
ESRM 350

**Consumptive and Non-
Consumptive
Exploitation of Wildlife**

Autumn 2013

"I wanted an ideal animal to hunt," explained the general. "So I said: 'What are the attributes of an ideal quarry?' And the answer was of course: 'It must have courage, cunning, and, above all, it must be able to reason.'"

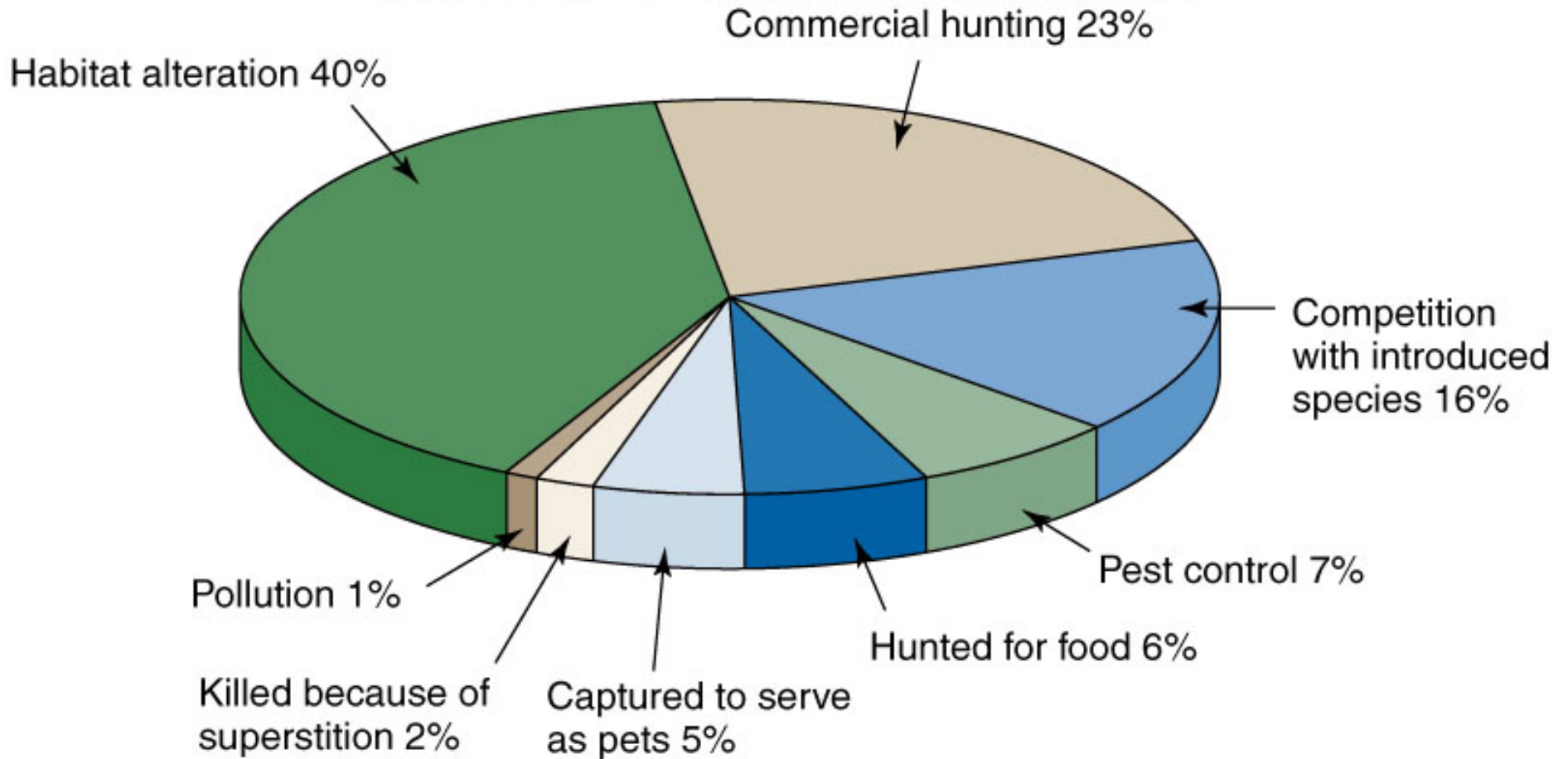
- Richard Connell, *The Most Dangerous Game*

