



MINNESOTA BREEDING BIRD ATLAS

Field Instructions for Volunteers

Minnesota Breeding Bird Atlas Project
April 5, 2010

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Welcome to the Minnesota Breeding Bird Atlas!

What is a Breeding Bird Atlas?

A Breeding Bird Atlas (BBA) is a collection of observational data about all of the birds that breed in a particular state or region. It is designed as a repeatable, grid-based survey to document and map the distribution of breeding birds and provides a baseline to monitor changes over time. Data are collected by ornithologists, field researchers, and hundreds of enthusiastic, amateur birders.

Minnesota's First Breeding Bird Atlas

Minnesota will conduct its first BBA during the five year period from 2009 to 2013. The Minnesota BBA is designed to accomplish the following goals:

- Delineate the distribution of all breeding birds in Minnesota
- Increase monitoring efforts for bird populations
- Generate new local discoveries
- Create Geographic Information System (GIS) layers that enable detailed assessments of bird distributions
- Facilitate the creation and testing of models that predict bird distribution and abundance by habitat
- Engage the public in bird conservation issues
- Increase opportunities for citizen scientists to contribute to avian science

Who is Involved in Minnesota's BBA?

Project Coordinator: The project coordinator is responsible for statewide implementation of the atlas including recruiting volunteers, preparing field materials, managing the BBA database, and ensuring the overall quality of the data collected.

Regional Coordinators: The state is divided into 32 atlas regions with one or more volunteers responsible for coordinating atlas activities within each region. The Regional Coordinators ensure that all priority atlas blocks within the region are surveyed within the duration of the project. They also recruit surveyors, provide local bird and habitat expertise, monitor survey progress, and review results for reliability. A map of all regions and a list of coordinators and their contact information can be seen at www.mnbba.org (*Regions and Blocks*).

Atlas Surveyors: Surveyors are the backbone of the atlas project. They begin by signing up to cover one or more Priority Blocks. Once their selection is made they: explore the habitat and access points within each block; observe birds in all the habitat types present (no need to survey the entire block); and record evidence of breeding behavior for every species observed (e.g. carrying nesting materials). The goal is to record a breeding status code for every species observed and/or heard in the block.

Surveyors do not need to be expert birders to participate. The success of the atlas depends on the help of all individuals interested in Minnesota birds. A list of frequently asked questions about being a surveyor can be found at www.mnbba.org (*FAQ*).

Field Observers: Individuals also can contribute breeding bird observations from any place in the state (e.g. their backyard or a favorite park where they hike or camp). These individual observations, called incidental observations, are important in helping to delineate the statewide breeding distribution of all Minnesota's birds.

Overview of Atlas Process

The following paragraphs provide a broad overview of the four steps in the Atlas process. Each is discussed in detail in the section “How to Conduct a Block Survey: Details” on page 9.

Step #1: Find and Register for one or more Priority Blocks

The MNBBA website, www.mnbba.org, is the place to find and request one or more atlas blocks to survey. Quick and easy instructions can be found at the website under *Regions and Blocks: Easy Guide to Finding Blocks and Entering Data*.

Blocks that are a priority for the MNBBA are outlined in red on the website. These are the blocks that the BBA must complete during the 5 year survey period. Blocks that are already owned are shown in blue.

If you do not use or own a computer you can still participate by contacting the Regional Coordinator in your area who can recommend a block to survey. The Regional Coordinator, or a friend, then can register you for that block.

Step #2: Scout and Explore Your Block

The goal of every block survey is to report as many species as you observe with the strongest evidence of breeding by covering all the habitat types in the block. However, you do not need to cover the entire block (whew!) There are three things to consider as you get familiar with your block: habitat, access, and property ownership.

Habitat

Check out the block to identify the different types of habitat present: e.g. urban areas, wetlands, row crops, grassland, and woodland. Different habitats provide nesting habitat for different species. Survey birds in every different habitat that you identify.

Access

When you have a good idea of which habitat areas you want to cover, look for access to those areas. Are there roads, walking paths, or canoe-able waterways you can use? What's the best way to get to where you want to go to find as many species as you can? Some places may provide habitat for many species – or you may know a place where you might find an uncommon species.

Land Ownership

As you explore your block it is essential that you respect private property. Use only public access to public land unless you have permission from a private property owner to survey there. If you think you may be missing critical habitat by avoiding private property, request permission from the landowner. Your Regional Coordinator can help you identify who owns the property. In some cases, there will be property that is off-limits. This is fine and will not compromise the outcomes of the Atlas project.

Step #3: Get Out and Bird!

This is what the Atlas is all about. The survey goal for every block is to record as many different species as the surveyor finds within the block and the strongest breeding evidence for each species (e.g. adult carrying nesting material). To accomplish this, make multiple visits to your block to look for as many species as you can find. Visiting at different times of the day throughout the length of the breeding season will improve your chances of finding the most species.

Use one of the MNBBA Field Cards or your own field notebook to record your observations. Surveyors observe bird behavior and record the code that describes what they see. A list of breeding evidence codes and tips are in Appendix A and are available on the website (*Materials: Essential Materials*). Each breeding evidence code belongs to one of four status levels: Observed, Possible, Probable or Confirmed. Our goal is to document Probable and Confirmed observations in each block for as many species as possible.

Don't forget to document your effort (time) as well. Remember:

- For all observations record the species seen and the breeding evidence code.
- For special species some additional information is required (see "Special Species", page 7).

Step #4: Submit Your Observations

Finally, you need to add your observations to the database. On the MNBBA website select *Enter Observations*. This tab will take you directly to the database where all of Minnesota's BBA data are entered and stored. Once again, an *Easy Guide for Finding Blocks and Entering Observations* will help guide your data entry efforts. The guide can be found in two locations on the website (under *Regions and Blocks* and *Materials: Supplemental Materials*).

We encourage you to enter your data after every visit. If you are not comfortable working online, you can have a friend enter the data or you can send your data sheets to your Regional Coordinator or someone they designate.

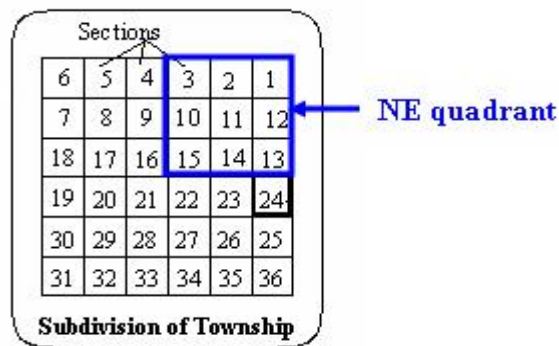
Atlas Structure

Survey Area

Priority Blocks

Surveys will be conducted in predetermined areas to ensure that the atlas covers the entire state. Volunteers will survey every corner, but not every inch, of the state. Most Atlases use a grid system to determine the survey area. Minnesota chose the U. S. Public Land Survey System to select these areas. The Public Land Survey System is based on a 36 square mile area called a township. Townships are subdivided into 36 sections (each 1 mile by 1 mile). To reduce survey bias, the Minnesota BBA randomly selected the NE quadrant (3 miles by 3 miles) of every township in the state to survey. These predetermined areas are called **Priority Blocks**.

