Phase I: Grays Harbor Seabird Survey - Feasibility and Scoping Project

FINAL PROJECT REPORT

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Prepared for:
Grays Harbor County Marine Resources Committee

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Seattle Audubon Society
for birds and nature

Publication Information

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This report describes work undertaken to assess the feasibility of establishing a seabird monitoring project in Grays Harbor County following Seattle Audubon's Puget Sound Seabird Survey project as a model. The report details appropriate survey locations and provides recommendations on whether to move forward with establishment of the program in Grays Harbor County.

Copies of this final project publication are available from the Seattle Audubon Society and online at www.seattleaudubon.org.

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Abstract

The existing Puget Sound Seabird Survey is a shore-based survey in Puget Sound and the Strait of Juan de Fuca. The survey uses distance sampling to record all species of coastal seabirds and waterfowl.

This report describes work undertaken to assess the feasibility of establishing a similar project along the coastline of Grays Harbor County. This study identified 25 potential seabird survey locations and through sites visits, confirmed 16 suitable survey locations. Attempts were made to recruit potential volunteers who were interested in conducting surveys for the project via meetings with knowledgeable birding community members and the Grays Harbor Audubon Society's newsletter. Unfortunately, at this early stage in the project, insufficient volunteers with the appropriate knowledge were identified for the project be a success.

Introduction

The Puget Sound Seabird Survey (PSSS) is a monthly, shore-based survey of seabirds that extends from the eastern shore of the south and central Puget Sound, Vashon, Bainbridge and Whidbey Islands and the north coast of the Olympic Peninsula that takes place during the winter months, October to April. The intent of the survey is to determine the status and trends of wintering marine birds over time and area. The PSSS utilizes trained citizen scientists to collect data, with the first survey season taking place in 2007, primarily in south and central Puget Sound. The PSSS intends on expanding geographically where gaps in seabird knowledge exists and where there is a need to monitor seabird populations due to actual, or anticipated, threats to marine birds or their natural resources.

The goal of this Phase I project is to determine the feasibility of establishing a seabird survey in the Grays Harbor area. This will be accomplished by identification of appropriate survey sites and volunteer surveyors. If established, survey sites would join Seattle Audubon's broader PSSS and be administered in connection with Grays Harbor Audubon Society (GHAS) and other appropriate organisations. The success of data collection at these expanded survey sites relies on dedicated and knowledgeable outer coast residents and the birding community to collect data on the status of seabirds and habitat health. If it is determined that establishing a seabird survey project in Greys Harbor County is appropriate, welcome, and would be successful, we will recommend moving forward with a Phase II project. A Phase II project would establish permanent survey sites, recruit volunteers and collect baseline data on seabirds and waterfowl.

Project Goal and Objectives

The project goal and associated objectives for this Phase I project are described below.

Goal

The goal of this project was to assess the feasibility of establishing a seabird monitoring project in Grays Harbor County. In order to establish a seabird monitoring project, it is necessary to have suitable locations from which to conduct surveys of seabirds and to have sufficient knowledgeable volunteers to conduct the surveys.

Objectives

The first objective was to identify 10-15 potential seabird survey locations distributed along the coastline of Grays Harbor County that provided good visibility to the water and where volunteer citizen scientists would be able to safely conduct surveys on seabirds and other waterfowl.

The second objective was to verify each of the proposed seabird survey locations on the ground to ensure they were appropriate for the survey in terms of survey methodology and access to the volunteer surveyors.

The third objective was to determine whether there were sufficient knowledgeable volunteer citizen scientists in the region who were willing to take part in a monitoring project such as this if we were to move to implement the project.

Grant Background

Seattle Audubon was awarded the grant *Phase I: Grays Harbor Seabird Survey – Feasibility and Scoping Project, Grant Agreement: #13-1979* in July 2014. This grant was provided by the Grays Harbor County Marine Resources Committee, a committee formed in accordance with Revised Code of Washington (RCW) 36.125 and the Washington Department of Fish & Wildlife (WDFW). In addition to increasing the geographic scope of the PSSS to Grays Harbor County, the grant enables a closer working relationship with Grays Harbor Audubon Society and the engagement of their members in this important monitoring project.

This Phase I project aligns well with the Grays Harbor County Marine Resource Committee's Marine Life, Sound Science, Education and Outreach, and Coastal Communities categories; the GHCMRC's Fish and Wildlife Species, Estuarine and Nearshore Habitats, and Recreation and Tourism benchmarks for success; and the GHCMRC's Research and Monitoring strategies for action in the request for proposals (GHCMRC, 2014). The intent of this project is to identify suitable seabird survey sites and assess community resources to establish an expansion of the PSSS over this geographic area.

Geographic Area of Focus

There are 135 active PSSS sites in the Puget Sound and Strait of Juan de Fuca but none currently in Grays Harbor County, a location that is considered a Globally Important Bird Area and is designated as a Western Hemisphere Shorebird Reserve Network. After Alaska, it is the most important staging area for a million migrating shorebirds along the Pacific Flyway with stop over sites on both sides of the shipping channel. Grays Harbor estuary constitutes the second largest watershed in Washington State; one of only six major estuaries on the Pacific Coast. The estuary's 94 square miles of mudflats, salt marshes and open water are internationally significant. As many as 24 shorebird species use Grays Harbor with Western Sandpiper and Dunlin most abundant. Black-bellied Plover, Red Knot, Least Sandpiper, and Semi-palmated Plover are also common.

Survey sites in this region would offer critical data about species richness, habitat health, and abundance of seabirds while filling important gaps in our current dataset. It would also add to the existing body of

knowledge on threatened birds like the Marbled Murrelet, which is a federally and State Listed species, and considered an indicator species of overall marine ecosystem health.

Threats to the Ecosystem

There are numerous threats to water quality in the estuary. These range from dioxins from local pulp mills and human pollution from the area's towns, to larger threats such as the potential for catastrophic oil spill. An Environmental impact statement is being prepared for the Grays Harbor Rail Terminal Project, a new proposed bulk liquids rail logistics facility at the Port of Grays Harbor in Hoquiam. The Department of Ecology and the City of Hoquiam are co-lead agencies for this environmental review, being conducted under the State Environmental Policy Act. The terminals would receive tens of millions of gallons of Bakken crude oil from North Dakota and tar-sands oil from Alberta, Canada via a rail network, store the oil in massive shoreline tankers and then pump the oil onto oil tankers and barges, increasing four-fold large-vessel traffic through Grays Harbor.

Baseline data and continued trends in seabird populations in the region are critical for future studies by other organizations and government agencies without the resources to do their own field work to the extent provided by this project. Should there be an oil spill or other environmental disaster in the region, this would be the only recent, established and credible data available, enabling assessment of the impact to seabird populations and their fragile marine habitats. Oil trains risk catastrophic environmental consequences by way of vessel transfer, accident, and sabotage. The Westway and Imperium terminal proposals in Grays Harbor will have significant impacts on the community, marine life, and the future of Washington State (Audubon Washington, 2014). Therefore, these data will form the baseline for local seabird populations by which post-disaster data can be compared.

Puget Sound Seabird Survey Background

The Science Committee of the Seattle Audubon Society conducted a review of gaps and priorities in regional bird data and methodology in 2006, and recognized that a comprehensive land-based seabird survey using state of the art survey techniques and analysis would be critical in understanding the status and trends of seabirds in Puget Sound. The Puget Sound Seabird Survey was implemented in central and south Puget Sound in 2007, expanded first to Whidbey Island and the Strait of Juan de Fuca in 2013 and then to Vashon and Bainbridge Islands in 2014. This Phase I project investigates the potential of expanding the geographical reach further to include an area considered at-risk of large and catastrophic oil spills on the outer coast.

The data created by the PSSS is examined at different levels of analysis. In its basic form, it provides information on species distribution, seasonality, and relative density. However, the survey also collects distance and bearing data that enables an abundance estimate to be calculated using the modelling and analysis technique of distance sampling.

Puget Sound Seabird Survey Methodology

The PSSS is a shore-based survey that uses distance sampling to record all species of coastal seabirds and waterfowl including geese, ducks, swans, loons, grebes, cormorants, gulls, terns, and alcids. The

PSSS uses a “point transect” method in distance sampling and requires the position of each bird sighting to be determined with as much accuracy as possible. This is accomplished using measuring devices for both distance and angle from the survey location.

The survey engages teams of 2-4 volunteer surveyors proficient in seabird identification to visit assigned survey sites on the first Saturday of each month for 7 months, October through April. Each survey takes 15-30 minutes and occurs within a pre-set four-hour window, timed to be two hours either side of the daylight high tide.

Volunteers are trained on the PSSS methodology and provided with survey kits that consist of a storage clipboard, ruler, compass, Velcro strap for attaching the compass to optics, pencil, and enough data sheets to last the season printed on Rite-in-the-Rain paper. In addition, the surveyors are provided with printed copies of the survey schedule, and the protocol for reference, as well as printed descriptions of their assigned sites that include photographs of the exact survey location and images with landmarks and their distances used to aid the surveyor in estimating the 300 m survey boundary.

Once seabird surveys are completed, data are submitted to Seattle Audubon using a specifically designed online data entry website, located at www.seattleaudubon.org/seabirdsurvey. In order to maintain the security and integrity of the data, each surveyor requires a personalized username and password to access the data entry pages of the site. Once data have been entered into the site, anyone with the site’s URL can access rudimentary data summaries by exploring the various tabs featured on the site.

Identification of Potential Seabird Survey Sites

The first objective of this Phase I project, was to identify 10-15 potential seabird survey locations distributed throughout the area of focus. A desktop analysis was conducted to delineate the geographic area of interest and various sources were utilized in identifying the potential seabird survey sites.

Geographic Area

In order to identify appropriate survey sites it was important to delineate the geographic area of interest. Funding for this project was provided by the Grays Harbor County Marine Resources Committee and so logically emphasis was made on the coastline of Grays Harbor County (Figure 1. However, one of the key partners in this project is the Grays Harbor Audubon Society (GHAS) and we expect that many of the volunteer seabird surveyors would be members of, or involved with this organisation. Therefore, ensuring survey sites are distributed across the territory of the GHAS would improve the geographic coverage of seabird data and potentially provide easily accessible survey sites for all GHAS members (Figure 2). When comparing the two maps, the geographic coverage is similar, however when explicitly examining the coastline, GHAS’s territory reaches further south than the County border. As a result, the coastline under consideration for survey locations was larger than Grays Harbor County’s coastal territory (Figure 3).

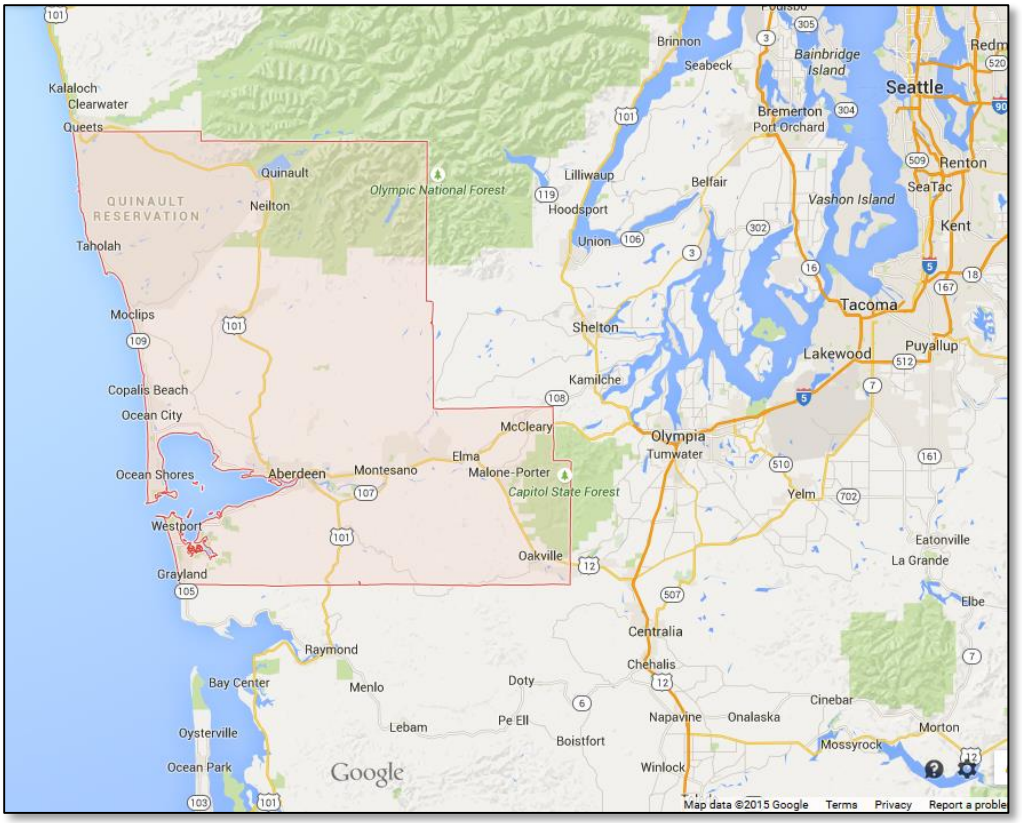


Figure 2. Area of Grays Harbor County and its location relative to Seattle, WA
Source: Google Maps, 2015

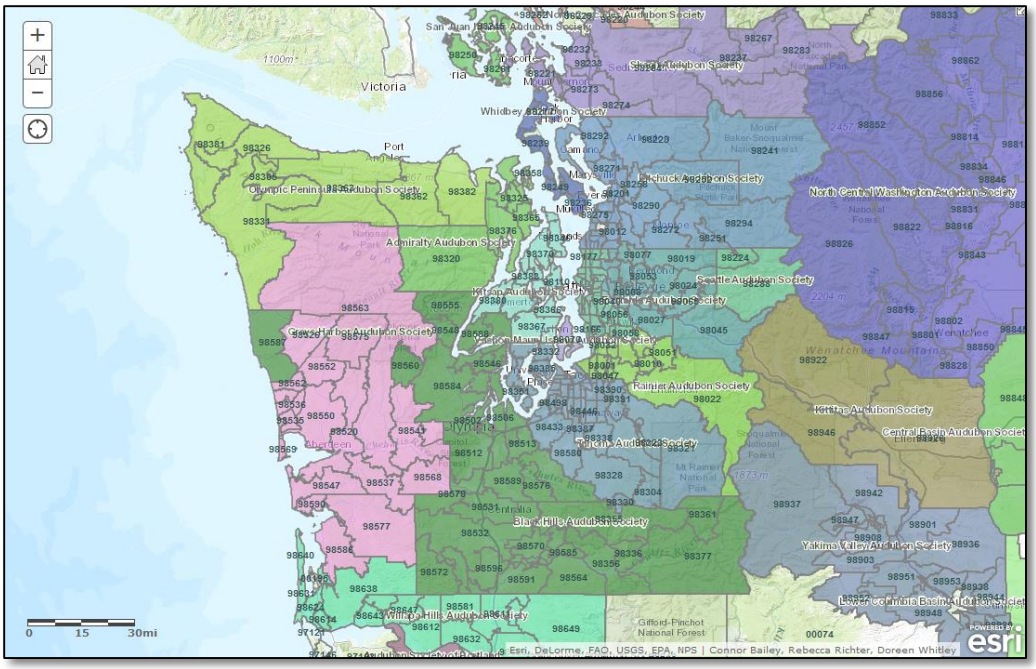


Figure 1. Territory of Grays Harbor Audubon Society (pink)
Source: National Audubon Society ESRI web portal, 2015

Figure 3. Geographic area under consideration for seabird survey locations (yellow polygon)

Survey Site Requirements

There are four main factors that determine the suitability of seabird survey locations. The locations must have all of the following:

- Be representative of nearshore habitats of the area.
- Have safe, public access.
- Have >3m (10ft) of elevation.
- Be 1.6km (1 mile) away from the nearest other seabird survey location.

