

The
Delaware
Breeding Bird
Atlas
Handbook



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The Official Delaware Breeding Bird Atlas Website can be found at:

www.fw.delaware.gov/BBA

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Welcome to the 2nd Delaware Breeding Bird Atlas!

From 2008 through 2012, we have the great opportunity to survey Delaware's breeding bird fauna systematically. Most of us have likely seen an American Robin nest in a local park or woodlot. Along the coast, Ospreys seem to inhabit any structure on which they can assemble a few sticks. Look at some nest boxes erected for Eastern Bluebirds, but look carefully. Maybe they contain Tree Swallows or Carolina Chickadees instead! Many of us might associate these birds with a healthy population or consider them relatively common. Now, imagine yourself along a roadside in early May listening to Black Rails call from a high marsh. Or stumbling across a Cooper's Hawk nest along the White Clay Creek. Or maybe, observing a Swainson's Warbler carrying food along a swampy creek bottom in Sussex County! Exciting indeed, and as important to know as the robins, Ospreys, and swallows!

All of these examples represent important data for OUR atlas project! Why, though, is it important for us to do a second breeding bird atlas for Delaware? Don't we already know what birds breed here and where they are?

These are reasonable questions to ask, and they have reasonable answers. Delaware completed its first atlas in 1987. Since then many changes have occurred throughout Delaware. We have seen the decline of some species that were once relatively common. For example, according to the first atlas project Northern Bobwhite could be found in 99% of atlas blocks. Today, it has become a challenge to locate a bobwhite north of the C & D Canal. Conversely, some species appear to be increasing in Delaware, such as the Bald Eagle. In 1987, at the completion of the first atlas, only four breeding pairs of Bald Eagles had been confirmed in the State. Today, after a remarkable comeback, more than 40 pairs are known to breed within Delaware's boundaries! What other information can we learn during this project? Do we have any "new" species breeding here? Has a species changed its breeding habitat? Are species breeding at different times than they did 20 years ago? These are all questions to be answered, and they will be answered by the second Delaware Breeding Bird Atlas.

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The second Delaware Breeding Bird Atlas is primarily a volunteer citizen science project. As a participant, you have a grand opportunity to enjoy our exciting bird fauna and contribute valuable data to science that will update our knowledge of Delaware's breeding birds. Your contribution of time, skill, knowledge, and data are the key to the success of the atlas! Most importantly, EVERY contribution counts! Whether you contribute many hours atlasing several blocks or report just a single nest you found in your backyard, your contribution helps to create this atlas. We welcome everyone to join us in making the second Delaware Breeding Bird Atlas a project to be enjoyed by all. In the process, we hope that you can both learn from the project and teach others about the wonders of our bird diversity! Along the way, we may learn a few things about those birds, become better at identifying them, or simply take pride in contributing to their survival. All of this is possible with your support and assistance.

How a Breeding Bird Atlas Works

A breeding bird atlas is a complex study with many components. To understand how an atlas works, you need to look at the big picture. As a volunteer, you should be familiar with the basic principles behind atlasing. In our atlas, there are three primary positions: volunteer atlasers, regional compilers, and project coordinator. Each position has an important role to play.

A volunteer atlaser spends time in his or her "block" attempting to confirm breeding for as many species as possible. A block is approximately 10 sq. miles and is created using a standardized grid that is overlaid onto a map of Delaware. Delaware has over 265 blocks divided into six regions in the State. Typically, each block has one "owner". Each atlaser spends time in their block surveying during the breeding season (for most birds, March - July), and observing and recording data about the birds they encounter on field cards. Volunteer atlasers report this data using an online, interactive data entry application or by submitting their field cards for entry. Once the data are entered the volunteers "save" it to the database for verification.

Regional compilers, aside from also being volunteer atlasers, have additional responsibilities. The regional compiler is the primary contact for each

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region. Each of the six regions contains more than 40 blocks. The role of the regional compiler is to support the work of the volunteer atlasers. Volunteers will contact their regional compilers for most day-to-day questions and issues. Regional compilers will also assist in recruiting block owners for their regions and assuring the coverage of blocks is being met. Lastly, regional compilers have the important task of verifying data. Once a volunteer enters and saves his or her data, the regional compiler will review it for accuracy and verify it, placing it into the database as valid data.

Responsible for organizing the atlas project, the project coordinator holds the same responsibilities as, and provides support for, the regional compilers. The project coordinator ensures that volunteers have all the tools that they need to make the atlas project successful. In addition, the project coordinator is responsible for maintaining communications between volunteers, compilers, project supporters, landowners, and others. The project coordinator handles all of the financial and logistical issues of the atlas, including reports and data analyses. The project coordinator is available at any time to assist the volunteers or regional compilers and can provide support wherever it might be needed. Of course, do not be surprised if you see your coordinator out in the field atlasing too! A goal of organizing a successful atlas project is to make it enjoyable for everyone!

Delaware's First Breeding Bird Atlas

From 1983 through 1987, over 100 volunteers participated in compiling data for Delaware's first breeding bird atlas, Delaware's largest and most comprehensive ornithological project. This effort, incorporated in *The Birds of Delaware* (Hess *et al.*, 2000), summarized the distribution of the breeding birds during those years along with species accounts and data about all birds that occurred, or thought to have occurred, in the State. Since then, the first atlas has become an important resource, providing much data about Delaware's breeding avifauna. It is often used by researchers, scientists, government officials, and birders alike. However, much has changed in the last 20 years. Development is occurring in every county. New roads are being designed and constructed. Wetlands are being created and clear cuts are regenerating. Some agricultural lands are being pulled from production to make way for new homes, other parcels are allowed to lie fallow for

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several years, and still others are being created to make more room for important crops. Beyond observable change, we also must consider climate change and how it has affected, and will affect, our landscape. Our challenge now is to examine how change to our landscape or our climate has influenced our populations of breeding birds!

Delaware's Second Breeding Bird Atlas – OUR ATLAS!

On November 30, 2006, a group of interested and dedicated parties met at the University of Delaware to begin discussing our second atlas effort. At that time, the foundation was laid for an atlas unlike any other. An atlas committee was formed and divided into two sub-committees: a technical committee to deal with the issues of methodology, protocol, data, and databasing, and a logistical committee to deal with the issues of finding a coordinator, assembling volunteers, developing a steering committee, and publicly promoting the atlas project. Now it is up to you, the volunteers, to take part in a project that uses methods from past successful atlases, incorporates novel ideas, and will produce a product that will complement the efforts of the first atlas and set standards for years to come.

Objectives for the Delaware Breeding Bird Atlas:

- To determine the current distribution of all bird species breeding within Delaware, as well as within specially designated areas.
- To assess changes relative to the first Delaware breeding bird atlas and establish protocols to allow for better comparisons with future atlases.
- To generate improved information on the status, distribution, abundance, and habitat associations of Species of Special Interest within Delaware.
- To be a forum for education and conservation awareness in Delaware.

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Products anticipated from the Delaware Breeding Bird Atlas:

- Species-specific summaries of the breeding habits of Delaware's birds.
- Detailed distribution maps for all bird species breeding in Delaware.
- Analysis of changes since the first atlas.
- General and species-specific conservation recommendations.
- Permanent records of the data collected that are electronically and conventionally published and available to all interested parties.

Training

Although this handbook has been designed to provide you with much of the information a volunteer will need to be a successful atlaser, we are providing training to everyone to familiarize participants with atlasing and to provide an opportunity for questions, comments, or concerns. Training will be provided at various locations throughout the State and include identification and bird-finding techniques. You will be notified via email or phone about upcoming training seminars or, contact your regional compiler or the project coordinator for more information. Please be aware that these training sessions will include some time in the field.

We encourage everyone, regardless of your level of commitment, to attend one training session. Whether you have never atlased before or you are a seasoned veteran, a training session is a great way to meet other atlasers and for everyone to understand the importance of our atlas project! Attending a training session will also be an opportune time to ask any questions, express any comments, or make any suggestions regarding the Delaware Breeding Bird Atlas and your involvement!

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Coordination

The Delaware Breeding Bird Atlas is a large complicated project involving a large number of people, most of whom are volunteering their time. To facilitate the success of this project, we have one project coordinator, assisted by six regional compilers. Compilers and the coordinator are available to assist you in all aspects of the atlas project, from establishing your block, to providing you with necessary materials, to reviewing your data, and even in the field when necessary.

When you need assistance, please contact your regional compiler first. If your coordinator cannot be reached, please contact the project coordinator. Also, please keep in mind that the regional compilers are also volunteers and likely have responsibilities outside the atlas project. In the event that you need immediate support, contact the project coordinator.

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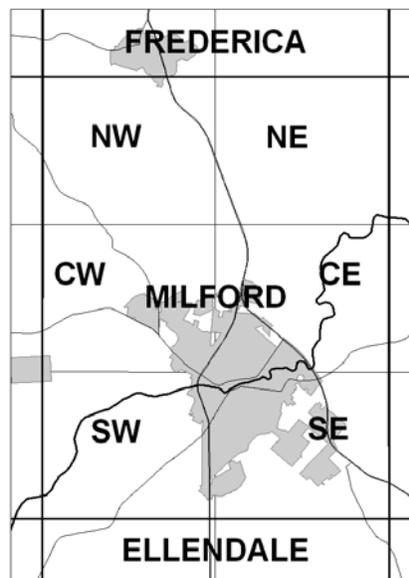
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UNDERSTANDING ATLASING

1. The Atlas “Block”

What is an atlas “block”? The US Geological Survey developed a grid that divides all US land into 7.5-minute quadrangles. These quadrangles, or “quads”, are bordered on the north and south by lines of latitude and the east and west by lines of longitude. Quads are typically named for a feature, such as a town, located within them (e.g., the Milford quadrangle). Each quad can then be further divided into 6 discrete “blocks”. Blocks are simply named for their position within a quad (NE = Northeast, NW = Northwest, CE = Center East, CW = Center West, SE = Southeast, and SW = Southwest) and the name of the quad (e.g., NW Milford). Block boundaries measure 5km by 5km, and total 25 square km in area that is approximately 10 square miles.

