



Birds New Zealand

Fostering the Study, Knowledge and Enjoyment of Birds

A Guide to Counting Red-billed Gulls

Key Points

1. **Aim:** *to obtain an overall estimate of the size of the red-billed gull population breeding in New Zealand in 2015-16.*
2. **Count the number of active nests** (i.e. as indicated by either an incubating or brooding bird or chicks in a nest) through ground or scan counts, or by photographing the colony from a prominent point overlooking it, or from a boat or aircraft, then counting the number of nesting birds later from the photographs.
3. Colonies should be surveyed as close as possible to the peak of egg laying, likely to be sometime between mid-October and mid-November.
4. Please support all counts, even ground and scan counts, with one or more high-resolution digital photographs of the colony, to provide a permanent record.
5. Where possible, take both panoramic (~70 mm focal length or equivalent) and close-up (~300 mm focal length or equivalent), high-resolution photographs of colonies.
6. Large colonies should be subdivided into more manageable counting units, using topographic or vegetation features as reference points. These should be sketch mapped.
7. In addition to a count of the number of breeding pairs (active nests), please provide geographic coordinates for the colony (latitude/longitude or NZTM 2000 coordinates: see <http://www.topomap.co.nz/>); the name of the site, if known; the date and time of the observation(s); prevailing weather conditions; the observer(s) name(s); and, if possible, a sketch map of the area, showing from where the counts were made, along with any photographs.
8. Details of how to go about censusing red-billed gull colonies are given below. You only need to read the section that is relevant to the counting technique you propose using.

Background

The aim of this survey is *to obtain an overall estimate of the size of the red-billed gull population breeding in New Zealand*. This is different from trying to estimate the total number of red-billed gulls in the country because not all birds in the population are concentrated around colonies during the breeding season, and so will be difficult to track down and count. Of those that are present at a colony, many are non-breeders in any given year, either because they are not sexually mature (red-billed gulls generally do not start breeding until they are 2-3 years old), or because they are foregoing breeding because of poor body condition, or they have attempted to breed but failed for some reason (and might or might not try to breed again in that season). Their numbers also vary through the day. Counting non-breeders will overestimate the size of the breeding population in a given year.

For these reasons, we want to estimate as accurately as possible the number of **breeding pairs** of red-billed gulls at each site, a number therefore that is equivalent to the number of **active nests**. A pair is a count of **one**. Birds that are incubating eggs or brooding small chicks are usually well settled, sitting deep in the nest, with their rear end pointing upwards (Figure 1). Count all birds sitting on a nest or which are standing next to clearly visible chicks.

Other individuals present, if counted, should be noted separately. These include a) birds standing or sitting on obviously empty nests, either because they have nested and failed, or because they might yet nest but haven't started; b) birds standing on prominent look-out points around the colony, and which could be the partner of a nearby incubating bird; and c) non-breeding loafers, usually present on the fringes of a colony.



Figure 1. Incubating red-billed gulls tend to sit with their rear ends pointing upwards, often but not always with their heads erect, looking around.

Direct counts

Direct counts of all active nests is done by walking through a colony to locate all nests and counting those that contain eggs or young chicks. To avoid double-counting, each nest should be discretely tagged. **This approach is generally not recommended because of the disturbance that it can cause.** It is also not feasible on sites that are difficult to access (e.g. rugged terrain; or where the landowner does not permit access). If you decide to do a ground count, please photograph the colony first so that we have a permanent record of the site. Obviously, the photograph(s) should be high resolution and cover the whole colony, either in one image, if the colony is small, or in a sequence of overlapping photos that can be digitally stitched together later into a single large image. A sketch map of the colony, showing the vantage point(s) from which you took the photographs, would help.

If you are going to do a ground count please alert the local Department of Conservation office, explaining the purpose of the survey and indicating that this is part of a national project supported by DOC. You also need to get permission from the landowner if the colony is on private land.

Scan counts

Scan counts are made from a distance through a telescope or binoculars, with all incubating or brooding birds being counted separately from any other individuals present. Scan counts are done in places that cannot safely be accessed physically (i.e. colonies on cliffs or rugged offshore islets or stacks); where access is denied but the colony can be viewed from nearby; or where a closer approach would disturb the nesting birds. Colonies counted in this way should be mapped to show their apparent extent, along with the vantage point(s) used and exactly which areas have been counted, if not all.

If you do a scan count, please also photograph the colony from the point(s) where you made the count(s). This could be a single photograph, if the colony is small and the birds are close together, or a series of overlapping photographs, if the colony is large or spread out. The photographs should be at as high a resolution as possible (if needs be, see **Counts from photographs** below for more detail). Please submit originals of these photographs with your counts, as they will form a permanent record of your observation. If you want to do a total count, do it first, at the time you photograph the colony. You can then take your time counting the actively nesting birds (as previously defined). Comparing your total count with the number of birds visible in the photograph(s) should reveal if there are any major inconsistencies in counting.

What should you do when you cannot see the whole colony? Some parts of the colony could lie out of sight and therefore be missed. Some regions might be partly obscured and therefore be undercounted. This is particularly so in colonies on rough ground, or those where some nesting birds lie out of sight because of a topographic feature, such as a rock outcrop, or screening vegetation. Please indicate this in your notes, preferably supported by a sketch map showing your best estimate of the full extent of the colony and indicating clearly which areas were counted.

