



# BC Coastal Waterbird Survey Protocol

## Instructions for Participants



Environment  
Canada

Canadian Wildlife  
Service

Environnement  
Canada

Service Canadien  
de la faune



TD Friends of the  
Environment  
Foundation



## ***Background***

The coastal marine habitat of British Columbia is home to many species of waterbirds and supports some of the highest densities of seabirds, waterfowl, and shorebirds in the eastern North Pacific. The coastlines of British Columbia are of international importance for waterbirds especially during winter when vast numbers of loons, grebes, cormorants, herons, swans, geese, ducks, shorebirds, and gulls can be found feeding and roosting in bays, estuaries and along the rocky inter-tidal beaches of the coast. The BC coast lies along the Pacific Flyway, providing key migration stopover sites for many species that use tidal and inshore marine habitats such as bays, coves, beaches, rocky islets, estuaries, mudflats and eelgrass beds for feeding and resting during migration.

Several coastal marine habitats in BC are immediately adjacent to major population centers, and thus subject to a wide range of anthropogenic influences including recreation, industrial and residential development, and increasing shipping traffic. The BC Coastal Waterbird Survey (BCCWS) is a volunteer based long-term monitoring program established in 1999 in order to assess the impacts of natural and human-induced environmental change on BC waterbird populations. The data collected is used to estimate population size and to assess population trends and distribution of coastal waterbirds in BC. With the coastlines of BC under increasing pressure from development and human population expansion, long-term data on the abundance and distribution of waterbird species will enable us to monitor the effects of human activity on waterbird populations and habitat use. For example, BC Coastal Waterbird Survey data can provide valuable baseline information in the event of a disaster such as an oil spill.

The BC Coastal Waterbird Survey protocol is designed to collect coastal waterbird data specific to the objectives of the monitoring program. These instructions are meant to assist volunteer counters, encourage consistency between volunteer counters, waterbird counts, and survey sites. The BC Coastal Waterbird Survey is designed to be scientifically defensible and flexible without compromising the standardized methods of the survey protocol.

***What am I committing to?***

The BC Coastal Waterbird Survey is a program designed to monitor coastal waterbirds. Participants of the Survey conduct **monthly counts** of waterbirds at a designated survey site with an emphasis on the winter period from September to April; but we appreciate it if surveyors are able to collect information all year round. Even with a few visits a year, you are helping amass an important data set for monitoring and helping to conserve waterbird populations in British Columbia. While we hope people will adopt a BC Coastal Waterbird Survey site and continue to visit for years to come, we appreciate whatever efforts you can make.

***What if I cannot visit every month?***

In the event of any absences or illness, a friend can step in and do your waterbird count for the month, or inform your regional organizer or the BC Coastal Waterbird Survey Coordinator to help find a temporary replacement. If a monthly survey is missed, surveys can resume when you return.

***What bird species are we counting?***

We are counting all species of coastal waterbirds including the many species of **loons, grebes, cormorants, herons, swans, geese, ducks, shorebirds, gulls, terns, auks as well as raptors that use coastal areas**. Because raptors are also of interest and may affect numbers of waterbirds, we are counting hawks, eagles, falcons and vultures flying over or using the survey area. Other species such as **crows, ravens and kingfishers are also counted**.

***Survey skills and equipment***

Advanced bird identification skills are required for this program. Surveyors must be comfortable identifying all waterbird species that regularly occur in the survey area, in winter plumage. If you are unsure of your identification skills, we encourage you to accompany an experienced observer until you feel confident with all the regular species in your area. Identification guides for some species are available under “Resources” on the BCCWS website: [www.birdscanada.org/volunteer/bccws/index.jsp](http://www.birdscanada.org/volunteer/bccws/index.jsp).

To adequately view and identify waterbirds from the shoreline, **surveyors need high quality binoculars or a spotting scope, but preferably both**. Optical equipment should be good enough to identify birds up to at least 500m from the shoreline in good conditions.

