

Skagit - Heron Foraging Study Overview and Protocol

OVERVIEW

Purpose

The Skagit Heron Foraging Study began in 2014 as a citizen-science project, to document the feeding areas utilized by Great Blue Herons nesting at two major colonies located at March Point and Samish Island in western Skagit County Washington. The March Point and Samish Island heron colonies constitute the largest breeding concentration in the Salish Sea. The herons of these colonies depend on the rich marine habitat and abundant food source around their colonies. Of particular importance is Padilla Bay, a National Estuarine Research Reserve, including the mosaic of wetlands and upland fields associated with the bay.

The primary purpose of the heron foraging study is to document heron feeding locations and concentrations, and to collect foraging data through the nesting season. Foraging surveys for herons have not been conducted in the Puget Sound since 2001 and 2004. Due to the large concentration of heron breeding and critical feeding areas in western Skagit County, there is a pressing need to update foraging data, and to clearly document localized feeding by the herons nesting on the edges of Padilla Bay. In addition, the location of major oil ports at March Point pose a high risk for oil spills into these feeding grounds increasing the need for informed advanced planning based on empirical data, for both heron and prey species.

Coordination

The 2015 Skagit Heron Foraging Study continues to be under the oversight of the Skagit Land Trust. However, efforts are underway to explore the transfer of the project to the new Coastal Volunteer Partnership (CVP), a consortium of five natural resource organizations. The CVP is based at the Padilla Bay NERR headquarters and would tie seamlessly into Padilla Bay research.

Currently, Regina Wandler of Skagit Land Trust is overseeing the project and provides the repository for original paper data forms and project records. The project volunteer coordinator is Matt Kerschbaum, and the science advisor is heron specialist, Ann Eissinger of Nahkeeta Northwest.

Volunteers

Citizen volunteers of the 2014 pilot study will continue this season. A total of 13 individuals attended the March 2015 orientation meeting, and of those 10 will volunteer for the project. In order to accomplish desired coverage of identified survey sites, the project needs a few more volunteers. Heron team members will attempt to recruit, and Tim Manns of Skagit Audubon

has offered to help in this effort. Of those participating most volunteers were trained by WSU Beach Watchers, U/W COASST, other citizen-science programs, or are retired professionals in the field of Marine Biology.

All individuals participating in this study are unpaid volunteers and are utilizing their own personal vehicles and equipment. All participants are completely responsible for their own safety, insurance and liability.

PROTOCOL

The following guidelines for the Skagit Heron Foraging are for the 2015 season.

Equipment-

Equipment needed for foraging survey include:

- Binoculars
- Spotting scope and tripod
- Clipboard
- Pencils
- Field form
- Field notebook (optional – for additional notes)
- Maps to write on (satellite view and road or nautical)
- Compass
- Camera
- GPS (for establishing site only)
- Tide chart (check in advance- use onsite to monitor tide levels)
- Snacks, water and personal gear
- Cell phone
- Chair or stool

Site Selection and Documentation-

Sites for the 2015 heron foraging study will be pre-selected and assigned to each volunteer. Matt (volunteer coordinator) will maintain a list of sites and volunteers (see attachment). Each site will need one main contact person, who will be responsible for ensuring that surveys are completed and all forms are sent in a timely manner.

All sites have been given a site code which will be used on all correspondence, forms, and emails. **Please refer to the 2015 Site List (attached) for the correct code and assigned volunteers.**

Forms-

All forms for the 2015 heron foraging study will be provided in both hard (paper) copy and electronic formats. Site Description and Volunteer Contact forms will be completed only once and at the beginning of the field season. Field Survey Forms and related attachments will be completed, one form for each survey. 2015 forms include:

1. **Site Description Form and attachments** (fill out one form per site - once)
2. **Volunteer Contact Form** (fill out one form per volunteer - once)
3. **Field Survey Form and attachments** (fill out form with each survey)

