.

Contents of TSC Act

Part 1 - objects & definitions

Actions taken to manage threatened species in NSW are required to be consistent with the objects of the TSC Act. These objects are:

- to conserve biological diversity and promote ecologically sustainable development
- to prevent the extinction and promote the recovery of threatened species, populations and ecological communities
- to protect the critical habitat of those threatened species, populations and ecological communities that are endangered
- to eliminate or manage certain processes that threaten the survival or evolutionary development of threatened species, populations and ecological communities
- to ensure that the impact of any action affecting threatened species, populations and ecological communities is properly assessed
- to encourage the conservation of threatened species, populations and ecological communities by the adoption of measures involving cooperative management

Part 2 - listing processes

The TSC Act provides for the listing of the following categories of threatened species and threatening processes based on the decision of an independent committee of 10 expert scientists, “the Scientific Committee”. There are specified criteria to be met for each listing category. The list categories are:

Schedule 1: endangered species, populations and ecological communities

- Part 1: Endangered species
- Part 2: Endangered populations
- Part 3: Endangered ecological communities
- Part 4: Species presumed extinct in NSW

Schedule 2: vulnerable species

As the Grey-headed Flying-fox is listed under this schedule the Scientific Committee was required to demonstrate that it met the criteria for listing as a vulnerable species under s14 of the TSC Act.

“A species is eligible to be listed as a vulnerable species if, in the opinion of the Scientific Committee, the species is likely to become endangered unless the circumstances and factors threatening its survival or evolutionary development cease to operate.”

In order for such a species to be removed from Schedule 2 of the TSC Act, it would be necessary to satisfy the Scientific Committee that the above criteria were no longer met.

Schedule 3: key threatening processes – this allows the listing of process which threaten biodiversity. Relevant processes already listed for the Grey-headed Flying-fox include the clearing of native vegetation.

Part 3 - critical habitat identification

This section only applies to endangered categories and is not currently relevant to the Grey-headed Flying-fox as a vulnerable species. Should the species status be upgraded to endangered or should endangered populations be listed in the future then there is the potential for this provision to operate. The latter is considered unlikely in the short to medium term for such a mobile species.

Part 4 - recovery plans

This section requires the preparation of a recovery plan within 5 years of listing for vulnerable species. It specifies the broad content and process of preparation of recovery plans. The TSC Act specifies that priority is to be given to preparation of recovery plans for keystone species, and the forest pollination role of this species would support priority being given for a recovery plan on this basis.

Part 5 - threat abatement plans

This section requires the preparation of a threat abatement plan within 3 years for a listed key threatening process. While threat abatement plans are separate from recovery plans it should be noted that habitat clearing has been identified as the primary threat for the Grey-headed Flying-fox. Clearing of native vegetation has been listed as a key threatening process and so there is likely to be some overlap between the measures that such a threat abatement plan could identify and priority actions within a recovery plan for this species.

Part 6 – licensing

This section provides a requirement for the issue of a licence or approval of a property management plan for any actions which harm threatened species, populations or ecological communities, or damage their habitat. It also provides specified exemptions from this requirement, particularly for actions approved through the planning process, and its operation normally only occurs when a planning approval is not required under the *Environmental Planning and Assessment Act 1979* (EP&A Act). This section also specifies requirements for the preparation of species impact statements where a significant impact on the species is likely to occur.

Part 7 - stop work orders, joint management agreement

Stop work orders provide an emergency power to direct cessation of operations while urgent negotiations on protection of the species or its habitat occur. There are major limitations on their use.

Joint management agreements provide a mechanism for land management agreements with public authorities where important threatened species habitat is identified.

Part 8 - Scientific Committee

This provides the legislative basis for the operation of the Scientific Committee

Part 9 - Biological Diversity Strategy

This provides for the preparation of a Biodiversity Strategy and the establishment of a Biodiversity Advisory Council, which is responsible for the strategy and the provision of broad biodiversity conservation advice to the Minister. Broad measures for the conservation of threatened species and ecosystems are specified within this Strategy.

