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Wetland Bird Surveys & Monitoring

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1. Introduction

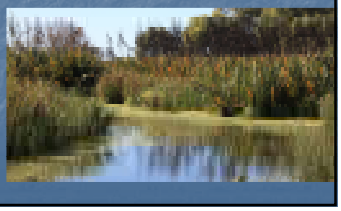
- Birds(avifauna) are often a major feature of wetlands
- Use is dependant on a range of factors (wetland type, vegetation and size, water levels, time of year and day)
- Knowing what bird species use wetlands is useful for a range of reasons
- Whangamarino wetlands (8800 ha) first major New Zealand wetland bird survey in 1980

Presentation covers:

- Freshwater lakes, swamps and bogs
- Estuaries and salt marshes

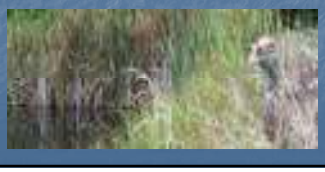
But does not cover:

- Rivers & Streams
- Geothermal wetlands



Presentation covers cont…

- Purpose of bird surveys
- Factors to consider before starting
- Types of surveys
- Survey methods
- Bird detection and identification
- Examples of bird surveys and monitoring



2. Purpose of bird surveys

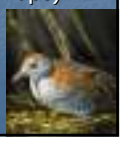
- General interest
- Management needs and experiments
- Research
- Advocacy
- Environmental impact reports
- Monitor overall biodiversity health and change

3. Factors to consider before starting

- Clearly define purpose of survey/monitoring. This will will influence the methodology
- What bird species are likely to be present and what will be surveyed
- Are approximations, indices or absolute bird numbers needed
- What sort of sample size is needed
- What variables need to be measured (weather, water levels, vegetation type etc)

3. Factors to consider cont…

- How will data be recorded and used (design of forms, spreadsheets, GSI mapping etc)
- Previous studies of that site or species
- Timing/frequency of survey (time of year and day, water or tide levels)
- Available resources (equipment, people, maps)
- Observers skill, training needs
- Terrain and physical access



4. Types of surveys

- Baseline survey (species presence/absence, site list with approximate or specific bird nos)
- Distribution survey across numerous sites eg Atlas type study (often large scale)
- Distribution and abundance (large site or several sites, habitat use, territory mapping)
- Population monitoring (seasonal, annual or long term trends)

5. Survey methods

- Influenced by purpose of survey, target bird species, territory size, type and size of wetland, terrain and physical obstacles
- Straight line transects – sites accessible - stations at set distance apart (eg 100 metres) located by GPS or markers – suitable large wetlands >10 ha – bird detectability constant
- Route transects – often physical barriers or simply more convenient - stations at regular or irregular distances apart

5. Survey methods cont…

- Area searches – more casual approach or focus on specific habitat/vegetation types – similar to route transects
- Point count – all birds counted from one point – small lakes and shorebird high tide roosts
- Combination of the above

5. Survey methods cont…

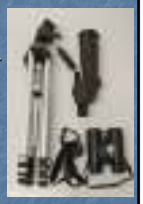
- Five minute bird calls with/without tape recorders to elicit responses (crake, fernbird, bandedrail)
- New DOC protocols being trialled by Arawai Kakariki wetland restoration researchers for bittern, fernbird & crake

6. Bird identification

- Correct bird identification is the key
- Good bird field guide
- Know what birds to expect
- Sight – bird, feather, footprint, nest or egg
- Call-notes (one or two sounds) or song (series of notes in recognisable pattern)
- Foot, vehicle, canoe or plane

6. Bird identification cont…

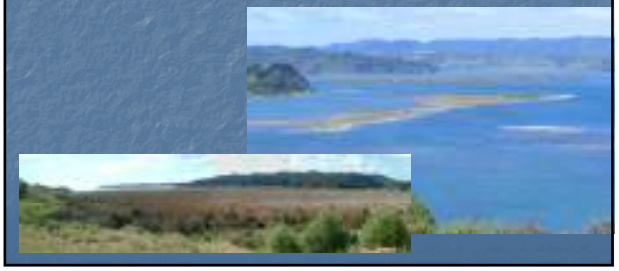
- Binoculars - with good light gathering qualities 8 x 40 with minimum 6.5 degree field of view, rubber coating & water tight bodies. 10 x 40 more suited for longer distances
- Spotting scope and tripod – Vary power with best magnification 20x - 25x.
- Tape recorder or MP3 player
- Radio telemetry equipment if working with birds fitted with transmitters