U.S. Public Land Survey Township



Rivers, borders, or occasional variations in the grid system can create townships less than 36 square miles. In cases where the NE Priority Block was not complete, we selected the SE quadrant or continued clockwise to select a complete quadrant. If the township had no complete quadrants, the township was excluded from the MNBBA.

Each atlas block is identified by its Township/Range number and a quadrant letter code. For example, T123 R20a identifies Township 123, Range 20. A lower case "a" means it is the NE quadrant of the township.

Secondary Blocks

Secondary blocks (quadrants in the township outside the Priority Block) may also be surveyed where habitat present in the township is under-represented in the Priority Block or when special sites do not fall within the Priority Block. Special sites include National Wildlife Refuges, State Parks, State Scientific and Natural Areas or Important Bird Areas. Regional coordinators can help surveyors identify these special sites.

Incidental Observations

Anyone can report bird observations anywhere in the state, including in blocks that already are owned by other observers. When these data are submitted, field observers will need to provide location information by either knowing the GPS coordinates or the block ID.

Safe Dates

A large proportion of Minnesota's breeding birds are migratory species and the timing of their migrations through the state often overlaps with the breeding season; some individuals of a given species are migrating through the state while other individuals are breeding. For example, an individual bird seen in late May might be a local breeding bird or it could be a migrant on its way to more northerly breeding grounds.

To reduce the possibility of incorrect reporting, safe dates for all of Minnesota's breeding species are provided on the website under *Materials: Supplemental Materials* (the first master list is sorted taxonomically; the second is sorted chronologically using safe dates). These dates help exclude observations of non-breeding individuals during pre- or post-breeding movements through the state. If a bird exhibits behavior in the Observed or Possible breeding code categories, but the timing is outside the safe dates for that species, do not record that species. The individual may be migrating through. However, breeding evidence can always be recorded outside of safe dates for Probable or Confirmed observations.

Key points to remember about safe dates:

- Safe dates do **not** define a species' breeding season.
- Safe dates are, at best, professional estimates averaged for the entire state.
- Safe dates **only** apply to records in the "Observed" and "Possible" categories. Observations in the "Observed" and "Possible" categories that are outside of the safe dates will not be accepted.
- Safe dates do not apply to "Probable" or "Confirmed" observations.

The figure below shows safe dates for a hypothetical Minnesota breeding bird (*Species A*). Note that safe dates do not define the full breeding season, but rather a smaller portion of the season after pre-breeding movements (mostly spring migration) and post-breeding movements (fall migration and post-breeding dispersal) have been considered.

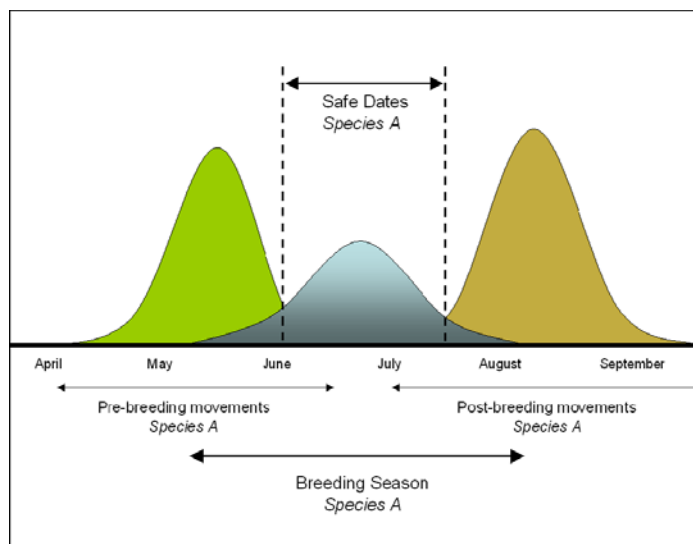


Figure courtesy of 2nd Pennsylvania BBA

Special Species

Atlas surveyors will conduct the survey and record their observations in the same manner for the majority of species that they encounter. For a select number of species the method of survey and/or the information that is recorded will vary.

Species with Survey Challenges: Owls, Nighthawks, Whip-poor-wills and Marsh Birds

Because many species are nocturnal and many marsh birds are secretive, these birds are normally difficult to detect. To improve the likelihood of finding these species please review two documents on the website under *Materials: Supplemental Materials*: 1) *Nocturnal Survey Guidelines*, and 2) *Marsh Bird Survey Guidelines*.

Species that Require Additional Data

1. Species to Verify

The MNBBA identified 51 species that require additional verification because they are rarely seen in the state (e.g. casual, accidental and former breeding species), they are endangered or threatened in the state, or they are difficult to distinguish from other more common species (see Appendix B and the website at *Materials: Essential Materials: Special Species and Habitat Codes*). If these species are observed they will require completion of a MNBBA Verification Form (found on the MNBBA website under *Materials: Essential Materials*).

2. Waterbird Colonies

Many waterbird species, such as grebes, herons, egrets, terns and gulls nest in colonies. When a colony location is found, surveyors are asked to estimate the number of nests and/or adults and to record the colony location. Colonial waterbird species that are very rare, such as the Snowy Egret and Common Tern, will require completion of a verification form.

Species for whom Additional Data is Encouraged

1. Species of Conservation Interest

Birding organizations and government agencies maintain a variety of different lists as a way to highlight species that are rare, vulnerable to disturbance, and/or declining in abundance for conservation purposes. The MNBBA has identified 44 Species of Conservation Interest in Minnesota (see Appendix B and the website at *Materials: Essential Materials: Special Species and Habitat Codes*) from a variety of these sources.

The additional field documentation requested for these three groups of species is discussed in the section: "How to Conduct a Block Survey: Recording Breeding Bird Data" (page 15).

Websites and Logins

The MNBBA project has two separate but closely integrated websites. The MNBBA website (www.mnbba.org) is an informational site and the portal to our database. This is the best place to find information about how you can participate in the project as well as materials and instructions for volunteer surveyors (including all the materials referenced in this document). By selecting *Request a Block* or *Enter Observations*, the MNBBA site provides a direct link to the database website managed by the Cornell Lab of Ornithology. This is where you can locate a block that you are interested in surveying, request to own one or

more blocks, enter and/or edit your observations, and view the atlas results. Even if you do not own a block you can enter observations you made anywhere in the state. The MNBBA website also provides additional summaries of the atlas data and an alternative method to find a survey block.

