

# Review of captive management of kea (*Nestor notabilis*)

– report on initial consultation with stakeholders July 2011



Kea at Nga Manu, Waikanae. Photo: Rob Scotcher

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## 1 Background

Kea are held in captivity in approximately 28 facilities throughout the North and South Islands. The captive population has been managed in a coordinated programme since 1991, which aimed to rationalise and make better conservation use of the large number of captive kea in NZ (Pullar 1996).

The 1996 Captive Management Plan (Pullar 1996) set minimum standards for housing conditions, and a target captive population of approximately 100 birds. By setting in place a moratorium on breeding, the plan was effective in reducing the size of the captive population from over 290 birds in 1991, to approximately 80 now, through natural attrition. The numbers of kea held singly, in private hands (off-display) and in sub-standard conditions was also reduced. The breeding ban has led to a captive population with an imbalanced age structure (i.e. aging birds with little recruitment) and possibly lowered genetic diversity.

The Department of Conservation (DOC) published its policy on Captive Management of Wildlife Absolutely Protected under the Wildlife Act 1953, in 2003. Then in 2008, the Captive Management Standard Operation Procedure (SOP) was approved. The policy and SOP set out criteria and standards for captive management. A new kea husbandry manual (Orr-Walker 2010) was produced in 2010, providing new minimum and best practice standards for captive husbandry.

With DOC policy and husbandry standards in place, the future of the captive kea programme now needs to be re-assessed, relevant stakeholders consulted and decisions made on its purpose and future direction. As there are differing views on how the captive kea population should be managed and for what purpose, engagement with stakeholders was considered to be the first step.

## 2 Introduction

This phase of the review aims to identify and discuss the perspectives of all stakeholders, before entering into an objective setting process which would be included in a new plan for captive management of kea.

Captive kea stakeholders were consulted by way of a questionnaire in May 2011, which asked for their views on the value of having kea in captivity and where captive management should be heading. The questionnaire was sent to captive kea holders, the captive coordinator, the Zoo Aquarium Association (ZAA), Kea Conservation Trust (KCT), Ngai Tahu and DOC Technical Support and Biodiversity staff. The questions are attached as Appendix 1.

A complete set of all responses to the survey is recorded in [DOC DM-790065](#), along with a list of the current captive kea holders.

Nineteen kea holders, the captive coordinator, seven DOC staff, two Ngai Tahu representatives, the KCT and two ZAA managers completed the survey.

### 3 Feedback from captive kea stakeholders

#### 3.1 The value of captive kea

Seven people thought there was limited value in holding kea in captivity, although four of them mentioned advocacy as having potential benefit if it was done well.

Their main concerns were:

- Welfare of the birds - kea are highly intelligent; in captivity they generally do not receive enough behavioural enrichment and some aviaries are too small
- Advocacy is often not of a high enough standard to provide advocacy value
- Conservation advocacy can be achieved without needing to have birds in captivity - for example through the work of the KCT, wildlife films or the birds themselves in the wild
- Bored kea in substandard conditions do not provide good advocacy - because kea are so intelligent it is very difficult to keep them entertained/fulfilled in captivity

Several people questioned the ethics and humaneness of holding a species of such intelligence in captivity at all, and whether the perceived benefit of conservation advocacy justifies sustaining the captive population and outweighs the welfare cost to the individual birds.

Other respondents identified the following four main areas of value in holding kea in captivity, and all were considered to offer conservation benefits to the species.

#### **Value 1: Advocacy**

All of the kea holders, ZAA managers, Kea Conservation Trust and most of the DOC staff that responded saw advocacy as one of the most (or the most) important values of having kea in captivity.

Several people made the comment that advocacy needed to be done well with high quality aviaries to achieve conservation benefit, and that advocacy value is limited if facilities do not meet the new minimum husbandry standards.

The following benefits of captive kea for advocacy were identified:

- Giving people the opportunity to see kea, raising awareness.  
Having kea in captivity gives people with no access to the backcountry the opportunity to see, interact with, and care about kea - so advocacy messages reach higher numbers of people than if there were no captive kea. New Zealanders are becoming increasingly urbanised, yet are expected to care about, and support (through taxes) conservation of species and habitats. Many people do not understand the threats to kea and the factors that contribute to their decline.

- Catalyst for fundraising for conservation projects.  
Two holders mentioned that having kea on display has helped raise funds for in-situ conservation projects.
- Helping reduce adverse interactions with wild kea.  
Most respondents felt that one of the most important threats to wild kea is adverse interactions and conflict with people. Advocacy can focus on explaining the basis for kea's 'destructive' behaviour and highlighting their vulnerability to human impacts (shooting, lead poisoning, feeding junk food, etc.). Educating people on how to behave around wild kea (e.g. not feeding them, sharing their space) was considered particularly important by facilities in the South Island, where people are closer to kea territory.
- Building support for kea and their habitats and conservation.  
Kea are one of the few species that will interact with visitors and some would say are one of NZ's iconic native species. They are excellent ambassadors for advocating the conservation message and are powerful advocates for their species. Good displays will promote interest in conservation and empathy with kea - building personal bonds with kea can inspire people to act.

