



The 2nd Virginia Breeding Bird Atlas Handbook and Guidelines

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I. Acknowledgements

The second Virginia Breeding Bird Atlas (VABBA2) is funded and supported by the Virginia Department of Game and Inland Fisheries (VDGIF), as well as the Virginia Society of Ornithology (VSO). These two primary partners have committed tremendous time and resources to ensure the success of this effort. This speaks to their shared commitment to bird conservation through scientific research and public engagement.

Additionally, many other partners have come together to support the VABBA2. The Conservation Management Institute at Virginia Tech (CMI) houses the VABBA2 headquarters office. The Appalachian Mountain Joint Venture has provided a space for the Atlas website and assistance with its development. Numerous other organizations including the Virginia Master Naturalist program, local bird clubs and Audubon chapters, as well as natural resource personnel from around the state have rallied to help support this endeavor.

An initial Atlas steering committee was formed several years ago and has been the driving force behind the launch of this endeavor. Members worked hard to secure both the funding and support necessary to make the VABBA2 a reality. We wish to thank the VABBA2 Steering Committee for their continued work and investment in this second VA Breeding Bird Atlas.

VABBA2 Steering Committee:

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II. Background and History of the Breeding Bird Atlas

Breeding Bird Atlases have come a long way since they were first used in Great Britain during the mid-1950s. Ornithologists recognized the value of recruiting help from a very active British birding community to document distribution and abundance of breeding bird species. This method of tracking population status and distribution quickly spread around the world. In the 1970s, American ornithologists began implementing atlases that used smaller grid blocks as survey units. From this change, the modern breeding bird atlas was born.

Virginia conducted its first breeding bird atlas from 1985-1989. This effort documented 196 breeding bird species in Virginia, seven more probable breeding species, and two possible. During this first Atlas, 97% of priority blocks were surveyed, while 43% of the total number of blocks were visited. For the Second Virginia Breeding Bird Atlas, we hope to achieve broader coverage of the state and potentially increase the number of confirmed breeding species. Given changes to the landscape through habitat loss, conversion, or climate change, we anticipate that species distributions will have shifted in the last 30 years. In the U.S., 40 species of common birds are in steep decline and 17 of these breed in Virginia. However, too little is known about their current status in the state. Data generated by the Atlas will help clarify how these and all other bird species are using Virginia's landscapes and the status of their populations in the face of many environmental changes.

Project Vision: Virginia's birds represent a rich cultural and ecological heritage, a living legacy, the loss of which would threaten our own identity. This project is dedicated to two key tasks:

- Generating a complete inventory of Virginia breeding bird distributions that anyone, managers, researchers, birders, or simply the curious, can access and use.
- Providing an opportunity for the public to take an active role in the conservation and management of Virginia's birds.

Wildlife is a natural resource just like the forests, rivers, and grasslands. Stewardship of these resources is a responsibility in which all people can take an active role. Through the VABBA2, we want volunteers to join us in not only collecting data on breeding birds, but raising awareness of their importance to the ecological landscape of Virginia. Birds are bellwethers. Not only do we appreciate them for the richness that they add to our woodlands, mountains, marshes, and backyards, but also for the important changes that they signal. By monitoring birds, we can identify threats to our ecosystems, so that we may work toward better protection and restoration practice.

The VABBA2 project is directed by an Atlas Coordinator, Ashley Peele, based at the CMI in Blacksburg. The coordinator handles general operations of the project and oversees the regional coordinators who manage the 12 state atlas regions.

Ultimately, the volunteers who devote their time and energy to survey for the Atlas are the most important partners. The nature of atlasing is to become an expert on the bird communities inhabiting your atlas blocks. Volunteers will devote hours to identifying species and documenting their breeding status. Inevitably, a relationship will form between you and these communities of birds. Understanding them is a responsibility, but a pleasure too. We hope you will consider the VABBA2 as an opportunity to expand your own knowledge of Virginia's birds and make your own significant contribution to their conservation.

III. Project Objectives

The goal of the Second Virginia Breeding Bird Atlas is to document the distribution and abundance of breeding birds in Virginia, ultimately providing a contemporary record of current bird communities and how they compare to data from the first atlas. These data will be easily accessible to support conservation of birds and their habitats.

The VABBA2 vision brings together multiple objectives to achieve a clearer understanding of Virginia avifauna.

- Document the current distribution of Virginia's breeding birds
- Assess changes in species distribution since the first Virginia BBA (1985-1989)
- Collect information on the distribution and occurrence of priority species for which current data are lacking
- Engage birders, ornithologists, government agencies, non-governmental organizations, K-12 students and educators, universities, and industry in the pursuit of scientific information and a broad conservation message

IV. Atlas Materials

A. The Atlas Block System

Virginia is a large, topographically diverse state, which creates challenges for surveying all nesting birds. Therefore, the state is organized into a sampling grid comprised of single units, or 'blocks', using the 7.5-minute topographic quads prepared by the U.S. Geological Survey (USGS). Each quad is divided into 6 blocks, representing a 23 sq. km area, approximately 9 sq. miles.

Within a quad, each block is assigned a two-letter directional code: northwest (NW), northeast (NE), center-west (CW), center-east (CE), southwest (SW), or southeast (SE) (see Figure 1 below). The southeastern (SE) block in each quad is the 'Priority Block' (see below for details on Priority Blocks).

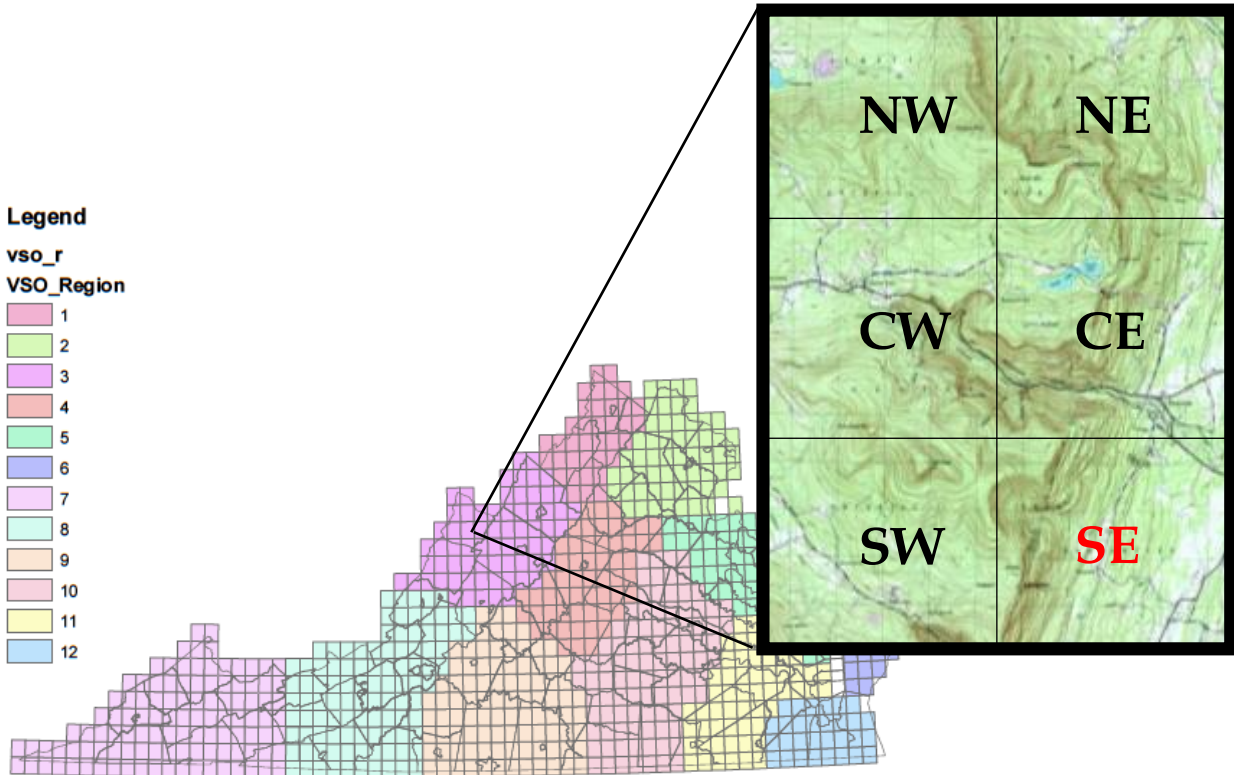


Figure 1. Example of topographical quad map separated into six Atlas blocks, including the Priority 'SE' Block highlighted in red.

