

BMS Manual
Supplement on Method
for Counting Waterbirds

February 2001

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**Technical Assistance
IMPROVING BIODIVERSITY CONSERVATION IN PROTECTED AREAS
THE PHILIPPINES**

**BMS Manual
Supplement on Method
for Counting Waterbirds**

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REQUEST FOR COMMENTS:

The readers are kindly requested to send comments and suggestions for improvements of this Manual to PAWB-DENR with copy to NORDECO:

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Waterbird counts entail regular visits to a particular area in order to identify, count and record the species of waterbirds present. The number of waterbirds indicates the importance of the area to conservation of waterbirds. Information on year to year variation in numbers and species of birds at each site can enable assessment of change in waterbird populations and of the possible need for conservation management action.



Waterbird species are difficult to identify. In the beginning, protected area staff need to be able to distinguish:

- ducks,
- large heron-like birds,
- small heron-like birds,
- waders, and
- other waterbirds (other than ducks/herons/waders).

After training and with some coaching, a small number of protected area staff may be able to identify waterbirds to species level.

This supplement describes the Waterbird Count field method and the organisation, analysis and interpretation of waterbird count data (modified from Howes, J. and Bakewell, D. 1989. Shorebird Studies Manual. AWB Publication No. 55. Kuala Lumpur, Malaysia).

EQUIPMENT

The following materials are needed: binoculars, topographic map, notebook, pen, identification guide, hat, food and drinking water. A telescope and tripod would also be useful. Use old shoes and clothing since you will get wet and muddy. If access on foot is not possible, you can undertake the survey by boat, using short stops to identify and count birds. One advantage is that you can often get closer to the birds by boat than on foot.

SUITABILITY

This method is recommended in lakes, swamps, estuaries, wet meadows, mudflats and intertidal areas where at least 500 individuals of waterbirds occur regularly.

PERSONNEL

The method can be undertaken by any protected area staff who has been trained or has skills in distinguishing the major groups of waterbird species.

FREQUENCY

We recommend that you census waterbirds in your PA every quarter of a year. The first count each year should take place in the last week of January, coinciding with the international mid-winter census of waterfowl.

LOCATION OF WATERBIRD MONITORING SITES

Waterbirds should be counted in areas where they occur in large numbers, in particular if the areas are threatened. Some waterbird concentrations may not be possible to count, however, because they are found in areas that are not accessible on foot or by boat.

STEPS

Selection of waterbird count sites

- 1 Obtain a topographical map and, if possible, vegetation and land use maps for the area.
- 2 Draw patrol routes and trails on the map. Locate those areas on the map where you know waterbirds occur in large numbers.
- 3 Are any of the areas with waterbirds threatened? Are those areas accessible on foot or by boat? If so, waterbird counts should also be undertaken in these areas. Select survey routes for waterbird counts.
- 4 Identify the boundary of each area to be surveyed.
- 5 Decide how to gain access to the site and how to survey it. You can count waterbirds by looking from a boat, tall tree, hill, bamboo platform (Figure 1-1) and other raised position where you have a good view of the site without disturbing the birds. Be careful not to disturb the birds - they may fly elsewhere and be 'double-counted'.
- 6 Before going to the field you should check the weather and the water. Avoid bad weather such as heavy rain and strong winds. Check tide timetables in coastal areas and water depths in freshwater areas (Box 1-1).

Box 1-1. In coastal areas count birds when the tide is incoming, high or outgoing

In coastal areas, counts of waterbirds should be made when the tide is incoming, high or outgoing. During low tide, waterbirds scatter over a large area to feed. They are difficult to approach and it is time consuming to identify and count them. When the tide is 'coming in' or 'going out' feeding birds will be more concentrated than during low tide and thus easier to count. During high tide there is little or no feeding area available so the birds will rest, often adjacent to coastal feeding sites (e.g. in the mangrove trees, drained fishponds, rice fields). If high tide roost sites are accessible, they allow the opportunity for a more accurate evaluation of total numbers of birds and species in an area. However, it may sometimes be difficult to count and identify sleeping birds.

When counting waterbirds

- 1 Scan the area with binoculars to see where the main concentrations of birds are.
- 2 Count or estimate the overall flock size using the binoculars, e.g., 100 birds. See Box 1-2.
- 3 Make an assessment of the dominant species groups present e.g. ducks 80%, large heron-like birds 10%, waders 10% etc. Completing these steps ensures that even if the flock is now disturbed and birds leave, some data has been collected.
- 4 Now you should make an accurate count of individual species groups. Use the binoculars to move slowly through the flock counting each species group.