It is important for the survey sites to be located on public land and be accessible via public thoroughfares. Ideal survey locations can be found on private property, however due to the intended longevity of the survey, gaining guaranteed repeated permission on an annual basis can be difficult. Survey sites that have an elevation of greater than 3m enable surveyors to more easily identify and count seabirds on the water. Greater elevations also increase the accuracy of measuring distances which is a key component of the seabird survey protocol. To reduce the chances of double counting birds, survey sites are spaced at least 1.6km (1 mile) apart. This distance does not eliminate the issue entirely due to the highly mobile nature of birds, but does reduce the chance if volunteers have multiple sites to survey.

Proposed Survey Sites

Identification of potential survey sites was addressed through a desktop analysis of online maps and web research, in addition to conversations with knowledgeable individuals who know the area and especially the best birding locations.

Google Maps and Google Earth mapping tools were used to visually assess publicly assessable shoreline within the geographic area of interest. In addition, a converted Shapefile that depicts Washington State's public shore access points (Department of Ecology, 2008-2010) was examined in Google Earth to confirm public access.

Twenty-five potential survey locations were identified during the desk analysis (Table 1 and Figure 4). This number was higher than the targeted 10-15 sites because during field verification sites are often found to be unsuitable and need to be rejected. Having a higher number of sites to verify increases the chances that enough of them will be suitable. Eight of the sites were closer than 1.6km (1 mile) apart and 3 were not officially publicly accessible. Many of the sites were clumped around the population centers of Ocean Shores and Westport because it is anticipated that these towns are where the majority of the volunteers will come from, thereby encouraging participation in the project. During the field work component of the project these sites were assessed for survey appropriateness and a number of them rejected from further investigation due to issues relating to access, obstructed viewing, etc.

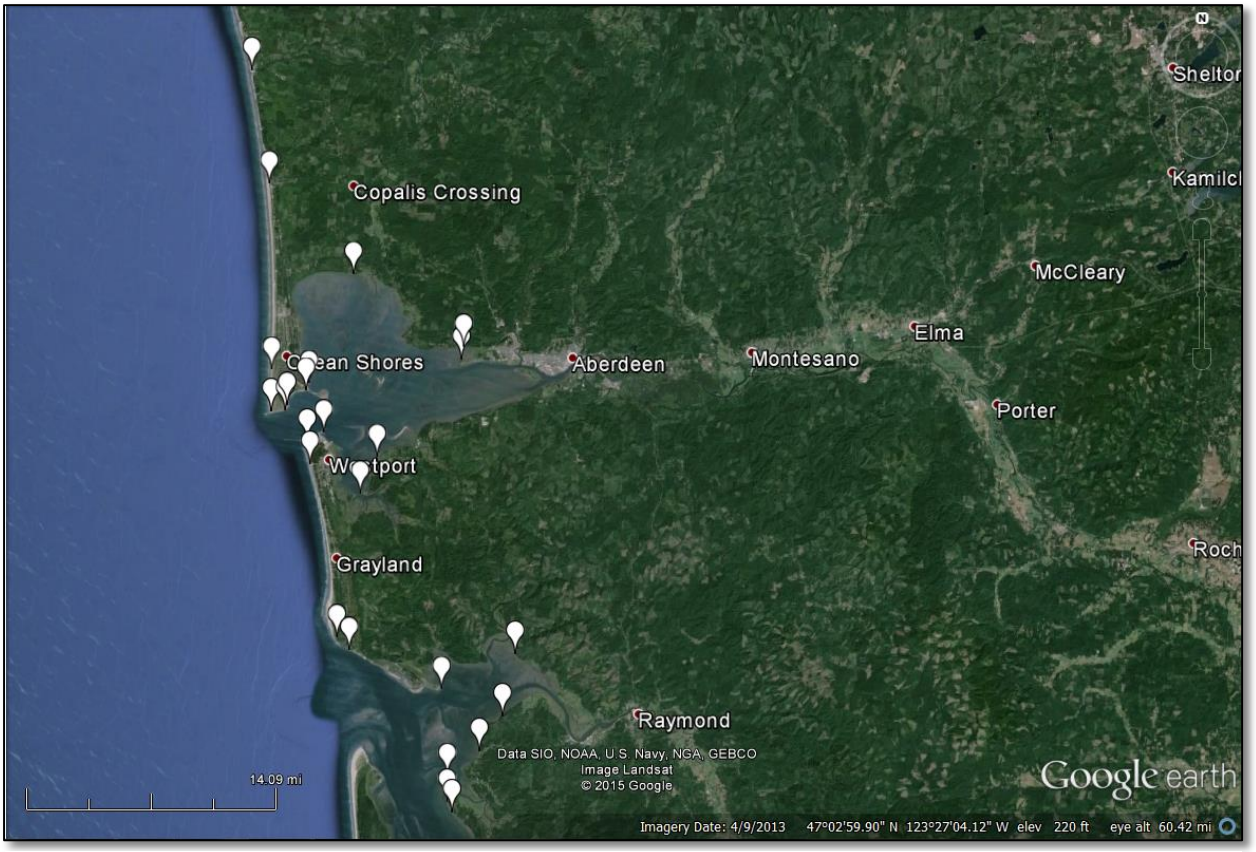


Figure 4. The 25 potential survey sites identified for the Grays Harbor Seabird Survey

Table 1. Potential Grays Harbor Seabird Survey locations.

#	Survey Site Name	Nearest Town	Latitude & Longitude
1	Grays Harbor National Wildlife Refuge	Hoquiam	N46°58'24.69", W123°56'52.78"
2	Grays Harbor National Wildlife Refuge North	Grays Harbor City	N46°59'1.21", W123°56'43.57"
3	Burrows Road	Gray Gables	N47° 2'29.00", W124° 4'41.20"
4	Catala Avenue	Ocean Shores	N46°57'8.59", W124° 7'45.15"
5	Quinault	Ocean Shores	N46°56'47.45", W124° 7'57.75"
6	Oyhut Wildlife Recreation Area	Ocean Shores	N46°56'3.70", W124° 9'17.57"
7	Treatment Plant	Ocean Shores	N46°55'48.44", W124° 9'26.06"
8	Point Brown	Ocean Shores	N46°55'44.93", W124°10'25.62"
9	Ocean Shores Beach	Ocean Shores	N46°57'46.62", W124°10'26.19"
10	Griffiths-Priday Ocean State Park	Copalis Beach	N47° 6'51.03", W124°10'49.37"
11	Pacific Beach State Park	Pacific Beach	N47°12'23.75", W124°12'13.43"
12	Bottle Beach State Park	Ocosta	N46°53'35.89", W124° 2'48.55"
13	Beardslee Slough	Bay City	N46°51'47.38", W124° 3'58.41"
14	Westhaven Harbor	Westport	N46°54'44.71", W124° 6'38.81"
15	Point Chehalis	Westport	N46°54'17.61", W124° 7'49.15"
16	Westport Light Trail	Westport	N46°53'12.54", W124° 7'35.46"
17	North Cove	North Cove	N46°44'46.28", W124° 5'29.70"
18	Cape Shoalwater	North Cove	N46°44'9.71", W124° 4'36.26"
19	Tokeland	Tokeland	N46°42'18.68", W123°57'59.95"
20	Smith Creek State Wildlife Recreation Area	Tokeland	N46°44'5.36", W123°52'47.35"
21	Bruceport Park	South Bend	N46°41'2.24", W123°53'38.44"
22	Bone River	South Bend	N46°39'19.41", W123°55'15.24"
23	Goose Point	Bay Center	N46°38'4.27", W123°57'30.66"
24	Rhodesia Beach	Bay Center	N46°36'49.06", W123°57'29.87"
25	Sandy Point	Bay Center	N46°36'18.65", W123°57'8.84"

Seabird Survey Site Verification

The second objective of the project was to verify each of the proposed seabird survey locations on the ground to ensure appropriateness.

Field Verification

Field work was conducted to verify the appropriateness of each of the 25 proposed survey sites. Each of the proposed sites (Table 1) were visited and assessed based on the following criteria, in order of importance:

- Is there a view of the water?
- Is there adequate parking nearby?
- Is access to the site safe and relatively easy?
- If water can be seen, at high tide is the view of the expanse of water >130°?
- Is the habitat representative of other nearshore habitats in the area?
- Is there sufficient elevation at the location to conduct a survey?

At each proposed survey site a suite of measurements were collected, descriptions recorded and photographs taken to enable the creation of site description sheets for each survey site (Table 2). These site descriptions will be shared with the seabird survey volunteers to provide written and pictorial information that will enable the surveyors to locate the exact survey location when conducting the surveys.

Table 2. Measurements, descriptions and photographs recorded at each proposed seabird survey site.

Feature	Notes
Survey Site Name	*Identifying name*
Access	*Describe how the site was accessed*
Parking fee/Permit	*The costs involved in surveying at this site*
GPS	
Specific survey location	*Describe exactly where to place the scope tripod or where to stand for the survey*
Distance Marker 1	*Identify distance landmark and measure distance from survey site*
Distance Marker 1 Photo(s)	*Photos of distance landmark*
Distance Marker 2	*Identify additional distance landmark and measure distance from survey site*
Distance Marker 2 Photo(s)	*Photos of distance landmark*
Distance Marker 3	*Identify additional distance landmark and measure distance from survey site*
Distance Marker 3 Photo(s)	*Photos of distance landmark*
Panorama Photos	*Photos showing panorama at the survey site*
Bird species observed	*During the visit to assess the site record any bird species of interest*

Results

Visits were made to all twenty-five of the proposed seabird survey locations. Of those, 9 were deemed unsuitable for seabird surveys and were rejected. The reasons the sites were rejected are detailed in Table 3 and range from view obstruction, and insufficient elevation, to access being either limited or unsafe. Many of these issues were unforeseen and could not be identified during desktop analysis. One site in Table 3, Burrows Road, was assigned a suitability status of 'maybe' due to parking at the site being less than ideal and the shoreline not being officially public access. However, the location provides a good vantage of the inner bay of Grays Harbor estuary and if there are sufficient volunteer surveyors it would be good to include this location in the survey.

An additional benefit of conducting field verification is that it enables locations that were not originally proposed as survey sites to be identified in the field and can be used to augment the loss of sites rejected. As a result, three additional locations were identified in the field that could be potential survey sites (Table 4).

Table 3. Results of field work verification of proposed survey sites.

#	Survey Site Name	Suitable?	Reason for No/Maybe
1	Grays Harbor National Wildlife Refuge	Yes	
2	Grays Harbor National Wildlife Refuge North	No	View obscured by tall vegetation and closer than 1.6km to site #1
3	Burrows Road	Maybe	Not great parking nearby and not clear public access although you can see water from road
4	Catala Avenue	No	No access was found, area now fenced and closer than 1.6km to site #5
5	Quinault	Yes	
6	Oyhut Wildlife Recreation Area	Yes	
7	Treatment Plant	No	Access to survey location requires scaling large breakwater boulders and closer than 1.6km to site #6
8	Point Brown	Yes	
9	Ocean Shores Beach	No	Elevation is insufficient and there would be considerable disturbance due to human activity
10	Griffiths-Priday Ocean State Park	Yes	
11	Pacific Beach State Park	Yes	
12	Bottle Beach State Park	Yes	
13	Beardslee Slough	No	No nearby parking and unsafe access to site
14	Westhaven Harbor	Yes	
15	Point Chehalis	Yes	
16	Westport Light Trail	Yes	
17	North Cove	No	Elevation is insufficient and there would be considerable disturbance due to human activity
18	Cape Shoalwater	No	No access to site
19	Tokeland	Yes	
20	Smith Creek State Wildlife Recreation Area	Yes	
21	Bruceport Park	No	View obscured by tall vegetation
22	Bone River	Yes	
23	Goose Point	No	Difficult access to site with less than ideal viewing area
24	Rhodesia Beach	No	Elevation is insufficient to conduct survey and closer than 1.6km to site #25
25	Sandy Point	Yes	

Table 4. Additional survey sites identified during field verification.