Virginia contains 811 quads and each has a 7-digit number and a name that is used as a unique identifier. Atlas blocks are identified by the quad name and two-letter directional code (e.g. Charlottesville SE). Occasionally, an official USGS quad name will already use a two-letter directional suffix in the name. Remember that the final letters always indicate the block location within the given quad (e.g. Lake Drummond NW SE is the Priority block for the quad named Lake Drummond NW). A block is the basic unit within which atlasers will conduct surveys for breeding birds. The goal will be to maximize the number of species recorded within each block, and, for each species recorded, to confirm breeding to the extent possible.

1. Priority Blocks

The goal of any Atlas is always to sample as many blocks as possible. However, given the size of Virginia, time necessary to survey, and need for many observers, the initial focus of the VABBA2 will be surveying Priority blocks. If a Priority block falls outside state lines, then another block within the quad was chose to replace it.

Data collected in this Atlas will be more valuable if it represents bird populations across the breadth of Virginia, rather than concentrating on the few heavily populated parts of the state. Uniform coverage is critical; thus it is far better to survey one block (a Priority block) in every quad in the state than all six blocks in 75% of the state. For this reason, we strongly encourage atlasers to focus their efforts on priority blocks until all of these have been covered in their given region. Regional coordinators are responsible for ensuring that Priority Blocks are surveyed in their respective regions and will direct volunteers toward these blocks in the first year of data collection.

2. Regular Blocks

While we emphasize the importance of completing Priority blocks, atlasers (volunteers who are collecting field data) are certainly not restricted from surveying in other blocks as well. Atlasing in one's neighborhood or property is always welcome, even if it does not fall within a priority block. However, we encourage atlasers to also seek out priority blocks adjacent to or nearby their own property. Additionally, incidental observations in regular blocks are also welcome, as this may be a source of important information on habitats or species that may otherwise receive less survey coverage. Overall, the project goal is to complete surveys of all Priority Blocks and then as many Regular Blocks as time and effort allow. If ever in doubt, we encourage atlasers to contact regional coordinators with questions about what blocks are most in need of survey coverage.

3. Block Sign-up

Atlasers can sign up to be the *Principal Atlaser* for one or more blocks. This is a commitment to ensure that this block will be completely surveyed during the 2nd Virginia Breeding Bird Atlas (2016-2020). Responsibilities for a Principal Atlaser include:

- Adequately surveying for all breeding bird species. See **Block Completion Guidelines** to find more details on this.
- Confirming breeding status for as many species as possible.

- Regularly submitting data from your block to the Virginia Breeding Bird Atlas 2 eBird portal. Entering data quickly is critical to prevent duplication of effort and accuracy of observations. Details fade quickly from our memories, so we encourage atlasers to enter their observations as soon as possible.
- Providing additional details for birds designated as priority species by entering information into Priority Species database.

While a principal atlaser can get help from others in surveying their block(s), they are ultimately responsible for seeing that their block(s) is completed. However, additional atlasers can sign up to survey a block as alternates AND you do not need to be signed up for a block in order to submit observations for that block. For example, if you are traveling through the state and stop off to survey in a region that is new to you, don't hesitate to submit those observations (if consistent with atlas protocols described below). However, if you will be regularly atlasing in an area, signing up for those blocks will help regional coordinators keep track of survey efforts in their region.

Experienced and active birders are encouraged to sign up for one or more blocks. If you are a beginning birder and not yet confident in visual and auditory identification of most bird species you observe, consider finding a more experienced birder to work with you in a block.

Skilled atlasers who sign up for more than one block should plan on beginning their surveys in the first field season. We recommend signing up for 1-3 blocks at a time and working on these simultaneously. When those blocks are completed, then move on to another group of blocks. This strategy will be more efficient and allow you to make a greater contribution to the atlas. We discourage atlasers from re-visiting areas that are already 'completed', based on the atlas protocols. Moving to new blocks will provide more and better data for the project than spending hundreds of hours in one or two blocks.

Block Sign-up Tool - The atlas sign-up tool is available on the VABBA2 website (vabba2.org). The interactive map tool described below allows users to select a specific block, then click a 'Sign-up to survey this block' link. This directs users to a request form, which will be sent to the appropriate regional coordinator (RC) when submitted. Once a block request has been submitted, the RC will review the request.

In some cases, an RC may contact you and request that you consider atlasing another block or teaming up with another birder. Note that this is part of their responsibility to ensure that their Atlas region is fully covered and thoroughly surveyed.

B. Maps

Maps are the most important tool in the Atlaser's kit. They will show you habitats, topography, and the boundaries of your block. Awareness of your location is critical for accurate surveying. If you cross a block boundary unknowingly, then the location of breeding species that you report to eBird will be inaccurate. The Atlas is striving for detailed data on nesting bird locations, so please make an effort to document your location accurately.

An interactive map of the Atlas block grid is available on the vabba2.org website. Block names are included and Priority blocks highlighted in purple. This map allows you to zoom in on the region in which you are interested in atlasing to identify specific blocks. Once you have identified priority blocks to survey in, you can select the block from the mapping tool and fill out a sign-up form. This information will go to your regional coordinator for review and you will receive a confirmation that you were made the *responsible* atlaser for a given block. Coordinators will be responsible for tracking how many volunteers are signed up for each block and will let you know if there are other Priority blocks in greater need of survey coverage for your specified area.

Additionally, PDF maps are available for download on the VABBA2 website. These maps can be downloaded to your smartphone, tablet, or computer. A phone app called *PDF Maps* is available for both iOS and Android phones. This app will allow you to track your location in real-time on the PDF maps provided by the Atlas. To use these apps, you simply download the appropriate app to your phone, then upload the desired PDF maps to the app. This can be done through several methods including via Dropbox, iTunes file sharing, or through the map URL directly.

C. Atlas Data Forms

Several data sheets are provided for use in the field. While some atlas volunteers may choose to use their smartphones to track their observations, others may wish to maintain written records of their observation.

The first data sheet is the [VABBA2 Field Checklist](#). This data sheet should be used each time you start a new checklist, which should occur with every block visit (i.e. visit to a block on a different date) or, if desired, when you survey different sections of your block on the same date. A list of breeding codes is included with this document as a quick reference, but remember to review the more detailed descriptions of the breeding codes in your Atlas Handbook. This sheet also

includes fields for recording your survey effort (time spent surveying), as well as non-survey effort (travel time and mileage).

Note: Documenting effort is an important aspect of atlas records, so please remember to record all time spent on atlas efforts, including both birding and non-birding effort. A separate Effort Database is available on the VABBA2 website for entering these effort data. We ask that you update this at the end of each breeding season.

A [Block Summary Card](#) has also been made for the purpose of tracking progress within your blocks. Data compiled on this sheet is not intended as an Atlas checklist for submission, but rather a personal record of what breeding evidence you have accumulated for a given block. The checklist of species is limited to breeders, but feel free to add any new species that you document in your block(s).

A [Quick Reference Guide](#) is also provided to serve as a cheat-sheet for the field. If you were to forget to bring along a Field Checklist sheet, then this guide lists all of the data needed for each checklist and what information to record for each species observation. Additionally, priority species and breeding codes are described, along with some useful tips for documenting breeding evidence. We recommend making this guide a part of your regular field kit. Stick a copy in your field guide, so it is always handy.

The [eBird mobile app](#) provides another option for recording your data while in the field. This app is available for Android and iOS (iPhones/iPads) platforms, but there are several limitations to be aware of. See the section below on [Data Entry through eBird mobile app](#) for detailed guidelines on using this app for Atlas surveys.

V. Survey Methods

A. Recommended First Steps

Before you head out into the field, we recommend you first work through these steps to decide where you will survey, what you will need, and how atlas surveys are carried out.

