



## Saving the Kakapo

The kakapo is a large, nocturnal, underground-nesting flightless parrot native to New Zealand which is critically endangered.

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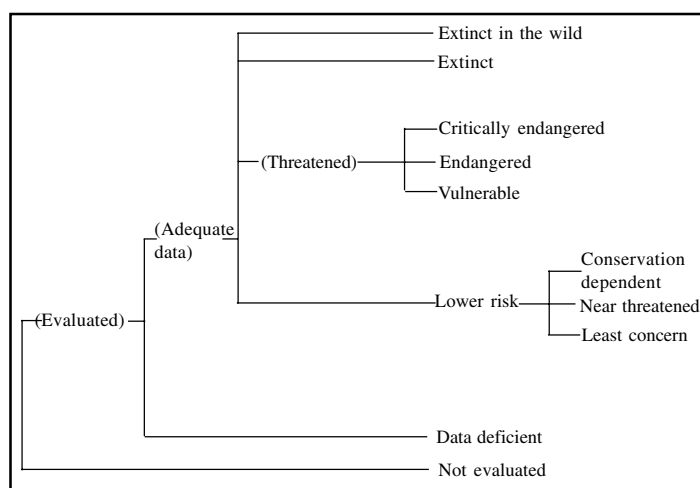
- Explains why the kakapo is critically endangered
- Describes how scientists are trying to conserve this species
- Reviews recent exam questions on animal conservation

The kakapo (*Strigops habroptilus* Fig.1) is critically endangered (Fig. 2) which means that it is facing an extremely high risk of extinction in the wild in the immediate future.

**Fig 1. Kakapo – the world’s heaviest parrot**



**Fig 2. IUCN categories**



The kakapo remains one of the world’s rarest bird species and despite 40 years of effort there are still only about 126 individuals inhabiting specially chosen predator-free islands off New Zealand’s south coast.

The kakapo was once abundant across New Zealand so why is the kakapo so close to extinction?

### Threats to the kakapo

The original threats were hunting by the Maori, the indigenous people of New Zealand who valued its beautiful feathers and its food potential and, in the 1800s European settlers and the vermin and pets that they introduced. In the twentieth century predators such as rats, stoats and weasels decimated the kakapo population.

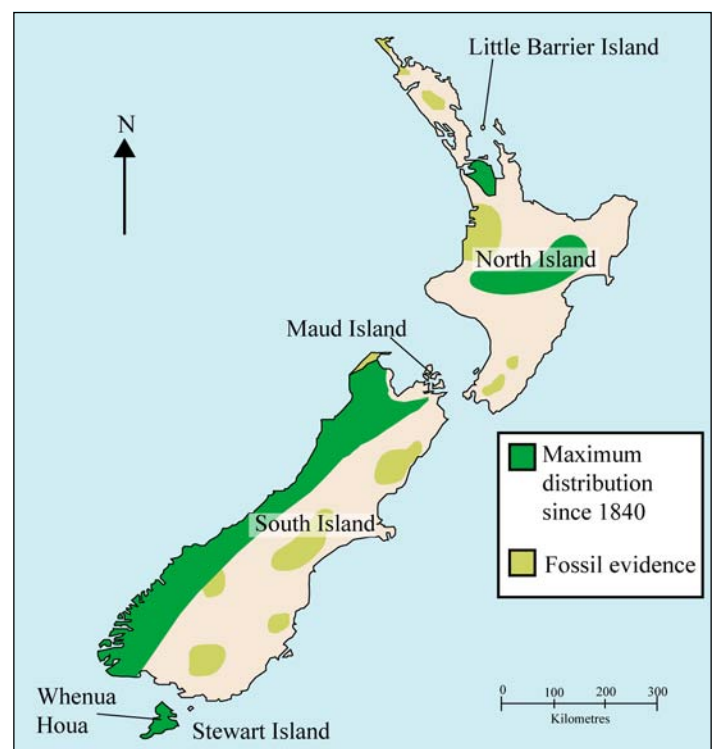
The kakapo has excellent camouflage, which works well against birds of prey, but, despite having immensely powerful claws, it acts defenceless against feral cats and tree-climbing predators such as stoat that hunt by smell. The Kakapo is actually capable of crushing a stoat with its claws but fails to even try!