#	Survey Site Name	Nearest Town	Latitude & Longitude
1	Burrows Road I	Gray Gables	N47°2'29.04", W124°4'7.71"
2	Washaway Beach	North Cove	N46°43'39.73", W124°3'10.02"
3	Bruceport Historical Marker	Bay Center	N46°39'49.90", W123°55'10.72"

List of Final Grays Harbor Seabird Survey Sites

Based on the desktop analysis, conversations with knowledgeable people in the region, web research and findings from field work, we propose a total of 16 sites as suitable for conducting seabird surveys in Grays Harbor County (Table 5 and Figure 5). Site descriptions for each identified survey site, which include data collected during field verifications, maps, Google Earth images and photographs can be found in Appendix I.

Table 5. Final Grays Harbor Seabird Survey sites.

#	Survey Site Name	Nearest Town	Latitude & Longitude
1	Grays Harbor National Wildlife Refuge	Hoquiam	N46° 58'24.86", W123° 56'52.71"
2	Burrows Road	Gray Gables	N47° 2'29.04", W124° 4'7.71"
3	Quinault	Ocean Shores	N46° 56'48.42", W124° 7'53.43"
4	Oyhut Wildlife Recreation Area	Ocean Shores	N46° 56'3.64", W124° 9'17.40"
5	Point Brown	Ocean Shores	N46° 55'44.85", W124°10'24.65"
6	Griffiths-Priday Ocean State Park	Copalis Beach	N47° 6'42.16", W124° 10'56.65"
7	Pacific Beach State Park	Pacific Beach	N47° 12'23.35", W124° 12'14.52"
8	Bottle Beach State Park	Ocosta	N46° 53'35.81", W124° 2'48.67"
9	Westhaven Harbor	Westport	N46° 54'44.73", W124° 6'38.77"
10	Westhaven State Park	Westport	N46° 54'17.70", W124° 7'56.68"
11	Westport Light Trail	Westport	N46° 53'12.65", W124° 7'35.65"
12	Washaway Beach	North Cove	N46° 43'39.73", W124° 3'10.02"
13	Tokeland Pier	Tokeland	N46° 42'26.71", W123° 57'58.51"
14	Smith Creek State Wildlife Recreation Area	Tokeland	N46° 44'5.51", W123° 52'47.86"
15	Bone River	South Bend	N46° 39'19.33", W123° 55'15.34"
16	Sandy Point	Bay Center	N46° 36'18.50", W123° 57'8.88"

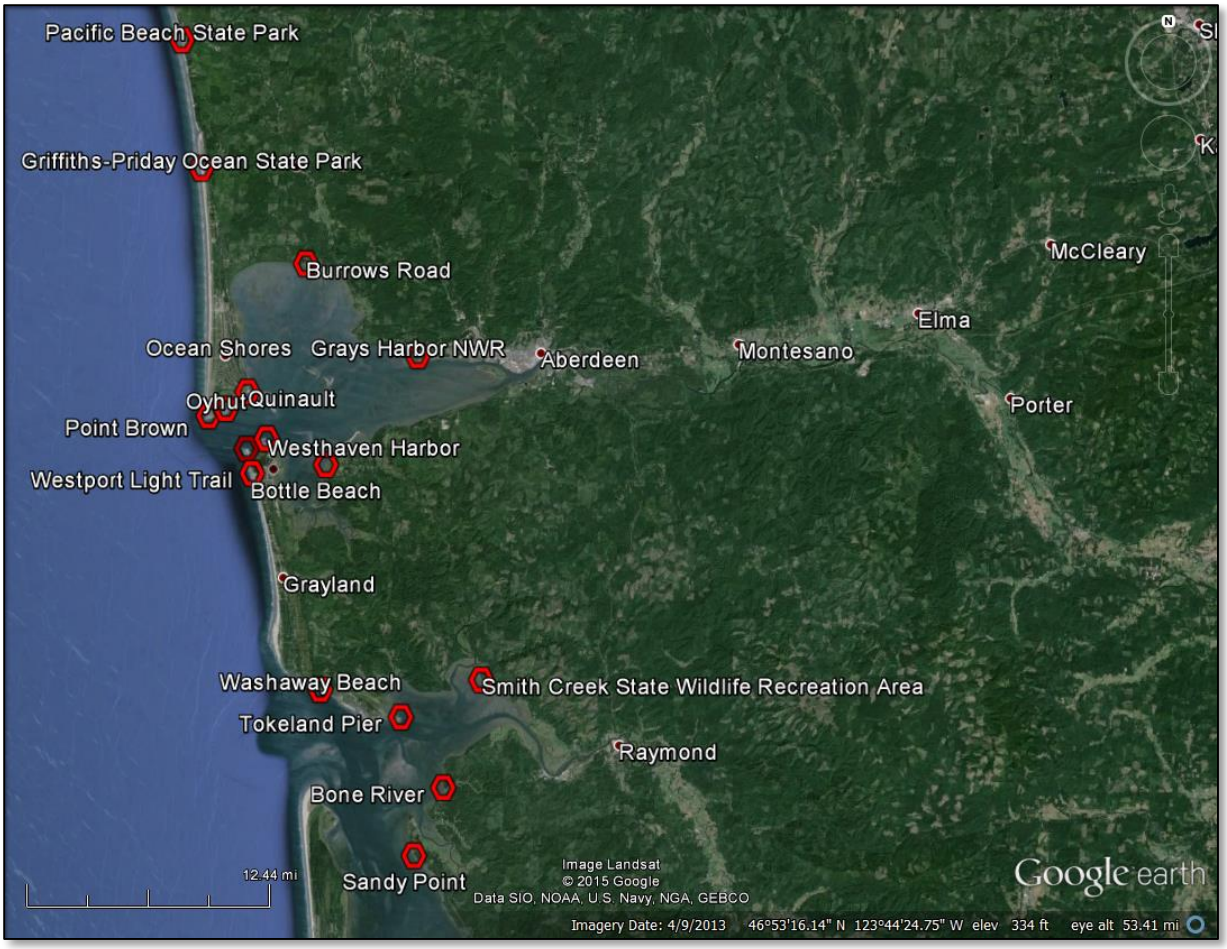


Figure 5. Final survey locations for the Grays Harbor Seabird Survey

Volunteer Outreach

The third objective of this Phase I project was to determine whether there are sufficient knowledgeable volunteer citizen scientists in the region who would be willing to take part in the Grays Harbor Seabird Survey once established.

Outreach Background

A citizen science monitoring program such as this relies entirely on finding dedicated, knowledgeable and willing volunteers who are interested in conducting surveys of this nature. Volunteers with the kind of knowledge required by specialized bird surveys are best recruited from local Audubon chapters and other bird clubs. Most individuals within the birding community are linked, to some degree, to organizations such as these and therefore are an excellent place to start when recruiting survey volunteers. The Grays Harbor region has its own Audubon chapter, the Grays Harbor Audubon Society (GHAS), with whom we partnered for this Phase I project.

The GHAS produces an average of 5 issues of their 8-page newsletter, The Sandpiper, each year. Each issue of the newsletter is distributed by mail to about 250 households and therefore, is one of the best

methods of reaching the birding community in the region. In addition, the newsletter is accessible via the GHAS website which amplifies the number of potential readers.

Outreach Materials

In January 2015, Seattle Audubon published the first peer-review scientific paper on the work of the Puget Sound Seabird Survey entitled*, Using citizen-science data to identify local hotspots of seabird occurrence* (Ward, E. et al., 2015). A press release was distributed widely to draw attention to the results of the project and resulted in numerous articles in the media. GHAS included an article on the scientific paper in the Jan/Feb 2015 edition of the Sandpiper newsletter, thereby introducing the project concept and it's capabilities to their members (the full article can be read in Appendix II).

The March-April edition of the Sandpiper newsletter is traditionally overfull with content due to the quantity of events and news during spring shorebird migration, and 2015 was no exception. As a result, the next available opportunity to submit an article to the Sandpiper newsletter was for the May/June 2015 edition. An article entitled *Grays Harbor is not just for Shorebirds* was submitted to the editors and included as the feature article in the May/June 2015 newsletter (Figure 6)(the complete article can be read in Appendix III).

Outreach Results

The response from the articles in the newsletters were very underwhelming, and at the time of writing, only one volunteer reached out to indicate their interest and availability, should the project move forward.

A meeting with the President of Grays Harbor Audubon Society, Arnie Martin, revealed that across their entire membership, they only have approximately 30 active members (Martin, A., pers. comm., 2015). Of the active members, only 6 or 7 have the knowledge needed for a project of this scope and of those, only approximately 3 have the time available to take part in a monitoring project on a regular basis (Martin, A., pers. comm., 2015).

Membership Meeting
Sunday June 7, 2015
Murrelet Survival Project
1:30 pm – 3 pm
Hoquiam Library

May/June 2015

The Sandpiper

Grays Harbor is not just for Shorebirds
By Toby Ross

It is well understood that the Grays Harbor estuary is a critically important stopover for hundreds of thousands of migrating shorebirds. However, there are also considerable numbers of seabirds have received modest funds to conduct phase 1 of the Grays Harbor Marine Bird Survey (GHMBS) project which entails 1) identifying potential survey locations and 2) engaging interested citizen science volunteers who would consider conducting the surveys. The survey protocol will be modeled after the PSSS (http://www.seattleaudubon.org/sas/WhatWeDo/Science/CitizenScience/Puget-SoundSeabirdSurvey.aspx) and training will be provided to ensure clarity and accuracy. We have identified 26 potential locations for the surveys from Pacific Beach in the north to Bay Center to the south. A monitoring program such as this will provide invaluable information on marine bird population trends and their geographical distribution which will prove invaluable in the event of a catastrophic oil or toxic spill during transit through the area. Survey locations are at least 1 mile apart and are restricted to publicly accessible land.

If you think you would be interested in taking part in a survey like this, you would need to commit to

Figure 6. Article soliciting volunteer surveyors to the Phase I project featured in the May/June 2015 Sandpiper newsletter

Conclusions and Recommendations

Assessing the feasibility of establishing a seabird monitoring project in Grays Harbor County relies on two key areas, suitable survey locations and sufficient knowledgeable citizen science volunteers to conduct the surveys.

Survey Locations

The first and second objectives of this Phase I project were to identify 10-15 suitable seabird survey locations distributed along the Grays Harbor County coastline. This project successfully identified 16 survey sites that would be suitable for seabird surveys using the Puget Sound Seabird Survey methodology. A number of the sites were clustered around areas of increased population, namely Ocean Shores and Westport, which improves the chance of engaging volunteer surveyors.

One of the key elements of identifying suitable survey locations is elevation and this factor was a concern in the Grays Harbor region due to the topography of the near-shore landscape being predominantly flat and low elevation. The Puget Sound Seabird Survey methodology works best at sites with an elevation greater than 3m (10ft). Increased elevation at survey sites facilitates improved viewing and more accurate measurements of distance to birds on the water. As a result, a number of the initially proposed survey sites were rejected due to their low elevation.

In addition, safe access to survey sites is also a highly important component and therefore was constantly considered when verifying survey sites in the field. Four of the initial 25 potential survey sites were rejected due to either safety concerns or blocked access. There remains one site, Burrows Road, that is not ideally located in terms of safe access. If implimentation of the project proceeds, the Burrows Road site will not be a priority site when recruiting but if volunteers are found who are keen to survey at this location the access issues will be made very clear. If volunteers are deterred by the access issues at this site it is likely that the site will be removed from the survey due.

If this Phase I project does proceed onto Phase II, additional surveys sites can be added as needed, provided similar stringent evaluation processes are applied to new sites.

Survey Volunteers

The third objective of this Phase I project was to determine whether there were sufficient knowledgeable volunteer surveyors in the region who would be willing to conduct the seabird surveys. The Puget Sound Seabird Survey assigns teams of 2-4 volunteer surveyors to conduct surveys at each survey site. Usually, one of the team members measures the distance and bearing to each bird, while another volunteer acts as scribe and completes the data sheets. If there are additional volunteers they act as spotters, and identify and keep track of birds within the survey area. Seabird surveys take between 15 and 30 minutes each to complete within a 4-hour survey window. As a result, many teams choose to sign up for multiple sites, often 3-4. Based on the number of survey sites identified and the geographic groupings of those sites, we propose a minimum of five survey teams to cover all current identified sites. Therefore, in order to survey all identified sites adequately we would require a minimum of 10 volunteer surveyors, with an ideal target of 20.

It is clear that at the time of writing, and based on the outreach work that has been conducted for this Phase I project, there are insufficient volunteer surveyors in the area to make the project viable.

Recommendations

The clear issue with moving forward with implementation of a Grays Harbor Seabird Survey is the lack of knowledgeable survey volunteers. As has been mentioned above, dedicated, knowledgeable and willing volunteers are essential to the success of monitoring programs such as this. Therefore, if there is a desire to proceed with implementing the Grays Harbor Seabird Survey, attention must be focused on recruiting volunteers.

Based on conversations with GHAS members and other sources it is recommended that outreach activities be increased and broadened geographically. Initially, contact should be made with the Aberdeen Bird Club based in nearby Aberdeen, WA to determine the interest of their members. Although their “territories” are outside Grays Harbor County, reaching out to Willapa Hills Audubon Society and Black Hills Audubon Society to determine whether any of their members would be interested in volunteering on the surveys would be advised. Members of the birding community often travel far and wide to observe birds, therefore the two neighboring Audubon chapters possibly have interested people within their membership who would be willing to travel in order to take part in the project. An additional organisation that would be worth contacting is the Washington Ornithological

Society (WOS) whose membership covers the entire Washington State. Outreach efforts to WOS would reach considerably further than any of the other organisations mentioned and may attract birders from outside the Grays Harbor region to come and volunteer. Finally, there are a number of listserves that could be posted to in order to reach the broad birding community. The two most commonly used in Washington state are 'Tweeters' hosted by the Burke Museum at the University of Washington with in excess of 3,200 members, and 'WAgeneral@googlegroups.com', managed by Washington Audubon Society that reaches thousands of Audubon members around the State.