Willowbank: *“Thousands of foreign and local visitors come to Willowbank every year to see the kiwi, however many leave with the kea having made the strongest impression on them.”*

## **Value 2: Research**

Twelve respondents said that captive kea were valuable for conservation research, specifically:

- Trials of bait and trap designs for pests, and modifications to reduce unwanted impacts on wild kea (testing safety of kill traps and bait stations, bait aversion trials, etc.).
- Testing of repellents to reduce kea-sheep conflict.
- Furthering knowledge of the species, e.g. nest monitoring provided DOC with weights and photos of chicks throughout development to help age chicks in the field.
- Development and improvement of husbandry techniques for the species, should they ever be needed to aid kea recovery.
- Trialling kea management techniques such as catching techniques, transmitters, id. band trials.
- Providing samples (blood/serum/faecal/feather) for research, e.g. moulted feathers for past bird distribution studies using stable isotopes.

## **Value 3: Insurance population/future conservation value if needed**

Eight out of 18 kea holders and three other stakeholders thought that while there might not be a need for a breed for release programme right now, the captive population could provide valuable insurance in case of events leading to major population decline in the wild. If the captive population was well managed with optimum genetic diversity and age structure, it could potentially provide birds for release into the wild in the future, if a recovery programme was needed to restore kea to areas where populations had crashed.

## **Value 4: Maintaining husbandry skills and infrastructure in the captive industry.**

Several people thought it was important to retain the kea husbandry skill set and expertise within the captive community, as kea are an intelligent species requiring a high level of care. In addition, refining husbandry techniques (especially for breeding kea) so that the required skills are available if needed for recovery/reintroduction purposes in the future.

Capital projects of the size required to hold kea appropriately take several years and significant funding to become a reality, so it is important that current infrastructure remains viable. There has already been a significant investment in custom-built facilities for kea.

## 3.2 Issues with current captive management

### **Management of captive population**

The lack of managed breeding in the past has resulted in an imbalance in the age structure (older birds) and loss of genetic diversity. The general feeling was that the captive population is currently not being managed sustainably.

Everyone that supported having a captive kea population agreed that the population needs to be managed differently to be sustainable long term, i.e. for maximum genetic diversity and healthy age structure. Many people said that to achieve this, limited breeding of carefully chosen individuals would be needed, and new founders might occasionally need to be added to the population.

### **Communication**

Several people felt that communication was lacking between the captive coordinators, ZAA member holders and private holders, to the detriment of the captive programme. They said that people need to be kept up to date and actively exchanging information and birds as needed to maintain the genetic integrity of the captive population.

### **Husbandry standards**

Thirteen people thought that some captive facilities do not provide enough behavioural enrichment for kea or that some housing was not up to standard. The expectation coming through in people's comments is that the new husbandry manual would address this issue as facilities work towards meeting the new standards.

The majority of respondents said that holders should have to meet the husbandry and advocacy standards required to be allowed to hold kea, with some saying that DOC should more actively enforce this aspect of holder's permit conditions.

KCT, ZAA and the captive coordinator raised the issue that DOC does not consistently implement enforcement of husbandry standards and permit conditions. KCT suggested that if holders are not meeting the minimum standards, they should be given set periods to raise standards or the animals be removed. There currently seems to be no monitoring system when renewing permits and an auditing timetable is needed. *"Standards are of little value if they are not rigorously monitored and failings not met with some appropriate consequence."*

ZAA raised a related issue, that national consistency is needed with kea holding permit requirements. DOC should use a set of standard permit conditions, including a requirement for the holder to comply with husbandry manual standards.

Other points raised singularly about husbandry standards were:

- Not allowing breeding is becoming a welfare issue as birds become frustrated at being unable to nest during breeding season. (Note: the husbandry manual does address this issue).
- Addressing all the needs of captive kea detailed in the new kea husbandry manual really begs the ethical question of whether the 'world's smartest bird' should be held captive at all?
- Concern that the recent husbandry manual did not go through the standard species management programme endorsement process for members of the ZAA. Although holders were provided with

an opportunity to comment, their endorsement of the manual prior to publication was not sought. Would like to see review of new husbandry manual including standards endorsement process.

- The minimum enclosure size standard in the new husbandry manual is too large - people could adequately provide for the welfare of the birds in smaller aviaries with carefully thought out behavioural enrichment, browse and a range of substrates.
- Increasing the minimum standards of the husbandry manual further would mean some holders were unable to meet the standards required.
- Delete the proposed six monthly internal audit (husbandry manual) which is right over the top.

Apart from the three latter points, none of the respondents indicated they would not be able to meet the husbandry manual standards or that the standards were too high. Comments about the husbandry manual were generally positive and accepting that high husbandry standards were necessary for captive kea.