- **Schedules 1-3, lists of threatened species, populations, or ecological communities and threatening processes**
- **Schedule 4 - Amendments to National Parks and Wildlife Act (NPW Act)**

This includes additional licensing provisions and penalties for harming threatened and protected species

- **Schedule 5 - Amendments to Environmental Planning and Assessment Act**

These provisions integrate threatened species assessment with planning approvals under the *Environmental Planning and Assessment Act 1979*

(EP&A Act) and are essential for the protection of threatened species habitat both through the development assessment process and through identification of threatened species habitat in environmental planning instruments.

Major mechanisms within the TSC Act

As indicated in the previous section, there are several major mechanisms within the TSC Act which operate together to provide framework for protection of threatened species. These are

- Listing of threatened species on schedules – this provides the legal basis for identifying particular species as threatened and triggers (in respect of species so listed) all the other protective measures which apply to them.
- Management Plans - Recovery Plans, Joint Management Agreements and Property Management Plans – the operation of these plans at a range of scales provides the mechanism for developing an agreed management framework for a threatened species. The recovery plan operates at a statewide scale to identify actions required for species conservation, whereas the other two management planning processes operate at a land ownership level to provide agreed protection. Joint Management Agreements are limited to Public Authorities and require an expert review by the Scientific Committee, whereas property management plans operate at an individual landholder level and could therefore be used as protective mechanism for specific land parcels with important habitat on private land. Property management plans also provide an exemption from other threatened species licensing requirements.
- Protection against species harm/habitat damage – a legal offence is created to harm a threatened species or damage its habitat with a penalty of up to 500 penalty units (currently \$55,000) for a vulnerable species.
- Approval processes under EP&A, TSC and NPW Acts for actions which harm the species or damage its habitat. These are subject to assessment requirements and other constraints, which are further detailed in the next section. Where a significant impact on the species is deemed likely through the initial assessment provisions then, following the preparation of a detailed assessment of impacts (a Species Impact Statement) there is a formal NPWS

approval or concurrence role (or a Ministerial consultation role) before the action can proceed.

- Habitat identification provisions

- Part 3 of the EP&A Act provides for identification of threatened species habitat and threatened species requirements in amended Local Environmental Plans, Regional Environmental Plans and State Environmental Planning Policies. This allows NPWS to request local government or other state government agencies to identify threatened species habitat in Part 3 studies and Environmental Planning Instruments. It could allow the identification of Grey-headed Flying-fox habitat (eg feeding habitat and roosting habitat) in Local or Regional Environmental Plans. Similar provisions exist in other equivalent planning instruments (eg Regional Vegetation Management Plans under the NVC Act). Through these mechanisms the potential exists for such habitat to be protected through appropriate land management zoning.

- Part 3 of the TSC Act makes provision for identification of critical habitat, however this only operates for endangered categories of threatened species.

More detailed information on the above mechanisms and the provisions through which they operate follows.

Approval Process For Actions Which Affect Threatened Species

The TSC Act specifies an approvals' process which is required for those actions likely to

- harm or pick a threatened species, population or ecological community
- damage habitat of a threatened species, population or ecological community (includes critical habitat).

Where such an action occurs, without the relevant approval, this constitutes a breach of the legislation and penalty provisions, which relate to such breaches are specified in the NPW Act.

Definitions

Harm

The TSC Act defines 'harm' in relation to fauna (including an animal of a threatened species, population or ecological community) as having the same meaning as in the NPW Act:

hunt, shoot, poison, net, snare, spear, pursue, capture, trap, injure or kill, but does not include harm by changing the habitat of an animal.

Pick

The TSC Act has introduced an assessment provision for native flora (including a plant of a threatened species, population or ecological community). The TSC Act defines 'pick' as having the same meaning as in the NPW Act:

gather, pluck, cut, pull up, destroy, poison, take, dig up, remove or injure the plant or any part of the plant.