Outreach activities should include newsletter and website articles, social media posts presentations at member meetings and bird festivals. Posters can also be distributed to sites where birders frequent, for example county parks, state parks, recreation areas and wildlife refuges. It is expected that a combination of these activities would encourage sufficient volunteer surveyors to engage in the project and ensure its success.

References

Audubon Washington, 2014. OIL TRANSPORT IN GRAYS HARBOR – Points on Birds, Community Impacts, and EIS Evaluation.

Grays Harbor County Marine Resource Committee, 2014. Request for Proposals.

Ward, E., et al. 2015. Using citizen-science data to identify local hotspots of seabird occurrence. PeerJ 2:e704; https://peerj.com/articles/704/

Washington Department of Ecology, 2008-2010. Washington State: Public Beach Access Points Data, Geodatabase Shapefile. https://fortress.wa.gov/ecy/coastalatlas/tools/PublicAccessDownload.aspx Accessed February 2015.

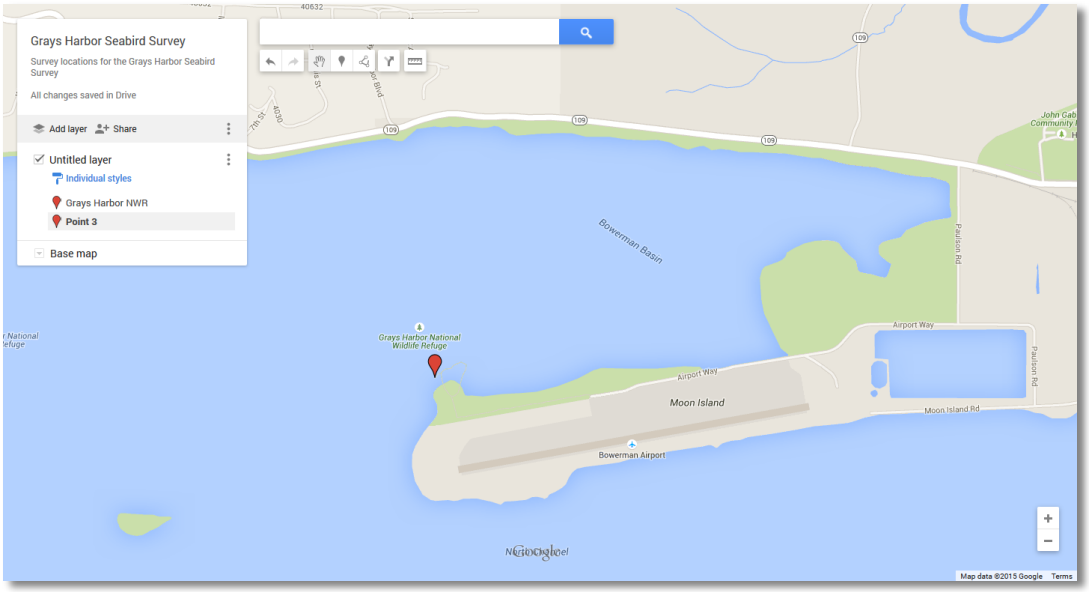
APPENDIX I

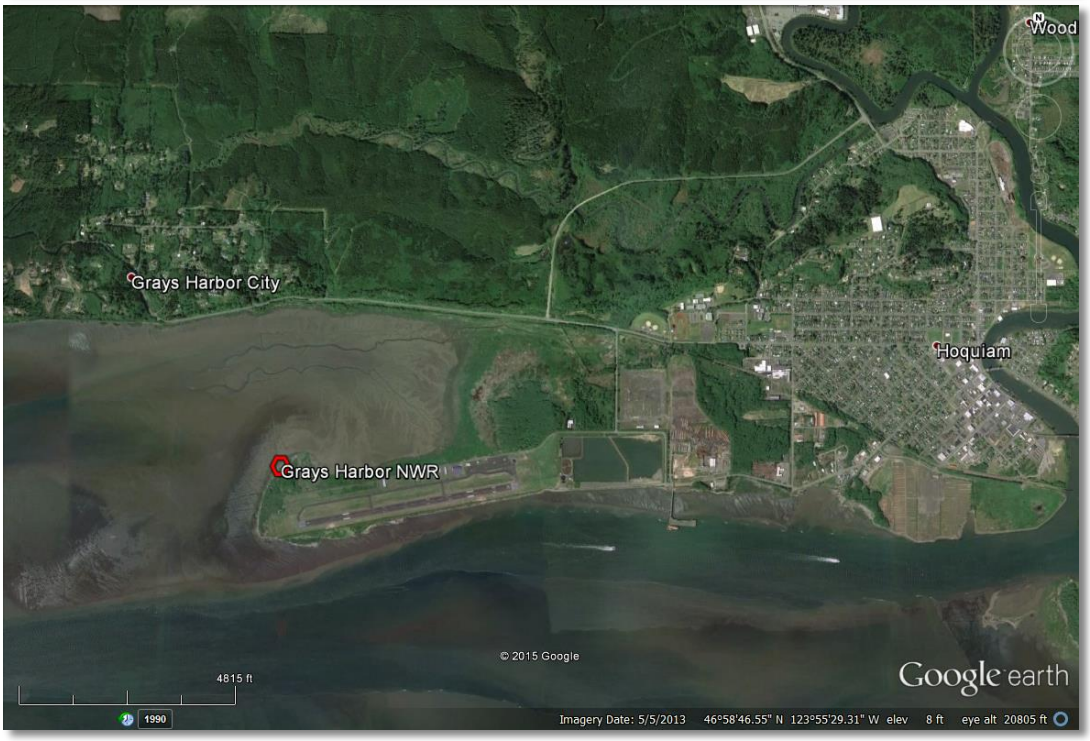
Seabird survey locations identified for the Grays Harbor Seabird Survey.

Site Name: Grays Harbor National Wildlife Refuge **County:** Grays Harbor **Town:** Hoquiam
GPS: N46° 58’24.86, W123° 56’52.71

Access: Drive to end of Airport Road and park next to National Wildlife Refuge sign. Walk the Sandpiper Trail to the end of the boardwalk, turn left at the loop, and take the left branch that leads to the tip of the spit.

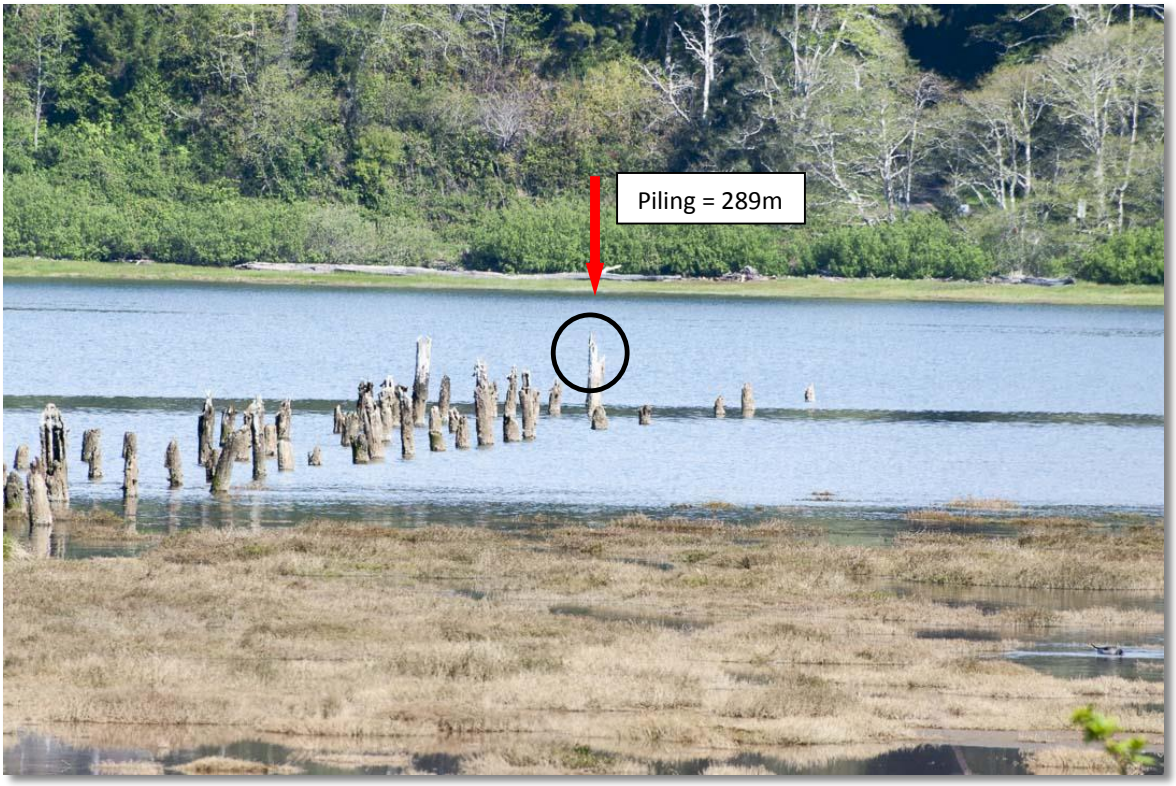
Maps:





Permit/Fee: None
Survey Location: Position the scope tripod, or stand, to the right of the bench at the angle of the railing.

Distance Landmark 1: There is a line of old pilings from the remnants of a dock. The very last piling is 289m away from the survey location.



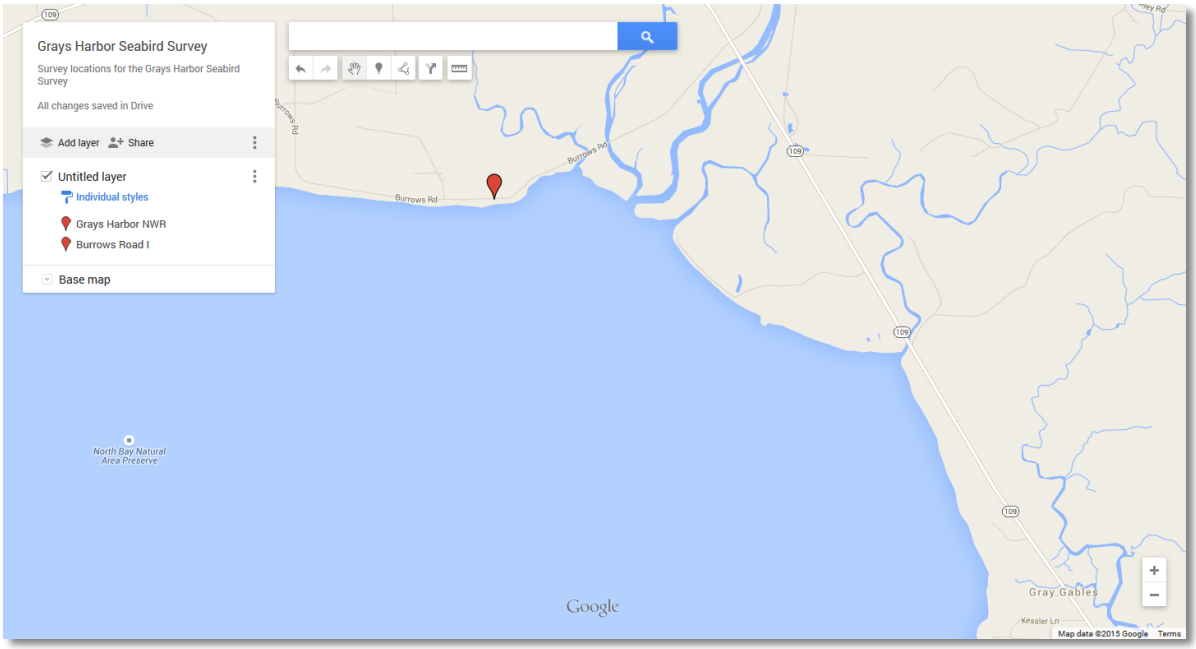
Species observed during visit:

- Greater Yellowlegs
- Northern Pintail
- Mallard
- Caspian Tern
- Peregrine Falcon
- Northern Harrier

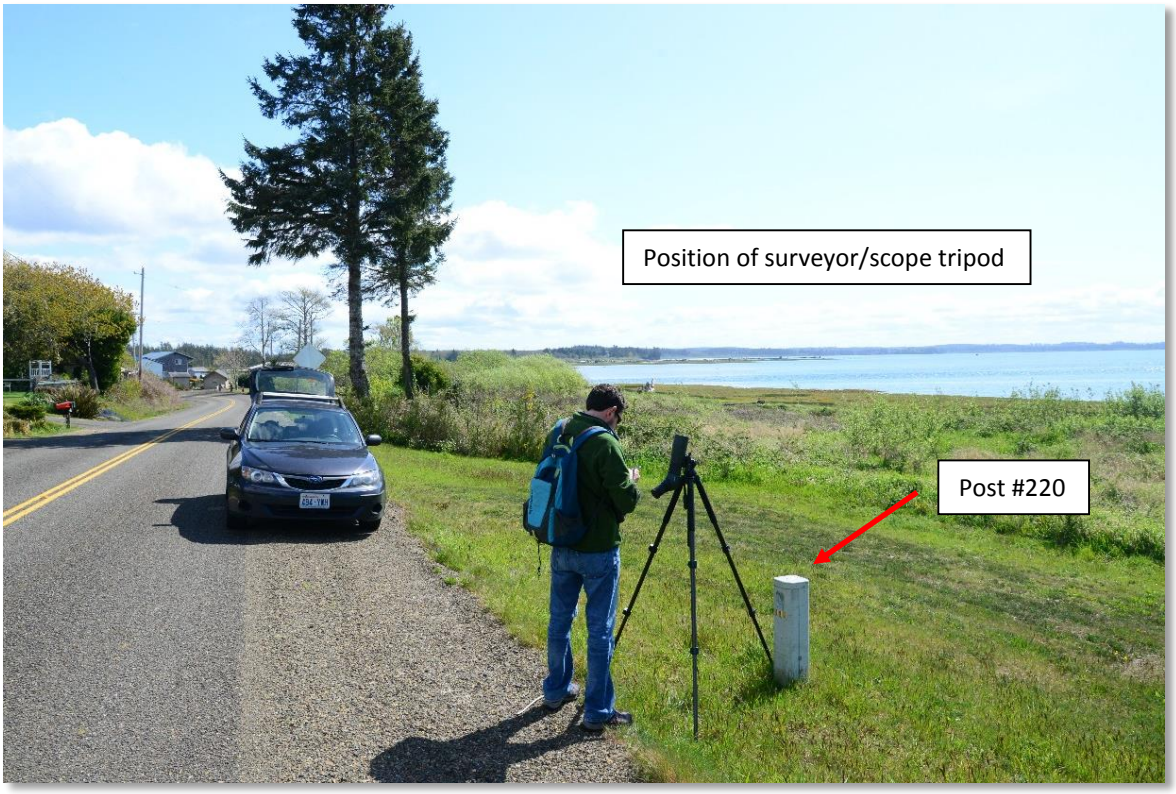
Site Name: Burrows Road **County:** Grays Harbor **Town:** Gray Gables
GPS: N47° 2’29.04, W124° 4’7.71

Access: There is not much room to park at this location but there is enough room to pull off the road on the shore side of the road. Look for house marked Number 232 and a short post marked 220, this is the location of the survey site.