1. **First, obtain block maps and consider what priority blocks need to be surveyed in your preferred area.** You can do this by reviewing what blocks are already covered on the VABBA2 Block Map tool. We encourage newer birders to team up with more experienced

birders. This will provide both a learning opportunity and ensure the accuracy of the data collected. (Note: when birding in a small group, effort should be tracked for each individual. eBird will do this automatically, but be sure to note group size on data forms for your own record-keeping.)

2. **Next, gather all the key materials, including this handbook and data forms.** These can be accessed on the VABBA2 website. Be sure you are not only familiar, but comfortable with the survey protocols and use of the data forms prior to entering the field. Contact your regional coordinator if you have questions about survey protocols or data entry.
3. **Next, familiarize yourself with the area you will be surveying.** Note block boundaries, roads, trails, private lands.
 - Consider whether you will need to request permission to access areas with your block (See **Land Access protocols**). This should be done prior to the day you will first attempt to survey.
 - Additionally, it is very important to survey in each of the major habitat types represented in your block, so set up a plan for visiting all of these during your survey efforts.
 - Major habitat types include forest, grassland, shrubland and wetland, as well as developed areas like suburban or urban habitats. These can be further subdivided if there are unique vegetative communities in your block; for example, forest types that may merit particular attention could include spruce-fir, maritime pines, swamps, open pine savanna, etc.
4. **Get out and explore in early Spring or Fall.** As best you can, try to do a reconnaissance survey to become familiar with your block. This can be done in February or early March when most species are not yet breeding, or in Fall to prepare for more concerted effort in the coming Spring.
 - These reconnaissance efforts should be included when tracking your overall volunteer effort. However, if carried out in the Fall or Winter when no species are breeding, this time should not go towards effort calculations used to assess block completion (See **Block Completion Guide**).
5. **Once you are familiar with the area, begin building a species list.**
 - a. *Review what is known from the first atlas. How many species were confirmed breeders, how many were possible or probable?* This information can be found on the Atlas block tool. Lists of possible, probable and confirmed breeding species are provided from the first Atlas for each block. These lists can be accessed via the VABBA2 Map and Block tool on the website.

- b. *Review bird ID and vocalizations of species that you may be less familiar with.*
It is easy for those many migratory bird songs to become a little fuzzy between breeding seasons. Take the time to review songs or field marks of species that you are less familiar with.
 - c. *Carry out exploratory visits to establish what species are present on the site.*
Late May and early June are good times to do this, since most migratory species will be present and residents will often be in the throes of breeding. Evidence of breeding should also be recorded, if observed at this time. It is likely you may start to observe breeding behavior in resident species, during these early visits. Remember that these steps are just recommendations and you should document any breeding evidence that you observe any time you are in the field.
6. **Once comfortable with these early steps, it is time to move on to documentation of breeding evidence in more earnest. The fun begins!**

B. Documenting Breeding Evidence

Birders may already be familiar with the basic survey criteria for this atlas. **The key difference between atlasing and general birding is the observation and reporting of specific bird behaviors that provide evidence of breeding in your block.** These behaviors are organized based on an increasing level of confidence that a species is in fact defending a territory and nesting in your block. The final level or category confirms evidence of breeding and should be documented for as many species as you can.

1. *Breeding Categories and Codes*

Observed:

Observed. *A species (male or female) is seen in a block during its breeding season, but there is no evidence of breeding.* Note: in the first VABBA, an 'O' was used to designate this breeding code. For the VABBA2 eBird portal, a species entry that does not include one of the breeding codes will automatically be categorized as 'Observed'.

- For several species of waterfowl, males will leave their breeding grounds soon after the clutch has been laid and gather elsewhere for the summer and molt. This post-breeding dispersal is not unique to

ducks and geese, so certain observations of herons and gulls should also be coded Observed.

- Note that for certain species (e.g., Common Nighthawk, Louisiana Waterthrush, and Olive-sided Flycatcher), the overlap between migrants and breeders occurs in both spring and late summer, when precocial individuals begin post-breeding movements. They may show up in an Atlas block in June, when they were absent in May. Refer to transition (T) times in the **Breeding Guidelines Charts**.
- Regionally rare species (e.g., Loggerhead Shrikes or Golden-winged Warblers) in unsuitable breeding habitat.

Examples:

1. Shorebirds or water birds observed in summer, but outside their breeding range.
2. A group of ducks, composed of adult males or birds in molt, observed in summer.

F = Flyover. This observation applies to *birds that are observed flying overhead, but not landing anywhere within sight*.

Examples:

1. Turkey Vultures soaring over a block.
2. A Great Blue Heron flying over a forested area in Albemarle County.
3. A gull flying overhead in the Piedmont.

Possible

H = In Appropriate Habitat. *A male or female observed in suitable nesting habitat during their breeding season.*

- Only use for colonial species if a presumed colony or suitable breeding site is present in the block.
- Although there are no firm rules, please be careful assigning H to most Neotropical migrants (thrushes, warblers, vireos, swallows) from late July onward. Consult the **Breeding Guidelines Chart** for guidance on safe breeding windows vs. transition times.

- This code is also appropriate for independent juveniles hatched in the current breeding season (still in juvenile plumage), who no longer qualify as PY (precocial young) or FL (fledged young).

Examples:

1. While hiking through a section of your block that crosses Shenandoah National Park, you see Blue-headed Vireo, Black-throated Green Warbler, Ruby-throated Hummingbird, and Eastern Wood-Pewees in a mature hardwood forest.
2. Dickcissel observed in an abandoned field in late July.

S = Singing Male. *A singing male in suitable nesting habitat during its breeding season.*

- Rules applying to the use of code H also apply to this code.
- Some species produce non-vocal sounds that are still associated with breeding. Examples include:
 - Ruffed Grouse
 - American Woodcock
 - Common Nighthawk
 - Woodpeckers
- Some species make no sounds that are specifically associated with breeding. These species can normally be coded as H. Examples include:

• Jays, crows, ravens	• Swifts
• Geese and Ducks	• Belted Kingfisher
• Wading Birds	
- Woodpeckers, chickadees, and titmice have familiar calls that are heard throughout the year. Warblers, sparrows, and other species use *chip* call notes as non-breeding vocalizations, while finches have very unique flight calls (e.g. *potato chip* call of the American Goldfinch). All such calls should be reported as H rather than S.

Examples:

1. A male Red-eyed Vireo singing from the trees at Hog Island Wildlife Management Area in June.
2. Rails heard in a tidal marsh in late May.
3. Woodpeckers drumming. This is comparable to singing, so acceptable to use S. (Only Pileated Woodpeckers and Yellow-bellied Sapsuckers can be reliably identified by their drumming sound.)

Probable

While moving around your block, you may find yourself picking up multiple singing males within a relatively small area. In such cases, we strongly recommend taking the time to stop and investigate the area for evidence to upgrade that species from a *possible* to *probable* breeder, using the following codes.

P = Pair in suitable habitat. *Use this code when confident that you have observed a mated pair.*

- Easily applied to species with obvious sexual dimorphism, like Northern Cardinals or Red-winged Blackbirds. However, species like raptors, doves, flycatchers, crows, jays, and thrushes show subtle or no differences in color or morphology. Please be very confident that a pair of birds is in fact a male/female pairing before applying this code.
- This code is rarely applied to colonial nesting species.
- Ducks frequently form pair bonds en route to their breeding grounds, so be careful in applying this code to potentially migratory ducks in late winter and early spring, particularly those that are unlikely to breed in VA.
- Some highly social species are only in noticeable pairs for a few weeks during the early part of their breeding season. Keep this in mind when considering codes for chickadees, crows, jays, and blackbirds.

Examples:

1. A male and female Red-winged Blackbird foraging together in a cattail marsh on Jamestown Island.
2. Male and female kestrel perching together near nest boxes or obvious cavities.

S7 = Singing male present seven or more days apart. *A male is observed singing in the same location on at least two occasions seven or more days apart.*

- Remember again to be careful about distinguishing breeding vocalizations from normal calls associated with crows, ravens, woodpeckers, chickadees, titmice, etc.

Example:

In the first week of June, you note a male Scarlet Tanager singing from the top of a Tulip Poplar in your block. The next week, you observe the same species singing from the same location. At this point, it would be safe to use the 'S7' code.