### **Measuring the conservation benefits of advocacy**

- Several DOC staff felt that it is difficult to measure conservation benefits of advocacy; that we need to get better at determining how to improve the advocacy value of captive kea and put in place ways to measure benefit to the wild population.
- Orana Park noted that their new walkthrough aviary and improved interpretation has increased the length of time visitors spend viewing kea, increasing the potential to convey conservation messages about kea. "Visitors provide more positive comments about the birds. Previously, the birds were 'boring', now 'they are amazing animals'. Furthermore, due to the interest shown by teachers when booking formal curriculum-linked programmes, the kea are now included in almost 85% of formal education programmes (previously, only 5%)."
- Kea Conservation Trust cited two reports on studies about impacts of zoo visits/learning programmes:

[http://warwick.academia.edu/EricJensen/Papers/402822/Learning\\_about\\_Animals\\_Science\\_and\\_Conservation\\_Large-scale\\_surveybased\\_evaluation\\_of\\_the\\_educational\\_impact\\_of\\_the\\_ZSL\\_London\\_Zoo\\_Formal\\_Learning\\_programme](http://warwick.academia.edu/EricJensen/Papers/402822/Learning_about_Animals_Science_and_Conservation_Large-scale_surveybased_evaluation_of_the_educational_impact_of_the_ZSL_London_Zoo_Formal_Learning_programme)  
[http://www.aza.org/uploadedFiles/Education/why\\_zoos\\_matter.pdf](http://www.aza.org/uploadedFiles/Education/why_zoos_matter.pdf)

## **3.3 Future direction or objectives for captive management**

### **Consultation and communication**

The following suggestions were made for consulting and improving communication among stakeholders:

- Hold a workshop with stakeholders to review the issues for captive management and develop objectives/actions for a new captive management plan.
- Engage all stakeholders in the writing of the captive management plan. This would include giving feedback on submissions and seeking endorsement from stakeholders (including all holders) before the document is finalised. This would ensure buy-in from all stakeholders.
- Establish and promote mechanisms for communication between all kea stakeholders, e.g. regular kea conservation updates to holders to help keep advocacy messages current, produce and distribute Annual Report and Recommendations or equivalent.

### **Captive coordination**

There were a few comments about the future role of the captive management coordinator:

- Review the captive coordinator position and appoint a single coordinator from within the captive industry.
- The captive coordinator needs expertise in small population management to manage the population sustainably.
- A new captive coordinator and stud book keeper should be appointed by DOC. The captive coordinator role should be someone actively involved with kea conservation and who will continue to work with holders to increase captive standards within set timeframes. A studbook keeper should be knowledgeable of basic genetics requirements and tools, and aware of welfare issues.
- The captive programme must be overseen by someone with appropriate organisational backing following a strategy developed by all stakeholders.

### **Size of the captive kea population**

Answering the question of how many kea holders there should be, most people said that the primary concern was that holders must first meet the standards required in the husbandry manual. Half the respondents thought the current number of holders was enough or too many.

Most people thought that there was currently enough kea in captivity, or that there needed to be just slightly more for the population to be self-sustaining, with old stock being replaced with captive-bred young.

The majority said that the number of kea in captivity should be determined by the number needed to maintain adequate genetic diversity (depending on the goals of the captive programme), and the capacity of holders to ensure the health and wellbeing of the birds. The appropriate order of events is that the goal and objectives of the programme are determined first, the holders match the standards required to achieve these, and the population size and number of holders follow from that.

Other comments:

- There should be fewer holders, with birds living in larger groups.
- Breeding should be managed to create ‘flocks’ of juvenile birds (not just one chick), enabling them to express and learn from the natural behaviours of their age group.
- The number of new holders should be limited, and may even be self-limiting due to the high housing standards required.
- There should be an on-going reduction in the number of birds held in substandard facilities.
- Facilities that exceed minimum standards should be allowed to hold surplus birds from private holders or those with substandard facilities.
- The size of the population determines the frequency with which new founders are required to maintain adequate genetic diversity in the captive population and to minimise inbreeding. Populations of less than 50 birds are likely to be demographically unstable – so that should be the minimum target population. If 100 spaces of adequate size can be provided then the required rate of new founder addition will be significantly less than for a population of 50.

### **Private holders**

Eight people questioned private holders keeping kea and thought private holdings should be phased out for the following reasons:

- Lack of advocacy value because the birds are not on display to the public, no particular purpose for them
- Privately held kea that are treated like pets are not a good image

- Potentially less accountability and substandard housing conditions
- Captive native parrots are a potential portal through which exotic diseases could infect wild parrot populations, so kea should only be kept by professionally managed institutions (and ideally only in the North Island to prevent escapes infecting wild populations)

Two people suggested there was value in private holders keeping kea if they had extensive knowledge and bird breeding skills.