All atlas blocks have also been assigned a number for quick reference by volunteer atlasers. In most cases, you first saw your “block number” when you were selecting your block(s). These numbers will not change throughout the project and are easy to remember.



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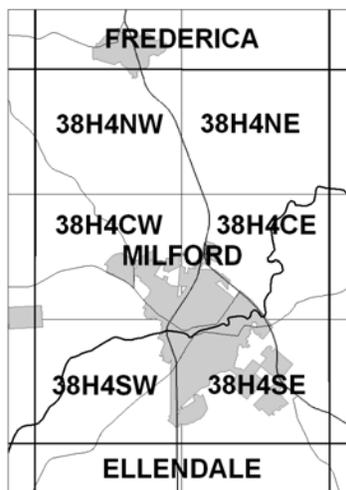
The State of Delaware is contained entirely or partially within 53 quadrangles and more than 265 blocks. Our goal is to cover all of these blocks adequately. Some blocks may have only a small portion of Delaware contained within them, but if you look carefully at a map, you will quickly see that some of the habitat within those partial blocks does not occur in other regions of the State. During the first atlas project, some of these regions were combined with adjacent blocks, while the smallest of them were simply excluded to conserve effort.

For the second Delaware Breeding Bird Atlas, we are employing a block identification system that will provide precise information about a block to anyone who intends to use the data. These codes will be used during data analyses to clearly identify blocks in a standardized manner.

For each block, a six (6) character code will be applied. This code is adapted from a standardized alphanumeric code used by the USGS. As volunteers, you may see this code and it is important that you know what it means.

The block named Milford NW will be coded as **38H4NW**. To understand the code, we will break it into three (3) parts.

1. **38** – This number indicates the latitude where the quadrangle can be found. For Delaware, 39 would indicate the northern portion of the state and 38 would indicate the southern region.



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2. **H4 - These** characters are unique identifiers of quadrangles within a given latitude and longitude. The characters range from 1 - 8 (from east to west) and from A- H (from south to north). We are not including the degree of longitude because all quadrangles fall within - 75° longitude.
3. **NW** – As with the standardized named blocks, this two (2) character code indicates the position of a block within a quadrangle.

If you are interested in a particular block, contact the appropriate regional compiler to see if that block is available. You may also contact regional compilers for a list of available blocks in each region. Once you have selected a block (or blocks) and your selection has been approved by a regional compiler, you can move on to the next step as an atlaser.



2. Your Block and You

So, you have selected a block or two. Now what? What is the next step for you?

LEARN YOUR BLOCK! We highly recommend you get out to your block and take some time to look around *before* spring arrives. Without the heavy spring and summer foliage, you might just find places you would like to visit once our breeders have arrived!

Here are some steps to get to know your atlas block:

1. Block Maps – The DE BBA Project will provide topographic maps for each block to be surveyed. These maps will be available in an electronic format through the DE BBA website: <www.fw.delaware.gov/BBA>, and the USGS database application: <www.pwrc.usgs.gov/bba/index.cfm>. These maps will be available for you to print at any time. If you cannot access these maps from the website, please contact the regional or project coordinator and we will assist you or provide a map to you. You may also be interested in

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- other types of maps for your block, such as land-use maps, or land-cover maps. Please contact the project coordinator to obtain additional maps if needed.
2. We would strongly suggest that you obtain an up-to-date street map or road atlas for Delaware, or just a county, as they can be very helpful. Street maps not only help you navigate to and from your block easily, but also provide you with a tool to determine your location in the event you need to report it.
 3. Using today's technology, we can examine satellite photographs. Once only available to a select few companies, agencies, organizations, and individuals, advances in mapping and satellite imagery have provided the public with free tools. Check out mapping programs and sites like Google Maps™ <<http://maps.google.com/>>, or MapQuest™ <<http://www.mapquest.com/>>, where you can view traditional maps and satellite images. These web-based programs do not require you to download and install any program-specific software, and they are free! If you are interested in more detail, try Google Earth™, an interactive satellite imagery program that you can download free from <<http://earth.google.com/>>. This program will allow you to move around easily and zoom in and out quickly to locate a point. Other features include marking and saving points, applying map features (roads, towns, etc.), and measuring distances.
 4. SCOUT! – Get out to your block as early in the season as you can. As mentioned earlier, if you scout your block before you begin atlasing, you may obtain some valuable information that can help you later. For example, look for potential nesting sites and consider that development doesn't always prevent birds from nesting at a site. Make yourself familiar with the boundaries of your block. Examine road conditions. Look for places to pull over and stop, especially if you are on or near a busy roadway. Search for access points into hard-to-access areas while minimizing disturbance. Find the nearest convenience store for that quick coffee break. By scouting your block early, you will be prepared to atlas your block well.

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IMPORTANT NOTE: Please be aware of your location. In many blocks, areas you would like to atlas may fall on privately owned land or limited access areas. Before entering such properties, please be sure to obtain all necessary permission. This includes lands owned or managed by The Nature Conservancy, Delaware Nature Society, Bombay Hook and Prime Hook National Wildlife Refuges, and restricted state lands such as Burton's Island. If you are unsure if you have permission, particularly on State or Federal lands, please contact the project coordinator before entering. If you are unsure about an area, please err on the side of caution and determine your permissions before entering!

5. Access – Determine areas that need special permission or have limited access in your block. In some cases, the project coordinator will be working with large landowners, corporations, government agencies (including State-managed lands), and other organizations to gain permission and access to important areas that need to be surveyed. Check with the project coordinator and your regional compiler to determine who the landowners are and what is required of you to access the property, if access has been granted.

In other cases, you may be the primary contact with a landowner. We will provide you with brochures and handouts for landowners. These materials will explain our project, why we need their assistance, how it affects them, and what they can gain from it. We will also provide you with a form letter, which you can mail to a landowner, asking for permission to survey their property. Please include in the letter items such as where you would like to survey (e.g., the woodlot behind the house, the weedy field adjacent to the pond, etc.), when you intend to survey (morning, afternoon, once a month, twice a month, etc.), and how long you expect your survey to last (1 hour, 3 hours, etc.). Above all else, be polite to private landowners and always remember that you are representing all of us working on the BBA!

Also, consider offering the landowner a daily summary of what you have seen when you conduct a survey or offer to have them come with you so that they too might enjoy the wonders of our native birds.

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Provide them with a few field cards if they want to collect data. Present them with an end-of-season summary for their property. Most importantly, please thank them and repeat how helpful they have been in making the BBA a success.

If a landowner declines your request for access, remain gracious. Ask questions about any birds that might be breeding on their property and offer field cards and contact information in the event that they would like to report something. Many landowners are concerned about people visiting their property and may simply feel uncomfortable allowing access. Please be respectful and understanding of their decision and thank them for considering it.

Again, if you have questions or concerns about access onto private or limited access property, please contact your project or regional compiler.

In addition to private property, please be aware that even some public areas may be closed from time to time for various reasons. **Please remember to obey ALL POSTED SIGNS regardless where you are!** For example, if you arrive at a state wildlife area and posted signs indicate that access is only permitted to active hunters, please do not enter. Contact the project coordinator for permission or accessibility options. We want this atlas project to be safe for all volunteers and we want all volunteers to be respectful of all rules and regulations.

3. Go “Atlasing”

Atlasing all breeding species in Delaware is the fundamental goal of our atlas project. Remember, atlasing is not just bird “watching” – it’s bird “observing”. The goal is not to try to ID a bird and move on. The goal is to observe a bird you have identified to determine if it is breeding or not! Now that you are ready to begin looking for breeding birds, here are a

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few tips to assist you in atlasing your block(s). Below are the **What**, **When**, and **Where** of atlasing.

WHAT

The birds, of course! Delaware's wild breeding birds! Birds occur everywhere. They are some of the most mobile organisms on this planet. From a large forest patch, to a tidal saltmarsh, to an old barn, or on a high-rise office building in Wilmington, birds may take advantage of any breeding location that they find suitable!

Just as you investigated your block and scouted out locations in it before atlasing, it is important for you to know what birds may occur in your block. We highly recommend you learn about the birds in your block before and during your atlas field season! The most appropriate place to find these data is from the first atlas. There are two valuable ways to learn about the birds located in your block from the first atlas project!

- ❖ *Birds of Delaware* (Hess *et al.*, 2000) – This is the published record of Delaware's first atlas project. In it, you can find species accounts and figures indicating breeding distribution and evidence for each species. This is a great resource to use both before and during atlasing. You can refer to it to see if a species has occurred in your block before you begin atlasing. While atlasing, you can use it to investigate whether a species you detected was found in your block during the first atlas or if it occurred in a nearby block.
- ❖ Go to: <http://www.pwrc.usgs.gov/bba/>. This is a USGS-hosted website designed to provide atlas data to the public. To find the data from Delaware's first atlas:
 1. Find and click on Delaware 1983-1987 in the list of atlases on the Atlas list tab on the map.
 2. Under "**Results**", click on "**by block**".
 3. Follow the instructions for the drop-down windows and select your USGS topo quad and block, then click "**GO**".

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Once you have generated a results page, you can print it for your own records. You may wish to keep this print-out handy when you are in the field to assist you.

Again, we recommend that you review species observed within your block from the last atlas so that you will have good baseline knowledge of species to expect (although these may not necessarily be encountered during the second atlas). In particular, note any uncommon species or Species of Special Interest (Appendices 3 & 4) that you might encounter.

WHEN

When to focus your atlas efforts will determine your success as an atlaser! You need to consider several factors:

- ❖ **Time of Day:** One simple rule of thumb is that *most* birds are *most* active for a period of 3-4 hours after dawn. Consider the dawn chorus. It is an excellent time to detect some species that you would otherwise miss during the day. Initially, these hours would be the best time to atlas your areas. While these hours are most productive, we require that you vary your survey times.
 1. On occasion, survey in early afternoon, late afternoon, or early evening. During these times, the activities of birds will change. Adults foraging for their young will be active and can often be observed carrying food in early or late afternoon, regardless of temperature. Early evening is the time for the evening chorus when many males will sing. If you missed a species during the dawn chorus, you might pick it up at this time!
 2. Owls and nightjars are often difficult to detect, unless you survey at night! We ask that you survey your blocks for the common owl species (Great Horned Owl, Barred Owl, Eastern Screech Owl) and nightjars after dusk or before dawn several times. Consider scouting your block(s) during the day for sites that appear suitable for owls

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and nightjars and return after dark in an attempt to detect them. To do this, we suggest the following:

- a. ***Important***: We suggest night atlasing in teams for safety and efficiency. Contact adjacent block owners or the project coordinator to establish night atlasing trips!
- b. You may use call recordings to elicit a response from the birds, if none are heard upon arriving. There is no need to use excessive volume, as it distorts the sound and the owls and nightjars can hear for great distances. Terminate any call playback immediately after receiving a response.
- c. Consider visiting your block early in the year as many owls have established territories at that time, and some (Great Horned Owls) are breeding in January.