Consumptive Exploitation

- Harvesting wildlife populations for the purpose of subsistence or recreation
- Forms include
 - Commercial hunting
 - often regulated, though not in the case of black markets (poaching)
 - Subsistence hunting
 - difficult to regulate
 - Collection for parks, zoos, and the pet trade

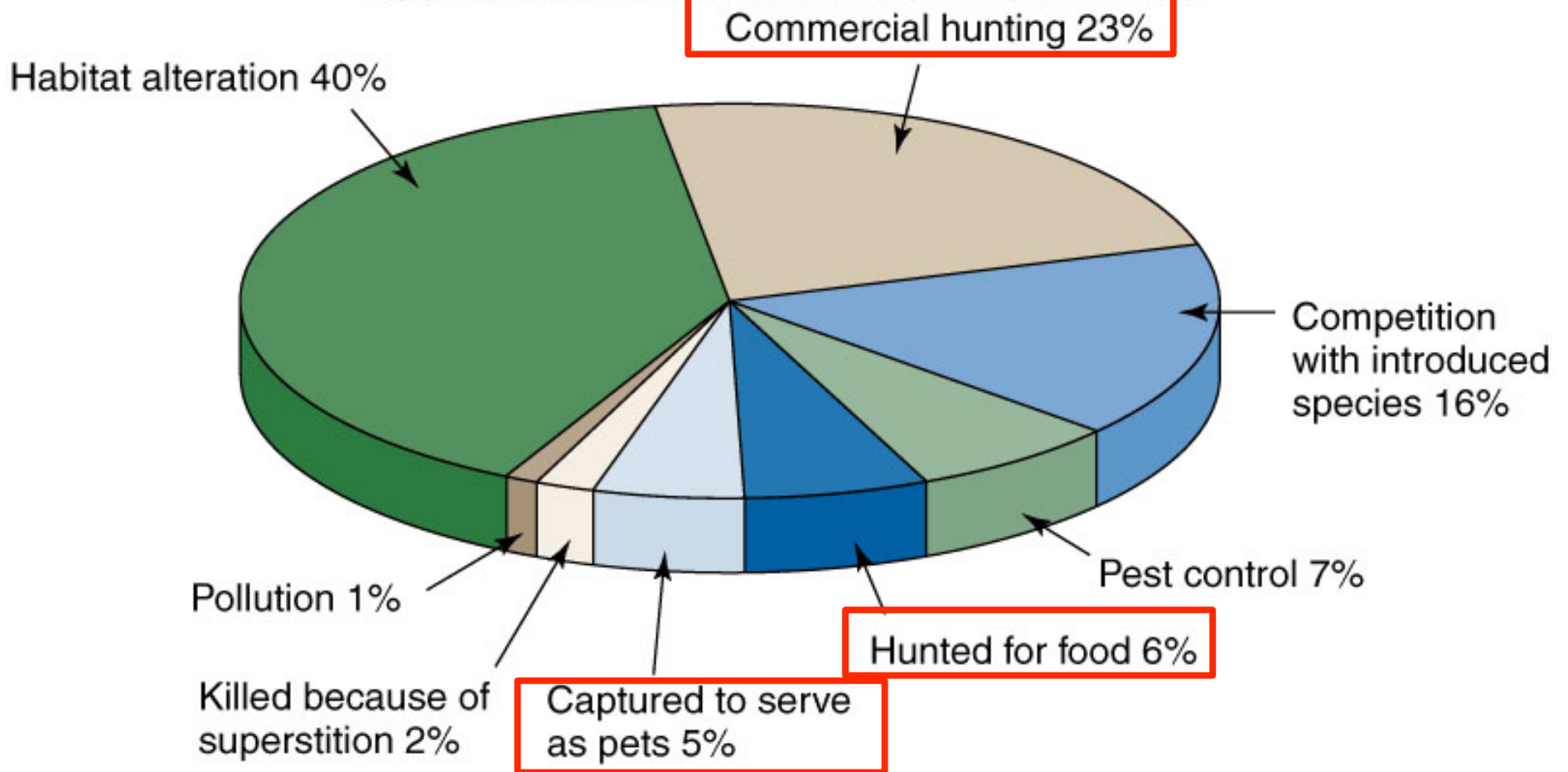
Causes of Extinction

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Case Study: Collapse of the Steller's Sea Cow



Hydrodamalis gigas

- Largest member of order Sirenia (sea cows)
 - up to 8 meters long, > 5000 kg
 - range: eastern Bering Sea
 - diet: kelp (primarily)
 - discovered in 1741 by shipwrecked crew of Vitus Bering's ship the 'St. Peter'
 - hunted for meat and fat
 - extinct by 1768 (just 27 years later!)