Site Description Form

At the beginning of the season each volunteer group will fill out one Site Description Form. The form is self explanatory. Use the site name, lat-long, and site code provided on the master site list. Should your Lat-Long differ from that of the master site list, advise Matt so that the master list can be corrected. In addition to the Site Description Form are two attachments:

1. An aerial map, labeled with site name and range of view
2. A panorama photo taken from the observation point

The site description should include directions to access the site, and a brief description of the site from the upland to the intertidal, for example: rural upland, natural shoreline, no bank, cobble backshore, gradual sloping intertidal, mostly mud. Ask for help in writing this description if you are unsure about terms or detail.

You may use the Word version of this form if you wish to just type in the information – then just email it to Ann as a Word Document with the attachments either embedded in the word document or as a separate file. Use the site code followed by “site description” as the file name. Or if you choose to print out the form and fill it in, once the form is completed scan as a PDF with attachments and email to Ann. Once Ann has reviewed your form and responded, send your original copy with attachments to Regina at the Skagit Land Trust for the project master file.

The site description form will ask for you to define the range of view from the observation point and describe if there are obstructions in your view. The range of view is the extent for which you can clearly see herons (using scoping scope or binoculars) from your post. Examine your site both on the ground and using an aerial view, such as Google Earth.

Take time to determine what your field of view is from the site and roughly sketch it on a map before attempting to portray it graphically. To graphically illustrate your range of view, use an aerial map identifying the observation point then show the approximate range of view using a sweeping line along the perimeter of your view. See generalized example below:



For an explanation to use Google Earth, please see the Google Earth attachment to this document.

Panorama Site Photo: With each site description form there is a request for a panorama photo from the observation site. If a photo was taken in 2014, please include the photo in your form submission. If a photo is not available, you or someone from the Skagit Heron Foraging Study group will need to take a photo and include it with the site description form and field-of view-aerial.

Additional Photos: To document your site thoroughly additional photos are encouraged. A photo of the uplands, or specific habitat features used by herons at the site would be useful.

Volunteer Contact Form

As a volunteer for this project, we would like to have your contact information, so we ask each volunteer to fill out a volunteer contact form. This information is for internal project use only.

Field Survey Form

The Field Survey Form is for each survey and should be filled out completely. The form is self explanatory. Please follow the field survey guidelines below. This form along with an aerial view indicating heron concentrations, flight directions and other detail should be submitted together as soon as possible after each survey. Notes of incidental observations made during the survey should be included as an attachment to the Field Survey Form.

Record Keeping-

All original records from the 2015 Heron Foraging Study will be sent to Regina Wandler at the Skagit Land Trust for safekeeping. Please print and send all original forms to:

Skagit Land Trust
1020 S. 3rd St.
Mt. Vernon, WA 98273
ATTN: Regina Wandler – Heron Foraging Data

All forms, survey notes, attachments should be scanned and emailed to Ann Eissinger for review: nahkeetanw@gmail.com

Heron Team members should keep electronic data backup of all completed forms for which they are responsible.

Correspondence-

All general correspondence for the project will be through Matt Kerschbaum volunteer coordinator. He will also have all forms, site information and protocol records. For project or survey questions also contact Matt. Matt will forward questions he cannot answer to Ann or to other parties who will respond directly to the person originating the question.

Email and Form Transmission

For all email correspondence, please place first in the email subject line: "Skagit Heron Team."

If you are emailing completed forms, please place in the subject line: "Skagit Heron Team Forms."

For all other correspondence, please place in the subject line: "Skagit Heron Team – *your topic*."