### ***Getting Started***

The Program Coordinator will assign you a survey site, usually a location that is convenient for you. If the site has been previously surveyed by another volunteer, we will provide information about the counting method used previously and ask that you follow the same counting technique/locations.

If there are no sites in your area, we can establish a new site if necessary. Sites generally include a section of coastline or a bay or inlet and extend to 1km offshore when possible. Each site has a mapped count area and only birds within the boundaries of your site should be counted. Birds outside of your site area boundaries should not be counted.

Once you have a designated BC Coastal Waterbird Survey site and the necessary equipment and skills, we will send you a package with Instruction and Data Forms. The Program Coordinator will provide you with an Observer Code and password for data entry. You are now ready to do the monthly survey!

### ***When do I do my BC Coastal Waterbird Survey?***

BC Coastal Waterbird Surveys are monthly waterbird counts. To standardize counts, surveyors are asked to visit on **the second Sunday of each month**, or as close to that day as possible. We urge you to try and count as close to the target day as possible, but since weather conditions vary and other commitments crop up, **surveys conducted 1-2 days before/after the designated Sunday are acceptable.**

We appreciate the effort of volunteers and understand that sometimes you cannot go out in the required date; so, we suggest you do the survey even if you miss the designated date. In certain cases some surveys may not be included in an analysis if the timing does not meet specific requirements. Therefore we encourage you to conduct the surveys as close to the target date as possible.

On the count day, the survey should be done **within 2 hours of high tide** to standardize timing and ensure birds are close to shore for easy viewing. At some sites a mid-tide is acceptable when the shoreline is steeper and the tide does not recede too far.

Synchronized counts are most important for large areas that are divided among multiple observers, where there is a high risk of multiple counting. Regional coordinators in these areas may wish to emphasize coordinated efforts.

### ***Using the Field Data Sheet***

Please fill out the two-sided form for each survey. Complete each section of the form including “Observer”, “Survey Site”, “Survey Conditions”, “Survey Equipment” and “Human Activity”.

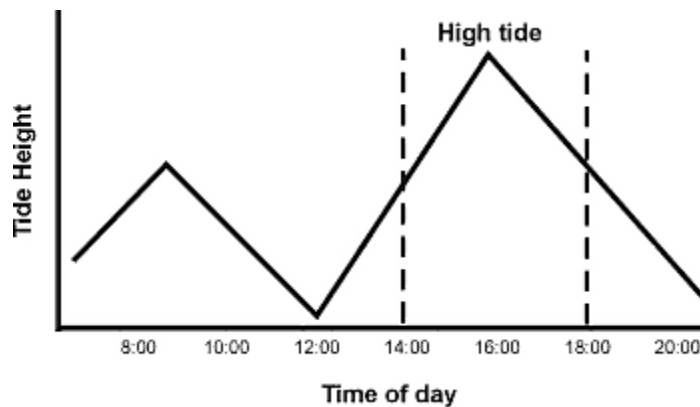
- Time: Use the 24-hour clock to record Start and Finish Time (i.e. 3 pm = 1500).
- Survey Conditions: Circle only the appropriate description for each condition.
- Visibility: Check the distance at which you were able to see and identify waterbirds easily (<100m, 100m, 250m, 500m, 1km). If you did not have good visibility during the surveys please select the reason (Glare, sea-conditions, weather, other).
- Human activity: Please do not leave blank spaces; if you did not find any human activity check “No Activity”.

### ***Weather and Sea Conditions***

Weather conditions affect the visibility of waterbirds and the enjoyment of the visit. **Surveys should be conducted on days with reasonable weather conditions.** Slight winds and drizzle are OK, but it’s best to avoid those westcoast winter storms! It can be difficult to see birds in rough, stormy waters, so try to reschedule to the next day if possible. Suitable weather and sea conditions are up to the discretion of each volunteer counter. Base your judgment on normal weather conditions for that time of year.