T = Territorial Defense. *A permanent territory is presumed through observation of defensive behavior.*

- This can include chasing or fighting with individuals of the same species or counter-singing males (one bird sings in response to another, initiating a series of back and forth vocalizations).
- This code can also be used for interspecific competition or aggression, e.g. a Blue Jay chasing a crow out of its territory.

Examples:

1. One male Ruby-throated Hummingbird chasing another near a honeysuckle in a city park that bisects your Atlas block.
2. Two Chestnut-sided Warblers counter-singing from nearby treetop.

C = Courtship, Display, or Copulation. *This can include observations of food transfer, displays or grooming between a pair of birds.*

- Some hawks and hummingbirds will perform courtship flights without a female present, so the C code can be applied in such cases.
- Some species carry nest material around prior to actual nest-building as a means of courting females, e.g. Eastern Bluebirds or Tree Swallows. In such cases, the C code should be applied, rather than the NB code described below.

- Note that copulation is only considered as 'probable' evidence of breeding, because some species of birds may copulate away from their nesting sites.

Examples:

1. A male American Kestrel copulating with a female on a fence post.
2. A male bluebird bringing nest material to a nest box, waving wings while perched above box, and/or feeding a female.
3. Male cardinal feeding seed to a female.

N = Probable Nest Site. *A bird is observed visiting a potential nest site repeatedly, but there is not enough evidence to upgrade the species to 'Confirmed.'*

Examples:

1. A Gray Catbird frequently visiting a dense shrub thicket.
2. A Tree Swallow frequently perched on a nest box.

A = Agitated Behavior. *This code should be used when agitated behavior or anxiety calls are observed from an adult, when unprovoked by pishing, predators, or the use of playback recordings.*

- This code applies to primarily vocal responses, when a bird's behavior is agitated, but not clearly indicative of a nest nearby.
- Atlasers should always be careful to avoid behaviors that will agitate nesting birds and risk of abandonment.
- This can occur between different species, e.g. a Northern Parula scolding a Brown-headed Cowbird. In such cases, both species can typically be coded as A.

Example:

1. A House Wren begins chattering loudly from a bush as you walk by.
2. Chickadees giving their familiar 'chick-a-dee-dee-dee' alarm call.

B = Repeat visits or nest building by wrens, kingfishers, woodpeckers, chickadees, and titmouse. *These species are known to build ‘dummy’ nests or excavate cavities for roosting, so it is important not to use this as a confirmation of breeding for these families of birds.*

Examples:

1. A Red-headed Woodpecker repeatedly entering and excavating a cavity within a stand of dead pines.
2. A Carolina Wren visiting multiple cavities or nests in your yard.

Confirmed

Many of the breeding codes used to upgrade a species into the ‘confirmed’ category rely on evidence of nesting within you block. Searching for such evidence should be carried out with care so as to minimize the level of disturbance to the birds and nest. If you are able to confirm breeding without approaching a nest, this is highly preferable to approaching a nest closely enough to view eggs or chicks. Approaching a nest should be treated as a last resort for confirming breeding, when no other breeding evidence is apparent. Additionally, observers should only consider approaching nests that are visible. If you suspect a nest is hidden in a thicket or meadow, then do not push through vegetation to find it, as this increases the risk of accidental damage to eggs or nest.

CN = Carrying nest material. *One or more individuals are observed carrying sticks or other material for nest building, but nest site is not actually observed.*

- Note that this code should not be used for species like wrens who build multiple dummy nests.
- Code can be used for cavity-nesting species, because they typically are only seen carrying material for use as nest lining.

Examples:

1. A Ruby-throated Hummingbird collecting fibers from cattails or strands of spider webs.
2. A Bald Eagle flying with a large stick in its talons.

NB = Nest Building. *Observation of actual nest construction. Note:* Remember to use the probable ‘B’ code for species that build dummy or cavity nest like woodpeckers, wrens, chickadees, and titmouse.

- Rarely used for ducks, grouse, quail, turkeys, or shorebirds that build very simple nests and thus do not fly with nest material.
- Also, this code should not be used for species like the American Kestrel or Great-Crested Flycatcher that lay their eggs in cavities excavated by other species.
- This code can be used for species that use nest cavities excavated by other species, but add material prior to laying, e.g. Eastern Bluebird and Tree Swallow.

Example:

Any instance of a bird actually building a new nest or adding material to an existing structure.

PE = Physiological Evidence. *To be used only by experienced banders who have a bird in the hand and can note brood patches (highly vascularized incubation patch) or cloacal protuberances.*

DD = Distraction Display. *When an adult feigns injury, or attacks an intruder to defend or distract from unseen nest or young.*

- These behaviors involve some degree of risk to the parent, which is the key difference from code A (Agitated Behavior) described above.
- Many songbirds may resort to this strategy, particularly right after hatching. This can be hard to distinguish from agitated behavior (A), so we recommend using DD when an individual bird approaches you between ground- and eye-level, raising trembling, or drooping one or both wings.

Examples:

1. A Killdeer feigning a wing injury and vocalizing loudly to lead predators away from nest.
2. In addition to Killdeer, Common Yellowthroat, Ovenbird, and sparrows (genus *Melospiza*, e.g., Song, Lincoln's, Swamp Sparrow) also use injury feigning to distract from nest or young.
3. A Northern Mockingbird calling loudly and diving at you from a nearby thicket.

UN = Used nest. *When an occupied nest or eggshells are found, but no adults are present.*

- Use this code with extreme caution as nests must be carefully identified if this observation is to be accepted. Several good references exist on this including *A Guide to the Nests, Eggs, and Nestlings of North America Birds* by P.J. Baicich and J.O. Harrison and *Egg Dates for Virginia Birds* by Roger Clapp is another good reference.
- Note: in eBird, this code includes a reminder to 'enter 0 if no birds seen.' It is possible that you will identify a nest, but see no adults visiting it. In this case, it would be a UN code with 0 birds observed. However, you may observe individuals of the same species elsewhere in your block, in which case you would enter the UN code, but still estimate the number of adults seen.

Example:

You find a ground nest with several large eggs in it, while walking in the woods. This can safely be identified as a Wild Turkey nest.

FL = Recently fledged young. *Juvenile birds, either precocial or altricial (born naked and helpless, e.g. songbirds) that are still dependent on parents.*

- Some fledgling birds are capable of ranging far from their natal nests. If a fledgling's tail feathers are shorter than the adults, then it probably originated locally.
- Additionally, this code should never be used on colonial nesting species, e.g. terns, gulls, wading birds, etc., unless the nesting colony is present in the block a fledgling is observed in.

Example:

1. A stubby-tailed juvenile cardinal incapable of sustained flight.
2. Great Blue Heron fledglings sitting in trees near rookery.

ON = Occupied Nest. *Adults seen perched on a nest or entering and leaving a nest site in circumstances indicating an occupied nest.*

- Can be used for nests which are too high or enclosed for adults to be seen perching on the nest (e.g. Chimney Swift or Baltimore Oriole nests).

CF = Carrying Food. *Adult bird carrying food for the young.*

- Look for repeated carrying of food in the same direction.
- Adult birds may be carrying food for courtship or their own consumption. This code should not be used for species that frequently do this, such as corvids, raptors, and terns.

Example:

An Eastern Phoebe repeatedly observed carrying food to the high eave of a building.

FY = Feeding Young. *Adult bird feeding recently fledged young that are not independent.*

- This code should not be used for species that disperse widely from the nest site, e.g. raptors and terns.

Example:

Adult Song Sparrow seen feeding downy fledglings that have left the nest, but remain in the natal area.

FS = Carrying Fecal Sac. *Adult bird carrying a membranous, white fecal sac away from the nest.*

- This code is easiest to confirm when observing birds leaving the nest.
- Note that only songbirds and woodpeckers produce fecal sacs. This code should only be applied to these groups of species.

Examples:

A Tree Swallow carrying a large, white sac in its bill.

NE = Nest with Eggs *(or eggshells on the ground).* *Only use this code if adult bird is present to verify the species identity. If no birds present and you are able to identify egg to species, use the UN code above.*

- We encourage you to observe the nest from a safe distance until an adult is seen.
- Note that there is no need to look into the nests of species when breeding has been confirmed through other codes. Only cautiously check for eggs, if no other breeding evidence is available.