The Cornell site can be accessed directly at: <http://bird.atlasing.org/Atlas/MN>. This site requires everyone entering observations (whether or not they own a block) to register on the site. Surveyors create a login and can then request a block, enter their observations, and review their results. In addition, Regional Coordinators and Atlas Administrators use this website to review the project progress and the observations submitted. You may wish to bookmark both websites on your list of "Favorites" for quick and easy access.

How to Conduct a Block Survey: Details

Identify the Priority Block you want to Survey

The *Request a Block* tab on the [MNBBA](http://www.mnbba.org) website (www.mnbba.org) will help you find a block. Click on this tab to open the "View Regions & Blocks" page.

- If you are already registered, click "Sign In" and enter your Username and Password then click "Log In".
- If you have not registered as a participant, click on the link, "click here". After filling in the required information hit "Continue" to enter your contact information on the next page. Then click "Continue".

The "Welcome to the MNBBA" page is your MNBBA home page. Select the "View Regions and Blocks" tab at the top of the page. This will allow you to zoom in on the Minnesota map to an area you are interested in. At the appropriate scale, the map will display all of the atlas blocks in the general area you selected. The blocks outlined in red are the priority blocks, blocks outlined in green are the secondary blocks, and blocks shaded blue are already adopted by another atlas surveyor.

When you find a block you want to adopt, single-click on it. A pop-up window will appear that provides the Block ID, region number, and a link to request ownership of the block ("Request to Own"). Click on the request link to open the "Request Block Ownership" window. Enter any notes that you want and click "Submit". A message is emailed to the Regional Coordinator who will respond to your request. When your request is processed, a link to that block will appear on your "My Home" page.

There is a one page "Easy Guide for Finding a Block and Entering Data" on the MNBBA website (under *Regions and Blocks* and *Materials: Supplemental Materials*).

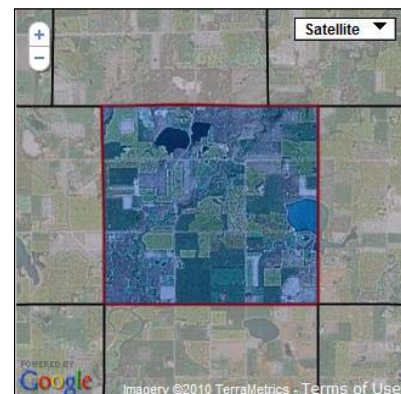
The version used to find and select blocks during Season 1 is still available under *Regions and Blocks: Alternative Block Finder*.

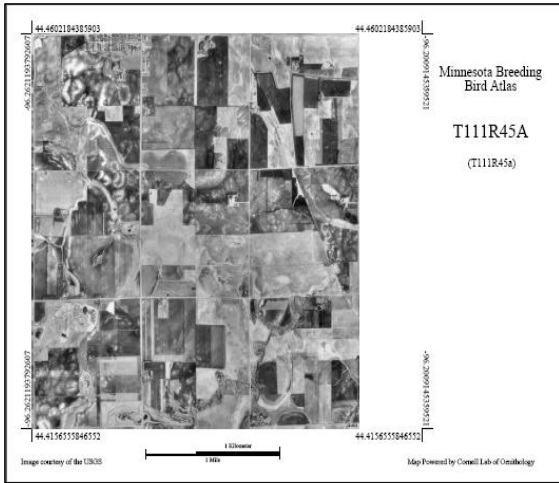
Scout or Explore Your Block

Review Block Maps

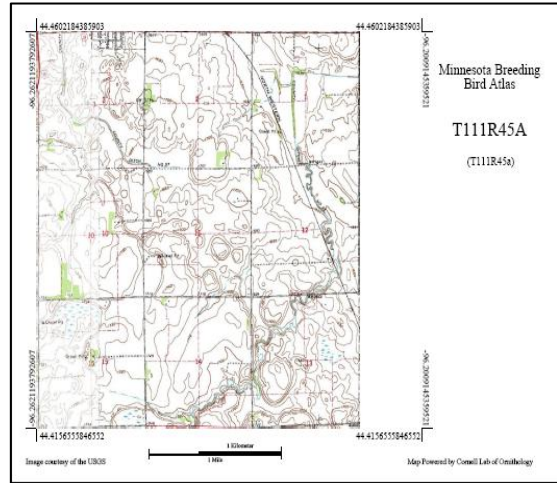
The first step is to familiarize yourself with the maps that are available for your block. Begin with the maps available on the Cornell website on the Block Profile page. The small map on the Block Profile page is from Google Earth (at right). Its size cannot be enlarged.

The mapping function on this page allows you to select a satellite image, a street map image, an image showing terrain, or a hybrid. The "Block Maps" tab on the Block Profile page allows you to display and print two additional map images: a black and white satellite image and a USGS topographic map. Both are shown below.





Cornell Block Map: Satellite Image

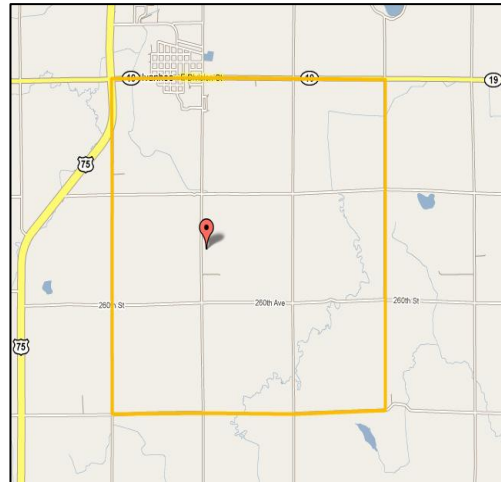


Cornell Block Map: Topo Image

To see and print a larger, color satellite image and/or street map of your block return to the MNBBA home page (*Home* tab at top of the *Block Profile* page). Under *Materials* select: *Regions and Blocks: Alternative Block Finder* and then *Find a Block: GPS Location or Block ID*. Type in your block ID and you will see displayed a satellite image of your block. The tools at the top of the page allow you to zoom in and out and to display other relevant information (such as streets, locations of Wildlife Management Areas, etc.)



MNBBA Block Map: Color Satellite Image



MNBBA Block Map: Street Map

- Identify Access Points

These maps provide an initial assessment of available access points to the area. In most regions of the state, county roads, delineated on the county highway maps, can provide primary access. In more remote areas of the state, logging roads and/or trails may be particularly important. Some of these may be displayed on recreational maps but an initial site visit, before you begin the survey, will help you locate additional entry points.