### ***What about changes with the tide?***

One major consideration when counting coastal waterbirds is the state of the tide. In some areas, like extensive mudflats and sandy beaches, waterbirds are too far away to see at a mid-low or low tide. In other areas, the effect of the tide may be far less dramatic. Although you may be able to see some species better at low or mid-tides, such as feeding shorebirds, it is important to standardize the timing of the Survey across all sites. BC Coastal Waterbird Surveys are best done between the period beginning **2 hours before the high tide of the day until 2 hours after the high tide of the day.**



The high tide of the day in this example is 16:00 (4 o'clock in the afternoon). Therefore the best time to count waterbirds is from 14:00 to 18:00 (between 2 and 6 o'clock in the afternoon). Volunteers can check tides using the interactive map and tide predictor on the Canadian Hydrographic Services website: [www.waterlevels.gc.ca/eng](http://www.waterlevels.gc.ca/eng)

### ***How do I count waterbirds?***

All waterbirds using the site are counted during a survey. **Birds that are flying through your site and do not land should not be counted.** Counts are generally done by walking along the shoreline where it is accessible, or by conducting point counts at designated locations such as end of streets, from points of land etc. Avoid private property unless you have proper permission to access.

Record waterbird count in 3 habitat categories: INLAND, NEAR-SHORE and OFF-SHORE habitats (Figure 2).

Separating waterbird counts by habitat will help us understand which habitats birds are using as well as reduce the variation among observers. Most of us, under good conditions, will be able to identify waterbirds up to 500m but the observer variation will increase at greater distances.

- **INLAND** refers to all birds in inland habitats (above the highest high water mark on the beach, in fields, or on inland ponds) that are visible from the shore or from your vantage point. These birds are located above the high water mark. Do not include landbirds or forest birds in your count (Figure 2).
- **NEAR-SHORE** refers to birds in near-shore habitats, which extend from the high tide mark on the beach seaward to 500m from shore (Figure 2).

- **OFF-SHORE** refers to birds in off-shore habitats which extend from 500m off-shore to as far as you can see waterbirds during the visit, usually 1km ((Figure 2).