Case study: Sustainable Trophy Hunting for Lions

a



Nose pigmentation can be used to harvest only old males (> 8 yrs) that are no longer reproductive active

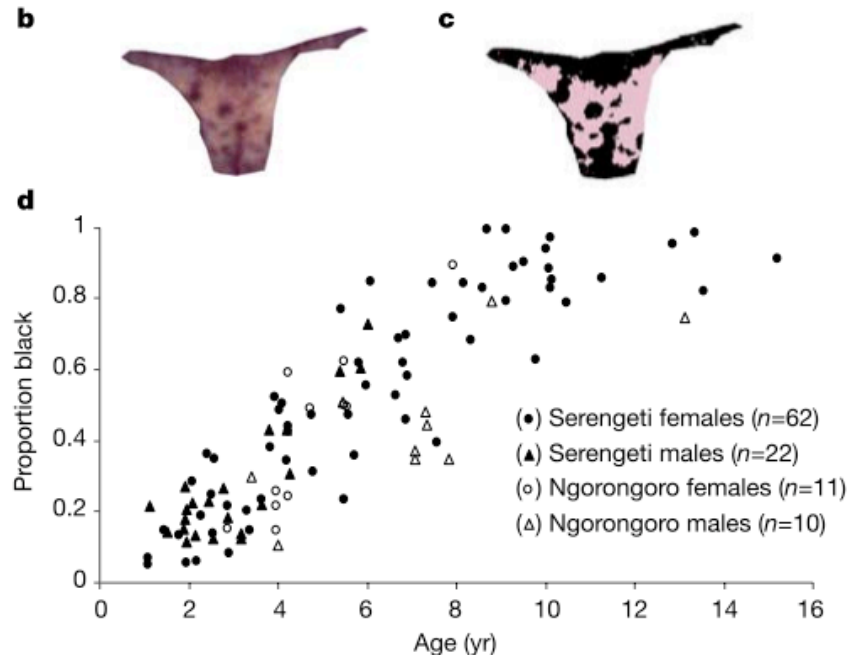


Figure 4 Age estimation for adult lions using nose colouration. **a**, Identification photograph of a 3-yr-old Serengeti male. **b**, Excised photo of nose tip. **c**, GIS rendering of nose colouration. **d**, Age-change of nose colouration for males and females in two separate populations. After controlling for age, there was no effect of sex on nose colour in the Serengeti, but Ngorongoro males had lighter noses than Ngorongoro females ($P = 0.0485$) and Serengeti males ($P = 0.0281$).

Comparing Human and Non-Human Predation

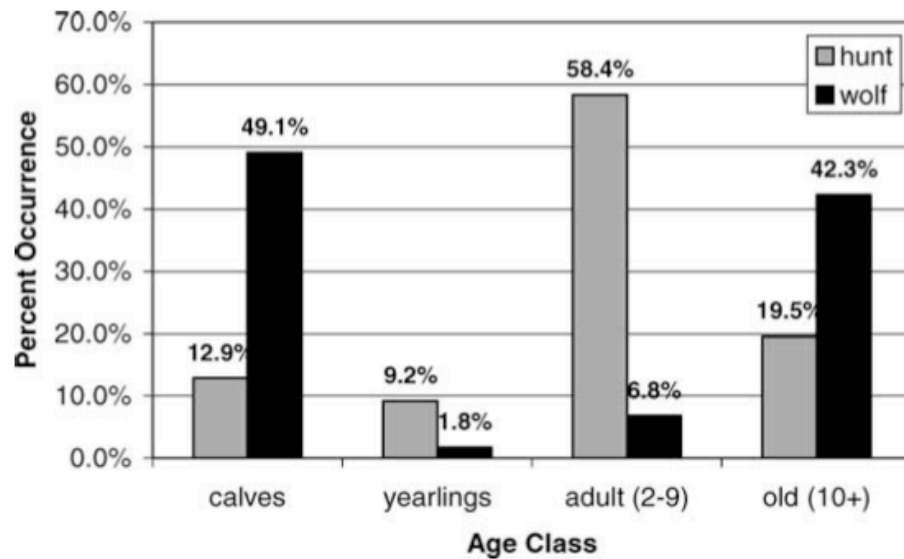


Figure 2. Age distributions of female northern Yellowstone elk killed by hunters in the Gardiner Late Hunt (1996–2001) and by wolves (1995–2001).