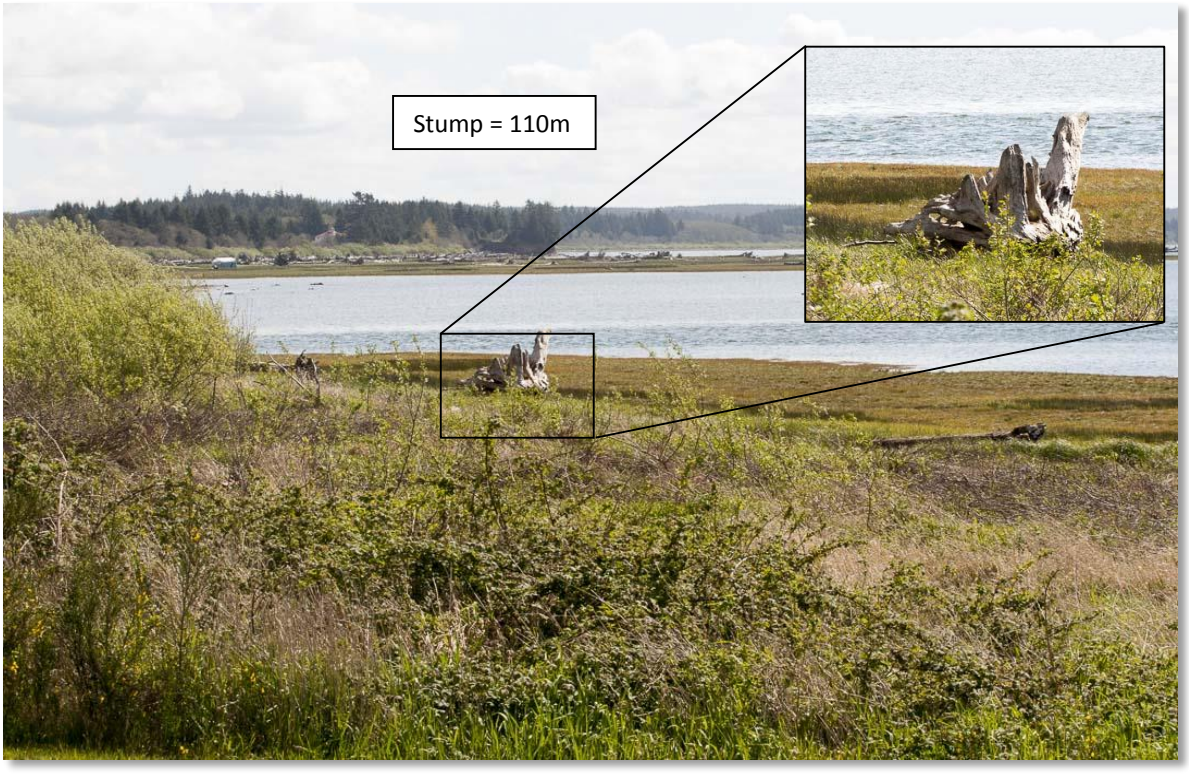
Maps:



Permit/Fee: None
Survey Location: Position the scope tripod, or stand, directly next to the short post marked 220.



Distance Landmark 1: Large tree stump washed up on shore is 110m from the survey location.



Distance Landmark 2: The last conifer tree in the short row of trees is 117m from the survey location.

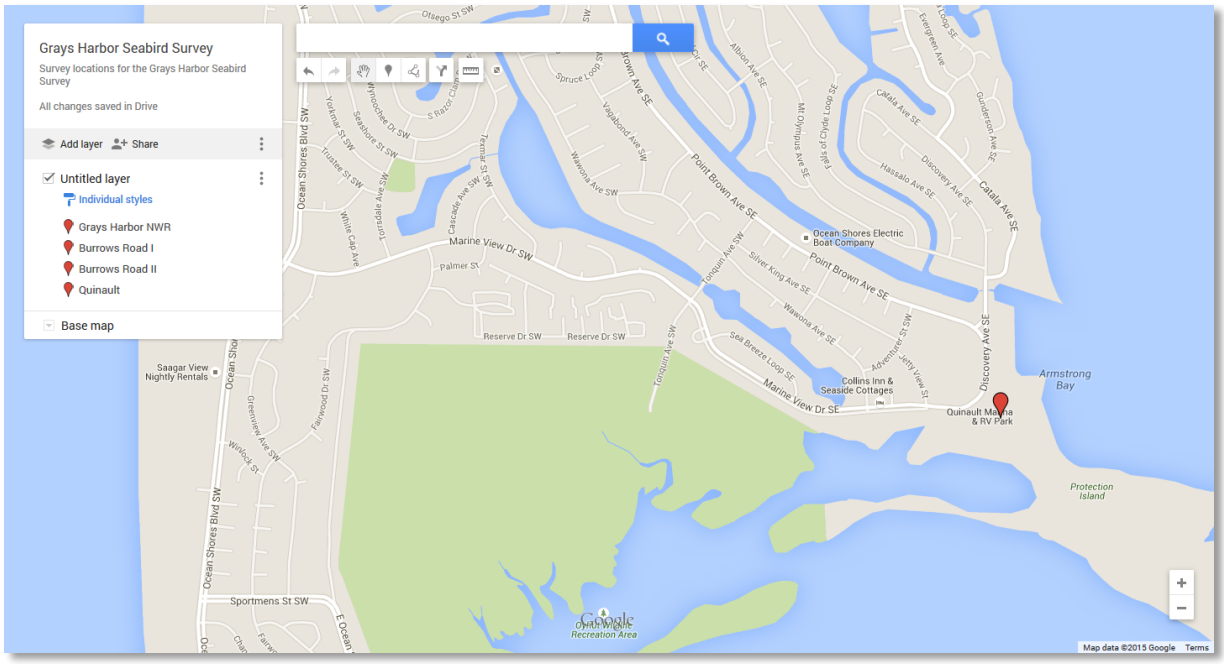
Species observed during visit:

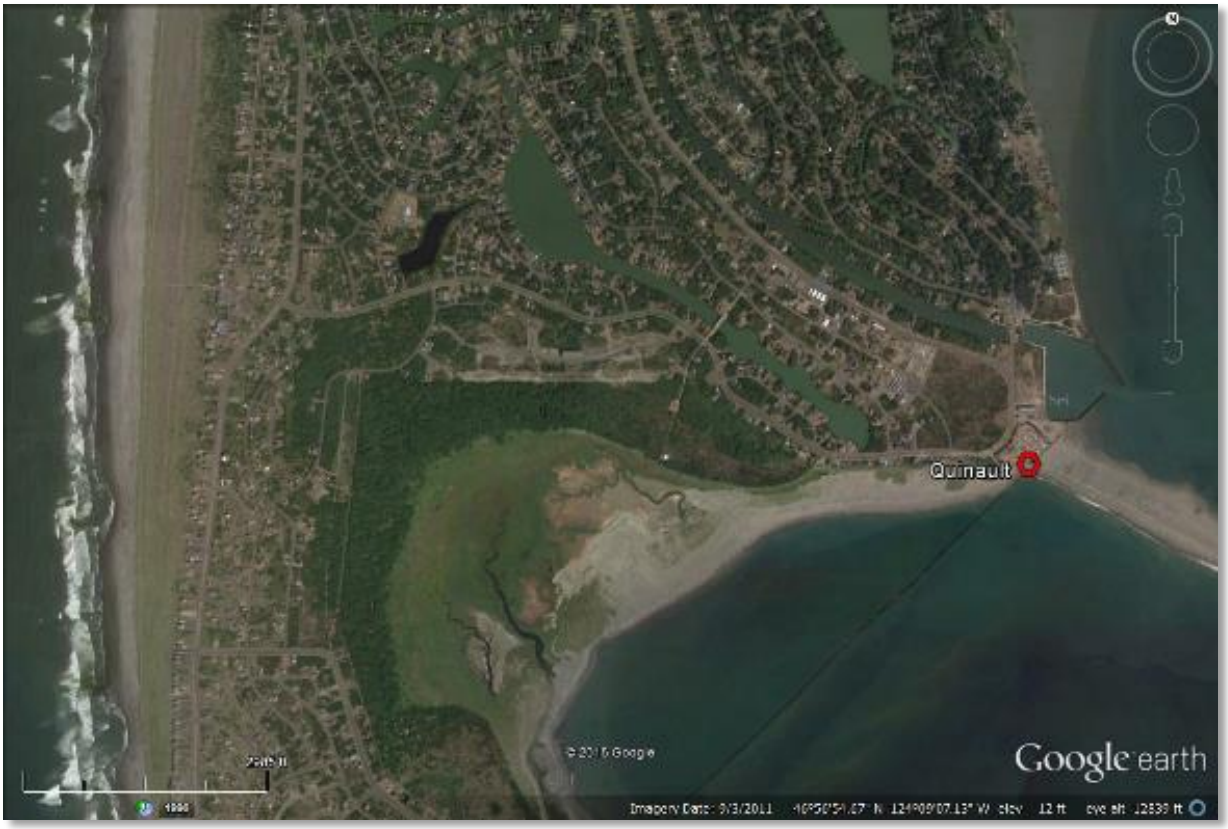
- None

Site Name: Quinault **County:** Grays Harbor **Town:** Ocean Shores
GPS: N46° 56’48.42, W124° 7’53.43

Access: Park in the small parking lot just off the side of the road where Marine View Drive SE meets Discovery Avenue SE. Take the short road that leads down to the beach. Once you reach the beach turn left (east) and walk along the beach to an area that is slightly elevated adjacent to a wooden fence.

Maps:





Permit/Fee: None
Survey Location: Position the scope tripod, or stand, atop the slightly elevated area in front of the wooden fence. The exact location is about 15ft in front of the 5th fence cross bar.

Distance Landmark 1: Looking left

Distance Landmark 2: Looking right

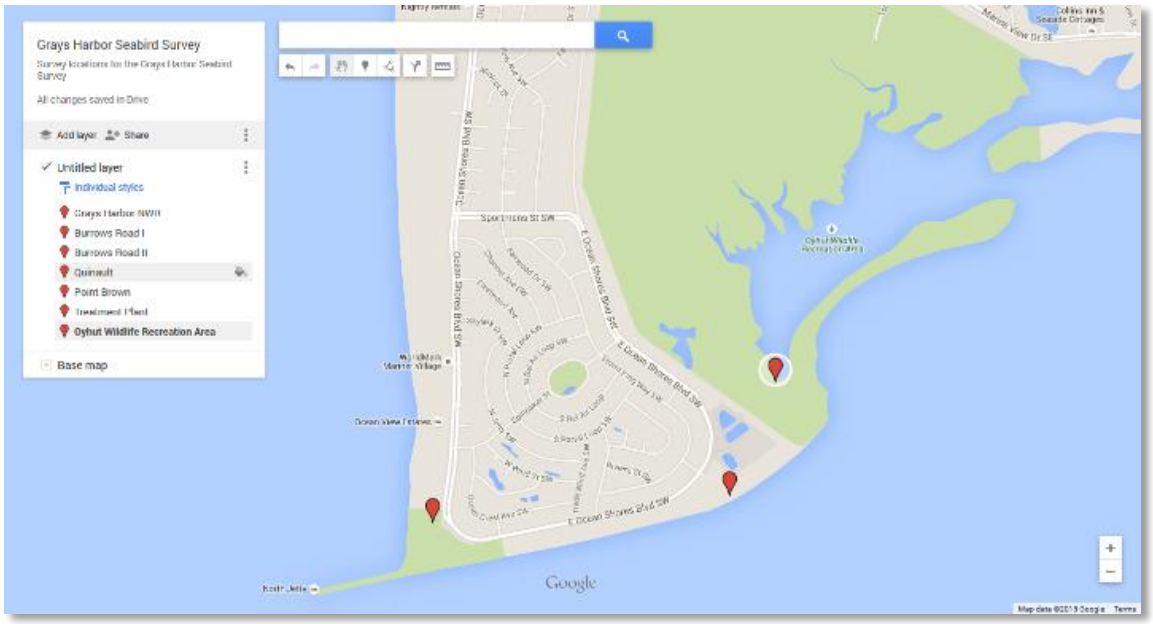
Species observed during visit:

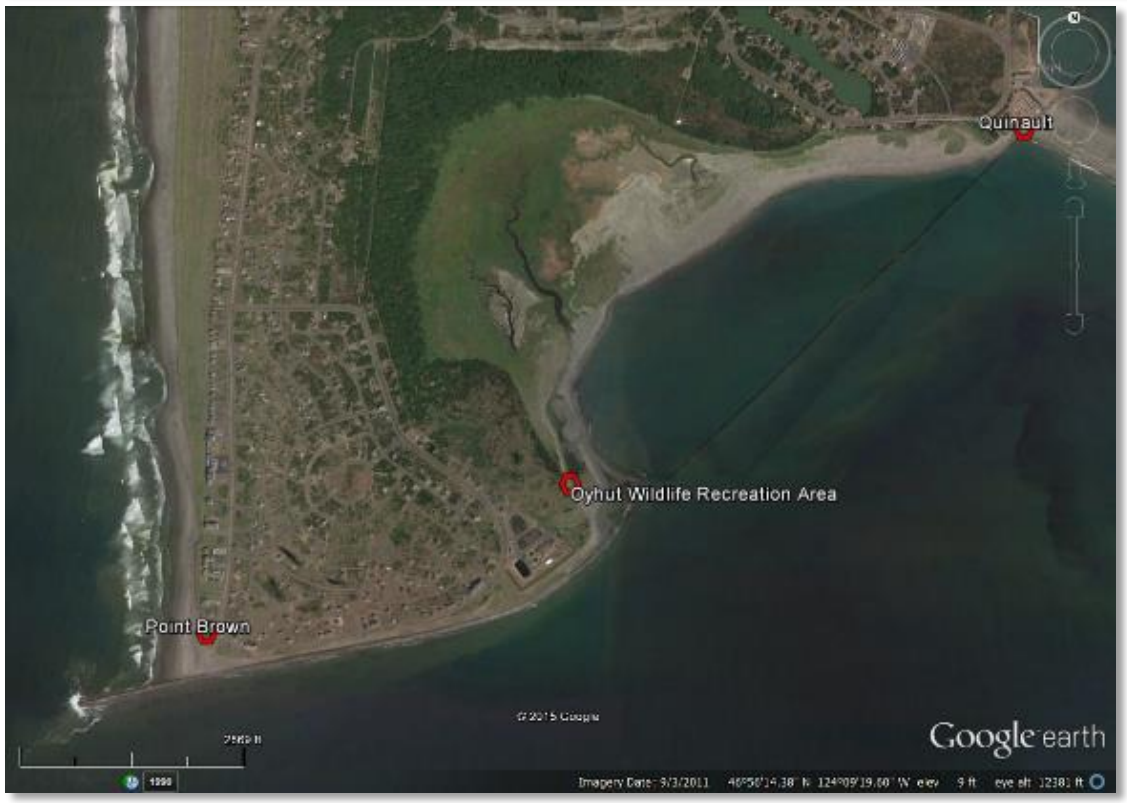
- Western Gull
- Ring-billed Gull

Site Name: Oyhut Wildlife Recreation Area **County:** Grays Harbor **Town:** Ocean Shores
GPS: N46° 56’3.64, W124° 9’17.40

Access: Access this site via E Ocean Shores Boulevard SW. Park on the verge outside house #1408 (near strange windmill). Between the houses locate a path used by off-road vehicles and walk towards the shore. Take the left fork in the path and head for the channel marker tower. The survey location is at the head of the dune.

Maps:





Permit/Fee: None

Survey Location: Position the scope tripod, or stand, at the head of the dune to the center-left of the footpath.

Distance Landmark 1: Looking left.

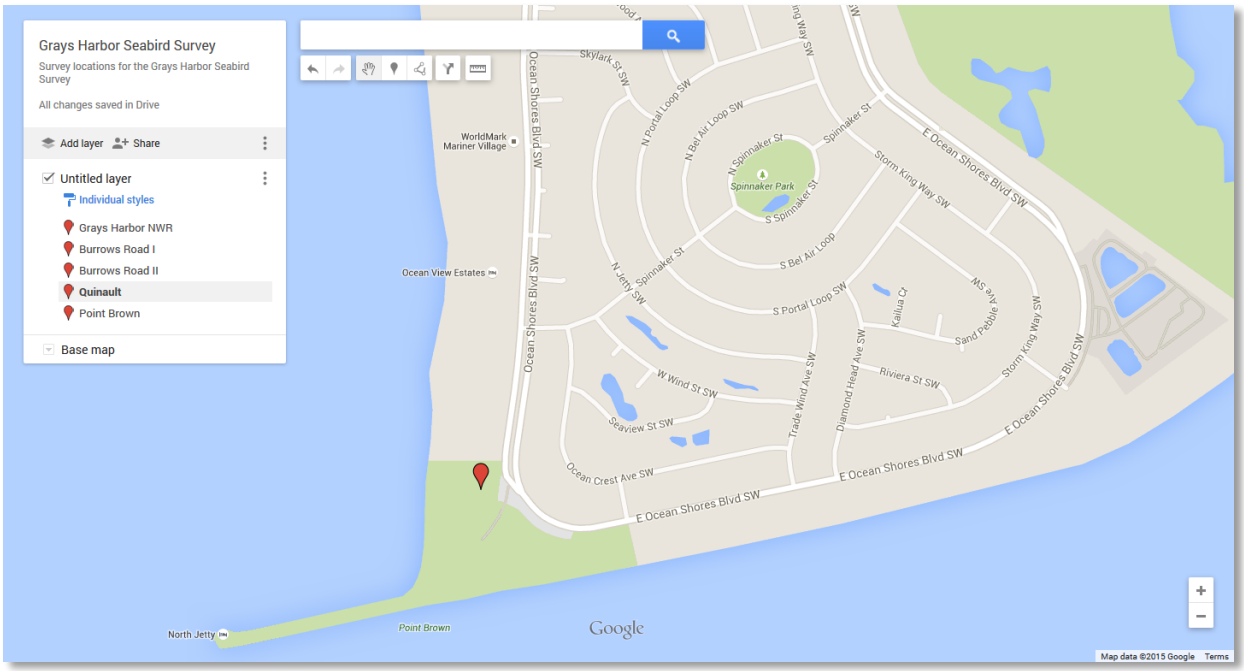
Species observed during visit:

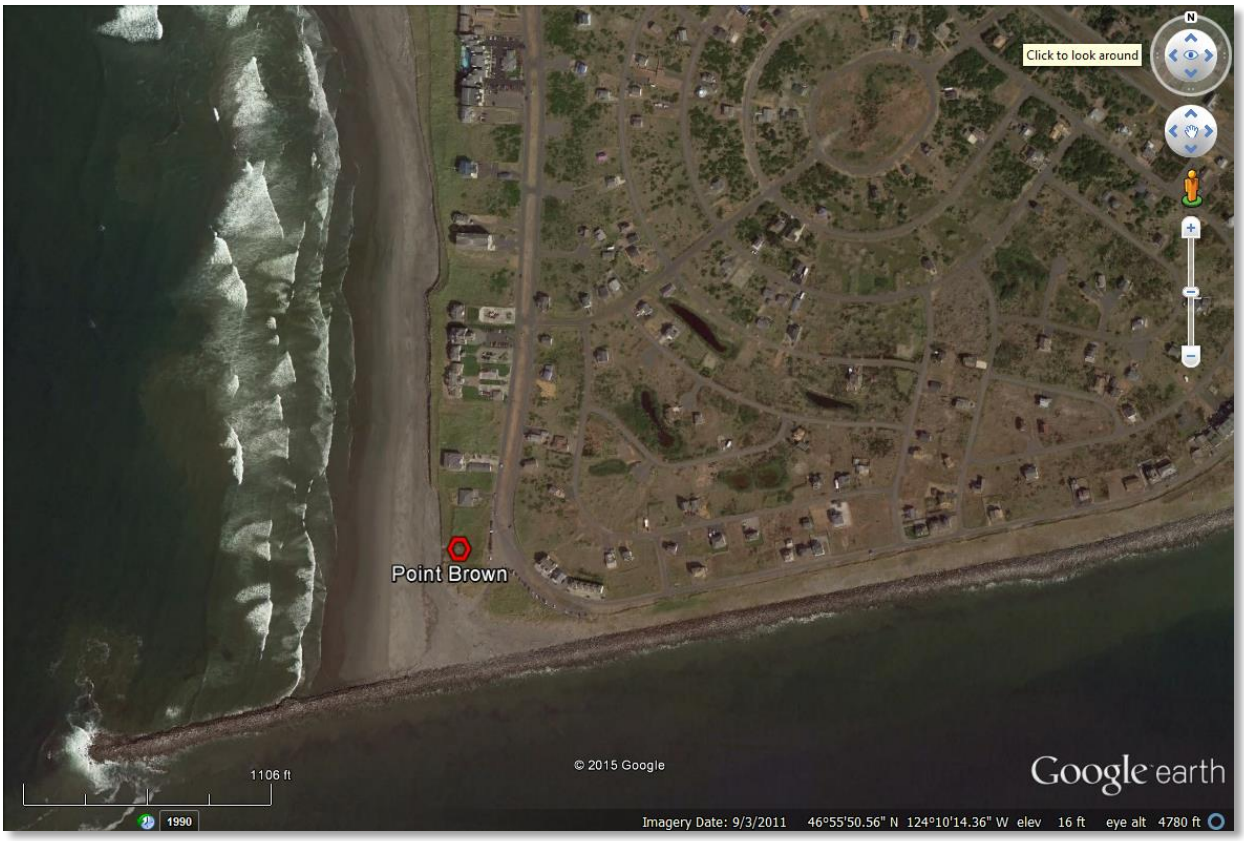
- Western Gull
- Common Loon
- Pelagic Cormorant

Site Name: Point Brown **County:** Grays Harbor **Town:** Ocean Shores
GPS: N46° 55’44.85, W124° 10’24.65

Access: Park in the ample parking area. Take the narrow trail located across from the mauve house #148 that leads up and through dunes to the highest point of the bluff.

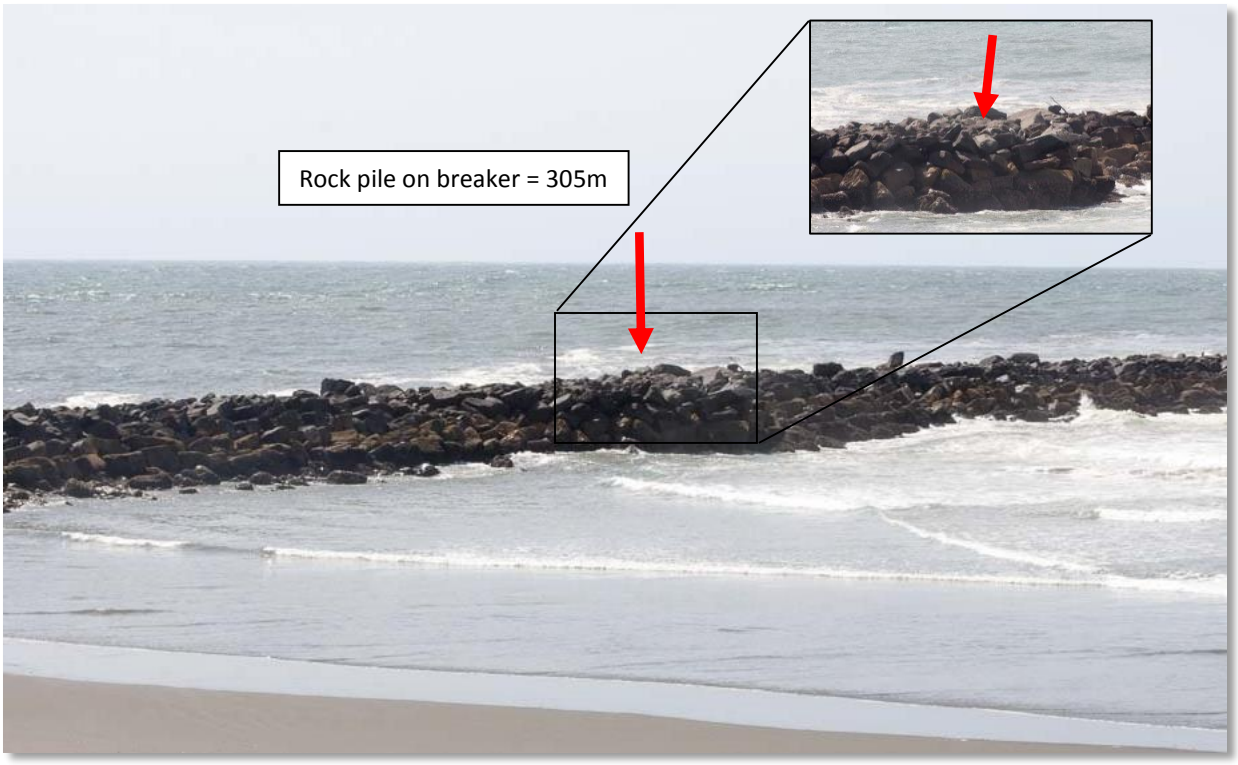
Maps:





Permit/Fee: None
Survey Location: Position the scope tripod, or stand, over the large driftwood log located at the end of a short branch off to the left of the main path over the dune.

Distance Landmark 1: Looking left.



Distance Landmark 2: Looking right.