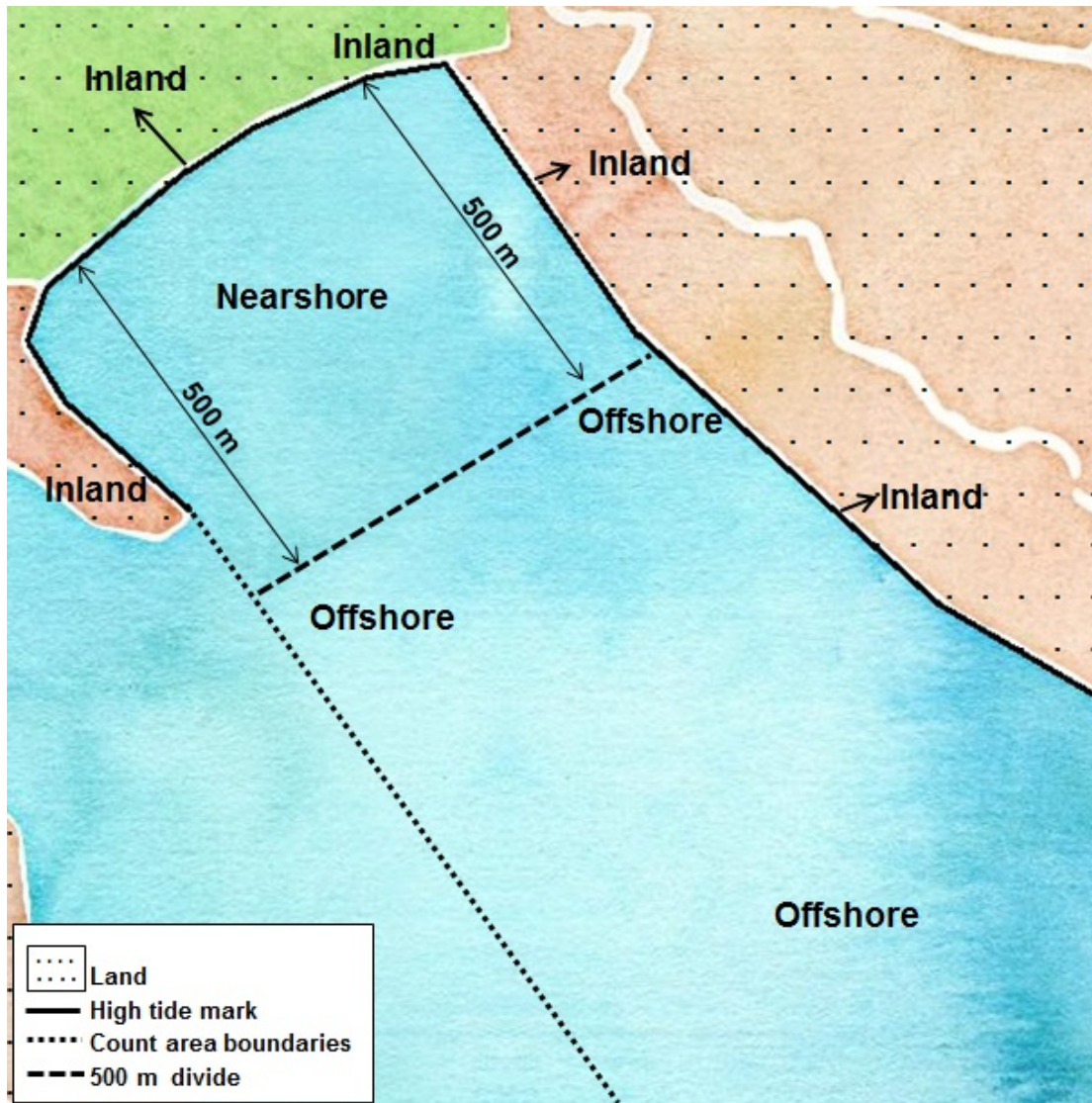


Figure 1. Inland, near-shore and off-shore habitat categories assigned to waterbirds in BCCWS.

Please separate these counts by habitat, and enter them in the appropriate columns on the BC Coastal Waterbird Survey recording form. At some sites, like estuaries or narrow inlets, although birds can be seen 500m away they

are not in OFF-SHORE habitats. In these situations, please record birds in the appropriate habitat; use your judgment to make your estimate as precise as possible. Avoid using the unknown habitat column ("UH").

***What about birds moving around during the survey?***

If a movement of birds occurs during the survey, do your best to **count birds only once**. Birds that fly into your count area and land, birds that continuously move about within the count area, or birds that were in the count area when you began but later flew out of the area should be counted only once. **Record moving birds in the habitat that was closest to shore**. If birds were near-shore then moved off-shore record them in the near-shore habitat only once. If birds were near-shore and moved inland, record them in the inland habitat. Birds flying over should not be counted unless they are actively using the habitat, such as an eagle or gull foraging for food.

***What if I see a species that is not on the form?***

Over 75 species of waterbirds have been recorded in British Columbia. To keep the survey form simple, we have only listed the species that are most commonly recorded in most areas of BC. If you see a species not listed, simply fill in the species name on one of the lines under "OTHER" and record the appropriate counts there.

***Counting waterbirds at your survey site***

BC coastline habitats are diverse, which results in wide variation between BC Coastal Waterbird Survey sites. Survey techniques will differ between sites. At some sites, such as small bays or harbours waterbird counts can be done from one vantage point, usually standing on the beach. At these sites, the off-shore habitat begins at 500m from the observer.

When walking along shorelines or mudflats, waterbird counts should be broken up into sections using landmarks along the shoreline such as a tree, access point or point of land (Figure 2). Observers should walk along the shoreline, stopping to count each section. Try and be consistent each time you survey the site. The off-shore habitat begins at 500m from the shoreline (Figure 2).





