Wildlife Control

Aims:

- **understand the reasons for wildlife control**
- **understand the control methods**
- **learn how to assess success or failure in control programs**
- **consider some of the complications in control programs**
- **develop approaches to problem resolution**
- **examine the ethics of vertebrate wildlife control**

Reasons for wildlife control

- **damage to agricultural and horticultural crops**
- **damage to forestry nurseries and plantations**
- **damage to ecosystems that need to be conserved**
- **competition with livestock for feed**
- **the risk of predation of livestock and farmed fish**
- **the risk of predation of game animals**
- **the risk of predation of endangered wildlife**
- **the risk of transmission of specific diseases to livestock**
- **the risk of zoonotic diseases spreading to man**
- **damage to property**
- **consumption and contamination of stored feedstuffs**
- **the risk of overpopulation (and emaciation) in the species**

Wildlife control for animal disease control purposes

- ***Mycobacterium bovis*** **and brushtail possums in NZ**
- ***Mycobacterium bovis*** **and badgers in UK**

- **Maintenance hosts & Spill-over hosts**

Examples of some topical zoonoses transmitted by wildlife

- **Alveolar hydatid disease – *Echinococcus multilocularis* & urban foxes**
- **Haemorrhagic fever with renal syndrome – *Hantavirus* & rats**
- **Leptospirosis – *Leptospira* spp. & rats**
- **Bird 'flu' – avian influenza A virus subtype H5N1 & wild waterfowl**
- **Toxoplasmosis – *Toxoplasma gondii* & feral cats**
- **Lassa fever – *Arenaviridae virus* & mice**

Hantavirus has been isolated from the following rodent species in Brazil:-

Akodon monotensis
Akodon paranaensis
Akodon serrensis
Oligoryzomys nigripes
Oxymycterus judex

In a recent study in Salvador, 142 wild *Rattus norvegicus* were captured and tested for *Leptospira* species. 80% of the rats tested positive for *Leptospira* in their urine and kidneys, and 68% had positive antibody titres in their serum.

This study was conducted after the flood-associated outbreak of Leptospirosis which killed 50 people in Salvador.