- Identify Different Habitats to Explore

Review the maps and look for different habitats (e.g. coniferous forest, wetlands, open grasslands, open water) because you will need to look for breeding birds in a representative area of each habitat to increase the probability of finding all the breeding species. You may want to circle different habitat types on the map with a colored pencil and highlight any unusual features, such as parks, bridges, cemeteries or grain elevators, to be sure to survey those areas as well.

Conduct a Field Reconnaissance of your Block

Fall or early spring is a great time to get out and explore your block. Review the maps or explore the area by car, on foot, by bike, or in a canoe. Be sure to print a topographic map, and/or a satellite photo to bring along in the field, depending on what works best for you. Locate the access points you identified earlier and assess which will work best for road surveys, hiking and/or water access.

Remember to always be careful stopping on busy roads and, if you head off-road, to bring along maps and a compass. In some areas private lands may provide key access to important habitats that you want to sample but never enter private land without permission (see section on "Atlasing and Land Ownership"). A good rule of thumb is to stop every half mile within a similar habitat to listen and look for birds. For guidelines related to specific habitats, read *Suggestions for Surveying an Atlas Block* at the MNBBA web site under *Materials: Supplemental Materials*. This is your chance to discover some new, great birding sites.

Atlasing and Land Ownership

It is essential that Atlas Surveyors do not survey on private property without permission. When you explore the block in spring and/or fall it is a good time to identify private landowners and secure permission to survey their property. Minnesota County Plat Books are particularly helpful in identifying property boundaries and landowners, and are available for purchase in county offices. Plat maps are also available online for many counties and some counties have advanced interactive mapping tools that you may find helpful. Your Regional Coordinator also has a set of the county plat books that are available in his/her region.

Once you have identified the landowner of a property you wish to survey, and he/she is available, don't be shy about asking permission. Most folks are happy to let you on their property once they understand the project. Oftentimes the landowners know a great deal about the birds on their property and can be very helpful. If they allow you access, let them know when to expect you and follow-up by providing them a thank you and a list of birds you documented on their land. Provide them with contact information should they observe any birds that you were unable to document.

If the landowner is not available, you can send a letter requesting permission. A copy of a standard request for permission is available from the MNBBA website (*Materials: Essential Materials*).

There will be some landowners who do not grant you permission to enter their land. Be respectful of their wishes and do not press the issue further. We expect that we will not be able to gain access to all private lands in Minnesota's Priority Blocks. This will not compromise the success of the atlas.

Finally, throughout the state, and particularly in the northern region, surveyors will encounter public lands in their blocks. They may be owned by the county, the state or the federal government. Although access to most of these lands is not restricted, obey all restrictions that are posted on boundary signs. In all cases, it is best to check with the local public lands office (e.g. a local Department of Natural Resources Offices, a county lands office or a national forest, national park or U.S. Fish and Wildlife office) and let them know what you are doing. Like the private land owners, the public land owners likely will be very interested in learning what you have documented on their property and can often provide you with helpful information.

Survey Preparation

Obtain and study Atlas materials before you head out to the field

It is important that you go into the field fully prepared. Take a few minutes to visit the MNBBA website and review the atlas materials. Investing time up front to become familiar with these documents will save you time and prevent frustration in the field.

Review Expected Species

Review species that are expected in your survey area by using the following resources:

1. First, on the MNBBA web site you will find field forms that have been customized for each of Minnesota's 32 BBA regions (*Materials: Essential Materials: Multiple Visit Field Form with Regional List of Expected Species*). Select the form for the region where you will be working (the map of regions is available on the web site under *Regions and Blocks*). The field form lists the species that are expected in the region based on our current knowledge of the distribution of Minnesota's breeding birds. The information was compiled from data collected by the Minnesota Ornithologists' Union (MOU). Reviewing the species on the list is a great way to learn what species you might expect in your block. You can also use this field form for collecting data in the field.
2. If you would like a finer level of resolution, MOU county maps allow you to identify birds that occur in the county where your block is located during the summer season (<http://moumn.org/cgi-bin/occurrence.pl?season=Summer>) as well as birds that are known to nest there (<http://moumn.org/cgi-bin/occurrence.pl?user=nesting>).

Additional background information on many individual species or groups of species can be found under *Supplemental Materials* on the MNBBA website. Included are field survey tips for different groups of species (*Species Reference Guide*).

If you need to review the field marks, songs, and calls of the species in your area, there are many great field guides and song identification CDs and DVDs that are also listed under *Supplemental Materials*.

Become Familiar with Codes and Forms

Data organization and accuracy are key aspects of surveying and successfully completing an atlas block. Atlas volunteers may select a field form that best suits their needs from the following three options (see *Essential Materials* on the website).

1. Multiple Visit Form with Regional List of Expected Species

The multiple visit form is customized for each of MNBBA's 32 regions. The primary advantage of this form is that it includes the list of expected species for the region with each of their safe dates and it allows you to record the outcomes of multiple visits on a single form. This makes it easier to focus successive visits on species that you haven't seen or species that need their breeding evidence codes updated. The breeding evidence codes, however, are not on the form so make sure you bring a copy along with you in the field.

2. Single Visit Form

This is the primary field card that was used during the 2009 field season. Breeding evidence codes are included on the form but the observer must write each species seen and/or heard during the visit; a list of expected species is not included.

3. Incidental Observation Form

This simple form is designed for recording incidental observations and their location at sites outside of your block. Keeping a supply of these in your car will help facilitate recording such observations.

Surveyors also may choose to record their observations in their own field notebook. If so, it is extremely important to be familiar with the required data on the standardized field cards so that you properly record the essential data. Every observation you make needs to include these 5 elements:

1. Date
2. Location (to the level that you can assign it to an atlas block)
3. Time spent in the field
4. Species
5. Breeding evidence code

It is extremely important that you record your survey hours (i.e. the time you spend in the field). This will be essential for making valid comparisons with future atlas efforts. Recording the time spent on non-survey activities (i.e. driving to the block and breaks) and the mileage (both within and to/from the block) is optional.

For incidental records made while traveling through several different Atlas blocks or by casually watching birds in your backyard, we ask that surveyors assign an "effort" of 15 minutes for each reported set of observations. To enter your data into the atlas

database, the location information will need to be sufficient to assign the observation to an atlas block.

Note: The Field Card will have a great deal of valuable information. Losing field cards and all the data they contain is something to avoid at all costs! To prevent loss of critical data, it is recommended that field data are submitted on the website as soon as possible after it is collected to provide an added measure of data "safety." Surveyors may want to make photocopies, especially if they are submitting records on paper. Also, if you chose to record all your field observations in your own field notebook, it is important that you remember to record your time spent surveying (i.e. survey effort).

