

Case studies, continued.

### 9) Puerto Rican Parrot

Low point was 13 parrots in 1975.

Do not breed until 4 years old. May be assisted by helpers at the nest, but this is not clear. Breeding coincides with the dry season, and fruiting of the sierra palm. First year mortality is high at 30%.

Numerous until 19th century.

Between 1850 and 1900, human population increased, and 99% of the forest on Puerto Rico was cleared.

By 1930, the parrot had become restricted to highlands on the eastern side.

- this is probably suboptimal habitat since rainfall is about three times that of other areas (this sounds very familiar when compared to some other species we've looked at).

- From about 2000 in 1937, declined to 13 in 1975.

- A lot of possible factors may explain the decline from 2000 to 13 individuals:

- collection of nestlings for the pet trade

- illegal shooting

- felling trees

- military experiments

- guerilla activities

- competition from thrashers, bees, (nesting sites), parasitism and predation.

- Initially, it seemed a shortage of nesting sites may have been responsible, but numerous artificial nesting sites remained unused.

- A captive breeding program started being successful by 1992 (58 birds, of which 14 were released).

- But numbers have remained low, the main problem being that no one knows why breeding success both in wild and captive populations remains low.

- We need to know more about the biology of this animal!

- Since the text was published, the status of this bird hasn't changed much.

- (incidental note: Hurricane Hugo eliminated about half the population when it came through in 1989.)

#### 10) Ping Pigeon (summary only)

It's history is kind of similar to that of the Puerto Rican Parrot. It had been reduced to less than 20 animals

With humans came clearing of forest, rats and macaques (remember the dodo?)

Unfortunately, the exact cause of the decline to 20 species had only been assumed to be predation (no one is sure).

- Captive breeding has allowed the population to recover. Although only one site lists "350 birds in the wild", it does seem that after some initial setbacks (see text) the bird now breeds successfully in captivity.

- A poisoning campaign (rats) seems to have helped as well. Supplemental feeding is also taking place (both of these programs started at the same time, so it's not clear which is more important):

- Note: it is true that scientifically it might be important to know this, but if there isn't time to determine this, it makes sense to try everything at once.

- Birds are also susceptible to regular cyclones (hurricanes) that come through that part of the world.

- Bottom line - without constant monitoring and help, the remaining populations might very well crash. It's also not clear what causes are the most important in restricting the size of the population.

#### 11) Hawaiian goose (nene) (summary only)

- The main point here is the same as the previous two species - not enough biology is known about the goose to be certain of long term success.

- From 25,000 geese in 1800, numbers dropped to about 30 in 1951.
- Changes in land use prevented migrations (migrations were from lower to higher elevations). Geese became restricted to suboptimal habitat.
- Starting 1960 captive bred geese were released, but numbers did not increase (past release numbers) and declined after 1981 when releases were suspended.
- But by 1990, wild geese numbered 230.
- Predation seems to be important, as seems inadequate captive breeding programs (the young are not raised in ideal conditions, and are very naive when released into the wild).
- But the main difficulty is that even though several studies have been carried out, the effects of predation, food availability and bad captive breeding practices are all confounded, so no one is quite sure what's going on. BUT:
  - success seems higher in areas without predators, or where predators are controlled (particularly mongoose).

## 12) Dark-rumped petrel (summary only)

- Used to occur in the Galapagos and Hawaii. Hawaiian Island form thought to be extinct until two small colonies were rediscovered. Galapagos Island form started to decline after the arrival of the usual animals accompanying humans in the 1930's. (Some debate about whether these are actually two different species).
- Declined rapidly in the late 1970's to early 1980's (see table 4.1 in text). For those islands with data, numbers decreased from 20,000 to 1,500 in about 5 years.
- The picture is rather muddled. The main cause seems to vary from Hawaii to the Galapagos. In both cases, pigs are thought to play a supporting role in low nesting success of the petrel. Rats seem primarily responsible on the Galapagos, and rats, cats and mongooses seems to have helped in Hawaii.
- Did not find a lot of information on the web, but the IUCN lists this species as Critically Endangered, with the populations continuing to decline.

## 13) Red Kite

- Brings up an interesting issue - does it make sense for a species to be listed as endangered in one country (or state) when it is common in a country across the border???
- Is not listed by the IUCN
- In 1990, 11,00 to 13,000 (some estimates are rather higher than that) birds were scattered across Europe.
- In Wales (western Great Britain) there were as few as a dozen birds left in 1990.
- Before garbage disposal was systematic, birds were seen as valuable scavengers. Then, combination of bounties (not sure why these were instituted) and egg collecting drove the Red Kite to the brink of extinction in Wales.
- Egg collection continues to be a problem, but has been reduced considerably since 1960. Together with re-introduction programs from Sweden and elsewhere, population has recovered nicely (see fig. 4.16, p. 123). Bird guides call this bird common in Wales now.
- The effect of other factors (such as food limitations and/or habitat) has not been fully determined.