The kakapos are also slow and infrequent breeders. They rear their young on the fruits of native trees. These trees only produce abundant fruit every 2–6 years, and kakapo only breed in those years. Even when they do breed, they only produce small clutch sizes so even if they do avoid the predators the population grows only very slowly.

Scientists have been aware of the threat to the kakapo for decades and had been searching for individuals that they could use to start a breeding program. Almost all the individuals they found were old males but eventually an intensive and highly expensive rescue operation was established.

Between 1982 and 1997 all surviving kakapo were moved (translocated) to three almost predator-free islands (Fig. 3)

**Fig 3. Translocated kakapo (New Zealand)**



The only potential predators of kakapo on Little Barrier Island and Whenua Houa were Polynesian rats, but Maud Island was occasionally invaded by stoats and weka (*Gallirallus australis*), a native bird that preys on the kakapo's eggs and chicks. Conservation managers hoped that these translocations would help save the kakapo.

**Typical Exam Question**

State three factors that have led to the kakapo becoming critically endangered (3)

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 Hunting by humans to provide food/feathers;  
 Predation by endemic species/introduced species;  
 Poor defence against predators/high stress;  
 Infrequent breeding;  
 Low clutch numbers;

The New Zealand government's Department of Conservation set up the Kakapo Recovery Programme. Scientists decided that the only option was to try to manage almost every aspect of kakapo life.

**Strategies for conserving the kakapo**

- Airlifting male and female birds to Maud Island in the Marlborough Sounds and Codfish Island - predator-free islands so that they can breed safely
- Laying predator traps e.g. rat-traps and poison stations
- Identifying islands with plentiful rimu trees which produce a nut that seems to trigger kakapo breeding
- Moving kakapo to islands where the rimu trees appear to be about to have substantial nut harvests
- Provision of food supplements e.g. protein - rich seeds to encourage breeding
- Round-the-clock surveillance of kakapo eggs using alarms triggered by an infrared beam that signalled when a female bird had entered or left the nest and radio-tracking the birds as they forage
- Building three-foot-high walls around eggs to prevent them rolling downhill and putting artificial roofs and heating blankets over nests
- Digging drains above a nest to divert heavy rainwater away from it
- Swapping eggs from first-time layers to more experienced females with whom the chances of the chick surviving would be greater
- Artificial incubation of eggs and hand-rearing of chicks
- Establishing a self-sustainable kakapo population on remote and predator-free Campbell Island, which is located halfway between New Zealand and Antarctica.

**Ongoing research**

- What is it in the rimu tree that encourages breeding?
- Scientists suggest it may be a class of chemicals known as terpenes or it might be the particular nutrients in the nuts
- A lot of research effort is being directed towards developing our understanding of the nutritional needs of the kakapo
- Scientists are trying to identify ways of artificially encouraging the rimu trees to produce large nut harvests

**Ongoing challenges**

Because the existing population all stem from just a few individuals from Stewart Island, there is little genetic diversity within the population.

The government's conservation strategy is labour-intensive, hence expensive and it is crucial that the kakapo population becomes self-sustaining. But how can scientists prevent predators reaching the islands?

**References**

Elliott GP Merton DV Jansen PW (2001) Intensive management of a critically endangered species: the kakapo *Biological Conservation* 99 (1) p 121-133

**Practice Question**

1. Outline the potential roles of zoos in the conservation of endangered species, such as the kakapo (6)
2. Describe the characteristics of an endangered species that might cause it to recover very slowly (6)

1. captive breeding program; idea of reintroduction; provide a refuge; provides research opportunity to study nutrition etc of kakapo; reduces risk of extinction; helps avoid inbreeding/increased genetic diversity; inbreeding results in reduced reproductive success/altere behaviours; ref to gene pool; raise awareness;  
 2. Low fecundity/rate of reproduction; Late reproductive maturity; Specialised mating rituals e.g. dancing; High infant mortality rate; Specialised feeding requirements; Limited/specialised habitat; Lack of suitable habitat; Large number of predators/poor defence against predators; Large range requirements; Shortage of mates/population far below carrying capacity; Long/fixe migration routes;

Markscheme

**Acknowledgments:**

This Factsheet was researched and written by Kevin Byrne. Curriculum Press, Bank House, 105 King Street, Wellington, Shropshire, TF1 1NU

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