4. Verification Form

You can fill out a paper copy or complete the form on line. A verification form must be filled out for any observation of a Species to Verify (Appendix B) and submitted to the Regional Coordinator or the Project Coordinator.

Planning When to Survey

Evidence from other states suggest that spending at least 20 hours in a block actively searching for breeding birds should enable you to document most of the breeding species in the block. This estimate will vary depending on your skill level, the diversity of habitats in the block and the ease of access to different habitat types. Plan to visit the block multiple times throughout the season, including one nocturnal visit. Be sure to survey all the different habitat types. Scheduling the timing of field visits is up to the surveyor.

Additional background information that will help you anticipate when and how you might conduct the survey for different groups of species can be found under *Supplemental Materials (Species Reference Guide)*. For example, although dawn surveys are the best time to hear most breeding songbirds, evening is the best time to look for nighthawks in urban areas. Other considerations include:

- Time of Year

Some species begin nesting as early as January or as late as August, however, the majority of atlas survey work will take place from March through August. Survey work can be divided into three general time periods:

1. March and April: We suggest you spend a few hours in March and April to look for breeding owls, raptors, and woodpeckers. While you are out in your block/s listen for other early breeding species
2. May and June: Most Minnesota birds breed from late spring through summer. Late May through June is an excellent time to hear and locate singing males.
3. July and August: July and early August is an excellent time to observe juvenile birds which will confirm breeding as well as late nesters, such as Cedar Waxwings.

- Time of Day

Many birds are active during the morning so a majority of your survey effort should be concentrated in the morning hours. However, at least one visit should also be devoted to birding just after dusk and into the early evening to document nocturnal species that might otherwise be missed during the day. You could survey for an hour or two after dusk or begin an hour or so before sunrise (see *Nocturnal Survey Guidelines* under *Supplemental Materials* on the web site).

- Weather Conditions

Surveys should be run under satisfactory weather conditions. Avoid rainy, very windy, or very cold (below freezing) conditions. Occasional light drizzle or mist may not affect bird movement or calling but steady drizzle or heavy fog should be avoided. If the weather is interfering with your ability to see or hear birds, call it a day and plan another visit.

Record Breeding Bird Data

Remember that the goal is to complete the Priority Block with the strongest evidence possible for every species observed. The list of evidence codes (Appendix A) is in order of weakest to strongest evidence.

On Each Field Visit:

- Enter the breeding evidence code for each species, based on your observation.
- Record only what you actually observe; when in doubt, choose the more conservative of two or more applicable breeding codes.
- If you make multiple observations of a species in the block on the same day, only record the observation with the highest breeding evidence code (for example if you hear more than 5 Red-eyed Vireos (Evidence Code: M) but later find a nest with eggs (Evidence Code: NE), only record the latter observation).

On Subsequent Field Visits:

- Record new species seen that were not observed on your last field visit.
- Record species seen on your last field visit **only** if you are able to upgrade to a stronger breeding evidence code (e.g. the highest evidence code on your first visit was Possible [X] but now you see birds of that species carrying sticks to a nesting site so you change the Evidence Code to CN).
- When you enter the observation into the atlas database, do not delete the earlier observations of a species that were of a lower breeding evidence code.

Information on the relative abundance of species is being collected through a companion program as part of the MNBBA so the number of individuals you observe of each species is not important.

When Additional Information is Required:

1. You Observe a Species to Verify:

Document detailed notes and the location for each sighting of these species. Completion of a Verification Form (www.mnbba.org) and location are **required**.

2. You Observe a Waterbird Nesting Colony:

Enter an estimate of the number of adults and/or nests in the colony in the Notes column and record the location. Location is **required**.

When Additional Information is Encouraged:

1. You Observe a Species of Conservation Interest:

When you confirm breeding for these species you are encouraged to describe the habitat where the confirmation was made. Later, when you enter the observation into the atlas database you will need to select a code (included in the list of *Supplemental Materials: Special Species and Habitat Codes*) that best describes the landscape where the bird was observed. Enter the habitat code in the notes column for that species.

Habitat codes are important for improving our knowledge of the habitat requirements of these species of interest. The habitat codes are three character codes. Use the code that best describes the habitat where your observation was made. If you are not familiar with the detailed habitat descriptions, use the three character code that ends with "X", for a more general description.

Recording Location for *Colonial Species* and *Species to Verify*

Location can be documented either using GPS Coordinates or a block map.

If you have a GPS unit, either record the location as a waypoint in the GPS unit to retrieve when you enter your data or write the coordinates in the Notes field on the Field Form. When you enter the location information online, you will be asked to record the coordinates in decimal degrees.

If you do not have a GPS unit, identify your location by putting a mark on your block map. When you enter the location information online, you can identify the location by clicking on an image of your block and the coordinates will be automatically generated.

Submit Your Data

A short *Easy Guide for Finding Blocks and Entering Data* is available in two locations on the web site (*Regions and Blocks* and *Supplemental Materials*). If you would like more detail, it can be found in the document, *Surveyor Data Entry Instructions* also on the MNBBA web site (*Supplemental Materials*). Remember, in addition to entering your bird observations it is also important to enter your hours spent actively surveying. Entering your mileage and time spent on other activities (such as driving to the block) is optional.

For Block Surveyors: Completing Your Block

Our goal is to complete blocks the same season they are begun so that surveyors can move on to other blocks in the state. A benchmark guideline for block completion from other state atlases suggests that a block is considered complete when 20 hours of effort have been spent actively surveying the block, including at least 1 nocturnal visit. You should also review the list of species that you have observed and compare it to the list of species expected in the region. Remember, the goal is to confirm breeding for as many species as you can. If most of your observations are of species with breeding evidence codes of Observed or Possible try to upgrade as many as possible to either Probable or Confirmed.

If you feel you have documented all the species that are expected, based on the habitats available in the block, and have done your best in terms of confirming breeding evidence, contact your Regional Coordinator for a final determination. Every block can be very different from others in the region so block owners and coordinators should evaluate what is appropriate for that block.

Ethics and Safety

Birding and Atlasing Ethics

(credit to the Ohio Atlas Project for the following information)

Some atlas activities might impose certain stresses on breeding birds, and all such activities should be kept to a minimum. Since one of the main goals of a breeding bird atlas is to confirm breeding, active nests or parents with fledglings may be encountered. If a nest is found, be sure to minimize disturbance to the nest, adults, young birds, and the surrounding vegetation. There is a variety of breeding evidence codes that will confirm breeding, so searching for the location of nests is not necessary.