**Figure 2. BCCWS at shorelines or mudflats. The survey is broken up in sections; in this example the counts are made from three points located at landmarks along the survey route.**

### ***Estimating the distance***

The 500m distance is only an approximate estimate. Errors of 100m too far or 100m too close are not important as long as you try to be consistent. Some people will feel confident estimating a distance of 500m to distinguish the near-shore and off-shore sections of the coastline; however, this can be a difficult task. Some helpful and easy distance estimation techniques include:

- Pacing out 500m on the beach: To get a feel for 500m, you can pace out a 500m distance along the shoreline and use that as your future 500m estimate. The average person walks approximately 1 meter with every 2 steps, therefore to pace 500m you need to walk 1000 casual steps.
- Using a permanent Marker: You can use a permanent marker, such as a buoy, deep water marker, or even a tree down the beach as a consistent 500m distance estimate. You can use an imaginary radius from the permanent marker to denote a ~500m distance from the shoreline (Figure 3).

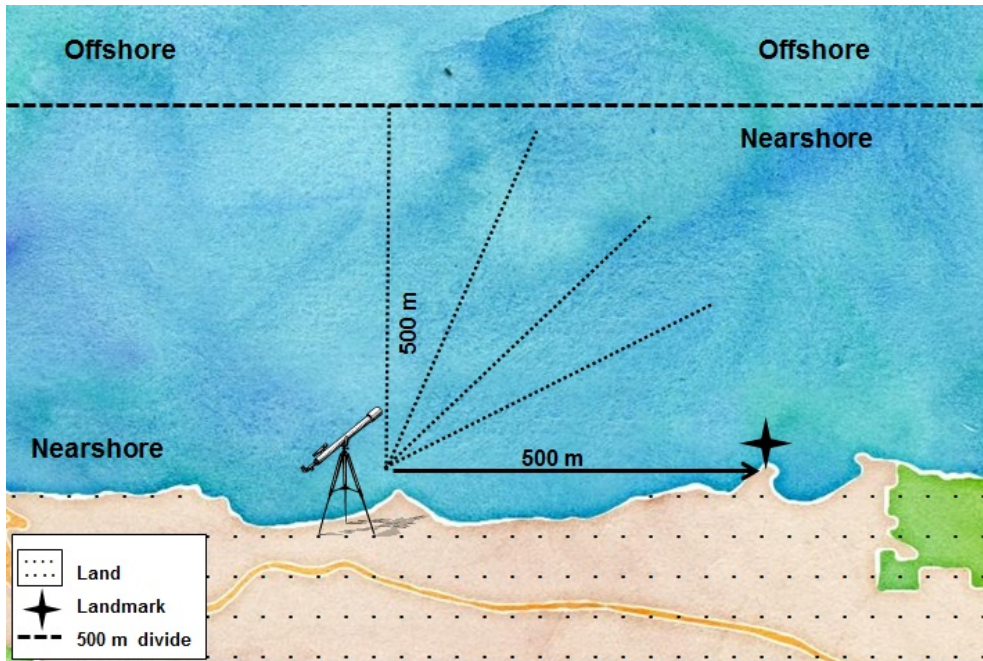


Figure 3. Estimating a distance using a permanent marker.

- Using Google Earth measuring tool: Zoom into your survey site on Google Earth and click on the Measuring Tool (icon looks like a small ruler). Click on the start point and then click on the end point and it will give you a straight-line distance in a small window (Figure 4).

