Wildlife Conservation

What is it? Why is it Important?

- Protection of animals, plants, and habitats
- Many threats: invasive species, climate change, poaching, etc.
- Natural interactions are highly interconnected
- One species disappearing can destabilize the local ecosystem
  - This harms humans too: e.g., undiscovered plant-based medicines
- Habitat destruction also increases wild animal contact with humans
  - Typically not good for either side
- Conscious efforts to preserve nature benefit everyone

How can Technology Help?

- Wildlife conservation is a very big problem
  - Depends on species populations in the area
  - Migratory patterns, hunting grounds, pack territories, etc.
  - System changes/evolves over time
- We can manually monitor all of this, but this is a lot of information
- Not enough people to collect the data or analyze it
  - Computers can do this more efficiently
- We can build devices to collect data
- We can write programs that analyze data
  - Keeps track of the health of the ecosystem
  - Helps us make informed decisions

Wildlife Conservation: Camera Traps

Camera Traps

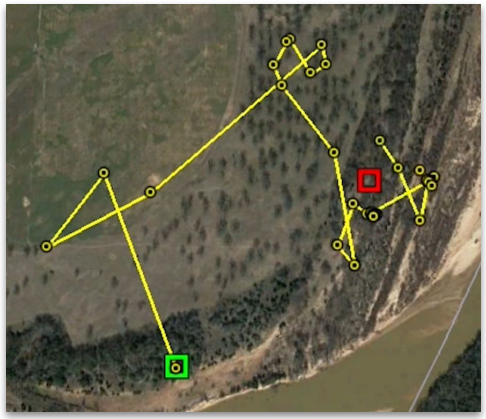
- Human observation is difficult
  - Time consuming
  - Covers a small area
  - Human presence disturbs wildlife
  - Can be dangerous
- Solution: autonomous observation devices
- Installed at fixed locations
- Works 24/7 without breaks
- Automatically take pictures of animals
  - Infrared sensors
- Animals ignore the devices
- Images sent/retrieved periodically


DAILY DIVE #061
CAMERA TRAPS IN THE HIGH
FORESTS OF NEPAL

Wildlife Conservation: Tracking Collars

Tracking Collars

- Difficult to track animals in the wild
- Solution: GPS tracking collars
- Animals sedated with darts
- While unconscious, collar is attached
- Animal is woken up
- Continues with their normal lives
- Collar silently records their location
- Some have extra features:
  - Can be remotely removed if needed
  - Notify rangers/researchers of animal death




Tracking
Virginia's Elk
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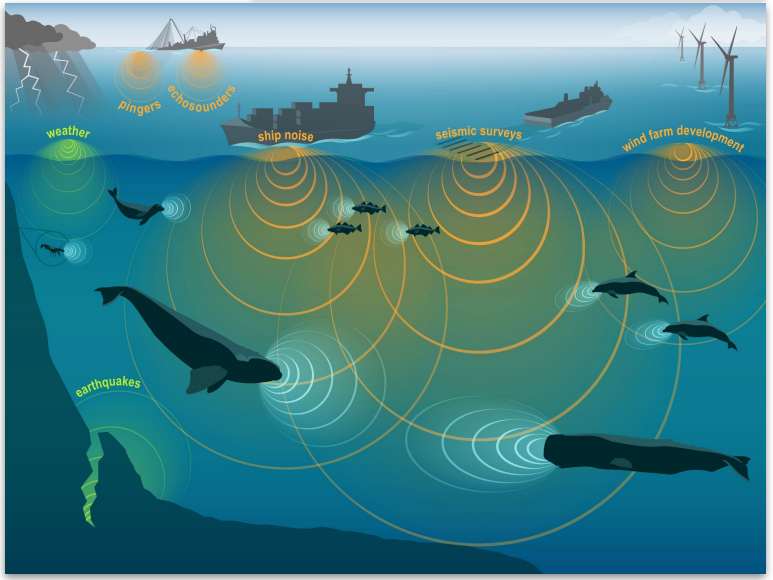
Wildlife Conservation: Underwater Acoustic Monitoring

Underwater Acoustic Monitoring

- Camera traps cover small areas
- Tracking collars require animal capturing
- Acoustic monitoring can solve both
- Very useful in underwater environments
  - GPS doesn't work
  - Sounds travel far - vision limited
- Place several underwater microphones
- Autonomously listen for specific sounds
  - Whale calls, etc.
- Record these and collect for analysis
- Can even track animal movements

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Wildlife Conservation: Drones


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