7. Bird survey examples

Marshbird Habitat of Ohiwa Harbour
(Keith Owen 1994)

2700 ha harbour with 380 ha of estuarine and freshwater wetland in the Bay of Plenty

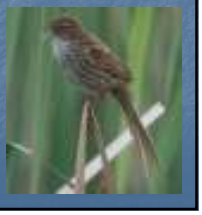


Ohiwa Harbour objectives

1.Map distribution of marshbird populations and habitat

3. Assess threats to marshbirds and their habitats and recommend appropriate action

4. Use bird & habitat data for advocacy purposes



Ohiwa Harbour cont…

Method:

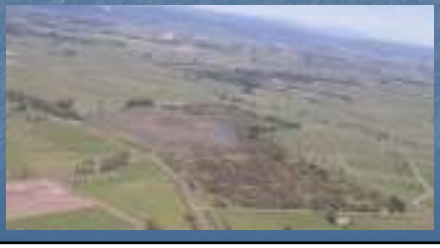
- Over eight days in November 1990 five observers used route transects and area searches using tape recorders making sight/sound records of marshbirds

Results:

- 35 bird species recorded. Bittern (4 birds), banded rail (45 birds), spotless crake (8 birds), North Island fernbird (145 birds) & marsh crake (none)
- Identified 42 separate sites of important bird habitat ranked outstanding, high or moderate)

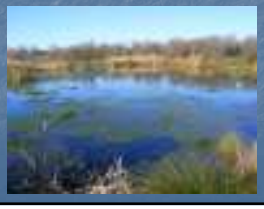
A Wetland Bird Survey of Awaiti Wildlife Management Reserve
(Nancy Willems 2004)

69 ha Reserve of willow, raupo, rush wetland with some areas of open water in the Bay of Plenty



Awaiti objectives

1. Obtain up to date information on distribution and abundance of birds
2. Assess changes in bird use as a result of willow control



Awaiti cont…

Method:

- Over two mornings in November & December 2004 five observers made sight/sound recordings at 49 stations using straight line & route transects 100m apart.
- Five minute bird counts were completed at each station before playing tapes of each species (rails, fernbird)

Awaiti cont…

Results:

- 39 bird species recorded. Spotless crake (42birds), marsh crake (none), banded rail (1 bird) and North Island fernbird (6 birds).

Bittern Monitoring Lake Hatuma 2007-2010

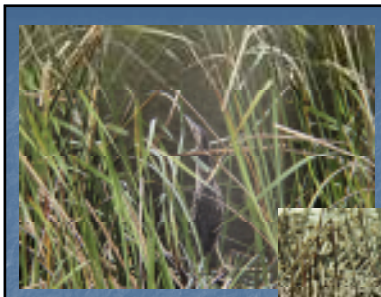
(John Cheyne)

150 ha shallow Hawke's Bay lake with 76 ha wetland margin dominated by willow and raupo

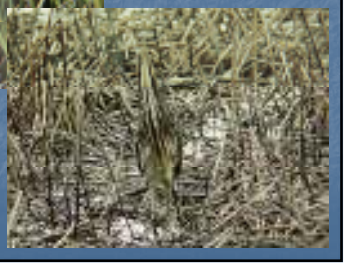
Bittern Monitoring cont…

Objectives:

1. Determine no. of booming male bittern present and map territories
2. Determine duration and intensity of booming
3. Record numbers of non booming birds



Can you spot them?



Bittern Monitoring cont…

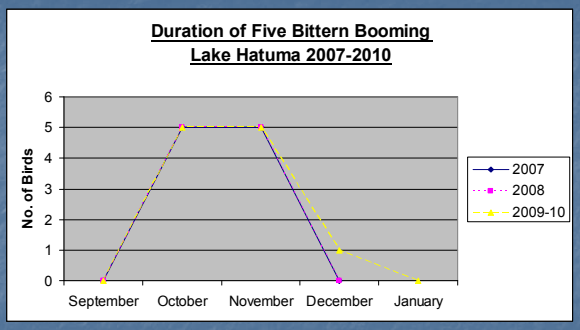
Method:

- Spring – summer period 2007-10 booming bittern were recorded each year
- Single point land based counts and route surveys by canoe.
- Direction of booming birds was recorded on an aerial photograph and location identified by triangulation
- Tape recorders were not used to elicit responses.

Bittern Monitoring cont…

Results:

- Five male bittern were recorded booming each spring from the same locations (territories?).
- Four locations were within 100 metres each year with one moving 200 metres in 2009.
- Start and finish dates of booming was very similar for 2007 and 2008.
- In 2009 one bird boomed one month longer, possibly as a result of higher than normal summer water levels.