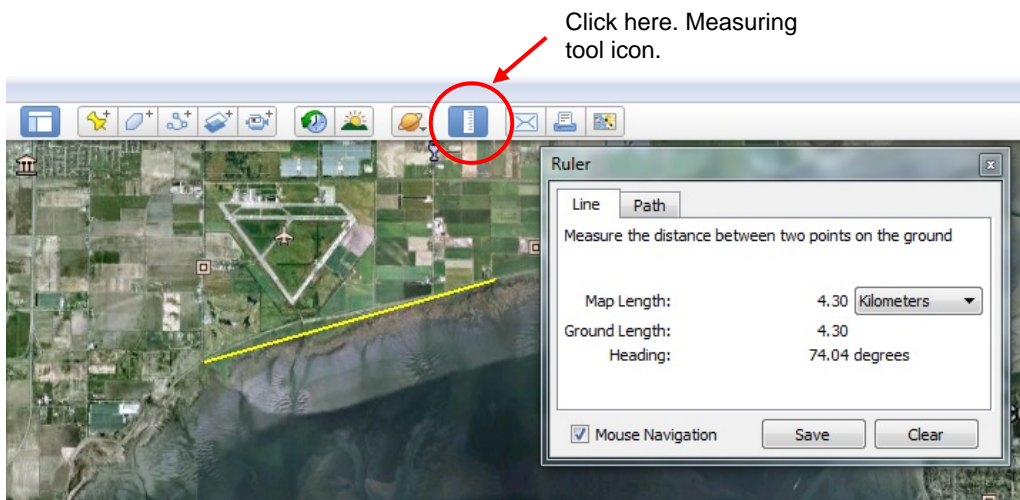


Figure 4. Using Google Earth measuring tool to estimate distance.

***Recording and entering the BC Coastal Waterbird Data***

It is helpful to take the recording form along during your survey. If you prefer to use a notebook in the field please enter your data online soon after your visit or fill in the BC Coastal Waterbird Survey data form. This ensures that all the details can be remembered and included.

Data can be entered online from the Bird Studies Canada Website, under the Coastal Waterbird Survey webpage.

**[www.bsc-eoc.org/dataentry/bccwsentry.jsp](http://www.bsc-eoc.org/dataentry/bccwsentry.jsp)**

To enter your counts online, log in using your Observer Code and postal code as your password (include the space). The Program Coordinator will provide you with an Observer Code and password for data entry. Once you log-in, complete the online forms with the survey details and counts. Remember to complete your data entry in one session. Click Save when you have finished, you cannot save a partially complete forms and go back to complete it. If you make an error or forgot something, contact the Regional Coordinator and changes can be made in the database.

If you do not have access to a computer, send completed BC Coastal Waterbird Survey recording forms to your regional organizer or to the BC Coastal Waterbird Survey Coordinator. Recording forms can be sent when it is convenient, but all data forms for the year should be sent to the BC Coastal Waterbird Survey Coordinator by May 1<sup>st</sup>.

***Please Send Completed BC Coastal Waterbird Survey Data Forms to :***

**BC Coastal Waterbird Survey**  
Bird Studies Canada  
5421 Robertson Road, RR1  
Delta, British Columbia  
Canada, V4K 3N2

**Safety**

Coastal areas can be dangerous. Please take great care during BC Coastal Waterbird Survey related activities. Please inform someone when you are counting coastal waterbirds and your expected time home. Please wear the appropriate clothing, like warm layers and rain gear when needed. **Bird Studies Canada cannot accept responsibility or liability for injuries or accidents during activities related to the BC Coastal Waterbird Survey.**

***Thank you for your help with this survey. Please don't hesitate to contact the survey coordinator if you have any questions or comments, or if you require materials.***

Phone 1-877-349-2473 / (604) 350-1988

Email: [bcprograms@birdscanada.org](mailto:bcprograms@birdscanada.org)

***Bird Studies Canada (BSC) is a not-for-profit conservation organization dedicated to advancing the understanding, appreciation and conservation of wild birds and their habitats in Canada and elsewhere. In British Columbia, BSC is involved in surveys of nocturnal owls, coastal waterbirds, and beached birds. The British Columbia Coastal Waterbird Survey is being conducted in partnership with the Canadian Wildlife Service, the national agency responsible for migratory bird research and conservation. For more information on Bird Studies Canada, please visit [www.birdscanada.org](http://www.birdscanada.org).***