If you suspect that a bird is breeding in a particular habitat patch, take some additional time to watch that bird's behavior. It might reveal the presence of a nest or young without the need to disturb the nest or vegetation concealing the nest site. For example, repeated visits by an individual bird to a particular location, such as a dense hedgerow or nest cavity, represent probable breeding (code 'N'). Increasing the confirmation level for this species could be accomplished by simply observing the bird carrying nest material (code "CN") or carrying food (code 'FY'), both of which confirm breeding for that species without encroaching upon the nest location. Another possibility would be to note the location of the likely nest and revisit the site in a few days. Please note that you should be especially careful if the adults are very upset by your presence. Increased adult activity near a nest site may attract nest predators such as jays, crows, accipiters, and a variety of mammalian predators.

The MNBBA discourages the use of playback tapes and understands that a great deal of controversy accompanies the use of tape playback to attract birds. In some unusual cases, if used correctly and very sparingly, it can be a useful tool for detecting elusive species in some situations. Brief (~20 second) tape playbacks to naïve individuals (those which are unlikely to ever hear another tape recording) should not have detrimental effects on an individual bird. However, it is important to note that tape playbacks should never be used in areas that are birded heavily, such as metro parks, state parks, or state nature preserves, and never for threatened or endangered species.

Special care should be taken when surveying for rare species, and nests should never knowingly be approached. Observing these species at a distance can, in many cases, yield breeding confirmation without the direct observation of nests, eggs, or young birds.

Field Safety

Whether you are birding in the agricultural landscape of southern Minnesota, the urban landscape of a city, or the dense forests of northern Minnesota, birding is a fun and healthy outdoor activity. Like all outdoor recreational activities, however, it is important that certain precautions are taken to ensure that the experience is both enjoyable and safe and that you are prepared for any hazards that may arise. Your personal safety should always be your top priority. The web site includes a list of important safety considerations to remember (*Supplemental Materials: Field Reminder Checklist*).

Appendices

Appendix A. 2010 MNBBA Breeding Evidence Codes and Tips

| Category | Code | Evidence |
|-----------|------|--|
| Observed | O | Species observed in a block within safe dates, but no evidence of breeding. Use this code for species not in suitable nesting habitat. For example, this code applies to raptors or gulls flying over, herons and other colonial nesters foraging with no observed rookery, ducks summering on a pond, or pelicans loafing. Check Evidence Reporting Tips for other examples if you have questions. |
| Possible | X | Species encountered in suitable nesting habitat within safe dates such as a Virginia Rail in a marsh. Use this code when you hear a male singing in a likely nesting area on only one occasion. For raptors, 'X' is not a reliable code due to extensive home ranges; use 'O'. Also, use caution with northern irruptive owls (Northern Hawk Owl, Great Gray Owl, Boreal Owl). Check Evidence Reporting Tips if you have questions. |
| Probable | M | Multiple (5 or more) singing or territorial birds of a species detected in suitable habitat within the block on the same day. Most species listed as (M) can be upgraded during a later visit. Check Evidence Reporting Tips for species specific examples. |
| Probable | S | Singing male in suitable habitat at same location at least 5 or more days apart. Be aware that some species do not sing to demonstrate territoriality or to attract a mate. Check Evidence Reporting Tips for species specific examples. |
| Probable | P | Pair observed in suitable nesting habitat. Geese, swans, ducks: 'P' not reliable as breeding evidence. Code as 'X'. For more information, check the Evidence Reporting Tips. |
| Probable | T | Permanent territory presumed through defense of breeding territory by fighting or chasing individuals of same species. Geese, swans, ducks: 'T' not reliable as breeding evidence. Code as 'X'. For more information, check the Evidence Reporting Tips. |
| Probable | C | Courtship or copulation behavior, includes displays or transfer of food. Geese, swan, ducks: 'C' not reliable as breeding evidence. Code as 'X'. For more information, check the Evidence Reporting Tips. |
| Probable | N | Bird observed visiting the same likely nest site repeatedly, but insufficient behavior for upgrading to Confirmed. Especially useful for cavity nesters or for a shrub-nesting species that flies into the same thicket and disappears several times. |
| Probable | A | Agitated behavior or anxiety calls from adults usually indicate a nest site or young in the vicinity. |
| Confirmed | PE | Physiological evidence of breeding based on bird in the hand such as a highly vascularized swollen incubation (brood) patch or an egg in the oviduct. For bird-banders only using expert judgment. |
| Confirmed | CN | Bird seen carrying nesting material such as sticks, grass, mud, cobwebs, etc. |
| Confirmed | NB | Nest building seen at the actual nest site, including wrens and woodpeckers |
| Confirmed | DD | Distraction displays, defense of unknown nest or young, or injury feigning. Killdeers may give a "broken wing" act, a Red-winged blackbird may dive at you near the nest site, or an Ovenbird may run about with wings fluttering. |
| Confirmed | UN | Used nest or eggshells found. Unless carefully identified, use this only for unmistakable eggshells and nests that were used during the Atlas period. |
| Confirmed | ON | Occupied nest indicated by adult entering or leaving nest site in circumstances indicating an occupied nest, including those in high trees, cliffs, cavities, and chimneys where the contents of the nest and incubating or brooding adult cannot be seen. |
| Confirmed | FY | Adult bird carrying food for young or feeding long-tail young. This code includes this year's birds with adults (e.g. duck broods not full grown). Be aware that some adults carry food a long distance or may be engaged in courtship feeding. |
| Confirmed | FL | Recently fledged short-tail young or downy young. This includes dependent young only. Be cautious of species that range widely soon after fledging. |
| Confirmed | FS | Adult bird seen carrying fecal sac. Many passerine adults keep their nests clean by carrying membranous, white fecal sacs away from the nest. |
| Confirmed | NE | Nest with eggs. |
| Confirmed | NY | Nest with young seen or heard. |

MINNESOTA BREEDING BIRD ATLAS: Breeding Evidence Code Reporting Tips

Ducks, Swans and Geese: the P, T, and C evidence codes are unreliable for these species because non-mated birds can be observed fighting or chasing, engaging in courtship or copulation behavior, or in apparent pairs even within safe dates. In all cases, look for confirmed evidence or mark as Possible (X).

Pelicans, Cormorants, Herons, Egrets, Gulls and Terns: With a few exceptions (noted below) these are colonial nesting species that often forage far from the nesting colony. Birds observed, even in large numbers, should be recorded only as Observed unless there is clear evidence of a nesting colony (i.e. nests are seen). If there is a lot of flight traffic to or from an area, N may be appropriate but field surveyors should do their best to locate the colony and upgrade the observation to Confirmed. If a colony site is located, document its exact location and approximate number of nests in the Notes field when you enter the observation.

