Volunteer Packet - 2022

Questions regarding this packet should be directed to:

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Introduction

The great blue heron (*Ardea herodias*) is often touted as one of the most widespread and adaptable wading birds in North America, and it certainly is no stranger to Maine. They can be seen foraging in tidal marshes, along riverbanks, and even in open grasslands. Though they tend to forage alone; their nesting habits are the complete opposite. Colonies can contain anywhere from a few pairs to several hundred, and often multiple nests occupy the same tree. Location of a colony is somewhat predator driven, but is also determined by the proximity of quality foraging habitat. In addition, human disturbance can be a real threat to a colony's continued occupancy.

Recent observations have indicated that colonies in Maine may be declining. Colonies that once held scores of active nests, have dwindled to a few pairs or have been abandoned altogether. Have the birds simply redistributed themselves across the landscape, occupying different sites that support fewer pairs, or is there a true decline in the number of breeding "great blues"? North American Breeding Bird Survey data for Maine indicates a significant declining trend (-5.5, $P < 0.02$, $N = 35$) in the number of birds detected between 1980 and 2007. Although most would still argue the great blue heron is a common sighting in Maine, this declining trend is somewhat alarming. Consideration of this decline, evidence of fewer active nests in recent years, and observations of predation by an increasing eagle population prompted MDIFW to list the great blue heron as a state Species of Special Concern in 2007. Unlike Endangered or Threatened status, Special Concern is an administrative category established by policy, rather than by regulation, and is used for planning and informational purposes only. Basically, it's a way of saying, "let's keep an eye on this species and make sure it's not really in peril."

In 2009, MDIFW conducted a nearly statewide census of nesting great blue herons and other colonial wading birds. Over 180 historical sites were checked and 73 new sites were discovered during the surveys or as a result of information provided by the public or other biologists. Biologists also visited 38 colony sites on the ground to help verify colony locations and to gather more precise counts of active nests. In addition to surveying colonies from the air and the ground in 2009, MDIFW chose to engage volunteers in the process of monitoring active colonies over time. Thus, the Heron Observation Network (HERON) was developed.

HERON is a volunteer-based adopt-a-colony program in which volunteers observe one or more active wading bird colonies one to five times during the breeding season and record information regarding the number of active nests. Great blue herons build large stick platform nests from 6-90 ft up in dead or live trees. Besides the number of active nests for each species, volunteers can record information regarding the nesting stage of the nests and any human or ecological disturbances to the colony. The data collected by HERON volunteers will be used to assess the breeding populations of colonial wading birds over time, identify and prioritize ecologically important areas, inform environmental review and landscape planning activities, and provide insights into nesting habitat selection. In addition, the hours and miles contributed by HERON volunteers will provide an important source of match for leveraging federal funds for future monitoring and research programs.

Logistics

Those interested in becoming a HERON volunteer should contact Danielle D'Auria, who will then assign one or more colonies for adoption, and provide the monitoring protocol, datasheets, and instructions to access the Citizen Science Portal.

Volunteer Hours and Mileage

MDIFW relies on several outside funding sources for much of its work; and is often asked to provide a source of matching funds or in-kind services. Volunteer hours and mileage, if documented properly, are considered a valid match. We now have a fillable pdf version of our Volunteer Assignment Agreement,

which only needs to be completed by those who have not done so in the past or if any of the following has changed:

- Your address and contact information,
- Your insurance company (if you opted out of MDIFW's Accident Plan),
- Your choice to enroll in or opt out of MDIFW's Accident Plan, or
- Your emergency contact information.

Danielle will contact all volunteers for whom we do not have an Assignment Agreement on file. The form can be found in two places on the internet:

1) On the Citizen Science Portal's Heron Observation Network Program page (scroll down to thebottom to find the link). Direct link is: https://ifw.citizenscience.maine.gov/HERON_Volunteer_Agreement_Form_OnlineEnabled.pdf OR
2) On the blog's File Cabinet page as a link. Direct link is: https://www.maine.gov/ifw/blogs/sites/maine.gov.ifw.blogs/files/4/2018/09/HERON-Volunteer-Agreement-Form_OnlineEnabled.pdf.

The volunteer form identifies the project and basic skills and expectations of the volunteer, and gives the volunteer the opportunity to be covered by MDIFW's Accident Plan for free. If the volunteer has their own insurance, there may be no need for this additional coverage. Please be aware that all information provided on these forms is confidential.

There are three pages to the fillable form. The first two pages are fillable and need to be completed; the third page provides insurance information. Please follow these instructions for completing the fillable form:

Page 1 – The HERON volunteer needs to complete the top portion with name and contact information.

Page 2 – The HERON volunteer needs to complete the Insurance section, and emergency contact information. MDIFW's Accident Insurance Policy is available to the volunteer at no cost. If the volunteer does not opt to be covered by MDIFW's Accident Plan, then the volunteer should provide the name of his/her insurance company.

To submit the form – Please check both boxes, fill in the date and send to danielle.dauria@maine.gov by doing one of the following:

- Click the Email Form button. This will only work if you have a default email program identified such as Outlook or Windows LiveMail on your computer. If you access your email through a web browser, this button will likely not work.
- Click the Save Form button. Save the form as a pdf to your computer. Then open your email program, start a new email addressed to Danielle.dauria@maine.gov, and add the form as an attachment to the email and send.
- Click the Print Form button. Print the form and mail to Danielle D'Auria, Maine Dept. of Inland Fisheries and Wildlife, 106 Hogan Rd, Suite 1, Bangor, ME 04401.

There are two ways a volunteer can properly document their time and mileage:

1) by entering the time and mileage directly into the new online Citizen Science Portal along with your observation data (instructions begin on page 9); or
2) by recording your time and mileage on your paper data sheets (instructions begin on page 6) and either scanning and emailing those to Danielle.dauria@maine.gov, or mailing them to: Danielle D'Auria, Maine Dept. of Inland Fisheries and Wildlife, 106 Hogan Rd, Suite 1, Bangor, ME 04401.

Choosing an Observation Location

Most often volunteers will be assigned colonies that are convenient for them to monitor (i.e., within a reasonable distance from their place of residence) or that they have observed themselves in the past. If needed, Danielle will help the volunteer choose an appropriate location from which to observe the colony without causing disturbance to the birds. Nesting herons can be extremely sensitive to human disturbance, and may even abandon a colony as a result of human intrusion. From the onset of courtship behavior through fledging, it is extremely important to keep a distance of 200 m (656 ft) from the colony.

For this reason a spotting scope can be extremely helpful for a clear view of the colony. Sometimes a closer distance is ok, but it depends on the colony and how much human disturbance the birds are used to. More than one point of observation may be needed in order to count and age the young in a nest accurately.

Landowner Permission

Volunteers should obtain landowner permission for any land accessed as part of the Heron Observation Network program, and especially land that is posted. This may require visiting a town office to determine the landowner and his/her contact information. Any landowner information for the colony site or land accessed to get to the colony site should be provided to Danielle D'Auria to keep on record for future monitoring. If help or advice is needed in obtaining landowner permission, don't hesitate to contact Danielle D'Auria.

Timing of Observations

Volunteers planning to observe the colony on several separate occasions throughout the breeding season in order to document productivity should try to begin in May and space out their observations such that they are 1-2 weeks apart, ending in August when most young start to fledge and thus increasingly lose their ties to the colony. This will provide useful information regarding the number of nesting attempts and the success of these attempts. If a volunteer plans to visit the colony only once, they should consider the visibility of the colony when deciding when to observe. For instance, if the colony nest trees are mostly live hardwoods, active nests may be difficult to see once the trees have leafed out; therefore, a one-time visit should take place in early May. Conversely, if the colony nest trees are primarily dead and easy to see throughout the season, a visit closer to early June may get a more accurate count of the peak number of active nests.