### **Advocacy standards**

DOC staff who responded to the questionnaire said that the captive programme should be focussed to only include well managed facilities that can provide effective and high quality conservation advocacy - including having high husbandry standards and being open to the public.

Most respondents mentioned threats to kea in the wild and suggested the main threats were introduced predators and people-related hazards. Much of the current captive advocacy is about threats to kea populations and habitat.

The advocacy messages that people thought would contribute to the protection and conservation of kea were:

- The risks to kea of lead poisoning, how owners of back country buildings can mitigate this risk
- Impacts of predators on kea and other native species, the need for predator control and the methods used
- Other threats to kea such as conflict with humans, sheep - the need for reducing opportunities for kea to be a nuisance, understanding and having tolerance
- Positive actions for the public to take (e.g. sharing kea territory space, joining KCT)
- How to interact with wild kea - what people should and shouldn't do (e.g. why not to feed kea)
- Uniqueness and beauty of kea, physiology and history of kea, their role in ecosystem
- Intelligence of kea and why they behave as they do (ecology), behavioural needs in captivity
- The role captive populations play in research to help wild kea - clear links to conservation actions in the wild

### **Management of captive kea population**

Nearly all stakeholders that supported maintaining a captive population thought that it should be managed to be self-sustaining long term, with maximum genetic diversity and healthy age structure.

Two people said that a long term commitment to the captive programme is needed from DOC and kea holders. This will enable holders to commit to meeting the new husbandry standards required.

About half thought the captive population should be managed so that it could be of use to breed birds for release in the future, if this was ever identified as a potential recovery action. Also mentioned by two people was that the captive population should be managed to maximise genetic diversity (and therefore its value) now, to support the wild population if the need should ever arise, rather than expecting to be able to remove founders from the wild in future (when genetic diversity may already have reduced).

Three people thought the captive programme should include breeding for release now and that kea should be in a recovery programme because numbers were declining in the wild.

ZAA offered the following advice about small population management:

A captive population managed sustainably would have a founder population of a minimum of 20 unrelated kea (i.e. 20 kea of wild origin - assumed unrelated), and it would be managed with the intent



of retaining a minimum of 90% genetic diversity of these 20 founders for an extended period. A founding population of 20 will capture 98% of the genetic variance in the wild population, although it will not necessarily capture the more rare alleles.

Population modelling software such as PM2000 (and the newer PMx) is used to determine optimum pairings, based on equalizing the representation of all founders (mean kinship approach) and minimizing inbreeding. It will also calculate the level of breeding required and the number of new founders needing to be injected into the population over specific time periods. This is vital when managing a long lived species such as kea. The ZAA has the capacity to undertake this work, and their staff regularly receive training to stay abreast of the latest international developments in small population management.

A population managed this way would be capable of being ramped up in the future to provide birds for release if it was ever needed. The number of founders needed for a self-sustaining population is the same whether the population is being managed for advocacy alone or for a breed for release programme.

Other comments made singularly about management of the captive population:

- Use the available skill base to manage the population sustainably (e.g. ZAA and Otago University geneticists).
- If the captive population can't be managed well it should be phased out.
- Management of the captive population through the species management programme of the ZAA is the preferred management method.
- Regular annual reports & recommendations are a good step to providing a well managed programme.
- Review and improve husbandry and keeper skills as an industry.
- Holders should be required to participate in research for conservation benefits.
- Clearer links between captive and in-situ kea conservation and research projects are needed. Develop captive kea research objectives and partnerships with research facilities.
- There should be an advocacy plan for the captive program as a whole.
- It would be good to have managed husbandry records/notes that are available to all holders.
- Take captive management out of government hands.
- Need a unified approach to implementing the management plan/kea husbandry manual, rather than having several fragmented groups with varying opinion, interpretation and values place their viewpoint on the captive holders of kea.
- Send captive bred birds to top quality overseas establishments in exchange for a significant donation to DOC to fund conservation of kea - would help international education and provide additional insurance population.

### **A new captive management plan**

What was said about developing a captive management plan:

- There are benefits in developing a captive management plan so that all parties can agree not only on the aims and objectives of maintaining a captive kea population, but also on the mechanisms through which it will be managed
- The captive management plan needs to be able to evolve with changing needs and research

- Hold a workshop with stakeholders to nut out the issues for captive management and develop objectives/actions for a new captive management plan
- A captive management plan should have clearly defined, unified goals with agreed actions, expectations and appropriate time-frames, and a pathway made for an efficient review process

What was said about what the objectives should be:

- About half of the stakeholders that responded said the objectives of the last captive management plan were still appropriate or suggested similar objectives. Most important was to manage the population for long term sustainability, by maintaining adequate genetic diversity and a healthy age structure through the introduction of new bloodlines and carefully planned breeding.
- Many said that an objective should be a genetically healthy self-sustaining population that would be suitable for breed for release programme if needed in future.