You can make accurate counts in two ways:

- A species group by species group count, i.e., count all of one species group, then another, etc., starting with the most abundant and finishing with the least abundant. This method is fairly slow and is best used when birds seem settled and unlikely to fly away.
- An all species group count, i.e., observing a flock and counting waders, 2; small heron-like birds, 8; duck 1; etc... until all birds have been counted. This method is fast to use and is best used for widely spaced flocks or in areas where birds are often moving.

Sometimes it is difficult to count feeding birds because of their movements. It is easier if you divide the area using markers. Good markers are fishing stakes, traps and other physical features. Count the birds between the markers and add together to get the total.

Box 1-2. An easy way to estimate bird numbers in large flocks

An easy and accurate method for estimating numbers of birds present is the 'Block' method. This can be used for large flocks, densely packed flocks or distant flocks. This method involves counting or estimating a 'block' of birds within a flock. Depending on the overall flock size, a 'block' can be 10, 20 or 50 birds. The 'block' is then used as a model to measure the remainder of the flock. Some examples are given below.



Shaded circle = number accurately counted

Unshaded circle = number estimated

This flock contains an estimated 30-40 birds (i.e., 3 blocks of 10 birds plus several left over). (NB actual flock size is 35 birds).



This flock contains an estimated 100-120 birds (i.e., 5 blocks of 20 birds plus several left over). (NB actual flock size is 115 birds).

DATA STORAGE AND MANAGEMENT

After each waterbird census, the observations written in the note book or on separate sheets of paper (data sheets) should be tallied for each site by the BMS observer. Store your notebook carefully. Data sheets should be filed with the BMS Coordinator in a ring-binder at the Protected Area Office. A copy should be submitted to the PENRO for safe storage.

Box 1-3. Waterbird counts: Do them the same way every time!

If data is to be comparable for analysis:

- the same area must be visited on each monitoring visit,
- the same techniques must be used for all visits i.e., on foot, by boat, using binoculars, etc.
- whenever possible, conditions should be similar (particularly when a tidal area is concerned), i.e., all visits must be during outgoing, low or incoming tide, or in other areas all visits must be made in the early morning or evening, etc.

TIPS

- 1 You must remain quiet and avoid quick or sudden movements as this will scare away the bird flocks. Try to blend in with the environment to reduce disturbance.
- 2 Avoid walking directly towards flocks of birds as this may make them fly away. Birds are far easier to count and identify using binoculars when they are on the ground, e.g. feeding or resting rather than flying.
- 3 It is always better to have the sun behind you, so that the patterns and colors of the birds can be seen clearly.
- 4 Take care not to be caught by the incoming tide when conducting coastal surveys on foot. In addition, when surveying by boat on an outgoing tide, care must be taken to avoid being stranded on sand bars or mud-banks.