Submitting Data Sheets and Photos

Data collected by volunteers and recorded on the HERON data sheets should be submitted online (see instructions on page 9) or by email or mail to Danielle D'Auria as soon as observations for that breeding season have ceased. The preferred method for data submittal is our online Citizen Science Portal. However, Microsoft Word and fillable pdf versions of the data sheets have also been provided for electronic submittal via email (danielle.dauria@maine.gov). Any photos of the colony, nest trees, or birds should also be mailed or emailed with a note describing the photo's subject(s), including the colony number, date the photo was taken, photographer's name, and whether or not it can be used by MDIFW with credit to the photographer. Photos can be very useful if there is a question about behavior or age of the birds. For those conducting productivity observations, a map or photo of the colony with labeled nests (numbers) may be helpful for the observer, but it does not need to be submitted to Danielle.

Detecting Disturbance

When nesting herons perceive a threat, they generally defend their nest with a steady escalation in alarm. At first, herons become alert and silent, but as a perceived threat continues to increase they vocalize, first with repetitive "chortle" or "cluck" calls, followed by loud prolonged squawks (depending on the level of perceived threat), or hopping off their nests or flushing from the nest site. They will often circle above the nest trees until the threat has ended. An unusual, loud, or rapid disturbance may cause herons to immediately flee rather than show a progression in alarm.

If the volunteer believes his/her presence is causing birds to leave their nests, alarm call, or flush from the site, they must leave and choose an alternative location for subsequent observations. Some colonies may be impossible to observe without causing disturbance; in such cases, these colonies will not be monitored by volunteers. It is not worth the risk of causing abandonment of a colony.

Completing the Data Sheets

Note: There is a set of completed data sheets for a hypothetical colony included in this packet as an example.

Visit Summary

Observer Name: Your first name and last name.
Colony #: Unique number assigned by MDIFW.

Survey Date: Date of your observation, mm/dd/yyyy. A new set of data sheets will need to be completed for each colony visit. Please do not visit colonies more often than once a week.

Total Survey Mileage: This is the number of miles you drove (to and from) in order to complete the survey. For multiple surveys on the same day (if you visit more than one colony), please divide your mileage across the surveys. (Number must be between 0 and 300)

Hours: This is the number of hours spent to get to and from your colony (by car and on foot), as well as your time observing the colony. For multiple surveys on the same day (if you visit more than one colony), please divide your travel time across the surveys. If your total time is 3 ½ hours, you will record 3 hours in this field and 30 minutes in the next field. (Number must be between 0 and 10)

Minutes: This is the number of minutes (in addition to the hours) spent to get to and from your colony (by car and on foot), as well as your time observing the colony. For multiple surveys on the same day (if you visit more than one colony), please divide your travel time across the surveys. (Number must be between 0 and 59)

Observation

Inactive Nests: These nests will appear in disrepair or be empty for the entire length of your observation.

Active Nests: These nests will contain at least 1 adult or young either in the nest or immediately adjacent to it (e.g., adult repairing nest, young getting ready to fledge). If the colony is active, this must be >0. If the colony is inactive, be sure to write in 0.

Note: The number of inactive nests plus the number of active nests should equal the total number of nests you observe. If a nest is occupied by another species such as a great horned owl or osprey, do not include it in the tallies for inactive or active nests. Instead, make a note of the additional nesting species in the Osprey section and/or the Notes section.

Nests in Incubation Stage: These nests will be characterized by an adult incubating eggs. Both members of the pair incubate the eggs, and incubation begins shortly after the first egg is laid. Incubation may be indicated by the following observations:

- Adult sits very low in nest and remains very still.
- Each incubation shift may last for several hours interspersed with periods of egg turning every few hours.
- Colony tends to be very quiet except for the gurgled greeting of an adult coming in to relieve its mate of incubation duties.
- When mates switch duties, the adult in the nest may rise, step to the rim of the nest and fly off as the incoming adult lands on the edge of the nest.

Nests with Young Visible: This is the number of nests with young that are visible on this visit date.

- Newly hatched young are quite small (~50 grams) and are mostly naked except for a few sparse patches of down. Although nestlings begin calling (tik-tik-tik sounds) within minutes of hatching, they may not be visible when they are this small, therefore a nest with newly hatched young may be indicated by the following:
  - Adult coming in to nest will likely be coming in to feed the young, and will stand on the edge of the nest first, and will try to regurgitate its food by retching its neck and throat. It will then lean down into the nest to place the regurgitated food into the bill of a young bird. This may take as long as 5 minutes.
  - After feeding very small young, the adult may "arrange" the young with its bill and settle very carefully to brood them.
  - If only coming in to brood the young (and not feed them), the adult may alight on the edge of the nest and look down into the nest for several minutes before carefully settling down to brood.
  - When brooding, the adults appear more active than when incubating. They tend to shift their position, preen and snap their bills more often.
- Older young (2+ weeks old) will likely be visible and audible. Common behaviors you may see include:
  - The young make a clacking noise that usually increases in tempo and volume as an adult approaches the nest.
  - Young will grab at adult's bill as it regurgitates food. When the food is in the throat of the adult, the young may thrust its bill into the throat of the adult.

- After feeding, adult may brood young or may fly from the nest or perch on a neighboring limb to rest or preen.
- As young grow, the adults may drop food into the nest rather than feed from the bill.
- Young may preen themselves and each other, jab each other with their bills, and grasp each other's mandibles and seesaw.

Nests, Stage Unknown: This is the number of nests for which the nesting stage is unknown due to behavior that is difficult to interpret, or an incomplete view of the nest preventing the determination of the nesting stage.

Note: the number of nests in the incubation stage, plus the number of nests with young visible, plus the number of nests stage unknown, should equal the total number of active nests you observe.

Young Visible: This is the total number of young seen in nests for the entire colony.

Fledglings: This is the total number of fledglings seen out of nests for the entire colony. Be sure to also include the # fledglings seen within the colony that were not near a nest (that you did not know which particular nest they originated from). About 8 weeks after hatching the herons will fledge and may still be within the colony but not at a nest. They will first "branch out" by moving to the limbs near the nest. Fledglings can be identified by a gray crown, dark upper bill, brownish feathers along the neck (rather than black and gray), rusty brown edging to feathers on wing and back, and a lack of body plumes; whereas adults have a white crown stripe and black plumes that extend from the eye, a yellowish bill, dark flight feathers, and "shaggy" feathers on the neck and back.

*# Adults: This is the total number of adults seen in the entire colony – includes adults at nests, perched in other locations, or flying around.

Bald Eagles: This is the number of bald eagles detected during your visit.

Description of bald eagle activity: If one or more bald eagles were seen during your visit, describe their behavior (e.g. flyover at high altitude; flyover just above treetops; perched on edge of colony; stooped toward heron on nest).

Ospreys: This is the number of ospreys detected during your visit.

Description of osprey activity: If one or more ospreys were seen during your visit, describe their behavior (e.g. flyover at high altitude; flyover just above treetops; actively fishing; nesting within colony; antagonizing adult heron).

Description of heron response to eagle(s) and/or osprey(s): If bald eagles or ospreys were seen during your visit, describe how the herons responded to their presence. This may include reactions such as standing erect as if on alert, flushing, cowering in nest, not affected, vocalizing, etc.

Notes: Use this space for documenting additional details or other noteworthy observations. Include any observations of human or natural disturbances such as low-flying aircraft, boats (describe type), people on foot, vehicular traffic, nearby construction noise or activity, potential avian or mammalian predators (such as great horned owl, bald eagle, raven, crow, raccoon) and extreme weather events (wind or rain that damages nest trees, blows nests out of trees or young out of nests, etc.). This is where nesting activity by great horned owls within the colony should be noted.

Page # of total # of pages: First blank is the page number; second blank is the total number of pages for this visit on this date. The total number of pages should include any Productivity sheet(s).

Productivity

Volunteers can choose to collect detailed information regarding colony productivity. Over time, productivity measures can help determine the effects of land use changes, document effects of contaminants or diseases, and measure whether a population is reproducing well enough to sustain itself, given existing rates of survival. Observers may choose to create a map or photograph of the colony with nests labeled to help them keep track throughout the season; this does not need to be submitted to Danielle. For each nest that the observer can see well, the nest status, nesting stage, and the number and age of young will be recorded. In order for productivity data to be useful, it is important to obtain nestling numbers for each nest at 1-2 weeks of age and close to fledging (6-8 weeks of age). Behaviors that characterize the different nest stages are detailed under the instructions for the Observation section of the data sheets.

