Overview

The NPABC Bird Habitat Associations Matrix and At-Risk Species List was designed by the Science Advisory Workgroup (primarily John Dinan and Paul Johnsgard) as a Nebraska specific resource for prioritizing birds of conservation concern and their respective habitats. It began as a simple list of bird species of concern in Nebraska. Each of the 363 birds regularly occurring in Nebraska was considered. All species that are endangered, threatened, experiencing significant decline in Nebraska according to BBS trends, or for which Nebraska contains one of the few remaining stable populations in its range, were included in list. Subsequently, all 363 species received a rank (1-6) according to their risk status (1 being most at risk).

The Bird Habitat Associations Matrix grew out of the At-Risk Species List so that resource managers would be able to prioritize habitats within which to work according to their importance to Nebraska at-risk bird species. Twenty-nine potential habitats were considered. The matrix is an Excel spreadsheet that lists these 363 Nebraska birds in the left column in taxonomic order. All 29 of Nebraska’s major avian habitats, primarily those defined by Gerry Steinauer and Steve Rolfsmeier (Terrestrial Natural Communities of Nebraska, 2003, with a few additional non-natural communities of importance to birds) are listed across the top. If a bird occurs in a given habitat, this is denoted by a letter, depending on whether the bird breeds (B), migrates (M), or winters (W) in that habitat. Capital letters indicate that the bird is regularly found in that habitat during that season, small letters denote irregular occurrence. If a species is found in the same habitat in more than one season, more than one letter is listed in the cell.

The Excel spreadsheet contains three worksheets. When the spreadsheet is first opened from the website, the “Matrix Codes” worksheet appears in the foreground. This spreadsheet contains a key to the Risk Categories, Status Codes used in the matrix, and Habitat Types and Codes. Users will need to refer to this worksheet in order to understand the matrix. The actual data matrix is found in the second sheet entitled “Matrix”. This contains the spreadsheet described above with the Habitat Codes as defined in the “Matrix Codes” worksheet. The “Bird List” worksheet contains a list of all 363 species included in the matrix, their scientific name, occurrence (regional and seasonal), status, and risk category.

Examples for Use

The Bird Habitat Associations Matrix can be used to search for information specific to the needs of your projects. This is done primarily by sorting the data according to the information you need. When sorting the matrix, remember to select rows 7-369, not the entire worksheet, in order to preserve the header rows. If you click “Data” at the top of the screen, then select “Sort” from the dropdown menu, the “Sort” dialogue box will appear. This function will allow you to sort the data based on three categories (columns). To return the matrix to the original order, simply sort by “AOU Order”, ascending, and nothing else.

Example 1 – Winter Bird Surveys. Suppose you are managing some land in the Pine Ridge area, and you are concerned about wintering habitat for at-risk birds. You want to know which of the birds utilizing the Pine Ridge in winter are considered at-risk, so that you can be sure to monitor them. The matrix can be sorted so that birds that winter in upland coniferous forest are grouped together in order of risk.

First, take a look at the “Matrix Codes” worksheet to find the code for the habitat you are interested in. Of the forest and woodland habitats listed, the Pine Ridge probably falls under the “Upland Coniferous Forest” category (UCF). Now you can design your sort. Select rows 7-369, and open the “Sort” dialogue box as described in the previous paragraph. Sort first by your desired habitat, UCF. Since you are interested in wintering habitat, and “W” for wintering comes after “B” for breeding and “M” for migrating, it will be easiest to sort this category in descending order so that the W’s come first. The second sort category should be risk, which should be sorted in ascending order so that the highest risk species are at the top of the list. If you want the birds clustered thirdly by taxonomic order, use “AOU Order” as the third search category. When you have everything set up, click “OK” to run the sort.

Now the matrix is sorted according to your parameters. Scroll through the UCF column. The top two listings are “WM” for birds that winter and migrate in the UCF. Then there are several “W” and “w” entries for regular and irregular wintering birds. All of these are listed as “6” in the Risk column, the lowest possible ranking. Therefore, none of these birds are of particular concern in Nebraska. Keep scrolling through the list to check for birds that may be listed as “BW” for breeding and wintering in UCF. The Long-eared Owl and the Mountain Bluebird breed and winter in UCF, and have a risk ranking of 3 and 4 respectively. These are probably the most important species to keep track of when considering wintering habitat for birds in UCF, particularly the owl since it is a regular winterer in UCF.