❖ **Weather Conditions**: When the weather is poor, do not go atlasing! If it is raining or windy, you will probably not obtain much data anyway. Do not waste your time if you do not think atlasing would be productive on a foul weather day. Also, please atlas safely. Be aware of the forecast for the area you will be atlasing and be prepared for adverse weather conditions whenever possible.

❖ **Time of Week**: For some atlasers, the time of the week in which you can atlas may be constrained by other responsibilities. For those of you who are not constrained, consider your block for a moment and ask yourself the following questions:

1. Does traffic increase or decrease in my block during the weekend?
2. What level of use (light, moderate, and heavy) do state- or federal-owned lands experience throughout the week?
3. When is disturbance a problem in my block?

Considering those questions, it is best to survey your block when human traffic and activity is lowest and when general disturbance is minimized. For example, if you are atlasing White Clay Creek during trout season, a good time to survey may be after 8 AM on Tuesdays, Wednesdays, or Thursdays, after the early morning anglers have

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retreated to their jobs. Alternatively, if you are atlasing a sensitive area that experiences heavy weekend use, consider giving the birds a day to “recover” before heading out into the field. We believe you will find your experience as an atlaser much more fulfilling if you take advantage of the best opportunities when you are able!

- ❖ **Season:** Consider the breeding season. Most species will typically begin breeding during May and complete their season in late July or early August – but not all species! Local breeding birds such as Great Horned Owls or Bald Eagles begin nesting much earlier than many other birds. Some species, such as the American Goldfinch or Indigo Bunting may not complete their clutch until August. It is important to consider the **breeding dates** for some species if you are to be successful in locating and confirming them in your block!

As a general rule, **primary and assistant block owners** should atlas their block(s) **once every 10-15 days during the peak breeding months**.

Atlasing twice a month during the breeding season over the 5-year atlasing period will result in adequate block coverage. In some case, less time might be required. In others, more coverage might be necessary. Coverage will be evaluated each year and adjustments will be made accordingly.

- ❖ **Safe Dates: !!IMPORTANT!! Safe dates ARE NOT the same as breeding dates!**

Safe dates can be defined as a period of time during which a given species is most likely to be a true breeding bird rather than a migrant or post-breeding disperser. Breeding dates cover a range of dates for a species during which that species is known to breed. For example, the Eastern Bluebird has a breeding date range from approximately early March through late September, and with the appropriate evidence can be confirmed breeding during that time. However, only during the range of early May through the end of July can we be confident in saying that a bluebird is probably breeding in lieu of confirmed evidence. We do this under the assumption that nearly all migrant

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bluebirds have moved out of the area, leaving only the resident breeders. In addition, although bluebirds may breed well into September, after July, you are likely to encounter post-breeding bluebirds dispersing into other areas. Since post-breeding dispersers are no longer breeding, any bluebirds detected after the safe date range has passed must be confirmed as breeders or listed as encountered.

SAFE DATES for all expected species can be found in Appendix 6.

Please consider safe dates carefully! We use safe dates to list a species as **O** (observed), **PO** (possible), or **PR** (probable) when we lack any other evidence of breeding. Be aware some codes are **only** applicable within the safe dates of an observed species.

In addition, part of our atlas project will allow us to improve the safe dates currently being used. To refine our safe dates, we will use an “**E**” code. This code represents “encountered” and is applied to any species that might breed in Delaware when no evidence of breeding is observed **outside of safe dates**. The “**E**” code allows us to capture migration and dispersal data for potential breeders. When these data are combined with breeding data, we can adjust our safe dates to be “Delaware-specific”. Keep in mind that atlasing your blocks outside of safe dates will provide the valuable migratory and dispersal data about species that both pass through and breed in Delaware!

While it is important to observe and recognize safe dates, atlasers should not use safe dates as a primary reference for WHEN to atlas.

WHERE

As a volunteer atlaser, you are likely the primary atlaser of your own block – a “block owner”. Your primary responsibility is to atlas **your** block. The more you cover your block, the more data you will acquire for the project and the chances of confirming species will increase. If you have

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gotten out and scouted your block, you will have a great start at where you need to be in order to obtain the greatest number of records.

Focus on “natural” areas first! State parks and forests, wildlife management areas, county parks, and National Wildlife Refuges are important areas and are likely to harbor the greatest number of species in any block that contains some part of them. These will also be the easiest places for you to gain access to and allow flexibility in surveying times. Other areas, particularly privately owned lands (Delaware Nature Society, The Nature Conservancy, etc.), have more restricted access, but also are very important to cover because they protect a wide array of habitat types throughout the state. In addition, consider any other private lands that might be under conservation easement in your block (remember to get permission!). If these types of areas occur within your block, you will spend much of your time covering them.

Aside from “natural” areas that may occur in your block, you cannot neglect the “less than favorable” areas as well! Some species breed in very close contact with humans and the disturbances we can cause. We are interested in these species and their populations in addition to all of the species that only occur in “natural” settings. Do not forget to check those weedy cornfields or that retention pond in the new subdivision that went in last year. Brush piles, horse pastures, bridges, and highway signs all present a potential nesting location for some species. Old farm buildings and silos may provide habitat for European Starlings, House Sparrows, or Barn Owls. House Wrens will nest in almost any concealed container provided, from a gourd to a clothespin bag. In open suburban and rural areas, homeowners install bluebird boxes and martin houses that can be occupied by other species as well. Just remember that just because you are not in the middle of an old field, a saltmarsh, or forest patch does not mean that some bird species is not nesting right in front of you. Some species have adapted to breed in what many might consider as the most unnatural settings.

4. Data Collecting – The “HOW” of atlasing!

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Collecting data for your block is the cornerstone of our atlas project. In this section, we will examine how you will collect your data and why it is important to have a standardized method to follow. Before we discuss the data, you should know that you are taking part in an atlas like no other! In terms of the data we are collecting, you will do some new things that no other atlas has ever done before.

First, as mentioned under Safe Dates earlier, one objective of this project is to refine the safe dates we are currently using. In order to do this, we will be recording every observation of any potential breeding bird on every survey trip. This is unlike other atlases that tally a running field card for the whole season. After five years of data collection, we can then examine the number of trips on which a species was observed in a period established by us to look for migratory trends. In the end, we will be able to develop a presence/absence curve over time to see when we should consider a species safe. These data will provide a strong foundation on which to base our safe dates! To do this, you will be introduced to the non-traditional atlasing code “E” and instructed in how to apply it.

Second, we would like to improve our understanding of the breeding phenology, or the timing of the breeding period, for each species using all available data. We will have past nest card data and egg dates, but we are also asking that you record different breeding codes for the same species each year and in some cases possibly the same day. Through this, we will be better able to determine a more accurate breeding phenology for all of our breeding birds. For example, you observe one American Robin sitting on eggs and another, 50 meters away, feeding fledglings on the same date. Knowing that these two breeding stages are occurring at the same time is important in establishing the limits of each stage and how each overlap. Unlike a traditional atlas, you will have the ability to enter the same species more than once if more than one code applies to that species on that day.

Third, as an atlaser, you will collect data about **Species of Special Interest**. As with most other atlases, we will have a Rare Species Reporting Form. Some data on the form will be required, but any

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additional data fields you can complete would be very beneficial in building a knowledge database about some of our most vulnerable species. Most important to us will be the basic information about the sighting (date, time, location, observer, weather conditions) and a detailed description of the bird(s), any behaviors, and general habitat. Also, for location, please be as detailed as you can, such as providing GPS coordinates if possible. In addition, for those atlasers interested, additional habitat analysis training will be established and provided to enable observers to acquire additional habitat data about Species of Special Interest (see more information under **Special Reports and Surveys**).

❖ What data are we collecting?

We are collecting two types of data simultaneously: **occurrence data AND breeding evidence**. Each time you go atlasing in your block you will carry with you either a field card (HIGHLY recommended) and/or a notebook (also HIGHLY recommended). As you survey your area, you will record every potential breeding species you encounter. Your field card will provide you with four (4) options from which to select to describe each species (see Appendix 1):

- **O – Observed:** No evidence of breeding has been observed.
- **PO – Possible:** Minimal evidence of breeding observed; additional evidence needed to upgrade the species to Probable status.
- **PR – Probable:** Evidence observed indicates species is likely breeding, but not confirmed.
- **CO – Confirmed:** Evidence observed indicates actual breeding or breeding attempt by the species.

We have assigned each option to a column on your field card. For each species encountered, you will only choose one option. For O, PR and CO, you must choose the most appropriate descriptive code to use. We provide these codes in Appendix 1 and on your daily field card. The descriptive code for O in the database is either E or O, depending on the survey date and the safe dates for that species. The only code available for PO is “X”.

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For species that you are able to confirm breeding (CO), you may apply more than one descriptive code to assist in developing a species breeding phenology. To allow for this on the field card and in the database, we have provided additional rows. Please enter the species and the appropriate descriptive code. You only need to record a given descriptive code once! For example, you discover two different pairs of breeding Wood Thrush. The first pair has recently hatched young in the nest and the second pair is still incubating eggs. You would record the first pair observed as “NY” (Nest with Young) under the CO column. For the second pair, you would go to the bottom of the field card and write in “Wood Thrush” and enter “NE” (Nest with Eggs) under the CO column. You will repeat the same process when entering the day’s field card into the database application.

If you are unsure of what code might be most applicable while you are in the field, take notes and ask questions later! Also, consider Appendix 2, which provides some help with confusing situations.