This Productivity data sheet is entirely optional and should only be completed if the observer is interested in tracking the status of nests throughout the season. A minimum of two colony visits are needed for this type of data collection. During all visits, it is very important to observe each nest from the same

location(s) and to keep track of which nest you are viewing so that reliable measures of that nest's productivity can be recorded (i.e., the number of chicks hatched that fledge at the end of the season). (Note: it is not required to record nest status/stage for every nest in a colony – only choose to do those nests you can see well; it is up to you to decide whether you want to observe from more than one location.)

Observer Name: Your first name and last name.
Colony #: Unique number assigned by MDIFW.
Survey Date: Date of your observation, mm/dd/yyyy. A new set of data sheets will need to be completed for each colony visit. Please do not visit colonies more often than once a week.

Colony Maps and Photos

You are no longer required to submit a photo or hand drawn map of the colony, but you may still want to create one for your own use. On the photo or map, you can label each nest with a number (1, 2, 3, etc…). By keeping the nest numbers constant throughout the breeding season, you can track productivity for that individual nest along the way. If nothing has changed from one visit to the next (no nests have appeared or disappeared), use the same photo or map from the previous visit.

Nest-Specific Information

There will be one row completed for each nest. If you are tracking productivity for more than 16 nests in a colony, use additional Productivity data sheets.

Nest (#): Nest number, as labeled on your map or photo.
Status: The status of the individual nest is whether the nest is active (**A**) or inactive (**I**). Active nests will contain at least 1 adult or young either in the nest or immediately adjacent to it (e.g., adult repairing nest, young getting ready to fledge). After a nest has fledged, if the adults and fledglings are not near the nest, the nest may be considered inactive.
Stage: If the nest is active, record the nesting stage. Please see the nest stage descriptions under instructions for the first page (Observation). Nest stage codes to be used include:

INC **INC**ubating - a heron is in a continuous crouched position, incubating eggs.

YNG **Y**ou**NG** are in the nest. You can see nestlings, or movement that would indicate nestlings are present. Record the number and age of chicks in separate columns.

FLN **FL**edglings **N**ear nest. Use **FLN** if you observe fledglings near a nest, and then indicate the number in the # of Young column. If there are some young in the nest and some fledglings near the nest, count them all as **YNG**. If there are no young left in the nest, count them all as **FLN.**

U Nest stage is **U**nknown due to behavior that is difficult to interpret, or an incomplete view of the nest preventing the determination of the nesting stage. Nest stage can only be considered unknown if it is also thought to be active. An inactive nest does not receive a nesting stage at all.

Young in Nest: This is the number of young in the nest and/or fledglings near the nest. It is helpful to count heads or bills of young in the nest.
Age of Young: # weeks old based on the nestling illustrations provided in this volunteer packet. The illustrations give a range such as 1-2 weeks, but online data entry will only take a single number. Thus, do your best to estimate the number of weeks given what you have seen during prior visits and the range given for the illustrations.

Online Data Entry thru Citizen Science Portal

MDIFW now has an online Citizen Science Portal for volunteers to enter their data. The goal of this portal is to make data transfer from volunteers to project leaders quick and easy, while providing volunteers and the public an interactive map for viewing colonies and corresponding data. The portal includes the following features:

- Volunteers have their own username and password to access the portal and securely enter their colony observations.
- Submit New Survey feature allows volunteers to submit colony observations as well as their volunteer time and mileage.
- Interactive map showing colony locations across the state, with the ability to search for a colony by its number, status (active or inactive), and date range (in years).
- Interactive map also has various basemap options including topographic, streets, relief, and imagery.
- Interactive map allows viewers to click on a colony and display the data from all past visits and quickly scan the colony's activity history.
- Links to important documents and resources relevant to the Heron Observation Network can be found at the bottom of the page.

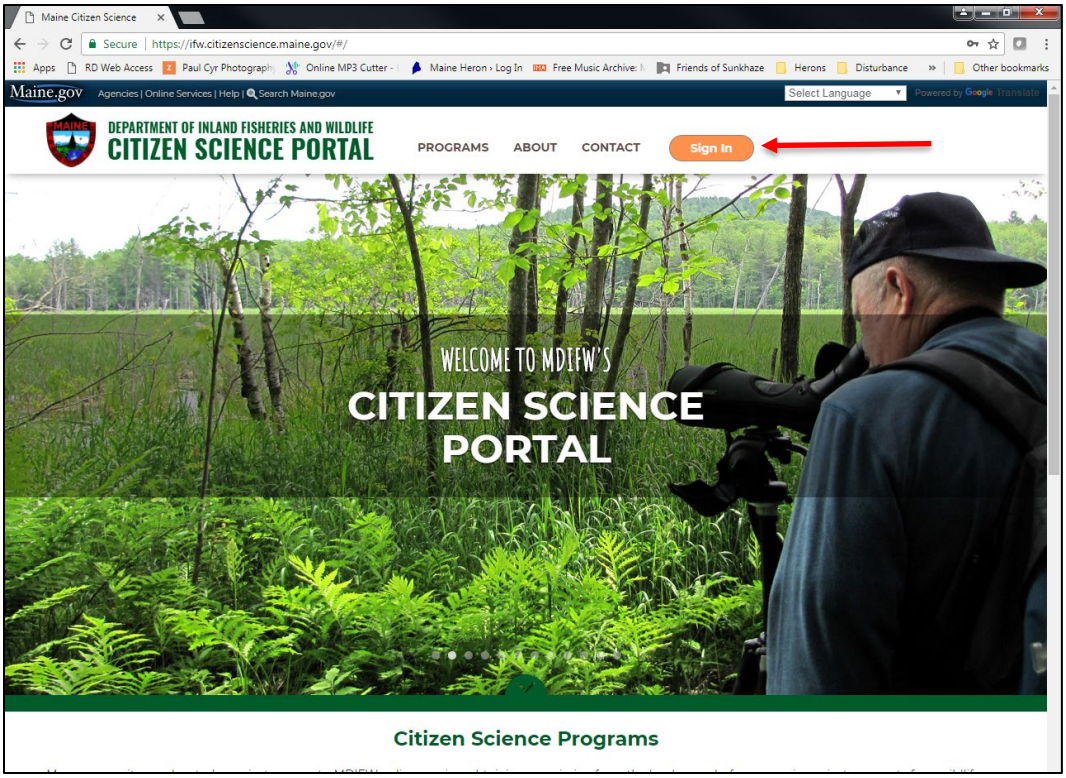
Submit a Survey

If you are a new user (have not used it before), you must first follow these steps to start using the Maine Citizen Science Portal:

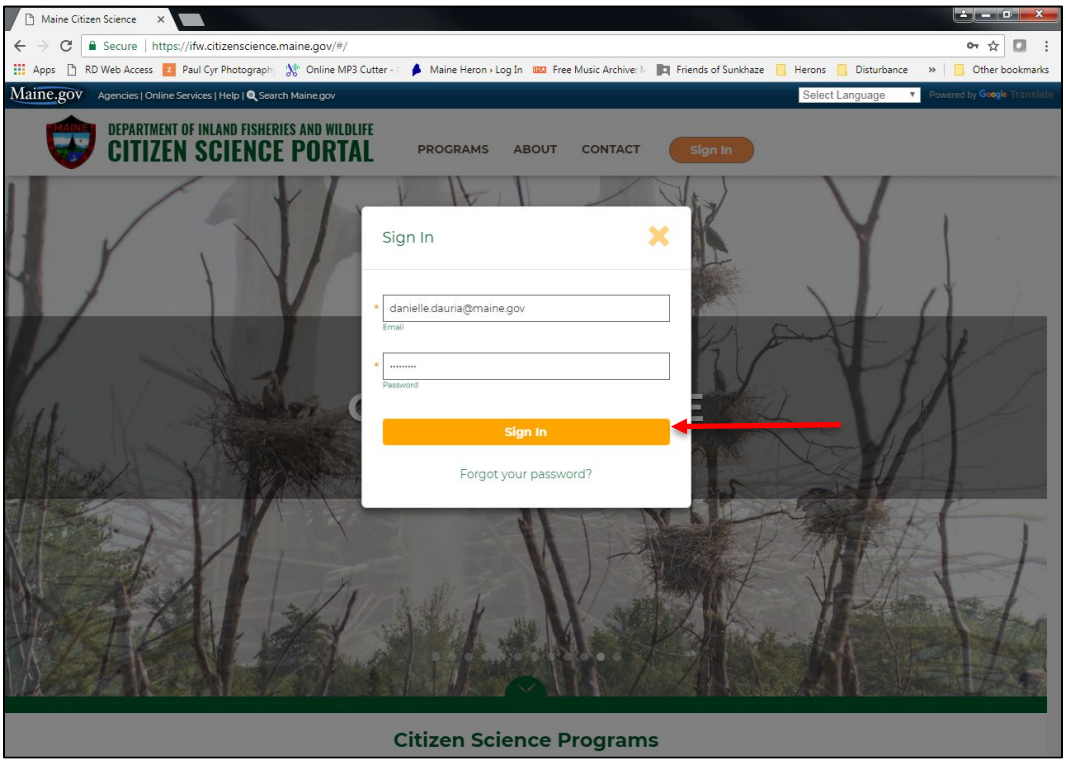
1. Go to the URL: https://ifw.citizenscience.maine.gov/#/
2. Click on 'Sign In'
3. Click on 'Forgot your password?'
4. Enter the email address you have used to communicate with Danielle D'Auria regarding the Heron Observation Network.
5. Check your email inbox to receive an email with a link to reset your password.
6. Reset your password using the link.

Once you have reset your password as instructed above, you can log in and begin using the portal. To do so, follow these instructions:

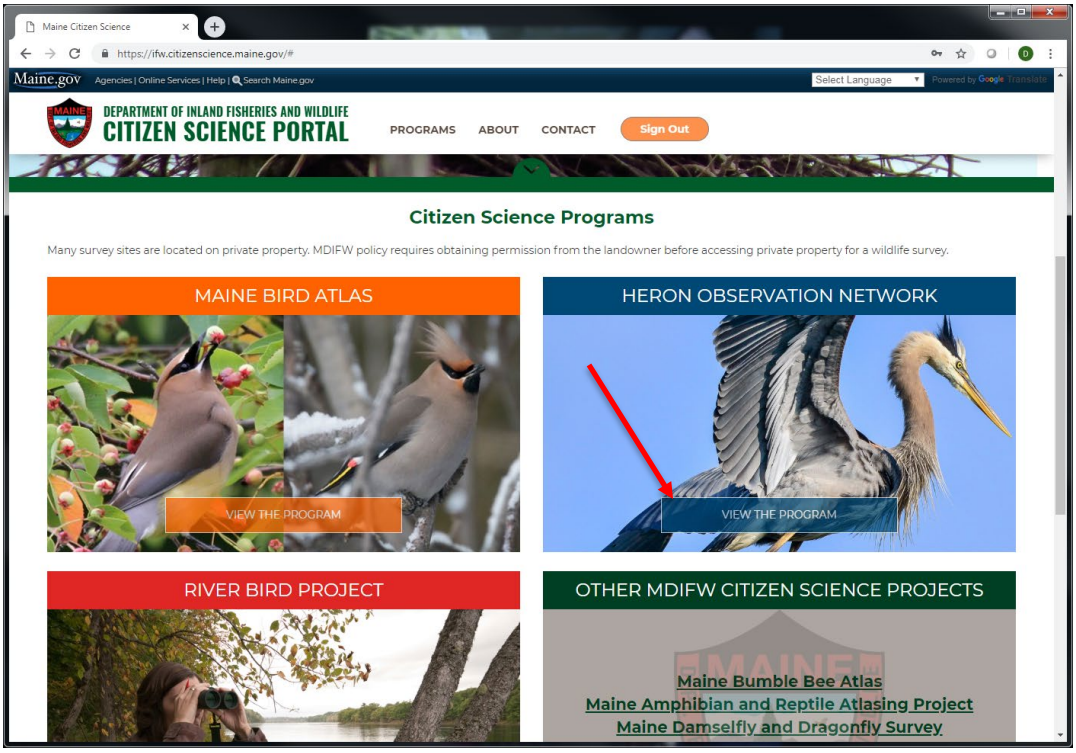
1. Go to the URL: https://ifw.citizenscience.maine.gov/#/
2. Click on 'Sign In'



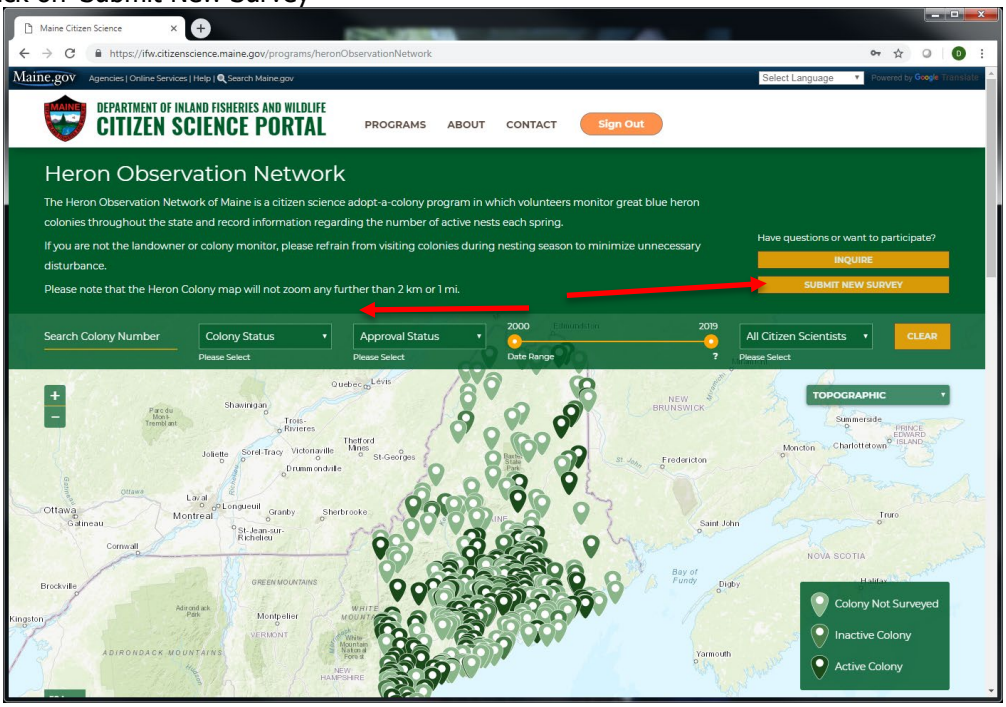
3. Enter your email address and password and Click 'Sign In'