- We recommend only approaching and looking into nests of birds using nest boxes and even then, with great caution.
- If a cowbird egg is found, use 'NE' for both the cowbird and host species. If no adult cowbirds are seen that day, then enter a zero for the number of Brown-headed cowbirds in eBird.

Examples:

An Eastern Bluebird leaves her nest box and you quickly peak in to check for eggs.

NY = Nest with Young. *Nest observed with young either seen or heard.*

- Be especially careful not to prematurely flush nestlings.
- If cowbird young are observed, this confirms both the cowbird and host species. Please record a comment indicating the host species of the cowbird young, if known.

Example:

Note that it can be difficult to identify nestlings or fledglings to species, so it is a good practice to wait for adult birds to return to the nest to confirm the species.

2. Common Breeding Code Errors

Every attempt has been made to provide clear guidance on when and how to apply these breeding codes to behaviors or evidence of breeding that you may document during your surveys. However, past atlases have helped identify certain codes that are frequently misused. Please refer to the list of common errors below to help guide your usage of these codes.

S = Singing Male OR **S7 = Singing Male Present >7 days.** This code only applies to species that have a song associated with breeding.

Code does not apply to:

- | | |
|-----------------------|------------------------|
| ○ Ducks, Geese, Swans | ○ Pigeons |
| ○ Shorebirds | ○ Terns or Gulls |
| ○ Wading Birds | ○ Jays, Crows, Ravens* |
| ○ Vultures | ○ Kingfishers |

*Crows are frequently misidentified when they are newly fledged. Please review the eBird article on the Atlas eBird page for tips on avoiding misidentification of crow species.

Many species of birds make sounds that are not associated with breeding. In some cases, these are actual songs (e.g. nuthatches), but typically we think of these as calls (e.g. Killdeer or Kingfisher vocalizations). Detection of these calls should be labeled **Observed** (a blank breeding code in eBird), and never labeled S or S7.

Examples of these include:

- Nuthatches
- Cedar Waxwing
- Belted Kingfisher
- Killdeer
- Common Nighthawk (swoop/dive counts as S)
- Swallows and swifts (Barn Swallows do sing, but observers must be able to distinguish song from call.)
- Blue-gray Gnatcatcher (BGGNs call frequently, but only sing on rare occasion.)

P= Pair in Appropriate Habitat. This code can rarely be applied to species that are not sexually dimorphic (i.e. males cannot be reliably distinguished from females in the field based on differences in size and/or plumage characteristics, such as a crow or Blue Jay).

Code rarely applies to:

- Crows and jays
- European Starlings
- Terns and gulls

B = Repeat visits or nest-building by woodpeckers, wrens, chickadees, titmice, and kingfishers ONLY.

- Never use this code for any species not mentioned above.
- A common error in atlasng is to apply the 'B' code to species that do not use cavity or dummy nests.

NB = Nest building. This code ONLY refers to species that actually build nests. Cavity nests DO NOT count. Note: species that nest in boxes (bluebirds, swallows, etc.) fall under this NB code.

Code does not apply to:

- | | |
|-----------------------------------|--------------|
| ○ Woodpeckers, including flickers | ○ Chickadees |
| and sapsuckers | ○ Titmice |
| ○ Wrens | ○ Vultures |
| ○ Brown-headed Cowbird | |

CN = Carrying Nest Material. Some bird species regularly carry materials that are not associated with nesting. In such cases, materials may be associated with tool use (crows, jays), food caching, or building roosting cavities.

Code rarely applies to:

- | | |
|------------------------|-----------------------------|
| ○ Crows | ○ Nightjars |
| ○ Vultures | ○ Woodpeckers and wrens |
| ○ Brown-headed Cowbird | ○ Wood Ducks and mergansers |

CF = Carrying Food for nestlings and juveniles.

Code does not apply to:

- Gulls
- Terns
- Hawks, eagles, falcons, Osprey (possible for raptors to be carrying food to young, so only use if you can confirm that they are returning to a nest with food.)

3. Breeding Guidelines Bar Charts

Understanding when birds are likely to be breeding can be challenging, particularly for migratory species. In spring, it is possible to have early-arriving migratory birds breeding, while individuals of the same species are still passing through on northward migration. Similarly, in late summer, some individuals may still be involved in breeding activity, while others are heading southward for the winter season. Such transitional times present challenges to the atlaser, so we have assembled a **Breeding Guidelines Bar Chart** for each of the three major eco-regions in Virginia. These charts show the likely non-breeding, migratory, transitional, and breeding times for each species. However, these are guidelines and should not be taken as absolute. Observations of strong breeding evidence should trump the dates provided in these charts.

These charts can be downloaded from the Handbook and Materials section of the Atlas website (vabba2.org).

C. Abundance

Counting the number of individuals of a given species is something that many eBird users are already accustomed to doing. As part of the VABBA2, atlasers are encouraged to record the total number of each species seen or heard on all of your eBird checklists. The eBird portal allows you to record an 'X', instead of a number. However, if you are unable to count the number of individuals, e.g. a very large flock, then give your best estimate. An educated guess is preferable to entering an 'X' for bird number, which provides no information other than presence.

Imagine a scenario where one observer detects 30 Hooded Warblers in their block and another observer detects one. If both observers enter an 'X', then those observations will be treated as equal and the number of individuals observed unknown. A goal of all atlasers should be to provide as much data as possible, so please strive to report all the species you identify and their numbers in each of the checklists for your block.

D. Location Documentation Guidelines

Some Atlas blocks will contain a diversity of habitats or properties; thus, it is important to divide your block up into surveyable units. While you are not required to submit separate checklists for each habitat type, it may be useful for your own recordkeeping. For the purposes of the Atlas, county lines are of less importance than block boundaries.

We recommend traveling checklists not exceed 1 mile in length. eBird only allows you to plot a single point for a traveling route, so this will be the only location associated with birds observed on that checklist. The farther you travel from your designated point, the less useful your observations will be from a scientific standpoint, so remember to try to keep traveling counts to shorter distance intervals.

eBird allows you to ‘Select a central block point’, when entering your Atlas checklist data (See [Steps for entering eBird data](#) below). We encourage you to pinpoint more precise locations within your block, as they represent an area of about 9 square miles. Selecting a central point or entire block provides much less useful data than selecting more precise locations within your block. Note that for priority species, we ask that you always record precise coordinates (latitude-longitude) for the location you observed them. See section on [Documenting Priority Species](#) below.

E. Timing

Surveying an Atlas block requires knowing *when* to survey, as well as *how* to survey. We provide some guidelines below to help you plan out when to visit your blocks over the course of the breeding season.

1. *Time of Year*

Documenting the distribution of **breeding birds** across Virginia is the focus of the VABBA2. Therefore, March through August are peak times for Atlas field surveys. Most species will be breeding from late spring through the summer. However, hawks, owls, and falcons begin breeding as early as January. Because of this, there is not an official field season for the VA Breeding Bird Atlas. Instead, we recommend the following schedule. (Note: that all of the effort

described below applies to your overall Atlas block effort and should be reported in the VABBA2 eBird portal.)

Recommended Field Schedule

January-February: Visit your block to check for nesting owls or other early-nesting raptor species (e.g. Bald Eagles). At this time, assess land ownership and the need to request access permission from landowners.

March-April: Conduct a survey in early spring to ensure familiarity with your block. Learn the roads, trails, habitat types, and property boundaries. Also use this time to identify any resident species that may already be setting up territories (e.g. Northern Cardinals or sparrow species).

May-June: Begin collecting breeding behavior data in earnest, while still identifying any new species that you may observe on your block. (Recommend at least two visits during these months.)

July: Use this month to upgrade the breeding status of as many species residing within your block as you can.

August-September: Carry out at least one late Summer-early Fall visit to check for late breeding species.

Atlasers can also reference the [Breeding Season Guidelines Chart](#) (see Handbook and Materials on vabb2.org) for guidance on when specific species are likely to be engaged in breeding activity.