For all survey forms, other forms and attachments sent electronically as a PDF (photos may be JPEG), **please save-as or name your file as follows:**

(date) **mm.dd.year.sitecode** for example: **03.25.2015.sk.sambay.chuckm**

Always lead your file name with the date, followed by the site code, separated by a period. If you have more than one file to send for the same date, then add a number 1,2,3....after the site code, again separated by a period, i.e., 03.25.2015.sk.smbay.chuckm.1

To prepare a field form for transmission please do the following:

- Review all forms and attachments for completeness and correctness and legibility (PLEASE!)
- Scan your form(s) and attachments for each individual survey as **one single PDF document** if possible

Note: most scanners have the option for PDF and for multiple pages. Many times the multiple page option is through the computer interface with the scanner, however each machine is different. If there is a printer/scanner icon on your computer desktop, click on that to access the printer control. From this you should be able to open the scanner dialog box and select the options you need. If you are having difficulty go online and search for your scanner make and model to determine options – or call a friend to help. If all else fails, contact Matt for assistance.

If you do not have a scanner, or need assistance, you may check with the Skagit Land Trust office to see if someone there can help. Regina is not in the office much until June, after which time she will be available to help with scanning and copying.

Field Survey Guidelines-

The 2015 Skagit Heron Foraging Study will utilize a revised field protocol from 2014. This year (2015) we have streamlined the observations and provided greater definition.

Prior to setting out to perform your surveys remember to prepare in advance. Work in pairs or small groups. Identify and delegate tasks among surveyors. Select a volunteer in your group as the primary contact for your site.

Field Safety

The following are suggestions for general safety.

- Please work in pairs if possible and inform someone of your outing and location.
- Carry your cell phone.
- Drive safely and well off roadways.
- Stay off roadways and do not put yourself in harm's way.
- Avoid muddy or unstable beach footing.
- Ask permission to enter private property and inform owners of your schedule in advance.
- Dress for the weather and conditions, carry food/water.
- Carry equipment in a backpack to keep hands free while walking.
- Use a folding chair or stool if needed.
- Report any mishaps to Matt.

Think safety!

SURVEY TIMING

One of the most important aspects of the foraging survey is timing, including duration, tides and season.

Survey Schedule and Duration

The 2015 survey field season is **April 15 to September 1**, or about 20 weeks. During this field season, surveys will be conducted **every two weeks per site**, or every other week. A total of **10 surveys** are possible and optimal during this field season. We realize that vacation and other planned activities will compete with field time. If each site is surveyed 8 times during the season, that will be an acceptable minimum. Please spread out any gaps in the surveying or ask someone to fill in for you if needed.

The duration for each field survey in 2015 is **2 hours**. Each 2 hour survey will be divided into **15 minute increments** for 8 data collection periods during each survey. There are 8 lines on the survey form, one for each 15 minute survey period. For additional notes, you may add notes on another sheet and include the site code, date and your name. Include this with your survey form.

Scheduling for individual surveys should include optimal tide consideration for your site to view herons. It is assumed that 2014 provided an opportunity to determine the best time to view herons from your site. Please refer to last year's data sheet to check for both good and bad timing related to tide levels and herons observed.

Tides are important! A tide list identifying optimal low tide periods this season is included at the end of this protocol. Please note, the list (attached) is for Guemes Channel, so tides will vary between sites by nearly 1 hour, and in height as well, so use this for guidance only. Check the tide charts for your site specifically. The tides of each site vary depending on location, connecting water bodies and intertidal gradient (slope).

The best time to survey is usually on an ebb tide, when there is still a waterline visible since most herons will follow the water's edge on an out-going tide. Also, herons will be foraging in water that is several inches to over 1 foot deep. They will also forage in intertidal channels or pools if those features occur in your viewing area. An in-coming (flood) tide is usually not as productive as the out-going (ebb) tide, but may vary by site and on the nesting stage of the herons. Although low tide cycles are recommended for surveys, arriving at your site near the maximum low tide may result in a great view of tide flats, but no herons in view. So, **determine in advance what tidal range – in feet – will provide the best timing to view herons from your site**. This may mean going to your site, with the tide chart, for a day for a test run, just to watch the tide to understand the stages and maximum view potential.