4. Scroll down to the blue Heron Observation Network box, and click on 'View the Program'

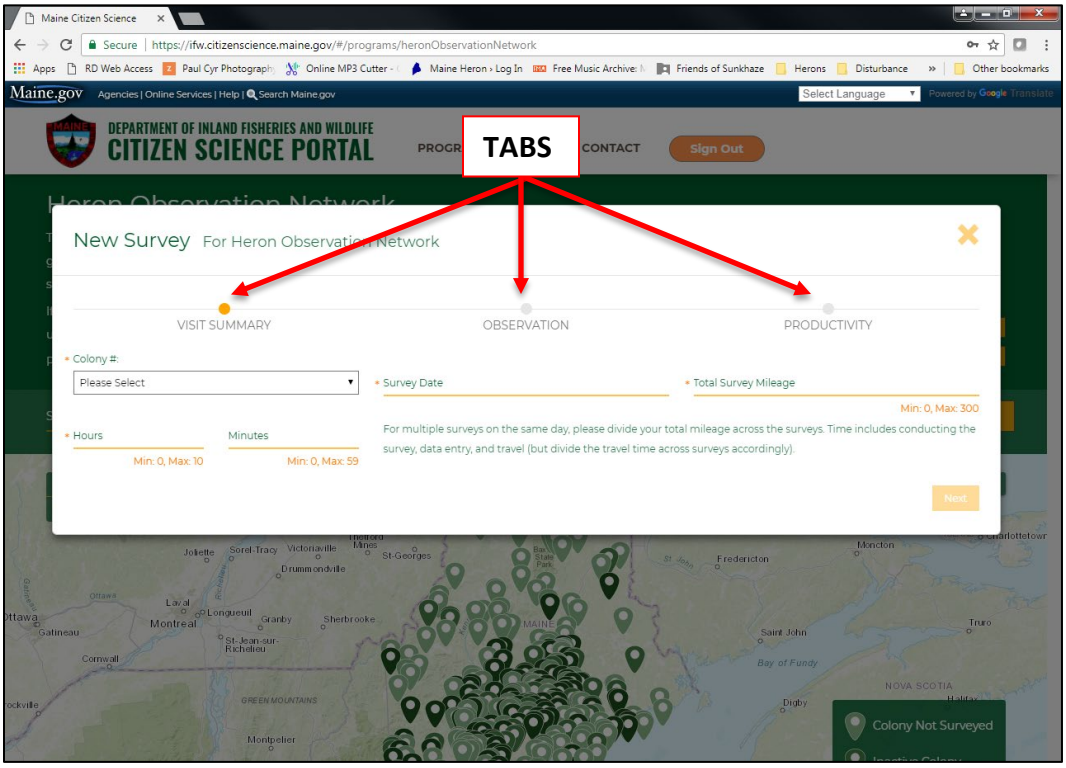


5. Click on 'Submit New Survey'

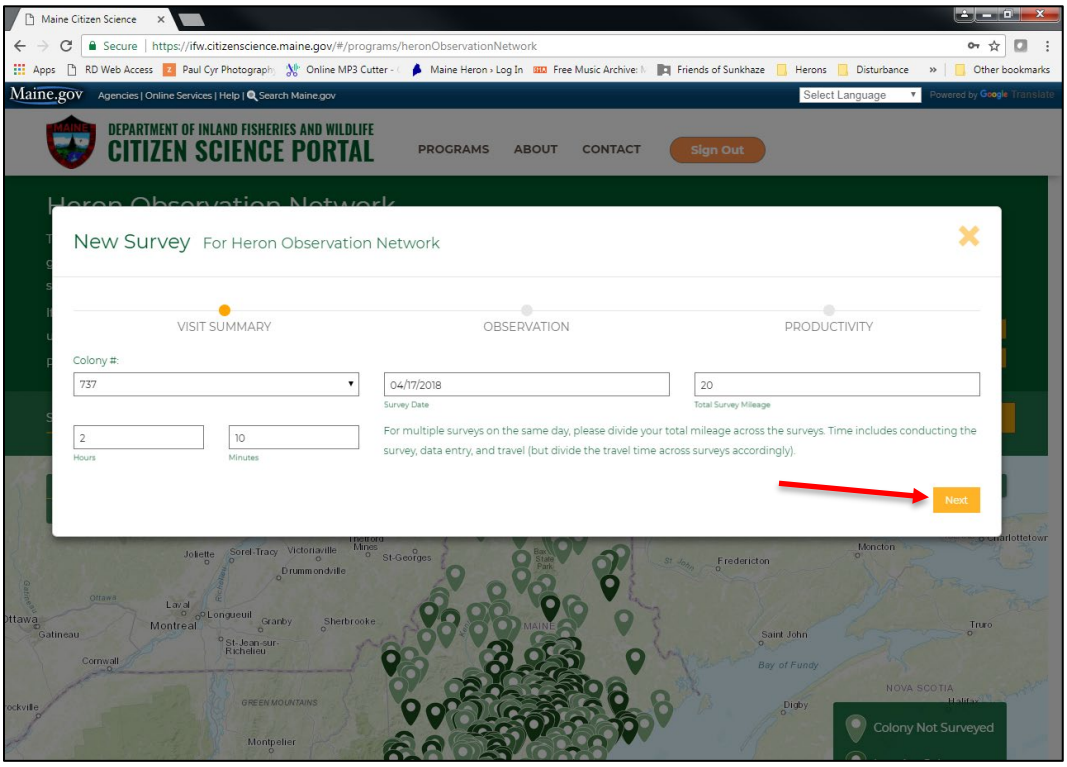


6. Enter your data. All the fields on the online data entry form correspond to fields on the paper data sheets. There are three "tabs" at the top of the entry form: Visit Summary, Observation, and Productivity. The tab that you are currently within is indicated by an orange circle above the

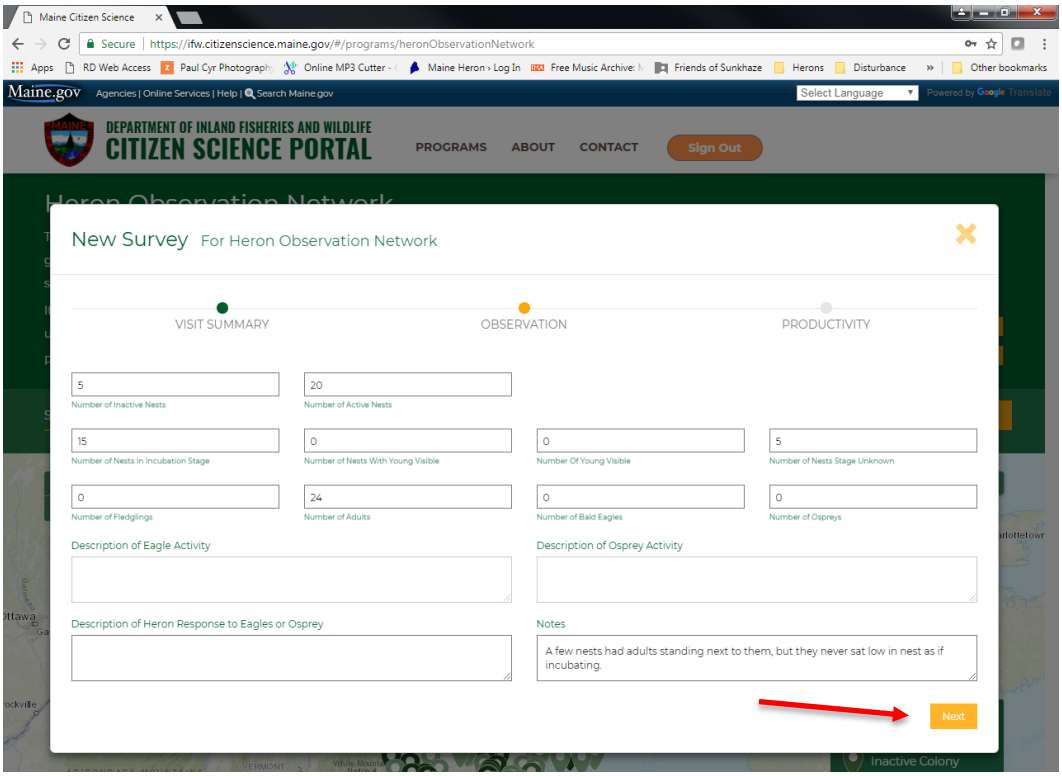
tab name. Once a tab is complete and you click Next to get to the next tab, the circle turns green You can go back to previous tabs by clicking on the tab name in case you want to view what you entered or need to make any changes.