In addition, the following were suggested for inclusion in a captive management plan:

- Review the targets (population size, % genetic diversity over time period) and clearly state how the programme will be managed, i.e. the source of new founders and the rate at which they are expected to be required
- Acknowledgement that wild kea populations are under pressure
- Acknowledge the advocacy/education role and potential of captive kea and include concise advocacy objectives that support the species
- A clear distinction between the professional holdings in zoos and wildlife parks and historical holdings of birds as pets from a previous era
- Allow facilities that exceed the minimum standards (the highest quality facilities) to breed kea or hold surplus birds from current holders
- Expand existing objective about meeting minimum aviary standards to include:
  - ensuring captive birds exhibit minimal detrimental effects from being in captivity
  - also preserving natural behaviours (including reproductive)
  - holders must meet minimum requirements in the husbandry manual, with emphasis on striving for best practice management
- Ensure that the cultural materials bank is a high priority and that all permit holders understand this
- Mechanisms for communication between all kea stakeholders
- Holders should be required to participate in research for conservation benefits, but only allow research that is of benefit to kea

## 4 Policy framework

The Department's Captive Management Standard Operation Procedure (SOP), approved in 2008, was developed to enable DOC staff to assess and process applications to hold protected species according to the Department's policy on Captive Management of Wildlife Absolutely Protected under the Wildlife Act 1953, released in 2003. The Captive Management SOP sets out specific criteria for holding protected species in captivity, in keeping with the principles of the captive management policy which makes it clear that there must be a conservation benefit to holding wildlife in captivity.

Currently kea are not part of an official recovery programme directed by a recovery plan. The kea captive programme does not fall under **Category 1** of the Captive Management SOP, “Captive management for direct conservation benefit - Recovery and Restoration”, because captive management has not been identified as a priority action in a recovery plan, and the other criteria for holding under Category 1 (emergency salvage, research, insurance, restoration) do not apply. (Appendix 4.1 of the Captive Management SOP has more details.)

The captive kea programme falls under **Category 2** of the Captive Management SOP, “Captive management for indirect conservation benefit - Advocacy”. (Appendix 4.2 of the Captive Management SOP has more details.)

The following Category 2 criteria are of note:

- Populations must be maintained only from existing captive stocks or be injured animals that cannot be rehabilitated
- On a case-by-case basis DOC may consider collection of specimens from the wild to maintain genetic diversity of a captive population if there is strong evidence that genetic diversity is limited and potentially detrimental to the welfare of the individuals through inbreeding
- Facilities must comply with a Programme Outline<sup>1</sup>, a Husbandry Manual<sup>2</sup> and individual holders’ Advocacy Plan<sup>3</sup>
- Holders who hold the species on display must score at least 20 points according to the scoring system in the SOP.

The Captive Management SOP states that current holders who do not comply with requirements will have to surrender the animal (when their permit to hold expires), if it is required for a coordinated captive programme. If the animal is not required for the captive programme, a new permit can be issued to hold under Category 3. Criteria for holding birds under **Category 3** “Grand-parenting<sup>4</sup>” include: a) the animal is not able to be included in coordinated captive programme; b) the animal will not be displayed, bred, transferred or released.

A new husbandry manual (Orr-Walker 2010) has been developed which sets new standards for the captive husbandry of kea. A Programme Outline (or full captive management plan<sup>5</sup>) is yet to be developed. Development of an overall Advocacy Strategy<sup>6</sup> would assist holders in developing their Advocacy Plans.

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<sup>1</sup> The Programme Outline is a brief document which describes the rationale for the protected species being selected for management and the aims and goals of the captive management programme. Required for Category 2 captive programmes and a ZAA standard.

<sup>2</sup> The Husbandry Manual is a document which states the record keeping requirements, standards for accommodation, feeding, health care and other living requirements for protected species held in captivity. Required for species held in captivity for recovery, restoration and advocacy.

<sup>3</sup> The Advocacy Plan is a document which states the goals of an advocacy programme for species that are held on display. Required for all holders of species held on display.

<sup>4</sup> Grand-parenting definition: the animal is held in an authorised facility (that meets the required facility standards) without breeding until they die a natural death.

<sup>5</sup> More detailed than a Programme Outline, the Captive Management Plan states the goals and objectives of a captive management programme and the actions and resources needed to achieve the goal. Required for Category 1 captive programmes, but optional (and recommended) for Category 2 captive programmes.

<sup>6</sup> The Advocacy Strategy states the advocacy goals for a coordinated captive programme and is used by holders or institutions to develop their site-specific Advocacy Plan. It is optional for captive programmes.

## 5 Status of kea in the wild

Kea was ranked as “**Nationally endangered**” in the 2005 threat classification lists (Hitchmough *et al* 2005, Molloy *et al* 2002), because it fitted the status criterion “The total population size is 1000–5000 mature individuals” and trend criterion “There has been a decline of > 60% in the total population or habitat area in the last 100 years”.