#### 14) Numbat

- A combination of fox predation and habitat alteration seems to be responsible for the decline in numbat numbers.
- A marsupial, now restricted to Western Australia:
  - shape is a little like a slender Armadillo without the armor plating.
  - No pouch. Young do attach to nipples, but are only protected by some long hairs.
  - Very long tongue (100 mm, about half it's body length!)
  - Large home ranges (100 ha.)
  - Termite eater (in captivity up to 20,000 small termites/day)
  - Solitary except during breeding season.
- In 1982 less than a few hundred numbats survived. Numbers now are over 2,000.

- It appears a program of poisoning (to kill foxes, and to a lesser extent cats) was successful, and in those areas with surviving numbats, it's numbers have recovered.

- In addition, a captive breeding and re-introduction program was started. (Anecdotal note indicates that first numbat to be released was killed by a fox; this started a monthly poisoning campaign).

- Conversion of woodland to support less termites didn't help - and there is some question as to the best management policy in reserves (i.e., how (or even if) to do controlled burns).

- Note: there are websites out there that haven't been updated in years (one web site from 1996 still laments the very low numbers of numbats). Also, without looking through the literature, the "2000" figure above can't be verified (only found on one web site, though several sites mention a "recovery" in progress). [Use web information with care!]

## 15) Chinchilla

- Interesting because in one sense the chinchilla is not endangered (you can get one as a pet!).

- However, for wild populations the story is rather different.

- Two species, short and long tailed.

- Primary problem was hunting for fur:

- 7 million pelts exported between 1840 and 1916.

- Problems continued due to illegal hunting and "stock" (for raising on ranches)

- Coats of chinchilla fur sold for as much as \$100,000. In Japan, coats were being sold for \$49,000 as recently as 1981.

- Now habitat alterations have exacerbated matters (one of their favorite food plants is endangered!)

- Records did not differentiate between the two species.

- Short tailed may be extinct (IUCN lists it as CR, and indicates a downward trend).

- Long tailed form survives in a few reserves in Chile.

- No real recovery. Not enough is known about their ecology in the wild, so other than stopping trade, not much has been done except to set up reserves.

- Web searches list mostly pet information!

- Re-introductions do not seem to have worked. Wild populations of the long-tailed form were estimated at about 10,000 in 1988 (consider: as late as 1900, 500,000 pelts were being exported per year).

#### 16) Hispid Hare (brief summary only):

- Less than 110 alive today (2001 estimate)

- Primary cause of population decline is habitat loss due to encroachment of human populations.

- It appears that the best thing to do would be to manage the tall grass habitat, but instead captive breeding programs are being recommended. Efforts at captive breeding have failed so far!!!

#### 17) Jamaican Hutia

- doesn't seem much point here - an endangered mammal that was thought to be extinct, and then discovered "not to be in immediate danger of disappearing". Re-introduction efforts have failed because not enough is known about the ecology of this animal. But, as mentioned, does not seem to be in imminent danger (listed as Vulnerable (the lowest "threatened" category) by the IUCN.

#### 18) Puerto Rican Crested Toad

- We've been ignoring most animals other than birds and mammals, so it's nice to have this example.

- But it's also frustrating because we know very little about this toad.

- thought to be extinct, but in 1984 3,000 individuals were seen in a car park after severe flooding (this area was then declared a "reserve").

- species emerges after very heavy rains (estimated to be at least 18 inches), such as that released by hurricanes.

- unfortunately, hurricanes can also wash these toads out to sea. Doesn't seem like the best "adaptation".

- Currently the best guess for wild populations is about 200 - 300.
- Captive breeding has been very successful, but re-introductions of up to 20,000 tadpoles and 4,000 toadlets (recently metamorphosed toads) doesn't seem to have boosted the population.
- Problems:
  - environment mostly wiped out by tourist industry (hotels sit on top of the best coastal habitat.
  - Mongooses eat adults
  - Insecticides may be implicated
  - Competition from the marine toad (mostly from tadpoles) may lower reproductive success.
- Very difficult to study since they mostly estivate underground except during rains. Thus no one knows for sure what to do. Barring anything else, re-introduction efforts seem the only choice just now.

Next: Just a few more species, not from the book.