If you feel that Upland Coniferous Woodlands may also be included in the Pine Ridge, you may want to repeat the sort using UCW as the first sort category (everything else remains the same). The results of this sort are very similar,
but now Townsend’s Solitaire comes out as a bW species as well, and has a risk ranking of 4. This might be another species worth monitoring.

For more information about the occurrence of these species in the Pine Ridge, you may look them up individually by name or AOU Order in the “Bird List”. This list provides more detailed information about the occurrence of each species in Nebraska, as well as species status and at-risk rank.

Example 2 – Birds of Wet Meadows. Suppose you are working on a landowner incentive program for wet meadows in western and southwestern Nebraska. You are trying to encourage landowners to manage their wet meadows for the benefit of breeding birds, particularly at-risk species. You would like to produce a pamphlet which lists all the birds that breed in wet meadows, together with a description of the species and nesting behavior and a good picture of the bird so that landowners can identify them on their land. You would also like to include the risk status of each species in the pamphlet. The matrix can be sorted so that all birds breeding in wet meadows are grouped together in order of risk.

First, take a look at the “Matrix Codes” worksheet to find the code for the habitat you are interested in. Wet meadows are listed under Herbaceous as “WM”. Select rows 7-369, and open the “Sort” dialogue box as described above. Sort first by your desired habitat, WM. Since you are interested in breeding habitat, and “B” for breeding comes before “W” for wintering and “M” for migrating, it will be easiest to sort this category in ascending order so that the B’s come first. The second sort category should be risk, which should be sorted in ascending order so that the highest risk species are at the top of the list. If you want the birds clustered thirdly by taxonomic order, use “AOU Order” as the third search category. When you have everything set up, click “OK” to run the sort.

The WM habitat is in the middle of the worksheet, which makes it a little challenging to read. All the birds that breed in WM habitat are listed at the top. Select the rows with B’s in them, including bm and bw (capitol and small letters) and highlight them so that you can remember which rows they are. Rows 7-56 are now highlighted. Now scroll to the left side of the worksheet to see which species are selected and their risk status. There are 6 species of high concern, 5 species of moderate concern, and 1 species of concern at the top. However, remember that the sort will group all the b’s before the bm’s and bw’s, so keep scrolling through the selection. Below there is one more species with a 2 ranking (Wilson’s Phalarope), and three more species with a rank of 3 (Northern Harrier, Black Tern, and Eastern Meadowlark). You may want to include all 50 species in your pamphlet, or perhaps just these 16 at-risk birds. However, before making your pamphlet, be sure to look up each species in the “Bird List” to make sure that it actually occurs in the western part of Nebraska. The matrix itself does not contain regional data, so range must be verified separately. For example, the Swamp Sparrow breeds regularly in wet meadows, but primarily in the eastern and central parts of the state. This species probably shouldn’t be included in the pamphlet. You may use field guides or local records to verify range as well.

Example 3 – Riparian Migration Workshop. Suppose you are putting together a spring migration workshop for kids in the Omaha area. You want to talk about riparian habitats in southeast Nebraska, and provide examples of at-risk species that depend on them during migration. Start by scrolling through the habitat types in the “Matrix Codes” worksheet to select the habitats you would like to feature. The riparian habitat (OWS), and sand or gravel flats (SGF). We’ll run three separate sorts, one for each habitat.

Select rows 7-369 and sort first for OWS. Since we’re looking for migration habitat, which is between “B” for breeding and “W” for wintering, it doesn’t matter whether we sort ascending or descending; the migrant information will be near the middle. Then sort by taxa (AOU Order) and risk. Run the sort, and scroll over to the OWS column to view the results. Highlight the rows where m’s appear under OWS, then scroll to the left to identify the species names and their risk status. The Bald Eagle is a great at-risk bird to feature as depending on riparian habitats during migration. The various swallows would also be good to talk about, even though they are low risk categories.

Now run a second sort for SGF (sand and gravel flats), leaving the other sort categories the same. There are many birds dependent on this habitat during migration, but most of them are central or western species. If you aren’t sure about a bird’s range, remember to look it up in the “Bird List” worksheet. There aren’t any at-risk species using this habitat for migration in the eastern part of the state. Both the Killdeer and the Spotted Sandpiper are found in the east and utilize SGF habitat during migration, so they would be good to talk about.

Conclusion

These examples illustrate several ways in which the Bird Habitat Associations Matrix can be used. They also point out things to be careful of when using the matrix, particularly range information. If you have further questions concerning the matrix, please contact the Science Advisory Workgroup Chair, or the NPABC Coordinator.