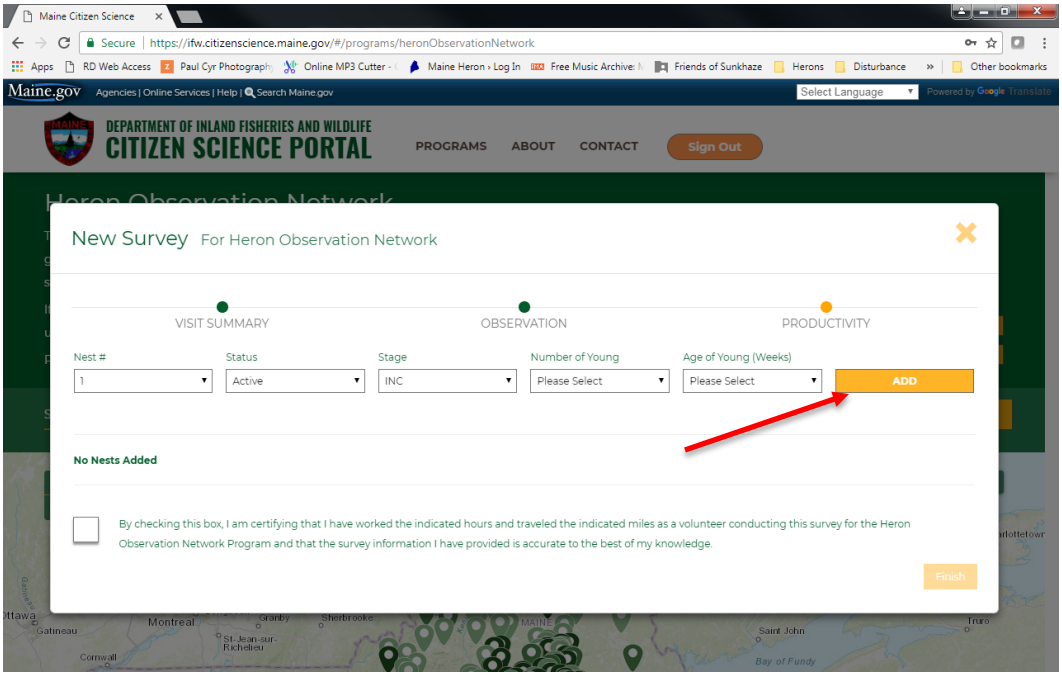
7. Here is an example of the Visit Summary tab with data filled in. After completing all the required fields, click on 'Next.'



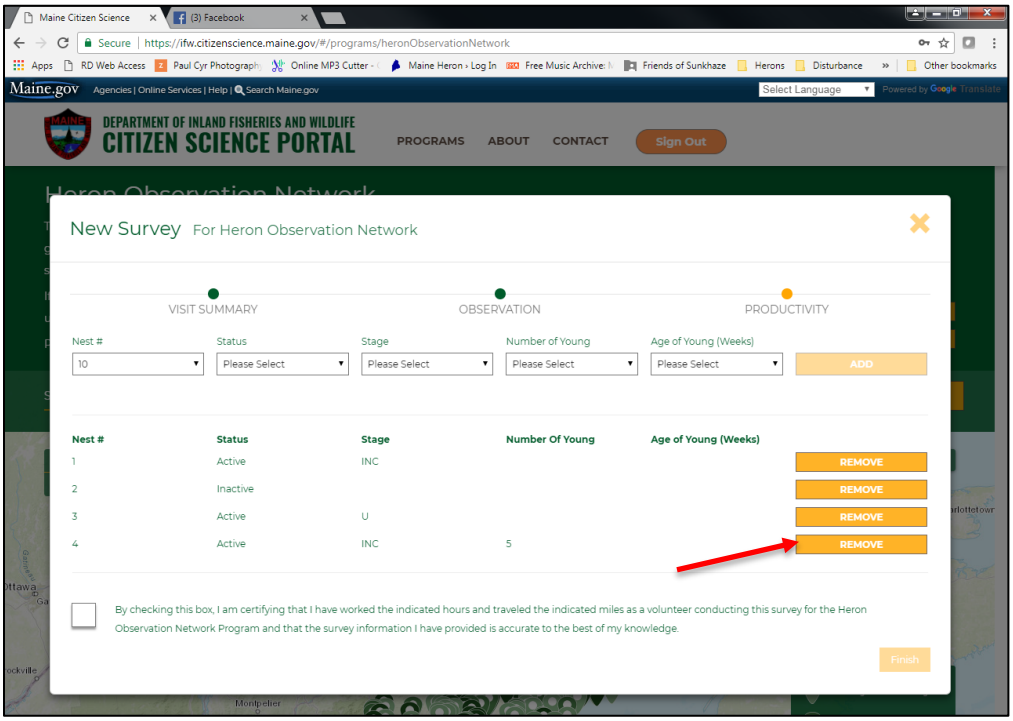
8. Here is an example of the Observation tab with data filled in. After completing all the required fields, click on 'Next.'



9. On the Productivity tab, you can choose whether to enter nest-specific information.
    a. If you do not plan to track individual nests throughout the season, you can skip this part and go to step 10.
    b. If you do plan to track individual nests throughout the season, enter nest-specific information for one nest at a time. Use the drop-down menus to choose the nest number, status, stage, number of young, and age of young. Click 'Add' to be sure it is recorded. Continue until all your nests have been entered.

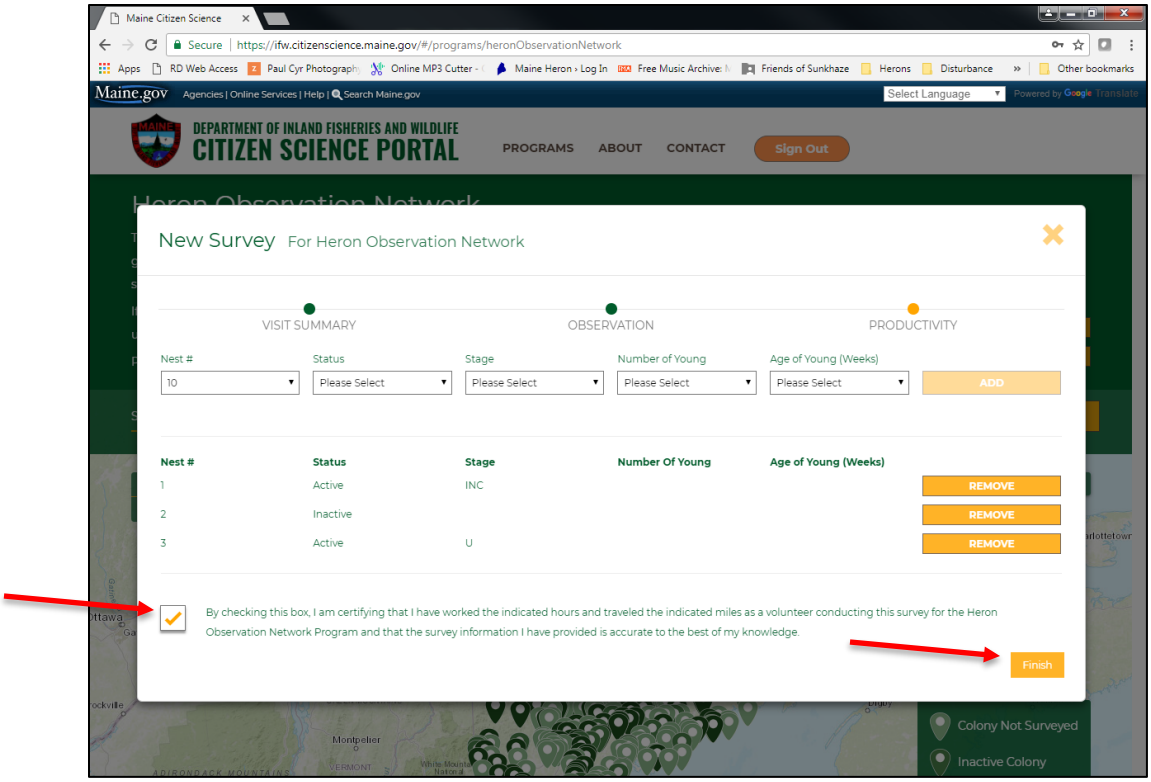


If you make a mistake regarding an individual nest, you can click on 'Remove' to delete it.



10. Check over your data on all three tabs by clicking on each tab heading (Visit Summary, Observation, or Productivity) and reviewing the data you have entered. To advance from the Visit Summary or Observation tabs to the Productivity tab, you need to click on 'Next.'