Legislative Approval Process for actions which affect threatened species

In summary, the legislative approval process for approval of the above actions which affect threatened species is :

- determine if consent is required under Part 4 of EP&A Act. If so approval occurs here and no further approval or licence is required
- if no EP&A Part 4 consent if required, then the issue is whether approval is required for the activity under Part 5 of the EP&A Act (granted by some public authority). If so approval occurs here and no further approval or licence is required
- if no part 4 consent or part 5 approval applies, a licence is required under the TSC Act unless specifically exempt.

Specified TSC Act License Exemptions

A licence issued under the TSC Act is not required for:

- actions authorised by a licence granted under the NPW Act;
- developments carried out in accordance with development consent under the EP&A Act;
- activities approved under Part 5 of the EP&A Act;
- actions authorised by *Rural Fires Act 1997* or the *State Emergency and Rescue Management Act 1989*;
- the carrying out of a routine agricultural activity;
- actions carried out in accordance with an approved property management plan; and
- actions that are not likely to have a significant affect on threatened species, populations or ecological communities, or their habitats, as determined by the Director-General of NPWS.

In all the above categories of approvals, the process is to determine whether the action is likely to have a significant effect on any listed threatened species, population or ecological community. This is done utilising a set of factors specified within the relevant legislation, commonly referred to as the “8 part test” (s 94 of TSC Act). If a significant impact is likely, then the preparation of a Species Impact Statement (SIS) is required. Prior to undertaking preparation of a Species Impact Statement, the proponent must seek from the Director General of NPWS (or delegated officers) the specific requirements for preparation of an SIS. Once the SIS has been prepared, the concurrence of the Director General of the National Parks and Wildlife Service must be obtained, where a significant impact is still deemed likely, and any specified conditions in this concurrence decision must be

followed. Where the action is to be undertaken by another Minister then the requirement following preparation of an SIS becomes consultation with the Minister for the Environment (Figure 1). Further information on these processes is available from Threatened Species Management Information Circulars No’s 1,2 and 4 available from the NPWS Web site (www.npws.nsw.gov.au)

The process for licensing the harm of the Grey-headed Flying-fox for orchard fruit damage mitigation is not specifically considered in this paper as it is dealt with an accompanying paper (Waples 2002). However, there is an ongoing need for assessment of the impact that any licensed culling has on the long term conservation of the species. It is proposed to address this primarily as part of developing a conservation strategy for the species in a recovery plan.