Daily timing is important too. Morning surveys are best for avoiding heat waves, and also to capture the herons first feeding of the day, which can result in more herons concentrated on the feeding grounds at the same time.

Observers should watch for **juvinal heron** entering the feeding grounds beginning in June or early July. If visible from your site, record their occurrence and total numbers on the field form in the designated spaces. See attached heron seasonal chronology for reference.

SURVEY METHODS

As stated before, each survey will be 2 hours in length, divided into 15 minute observation periods. At the beginning of each 15 period, you will pan (visual sweep) the viewing area from your fixed point, using your spotting scope (preferable) with a rotating mount, or binoculars. The pan should be a complete sweep of your field of view, shoreline to shoreline. Pan slowly - from left to right, counting each heron within view. Record the total herons on your form. It helps for one person to pan and count out loud, while the other person records data. On the form there is a data line for each 15 minute period, plus notes.

During each 15 minute period, also observe heron fly-overs and record total numbers and direction of flight. Use a compass and record general direction in degrees. Please make notes if you are near a nesting colony, roost, or staging area, and are observing herons flying to/from one of those features. Also identify those features on your site map. Record your information on the field form. In the event that there are abundant flyovers at different times, at different directions, make note of each group and direction of flight on a separate sheet, in your field notebook, or on a preprinted map. Transfer the flight information to the aerial photo used to record the foraging info. Include a graphic representation of flight totals and direction on the aerial map to accompany each field form – see attachment for example.

If you need guidance or assistance with the field forms, mapping or recoding your observations, contact Matt with your questions:

Matthias Kerschbaum cherrytree2@comcast.net

2015 Protocol Prepared by:

Ann Eissinger, Wildlife Biologist
Nahkeeta Northwest
PO Box 2891
Corvallis OR 97339
Ph 360-770-6012
nahkeetanw@gmail.com

ATTACHMENTS

- Skagit Site List, Site Codes and Volunteer Assignments
- 2015 Low Tide List
- Puget Sound Shoreline Profile
- Heron Nesting Chronology
- Using Google Earth



Photo by Sue Ehler 2014

2015

Skagit - Heron Foraging Study - Site List

Date: 4/1/2015

| Waterbody | Landbase | Location Name | Site Code | Lat-Long | Site Contact (volunteer) |
|----------------|-----------------|---------------------------------|------------------|---------------------------------|---------------------------------------|
| Samish Bay | Chuckanut Drive | Taylor Shellfish | sk.sambay.taylor | 48° 36.616' N 122° 26.251' W | To Be Determined (TBD) |
| Samish Bay | Chuckanut Drive | Chuckanut Manor | sk.sambay-chuckm | 48° 36.089' N 122° 25.663' W | TBD |
| Samish Bay | Samish Island | Blau Oyster Co. | sk.sambay.blau | 48° 34.589' N 122° 30.281' W | Paul Dinnel, Ed Gastellum? |
| Samish Bay | Samish Island | Alice Bay B&B | sk.sambay.alice | 48° 34.117' N 122° 29.428' W | TBD |
| Padilla Bay N | Samish Island | Therese Ogle | sk.padbay.ogle | 48° 33.957' N 122° 30.585' W | Therese Ogle |
| Padilla Bay NW | Hat Island | Hat Island | sk.padbay.hat | 48° 36.445' N 122° 35.797' W | Sue Ehler, Lin Folsom |
| Padilla Bay N | Bayview-Edison | Merritts? | ?? | TBD | Ken Gard, Pat Steffani |
| Padilla Bay E | Bayview | Padilla Bay NERR | sk.padbay.nerr | 48° 29.597' N 122° 28.970' W | Ken Gard, Pat Steffani |
| Padilla Bay E | Bayview | Bayview State Park | sk.padbay.baysp | 48° 29.256' N 122° 28.899' W | Ken Gard, Pat Steffani |
| Padilla Bay W | March Point | T-Baily | sk.padbay.tbay | 48° 28.147' N 122° 32.239' W | Sue Ehler, Matt and Bonnie Kerschbaum |
| Padilla Bay W | March Point | Four-H Machine | sk.padbay.4h | 48° 28.147' N 122° 32.387' W | Sue Ehler, Matt and Bonnie Kerschbaum |
| Padilla Bay W | March Point | Cowgill | sk.padbay.cow | 48° 28.724' N 122° 32.755' W | Sue Ehler, Matt and Bonnie Kerschbaum |
| Fidalgo Bay E | March Point | E. Tommy Thompson Trail Trestle | sk.fidbay.etttt | 48° 28.612' N 122° 34.369' W | Paul Dinnel, Lin Folsom, Jazz Morgan |
| Fidalgo Bay W | Fidalgo Island | W. Tommy Thompson Trail Trestle | sk.fidbay.wtttt | 48° 28.758' N 122° 34.792' W | Paul Dinnel, Lin Folsom, Jazz Morgan |
| Fidalgo Bay W | Fidalgo Island | Fidalgo RV Park | sk.fidbay.fidrv | 48° 28.975' N 122° 35.491' W | Paul Dinnel, Lin Folsom, Jazz Morgan |