Comparing Human and Non-Human Predation

Wolves kill elk with little reproductive value

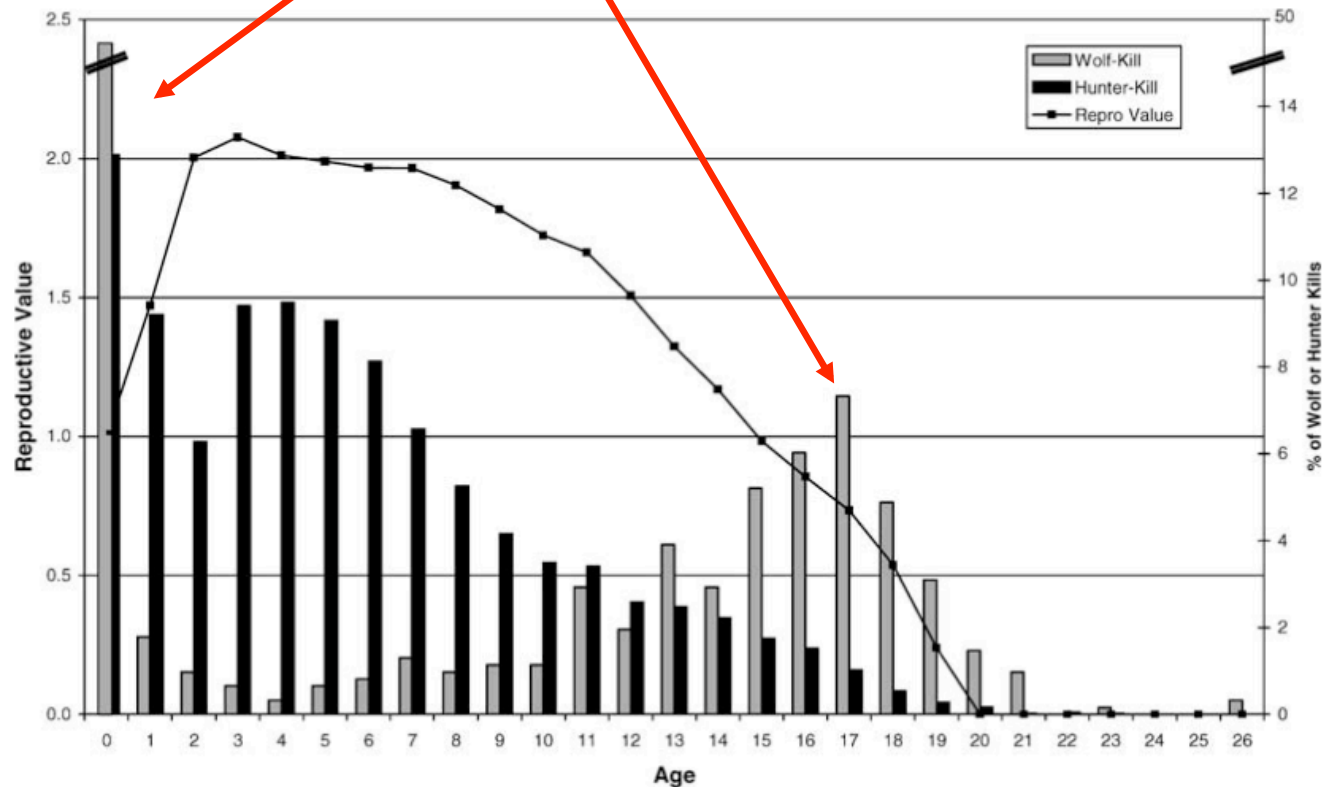


Figure 3. Reproductive values of female northern Yellowstone elk and age distributions of hunter (Gardiner Late Hunt, 1996–2001) and wolf-killed females (1995–2001). Note the scale change for the Y axis on the right side of the chart for wolf-killed calves (49% of total wolf-kills).