11. Once you are satisfied with the data you have entered, check the box certifying that the data you have entered is accurate (on the Productivity tab) and be sure to click on Finish to submit your data to the portal.



Additional Resources

Fact Sheet

There is a 1-page Fact Sheet that can be shared with landowners and anyone from the public that may be interested in the program. Please consider bringing several copies of this fact sheet with you so that when the opportunity arises, you can help educate people you encounter along the way.

Vehicle Sign

There is a Vehicle Sign that includes Danielle D'Auria's contact info as well as the volunteer's name and phone number. If someone sees what they think is a strange vehicle parked in a strange location, this sign can help alleviate any concerns and provides the person the opportunity to obtain more information.

HERON Blog

The Heron Observation Network has a blog (mefishwildlife.com/heron) which is our opportunity to give back to our volunteers and the general public by providing them information relevant to colonial wading birds, and an opportunity for them to share their experiences in the field observing colonial wading birds. There are several pages within the blog that volunteers should be aware of (navigate between pages by clicking on the tabs on the left):

Home – This is the heart of the blog, where timely articles are posted. Emails to current volunteers are often sent out to alert them of a newly posted article. Please don't hesitate to suggest topics for articles or to submit your own article for consideration on the Home page.

Tracking Project – This page describes a project in which MDIFW has equipped adult great blue herons with solar-powered GPS transmitters to learn about their movements. There are links from the Tracking Project page that provide instructions for tracking the birds' movements online, research questions to explore with students, and lesson plans for use by educators.

Calendar – This page includes upcoming public presentations about herons or related species by Danielle D'Auria.

File Cabinet – This page is really geared towards the volunteers, providing one place for all documents relevant to the HERON program, including summary reports, Word and pdf versions of data sheets, the Volunteer Packet, and a link to the Citizen Science Portal.

Report a Colony – This page is a brief description of how someone can report a wading bird colony to MDIFW, and is geared towards the general public who may be unfamiliar with the program.

Join HERON – This page is a brief description of how to become involved with the Heron Observation Network, and is geared towards the public who may be unfamiliar with the program.

Facebook

The Heron Observation Network has its own Facebook page: http://facebook.com/maineheron. This serves a similar purpose as the HERON Blog, potentially reaching additional members of the public.

Heron Tracking Project

In 2016, students from seven schools helped locate feeding herons and placed live bait so biologists could capture and tag them with GPS transmitters. The transmitters are solar-powered and will last several years, generating location data for the tagged herons through all seasons. Over the last six years, we have occasionally tagged additional herons as funding and time permitted. Data are now publicly available for use by anyone. Our goal is to gather new information about great blue herons with this cutting-edge technology, while actively engaging students of all ages in every phase of the project, within Maine and beyond.

We welcome all who are interested to explore and use the data generated by the transmitters to answer questions about movements during nesting, migration routes, habitat use, wintering locations, and much more! These data can be easily pulled into Google Earth, Excel, and ArcGIS, and you can even follow the herons on your smartphone. The herons' transmitters download data every 24 hours to an open source website, www.movebank.org. For instructions on how to track Maine's tagged great blue herons in Movebank, visit: mefishwildlife.com/trackherons.

A high priority of this project is to involve students in every phase; therefore we have developed several resources for educators interested in getting involved in the field work or tracking the tagged herons by using the internet or smartphones. These resources have been incorporated into the HERON Blog, under the menu item, "Tracking Project". Educators and students can also contact Danielle D'Auria for additional resources and ideas for incorporating the project into their learning environment.

Questions?

If you have questions about this document, entering data online, or the HERON program in general, please contact: Danielle D'Auria, Maine Department of Inland Fisheries and Wildlife, 106 Hogan Rd, Suite 1, Bangor, ME 04401; Email: danielle.dauria@maine.gov; Phone: (207) 941-4478; Fax: (207) 941-4450.

What is HERON?

"HERON" is short for the Heron Observation Network, a network of volunteers across Maine who monitor nesting areas, or colonies, of wading birds such as the great blue heron. HERON is managed by the Maine Dept. of Inland Fisheries and Wildlife.

These volunteers have "adopted" colonies and in doing so, visit them 1-5 times during the breeding season (May-Aug) to determine if a colony is active and the number of active nests.

Data collected by HERON volunteers will be used to assess the breeding populations of these birds over time, identify and prioritize ecologically important areas, and inform environmental review and landscape planning activities.

Great blue herons (E. R. Campbell).

What is a colonial wading bird?

Colonial wading birds are medium to large birds with long legs, necks and bills - features specially adapted for capturing prey while wading in shallow water.

Colonial wading birds nest in groups. These colonies can contain a few pairs to several hundred; often multiple nests occupy the same tree.

In Maine, we have several species of colonial wading birds (listed here from most abundant to least): great blue heron, snowy egret, glossy ibis, black-crowned night-heron, great egret, little blue heron, tricolored heron, and cattle egret.

Great blue heron (J. Mays), snowy egret (D. Albert), glossy ibis (B. Allen), black-crowned night-heron (D. D'Auria), and great egret (J. Mays).

Why should we be concerned about colonial wading birds?

Colonial wading birds are important predators that feed near the top of the food chain on a wide variety of fish and aquatic invertebrates. They are also relatively long-lived, making them good indicators of environmental quality, including wetland health, levels of toxic substances, and levels of human disturbance.

Nesting in colonies helps in terms of predator avoidance, but it also makes these birds especially vulnerable to habitat loss. Impacts to a small area (colony) can affect hundreds of breeding pairs of several different species.

Maine's coastal breeding population of great blue herons has experienced a steady downward trend from 1,208 pairs in 1983 to just 430 pairs in 2009. The statewide breeding population also shows evidence of decline, but its extent is unknown and warrants closer monitoring.

The black-crowned night-heron has also experienced a decline in Maine over the past 30-40 years. Its limited nesting distribution and small population warranted its designation as an Endangered species under the Maine Endangered Species Act in 2015.

For more information, or to report a wading bird colony, please contact:

Danielle E. D'Auria
Wildlife Biologist, Bird Group
Maine Dept. of Inland Fisheries and Wildlife
106 Hogan Road, Suite 1, Bangor, ME 04401
(207) 941-4478; danielle.dauria@maine.gov

Visit the HERON blog at mefishwildlife.com/heron

I am a volunteer member of the Heron Observation Network of Maine

My vehicle is parked here so I can monitor a nesting colony of great blue herons or other colonial wading birds.

My name is:_____

My phone number is:_____

The Heron Observation Network of Maine is a group of volunteers administered by the Maine Department of Inland Fisheries and Wildlife.

Questions? Please contact:
Danielle D'Auria
Office: 207-941-4478
Cell: 207-485-8386
danielle.dauria@maine.gov

On the web at mefishwildlife.com/heron

Heron Observation Network

Colony Observation Data Sheet

Submit data online at https://ifw.citizenscience.maine.gov/#/, by email (danielle.dauria@maine.gov), or mail to: Danielle D'Auria, MDIFW, 106 Hogan Rd, Suite 1, Bangor, ME 04401

Visit Summary

Observer Name: _____ Colony #: _____ Survey Date: _____

Total Survey Mileage: _____ Hours: _____ Minutes: _____

For multiple surveys on the same day, please divide your total mileage across the surveys. Time includes conducting the survey, data entry, and travel (but divide the travel time across surveys accordingly).

Observation

Inactive Nests: _____ # Active Nests: _____

(Note: # Inactive Nests + # Active Nests = Total Nests)

Nests Incubation Stage: _____ # Nests w/Young Visible: _____

Nests Stage Unknown: _____ # Young Visible: _____

(Note: # Nests Incubation Stage + # Nests w/Young Visible + # Nests Stage Unknown = # Active Nests above)

Fledglings: _____ # Adults: _____

Bald Eagles: _____ # Ospreys: _____

Description of Bald Eagle Activity:
Description of Osprey Activity:
Description of Heron Response to Eagles or Osprey:
Notes:

Heron Observation Network

Colony Observation Data Sheet

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Productivity

Observer Name: ____________________________ Colony # _______ Survey Date: ___________________

- ❖ This data sheet is optional and should only be used if you plan to track productivity of individual nests throughout the season (on 2 or more visits).
- ❖ You do not need to track every nest within the colony. Only choose to track those nests that you can see well.
- ❖ Observers may choose to create a map or photograph of the colony with nests labeled to help them keep track throughout the season; however, this does not need to be submitted with your data sheets.
- ❖ Please be sure each nest number corresponds to the same nest across all visit dates within the year.
- ❖ If there are more than 16 nests, use additional Productivity data sheets as needed.