Approaches in Wildlife Control Programs

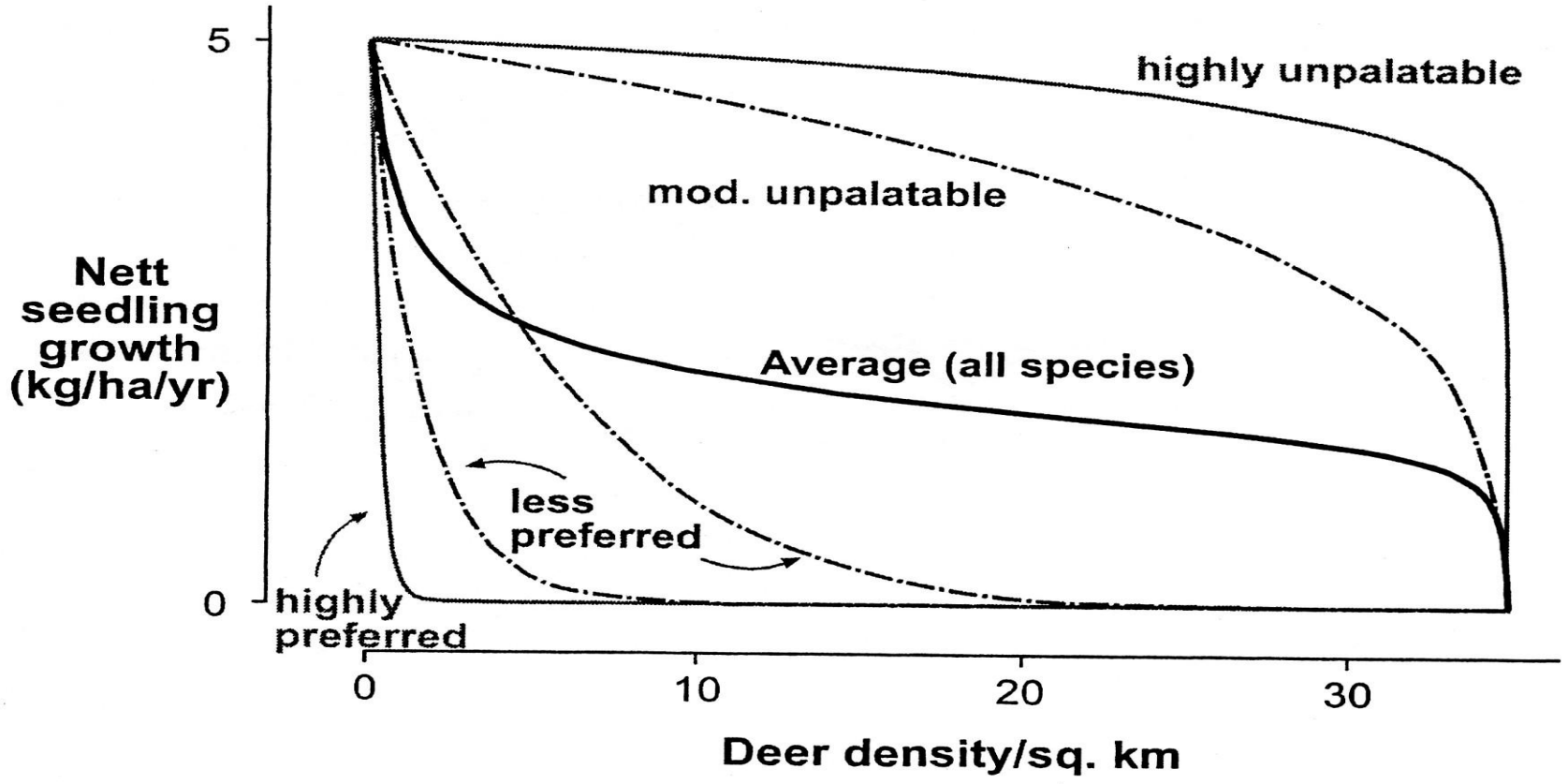
Three key components

- **set clearly defined objectives**
- **decide how to achieve those objectives**
- **monitor the outcome of the plan**

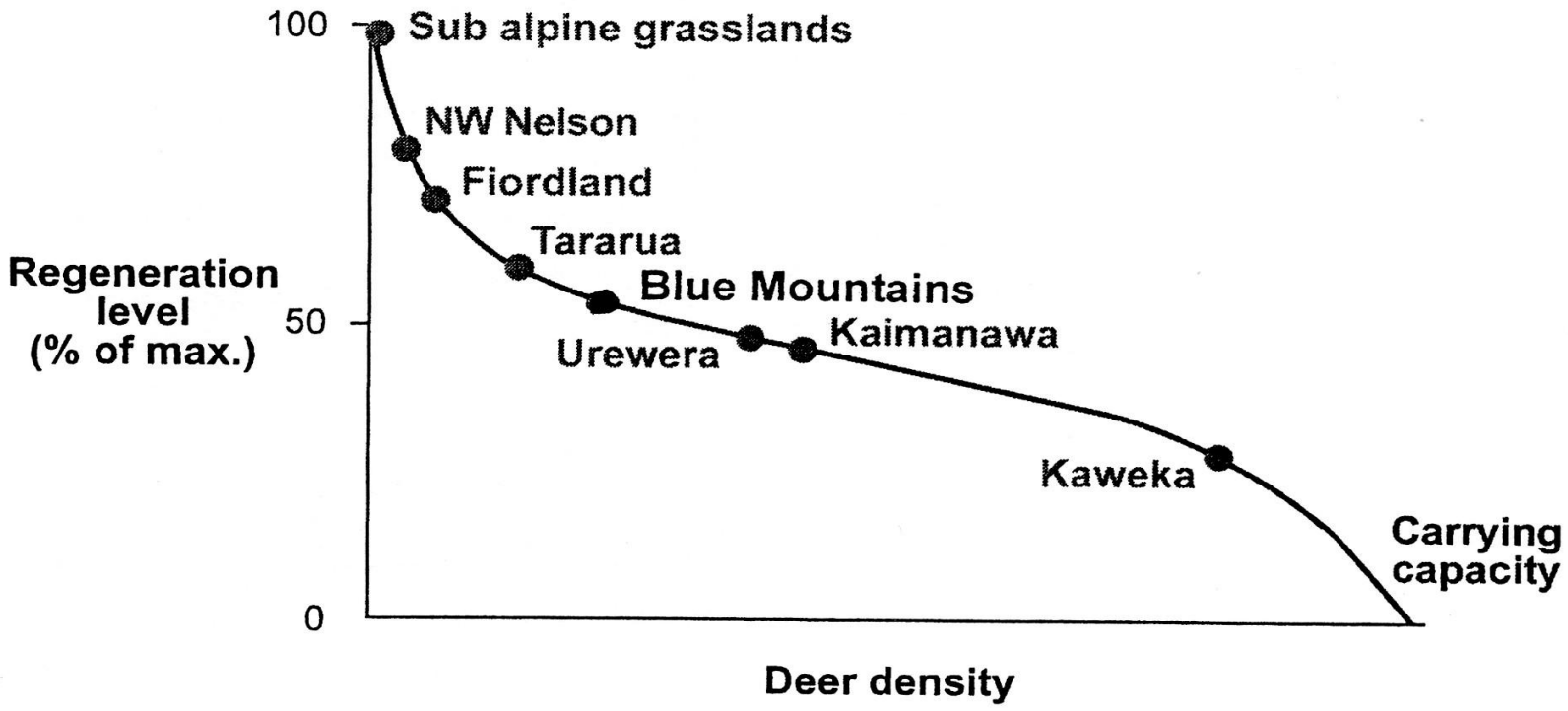
Goals should be transparent and defensible, even when outcomes are uncertain