**2015 Low Tide Periods for Heron Monitoring
(based on Guemes Channel station):**

April

7 +0.3 @ 1312
 8 0.0 @ 1353
 9 -0.1 @ 1439
 10 0.0 @ 1530
 11 +0.1 @ 1628

 18 0.0 @ 1053
 19 -0.8 @ 1130
 20 -1.2 @ 1220
 21 -1.2 @ 1305
 22 -0.9 @ 1400

May

5 -0.9 @ 1205
 6 -1.2 @ 1243
 7 -1.2 @ 1325
 8 -1.1 @ 1410
 9 -0.8 @ 1500

 16 -0.6 @ 1000
 17 -1.4 @ 1034
 18 -1.9 @ 1115
 19 -2.0 @ 1157
 20 -1.8 @ 1240
 21 -1.4 @ 1323
 22 -0.7 @ 1409

June

1 -1.0 @ 1029
 2 -1.5 @ 1103
 3 -1.9 @ 1140
 4 -2.1 @ 1220
 5 -2.0 @ 1304
 6 -1.7 @ 1349
 7 -1.0 @ 1438

 13 -0.7 @ 0856
 14 -1.4 @ 0937
 15 -1.9 @ 1017
 16 -2.1 @ 1057
 17 -2.1 @ 1137
 18 -1.8 @ 1218
 19 -1.3 @ 1258

June, continued

29 -0.8 @ 0925
 30 -1.5 @ 1001

July

1 -2.0 @ 1039
 2 -2.4 @ 1119
 3 -2.4 @ 1202
 4 -2.1 @ 1245
 5 -1.5 @ 1331
 6 -0.6 @ 1418

 12 -0.9 @ 0838
 13 -1.4 @ 0922
 14 -1.6 @ 1003
 15 -1.6 @ 1042
 16 -1.4 @ 1120
 17 -1.1 @ 1158
 18 -0.6 @ 1236