Counts from photographs

Please take and submit photographs wherever possible. These will provide a permanent record of the colony when you censused it. Digital photos can be viewed later on-screen, enlarged, and nesting birds identified in a consistent manner and marked accordingly. The same image can also be viewed by different observers, and an estimate of the extent of any detection errors obtained from these independent counts.

1. *Counts from photographs on land or from a boat*

Counts from photographs taken on land or from a boat requires having a series of overlapping, close-up, high-resolution photographs across a colony. We can then merge these later into a photomontage on which the number of nesting birds can be seen and counted. To help with this, please also take one or more panoramic photos of the whole colony. This will allow the areas photographed close-up to be identified and mapped.

To minimise camera shake, set your shutter speed as fast as possible (1/500 sec or faster is ideal) and, if possible, use a tripod or monopod. Try to take the photographs as perpendicular to the land surface as practical. Please submit the original photographs as JPEG or RAW images so as to preserve their metadata (i.e. date and time each photograph was taken; make, model and settings of the camera).

In some cases, you might also be able to do a ground or scan count. The results can then be compared with those from the close-up photos to assess more accurately the proportion of breeding and non-breeding birds. Such supporting counts do not have to encompass the whole colony but should cover an area that is sufficiently well-delineated by topographic features that a direct comparison can be made between the your direct count and the estimated number of nesting birds seen in the same area on the photograph(s).

2. *Counts from aerial photographs*

As with land- or boat-based counts, these involve taking a series of overlapping, close-up, high-resolution photographs across a colony. These can then be merged later into a photomontage from which the number of nesting birds can be counted. To help with this, take one or more panoramic photos of the whole colony, so that the areas photographed close up can be identified and mapped. If possible, choose an aircraft that has a photographic porthole or in which a window can be latched open.

A challenge with aerial surveys is keeping track of where the plane is relative to the features being photographed at the time. Do not assume that you will remember later exactly where you were when you took a particular photograph, especially when photographing colonies on a group of islands and stacks. **It is therefore essential to record a track of the flight path** with frequently recorded track points logged either on a hand-held GPS (e.g. Garmin 62 or 64) or on the aircraft's built-in GPS (please check that you can download a copy of the track from the aircraft's GPS). Each track point will detail its geographic position, altitude, date and time.

The tracks can be downloaded to a dedicated GPS mapping system (e.g. OziExplorer www.ozieplorer.com/ or TrackMaker <http://www.trackmaker.com/>); or to Google Earth; or as a GPX file to a Geographic Information System. You can then associate the time when a photograph was taken with the concurrent track point to get the relevant geographic location. To do this accurately, you must synchronize the time on your camera(s), any other recording equipment (e.g. voice recorder; video camera) and wrist watch with that on the GPS. This should be done just before take-off.

We don't recommend relying on cameras with a built-in GPS in aerial surveys (they can be useful for ground or boat-based surveys). They are generally not sensitive or fast enough to give particularly accurate readings. They also require a clear view of the sky.

Timing of the counts

Colonies should be surveyed as close as possible to the peak of the breeding season; that is, at the peak of egg laying. Counts made before the peak will underestimate the size of the breeding population because some birds will not yet have started breeding. Counts made after the peak could also produce an underestimate because some birds will have nested and failed. The further the count is from the peak of breeding, the larger this error will be.

For red-billed gulls this is complicated because the birds have an extended breeding season and the time of breeding can vary from year to year depending on the birds' physiological condition. The peak of egg laying is likely to be sometime between mid-October and mid-November. All this could mean visiting and censusing a colony a number of times to get the maximum count, at least for the larger colonies (e.g. more than 100 pairs). Obviously, this will be difficult to do if you are restricted to censusing a colony by boat or from the air.

The number of birds in a colony also varies through the day. Try to count the nesting birds when the total number of birds present is least, usually between mid-morning and early afternoon. This way you will minimise the chance of mistaking non-nesting birds for ones that are nesting.

What information do we require?

Colony name (if possible, use an established name for the locality):

Geographic location (latitude/longitude or NZTM 2000 coordinates: coordinates can be obtained from paper Topo 50 maps or online at <http://www.topomap.co.nz/> or from Google Earth):

Date and time of census:

Number of breeding pairs (equivalent to the number of **active nests**; a breeding pair is a count of **1**):

Total number of red-billed gulls present (this is optional):

Weather conditions at the time of the census:

Name(s) of observer(s):

File name(s) of relevant photographs (e.g. P1100223, DSC3138, or your own unique name for the file; these should correspond to any additional notes that you submit; please be sure to attach digital copies of these images):

A sketch map of the area (showing from where the counts were made and photographs taken, and which parts of the colony were counted, if not all).

What will follow from this census?

A report detailing the estimated number of breeding pairs will be prepared and circulated. This should help the Department of Conservation's relevant Expert Panel to review the red-billed gull's threat classification (currently 'Nationally Vulnerable'). It will also allow Birds New Zealand and DOC to identify a range of colonies for monitoring to determine long-term population trends, following which a monitoring programme will be set up.

We will be happy to answer any queries. Thank you and good luck.

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