The NZ Threat Classification system was revised in 2008 (Townsend *et al* 2008), which led to new threat categories and revised definitions and criteria. Under this system kea was ranked in 2009 as “**Naturally uncommon**” (within the “at risk” group), because it fitted the criteria: population naturally confined to a specific habitat/geographic area, totals less than 20,000 individuals and appears stable.

The expert panel for the bird listings now agree that this ranking was probably a mistake (Rod Hitchmough *pers. comm.*), as recent surveys have shown population declines in some areas and the impacts of predators become apparent. The next revision of the bird list is due in 2012, and kea is likely to be placed in a higher threat category.

Recent research has shown kea populations in the Nelson Lakes district have declined, with an estimated 70% loss of females over the past 10 years (Josh Kemp *pers. comm.*). Studies are showing possums and stoats to be significant predators of kea throughout much of the kea’s habitat, especially during nesting. In areas of more intensive predator control, where possum control is combined with stoat trapping, kea populations are doing well and nesting success is higher.

Other significant threats to kea are people-related hazards such as lead poisoning, misadventure at rubbish bins/dumps, cars, possum traps and baits, shooting.

## 6 Discussion

### Potential for captive breed and release

The potential for a “captive breeding for release” programme was discussed with scientists undertaking kea research in the Nelson Conservancy of the Department of Conservation. Based on current information, in the foreseeable future, there is not a role for captive bred kea in supporting the management of wild populations (i.e. breeding for release), for the following reasons:

- There is little point in releasing captive-bred kea into areas where the threats to kea still exist; and releasing captive-bred kea does not address the issue of females then being killed by predators when they come of nesting age.
- In areas under intensive predator control, many more chicks can be raised in-situ per year than the captive population could produce for release (Josh Kemp *pers. comm.*), unless the captive population was very large. Efforts are better directed towards predator control at suitable sites in the wild rather than releasing captive-bred birds.
- Currently kea are still found throughout their habitat range, so there is not yet a need to introduce new populations into new areas. In addition, with kea being a naturally wide ranging species and having such large territory areas, it would be difficult to introduce kea to a suitable site (i.e. where predators are controlled) and guarantee they would stay within the protected area.

This view is endorsed by the peer reviewers of this report.

### Should kea be held in captivity?

There is a history of kea often being held in poor or inappropriate conditions in captivity and developing serious behavioural problems such as feather plucking, aggression and stereotypies (repetitive

behaviours). The Animal Welfare Act 1999 imposes a duty on people who hold animals to ensure that the physical, health, and behavioural needs of the animal are met in accordance with good practice and scientific knowledge. This includes the opportunity to display normal patterns of behaviour. Some would argue that considering the natural behaviours and intelligence of kea, this is very difficult to provide in a captive situation. However, stakeholders all agree that welfare of captive kea is important and that the housing and husbandry of all captive kea should be of a high standard.

Advocacy has been identified by stakeholders as an important aspect of captive kea management, however measuring the actual benefits of advocacy to conservation of the species is difficult, i.e. how are captive kea actually improving the situation for wild kea? The difficulty of assessing advocacy impact is acknowledged in the Captive Management SOP's advocacy plan template, although the template goes some way in trying to get people to think about ways they can assess their advocacy programmes. There is no point in keeping kea in captivity for the reason of "conservation advocacy" if the display does not convey any conservation messages or have any impact on the visitor.

The Kea Husbandry Manual (Orr-Walker, 2010) seeks to address welfare concerns, but for it to make a difference, people must use it and follow its guidelines. And for advocacy to truly be of conservation benefit there must be an impact on the audience. Collectively the captive kea stakeholders need to share their ideas about how to improve husbandry standards and quality of life for captive kea, and how to improve their advocacy value. Some facilities provide advocacy to a high standard and they can set an example for others.

### **Captive management of kea population**

Establishing and maintaining an appropriately sized captive kea population is a long term commitment. Kea live for 30-40 years and so either bringing eggs or young birds into captivity has an expectation of a well established programme with long term commitment. It has taken 20 years to improve many of the issues of poor husbandry and isolated birds that were present in the captive population when the coordinated programme began in 1991. Whilst many institutions now hold kea in suitable aviaries with good interpretation and quality enrichment programmes, there are still a few cases of birds held either singly or in poor facilities without an enrichment programme. Birds self-plucking or undertaking other behaviours indicative of stress are reported on an ongoing basis. Taking a prudent and considered approach to setting a new direction is appropriate, to avoid repeating the problems of the past.

For the captive kea population to be managed to be self-sustaining in the long term, there would need to be carefully planned breeding of selected individuals in captivity. DOC's captive management policy does not support taking birds from the wild for this purpose.

Any kea acquired from the wild as injured birds may only be held in captivity permanently if they are unfit for release, there is a place for them in the captive management programme with a holder that is part of the programme, and they will be able to have a good quality of life. Such acquisitions are unpredictable. Therefore if specimens were needed from the wild to meet the minimum of 20 founders required for the captive programme and approval was given by DOC, collection of eggs to foster to captive pairs would be the preference, to minimise impacts on wild populations and stress to individual animals.