2. Time of Day

The majority of bird species breeding in Virginia are diurnal (active in daytime) and most active during the morning hours. In summer, when temperatures climb, bird activity will significantly decline beginning around noon. It is strategic to plan for morning atlas surveys. The dawn chorus (an hour or so before sunrise) is a great window for hearing and identifying the majority of the species present in your block.

Atlasers should also devote some time to the evening hours when nocturnal species such as owls, whip-poor-wills, and nighthawks are active. Please refer to the [Nocturnal Survey Guidelines](#) below and contact your Regional Coordinator, if you have additional questions. Other volunteers may be willing to assist with documenting nocturnal species, so please remember to also reach out to your fellow atlasers when in need of advice or help.

F. Nocturnal Surveys

Nighttime surveys are an important aspect of a thorough Atlasing plan. Virginia has a number of crepuscular (active at dawn and/or dusk) and nocturnal species that will most likely be detected if volunteers devote some time to surveying before dawn or after sundown. Species such as Great Horned Owl, Eastern Screech Owl, and Barred Owl may be opportunistically detected, during routine daytime atlasing. However, others like Chuck-Will's Widow, Common Nighthawk or Northern Saw-whet Owl are unlikely to be detected without nighttime effort.

How and where to survey for nocturnal species?

The use of call playbacks should increase your chance of detecting these species in your block. Note that Northern Saw-whet Owls are only likely to occur in high elevation spruce-fir forests during the summer breeding season. (Note that this is the only time when use of call or song playback is acceptable for atlas surveys.) Nighttime surveys may be conducted similarly to daytime counts. Driving or walking transects with periodic pauses to play calls can be effective. Care should be taken when using call playback. If you play multiple species at one survey location, play them in this order, Eastern Screech Owl, Barred Owl, Great Horned Owl. If you play the larger species first, smaller owls are less likely to respond when their call is played.

Additionally, targeting habitats where nocturnal species are likely to occur is also useful. Nighthawks and Chuck-Wills-Widows like open fields, pastures, wetlands, any open habitat where insects are likely to be abundant. Great-horned Owls are often found in woodlots or forested edges near such open habitats. Barred Owls are a little more selective, preferring larger mature forests, ideally near forested swamps, rivers, or streams. Eastern Screech Owls occur in many woodland habitats including parks, orchards, residential areas with mature trees, etc. Note that Northern Saw-whet Owls only breed in high elevation spruce-fir forests.

Barn Owl recommendations: A species like the Barn Owl is unlikely to be found using these methods. For these, we recommend scoping out your block for likely nesting habitats. Barn owls prefer to nest in old buildings adjacent to grasslands or pastures that will be good for hunting. A good practice is to talk with landowners whose properties fall within your block. Much time can be saved by consulting with knowledgeable farmers who may

already know that species like Barn Owls are nesting on their property. Once a likely nesting area has been identified, dusk is a great time to stakeout the location. Barn Owls tend to come out around sunset to begin hunting. Stationing yourself with a good view of possible nest buildings will help you to determine where owls may be nesting. Note: Barn Owl females rarely flush from the nest, even when humans approach closely. As a result, confirming breeding can be challenging. For this species, do not risk excessive disturbance to confirm. Probable evidence will be sufficient, if confirmation is not easily attained.

When to survey for nocturnal species?

In the eastern US, larger owl species (Great Horned Owl or Barred Owl) begin breeding as early as January or February. Smaller owls like Eastern Screech or Northern Saw-whet Owls begin breeding later, in early Spring (mid-April). If you conduct surveys early in their breeding windows, you are more likely to detect pairs or courting adults. In the summer, newly fledged owls and their parents can be very vocal and curious causing them to respond to recordings of their calls.

G. Block Completion Guidelines

A challenging aspect of any breeding bird atlas is knowing how to gauge whether a block has sufficient coverage to be designated 'complete'. Some blocks will only have one or two habitat types and thus only 30-40 species present. Others may be very diverse and have over 100 species present. Such variation makes it difficult to set benchmarks that apply to every Atlas block and situation. For this reason, we established a set of general criteria that Atlas volunteers can use to guide their survey efforts and assess whether they have sufficiently surveyed their Atlas block(s). Meeting all of these criteria is challenging, therefore we've ranked them in order of importance and encourage volunteers to try to meet all of these benchmarks, but not to spend more than 40-50 hours in a block to do so. Any questions about these benchmarks should be referred to your Regional Coordinator or the State Atlas Coordinator.

- 1. Surveys in a block should total at least 20 hours spread over multiple visits.**

Data from past atlases show that 75-80% of breeding bird species within a given block are detected in the first 16-20 hours of survey time, if all major habitats are visited. After this time, detections decline and effort is essentially wasted trying to find 100% of the species present. If you do not add new species to your list in several trips, consider moving on to another block. A rule of thumb is that it is not helpful to spend more than 40 hours in a single block. Instead, turn your time and attention to other Priority Blocks.

2. All habitat types present in a block have been visited (if accessible).

Realistically, covering your entire block is not feasible. Instead, strive for thorough coverage of all available habitats.

- This goal is more important than attempting a quick survey of your entire block. Some species cannot be found along edges like road sides. When possible, get off roads and into interior habitats to achieve better block coverage.
- However, remember to always acquire permission prior to entering private lands. Trespassing seriously hurts the reputation of both the project and the birding community and is never permissible.
- Additionally, please be aware of and abide by all access regulations for public lands.

3. Surveys should be spread out over different times of the year. As described above in the recommended **field schedule**, it is very important to not limit field observation time to just June and July.

- Early or late breeders will only be detected if one or more visits are also conducted in early Spring and late Summer. Consider June-August as the months for upgrading the singing birds detected earlier in the season from Possible or Probable to Confirmed status.

4. At least 2 night visits should be conducted. Simply put, most nocturnal species will only be detected on nocturnal visits. Such visits are critical for documenting owls, nighthawks, Chuck-Wills-Widow, etc.

- Remember that separate eBird checklists are necessary for daytime and nighttime visits. eBird will classify your visit as nocturnal if it ends earlier than 40 minutes before sunrise or begins later than 20 minutes after sunset.

5. At least 50% of species detected are confirmed as breeding. The overarching goal is always to upgrade as many species to 'Confirmed' breeders as possible. For example, if you have 50 species detected in your block, strive to confirm breeding in 25 (50%) of those species.

- However, please do not spend significantly more than 20 hours per block, in an effort to reach 50% confirmations. Consult with your RC, if you're uncertain as to whether you should continue working in a new block or moving on.

- 6. Species detected in a block should equal at least 80% of confirmed breeding species documented in that same block in the first Atlas.** Because the number of species will vary between blocks, atlasers should not focus on documenting an absolute number as a goal.
- A useful objective is instead seeking to document a percentage of the species recorded within a given block during the first Atlas. Lists of breeding species identified in the first VABBA for each atlas block can be found on the website (vabba2.org).
 - Atlasers should review these lists and use the total number for their block to determine the percentage of breeding species that they've detected relative to the first Atlas.
 - Remember that this is just a guideline and conditions may have changed in your block, affecting what species are present.

These parameters represent the cumulative effort necessary for block completion.

Remember that you can use the Block Summary Card to keep track of the species total and effort in your Atlas block. Additionally, eBird can be used to track your progress in a given block. When you believe that you have completed a block, notify your regional coordinator and they or the Atlas coordinator will review the data submissions for that block.

A block should be completed within one or two years of sign up. We need to cover many, many blocks in Virginia over the next five years, so make the most of your time in the field. Please sign up for blocks that you intend to survey in the first couple years. When these are completed within the project parameters and a block has been reviewed by your Regional and Atlas coordinator, sign up and survey other priority blocks. This will be the most efficient use of the time you are donating to the VABBA2.

H. Upgrading

Atlas volunteers should have several equally important goals for their blocks:

- Adding new species to the block lists
- Confirming breeding for as many species as possible
- Upgrading breeding status

The third goal is as important as the first two. Upgrading occurs from one category to another, e.g. from a Possible code to a Probable code. There is no order of importance for

breeding codes within a category, so time should not be spent on this. When in the field, it is helpful to just record the highest breeding code for each species for each visit within a block. The [eBird Explore a Region](#) tool displays in real time the highest breeding code for each species within each block, so you won't have to track this. Consider filling out a **Block Summary Card** between visits to a block to help you keep track of species' status within that block.