Figure 1-1. A simple bamboo platform useful in wetlands with high vegetation

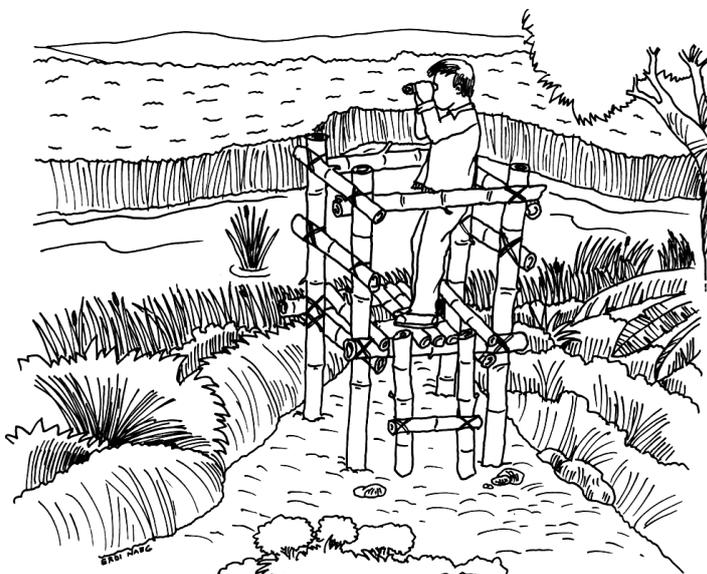
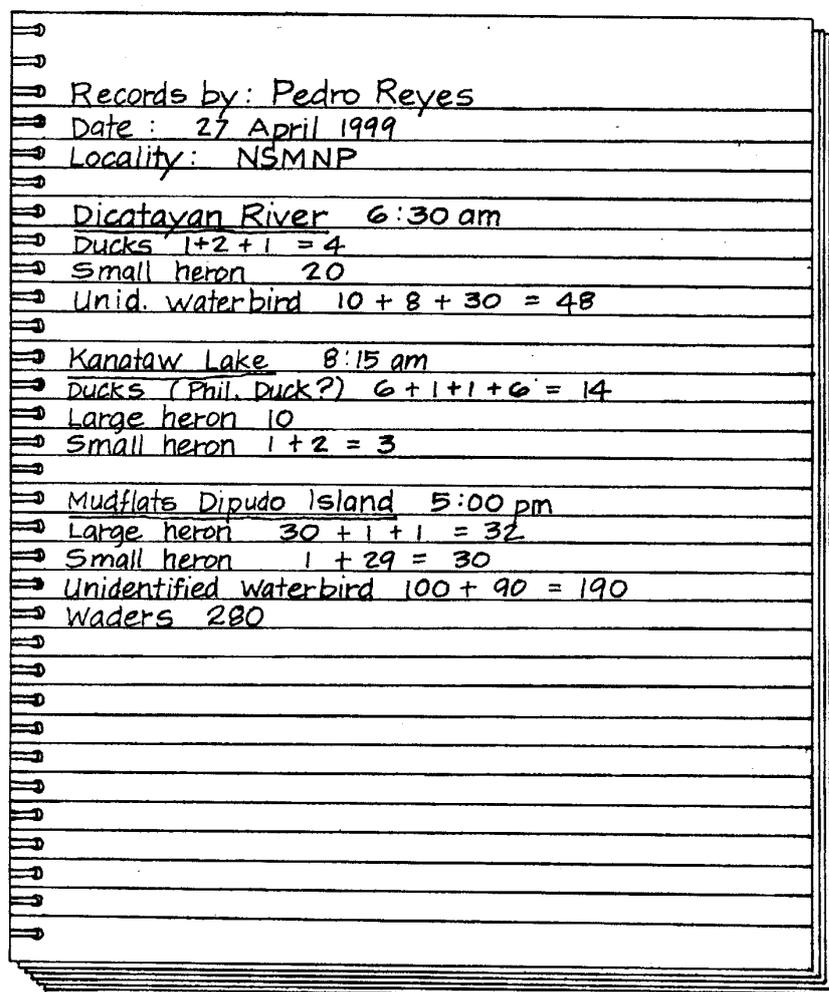


Figure 1-2. Example of waterbird count data in a notebook



Organisation, analysis and interpretation of Waterbird Count data

DATA ORGANISATION:

- 1 Take the ring-binder with the data sheets.
- 2 For each site, add up the observations in your data sheet by species group.

Example:

Northern Sierra Madre Natural Park, 27 April 1999

Species Group	Dicitayan River	Kanataw Lake	Mudflats Dipudo Island
Ducks	10	100	0
Large heron-like birds	150	200	100
Small heron-like birds	0	50	0
Unidentified waterbirds	0	0	400

ANALYSIS AND INTERPRETATION:

- 3 Compare the results with results of monitoring in previous quarters (do not compare between different species groups, or between different sites). Do the findings correspond with your expectations? Are there major changes in the number of any waterbird species group?
- 4 If so, you first need to assess whether the data is sufficiently extensive. When there is little data, differences are often caused by chance alone. The more data and the clearer change it shows, the more you can be sure that the change is real.
- 5 Secondly, you must assess whether the changes could have been caused by a change in monitoring routines (timing of the count, ability of the observer to detect waterbird species, etc.), or a change in staff (remember waterbirds should preferably be surveyed by the same person every quarter).
- 6 Thirdly, you should assess whether the changes could have been caused by a seasonal or annual change in the ability to record waterbirds, or by weather or other natural background conditions. For instance, many waterbird species are migratory (e.g., waders) and naturally only occur in the Philippines a few months each year.
- 7 If there are major changes which are not caused by chance (insufficient data), or a change in monitoring routines or staff, or natural background conditions, then you should assess the reason for the change, the importance of the change and whether any management intervention is appropriate (BMS Manual main volume, Chapter 15).