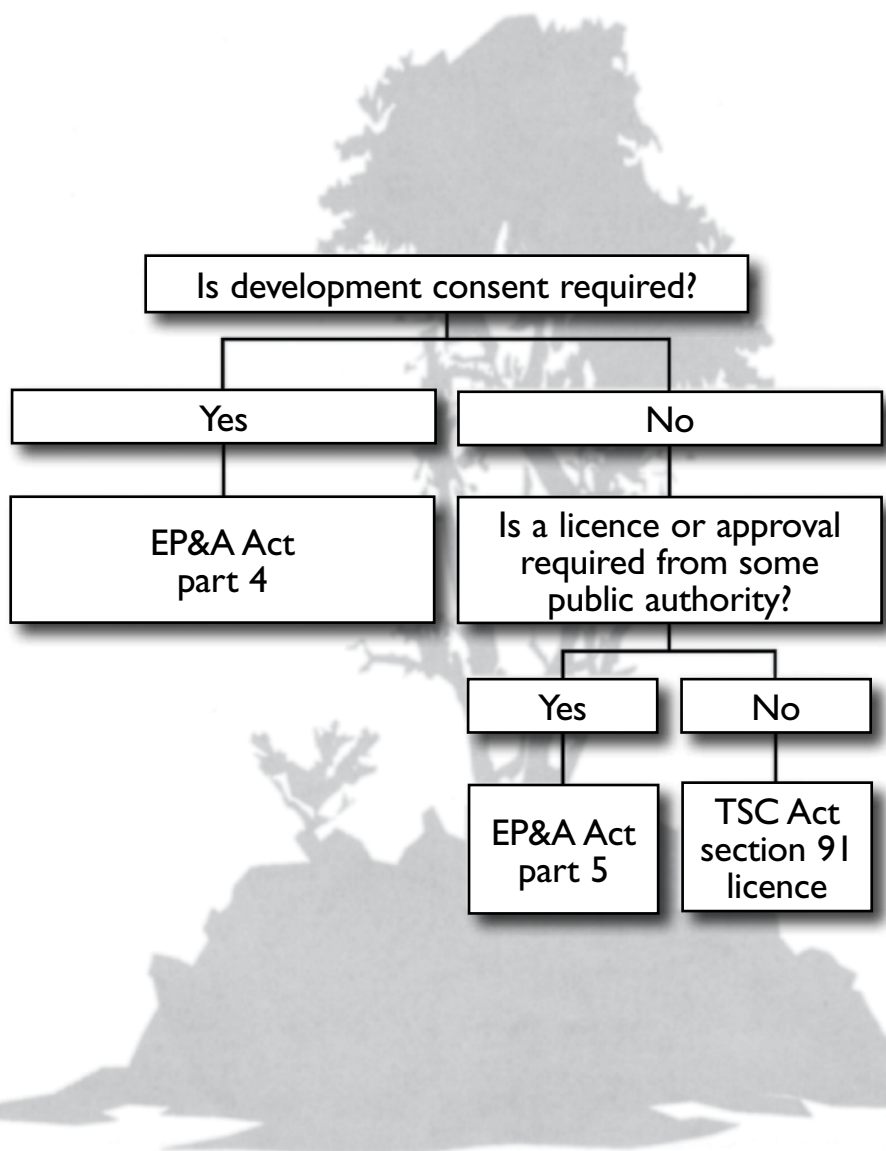


Fig. 1 Actions likely to affect threatened species

Recovery and Threat Abatement Planning

The TSC Act has a statutory requirement to undertake recovery and threat abatement planning for listed species and threats (Figure 2).

Recovery Planning is the development of a 'strategic' program involving both planning and implementation of actions - aimed at 'recovering' species, populations and ecological communities