EXCEPTIONS:

- Green Herons: Most birds nest in small, loose colonies but some may nest singly. Observations of bird(s) perched or foraging within safe dates is sufficient for Possible evidence.
- Black and Forster's Terns: Because these marsh-nesting species are closely associated with their breeding marsh, Probable evidence codes are suitable.
- Herring Gulls: Single pairs may be found nesting on cliffs along Lake Superior or on rocky islets on inland lakes, so Probable codes may be appropriate in these cases.

Diurnal Raptors (Vultures, Harriers, Hawks, Eagles, Osprey, Falcons): Observing a bird in suitable habitat during the safe dates is not a reliable indicator of Possible breeding because these species have large breeding ranges (often larger than the size of a single atlas block) and many do not breed until they are at least 2 years old. Observers should record the observation as an O or seek evidence for Probable or Confirmed nesting. Raptors carrying food should not be coded as FY.

Owls: Safe dates begin as early as January 20th for the *Great Horned Owl*, and as late as May 20th for the diurnal, rare summer resident, the *Burrowing Owl*. Single observations of common migrant owls (*Long-eared*, *Short-eared*, *Saw-whet*,) should be treated with care until later in the season.

Crows and Ravens: These wide-ranging birds can be a challenge for atlas surveyors. The Possible code is not acceptable and it is unlikely that most of the Probable codes apply.

Nighthawks, Swifts and Swallows: The Possible (X) evidence code is not acceptable for these species and many of the Probable codes will not apply. Sightings of these species should be recorded as Observed and field efforts should focus on confirming their breeding status. *Tree Swallows* are easy to confirm when they utilize nest boxes. *Northern Rough-winged Swallows* will nest singly or in small groups. *Barn Swallows* nest singly or in large colonies and *Cliff* and *Bank Swallows* nest in colonies. The *Purple Martin* is a colonial nesting species most often found in tended martin houses. Document street addresses or locations for active colonies. Note that migrant martins will utilize martin houses in migration so "ON" should not be used past July 10, the ending Safe Date.

MISCELLANEOUS SPECIES:

- Merlins and Peregrines over-winter in suburbs and cities where they previously nested; multiple observations of these species should not be coded as S.
- Cedar Waxwings: Foraging waxwings may occur far from the nest so use caution in indicating Possible and Probable evidence codes.
- Sedge and Marsh wrens typically build "dummy" nests. Nest building without further breeding evidence (e.g. birds carrying food into nest) for these two species results in Probable, not Confirmed, breeding status.
- Late migrant Wood Warblers: Late migrants, like Tennessee, Connecticut, Mourning, Wilson's and Canada, may linger into mid-June with some singing individuals observed that are not on breeding territory. Be careful about using X, M or S codes early in the breeding season.

OTHER CONSIDERATIONS:

- Species with similar calls and songs: Care should be taken in differentiating between some species by calls or songs alone. Examples include the Black-billed and Yellow-billed Cuckoo, Philadelphia and Red-eyed Vireo, the Cape May and Bay-breasted Warblers, and the Golden-winged, Blue-winged warblers and their hybrids. Using evidence codes that rely only on sound for these species is discouraged. Visual confirmations are needed.
- Species that look alike: Visual confirmations, on the other hand, are unreliable for species that look alike but whose songs are very distinctive. This includes the Eastern and Western Meadowlark and the Empidonax flycatchers. Song confirmation is required for these species.
- Non-singing Courtship Behavior: A few of the breeding evidence codes rely on documenting singing males (e.g. X, M and S). Many species, however, do not sing to demonstrate territoriality or to attract a mate. Some common examples include Greater Prairie-Chicken and Sharp-tailed Grouse leks, Ruffed Grouse's drumming, aerial displays by raptors and woodcock, woodpecker drumming, and dancing displays by Western Grebes. Unless otherwise noted above, these observations may be recorded as an S or C, depending on the species and circumstances (e.g. a Ruffed Grouse drumming would be an "S"; a pair of Western Grebes dancing would be a "C").
- Species with same plumage for male and female: Only use behavior to assign a Probable code.

Appendix B: MNBBA List of Species to Verify and Species of Conservation Interest

| Species to Verify | | Species of Conservation Interest | |
|--|----------------------------|---|-----------------------------|
| <u>Required:</u> Completion of a Species Verification Form (which includes details about the observation and conditions under which it was made) and the location. | | <u>Required:</u> Observations that have a “confirmed” breeding evidence code need to be accompanied with a habitat code (see back of the reference card). | |
| Mute Swan | Western Wood-Pewee | Trumpeter Swan | Western Kingbird |
| Bufflehead | Loggerhead Shrike | American Black Duck | Bell’s Vireo |
| Red-breasted Merganser | White-eyed Vireo | Northern Pintail | Purple Martin |
| Northern Bobwhite | Philadelphia vireo | Canvasback | Boreal Chickadee |
| Horned Grebe | Rock Wren | Spruce Grouse | Tufted Titmouse |
| Clark’s Grebe | Carolina Wren | Sharp-tailed Grouse | Golden-winged Warbler |
| Snowy Egret | Mountain Bluebird | Greater Prairie-Chicken | Tennessee Warbler |
| Little Blue Heron | Northern Mockingbird | Least Bittern | Black-throated Blue Warbler |
| Cattle Egret | Sprague’s Pipit | Bald Eagle | Cerulean Warbler |
| Yellow-crowned Night Heron | Yellow-throated Warbler | Northern Goshawk | Prothonotary Warbler |
| King Rail | Bay-breasted Warbler | Red-shouldered Hawk | Connecticut Warbler |
| Common Moorhen | Louisiana Waterthrush | Swainson’s Hawk | Wilson’s Warbler |
| Snowy Plover | Kentucky Warbler | Peregrine Falcon | Canada Warbler |
| Piping Plover | Hooded Warbler | Yellow Rail | Lark Sparrow |
| American Avocet | Yellow-breasted Chat | Upland Sandpiper | Grasshopper Sparrow |
| Solitary Sandpiper | Summer Tanager | Marbled Godwit | Le Conte’s Sparrow |
| Willet | Lark Bunting | American Woodcock | Evening Grosbeak |
| Wilson’s Phalarope | Baird’s Sparrow | Great Gray Owl | |
| Little Gull | Henslow’s Sparrow | Short-eared Owl | |
| Caspian Tern | Nelson’s Sparrow | Common Nighthawk | |
| Common Tern | Chestnut-collared Longspur | Whip-poor-will | |
| Barn Owl | Summer Tanager | Chimney Swift | |
| Northern Hawk Owl | Rusty Blackbird | Red-headed Woodpecker | |
| Burrowing Owl | Red Crossbill | Black-backed Woodpecker | |
| Boreal Owl | White-winged Crossbill | Olive-sided Flycatcher | |
| American Three-toed Woodpecker | | Acadian Flycatcher | |