Red deer *Cervus elaphus*

Determining the optimum or tolerable population density or size of a pest



Deer density and Regeneration rate of indigenous vegetation



Conclusions from this example

- almost complete removal of deer would be needed to protect plant species that are highly preferred by deer and may be endangered

- when the seed bank in the soil has been exhausted, natural regeneration of the endangered plant species is lost

Control Strategies

- **damage control**
  - **deterrents**
  - **exclusion**
- **pest control**
  - **sustained destruction**
  - **eradication**

Exclusion, deterrents and predation

Repellent, deterrent and exclusion devices include

- Noise emitters – bird scarer guns, ultrasound alarms
- Visual scarers –
- Chemical repellents – copper acetate to repel sharks
- Habitat removal – roost removal around fruit farms
- Exclusion – electric fencing, vermin proof doorways
- Feed competition – encouraging competitors which are less of a pest

Killing Methods

- Toxicants
- Introduced disease
- Traps and snares
- Hunting, shooting and fishing

Make sure you understand the advantages and disadvantages of .....

- Introducing a disease to control the pest
- Introducing predators to control a pest
- Bounty systems
- Recreational hunting in pest control
- Control leading to Vacuum effects
- The different measures of success
    - catch rates
    - scat density
    - feed removal/activity at chew stations
    - head counts/plot occupancy
    - runway/burrow opening counts
    - impact assessment

Pest Control Methods

- ***Toxicants***
- ***Traps and snares***
- ***Hunting, shooting & fishing***
- ***Introduced diseases***
- ***Introduced predators***

Welfare Compromise

The severity of a welfare compromise (W)

$$W \propto N\ I\ D\ C$$

N – number of animals affected

I – intensity of suffering

D – duration of suffering

C – capacity of the animal to suffer

Toxicants

- ***1080***
- ***Alpha chloralose***
- ***Anticoagulants***
  - ***brodifacoum***
  - ***bromadiolone***
  - ***pindone***
  - ***racumin***
  - ***warfarin*** *et al.*
- ***Bromethalin***
- ***Carbon monoxide***
- ***Chloropicrin***
- ***Cholecalciferol***
- ***Phosphorus***
- ***Potassium cyanide***
- ***Rotenone***
- ***Strychnine***
- ***Zinc phosphide***

Discontinued:-

- ***Alpha naphthylthiourea***
- ***Magnesium cyanide***

Acceptability Rating

0 Least acceptable

5 Highly acceptable

5/ Av-alarm
Shoo-roo
Electronic repellents
Denatonium benzoate
Polybutene
Methiocarb

4/ α-chloralose
potassium cyanide
carbon monoxide
head shot- rifle
head shot – shotgun (close)
cage and box traps

3/ 1080
Mist nets
Net guns

2/ Padded leghold trap
Conibear trap
Phosphorus
Anticoagulants
Bromethalin
RCD
Warren ripping
Leg and neck snares
Break-back trap