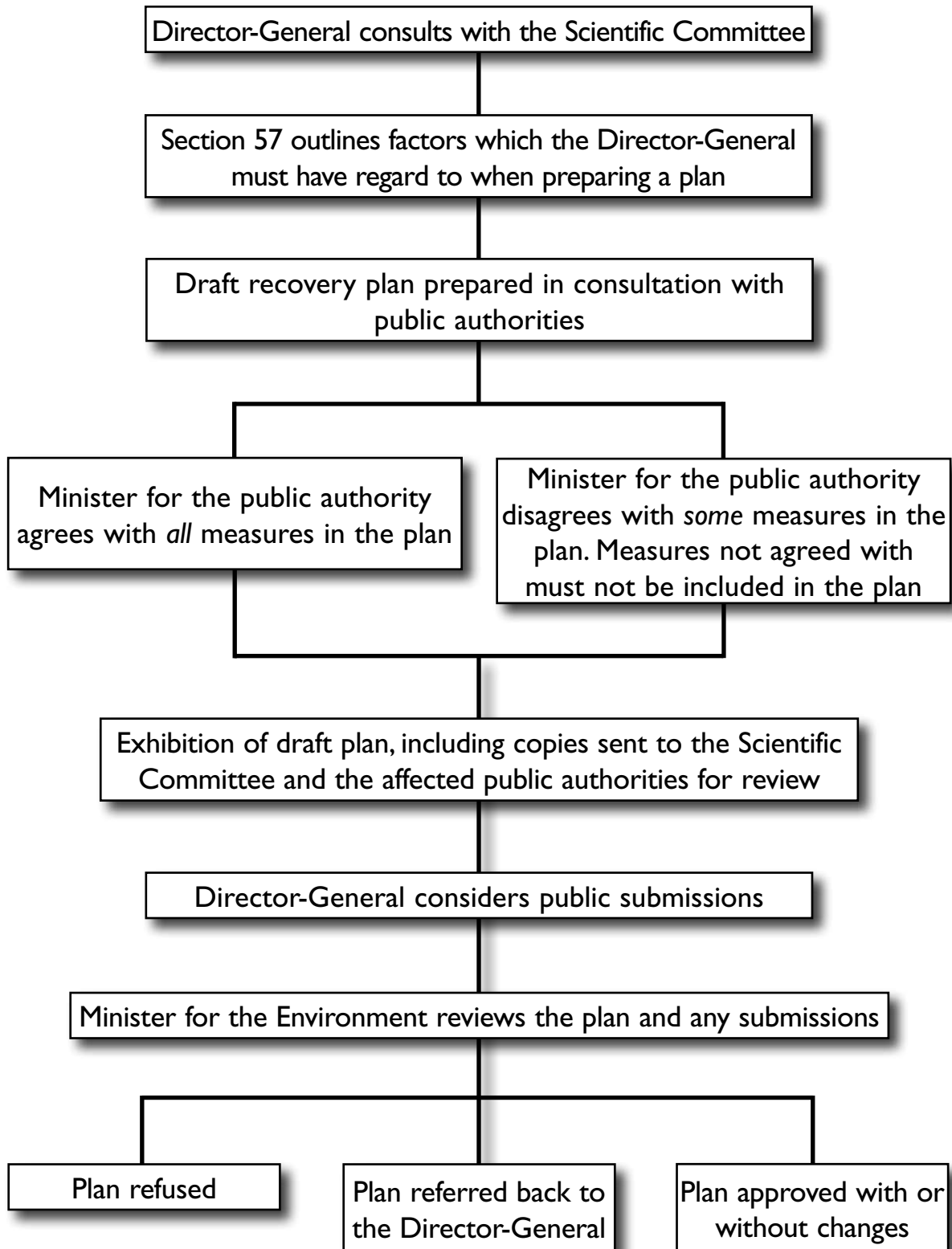


Fig. 2 Preparation of recovery and threat abatement plans

threatened with extinction. A recovery plan is a document which identifies the actions to be taken to promote the recovery of a species, population or ecological community.

A Threat Abatement Plan is a document which identifies the actions to be taken to abate, ameliorate or eliminate the adverse effects of threatening processes on threatened species, populations or ecological communities.

Both recovery and threat abatement plans must consider the social and economic aspects, as well as conservation benefits, for undertaking proposed recovery actions. They must seek to minimise adverse social and economic impacts of any actions to the maximum extent possible, consistent with meeting conservation objectives.

Recovery Plans for problematic species frequently involve formation of a recovery team. Such a team typically comprises a group of stakeholders and scientific experts. They may either directly formulate the recovery strategies for the species, or alternatively the team can act as a reference group to assist in consultation where strategies and actions are developed by specific people. The first stage in the preparation of a recovery plan for the Grey-headed Flying-fox will be to establish a stakeholder consultative committee for the management of the species. This will ensure that there is broad community input into the development of the required conservation strategies for this species and therefore allow an appropriate management framework to be developed. Some of the key tasks which will form part of this recovery plan and which this consultative committee will consider include:

- Development of a sustainable framework for the licensing of any actions which harm flying-foxes to ensure that any long term licensing operates in a manner which does not lead to decline in species abundance. It will include focus on the status of the species as an orchard pest and may require quantification of levels of fruit damage and investigation of non-lethal crop protection techniques.
- Identification of major flying-fox roosting sites and development of appropriate policies for their management, particularly where they occur in close proximity to human residential areas.

- Identification of specific habitat needs and a process where existing important habitat receives long term protection and, concurrently, commencing the restoration of areas of depleted habitat.

- **Recovery Plan** : following the establishment of the consultative committee, the preparation of a recovery plan for this species (required within 5 years) will be given high priority in view of the keystone role of this species in forest ecology, and the high level of contention over its management.

The recovery plan will require a combination of actions to conserve important habitat, minimise species destruction as a result of orchard damage, and assess long term population trends to ensure that population is stabilised. While it is unlikely that there can be any significant population increase in the short to medium term, as this is dependent on total habitat availability, an immediate priority needs be to arrest the population decline.