Building stronger evidence of breeding is a key goal for all Atlasers, but so is building a good species list. For rare or uncommon species, we encourage you to make extra effort to upgrade breeding status. However, we suggest that you prioritize documenting as many species as possible over confirming breeding in a common species. It should be apparent that there is a decided amount of strategy involved in Atlasing. Think carefully about what data is most important to collect and use your time in the field wisely.

I. Documenting Priority Species

The Atlas is first and foremost a conservation tool for assessing bird populations Virginia. For this tool to be most effective and useful, we need additional information for species designated as Priority. Some of these species are prioritized because they are of conservation concern, whereas others are species whose breeding status is significant from an ornithological perspective (e.g. species which have recently expanded their breeding range into Virginia, or whose breeding range is retracting to exclude Virginia). The extra details collected for these Priority Species will help us to confirm records, as well as provide a means of communicating important information on location for this species. Reporting this data is critical for helping the VDGIF and partners track Priority Species and, where needed, plan effective conservation and management strategies.

When priority species are observed, a complete field checklist should be entered in eBird, but additionally all priority species-specific observations need to be entered in the **Priority Species Database**. This is accessible via the VABBA2 website. The Priority Species database requires exact location information. When reporting location, use the decimal degree format (e.g. 40.21032, -70.0132). GPS units will provide most accurate locations, but smartphones apps can also be used to reliably estimate coordinates for your location. Note: exact locations do not have to be reported with your eBird checklist.

Atlas Priority Species*

American Bittern
American Black Duck
Common Merganser
Hooded Merganser
Mississippi Kite
Northern Harrier
Golden Eagle
Northern Goshawk
Ruffed Grouse
Northern Bobwhite
King Rail
Black Rail
Common Gallinule
American Woodcock
Spotted Sandpiper
Upland Sandpiper
Caspian Tern
Eurasian Collared-Dove
Monk Parakeet
Black-billed Cuckoo
Barn Owl
Northern Saw-whet Owl
Common Nighthawk
Yellow-bellied Flycatcher
Red-cockaded Woodpecker
Loggerhead Shrike

Common Raven
Bewick's Wren
Golden-winged Warbler
Brewster's Warbler
Lawrence's Warbler
Blue-winged Warbler
Golden/Blue-winged Hybrids
Nashville Warbler
Cerulean Warbler
Mourning Warbler
Wayne's Warbler (*Black-throated Green Warbler subspecies in SE Coastal Plain*)
Swainson's Warbler
Yellow-Rumped Warbler
Bachman's Sparrow
Henslow's Sparrow
Saltmarsh Sparrow
Vesper Sparrow
Swamp Sparrow (*Coastal Plain population*)
Dickcissel
Bobolink
Red Crossbill

**Observations of these species should be entered in the Priority Species database found at vabba2.org, while complete checklists should still be entered in eBird.*

VI. Data Entry

A. Getting started with eBird

For new eBird users, the first step is to visit the Virginia eBird page (eBird.org/content/va) and register. The registration process will allow you to select a username, which you will need to submit an atlas block sign-up request.

Next, familiarize yourself with the eBird site. You can access the VABBA2 eBird portal via the atlas website (vabba2.org). On our website, we provide several tutorials to help you get started using the eBird system. We recommend entering a few simple lists (non-Atlas data) into the Virginia eBird portal, e.g. observations from your yard or neighborhood, to better acquaint you with the data entry process. Once you've done this, you can move on to VABBA2 eBird data entry described below.

B. How to enter standard Atlas data

Please submit your Atlas checklists as soon as possible. Entering data rapidly will help avoid duplication of effort (repeat surveys of the same area by multiple Atlasers), ensure that Priority Species requiring follow-up are documented promptly, and record the most accurate data possible. The more time that passes between field observations and data entry, the more likely that important information may be lost or forgotten.

All of your VABBA2 data should be entered as field checklists using the VABBA2 eBird portal (ebird.org/content/vabba2), rather than the standard eBird portal (i.e. national or Virginia eBird portal). This is extremely important, because Atlas data entered into the wrong portal will not become part of the VABBA2 database. Note that while any checklist submitted through the VABBA2 eBird portal will also be visible through the standard eBird portal, the reverse is not true.

We ask that you submit all checklists that contain breeding codes to the VABBA2 portal. Submit complete checklists, even if not all of the species in the checklist have breeding codes assigned to them. You will see that the Atlas portal is the only one that will allow you to view Atlas block lines on the map. Your usual eBird username and password will allow you to access any of the various eBird portals and all of your observations will still be viewable on your 'My eBird' page.

Steps for entering data into eBird:

1. Log in to VABBA2 eBird portal and go to “Submit Observations”, you will see the “Where did you bird?” screen.
 - The first time you use the Atlas portal to input your data from a specific location you should click on “Find it on a Map”. Type a county or Atlas block name into the box, and click the name, and it will zoom to that region.
 - Use the zoom tools to zoom and pan to the exact location that you surveyed. Scroll and zoom into your block and click in the area where you did your survey. ZOOM IN AS FAR AS POSSIBLE when plotting your point to prevent location errors.
 - On the map, you may see blue pins for your existing eBird locations, and larger red pins that are eBird hotspots, which are generally public locations that people bird often. It is allowable to use one of these hotspot points to submit your data if it accurately represents your location but please BE VERY CAREFUL. In many cases, existing hotspots cross block lines or are near block edges and not a good representation of where you birded.
 - Click the map to plot the starting point for your survey. You can enter a name for this location on the right. We strongly suggest including the block name in the location name (e.g., “Roanoke SE – City Park”) to keep track of your atlas locations.
 - After you enter a location once, the name you chose will be available in the “Choose from Your Locations” dropdown list during subsequent visits (but when using this text menu, be sure you know which block this location is in, hence the recommendation to append locations with the block name).
 - There is currently the option to select a central Atlas Block point as your location, but we recommend using this only when you were not exactly sure of your starting point, or for incidental observations.
 - Instead, try to select the most accurate point possible for your starting location. This can be done either by selecting a location on the map as described above or by entering GPS coordinates under the ‘Find it on a map’ option. Click “Continue” to go to the “Date and Effort” page.

2. Choose the Observation Date, Observation Type, and Start Time.

- The most common Observation Type is *Travelling*; given that you will likely almost always be birding while moving through an area. Some observers may stop at a single point, make observations, then drive to a new point. In such cases, we recommend recording a new checklist for each point if they are greater than ¼ mile apart.
- However, you bird your Atlas block make sure the Observation Type correctly describes your checklist, either travelling, stationary, or incidental.
- Make sure you choose AM or PM for the time or use the 24-hour clock. Because the eBird system that tracks effort within a block keeps track of nocturnal and diurnal checklists separately, please make sure you enter separate checklists for nighttime and daytime observations.
 - Currently the eBird system marks a checklist as **nocturnal** if it occurs 40 minutes before sunrise or 20 minutes after sunset, so the key is to not combine into one checklist an hour of pre-dawn owling with hours of post-dawn daytime effort.
 - Note: try to be as accurate as possible in tracking your time in the field. These data will be important for later analyses of effort.
- The rest of the data entry on this page will vary depending upon the observation type you chose. Fill out the rest of the data entry and click “Continue” to go to the “What did you see or hear?” page.

3. For each species, put in the number of individual birds you observed for the point/route/area covered by that checklist, when possible.

- For those species for which you observed breeding behavior, you should click the “*Show Breeding Code*” button and then “*Choose the highest possible code*” that you observed.
- Although it isn’t necessary to put in a breeding code if you have already recorded a higher breeding code on a previous date, doing so will be useful in better defining the seasonal timing of different breeding behaviors.
- For example, it might be useful in determining if there is re-nesting or multiple broods, or expanding the known occurrence of nests with eggs for a given species. In general, always reporting the highest breeding code observed for each species on every checklist.

4. For **Priority species*** requiring additional information, you will need to document location coordinates of where the bird was observed in the Priority Species database (see section on Documenting Rare or Priority Species). You do not need to record precise coordinates for such species in eBird and in fact, we discourage this.