❖ How do we collect the data?

OBSERVE the birds in your block. It is critical that you spend some time watching the birds you encounter. This is especially important when the species is outside of its safe dates. Spending a few extra minutes watching a bird may provide you with behaviors that raise the species from O to CO. For example: A friend and you observe an Eastern Phoebe in late March. You feel it is just too early to be a breeder and dismiss it after watching it for one minute. As you walk away your friend, who was not as sure as you were, observes the phoebe sally to the ground and pick up nesting material then duck under a nearby bridge. Since nest-building (NB) falls in the CO column, your friend upgraded your species through careful observation. By no means are we asking for you to sit and observe a bird for an extended period of time (unless you feel it is absolutely necessary), but rather give an observation at least 3-5 minutes if there is a chance it might be breeding.

RECORD your data in the field. Your field card will assist you in keeping track of birds observed in the field, but you may be more

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comfortable with an additional method to keep records. In addition, some data may be lost if it is not collected while surveying.

Please do not rely on memory alone to collect data!

- **Field Card** – your field card will list all the species that could breed in Delaware. In some cases, a number of those species may not apply to your block. However, consider that during migration some Delaware breeding species may be encountered outside of their typical habitat (e.g., a Cerulean Warbler in Henlopen Acres during the Spring Roundup). Having a convenient card to indicate the species observed on a trip will also help to curb erroneous data that might occur when going on memory alone!
- **Field Notebook** – not required, but HIGHLY recommended! Field notebooks allow you to make notes, comments, and drawings when you are in the field. It relieves you of the pressure of remembering every necessary detail about a bird, its behavior, its nesting site, or its habitat. You can also use a notebook for other functions, such as keeping a list of important phone numbers, or writing down an address, or even taking the name of someone who might be interested in learning more about the Delaware atlas and how to contact them!
- **Species of Special Interest Reporting Form** – record rare species data on one easy-to-use form. We have created a form to record data about rare species. A list of Species of Special Interest can be found in this handbook (Appendices 3 and 4). These species are also highlighted on your field cards. If you find a Species of Special Interest, please take a moment to fill out this form. Take the time to record data in as many fields on the form as possible. At a minimum, provide the following information: Date, Species, Observer(s), Time of Observation, Detailed Description of Location (Lat/Long coordinates- *if possible*), and any behaviors that you might observe.

Be aware that some of our species of interest may also be on the Delaware Review List (www.dosbirds.org/committees/records.htm).

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If you detect a species on this list and you would like to have the record accepted (particularly if no breeding evidence is observed), please compile adequate field notes and descriptions for submission to the Delaware Bird Records Committee.

For those atlasers who are interested, we will always be willing to accept assistance in collecting Habitat Data for Species of Special Interest. Please contact the project coordinator or your regional compiler for training opportunities. For a more detailed description, see Special Reports and Surveys.

- **Nest Cards** – Because our Primary Goal is to map the distribution of Breeding Birds, we place emphasis on confirming that a bird *is* breeding! There are few better ways to confirm breeding than finding an active nest. In the Delaware Breeding Bird Atlas, we ask that you complete a Nest Card for each active nest you encounter. Only one (1) card is required for each nest and there is no need to fill out a new card for the same nest as development occurs. However, if you locate a nest in the early stages of construction or incubation, we ask that you return in several days to update the nest card. All nest cards should be turned over to your regional or project coordinator. See Appendix 5 for a Sample Nest Card.

5. Data Reporting

- ❖ **Online, Interactive Data Reporting:** The Delaware Breeding Bird Atlas takes full advantage of current technology, and through a partnership with the U. S. Geological Survey at Patuxent Wildlife Research Center, we are providing volunteer atlasers access to an online atlas database. Once you are a registered atlaser, you will be able to enter much of your data directly into the online database! You can access the database:
 - Through links provided on the atlas website:
<www.fw.delaware.gov/BBA>

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- By visiting: <www.pwrc.usgs.gov/bba/> and clicking on “Delaware 2008-2012” under Breeding Bird Atlases In Progress. [Also, note that you can view the data from the first DE Atlas under “Completed Atlases”!]
- **Tip!** One way to make access to the database site fast and simple is to make the site one of your “Favorites”. If you are not sure how to do this, please contact a coordinator for assistance!

- ❖ **Training:** We will provide you with necessary training on how to use the atlas database as part of your volunteer training. Entering your data will take only moments once you are familiar with the system. We will instruct you on how to log in to the database, how to enter your data, how to edit your data (when available), and how to review your data. However, we all know that technology is not perfect and some components may not be easy for everyone to understand or use quickly. **In the event that you have a question about entering your data online, PLEASE contact a compiler or the coordinator so that we can assist you!**

- ❖ **When do I enter my data?** As often as possible! We request that all volunteers enter their data as often as they can, preferably the same day as a survey. We ask that data be entered this way for three main reasons:
 1. Entering your data often allows us to provide you with updated statistics about the atlas project. Your regional compilers are responsible for reviewing your data, and you can assist them by promptly getting your data in for them to review. Until the data is reviewed, we cannot “officially” add it to the database.
 2. Spread the effort out. If you horde all of your data until the end of the atlas season, you will be left with numerous field cards to enter data from. Not only will this require a good deal of time on your part to enter, but it also increases the probability that an error could occur. Spending 15-25 minutes entering on the day you conduct a survey will save you a lot of grief later in the season!
 3. Collateral data! How many times have you reviewed a list of species after a day of birding and realized you forgot one or two?

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How often did you recall a particular behavior or action you observed when looking over your list? This is good information that may be lost if you wait to enter your data! Make your data the best it can be by getting all data in as soon after your surveys as possible!

❖ **HELP! I work outside and often observe the birds around me!**

How do I enter my data? We have anticipated that some people may observe breeding evidence while they are outside working or participating in other activities.

- If you are a registered atlaser, simply enter your data as an **Incidental Record**.
- If you are an unregistered user, but you believe that you will be entering **incidental data** often, please contact the project coordinator so that we can establish your identity in the database. You will then be able to enter the data as **Incidental Records**.
- **Please check under Section 7 to determine whether you should enter effort time for your incidental records!**

❖ **HELP! I do not have a computer, or I do not feel comfortable entering my data electronically!**

We have anticipated that some volunteers may not have easy access to a computer, or just don't like the idea of interactive data entry for personal reasons. We offer several solutions:

1. If you do not have a computer at home or work that you can use to access the internet and enter your data, but you would still like to enter your data electronically, please consider the following:
 - **Public Access Computers** – Check the availability at your local public library. Most, if not all, public libraries have internet access for registered library users!
 - **Ask a friend** – If you are atlasing a block with more than one volunteer, ask if the other volunteer(s) might be willing to enter your data. If you are a block owner and someone in your block would prefer not to use the online data entry tool, offer if you can, to enter the data for him/her.

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- **Contact the Project Coordinator for other possible solutions!**
- 2. **Mail-in** – If you would prefer, you can mail in your field cards and notes to the Atlas project for data entry. This option is available to everyone. We encourage you to mail in your data as often as possible, but we also realize that it would be more practical to send it all at once at the end of the season. **If you withhold your field cards and notes until the end of the season, please report any Species of Special Interest or anything you feel is unusual to the Block Owner, Regional compiler, or Project Coordinator as soon as you can!** We will ensure that your data are entered correctly! Please send all field cards and field notes to the Project Coordinator at the address listed on Page 10. **You can also provide your field cards directly to any coordinator at any time!**

All volunteers ARE REQUIRED to provide all field cards to the Project Coordinator by September 30 each year! We need to compile and archive the field cards in the event we need to acquire missing data or validate a record. Please be sure to completely fill in your field card on each survey, **including your name!**

6. Block Completion

In our atlas project, blocks will be termed complete after two conditions have both been met. We will examine two variables based on the breeding data and species list for each block.

1. Block Completion based on % CO/PR and % PO: We will label blocks as tentatively complete by examining the species detected as PO, PR, and CO. When 75% of the species in those categories are listed as either PR or CO, the block will be considered complete pending further evaluation. This puts emphasis on upgrading species in your block from O or PO to reach your goal.
2. Species Accumulation Curves: For each block, we will be generating a Species Accumulation Curve (SAC). We will construct SACs for each

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block by inputting the number of species detected in a block, and the number of times each species was detected for that block. Using statistical estimators, we can generate an “S”-shaped curve showing how the species were “accumulated” for each block and given that curve, an estimation as to how many species “should” be in that block. These curves will be analyzed and compared to data from the first atlas, as well as to adjacent blocks. Final determinations about block completion will be supported using the SACs. SACs will also assist us in recognizing blocks requiring additional support and coverage.

For more information about how a Species Accumulation Curve functions, contact the Project Coordinator.

Understand that species labeled as E or O (observed within or outside of safe dates) will not count towards completion, as they provide no evidence of breeding. It is, however, important for volunteers to consider those species for “upgrading” to a relevant breeding code (PO, PR, or CO).

When your block is listed as complete, you are not required to collect additional data for that block. We request that you consider atlasing a new block or assist in a block needing additional coverage, if your block reaches “Complete Status”.



7. Effort, Effort, Effort

Effort refers to two very important components of the DE BBA. We need to know how much time and effort you are putting into your volunteer service to assist in determining block completion and to support the grant funding this project. We will be reporting effort in two ways for this project.

- ❖ **The Atlas Database:** As part of the database, you will be required to fill out several fields prior to entering your bird data. These fields are our way of capturing effort and placing dates on the data you collect. By completing these fields, we can examine the data to observe

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several variables. Dates associated with observations will allow us to provide improved safe date information. Time spent atlasing a block can indicate that some blocks are under- or over-covered. We can also examine other statistics that can assist in the analyses of the data we are collecting.

- ❖ **Effort Recording Forms:** In support of the federal grant funding our project, we need to report the amount of time donated by atlas volunteers. As a volunteer, we ask that you complete the Volunteer Timesheet at least once each month. Please describe your activities and record the total amount of time you spent completing them. This form is for you to record both time spent in the field and time spent elsewhere contributing to the project, such as data entry! **PLEASE record ALL time spent on the atlas project, including travel time, data entry, and reporting.**

Volunteer Timesheets are available for download from the atlas website <www.fw.delaware.gov/BBA> or you may request paper copies from a coordinator.