The long-term recovery strategy for the Grey-headed Flying-fox is likely to involve seeking habitat restoration in key areas to minimise food gaps. These appear to be both a major source of mortality and a significant cause of fruit damage. Local conservation groups (such as Landcare groups) may be able to play a significant role in habitat restoration through planting of appropriate food tree species. The recovery plan for the Grey-headed Flying-fox is also likely to be of benefit for a range of other species which also use coastal forest ecosystems.

- **Threat Abatement Plans** : To manage broad threatening processes, such as land clearing, affecting this and many other species, priority needs to be given to implementing effective threat abatement measures that benefit a range of species. The preparation of a threat abatement plan for land clearing is now an obligation of the NPWS following its listing as a key threatening process. It will occur in combination with the development of a Native Vegetation Conservation Strategy and a range of coastal Regional Vegetation Plans under the Native Vegetation Conservation Act. In combination, these mechanisms are likely to be critical for achieving landscape scale conservation for the habitat of the Grey-headed Flying-fox along with many other threatened species.

Discussion

The legal implications of listing the Grey-headed Flying-fox as a vulnerable species are to give it the same protection as other threatened species in NSW under the TSC Act. However, it remains a problematic species from a management perspective on several counts and these issues are not readily overcome.

One of the major issues is the large aggregations in roost sites, in close proximity to urban areas, which means that it will continue to be regarded as a public nuisance by a proportion of the community. This issue is often increased by perceptions of disease threats coupled with noise, odour and local vegetation damage. The roosting aggregations increase the potential for human disruption of flying fox ecology, while at the same time providing major study sites.

The effectiveness of development assessment processes for a highly mobile species, such as the Grey-headed Flying-fox, will be variable. Significant roost sites are relatively easy to identify and therefore developments, which impact on them, will generally be clear. However, foraging habitat is highly variable in both space and time and will be much more difficult to identify through these processes. A more effective strategy for protection of foraging habitat is likely to occur through a combination of information gathering regarding habitat requirements in association with a recovery plan and then seeking to have important habitat identified through local and regional environmental planning processes.

The night-time foraging behaviour, coupled with the resort to orchard fruit when native food resources are limited, makes the species very difficult to control effectively and at the same time renders the whole population highly susceptible to long term impacts of control. Compliance of control is particularly difficult. There is a lack of information regarding the fate of animals where control has been attempted and there is difficulty ensuring that numbers controlled remain within set quotas. There is also a high potential for unauthorised control to occur, due to an inability to have concurrent scrutiny of control at a large number of potential damage sites. The species mobility means that sites and levels of damage can be highly erratic and difficult to plan for at both a fruit grower and NPWS level. At the same time, bouts of extremely severe fruit damage can leave growers in a situation where they see little alternative other

than to undertake high levels of destructive control if they are to retain a saleable fruit crop. Concurrently, there are severe logistical difficulties in undertaking humane control of a small mobile animal, which flies at night time, particularly when dependent young remain at roost sites. In such a situation, having an adaptive management framework, which allows new approaches to be investigated, and is also seen as equitable to affected parties, will be essential.

With the range of severe problems, relating to orchard and camp management, it is easy to lose sight of having a primary focus on habitat protection and restoration, however this is likely to hold the key to the long-term recovery of this species. In particular, gaining a better understanding of what drives the availability of food resources and what options there are for greater stability in these resources is an area where there needs to be a clear research focus if solutions are to be found. While the listing of the species as threatened does not solve these problems, it provides an impetus to find ecologically based solutions and therefore to effectively recover the species.

A significant step forward in the conservation of this species has come through the forest reservation process in northern NSW. The increased reservation of forested lands in this area arising from Regional Forest Agreements for the Upper and Lower North East Forests, coupled with an increased focus on ecologically sustainable forest management in other State Forests, provides potential for improved management at a forest landscape level to benefit this species.

Conclusion

The TSC Act provides a range of protection and planning tools relevant to Grey-headed Flying-fox conservation. Those which are likely to be most relevant include:

Legal protection of the species from harm or habitat damage as a result of its listing as a vulnerable species.

Environmental Impact Assessment – there is a requirement to undertake environmental assessment of any developments or activities which are likely to impact on the species under Parts 4 and 5 of the EP&A Act and Part 6 of the TSC Act.