 28 -0.8 @ 0853
 29 -1.4 @ 0935
 30 -1.9 @ 1017
 31 -2.0 @ 1059

August

1 -1.9 @ 1143
 2 -1.3 @ 1227
 3 -0.5 @ 1312

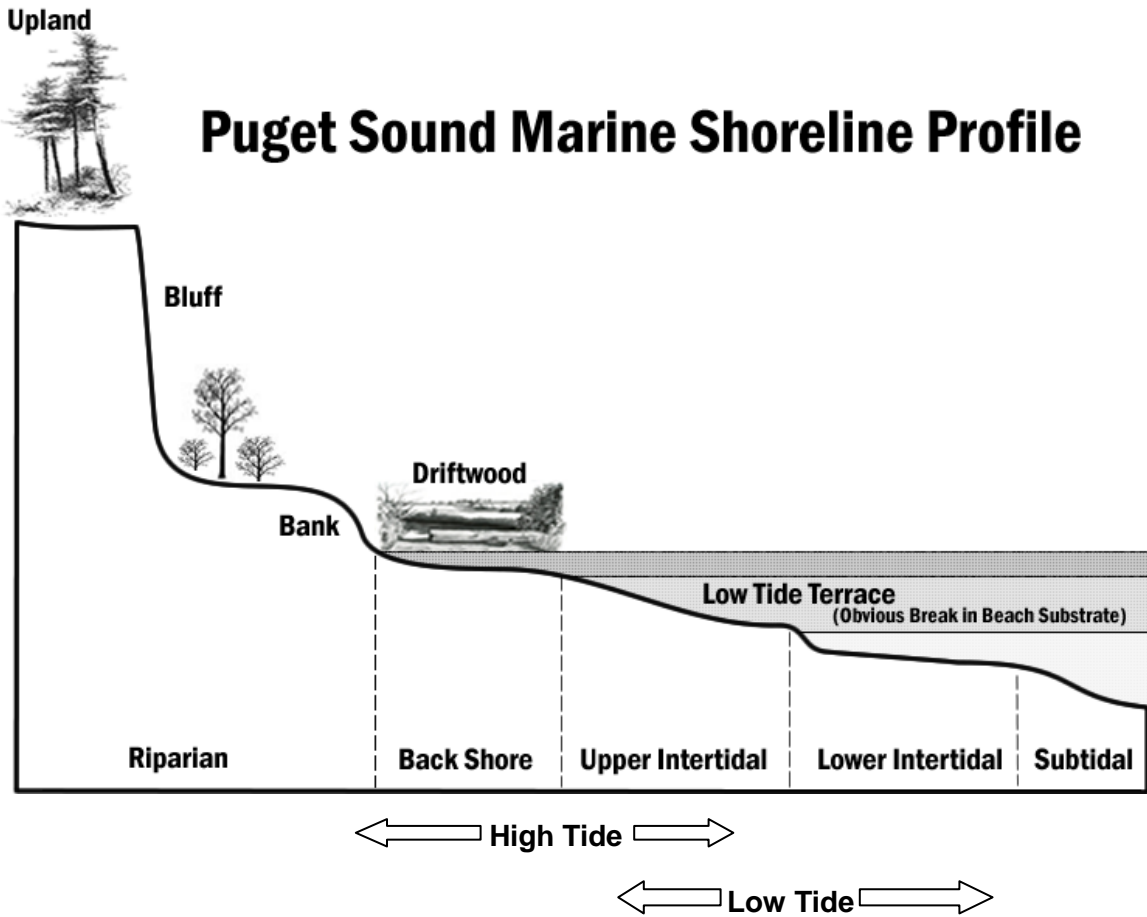
 9 -0.2 @ 0722
 10 -0.5 @ 0817
 11 -0.6 @ 0905
 12 -0.6 @ 0948
 13 -0.5 @ 1026
 14 -0.2 @ 1103

 26 -0.4 @ 0819
 27 -0.8 @ 0907
 28 -1.0 @ 0953
 29 -0.9 @ 1038
 30 -0.5 @ 1122

September

7 +0.4 @ 0645
 8 +0.5 @ 0748
 9 +0.6 @ 0842

 24 +0.3 @ 0742
 25 +0.3 @ 0836
 26 +0.5 @ 0925



Heron Nesting Chronology

| Month | Late Feb | March | April | May | June | July | August |
|---------------|------------------------------|--|------------------------|---------------------------|---|-------------------|---------------------------------------|
| Nesting Stage | staging (outside the colony) | colony reoccupation, pairing/courtship | egg laying, incubation | hatching, rearing young | rearing, early fledging in late June possible | fledging of young | fledging – dispersal end of season |
| Duration | varies | courtship varies, copulation to egg laying 7-10 days | incubation 28 days | young in the nest 8 weeks | young in the nest 8 weeks | varies | varies |

Using Google Earth

Using Google Earth is easy, and it is free.