- ❖ **Reporting Effort for Incidental Data Records:** We acknowledge that there are two types of incidental data. One type deals with “on the fly” observations. The second type identifies records collected from an area outside of your block for the purpose of atlasing. **If you survey an area outside of your block(s), we require that you enter the amount of time you spent in your efforts with your incidental data!** If you collect atlas data because of being outside for work or other activity, entering effort is optional, but available. Please be sure to enter only the amount of time you used actually collecting the data! A field for entering your effort time and travel is provided on the data entry page.

- ❖ **Examples:**

- You are birding at Cape Henlopen State Park and record 38 species, 9 of which you have confirmed breeding evidence. You

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were at the park actively birding for 3 hours and it took you 45 minutes to travel to and from the Park and your home.

Enter 3 hours of effort and 1.5 hrs of travel.

- You have been gardening in your backyard for 2 hours and observe a Blue Jay flying over carrying nesting material. You spend 15 minutes confirming what you observed. You make a mental note of your observations and enter the record later.

Enter 0.25 hrs for effort. You were not actually atlasing for 2 hours. You were actively atlasing for the 15 minutes you spent tracking down the bird. When you take some time away from your activities to continue observing the bird, you should enter effort.

- You are working outside and you notice a Barn Swallow nest. You make a mental note and enter the record later that week. You did not spend time taking notes or recording data and you entered the record along with other atlas observations from your regular block.

Enter 0 hrs. for effort. You did not spend any significant time actively atlasing. Please do not record any time associated with this event.



8. Special Reports and Surveys

As part of, or in association with, our atlas project, we will conduct several different focused efforts. For general atlas volunteers, these additional efforts are **not required but highly encouraged!** If you are interested in participating in these additional efforts, please contact a coordinator for information on what is required and how **you** can get involved or contribute!

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❖ Species of Special Interest Habitat Data Reporting

As part of the objectives of the DE BBA, we would like to collect additional habitat data on Species of Special Interest. We will provide training on how to conduct special techniques and how to collect specific data for certain species. We would like to encourage all atlasers to take part in this component if they are interested.

Although we may know a good deal about rare or uncommon species, it is important that we keep our information up-to-date in the wake of our ever-changing environment. Collection of specific habitat data can improve our knowledge of species we are most concerned for.

Why collect habitat data for Species of Special Interest?

Improved habitat data can:

- Provide Delaware-specific information to aid in protecting rare species and species of special interest.
- Provide credible scientific information for use by appropriate agencies and programs for use in tasks such as reviewing permit applications, subdivision and other development proposals, and comprehensive land use plans.
- Provide guidance to private conservancy organizations and public agencies in setting priorities for land acquisitions or acquisition of interests in lands (mainly conservation easements), for restoration of degraded habitats, and for land management throughout the state, including providing land management advice to private landowners.

The Delaware Breeding Bird Atlas is an excellent opportunity to obtain this data! This five-year intensive field project is the ideal time to collect as much information as possible about Species of Special Interest and their habitat preferences to provide a baseline against which to assess changes that occur in the interim between this atlas and the next one in 20 years!

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What this means for atlasers:

- Two lists of bird species: **A**—"rarest of the rare" and **B**—other species where we need improved data (e.g., of regional concern, rare in a portion of the state, state ranked for breeding).
- **A-list species:** Contact regional compiler (automated when you enter data into database). **IF you DO NOT intend to enter your data for that trip within 24 hours, PLEASE CONTACT a coordinator to report your find!** Be prepared to describe location as precisely as possible, GPS coordinates are very helpful. Take complete and accurate field notes.
- **B-list species:** If nesting is confirmed, complete the Habitat Assessment form to the best of your ability! Please record an accurate description of the species, its behavior, the date and time, weather conditions, and a detailed description of the location (again, GPS coordinates are helpful, if possible).
- **Data collection:** Examples of useful basic information: Forest—deciduous, coniferous, mixed (% deciduous/coniferous); open, closed canopy, % closure; structure—shrub layer, herbaceous layer, debris layer (height and density). Basic plant ID skills will assist in describing habitat. Similar parameters for shrub, grasslands, beach and dune, and marsh habitats are included.
- **Training:** We will provide to you the training you will need to complete the Habitat Assessment form! If you have any questions about the form please contact the Project Coordinator.

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❖ Special Surveys

We recognize that there are some species that are difficult to detect, even for the most seasoned atlasers. Birds that breed in difficult to access habitats and those that are most active at night are particularly problematic. To increase our chances of detection and confirmation, we will be conducting two specialized surveys throughout the atlas project: one for marsh birds and one for uncommon owls and nightjars. These surveys will be conducted throughout the breeding season and cover large areas. If your block contains marsh habitat or appears suitable for owls or nightjars, a survey will likely include those areas. Keep in mind that these surveys are not the responsibility of volunteer atlasers, although we welcome assistance. Although a survey might be conducted within a particular area of your block, these special surveys are meant to supplement data collected by YOU!

Included under special surveys are standardized protocols for marshbirds and nightjars. Other surveys, such as for uncommon breeding owls, will also be conducted. In addition, other special surveys may be implemented in the event a species or suite of species does not appear to have high detection rates but may be broadly distributed.

Look for information about these special surveys and survey opportunities on the atlas website or contact the Project Coordinator!

❖ Special Areas

As part of the 2008 – 2012 Delaware Breeding Bird Atlas, some areas within the State have been selected as Special Areas. Volunteer atlasers who own blocks containing a Special Area will be informed by the project coordinator or regional compiler. Our needs for Special Areas are simple. We want to know what species are breeding within these areas, regardless of the blocks that often divide them.

Therefore, what does “having a Special Area” mean for an atlaser. The only responsibility an atlaser has regarding Special Areas is to survey the areas, within the borders of his or her block. We suggest using a new

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field card for Special Area surveys to prevent data mix-ups. The database application will provide you with an option to indicate you surveyed a Special Area within your block. Data entered for Special Areas are used for both the Special Area and your block! Once data collection for the atlas is complete, we will generate Special Area Species Lists to update and improve lists previously used for an area!

For example, Trap Pond State Park has a list of species known to breed within its boundaries. Partially contained within four (4) blocks, we are interested in producing an updated list of breeders for the Park. You own the Trap Pond SW block. Each time you survey the Park, you record the species and breeding evidence on a field card. If you survey another site within your block on the same day, you use a new field card. Upon arriving home, you enter your data from your field cards and use the database application to indicate all entries for Trap Pond when you enter that card. At the end of the atlas project, all data from all four blocks containing some part of Trap Pond State Park are compiled and a new species list is generated. Likewise, all data you entered for the portion of the Park within your block is included with your block data.



In 2012, we will complete field data collection for the 2nd Delaware Breeding Bird Atlas. None of this would be possible without you – the volunteers. Because of your interest, enthusiasm, and dedication, we can be assured that Delaware’s avifauna is in the best of hands! Your contributions allow us to understand how our breeding bird populations have changed and where we need to focus our efforts to sustain our rich bird diversity for many years to come!

Thank You and Enjoy Atlasing!

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APPENDIX 1: Codes for Observed and Breeding Birds

OBSERVED (O):

E = Individual of any species that may breed in Delaware, but observed **outside of safe dates** and not exhibiting breeding behavior.

O = Individual of a species (♂ or ♀) observed in a block **during its safe dates**, but no evidence of breeding observed nor in suitable nesting habitat. Includes a wide range of species such as vultures or **immature** raptors and colonial nesting species not at the nesting colony.

POSSIBLE (PO) - used only during Safe Dates:

X = An individual of a species heard or seen in suitable breeding habitat **during its safe dates** but not exhibiting any of the behaviors described under the Probable or Confirmed categories.

PROBABLE (PR) - used only during Safe Dates:

P = Pair (♂ and ♀) observed in suitable habitat during the species' safe dates.

S = Permanent territory presumed through song at same location on at least two occasions, 7 days or more apart.

T = Permanent territory presumed through defense of territory, such as chasing of individuals of the same species or 2 or more males of the same species counter-singing.

C = Courtship behavior or copulation observed, except with certain species unknown to breed (e.g., Royal Terns) or for some raptors (Northern Harrier and accipiters) that court over a nesting location and are sensitive to disturbance (**see ON under CONFIRMED**).

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N = Species observed visiting probable nest site, such as repeated flights into and out of a particular area where the bird may potentially nest. **Should be used with caution and after repeated visits in cases where no other breeding evidence is available.**

A = Agitated behavior or anxiety calls from adult birds. **Does not include behavior instigated through pishing or tape-recorded calls.**

B = Nest building by wrens or excavation of holes by woodpeckers.

U = Used nests or eggshells found. **Must be carefully identified if they are to be accepted**

CONFIRMED (C) - **May be used ANYTIME the conditions below are observed:**

CN = Carrying nesting material, such as sticks or grass, or repeatedly carrying food (**raptors ONLY**) when no nest is observed. (**See note about raptors in Appendix 2**).

NB = Nest building at the actual nest site.

PE = Physiological evidence of breeding (obtained by an experienced bander in regards to live birds, or by specialists in the case of a recently deceased bird).

DD = Distraction display or injury feigning (i.e., Killdeer).

FL = Precocial young or recently fledged young (precocial or altricial) incapable of sustained flight and restricted to an area through limited mobility.

ON = Occupied nest, including adults entering and leaving cavity nest too high to observe and sitting birds which may be brooding young rather than incubating eggs, or courting raptors (Northern Harrier, Sharp-shinned Hawk, and Cooper's Hawk).

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AY = Attending young. Adults carrying food for young, feeding young (including recently fledged young), adults removing fecal sacs from nesting site. (**See note about raptors in Appendix 2.**)

NE = Nest with eggs.

NY = Nest with young seen or heard.

***Presence of cowbird eggs or young is confirmation of cowbirds and the host species** (applies FL, AY, NE, and NY codes).

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APPENDIX 2: Example Breeding Code Applications

At times, you may question which code is applicable to an observation. In the event you cannot apply a code in the field, try to record all the information possible about the observation.