Sustainable management of the captive kea population into the future will require the use of appropriate population management tools and expertise. The kea captive coordinator will need this expertise, currently available through the ZAA. It is not sustainable for the existing captive kea population to be subdivided into two groups and managed separately according to membership of the ZAA. The kea held by non-ZAA members must also be included in the managed population in order to make maximum use of the existing genetic pool; otherwise those birds are lost to the captive population.

There needs to be a clear commitment to one captive population, by both ZAA and non-ZAA members. The Captive Management SOP (Section 2.2) makes clear DOC's preference for all individuals to be held as part of one coordinated captive management programme.

### **Other general observations**

- Some of the smaller or private holders do not have email access and seem to have fallen out of the information loop. For example, some holders have not seen the new husbandry manual.
- The captive coordinator and DOC staff have spent considerable amounts of time working with holders to raise housing standards for kea, and reduce the number of kea held in substandard conditions.

## **7 Conclusions**

### **Primary purpose of the captive population - conservation advocacy**

As captive management has not been identified as a priority action for kea recovery, the primary purpose of the captive population is therefore display for conservation advocacy.

In keeping with the Captive Management SOP, captive management for advocacy requires holders to meet advocacy standards and have kea on public display. Holding kea off display is only acceptable if this is necessary to support the advocacy population.

Whether the private holders will fit this model, or are phased out (their holdings grand-parented), will depend on the needs of the captive population.

There is an ongoing requirement to phase out kea holders that do not meet husbandry manual or advocacy standards. The response from the majority of stakeholders suggests that they support this principle.

Sustaining the captive kea population for the purpose of conservation advocacy is consistent with the Department's Captive Management SOP, provided that:

- A DOC approved programme outline or captive management plan is developed for kea, detailing how the population will be managed.
- All holders meet the advocacy requirements in the Captive Management SOP and husbandry manual standards.
- Each facility displaying kea has a DOC approved advocacy plan and follows it. An advocacy strategy document should be developed, with clear advocacy standards and performance measures, to support holders in developing their advocacy plans.

If the captive kea population cannot be managed in this way, it is inconsistent with DOC policy and should be phased out.

Understanding what a captive kea population will look like to be sustainable will require some modelling work. Attributes of the population, such as total minimum size, number of sites/facilities, level of breeding needed, etc., to be able to maintain agreed levels of genetic diversity for an agreed length of time (e.g. 30 years), would all need to be included in the model.

Advocacy must support conservation of kea in the wild. Ways that advocacy could support wild kea conservation include:

- Building support for kea conservation and pest control programmes
- Helping gain funding for kea conservation projects

- Improving the public's attitude to kea and improve the way people manage issues associated with living/playing/working in kea habitat, e.g. ski fields, high country farming, buildings

Stakeholders have demonstrated a number of ways that the captive population has also provided opportunities for research that have been of potential benefit to wild kea conservation.

### **Goals for kea captive management**

Based on this round of feedback from stakeholders, and also set within the context of the kea husbandry manual and Captive Management SOP, a draft primary goal for captive management of kea could be:

- Manage a self-sustaining population of kea in captivity that maximises kea conservation and education advocacy opportunities, to build support for conservation of the species in the wild.

With objectives:

- Manage the captive population to be self-sustaining and maintain adequate genetic diversity. All captive kea are included under a single coordinated programme, or grand-parented. (Detail how the population will be managed and targets).
- Ensure that all kea in captivity are held in facilities which meet the standards in the Kea Husbandry Manual, and that holders strive to meet best practise standards.
- Maximise advocacy opportunities, develop an overall advocacy strategy to support advocacy plans for each public display.
- Use the captive population to maximise research opportunities.

With appropriate technical support in small population design, a workshop with stakeholders would be helpful to develop these or other objectives for the captive management plan.

### **Issues that need to be addressed by DOC:**

- The capacity/enthusiasm of DOC Area staff to enforce husbandry and advocacy standards and holders' permit conditions. This seems to be one of the major barriers to addressing the concerns that people have about animal welfare and advocacy standards. One option is to charge holders for annual inspections of their enclosures (as stated in the Captive Management SOP Appendix 4.8 sample permit to hold) to recover the cost of such monitoring by DOC staff (or outsourced). Charging for permits and inspections without following through with adequate performance, could lead to further disengagement with stakeholders to the detriment of relationships.
- Some DOC Areas may be issuing permits that are generated from the Permissions Database. The generic Authority to Hold Protected Species (OLDDM-539270 - linked to the Research, Collection and Wildlife Act Permitting SOP) does not include many conditions specific to long-term captive holding, e.g. nothing about meeting husbandry manual standards. The appropriate permit to use is the sample "Permit to Hold" in the Captive Management SOP (Appendix 4.8), which contains conditions directly relevant to captive management. This template needs to be linked into the Permissions Database - currently it is not. Additional conditions specific to captive kea holding could also be designed by affected conservancies and linked in to the permit template. An example of a species specific permit is the Grand and Otago Skink generic permit [DOCDM-191653](#).
- Area staff should be provided with clearer captive management directives, such as distributing the new husbandry manual to permit holders.