Comparing Human and Non-Human Predation

Human hunters kill elk with high reproductive value

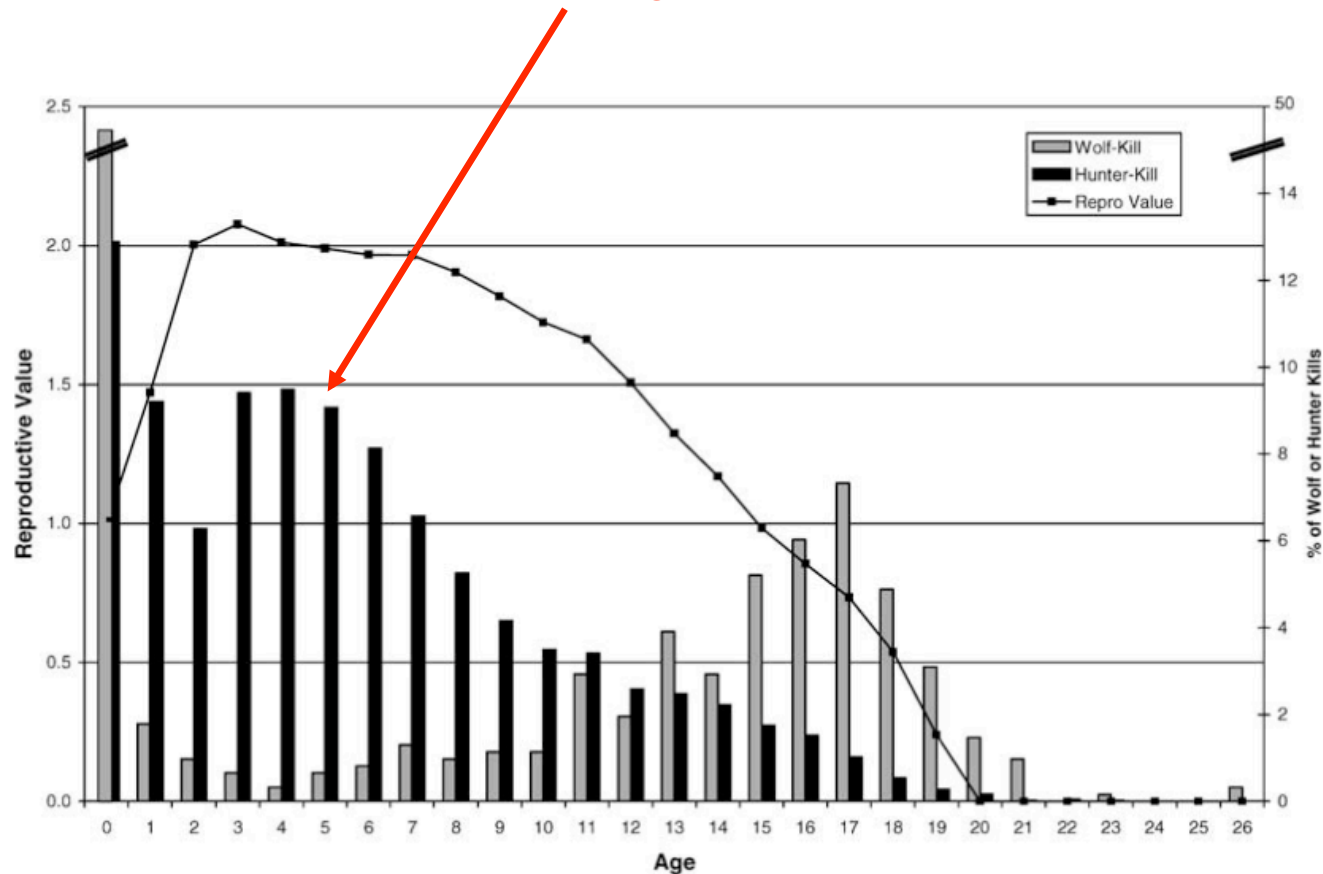
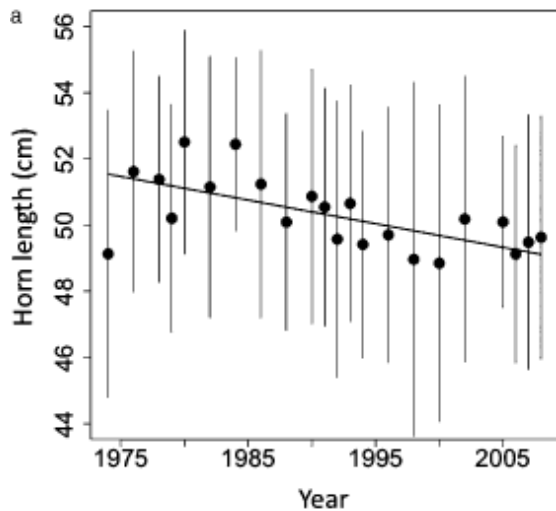
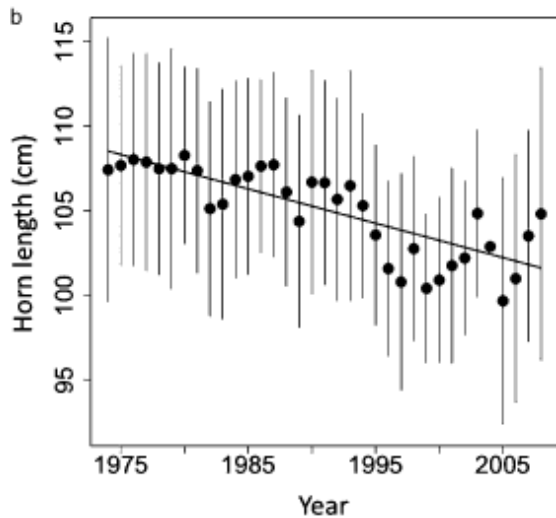