Bittern Monitoring cont…

- On 14 November 2009 a canoe area search recorded nine individual bittern comprising the five booming males and four other birds sighted of unknown gender.
- Best times for hearing booming were Oct and Nov, two hours either side of daylight and dark.
- Evening was slightly better as it avoided clashes with the dawn chorus of domestic poultry and wild birds (passerines).

Bittern Monitoring cont…

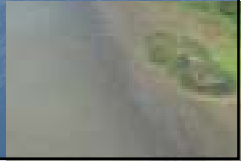
- Traffic noise and windy conditions will limit ones ability to hear birds.
- Some days all five males would boom throughout the day.
- Booming regularly heard up to 1200 metres away and sometimes 1700 metres.

Paradise Shelduck Aerial Trend Counts Hawke's Bay 2001-09

(Matthew McDougall, Fish & Game)

Method:

- 17-26 open water sites with flocks of flightless moulting shelduck counted each January by two observers in a Cessna 172 aircraft doing transects & area searches at 200m elevation. Supported by photography and GPS.



Paradise Shelduck Aerial Trend Counts cont…

Results:

- Population monitored annually for game bird management purposes (setting sustainable harvest limits for hunting).

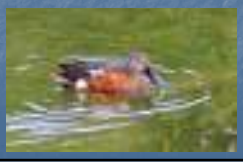
Paradise Shelduck Aerial Trend Counts 2001-2009 Hawke's Bay									
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
5765	5656	8139	8081	9742	12110	1218	13105	10883	

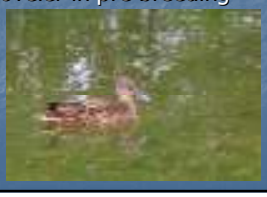
Shoveler Duck Trend Counts Hawke's Bay 2000-09

(Matthew McDougall, Fish & Game)

Method:

- 9-11 open water wetlands were counted using point counts on foot, from a vehicle or canoe 2000-09 in the first week of August. Shoveler in pre breeding flocks at this time.





Shoveler Duck Trend Counts cont…

Results:

- Population monitored annually for game bird management purposes (setting sustainable harvest limits for hunting).

Shoveler Duck Trend Counts 2000-2009 Hawke's Bay									
2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
3154	1736	3526	2070	3093	2694	2925	4559	2002	2996

Maketu Estuary Shorebird Census

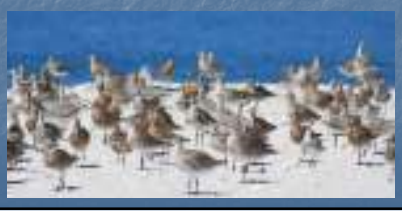
(Ornithological Society NZ)

215ha estuary in the Bay of Plenty

Maketu Estuary cont…

Objectives

1. Determine no. of shorebirds (waders) using the site each summer (Nov) and winter (Jun) as part of national study.



Maketu Estuary cont…

Method:

Shorebirds counted on high tide roost where they are forced to congregate over high tide periods

Results:

- Census carried out since 1984. Good understanding of annual species use and numbers.
- Maketu supports greatest diversity of shorebirds in BOP
- Meets criteria of the Ramsar Convention on Wetlands of International Importance as waterbird habitat.

8. Summary & Conclusions

- Wetland bird survey and monitoring is fun & simple or can be more complex depending on the need (project + objectives)
- There are a number of well used methods (straight line and route transects, area searches, points counts or a combination of these.)
- These are used for baseline, distributional, abundance or population survey & monitoring
- Need to pick one method that suits your project objectives
- Use trained bird observers or train observers up to required proficiency
- Use the same methodology throughout survey/monitoring period
- Collect data in a structured way so analysis of results can take place without difficulties
- Finally, good luck with your projects

Useful Reference Books

Bird Survey Design

- **Bibby, C. Burgess, N. Hill, D. Mustoe,H. (2000) " Bird Cenus Techniques"**
- **Ministry of Environment, Lands & Parks, British Columbia (1999) "Inventory Methods for Waterfowl and Allied Species"**

Bird Identification & Ecology

- **Heather, B. and Robertson, H. revised (2000) " The Field Guide to the Birds of New Zealand"**
- **Medway, D. (2000) "Common New Zealand Shorebirds"**
- **Moon, G. (2009) " New Zealand Wetland Birds and Their World"**

Acknowledgements

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