- You may also be required to add comments to eBird if your sighting is flagged as rare. Please take care to enter useful field marks and other supporting information as these may be necessary to confirm your sighting.

There are several tutorials explaining [how to enter data into eBird](#) available on the Atlas website. Please see the VABBA2 eBird portal or the vabba2.org website for these links.

C. Data entry through eBird mobile phone app

(Only applicable for Android or Apple IOS users.)

Currently, eBird does not have a mobile device app developed to allow Atlas-specific data entry while in the field. This is scheduled to be developed in the coming years. However, if you want to use the [eBird mobile app](#) for atlasing, you can do this, though there are a few caveats:

- eBird can have trouble accurately plotting your location when reception is poor. Checklist locations should always be checked later to ensure location and Atlas block accuracy. You can check where the location falls by going to Submit Observations on the VABBA2 eBird portal, and selecting the [Find it on a Map](#) option where all your locations are displayed (with the Atlas block grid). Even if you are having trouble plotting a location, checklists can be created using the “offline” mode. Once you establish a set of ‘personal’ eBird locations, the eBird app can quickly access those locations during subsequent visits without needing to access map data.
- eBird app checklists go into the system associated with the general eBird portal. In order for these checklists to be incorporated into the Atlas, the observer will need to open each and use the “Change Portal” option at the bottom right to switch over to the “Virginia Breeding Bird Atlas”.
- eBird app does not offer drop-down menus for breeding codes, but does offer a pop-up comment field for every species. This is accessed by tapping any species name from the list eBird provides. When you are out atlasing, we suggest using the species-level comments field to record breeding codes or other notes.
 - When you get home and have moved the lists to the VABBA2 eBird portal, you will then be able open up the checklist (Go to My eBird, Manage My Checklists) and view your notes. **Use the drop-down menu to officially enter the breeding codes into the system.**

So, to summarize, you can Atlas in the field with the eBird mobile app as long as you remember that when you get back to a computer you should a) check location accuracy, b) change the portal, and c) enter the breeding codes using the drop-down menu. **Given the current limitations of the eBird app, we recommend using the provided datasheets until the app is up to date with Atlas protocols.**

VII. Additional Information

A. Atlas Ethics

Establishing and following ethical guidelines is a crucial component of field work for scientists and the casual birder alike. The 2nd Virginia Breeding Bird Atlas will adhere to the guidelines laid out by the Virginia Society of Ornithology. These can be found in PDF format on the VSO website (viriniabirds.net/pubs), as well as vabba2.org. All volunteers should review these guidelines. Here, we highlight some of the key components for Atlas volunteers.

Respect and promote the welfare of birds and their environment. When in the field, avoiding stressing birds or exposing them to danger is of paramount importance. Restraint and care should be used when observing and/or photographing birds. If attempting to identify the occupants of a nest, avoid approaching too closely. If a bird shows signs of agitation, retreat immediately. Never sacrifice the potential security of a nest site or territory for the sake of confirming a species identity or breeding status. While we encourage thoroughness in your data collection efforts, this should never be at the cost of harm to the birds inhabiting your block.

The VABBA2 does not endorse the use of audio recordings (playback) or any kind of lure to attract birds. While playing calls can be useful for determining the presence or identity of birds in your block, this can be very disruptive during the breeding season. We strongly discourage Atlasers from using song or call recordings during atlasng, except during nocturnal surveys. The potential costs outweigh the benefits to be gained from this method.

Use your best judgment when revealing the location of rare or endangered species on eBird. If you feel that the potential for disturbance is too great, please do not enter precise location coordinates in eBird. Precise locations should be entered in the Priority Species database, which is not available for public view. The best policy is to not provide exact locations of rare nesting species.

Respect the habitats within your Atlas blocks as well. Avoid behaviors that may result in too much disturbance, e.g. driving off-road, bushwhacking off trails, etc. We encourage you to visit all habitat types present in your block, but with care and good judgment.

Respect the law, and rights of others. Access to private lands is important for thorough Atlas coverage of the state. VABBA2 volunteers should make every effort to maintain good relationships with landowners in their blocks. Private property should never be entered without permission and access should never be assumed from one visit to the next, unless previously established with the landowner. Additionally, never post a landowner's name or property location to email lists, eBird, etc. without permission.

Property rights extend to public lands as well. Be aware of whether state or federal lands allow public access. If they do not, it is likely that permission can be obtained to enter them, but seek out the proper authorities. Please see [Land Access Protocols](#) to guide your methods for approaching private and public landowners.

Remember that at the end of the day, common courtesy should be extended to anyone you meet. Maintaining goodwill with birders and non-birders alike will contribute to the conservation outreach goals of the VABBA2 and hopefully, gain the interest of people from outside of the traditional birder community.

Use care when birding in a group. We hope that birding clubs and other naturalist groups will incorporate Atlas activities into their field trip agendas, however we ask them to use care when conducting surveys as groups. Avoid group sizes that may cause undue disturbance to nesting birds. Additionally, if visiting a heavily birded area, be respectful of other birders not engaged in Atlas activities.

B. Contact information for Regional Coordinators

<u>Region</u>	<u>Coordinator</u>	<u>Contact Email</u>
1	David Carr	dec5z@eservices.virginia.gov
2	Michael Lott	Michael.lott@dcr.virginia.gov
3	John Spahr	feldspahr@gmail.com
	Lisa Koerner-Perry	koerner.lisa@gmail.com
4	Michael Stinson	myrmecocichla@gmail.com
5	Ellison Orcutt	mr.ellyo@gmail.com
6	Susan Rice	SueArroz@gmail.com
	Zak Poulton	dzpoulton@gmail.com
7	Steven Hopp	shopp@ehc.edu
8	Jerry Via	viaj@vt.edu
9	Paul Glass	pag@gcronline.com
10	Lewis Barnett (NE)	Blb.vabba2@gmail.com
	Evan Spears (SW)	E3spears@gmail.com
11	Dave Youker	youkerd@aol.com
12	Robert Ake	rake@cox.net

C. Land Access Protocols

Much of Virginia is privately owned, which can present challenges for covering all of your Atlas block. It is likely that all Atlasers will have to apply for permission to survey on private land. Maintaining good relationships with landowners is therefore crucial to the success of the VABBA2. Here, we lay out several steps to follow for approaching landowners.

1. Obtain a copy of the Land Access Permission letter from the Atlas website. This letter describes the objectives of the VABBA2 and why it is so important for Atlasers to survey private properties. This letter should be mailed or given in person to landowners, prior to any attempts at gaining access to their property. A pre-stamped quick-reply postcard should also be sent along with the letter for ease of response. When speaking with landowners, remember to be patient and answer their questions thoroughly. These people may be very interested in what you're doing and this is important for promoting the Atlas project. Courtesy and friendliness are the watchwords for public interaction.
2. Once permission is obtained, provide a schedule of your visits. Landowners will appreciate having a sense of how often and during what times you like to have access to their property.
Note: If a landowner denies permission to enter the property, move on and do not continue to contact them. Being respectful of their decisions is of paramount importance for the reputation of the project. We cannot expect to gain access to all private lands in VA, but will be grateful to landowners who do grant permission.
3. Obtain a copy of the Vehicle ID card from the website. Landowners may forget that you are going to be visiting on a particular day. Vehicle placards will remind them who you are and what you are doing on their land. Be sure to always use one of these when on private lands or accessing restricted areas of public lands (for which you have also obtained permission to enter).
4. Provide landowner with species list for their property, following the completion of your Atlas block. This is a courtesy that many landowners will appreciate. Be sure to let them know what species you were able to confirm as breeders. You may find that your activities spark their interest. Additionally, remember to consult the landowners about their own observations. It may be that you acquire some important incidental observations through them.

At times, it may be difficult to identify property boundaries or land ownership. Asking door-to-door can be effective. Failing this, tax assessors' offices are great sources of information on land ownership. The Virginia Assessor and Property Tax Records Directory is an online database that allows you to search and identify parcel owners in many VA counties. This can be found at <http://publicrecords.onlinesearches.com/Virginia-Assessor-and-Property-Tax-Records.htm>.