## 8 Recommendations

1. The Department confirms that kea are held in captivity for the purpose of display for conservation advocacy, and develops a new captive management plan with this as its basis. This plan will identify appropriate advocacy objectives, and the actions and resources needed to achieve them.
2. The Lead Conservator, Otago Conservancy, DOC addresses the issues specified in section 7. Specifically:
  - i. Ensure Area staff enforce husbandry manual requirements, advocacy standards and permit conditions;
  - ii. Investigate options to adequately resource inspections and audits to ensure husbandry conditions and permit standards are adhered to;
  - iii. Permits to hold kea in captivity use the format outlined in the Captive Management SOP and this permit is added to the Permissions database, and;
  - iv. Area staff ensure all people holding kea are aware of the captive management requirements.
3. If any current kea holders cannot meet the standards in the Kea Husbandry Manual, their kea are removed and placed in alternative, suitable aviaries.
4. If any current kea holders cannot meet the standards in the Kea Husbandry Manual and there is an agreement to grand-parent their birds, then this is documented and recorded with the captive coordinator.
5. To ensure the captive population remains viable and sustainable to meet the needs of a kea advocacy goal, DOC commissions an independent report on what attributes a sustainable captive kea population must have, i.e. firm targets/limits for population size, gender ratio, age structure, facilities, founders, level of breeding needed, etc., using small population management tools.
6. The Department continues to engage with stakeholders about the future of kea in captivity.
7. When developing a new captive management plan, the Department consults with stakeholders about the objectives and how the programme will be coordinated and managed.
8. This report is circulated widely to captive kea stakeholders and members of the community.

## 9 Acknowledgements

Thank you to everyone who took the time to share their views in the “Developing a future for kea” questionnaire.

This report was commissioned by:

Bruce McKinlay    Lead Technical Support Officer for captive kea, Otago Conservancy, DOC

And peer reviewed by:

Shaun O’Connor    Threatened Species Development Manager, Research & Development Group,  
National Office, DOC.

Andrew Grant      Technical Support Supervisor Biodiversity, Canterbury Conservancy, DOC.



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## Appendix 1: Questionnaire

### **Developing a future for Kea**

The Kea Captive Management Plan is now well out of date<sup>7</sup>. With the new Kea Husbandry Manual, and the Department of Conservation's Captive Management Standard Operating Procedures in place, it is timely to look at developing a new framework for captive kea.

The Department is seeking your views on the value of holding kea in captivity, and the current and future purpose of the captive programme. DOC will also be consulting with a range of other people and organisations with an interest in kea.

Please consider the following questions and feel free to expand on them if you wish, to help us understand your views of where captive kea management should be heading. Please let us know if you feel you do not want to be part of this consultation process.

1. In your opinion, what is the need for (or value in) holding kea in captivity?
2. How will the minimum standards in the new kea husbandry manual affect your kea holding? i.e. will you need to make changes to meet the new standards?  
  
If so, when are you expecting to be able to do so?
3. Are there any aspects of the way the captive kea programme is managed now, that you think need to change? What would you like to see happening?
4. Do you think that maintaining kea in captivity can have a conservation benefit for the species? If so, how?
5. Is there a need for new objectives in a captive management plan<sup>8</sup> for kea? What sort of objectives do you think should be included in kea captive management plan?
6. What advocacy do you have about your kea on display?
7. What sort of advocacy messages do you think could contribute to the conservation and protection of kea?
8. Do you think there should be more, less or the current number of kea in captivity? Why?
9. Should there be more, less or just the current number of kea holders? Why?
10. Do you think that in general, captive holders provide enough environmental enrichment for their kea?
11. Is there anything else which you think should be taken into account when thinking about the future of kea in captivity?

Please send your responses to Rose Collen at either [rcollen@doc.govt.nz](mailto:rcollen@doc.govt.nz) or 62 Bain Street, Invercargill 9812, by **25 June 2011**.

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<sup>7</sup> The current Kea Captive Plan can be found and objectives of a captive programme for a species, with described actions and a plan for how the animals will be managed (planned at: [www.doc.govt.nz/upload/documents/science-and-technical/TSOP09.pdf](http://www.doc.govt.nz/upload/documents/science-and-technical/TSOP09.pdf)

<sup>8</sup> Captive management plans state the goals number of animals, genetic and demographic management, etc.). The overall goal of the last plan (1996) was: "To manage a self-sustaining population of kea in captivity, of a minimum size needed to maintain adequate genetic diversity, to support the conservation of the species in the wild".