Species observed during visit:

- Western Gull
- Ring-billed Gull
- Pelagic Cormorant
- Pacific Loon
- Surf Scoter

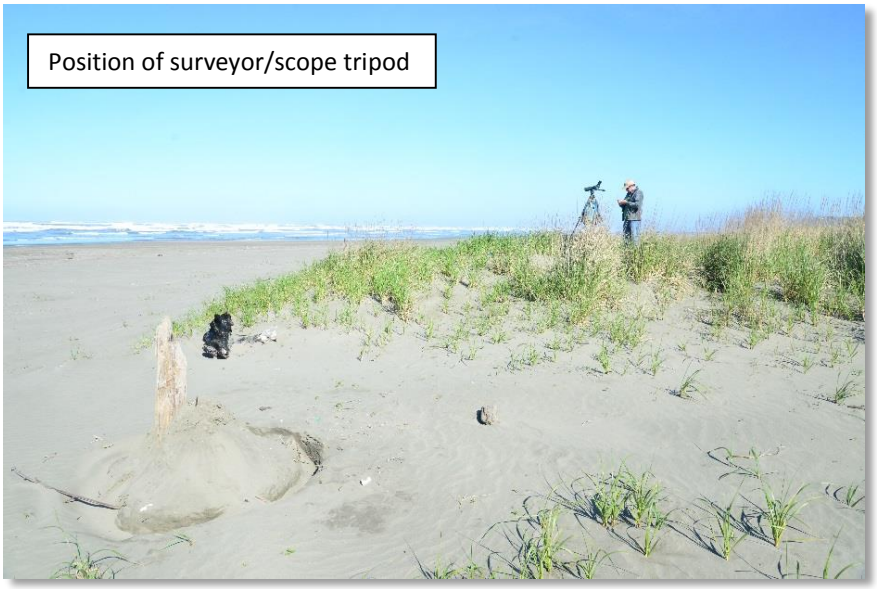
Site Name: Griffiths-Priday Ocean State Park **County:** Grays Harbor **Town:** Copalis Beach
GPS: N47° 6'42.16, W124° 10'56.65

Access: Drive to the end of Heath Road, park on the right side of the road, walk across footbridge, onto beach and up to the head of the dune.

Maps:

Permit/Fee: None

Survey Location: Position the scope tripod, or stand, on right side at the top of the dune.



Distance Landmark 1: Looking left

Species observed during visit:

- Western Gull
- Surf Scoter

Site Name: Pacific Beach State Park **County:** Grays Harbor **Town:** Pacific Beach
GPS: N47° 12'23.35, W124° 12'14.52

Access: Park in the day use area. Next to the sign, take the trail toward the ocean and take the left fork to the head of the dune

Maps:

Permit/Fee: Day use fee or Discovery Pass

Survey Location: Position the scope tripod, or stand, at the height of the dune.

Distance Landmark 1: None
Species observed during visit:

- Bald Eagle
- Black-bellied Plover
- Western Sandpiper
- Glaucous-winged Gull
- Western Gull

Site Name: Bottle Beach State Park **County:** Grays Harbor **Town:** Ocosta
GPS: N46° 53'35.81, W124° 2'48.67

Access: Park in carpark, walk boardwalk to end and access the beach next to the bird blind.

Maps:

Permit/Fee: Day use fees or Discovery Pass

Survey Location: Position the scope tripod, or stand, at the height of the dune

Distance Landmark 1:

Species observed during visit:

- Black-bellied Plover
- Lesser Scaup

Site Name: Westhaven Harbor **County:** Grays Harbor **Town:** Westport
GPS: N46° 54'44.73, W124° 6'38.77

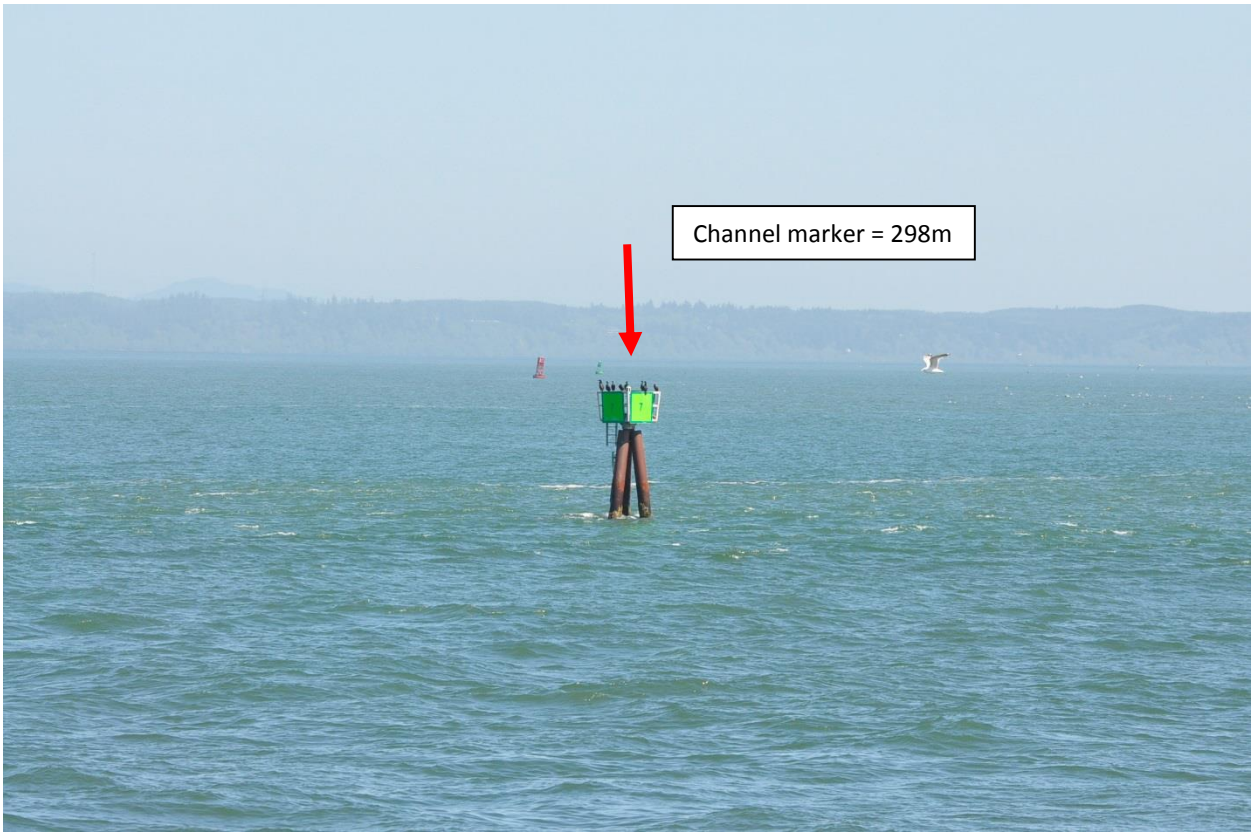
Access: Park in carpark of the Harbor Resort and locate the observation deck where the survey will take place.

Map:

Permit/Fee: None

Survey Location: Position the scope tripod, or stand, on the observation deck, at the corner of the railing next to the public scope.

Distance Landmark 1: Looking right



Species observed during visit:

- Common Loon
- Surf Scoter
- Pigeon Guillemot
- Brant
- Brown Pelican
- Peregrine Falcon

Site Name: Westhaven State Park **County:** Grays Harbor **Town:** Westport
GPS: N46° 54'17.70, W124° 7'56.68

Access: Park in carpark, take path right of bathrooms that is wide enough for off road vehicles that leads to the base of the breakwater.

Map:

Permit/Fee: Day use fee or Discovery Pass

Survey Location: Position the scope tripod, or stand, at the highest point before path leads down to breakwater.

Distance Landmark 1:

Species observed during visit:

- Pacific Loon
- Common Loon
- Surf Scoter

Site Name: Westport Light Trail **County:** Grays Harbor **Town:** Westport
GPS: N46° 53'12.65, W124° 7'35.65
Access: Park in carpark, take main path toward beach, take the left fork and follow it to the beach.
Map:

Permit/Fee: Day use fee or Discovery Pass
Survey Location: Position the scope tripod, or stand, on the bluff to the right of the path

Distance Landmark 1: None

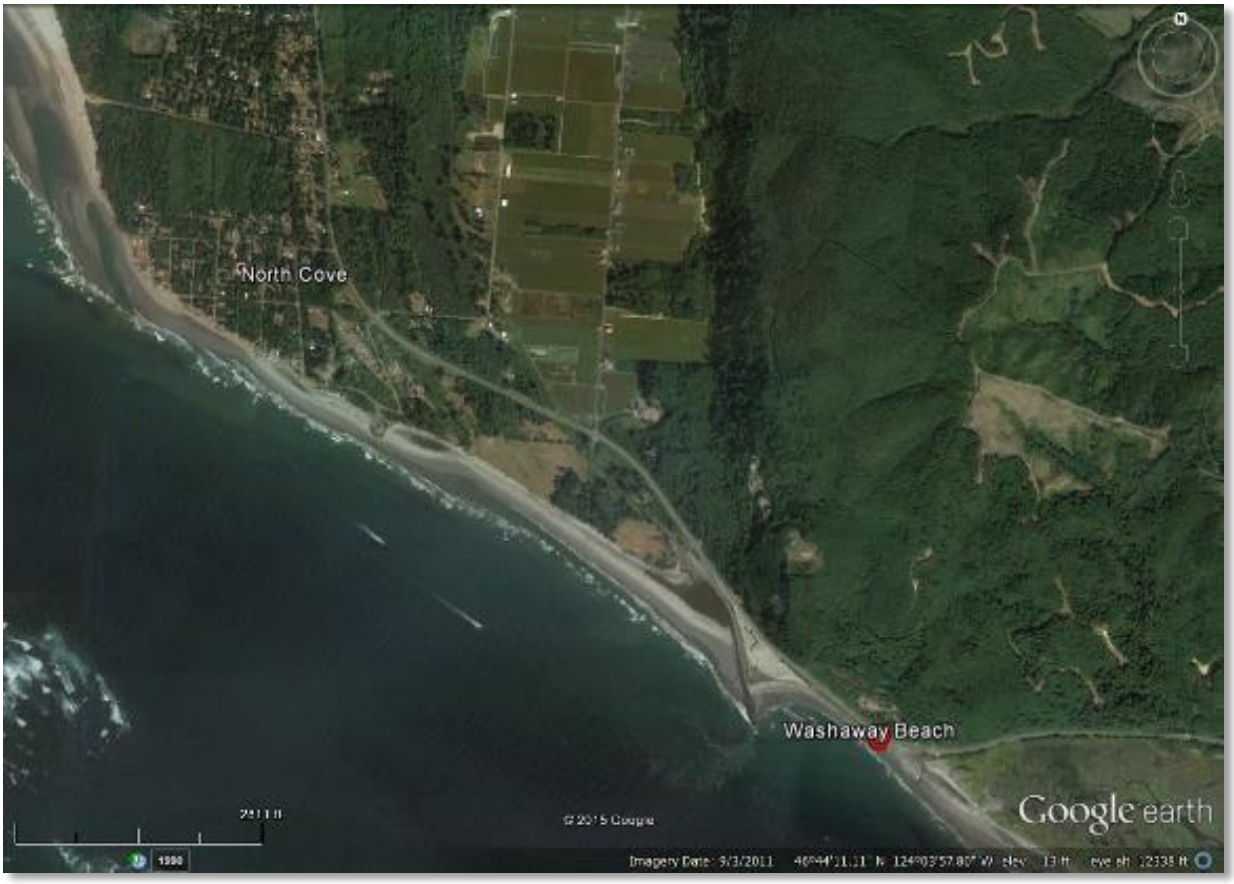
Species observed during visit:

- Glaucous-winged Gull

Site Name: Washaway Beach **County:** Pacific **Town:** North Cove
GPS: N46° 43'39.73, W124° 3'10.02

Access: Pull off SR105 on rise before you enter reservation that leads to Tokeland.

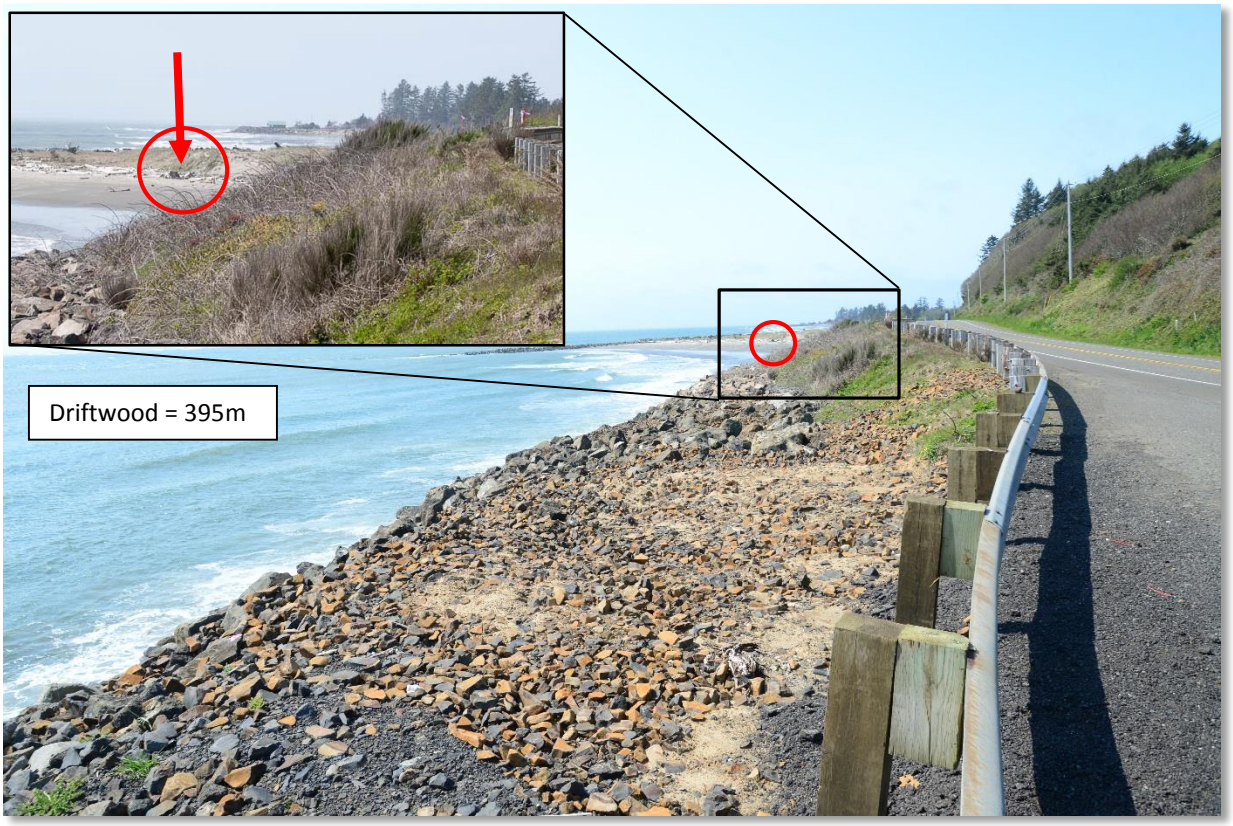
Map:



Permit/Fee: None

Survey Location: Position the scope tripod, or stand, where the photo was taken

Distance Landmark 1: Looking right



Distance Landmark 2: Looking left

Species observed during visit:

- Red-throated Loon
- Common Loon
- Surf Scoter
- Red-breasted Merganser
- Double-crested Cormorant

Site Name: Tokeland Pier **County:** Pacific **Town:** Tokeland
GPS: N46° 42'26.71, W123° 57'58.51

Access: Drive to the end of the fishing dock in Tokeland.
Map:

Permit/Fee: None
Survey Location: Position the scope tripod, or stand, at the end of the fishing pier.