Requirements: You will need a good internet connection – don't try this with dialup! When opening Google Earth – it will define what the system requirements are for your computer. Please read and determine whether your system is compatible. Once you have determined you can use Google Earth then continue.

First you will need to load Google Earth and place the shortcut icon on your desktop for easy access.

If you have not used Google Earth, I strongly suggest reading through or watching the introduction tutorials.

To find your site click on the globe, use the curser hand to locate the general area then double click to zoom-in and single click to stop. You may have to repeat that process several times zoom-into your site.

Once you are looking at your site and surrounding area – zoom into around 10-15,000 ft (indicated in lower right corner of screen) to examine your site area before setting the site location marker.

To mark your location, go to the task bar above the image and click on the box with the yellow tack icon – when you mouse over it, it will read “add placemark” - single-click on that box and a bright yellow tack will begin flashing on your screen and a task box (New Placemark) will open. Next you will need to name the site, place the tack on the site and adjust tack size and color as you wish.

- To place the tack on the site simply place your curser hand on the big flashing tack, click once and hold down and move the tack into place, then release. You will need to zoom in more to see your actual observation point location. Be as precise as possible, because this point will define the lat-long for your site. Once the tip of the tack is on your site, you can adjust the size and shape of your tack (it should still be flashing).
- To change tack size or shape – go to the tack icon in the New Place task box (upper right) and single-click on the icon – that will open to a pallet of tack shapes and colors. Choose one and adjust the color and scale as needed by clicking on the boxes at the top of the icon box. Click on “Ok” when you are done. The tack will still be flashing and the New Placemark task box will still be open.
- Next you will need to Name your site – by clicking on the Name box in the New Placemark task box, and type in your site code, then click OK and the site mark and name will be set. The name of the site will show in the “Places” list to the right of your screen. The Placemark may also be used to mark and label other habitats or important features within your survey area.

- To create a range of view from your site, I suggest using the New Path option. In the task bar to the right (2 boxes) from the Place Mark is the “New Path.” Click on New Path and type in Range of View as the name. Then click on Style and Color and select a bright color, then increase the width to 2.0, then while the task box is still open (you may need to move the box over by clicking and sliding it) – start setting the outline of your range of view by clicking points on the map – all of which will connect with a line forming the outer limits of your range of view. To undo the previous line and point – right click. When you are done click OK at the bottom of the New Path task box.
- If you make an error after setting the site point or new path there is no “un-do” that I know of. However, if the Placemark, New Path or other task window is still open and you want to start over, just click on “Cancel” and that will erase your work (that you have not saved) in that particular window and then you can start over. Once you click “OK” the in the Place or New Path windows, that point or path will be saved. The best thing to do is play with the tools, create a test image and simply delete what you don’t want to keep. On the left side of the screen all of the points and paths are saved – there you can simply click on the point you don’t want and then right click, then select delete.
- To save your aerial - the image on your screen – go to the task bar with the tack and new path etc, above the image, to the right of the printer icon is “Save Image” click on Save Image and a Save As box will appear. Select the location you want your image to go to (a file or the desk top) on your computer, then type in the image name such as “your site code.image” the hit save. The file will be saved as a Jpeg file which is fine.
- All your points and markers will be saved in the “Places” column to the left of the image on the screen. Those will be saved when you close Google Earth.

Please note that I am not an authority on Google Earth and there may be easier or more reliable ways to work with Google Earth. There are also other programs that some volunteers use, and that is fine too. Use what works best for you!

THANKS!!

Ann E.