OBSERVED: The Encountered code (E) is only applicable outside of safe dates. The Observed code (O) is only applicable during safe dates.

E = Individual of any species that may breed in Delaware, but observed **outside of safe dates** and not exhibiting breeding behavior.

Examples:

1. Eastern Phoebe observed along a field edge 3 weeks prior to safe dates and away from suitable nesting sites.
2. Three Mallard drakes swimming on a retention pond; no females present and outside of safe dates.
3. **Can be applied to any similar O observation when birds are observed outside of safe dates.** Please be sure that the bird(s) being observed are not exhibiting any breeding behaviors that could lead to further evidence.

O = Individual of a species (♂ or ♀) observed in a block during its **safe dates**, but no evidence of breeding, not in suitable nesting habitat.

Examples:

1. Foraging or fly-over herons, egrets, gulls, terns, Bald Eagle and Osprey known to cover long distances away from the nest site.
2. Vultures circling overhead.
3. An individual summer duck (Snow Goose at Bombay Hook NWR in June)
4. The occasional observation of a bird out-of-place, but within safe dates.
5. Any fly-over birds not using habitat within the block such as crows, foraging swallows, pigeons.

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POSSIBLE: The Possible code is applicable only during safe dates.

X = Single singing male present in suitable nesting habitat during its **safe dates**.

Examples:

1. Red-tailed Hawk perched in a tree in suitable habitat.
2. Female Cardinal seen along an edge in absence of a singing male.
3. Drumming Red-bellied Woodpecker (territorial drumming, not feeding). If repeated, can be upgraded to S.
4. Singing Pine Warbler heard in pine woods on 5/15 at location A. If repeated (7 or more days later), can be upgraded to S.
5. Singing Pine Warbler heard in pine woods on next visit to block on 5/25, but at location B. Cannot be upgraded for the block until the same bird is repeated.
6. Crows NOT passing through; observed calling and foraging.

PROBABLE: The Probable codes are applicable only during safe dates.

P = Pair (♂ and ♀) observed in suitable habitat during the species' safe dates. Use this code with caution and try to use it infrequently.

1. Pair of Great Horned Owls duetting (female lower pitch)
2. Pair of Mallards on a retention pond
3. This code cannot be used for species where the sexes are not separable (Blue Jay, crows, chickadee, etc.)

S = Permanent territory presumed through song at same location on at least two occasions, 7 days or more apart **and both observations within safe dates**.

1. Birds from Possible examples 3 or 4 are repeated on a subsequent atlas visit (5/22 or later) or bird from example 5 repeated after 6/1.
2. Note that by definition, this code cannot be used on the first visit to a block.

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T = Permanent territory presumed through defense of territory **within safe dates**, such as chasing individuals of the same species or 2 or more males of the same species counter-singing.

1. Two Mockingbirds chase each other around your yard
2. At a cut-over woods, there are 3 different Yellow-breasted Chats heard from the same stop.

C = Courtship behavior or copulation observed, except with certain species not known to breed (e.g., Royal Terns).

1. Displaying tom Turkeys
2. Woodcock courtship flights within safe dates
3. Does not apply to species that copulate away from breeding grounds such as Laughing Gull, Royal Tern, etc.

N = Species observed visiting probable nest site, such as repeated flights into and out of a particular area where the bird may potentially nest.

Should be used with caution and after repeated visits in cases where no other breeding evidence is available.

1. Barn Swallows or Phoebe making repeated trips under a bridge, but there is no access to see the actual nest. With patient observation, this may easily be upgraded to an AY confirmed code.

A = Agitated behavior or anxiety calls from adult birds. **Does not include behavior instigated through phishing or tape-recorded calls.**

U = Used nests or eggshells found. **Must be carefully identified if they are to be accepted.**

CONFIRMED – Confirmed codes may be applied whenever breeding evidence is found, regardless of safe dates. **Please note that many species exhibit breeding behavior, applicable to one of the following codes, well outside of safe dates.**

Example – Two Redstarts are seen along White Clay Creek on May 25th (safe dates from June 5 to July 5). One is seen foraging and heard

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singing, but nothing more. Since it is outside of safe dates, it may well be a migrant and cannot be counted for the atlas. However, a second Redstart is seen carrying nest material and making repeated trips to the same area in the same tree. This is a CN confirmation or possibly a NB if the nest could be located.

Note: The following species can only be confirmed at a nest: Great Blue Heron, Great Egret, Snowy Egret, Little Blue Heron, Tricolored Heron, Cattle Egret, Bald Eagle, Osprey, Peregrine Falcon and Bank Swallow.

CN = Carrying nesting material such as sticks or grass.

Does not apply to raptors, crows, colonial waterbirds (herons & egrets), or wrens. If you observe one of these birds carrying nesting material, try to observe where a nest might be located to upgrade to NB or other confirmed code.

AY = Attending young. Adults carrying food for young, feeding young (including recently fledged young), adults removing fecal sacs from nesting site.

AY cannot be applied to raptors, gulls, terns, or crows unless they are observed returning to a nest.

A Note on Raptors: Many raptors are prone to nest abandonment when disturbed by human activity, even if young are present. For Northern Harriers and accipiters, any courting display should be considered a confirming observation since these birds only court over the nesting location. For all raptors, males will carry food to females during the incubation period. Repeated sightings of a raptor carrying food to a specific area should be considered a confirmation of breeding. For Northern Harriers, any observation of a harrier carrying food should be considered breeding confirmation as harriers typically eat at or near the point of prey capture. Careful observation of a harrier carrying food will likely yield a nesting location.

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Please refrain from disturbing raptors if any of the above observations are made.

**PLEASE CHECK THE WEBSITE FOR OTHER SPECIES-SPECIFIC
CODE APPLICATIONS!**

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APPENDIX 3: Species of Special Interest – List A

| Common Name | Scientific Name | State Rank | State Legal Status |
|------------------------------|-----------------------------------|------------|--------------------|
| PIED-BILLED GREBE | <i>Podilymbus podiceps</i> | S1B | E |
| AMERICAN BITTERN* | <i>Botaurus lentiginosus</i> | S1B | |
| LEAST BITTERN | <i>Ixobrychus exilis</i> | S1B | |
| TRICOLORED HERON | <i>Egretta tricolor</i> | | |
| BLACK-CROWNED NIGHT-HERON* | <i>Nycticorax nycticorax</i> | S1B | E |
| YELLOW-CROWNED NIGHT-HERON* | <i>Nyctanassa violacea</i> | S1B | E |
| HOODED MERGANSER | <i>Lophodytes cucullatus</i> | S1B | |
| SHARP-SHINNED HAWK | <i>Accipiter striatus</i> | S1B | |
| COOPER'S HAWK* | <i>Accipiter cooperii</i> | S1B | E |
| BROAD-WINGED HAWK | <i>Buteo platypterus</i> | S1B | |
| AMERICAN KESTREL* | <i>Falco sparverius</i> | S3B | |
| RUFFED GROUSE | <i>Bonasa umbellus</i> | SX | |
| BLACK RAIL | <i>Laterallus jamaicensis</i> | S1B | E |
| SPOTTED SANDPIPER | <i>Actitis macularia</i> | SU | |
| UPLAND SANDPIPER | <i>Bartramia longicauda</i> | SHB | E |
| LONG-EARED OWL | <i>Asio otus</i> | SHB | |
| SHORT-EARED OWL | <i>Asio flammeus</i> | SHB | E |
| COMMON NIGHTHAWK* | <i>Chordeiles minor</i> | S2B | |
| CHUCK-WILL'S-WIDOW* | <i>Caprimulgus carolinensis</i> | S3B | |
| RED-HEADED WOODPECKER | <i>Melanerpes erythrocephalus</i> | S1 | E |
| LEAST FLYCATCHER | <i>Empidonax minimus</i> | SHB | |
| BROWN CREEPER | <i>Certhia americana</i> | S1B | E |
| LOGGERHEAD SHRIKE | <i>Lanius ludovicianus</i> | SHB | E |
| CHESTNUT-SIDED WARBLER | <i>Dendroica pensylvanica</i> | S1B | |
| BLACK-THROATED GREEN WARBLER | <i>Dendroica virens</i> | NR | |
| CERULEAN WARBLER | <i>Dendroica cerulea</i> | S1B | E |
| AMERICAN REDSTART | <i>Setophaga ruticilla</i> | S1B | |
| SWAINSON'S WARBLER | <i>Limnothlypis swainsonii</i> | SHB | E |
| HOODED WARBLER | <i>Wilsonia citrina</i> | S1B | E |
| SAVANNAH SPARROW | <i>Passerculus sandwichensis</i> | SX | |
| HENSLOW'S SPARROW | <i>Ammodramus henslowii</i> | SHB | E |
| ROSE-BREADED GROSBEAK | <i>Pheucticus ludovicianus</i> | SHB | |
| BOBOLINK | <i>Dolichonyx oryzivorus</i> | SU | |

* indicates NEST ONLY

| Key | Category | Description |
|--------------|----------|--|
| State Status | E | Listed as Endangered in DE |
| State Rank | S1 | Extremely rare in DE; < = 5 known populations or some other factor for which the species is in danger of extirpation |
| | S2 | Very rare in DE; approx. 6 - 20 known populations |
| | S3 | Uncommon in DE |
| | S4 | Apparently secure in DE |
| | S5 | Demonstrably secure in DE |
| | SU | Status uncertain in DE but likely of conservation concern |
| | SH | Historic records only (> 20 years) from DE |
| | SX | Extirpated from DE |
| | S#B | Relative breeding status |
| | S#N | Relative nonbreeding status |

