

Monitoring cameras

Features and examples of their use



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Murrumbateman Landcare

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Some considerations before use:

Legalities

- Check your local laws regarding use of cameras
 - Private property vs public property
 - Video/images of people vs video/images of plants and animals
 - Intended purpose

Human ethics and safety

- Would YOU want to be filmed or photographed without your permission?

Animal ethics

- Use of cameras for research purposes requires application to and approval of an official Animal Ethics and Care Committee (usually organisation based)
- Don't use cameras if they are likely to have a negative impact on animals



Monitoring cameras are useful for...



Documenting and/or explaining:

- Change
- Behaviour
- Presence and relative abundance



Of things like:

- Vegetation, soil, water
- Feral predators – cats, foxes, pigs
- Feral herbivores – goats, rabbits
- Native species – mammals, birds
- Stock and pets

Plus communication via:

*Time lapse videos, websites,
youtube, reports, talks*



Exploring interactions between these and:

- Season/month
- Time of day/night
- Temperature



Camera brands and power sources

Brands

- Reconyx – multiple models with various features
- Boblov – cheap and cheerful, great value, nice images
- Browning – between Boblov and Reconyx
- Swift – can be set up to transmit via phone network
- Arlo – internet connected, cloud storage, great for close-to-home
- Maginon – Aldi version of Boblov, works fine but poor quality image
- And more...

Power sources

- Rechargeable long-life lithium-ion batteries (e.g. Eneloop)
- Solar panels with associated batteries
- Heavy-duty external batteries
- Single-use long-life batteries (e.g. Energizer lithium)



Programming options

Time-lapse

- Images or video taken at set intervals between set hours
 - e.g. Three images, taken every hour, between 7am and 7pm



Motion-sensing

- Images or video taken when the motion-sensor is triggered by something moving in front of the camera
- Some cameras can be programmed to do both (e.g. Reconyx).
- Others can only do one at a time but are capable of either (e.g. Swift)

Still photos vs video

- Some cameras only do still photos, others do either/both still photos and video
- Some have their own screens for instant playback
- Still photos can be used to create videos



Programming options cont...

Adjustable features

Depending on the brand and model

- Trigger speed (how quickly the camera responds)
- Photo speed
- Number of photos per trigger / duration of video
- Delay or 'quiet period' after triggering
- Sensitivity of motion sensor
- Field of view within which motion must be sensed
- Hours of operation
- Days of operation
- Whether the images/video are recorded vs transmitted
- Sound recording
- Quality / resolution / size of photos or video
- Time stamp on/off
- Temperature units (Celsius or Fahrenheit)
- Infra-red vs white flash
- And more....



Installation

Fixing and positioning

- Bungee cords
- Straps and belts
- Screwed on
- Adjustable camera clamps and tripod fittings
- Iphone grips/stands

Supports

- Trees, logs, rocks
- Star pickets (noisy, heavy and expensive)
- Timber posts e.g. garden stakes (quieter, lighter, cheaper – but rot)
- Aluminium frames

Make them sturdy!

Security

- Steel cases
- Python locks
- Bike locks
- Cables with padlocks



Tips and tricks – setup



Angle

- Where is the sun going to be? Sun in the lens ruins images...
- Where is the shade going to be? Hard to see things...
- Angling slightly down helps

Distance

- Motion sensitivity
- Timing of motion trigger
- Quality of image



Accidental triggering of motion sensor

- Wind moving vegetation that's too close
- Vegetation growth can be fast! Obscuring the view
- Wind moving camera or support
- Sun/light on water triggering motion sensor
- Stock
- Spiders

Tips and tricks cont...

Stock or wildlife disturbance

- Using the camera/support as a scratching post or perch
- Chewing on the gear or connections
- Just curious



Spiders love cameras

- They obscure the lens and can trigger motion sensing
- Spider spray helps, but damages the camera coating
- Spider spray is smelly, making the camera's presence obvious



Tips and tricks cont...

Waterproofing

- How well-sealed is the unit?
- If you have moisture-absorbers / dessicants, use them



Tips and tricks cont...

If you want to see wildlife, aim for:

- Logs, large woody debris, snags
- Sites with large hollow-bearing trees
- Water, riverbanks, wetland banks



Testing is worth your time

- Reception and backup storage – for units that transmit images
- How many images / videos you can fit on your memory card
- Whether the camera is actually doing what you think it is!
- Check both quality of lens and image resolution

Theft is a real risk...

- Lock the camera securely if it's accessible to the public
- For most makes/models you can also set a password or 'Code lock' the camera



Examples of use

Murray-Darling Basin Environmental Water Knowledge and Research Project (MDB EWKR)

'Waterbird Theme'



Field research

Nest monitoring: Colonial-breeding waterbirds (e.g. Ibis and spoonbills)

- Quantifying egg and chick survival rates
- Quantifying predation: species, impacts, timing, location
- Estimating impacts of nest/egg/chick exposure (e.g. weather)
- Developing a guide to assist with accurately aging chicks
- General behaviour: courting, nesting, egg and chick care, pair-bonding and gifts, competition, aggression etc.
- Nesting habitat characteristics and species preferences



Results example: Egg and chick survival and mortality

- Hatching rates are often low (30–60 %).
- Most egg mortality is driven by predation or nest abandonment.
- Hatching rates differ between species.
 - Royal Spoonbill eggs are more likely to survive to hatching than Straw-necked Ibis eggs, while Australian White Ibis eggs are the least likely to survive to hatching.
- Once hatched, chick survival rates until leaving the nest are high and similar among the three species (88–92 %).
- Further analyses are planned – e.g. effects of water level changes, nest exposure, weather, etc.



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RECONIX

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BECONYA



Ecological responses to environmental flows: Paika floodplain lakes, SE Australia

[Floodplain biomass and biodiversity responses to managed flooding](#)
Heather McGinness, Jacqui Stol, Micah Davies, Veronica Doerr

Ecological responses to environmental flows: Paika floodplain lakes, SE Australia



Monitoring camera images

Documenting change/activity/relative abundance:

- Water levels
- Vegetation
- Feral predators – cats, foxes, pigs
- Feral herbivores – goats, rabbits
- Native species – mammals, birds, reptiles

Variables explored in analyses:

- Water level (wetting/drying phases)
- Season/month
- Time of day/night
- Temperature
- Vegetation – dominant species, biomass
- Behaviour and interactions – conspecific and interspecific



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RECONYX

Thankyou

Questions?

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<https://research.csiro.au/ewkrwaterbirds/>

<http://ewkr.com.au/>

<http://www.mdfrc.org.au/projects/ewkr/about/>

<http://www.environment.gov.au/water/cewo/monitoring/ewkr>



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Waterbirds Australia: Science for Management