Habitat Identification and Protection under Part 3 of EP&A Act – this allows NPWS to request

local government and other agencies to identify threatened species habitat in Part 3 studies and Environmental Planning Instruments. It allows the identification of Grey-headed Flying-fox habitat (eg feeding habitat and roosting habitat). Other equivalent planning instruments (eg Regional Vegetation Management Plans), also perform a similar function and over time these provisions allow land zoning for protection of important habitat.

Recovery Plan : its preparation over the next 5 years will be given high priority in view of the keystone role of this species in forest ecology, and the high level of contention over its management. Recovery will require a combination of actions to conserve important habitat, minimise species mortality, and assess long-term population trends to ensure that population is stabilised. A long-term strategy for population stability or increase is likely to involve seeking habitat restoration in key areas to minimise food gaps which appear to be a major source of species mortality.

Threat Abatement Planning : The preparation of a threat abatement plan for land clearing is now an obligation of the NPWS following the listing of this key threatening process. It will occur in combination with the development of a Native Vegetation Conservation Strategy and the preparation of a range of coastal Regional Vegetation Plans under the *Native Vegetation Conservation Act*. These have the potential to jointly provide a mechanism for protection of flying-fox habitat on private land.

Land Management Agreements (eg Joint Management Agreements) – these identify how to manage public lands for threatened species – these may be able to be developed for key habitat areas such as roosting sites and key feeding sites which are on public lands. This gives a formal mechanism to ensure that relevant land managers have a commitment to undertake required actions for Grey-headed Flying-fox conservation on lands they manage. Such agreements are also likely to benefit a range of other threatened species utilising the same habitat classes.

References

Waples, K. 2002. Review of the NPWS policy on the mitigation of commercial crop damage by flying-foxes. Pp 39-46 in *Managing the Grey headed Flying-fox as a*

threatened species in NSW, edited by P. Eby & D. Lunney, Royal Zoological Society of NSW, Mosman.

QUESTIONS & ANSWERS

DAN LUNNEY: Graham, thank you indeed.

JOHN BICKNELL (orchardist): One of the big problems we have as far as the flying-foxes are concerned is the removal of habitat, and a good deal of that habitat is removed by government. How do you control government?

GRAHAM WILSON: Actually, that is a really good point. The planning provisions are what applies to government in making a decision, and that includes local government under Part 4 of the Planning Act [*Environmental Planning and Assessment Act 1979*, also see Anne Conway's paper –eds]. The obligation in relation to a threatened species is to try and identify important habitat through Part 3 of the Planning Act. It is an important tool, and then for other decisions of government, they become caught up in Part 4 and Part 5, but particularly part 5, of the Planning Act. A lot of the broad issues are Planning Act matters.

JIM SHIELDS (State Forests): Graham, one of the things that I don't think has been brought out enough in planning is the difference between planning for a vulnerable species and planning for an endangered species. Would you like to speak to that point?

GRAHAM WILSON: Yes, that is really important because we tend to think of threatened species as being highly endangered, such as some endangered plants that might be known from two or three sites of half a hectare each. In one way, that's reasonably easy, you can probably just put a fence around

those areas and try and expand that habitat, but of course here we are talking about a species that ranges across a third of New South Wales, plus probably almost an equivalent area of Victoria and southern Queensland. So we are talking about a monumental scale of impact and threat.

Therefore, we need broad scale planning processes; that's why I referred to the Planning Act in New South Wales because we really have to think about land use as part of the long-term solution. The other thing we have to think about is the community groups that can start to look at habitat restoration. I suspect the recovery planning for this species will include groups like Land Care, who are already actively involved in revegetation and trying to get the right food tree plantings as an active process. Some of the fig tree work that's already happening in northern New South Wales for the Coxen's Fig parrot may well dovetail fairly well with this species. So we need that broad scale of approach to the issue. I don't know if that helps you, Jim.

JIM SHIELDS: Yes, thanks, it does.

DAN LUNNEY: Graham, thank you very much.