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APPENDIX 4: Species of Special Interest – List B

| Common Name | Scientific Name | State Rank | State Legal Status |
|--------------------------------|----------------------------------|------------|--------------------|
| GREEN HERON | <i>Butorides virescens</i> | S4B | |
| BLACK VULTURE | <i>Coragyps atratus</i> | S2B | |
| BLUE-WINGED TEAL | <i>Anas discors</i> | S3B | |
| NORTHERN HARRIER* | <i>Circus cyaneus</i> | S1B | E |
| NORTHERN BOBWHITE | <i>Colinus virginianus</i> | S4 | |
| KING RAIL | <i>Rallus elegans</i> | S2 | |
| SORA | <i>Porzana carolina</i> | S2 | |
| AMERICAN COOT | <i>Fulica americana</i> | S1 | |
| BLACK-NECKED STILT | <i>Himantopus mexicanus</i> | S2B | |
| BLACK-BILLED CUCKOO | <i>Coccyzus erythrophthalmus</i> | S1B | |
| WILLOW FLYCATCHER | <i>Empidonax traillii</i> | S3B | |
| YELLOW-THROATED VIREO | <i>Vireo flavifrons</i> | S3B | |
| WARBLING VIREO | <i>Vireo gilvus</i> | S2B | |
| BANK SWALLOW | <i>Riparia riparia</i> | S2B | |
| CLIFF SWALLOW | <i>Petrochelidon pyrrhonota</i> | S1B | |
| BROWN-HEADED NUTHATCH | <i>Sitta pusilla</i> | S2 | |
| WHITE-BREASTED NUTHATCH† | <i>Sitta carolinensis</i> | S3 | |
| SEDGE WREN | <i>Cistothorus platensis</i> | S1B | E |
| BLUE-WINGED WARBLER† | <i>Vermivora pinus</i> | S1B | |
| NORTHERN PARULA† | <i>Parula americana</i> | S1B | E |
| YELLOW-THROATED WARBLER | <i>Dendroica dominica</i> | S2B | |
| BLACK-AND-WHITE WARBLER | <i>Mniotilta varia</i> | S3B | |
| WORM-EATING WARBLER†† | <i>Helmitheros vermivorus</i> | S3B | |
| LOUISIANA WATERTHRUSH | <i>Seiurus motacilla</i> | S3B | |
| KENTUCKY WARBLER | <i>Oporornis formosus</i> | S3B | |
| YELLOW-BREASTED CHAT | <i>Icteria virens</i> | S3B | |
| SUMMER TANAGER | <i>Piranga rubra</i> | S3B | |
| VESPER SPARROW | <i>Pooecetes gramineus</i> | S3B | |
| GRASSHOPPER SPARROW | <i>Ammodramus savannarum</i> | S3B | |
| SALTMARSH SHARP-TAILED SPARROW | <i>Ammodramus caudacutus</i> | S3B | |
| SWAMP SPARROW (see note below) | <i>Melospiza georgiana</i> | S3B | |
| DICKCISSEL | <i>Spiza americana</i> | | |
| EASTERN MEADOWLARK | <i>Sturnella magna</i> | S3 | |

*Indicates NEST ONLY

† Indicates COASTAL PLAIN ONLY

†† Indicates PIEDMONT ONLY

Please take note of any Swamp Sparrow records away from the Delaware Bay coast and marshes. If you locate a Swamp Sparrow away from this coastal bay zone, please indicate the location in your field notes.

See Appendix 3 for State Rank Code descriptions.

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APPENDIX 5: Example Completed Nest Card

Delaware Breeding Bird Nest Record

| | | |
|--|----------------------|---|
| <u>Species (Common Name):</u> Eastern Bluebird | <u>Year:</u> 2008 | <u>County:</u> New Castle |
| <u>Exact Location</u> (be specific; provide GPS coordinates if available): Newark, White Clay Creek St. Pk. Nature Center ¼ mi. N of Hopkins Bridge Rd. on Creek Rd. | | |
| <u>Breeding Evidence</u> (if nest, give site information): Occupied Nest box with attending adults. Nest box on wooden post, ca. 6ft. high. Box ca. 50ft. from forest edge near small open area. | | |
| <u>Habitat:</u> Upland hardwood forest (oaks, tulip poplar, beech). Box in small, open area with grasses and goldenrod. Some surrounding shrubby vegetation, mostly multiflora rose. | | |
| <u>Dates of Observation(s) & Comments</u> (if colony, estimate number of birds & nests): 16 May – observed both adults entering nest box with food; young can be heard in box. 30 May – Two young observed in tree near box; adults tending and bringing food. | | |
| Use other side for additional information | | |
| <u>Observer Name and Address:</u> 123 Atlas Lane, Anywhere, DE, 19999 | | |
| <u>Phone:</u> (302)-555-5555 | | <u>Email:</u> jqbirder@nestsRgreat.com |

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APPENDIX 6: Safe Dates for Delaware Breeding Birds

| Species | Safe Dates | Breeding Notes |
|----------------------------|--------------|---|
| Pied-billed Grebe | 5/20 to 6/30 | confirmed nests generally late in MD/DE |
| Double-crested Cormorant | 6/1 to 7/15 | nest building may begin by late April |
| American Bittern | 5/15 to 7/10 | nesting begins during April (MD) |
| Least Bittern | 5/25 to 6/30 | |
| Great Blue Heron | 5/1 to 6/30 | adults return to colonies by mid- to late February |
| Great Egret | 5/15 to 6/30 | nest construction may begin in late March |
| Snowy Egret | 5/15 to 6/30 | |
| Little Blue Heron* | 5/25 to 6/30 | |
| Tricolored Heron | 5/15 to 6/30 | |
| Cattle Egret | 5/25 to 6/30 | |
| Green Heron | 5/20 to 6/30 | |
| Black-crowned Night-Heron | 5/15 to 6/30 | nesting begins by late March-early April |
| Yellow-crowned Night-Heron | 4/20 to 7/15 | nesting normally begins during April (OH) |
| Glossy Ibis | 5/15 to 6/30 | |
| Black Vulture | 5/1 to 7/15 | |
| Turkey Vulture | 5/20 to 7/15 | |
| Canada Goose | 4/15 to 6/30 | nest construction during March |
| Mute Swan | 4/1 to 6/30 | courtship in late February, nest built by 3/15 (MD) |
| Wood Duck | 4/1 to 6/30 | exploring cavities in late February |
| Gadwall | 5/20 to 6/30 | |
| American Black Duck | 5/20 to 6/30 | nesting begins by mid-March (MD) |
| Mallard | 5/1 to 6/30 | nesting begins in early March (MD) |
| Blue-winged Teal | 6/1 to 6/30 | |
| Northern Shoveler | 6/1 to 6/30 | nested in salt marsh (DE) |
| Green-winged Teal | 6/1 to 6/30 | |
| Hooded Merganser | 5/1 to 6/15 | most nests initiated mid-March to early April (MD) |
| Common Merganser† | 5/10 to 7/15 | |
| Ruddy Duck | 6/10 to 6/30 | courtship into mid-June (DE) |
| Osprey | 5/15 to 7/31 | nest construction begins in March |
| Bald Eagle | 4/15 to 5/15 | nest building in December, courtship in January |
| Northern Harrier | 5/10 to 7/25 | courtship normally mid-March into April |
| Sharp-shinned Hawk† | 5/25 to 7/31 | courtship should occur mid-March to early April |
| Cooper's Hawk | 5/15 to 7/31 | courtship begins in March |
| Red-shouldered Hawk | 4/20 to 7/31 | courtship displays as early as January |
| Broad-winged Hawk | 6/1 to 7/31 | courtship normally April & early May |
| Red-tailed Hawk | 5/15 to 7/31 | courtship normally begins in February |
| American Kestrel | 5/20 to 6/30 | courtship most evident in March |
| Peregrine Falcon | 6/1 to 6/30 | courtship displays by mid-February |
| Ring-necked Pheasant | 4/1 to 8/30 | males displaying in late March-early April |
| Wild Turkey | 3/15 to 8/15 | courtship begins in March |
| Northern Bobwhite | 4/1 to 9/30 | |
| Black Rail | 5/1 to 7/31 | |
| Clapper Rail | 4/15 to 7/31 | |
| King Rail | 5/1 to 7/15 | |
| Virginia Rail | 5/15 to 7/15 | breeding may begin in early April (MD) |
| Sora | 6/1 to 7/10 | nesting probably begins in early May (MD) |
| Common Moorhen | 5/20 to 7/31 | nest building through 7/16 (MD) |
| American Coot | 5/20 to 7/31 | nesting can begin in April (OH) |
| Piping Plover† | 4/15 to 6/30 | courtship during April |

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APPENDIX 6: Safe Dates for Delaware Breeding Birds (cont.)

| Species | Safe Dates | Breeding Notes |
|---------------------------|--------------|---|
| Killdeer | 4/15 to 6/20 | |
| American Oystercatcher | 5/1 to 6/30 | small nest territories used for several years |
| Black-necked Stilt | 5/1 to 6/30 | |
| Willet | 5/20 to 6/25 | |
| Spotted Sandpiper | 6/10 to 6/25 | |
| Upland Sandpiper | 5/10 to 6/25 | courtship during late April-early May |
| American Woodcock | 3/20 to 6/10 | courtship flights begin in December |
| Laughing Gull* | 5/1 to 6/30 | nest building begins in late April (MD) |
| Herring Gull* | 4/1 to 6/30 | nest building begins in late March (MD) |
| Great Black-backed Gull* | 4/1 to 6/30 | nest building begins in mid-March (MD) |
| Gull-billed Tern | 5/15 to 7/15 | arrives at colonies by mid-May (NJ) |
| Common Tern | 6/1 to 7/1 | |
| Forster's Tern | 5/15 to 7/1 | |
| Least Tern | 5/20 to 7/1 | |
| Black Skimmer | 6/1 to 7/10 | |
| Rock Pigeon | 1/1 to 12/31 | |
| Eurasian Collared-Dove | 3/1 to 7/31 | |
| Mourning Dove | 4/1 to 7/1 | |
| Black-billed Cuckoo | 6/1 to 7/31 | |
| Yellow-billed Cuckoo | 6/1 to 8/15 | |
| Barn Owl | 4/1 to 8/1 | |
| Eastern Screech-Owl | 12/1 to 6/30 | courtship begins in February (MD) |
| Great Horned Owl | 12/1 to 6/30 | courtship beginning in December (MD) |
| Barred Owl | 1/1 to 6/30 | courtship starts in "late winter" (MD) |
| Long-eared Owl† | 5/1 to 8/15 | |
| Short-eared Owl† | 4/25 to 8/31 | courting on 4/9 (PA) |
| Common Nighthawk | 5/20 to 7/15 | |
| Chuck-will's-widow | 5/1 to 7/15 | breeding activity starts in late April (MD) |
| Whip-poor-will | 5/10 to 7/15 | |
| Chimney Swift | 5/20 to 7/15 | gathering nest material through 6/24 (DE) |
| Ruby-throated Hummingbird | 5/25 to 7/5 | |
| Belted Kingfisher | 5/1 to 7/1 | nesting begins in late March (MD) |
| Red-headed Woodpecker | 5/15 to 8/15 | |
| Red-bellied Woodpecker | 3/1 to 7/1 | |
| Downy Woodpecker | 3/1 to 7/1 | |
| Hairy Woodpecker | 3/1 to 7/1 | |
| Northern Flicker | 4/20 to 7/20 | |
| Pileated Woodpecker | 3/1 to 7/15 | |
| Eastern Wood-Pewee | 5/25 to 7/31 | |
| Acadian Flycatcher | 5/15 to 7/25 | |
| Willow Flycatcher | 6/5 to 7/20 | |
| Least Flycatcher | 6/1 to 7/15 | |
| Eastern Phoebe | 4/20 to 7/1 | |
| Great Crested Flycatcher | 5/25 to 7/31 | |
| Eastern Kingbird | 5/25 to 7/5 | |
| Loggerhead Shrike† | 3/15 to 6/30 | |
| White-eyed Vireo | 5/15 to 7/31 | |
| Yellow-throated Vireo | 5/15 to 7/15 | nest building 5/4 (DE) |
| Warbling Vireo | 5/25 to 7/25 | |