Nest #	**Status** – check one (Active or Inactive)	**Stage*** – check one (INC, YNG, FLN, U)	**# of Young in Nest**	**Age of Young**** (# of weeks)
	☐ A ☐ I	☐ INC ☐ YNG ☐ FLN ☐ U		
	☐ A ☐ I	☐ INC ☐ YNG ☐ FLN ☐ U		
	☐ A ☐ I	☐ INC ☐ YNG ☐ FLN ☐ U		
	☐ A ☐ I	☐ INC ☐ YNG ☐ FLN ☐ U		
	☐ A ☐ I	☐ INC ☐ YNG ☐ FLN ☐ U		
	☐ A ☐ I	☐ INC ☐ YNG ☐ FLN ☐ U		
	☐ A ☐ I	☐ INC ☐ YNG ☐ FLN ☐ U		
	☐ A ☐ I	☐ INC ☐ YNG ☐ FLN ☐ U		
	☐ A ☐ I	☐ INC ☐ YNG ☐ FLN ☐ U		
	☐ A ☐ I	☐ INC ☐ YNG ☐ FLN ☐ U		
	☐ A ☐ I	☐ INC ☐ YNG ☐ FLN ☐ U		
	☐ A ☐ I	☐ INC ☐ YNG ☐ FLN ☐ U		
	☐ A ☐ I	☐ INC ☐ YNG ☐ FLN ☐ U		
	☐ A ☐ I	☐ INC ☐ YNG ☐ FLN ☐ U		
	☐ A ☐ I	☐ INC ☐ YNG ☐ FLN ☐ U		
	☐ A ☐ I	☐ INC ☐ YNG ☐ FLN ☐ U		

*Stage: If active, check one of the following codes for nest stage = INC (incubating), YNG (young in nest), FLN (fledglings near nest), or U (unknown).
**Age of Young: # of weeks old; see nestling illustrations in packet.

Heron Observation Network

Colony Observation Data Sheet

Submit data online at https://ifw.citizenscience.maine.gov/#/, by email (danielle.dauria@maine.gov), or mail to: Danielle D'Auria, MDIFW, 106 Hogan Rd, Suite 1, Bangor, ME 04401

Visit Summary

Observer Name: Danielle D'Auria Colony #: 899 Survey Date: 6/1/22

Total Survey Mileage: 50 Hours: 2 Minutes: 30

For multiple surveys on the same day, please divide your total mileage across the surveys. Time includes conducting the survey, data entry, and travel (but divide the travel time across surveys accordingly).

Observation

Inactive Nests: 4

Active Nests: 7

(Note: # Inactive Nests + # Active Nests = Total Nests)

Nests Incubation Stage: 1

Nests w/Young Visible: 5

Nests Stage Unknown: 1

Young Visible: 15

(Note: # Nests Incubation Stage + # Nests w/Young Visible + # Nests Stage Unknown = # Active Nests above)

Fledglings: 0

Adults: 10

Bald Eagles: 0

Ospreys: 2

Description of Bald Eagle Activity:
Description of Osprey Activity: Osprey nest at far end of wetland; both adults present.
Description of Heron Response to Eagles or Osprey: No response from herons.
Notes: Nest #3 had adult heron standing on the edge of the nest but didn't do any feeding or rolling of eggs. It never sat low in the nest.

Heron Observation Network

Colony Observation Data Sheet

Submit data online at https://ifw.citizenscience.maine.gov/#/, by email (danielle.dauria@maine.gov), or mail to: Danielle D'Auria, MDIFW, 106 Hogan Rd, Suite 1, Bangor, ME 04401

Productivity

Observer Name: Danielle D'Auria Colony # 899 Survey Date: 6/1/22

- This data sheet is optional and should only be used if you plan to track productivity of individual nests throughout the season (on 2 or more visits).
- You do not need to track every nest within the colony. Only choose to track those nests that you can see well.
- Observers may choose to create a map or photograph of the colony with nests labeled to help them keep track throughout the season; however, this does not need to be submitted with your data sheets.
- Please be sure each nest number corresponds to the same nest across all visit dates within the year.
- If there are more than 16 nests, use additional Productivity data sheets as needed.

Nest #	**Status** – check one (Active or Inactive)	**Stage*** – check one (INC, YNG, FLN, U)	# of Young in Nest	Age of Young** (# of weeks)
1	☑ A ☐ I	☑ INC ☐ YNG ☐ FLN ☐ U		
2	☑ A ☐ I	☐ INC ☑ YNG ☐ FLN ☐ U	3	1
3	☑ A ☐ I	☐ INC ☐ YNG ☐ FLN ☑ U		
4	☐ A ☑ I	☐ INC ☐ YNG ☐ FLN ☐ U		
5	☑ A ☐ I	☐ INC ☑ YNG ☐ FLN ☐ U	2	1
6	☑ A ☐ I	☐ INC ☑ YNG ☐ FLN ☐ U	4	2
7	☑ A ☐ I	☐ INC ☑ YNG ☐ FLN ☐ U	3	1
8	☑ A ☐ I	☐ INC ☑ YNG ☐ FLN ☐ U	3	2
9	☐ A ☑ I	☐ INC ☐ YNG ☐ FLN ☐ U		
10	☐ A ☑ I	☐ INC ☐ YNG ☐ FLN ☐ U		
11	☐ A ☑ I	☐ INC ☐ YNG ☐ FLN ☐ U		
	☐ A ☐ I	☐ INC ☐ YNG ☐ FLN ☐ U		
	☐ A ☐ I	☐ INC ☐ YNG ☐ FLN ☐ U		
	☐ A ☐ I	☐ INC ☐ YNG ☐ FLN ☐ U		
	☐ A ☐ I	☐ INC ☐ YNG ☐ FLN ☐ U		
	☐ A ☐ I	☐ INC ☐ YNG ☐ FLN ☐ U		

*Stage: If active, check one of the following codes for nest stage = INC (incubating), YNG (young in nest), FLN (fledglings near nest), or U (unknown).

**Age of Young: # of weeks old; see nestling illustrations in packet.

The following was taken from:
Vennesland, R. G. and D. M. Norman. 2006. *Survey protocol for measurement of nesting productivity at Pacific great blue heron nesting colonies.* Unpublished Report.

Note: To show scale, the same 12-inch ruler is used in each illustration.

APPENDIX 3 – Nestling Illustrations

(with approximate scale in inches)

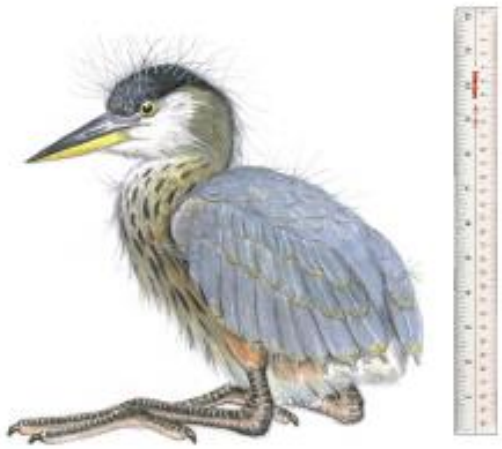
Including:

Age 1-2 weeks
Age 2-4 weeks
Age 4-6 weeks
Age 6-8 weeks

All illustrations are by Donald Gunn

1-2 weeks of age
Illustration by Donald Gunn

2-4 weeks of age
Illustration by Donald Gunn



4-6 weeks of age
Illustration by Donald Gunn

6-8 weeks of age
Illustration by Donald Gunn