1/ Unpadded leghold traps
Glueboards
Strychnine
Myxomatosis

0/ Lanes Ace leghold trap
Cholecalciferol
Chloropicrin

Shoo roo

Glue board

Mist net

Traps and Snares

Live traps

Cage traps

Box traps

Nets

Pitfall traps

Leg snares

Neck snares with stops

Leg-hold traps

Glue boards

Kill traps

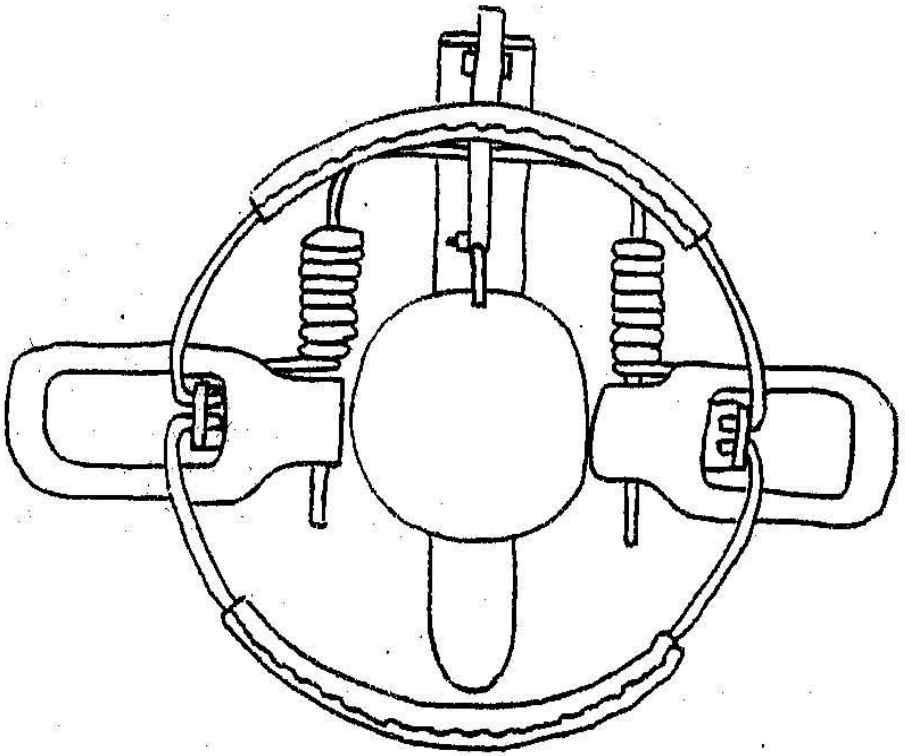
Neck-hold traps

Neck snares without stops

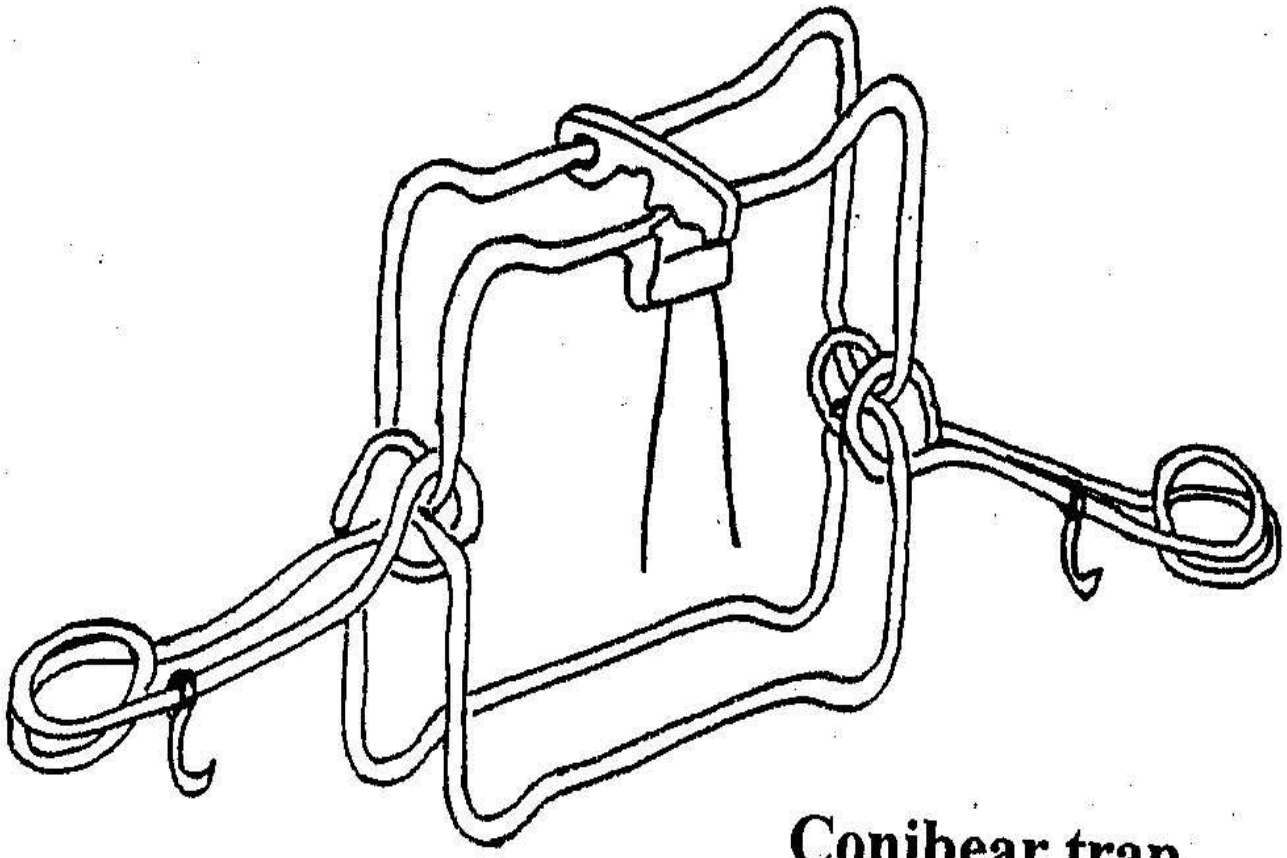
Break-back traps

Body-catch traps

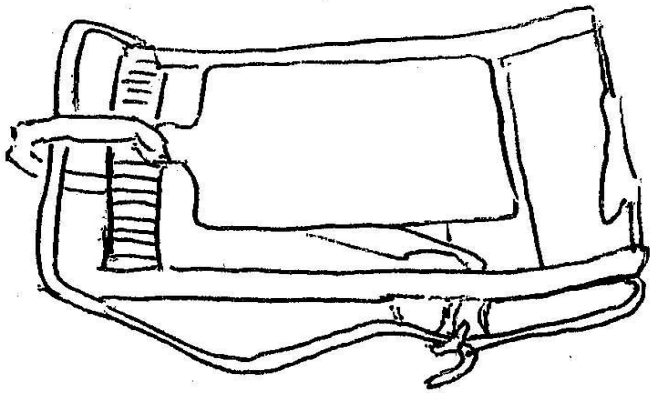
Crushing devices



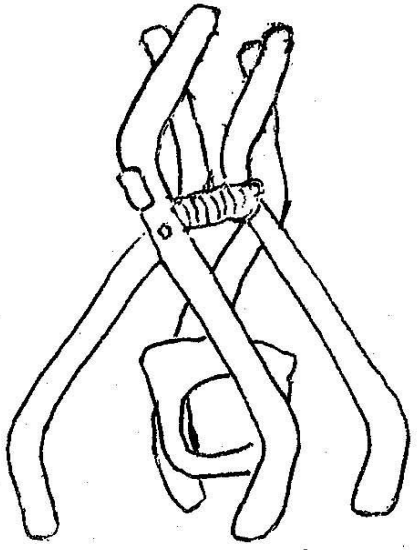
Leg hold trap (padded)