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Evolutionary Effects



Aepyceros melampus



Hippotragus niger

Figure 5. Overall temporal trend in horn length of harvested males in hunting units one to five of Matetsi Safari Area, Zimbabwe, for (a) impalas; and (b) sable antelopes. Lines are used for significant trends. Dots represent the average horn length of trophy animals per year, and bars the standard deviations.

Non-Consumptive Exploitation

- Use of wild animals that does not involve removing individuals from populations
 - non-extractive
- Examples include
 - bird watching
 - catch-and-release fishing
 - feeding wildlife
 - photography
 - ecotourism

On the Rise

- A 2006 survey by the US Fish and Wildlife service found that, in the USA alone
 - 71.1 million participated in at least one type of wildlife-watching activity including observing, feeding, or photographing wildlife
 - up 40% from 1996
 - generated 45 billion dollars

Not Without Costs

- e.g., feeding wildlife can
 - habituate wildlife (“a fed bear is a dead bear”)
 - foster dependence on humans
 - spread disease (if animals congregate)
 - create traffic hazards (feeding from cars)
 - promote predation (birds at feeders falling prey to cats)

Ecotourism

Responsible travel to natural areas that conserves the environment and improves the welfare of local people

- (The International Ecotourism Society)

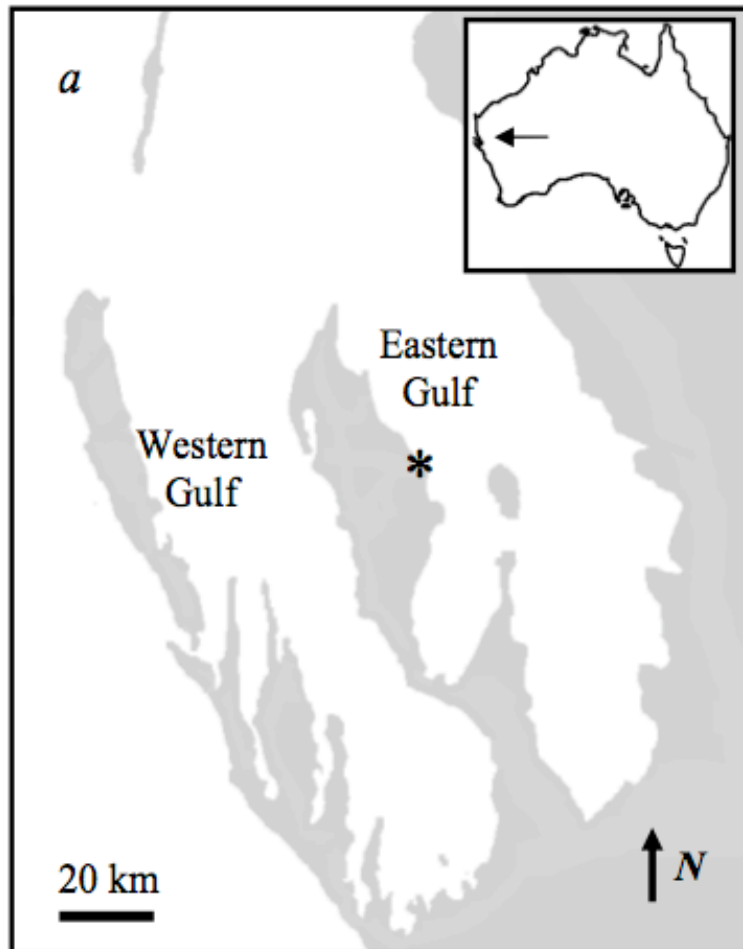
Ecotourism is growing 10% per year

Potential Ecotourism Benefits

- build environmental awareness and respect
- provide positive experiences for both visitors and hosts
- provide **direct** financial benefits for conservation
- provide financial benefits and empowerment for local people

But, ecotourism can have costs, too...

Ecotourism and the Dolphins of Monkey Mia



- Shark Bay's Eastern Gulf
 - Home to 2nd longest running dolphin research project (1982)
 - Indian Ocean bottlenose dolphins (*Tursiops aduncus*)
- Population roughly 200 individuals
 - focus of ecotourism cruises

Ecotourism and the Dolphins of Monkey Mia

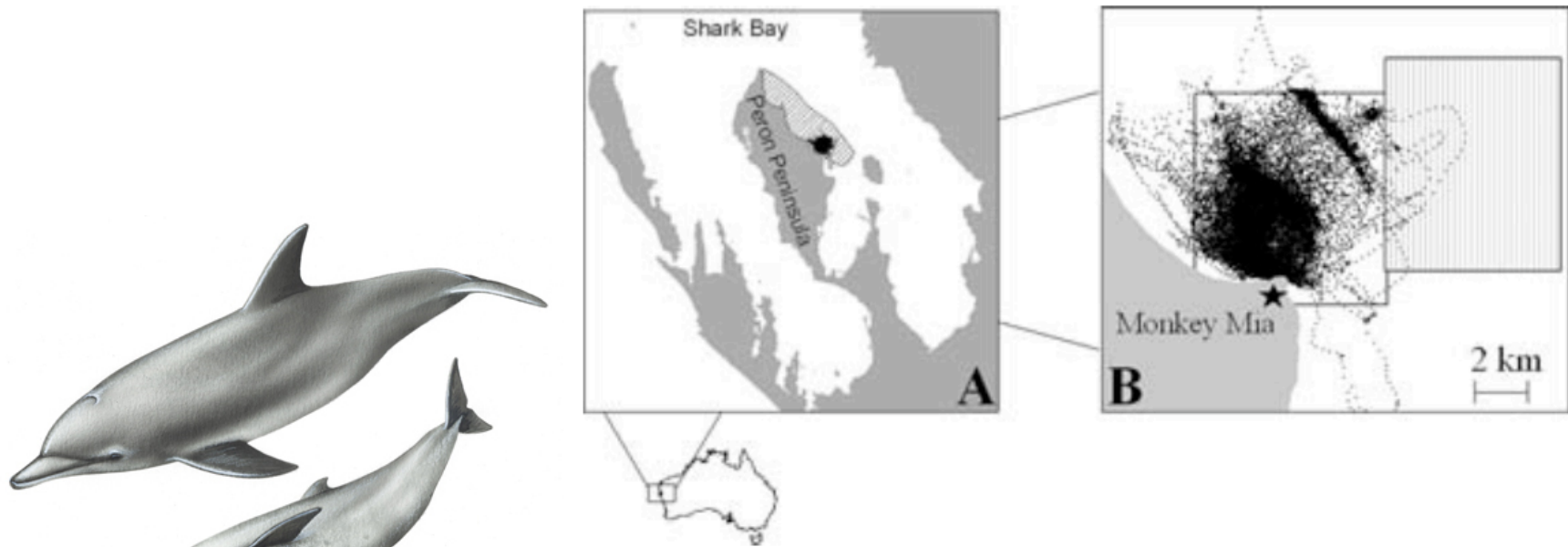


Figure 1. Study site in Western Australia: (a) Shark Bay and Peron Peninsula (hatched area, approximately 300-km² site of long-term dolphin research) and (b) 36-km² tourism site (black dots, tour-vessel movements) and an adjacent control site of equal size (shaded square).