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APPENDIX 6: Safe Dates for Delaware Breeding Birds (cont.)

| Species | Safe Dates | Breeding Notes |
|-------------------------|--------------|--|
| Red-eyed Vireo | 6/1 to 7/15 | |
| Blue Jay | 5/15 to 7/15 | |
| American Crow | 4/1 to 7/1 | |
| Fish Crow | 4/25 to 7/15 | |
| Horned Lark | 3/25 to 7/1 | territorial activity as early as January |
| Purple Martin | 5/10 to 7/5 | |
| Tree Swallow | 6/1 to 6/25 | |
| N. Rough-winged Swallow | 5/10 to 7/5 | nest building begins in early April (MD) |
| Bank Swallow | 6/1 to 6/20 | |
| Cliff Swallow | 5/25 to 7/1 | nest building by 5/9 (DE) |
| Barn Swallow | 5/25 to 7/10 | |
| Carolina Chickadee | 3/1 to 7/1 | |
| Tufted Titmouse | 3/1 to 7/1 | |
| Red-breasted Nuthatch | 5/15 to 7/31 | "late April" (OH) |
| White-breasted Nuthatch | 3/15 to 7/1 | as early as 3/25 (MD) |
| Brown-headed Nuthatch | 4/1 to 7/31 | |
| Brown Creeper | 5/5 to 7/31 | as early as 3/29 (MD) |
| Carolina Wren | 4/1 to 7/31 | |
| House Wren | 5/15 to 7/10 | earliest egg 4/18 (MD) |
| Sedge Wren | 5/20 to 8/15 | most clutches by 2nd week of Aug. (NE) |
| Marsh Wren | 5/10 to 7/15 | |
| Golden-crowned Kinglet | 5/1 to 8/1 | nest construction through 6/23 (MD) |
| Blue-gray Gnatcatcher | 5/7 to 7/1 | nest building conspicuous during April |
| Eastern Bluebird | 4/10 to 7/30 | |
| Veery | 6/1 to 7/31 | |
| Wood Thrush | 5/20 to 7/31 | |
| American Robin | 4/15 to 7/15 | nest building by 3/21 (MD) |
| Gray Catbird | 5/20 to 7/15 | |
| Northern Mockingbird | 4/1 to 3/15 | |
| Brown Thrasher | 5/10 to 7/15 | |
| European Starling | 4/15 to 6/10 | |
| Cedar Waxwing | 6/10 to 7/31 | peak breeding now July/August |
| Blue-winged Warbler | 5/20 to 7/5 | most nest building after 5/20 (MD) |
| Northern Parula | 5/25 to 7/25 | |
| Yellow Warbler | 5/25 to 7/1 | |
| Chestnut-sided Warbler | 6/5 to 7/15 | nest building 5/24 (DE) and 6/24 (MD) |
| Yellow-throated Warbler | 5/1 to 7/15 | nest building 5/8-30 (DE) |
| Pine Warbler | 5/1 to 7/15 | nest building by 3/23 (MD) |
| Prairie Warbler | 5/15 to 7/20 | nest building 5/5 to 6/9 (MD) |
| Cerulean Warbler | 5/15 to 7/31 | |
| Black-and-white Warbler | 5/25 to 7/1 | nest finished by 5/7 (DE) |
| American Redstart | 6/5 to 7/5 | |
| Prothonotary Warbler | 5/10 to 7/20 | |
| Worm-eating Warbler | 5/15 to 7/20 | |
| Swainson's Warbler† | 4/25 to 7/31 | |
| Ovenbird | 5/20 to 7/15 | |
| Louisiana Waterthrush | 5/1 to 7/15 | |
| Kentucky Warbler | 5/15 to 7/25 | |
| Common Yellowthroat | 5/20 to 7/15 | |

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APPENDIX 6: Safe Dates for Delaware Breeding Birds (cont.)

| Species | Safe Dates | Breeding Notes |
|--------------------------------|--------------|---|
| Hooded Warbler | 5/15 to 7/25 | |
| Yellow-breasted Chat | 5/20 to 7/5 | |
| Summer Tanager | 5/20 to 7/15 | |
| Scarlet Tanager | 5/25 to 7/25 | |
| Eastern Towhee | 5/7 to 7/15 | nest building begins in late April (MD) |
| Chipping Sparrow | 5/7 to 7/15 | |
| Field Sparrow | 4/20 to 7/15 | |
| Vesper Sparrow | 4/20 to 7/15 | nest building 4/2 (DE) and 4/14 (MD) |
| Savannah Sparrow | 5/25 to 7/15 | |
| Grasshopper Sparrow | 5/20 to 7/31 | frequently move between nesting attempts |
| Henslow's Sparrow† | all reports | frequently move between nesting attempts |
| Saltmarsh Sharp-tailed Sparrow | 5/25 to 7/15 | male does not maintain traditional territory |
| Seaside Sparrow | 5/15 to 7/15 | nesting begins during April |
| Song Sparrow | 4/15 to 7/15 | |
| Swamp Sparrow | 5/15 to 7/15 | nesting normally begins in late May along coast |
| Northern Cardinal | 4/1 to 8/15 | nest building can begin in last half of March |
| Rose-breasted Grosbeak | 6/1 to 7/15 | |
| Blue Grosbeak | 5/15 to 7/15 | |
| Indigo Bunting | 5/20 to 7/15 | |
| Dickcissel | 5/15 to 7/30 | |
| Bobolink† | 6/15 to 7/10 | nesting begins during last half of May |
| Red-winged Blackbird | 4/20 to 6/30 | males on territory by early February |
| Eastern Meadowlark | 4/20 to 7/15 | nest building during last half of April |
| Common Grackle | 4/15 to 6/30 | courtship occurs during March |
| Boat-tailed Grackle | 4/15 to 7/15 | |
| Brown-headed Cowbird | 4/20 to 6/30 | |
| Orchard Oriole | 5/15 to 6/30 | |
| Baltimore Oriole | 5/25 to 7/10 | nest building by 4/28 (MD) |
| House Finch | 4/15 to 7/30 | |
| Pine Siskin† | 5/20 to 7/15 | nest building in April (DE) |
| American Goldfinch | 6/1 to 8/30 | nest building by 7/6 (MD) |
| House Sparrow | 3/1 to 9/30 | |

† = Indicates all reports during safe dates should be considered at least possible.

* = Indicates only adults should be considered at any time.

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APPENDIX 7: Atlasing Ethics

As stewards of our state's natural communities, we not only have the privilege of enjoying our diverse bird fauna, but also the responsibility to protect it and treat it with respect. As promoters of citizen science, birding, and Delaware's avifauna, it is our duty to lead by example. Although often conducted with good intentions, consider how your actions as an atlaser may impact the birds you are studying, the habitats that they use, and the rights and privileges of other people that you might contact.

Throughout this handbook, we have provided tips to volunteer atlasers concerning good birding ethics. Below, we highlight some of the most important ideas we hope everyone will take away from the atlas project.

Please carefully read the following adapted statements from the American Birding Association's Code of Birding Ethics:

1. Promote the welfare of birds and their environment.

1(b) To avoid stressing birds or exposing them to danger, exercise restraint and caution during observation, photography, sound recording, or filming.

Limit the use of **recordings and other methods of attracting birds**, and never use such methods in heavily birded areas, or for attracting any species that is Threatened, Endangered, or of Special Concern, or is rare in your local area;

1(c) *Before* advertising the presence of a rare bird, evaluate the potential for disturbance to the bird, its surroundings, and other people in the area, and proceed only if access can be controlled, disturbance minimized, and permission has been obtained from private land-owners. The sites of rare nesting birds should be divulged only to the proper conservation authorities.

1(d) Stay on roads, trails, and paths where they exist; otherwise keep habitat disturbance to a minimum.

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2. Respect the law and the rights of others.

2(a) Do not enter private property without the owner's explicit permission.

2(b) Follow all laws, rules, and regulations governing use of roads and public areas, both at home and abroad.

2(c) Practice common courtesy in contacts with other people. Your exemplary behavior will generate goodwill with birders and non-birders alike.

**For the complete “Code of Birding Ethics”, visit:
<www.americanbirding.org/abaethics.htm>**

The American Birding Association's Code of Birding Ethics may be freely reproduced for distribution / dissemination. Please acknowledge the role of ABA in developing and promoting this code with a link to the ABA website using the url <<http://americanbirding.org>>.

As always, err on the side of caution. It is your duty as an atlaser, and as a steward of the creatures you enjoy, to support the success of our breeding birds.

If you have questions about general or specific situations regarding atlasing ethics, contact the project coordinator.

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NOTES:

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