MNBBA Habitat Codes

| | | | |
|------------|--|------------|---|
| FDX | Forest, Deciduous: deciduous species >90% of tree cover | OWX | <u>Wetland/Water</u> : open or shrubby (native) habitats that are wet or periodically/permanently flooded |
| | FDU <u>Forest, Deciduous Upland</u> : bur, pin, white & red oak; aspen; paper birch; sugar maple, basswood, hickory, etc. | | OWB <u>Open Bog</u> : ericaceous (lowland evergreen) shrubs; sphagnum |
| | FDL <u>Forest, Deciduous Lowland</u> : silver maple, green & black ash, river birch, cottonwood, swamp white oak, etc. | | OWG <u>Sedge/Lowland Grass</u> : includes sedges, wet prairie, red-canary |
| FCX | Forest, Coniferous: coniferous species >75% of tree cover | | OWS <u>Shrub Swamp</u> : willow, dogwood, alder, etc. (shrub cover >25%) |
| | FCU <u>Forest, Coniferous Upland</u> : pines, spruce-fir and upland white cedar | | OWM <u>Emergent Marsh</u> : cattails and/or bulrushes/phragmites dominant |
| | FCL <u>Forest, Coniferous Lowland</u> : tamarack, black spruce, and lowland white cedar, includes "stagnant" types with tree cover 50-70% | | OWL <u>Lake</u> : includes water lilies, sparse bulrush/cattail border |
| FMX | Forest, Mixed Deciduous and Coniferous: Coniferous species 10-75% of tree cover | | OWR <u>River/Stream</u> : minimum width about 5 meters (16 feet) |
| | FMU <u>Forest, Mixed Upland</u> : mix of upland deciduous and coniferous trees | OPX | <u>Open/Non-Vegetated</u> : native, non-vegetated habitats dominated by exposed rock, sand, mud, etc. |
| | FML <u>Forest, Mixed Lowland</u> : mix of lowland deciduous and coniferous trees | | OPC <u>Cliff/talus</u> : cliffs and talus slopes |
| SDX | Semi-Open Deciduous: deciduous species comprise >90% of woody cover | | OPR <u>Rock Outcrop</u> : bedrock outcrops |
| | SDN <u>Semi-Open w/ Deciduous Upland Natives</u> : oak savanna, aspen parkland; native species dominant | | OPS <u>Shoreline/Beach/Mudflat</u> : lake/river beach (sand, gravel, mud, rock) |
| | SDD <u>Semi-Open w/Deciduous Upland Disturbed</u> : upland cutover, burned, regenerating, upland shrub, plantation | HUX | <u>Urban/Small Town</u> : urban, suburban and small towns |
| | SDL <u>Semi-Open w/Deciduous Lowland</u> : lowland cutover, burned, regenerating (native shrub swamps are OWS) | | HUC <u>Commercial/Industrial</u> : offices, shopping centers, warehouses, factories, mostly impervious surfaces |
| SCX | <u>Semi-Open Coniferous</u> : coniferous species comprise >75% of woody cover | | HUR <u>Residential</u> : city, suburban, or small town residential areas with mix of lawns, trees, driveways, etc. |
| | SCN <u>Semi-Open w/Coniferous Upland Natives</u> : jack pine savanna, red cedar; native species dominant | | HUO <u>Open Space</u> : includes city/town parks, ball fields, golf courses; dominated by turf grasses, gravel parking areas, etc. |
| | SCD <u>Semi-Open w/Coniferous Upland Disturbed</u> : cutover, burned, regenerating, upland shrub, plantation | HRX | <u>Rural Upland</u> : rural uplands including farms, rural homes, and surrounding areas |
| | SCL <u>Semi-Open w/Coniferous Lowland Disturbed</u> : lowland cutover, burned, regenerating (native shrub swamps are OWS) | | HRC <u>Cultivated/Row Crop</u> : cultivated fields, including all row crops, small grains, etc. or recently cultivated fallow fields |
| SMX | <u>Semi-Open Mixed Deciduous and Coniferous</u> : coniferous species comprise 10-75% of woody cover | | HRH <u>Hay</u> : non-native grasses or alfalfa/legume/clover; has or will probably be harvested |
| | SMN <u>Semi-Open w/Mixed Deciduous and Coniferous Upland Natives</u> : native species dominant | | HRP <u>Heavily-grazed Pasture</u> : pastures uniformly grazed to maximum height of 1-2 inches (light to moderately grazed pastures are OGN or OGC) |
| | SMD <u>Semi-Open w/Mixed Deciduous and Coniferous Upland Disturbed</u> : cutover, burned, regenerating, upland shrub, plantation | | HRF <u>Rural Farm/Residential</u> : farmsteads and non-farm homes, including outbuildings, yards and small feedlots |
| | SML <u>Semi-Open w/Mixed Deciduous and Coniferous Lowland Disturbed</u> : lowland cutover, burned, regenerating | | HRT <u>Trees/Woodlot</u> : orchards, multi-row shelterbelts, farm woodlots (<20 acres); hybrid poplar (planted in multiple, uniform rows) |
| OGX | <u>Grassland Upland</u> : uplands dominated by herbaceous species, primarily grasses | | HRG <u>Gravel Pit/Quarry/Mine</u> : includes threes and other highly disturbed areas devoid of vegetation |
| | OGN <u>Grassland Upland Native</u> : includes light-moderately grazed native prairie | | HRD <u>Roadside Ditch/Fenceline</u> : include RR rights-of-way, transportation corridors, and adjoining fencelines & utility lines |
| | OGC <u>Grassland Upland Non-native</u> : includes light-moderately grazed non-native grass (cool season grasses) | | HRM <u>Mosaic/Fragmented</u> : mosaic or interspersed of multiple (3+) habitats or habitat components; no single habitat > 20 acres |
| | OGP <u>Grassland Upland Planted Native</u> : homogeneous tall, thick native grasses (usually 1-2 species) | HWX | <u>Rural Wetland</u> : rural, human-created or disturbed wetlands |
| | | | HWP <u>Stock Pond</u> : small ponds within pastures or adjoining farmsteads |
| | | | HWS <u>Sewage (wastewater treatment) Lagoon</u> : includes open water, shoreline and adjoining dikes of lagoons |
| | | | HWF <u>Flooded Field</u> : flooded cultivated or fallow fields |

