

## **Reserves in practice**

Often we are not able to meet our objectives in the previous “theoretical” approach.

So how well do reserves work in practice? As usual, it depends. There are stories of success and failure. We’ll look at these as we proceed.

### **Reserves need to meet the needs of the species:**

This is getting old, but it’s good to say it again. Unless a reserve includes the habitat needed by a species, and/or eliminates the cause of the decline of the species, it will not achieve it’s objective. Two simple examples:

White rhino in South Africa was thought to be extinct in 1892 (mostly due to hunting).

- in the early 1900’s, about a dozen rhinos were found and then protected in a game reserve.
- by 1994, numbers had recovered to 6,000

In contrast, reserves for protecting butterflies in Britain failed:

- extinction rates were similar in protected and unprotected areas
- the primary cause of the low success is that the required successional plants were missing. The area had to be constantly perturbed in the right way.

Some other examples illustrating specific points/problems:

### **Insufficient knowledge of the ecology/habitat:**

- Western Swamp Turtle - thought to be extinct until rediscovered in the 1950’s.
- those areas where it was found were set up as two reserves.
- unfortunately, these areas were suboptimal habitat.
  - all turtles in the larger reserve went extinct.
  - only 20-30 survived in the smaller reserve.
- a program of swamp rehabilitation, increasing reserve size, and

removing fox predation is the solution.

- it is not clear if any of this has been implemented, but it is now surviving in two reserves, one of which is being restocked by captive-bred individuals.

### **Tourism and dual objectives:**

The central Indian barasingha deer was in trouble due to dual objectives.

- Reserve for the deer was set up in response to a decline in numbers.
  - unfortunately, the park also included provisions for tourism and agriculture.
  - to increase tourism, feeding stations for tigers (“tiger baiting”) were set up.
  - in addition, grazing and burning were permitted.
  - by 1970, only 66 deer were left.
  - one problem is that tiger feeding was confounded with agriculture (both happened at about the same time, so it was hard to tell which was more important).
  - tiger baiting was stopped, grazing prohibited (this allowed better hiding places for fawns).
  - in addition, the reserve was slightly enlarged, and water supplies were improved.
  - deer numbers are recovering.

### **Lack of enforcement:**

We’ve talked about this many times. But one example is the continuing demand for tiger products, which offset the initial gains due to project tiger (we talked about this one quite a bit).

A reserve on paper without enforcement of applicable laws is useless.

Another issue here is that reserves are sometimes counter-productive. By setting up reserves, poachers know where the animals are!

See also the box in the text on rhinos - numbers seem to decline and recover depending on the degree of enforcement to prevent poaching.

### **Reserves are not immune from environmental disasters:**

The heath hen was established in a protected reserve (island) off the U.S. east coast. Numbers recovered from 50 to 2,000.

- unfortunately, a rather unfortunate sequence of environmental disasters hit the reserve and wiped out the heath hen:

- in 1916 a fire wiped out much of the breeding habitat.

- this was followed by a very harsh winter, and an influx of goshawks.

- the remaining heath hens succumbed to a disease brought onto the island by domestic turkeys.

- By 1927, only 13 were left, mostly male. The last one died out in 1932.

### **More on dual usage:**

A slightly different angle this time.

- Sometimes it might be judicious to allow some dual usage under carefully controlled conditions - this might prevent illegal activities.

- Some parks allow occasional forays into the park for harvesting of grass or other materials providing it's done in a prescribed manner.

We'll do a lot more with this dual usage idea shortly.

### **Larger is not always better:**

Kauri snails do better in smaller patches, since pigs don't like smaller patches (pigs eat snails).

### **Size is not a guarantee:**

- Estimates show that even in North America, very few parks are large enough to maintain a large assemblage of predators.
- This may require intensive management to sustain large predators.
  - Of course, this requires a thorough understanding of the biology/ecology of the concerned species, something that is often lacking.

### **Large carnivores:**

These have their own set of problems:

- Raid livestock, and are thus resented by people living in the area who often kill them.
- The authors suggest a cash compensation scheme for lost livestock.
  - unfortunately there are instances where people try to collect far more cash compensation than they're entitled to (often reporting many more animals lost, or faking a killing, or even using different animals to try and convince authorities that there was a "leopard" kill.
  - nevertheless, with some safeguards, it's probably not a bad system.
- Of course, large carnivores also kill people. The Sunderbans is a classic example. People enter the park for wood & honey, and are often killed.
  - Apparently people are allowed to enter the park.
- Management has included aversive conditioning of tigers with electric dummies, alternative food and water sources, reduction of permits for entering areas known to be tiger intensive (such as near tiger dens).
- Number of people killed has dropped, but then the number of people entering the park has doubled because of this.

## **Off reserve conservation:**

These are managed areas where the main objective is to allow some dual use while affording a degree of protection. They are often divided into three categories:

- land linking reserves (i.e., corridors, etc.)
- land used to buffer reserves from surrounding land use practices
- multiuse land, with a secondary objective being conservation.

Technically, even other lands qualify though (such as privately owned land).

Remember that these lands are less than perfect, but they often help out quite a bit.

An example of this arrangement:

- 1.6 million hectare Maya Biosphere Reserve:
  - contains four national parks and three protected “biotopes” making up about half the area.
  - the rest is a buffer for the reserves and is used by about 6,000 people making use of the forest and forest products.

Another good example of where this is helpful is endangered Australian mammals again:

8 mammals are found only on a single reserve, though 2 also exist on private lands.

10 species are found in off reserves as well as reserves.

4 are only on private lands (though unprotected - obviously it would be nice to offer some degree of protection here).

## **More on dual use problems:**

Often it is just assumed that dual use is all right. But this is often not the case.

Grazing has a negative impact in many instances.

Managing national forests for maximum lumbar yield has been detrimental to the red-cockaded woodpecker (and 63% of known colonies exist in national forests).

## **Buffer zones:**

An attractive idea that does not always work. However, an example cited in the text concerns water buffalo.

- People living around the reserve resented the fact that they could not enter the reserve for thatch, wood, fishing etc.
- buffalo raided surrounding farms.
- Buffers were set up to deal with both problems.
- Question - did people have to move to make room for the buffer?
- Not clear whether it worked.

Off reserve systems should be subject to the same considerations as reserves:

- the biology of what is going on should be the underlying factor taken into consideration.

Off reserve systems can be shown to work quite well in some instances:

- About 1/3 of the black rhinos in Kenya are on privately held lands.
- (the costs is huge - \$ 5,000,000.00 between 1984 and 1991)
- there is no guarantee, however, that these “private” reserves will stay that way in the future.