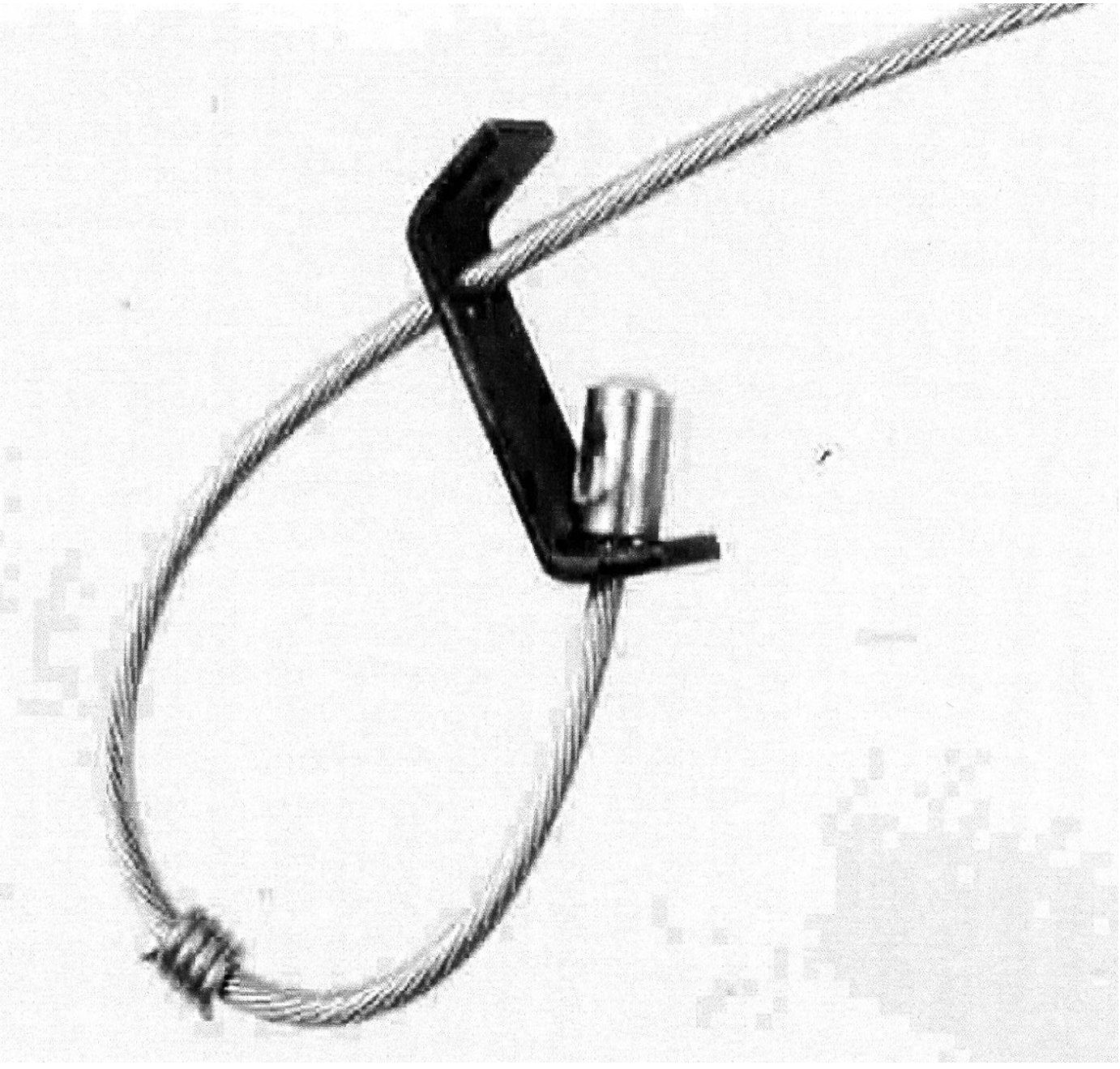
Conibear trap

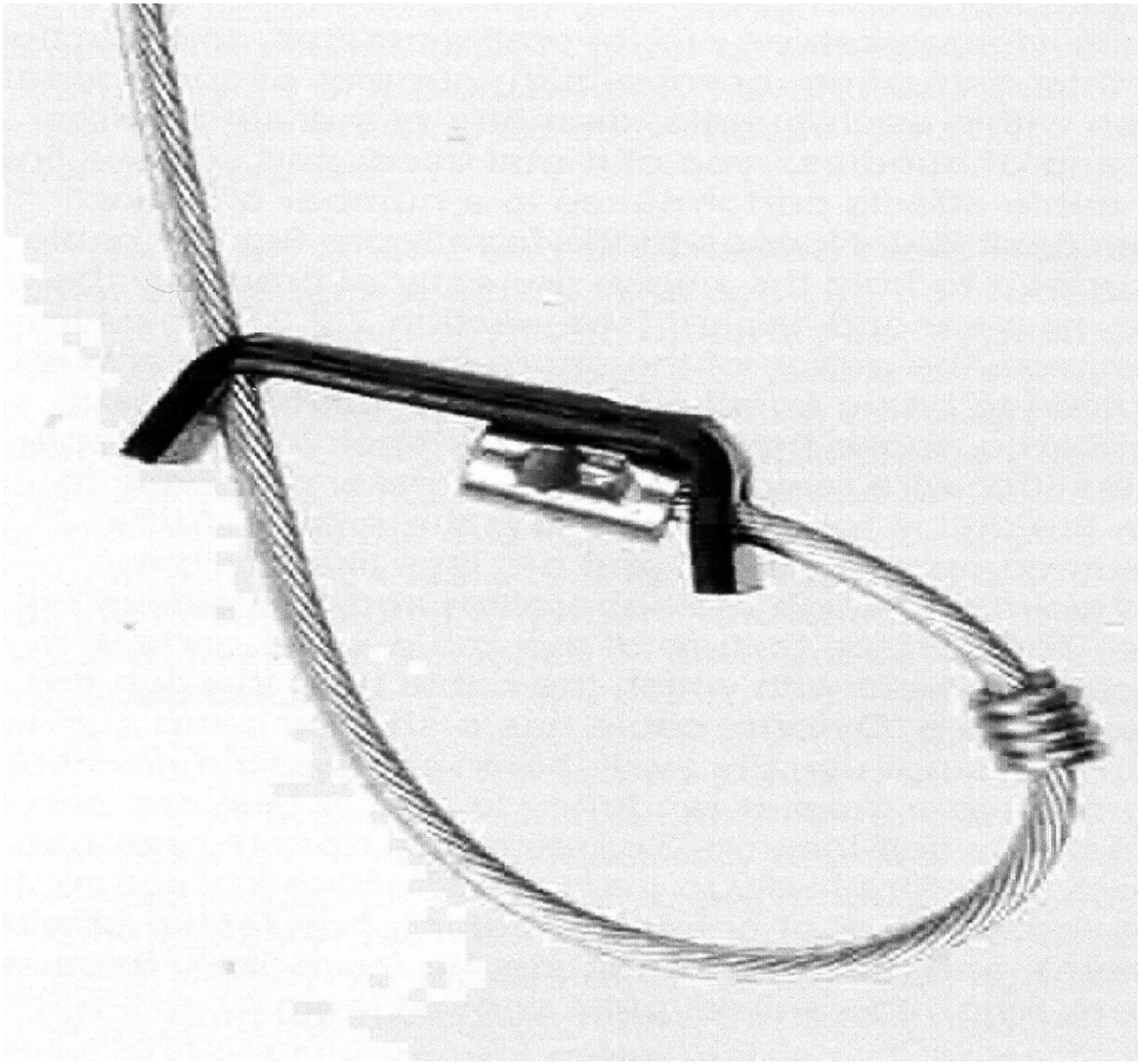


Fenn trap



Scissor trap





Shooting

On average 14 % of ducks were carrying birdshot pellets (Norman 1976)

On average 14 % of willow ptarmigan were carrying birdshot pellets (Holmstad 1998)

Introduced diseases

Myxomatosis

- ***time to death 10 to 50 days***
- ***skin swellings after 4 to 5 days***
- ***conjunctival swellings 5 to 6 days***
- ***eyes can be completely closed at day 7***
- ***death from secondary infections (esp. In lungs)***

Rabbit calicivirus

- ***liver damage with disseminated intravascular coagulopathy***
- ***death from a stroke or cardiac irregularities***
- ***not all deaths are quick***

Introduced predators

Advantages

- ***low cost***
- ***low effort***

Disadvantages

- ***predator will take non-target species***
- ***predator may become a pest itself***
- ***not always effective***

Ethics of Wildlife Control

Viewpoints on the ethics of wildlife control can fall in 4 positions:-

deontological

axiological

teleological

consequentialist

Is it Fair Analysis

- *Is it Fair ?*
- *Is it Necessary ?*
- *Are there Alternatives ?*

SPANCE Analysis

S - Society

P - Producers

A - Animals

N - Nation

C - Control Agency

E - Ecosystem

Use an ‘Is it Fair ……’ plus a ‘SPANCE’ Analysis for assessing the Ethics of controlling the following Wildlife species

Wildlife species	Reason for control
Jaguar *(Panthera onca)*	Loss of calves
Black vulture *(Coragyps atratus)*	Loss of calves
Wild boar *(Sus scrofa)*	Crop damage, lambs
Capybara *(H. hydochaeris)*	Crop damage, zoonosis (maculosal fever)