Ecotourism and the Dolphins of Monkey Mia

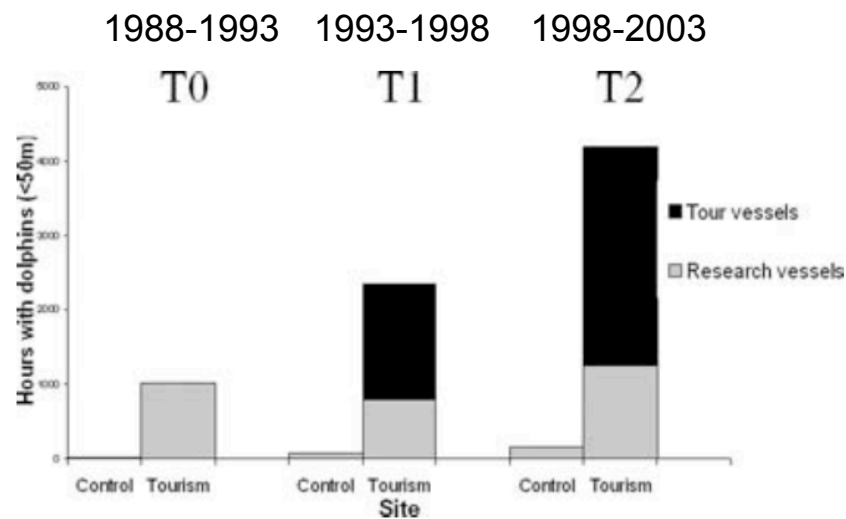


Figure 2. Total time spent within 50 m of dolphins by tour and research vessels in tourism and control sites during the time periods, T0 (pre-tourism), T1 (one tour vessel operating), and T2 (two tour vessels operating).

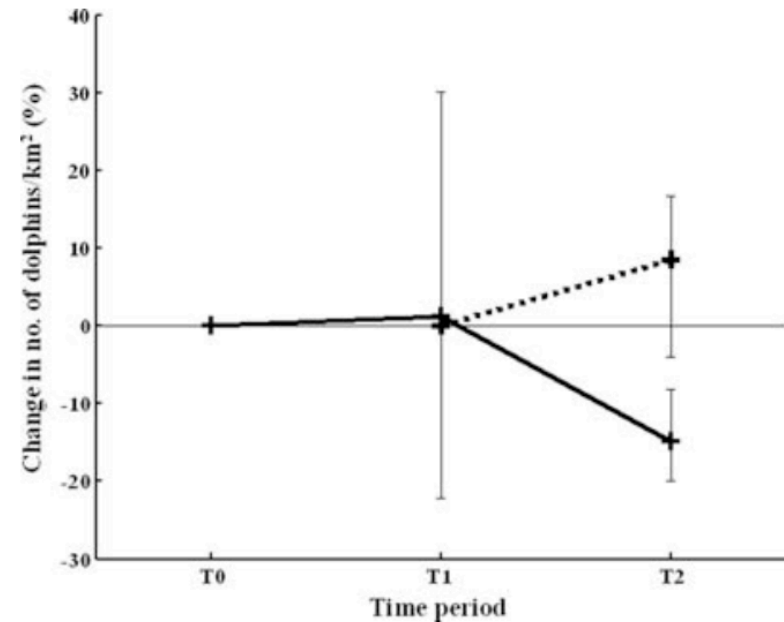


Figure 3. Average percent change in dolphin abundance within tourism (solid) and control (dotted) sites among the time periods, T0 (before tourism), T1 (one tour vessel operating), and T2 (two tour vessels operating). Vertical lines depict 95% confidence intervals.

Take Home Message

- Ensure that, wherever ecotourism occurs, benefits outweigh costs
 - recognize that ecotourism is potentially harmful to some wildlife species
 - costs can be hard to detect (e.g., displacement of sensitive species and individuals)