Distance Landmark 1: Looking left

Distance Landmark 2: Looking right

Species observed during visit:

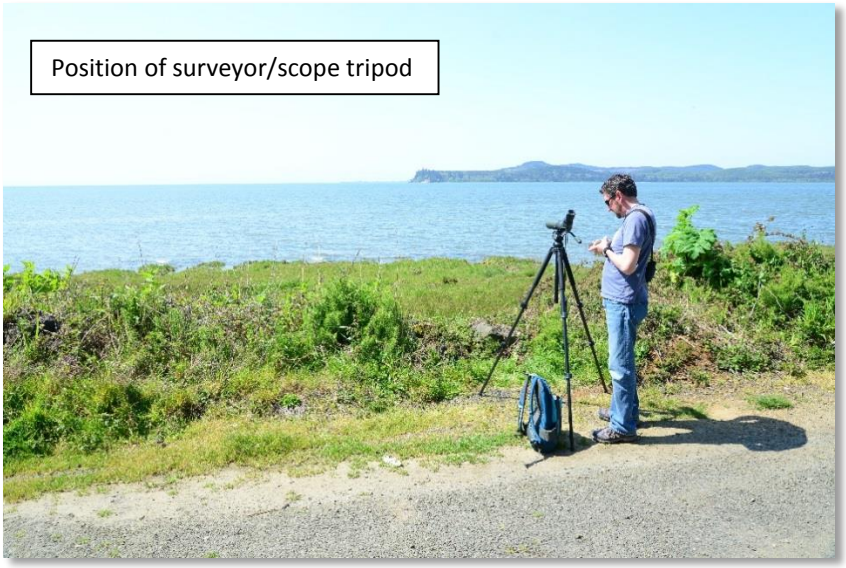
- Red-throated Loon
- Common Loon
- Western Grebe
- Horned Grebe
- Double-crested Cormorant
- Canada Goose
- Glaucous-winged Gull
- Least Sandpiper

Site Name: Smith Creek State Wildlife Recreation Area

County: Pacific **Town:** Tokeland
GPS: N46° 44'5.51, W123° 52'47.86

Access: Pull off SR105 at mile marker #9.
Map:

Permit/Fee: None
Survey Location: Position the scope tripod, or stand, as is pictured in the image below.



Distance Landmark 1:

Species observed during visit:

- Common Loon
- Red-breasted Merganser
- Lesser Scaup
- Bufflehead
- Brant

Site Name: Bone River **County:** Pacific **Town:** South Bend
GPS: N46° 39'19.33, W123° 55'15.34

Access: Pull off SR101 at just before "Severe Side Wind" ahead sign on right before Bone River, heading south.

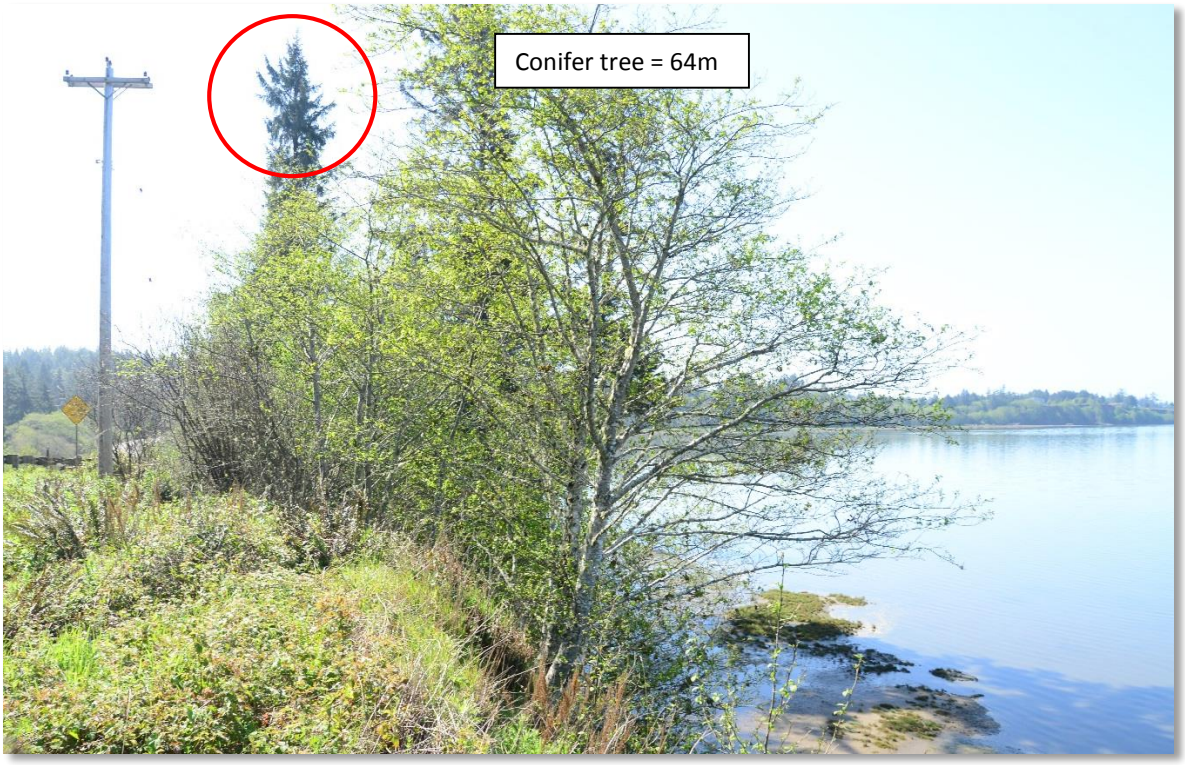
Map:

Permit/Fee: None

Survey Location: Position the scope tripod, or stand, over the railing on the grassy verge.

Distance Landmark 1: Looking left

Distance Landmark 2: Looking left



Species observed during visit:

- Brant
- Red-breasted Merganser
- Horned Grebe
- American Wigeon
- Northern Pintail
- Bufflehead
- Greater Yellowlegs

Site Name: Sandy Point **County:** Pacific **Town:** Bay Center
GPS: N46° 36'18.50, W123° 57'8.88

Access: Heading south out of Bay Center, pull off SR105 on shore side of road before curve.

Map:

Permit/Fee: None

Survey Location: Position the scope tripod, or stand, at the junction between the metal and concrete road barriers.

Distance Landmark 1: None
Species observed during visit:

- Ring-billed Gull
- Common Loon
- Surf Scoter
- Brant
- Canada Goose
- Red-breasted Merganser

APPENDIX II

Citizen science reveals positive news for Puget Sound seabirds

by Michael Milstein, NOAA Fisheries

A new analysis of seven years of bird sightings by volunteer birdwatchers from the Seattle Audubon Society has found positive trends in several Puget Sound seabird species that had been in historic decline.

The study tracked the occurrence of 18 seabird species at 62 sites around Puget Sound and found increased presence of 14 species, including cormorants, loons, rhinoceros auklets, and harlequin ducks. It also documented local hotspots for certain species, which may reflect especially important habitat or prey the birds depend on.

Many seabird species are thought to have declined around Puget Sound since the 1960s and 1970s but the new results suggest the trends have turned up for many species. The Puget Sound Partnership lists some of the species as barometers of the health of Puget Sound.

"Seeing positive trends here is good news," said Scott Pearson, a seabird research scientist at the Washington Department of Fish and Wildlife and a coauthor of the research. "What we may be seeing is that a number of species may be turning the corner."

The research published in the peer-reviewed online journal PeerJ is unusual because it's based on "citizen science," specifically Seattle Audubon's Puget Sound Seabird Survey that began in 2007. Researchers noted that the new analysis offers a model for how citizen observations can provide important data for wildlife agencies with limited budgets to collect it themselves.

Several of the research authors helped develop the Seabird Survey, which assesses the presence of seabirds during the winter when many species are most abundant. More than 250 experienced volunteers have participated in the survey through the years, returning to the same sites on the first Saturday of each month from October to April. They identify birds and collect details such as how long they spent searching for birds and the bearing and distance to each bird, which helps calculate the density of each species.

"The beauty of working with birds is that there are so many people who love birding and who are very skilled at it," said Toby Ross, Science Manager at Seattle Audubon and a coauthor of the study. "You could never do this with staff people. You'd never have the budget to send out this many people so consistently for so many years, but volunteers make it possible."

The analysis focused on 18 seabird species that are indicators of the environmental health of Puget Sound because they are relatively abundant and depend on Puget Sound for food and habitat. It examined their presence over time at 62 public sites such as parks and piers from the northern end of Whidbey Island south to Olympia. Researchers used statistical models to translate observations by Seabird Survey volunteers into trends in the presence of each of the 18 species.

Of the 18 species, 14 demonstrated positive trends since the survey began in 2007. They include marbled murrelet, rhinoceros auklets, loons and bufflehead and harlequin ducks. The results dovetail with other recent results, such as nesting surveys that have also found increases in rhinoceros auklets. However researchers cautioned that positive trends in sightings do not necessarily reflect increasing populations. For example, federally listed marbled murrelet populations continue to decline across Washington. The Seabird Survey will continue tracking bird sightings.

"Every year we add more data and we can do more analyses and we'll see if the trends continue," Ross said.

The study found declines in four species: white-winged scoter, brant, western grebe and red-necked grebe. Researchers suggested the declines might result from geographical shifts or prey declines in Puget Sound or the Salish Sea or environmental threats to their nesting grounds elsewhere. Similar citizen-science data from other areas have indicated that western grebes appear to have shifted to the south, out of the Puget Sound region.

Funding for the Puget Sound Seabird Survey was provided by Boeing, Sustainable Path Foundation, Russell Family Foundation, Washington Department of Fish and Wildlife and Patagonia.

The authors concluded that the survey approach and other citizen-science efforts could help collect many kinds of data, including indications of harmful algal blooms and ocean acidification.

For more information on the Puget Sound Seabird Survey, visit www.seabirdsurvey.org

Harlequin Duck - Doug Schurman

page 5

APPENDIX III

Membership Meeting
Sunday June 7, 2015
Murrelet Survival Project
1:30 pm – 3 pm
Hoquiam Library

May/June 2015

The Sandpiper

Grays Harbor is not just for Shorebirds

By Toby Ross

It is well understood that the Grays Harbor estuary is a critically important stopover for hundreds of thousands of migrating shorebirds. However, there are also considerable numbers of seabirds that overwinter in the region's waters – sea ducks like Surf and White-winged Scoters, Ring-necked Duck, Bufflehead; Horned and Western Grebes; and Alcids like Marbled Murrelet and Rhinoceros Auklet – all utilizing salt and brackish water habitat in the region. However, seabirds have been in decline in Washington's coastal and Sound waters over the last 50 years due to climate change, toxins, habitat loss or modification, and the recovery of top predators to name a few.

In order to monitor the trends in seabird abundance in the Puget Sound, Seattle Audubon developed and implemented the Puget Sound Seabird Survey (PSSS). Now in its 7th season, the project engages citizen scientists to collect data at 135 locations in 8 counties around the Puget Sound and the Strait of Juan de Fuca. To date the project has recorded 74 species of marine bird across all sites, and earlier this year published the first peer-review scientific paper (https://peerj.com/articles/704/) utilizing the data.

Now that the project has proven functional, we are exploring the concept of establishing a seabird monitoring program throughout near-shore habitat in Grays Harbor Audubon Society territory. We have received modest funds to conduct phase 1 of the Grays Harbor Marine Bird Survey (GHMBS) project which entails 1) identifying potential survey locations and 2) engaging interested citizen science volunteers who would consider conducting the surveys. The survey protocol will be modeled after the PSSS (http://www.seattleaudubon.org/sas/WhatWeDo/Science/CitizenScience/Puget-SoundSeabirdSurvey.aspx) and training will be provided to ensure clarity and accuracy. We have identified 26 potential locations for the surveys from Pacific Beach in the north to Bay Center to the south. A monitoring program such as this will provide invaluable information on marine bird population trends and their geographical distribution which will prove invaluable in the event of a catastrophic oil or toxic spill during transit through the area. Survey locations are at least 1 mile apart and are restricted to publicly accessible land.

If you think you would be interested in taking part in a survey like this, you would need to commit to seven, 15-30 minute surveys, one per month, from October to April, and you'd need to be confident at identifying seabird species seen in the waters around Grays Harbor. The surveys are taken from the shore and will only require easy to moderate accessibility. If you think you'd be potentially interested in taking part in a project like this, or you have recommendations for survey locations, email me at tobyr@seattleaudubon.org