ART + SCIENCE AT HOME

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SHARING OUR HABITATS with BIRDS

Why don't we have flamingos roaming around the Cary Institute campus in Upstate New York? Wouldn't that be great if we did? And why is it that unlike the Absent Flamingo, we can confidently predict that certain other species like the American Woodcock and the Magnolia Warbler **will** show up here every year on their migration flights?

The basic answer is that the Cary campus has the specific mix of environmental conditions, food, shelter, and breeding sites that the American Woodcock and Magnolia Warbler need to survive, but doesn't offer what Flamingos need. American Woodcocks are adapted to survive and reproduce in young forests and shrubby old fields, while Magnolia Warblers need conifer forests, all of which the Cary campus has. We can think of both of these birds as specialist species, meaning that they have a very specific checklist of things they need to survive within their habitat. The Cary campus also has quite a few generalist bird species, which aren't very picky about where they nest and breed or what they eat. Make a quick mental list of the bird species that you see all over the place: in meadows, suburbs, forest edges, and busy city streets. We're guessing you thought of generalist birds like the American Robin, European Starling, and Common Grackle. Generalist birds tend to be more adaptable in human-dominated spaces than specialists, and habitat loss to human land use change is one of the greatest threats facing sensitive specialist birds. If you went for a walk through a suburb built on land that used to be a forest it's unlikely you'd see any Magnolia Warblers, but the odds are high that you *would* see dozens of American Robins.

This leads us to a fascinating research project by a nationwide team of scientists that includes Cary Institute's Dr. Peter Groffman. Their project is called "Ecological Homogenization of Urban America". **Homogenization** means to make things similar or uniform. The classic American lawn is a great example of ecological homogenization. Americans love turning our outdoor spaces into cookie cutter versions of smooth, weed-free lawns with one or two trees and perhaps a small collection of low-maintenance flowers or imported shrubs. Along the way, we lose the native trees and flora that make our locations unique and suitable for specialist birds that need the seeds or the insects that interact with those native plants. For the past decade Dr. Groffman and his collaborators have been studying residential lawns in large urban areas (Los Angeles, Phoenix, Boston, Miami, Minneapolis-St. Paul, and Baltimore). They look at plant biodiversity, soil chemistry, microclimate, and water flow to determine the impact of planting the Great American Lawn and are finding that despite differences in climate and topography, our cities are ecologically starting to look more and more similar, which is bad news for specialist birds.

Habitat Network, Cornell Lab, TNC

Take a look at these two photos from the Ecological Homogenization of Urban America Project. One is from the hot, arid desert of Phoenix, and one is from the seasonal coastal climate of Boston. Can you tell which is which?

ecologicalhomogenization.com

Boston is on the left. Do they look more or less similar than you might imagine? Why do think this is, and what impact do you think that might have on biodiversity? Now, imagine you were a specialist desert bird like a Gila Woodpecker and you were trying to find habitat within one of these two lawns. Where would you find the saguaro cactus you need for building your nest?

For today's lesson you are going to examine habitat and ecological homogenization for birds in your neighborhood. You'll use a birds-eye view to examine your home ecosystem and determine which resources it offers birds, and which resources could be added to make it more bird-friendly. Note: if you do not live in an area with much outdoor space, you can easily do these exercises from the location of your choice with Google Maps using a combination of aerial and street view. Even in dense cities, designers are developing ways to provide more habitat through the addition of native plants to parks and the construction of green rooftops on buildings.

STEP ONE: Gather your supplies and head outside.

- You will need your fieldbook, and art supplies.

STEP TWO: Observe the weather.

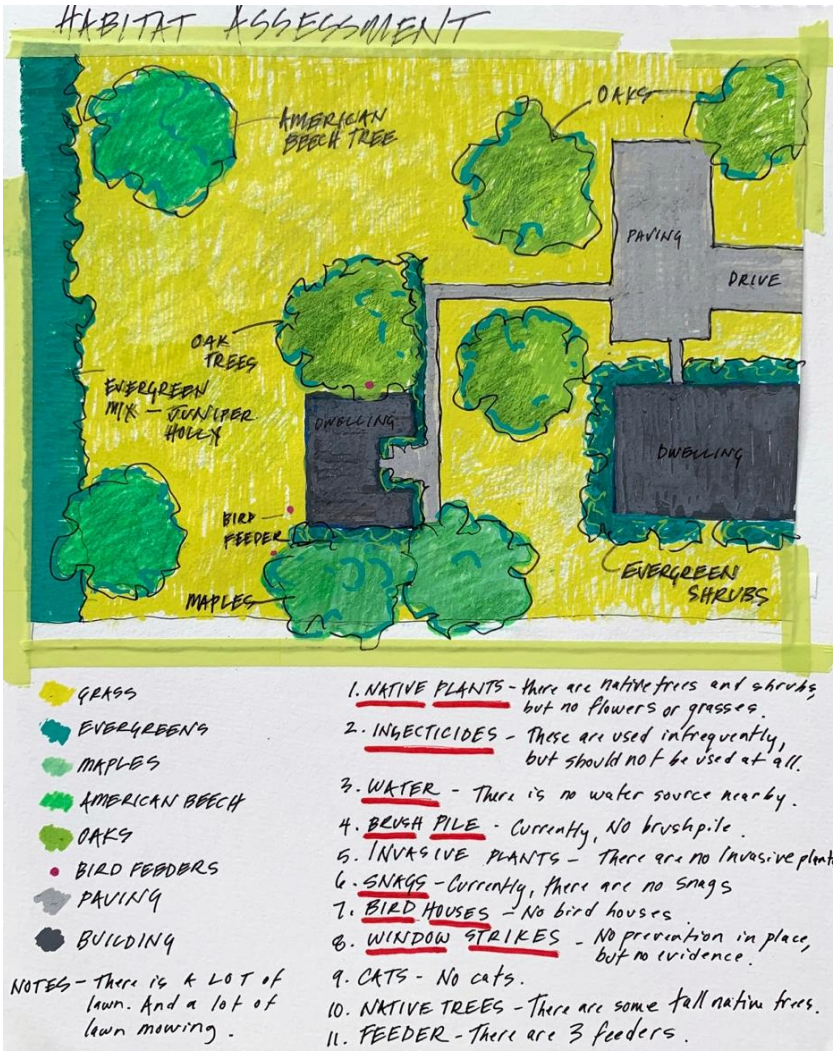
- You know the drill. Jot down some notes about where you are and what is happening weather-wise.

STEP THREE: Assess existing habitat.

- Every organism requires a habitat that provides the following essential components:
    - Food, water, shelter, nesting spaces, cover for safety.
- If these basic elements are not present, an organism cannot survive.
- Today we will pretend to be birds who are considering moving into our yards or parks, and are assessing whether they could thrive as our neighbors.
- Start with your backyard, or your street, or a park in your neighborhood.
- Explore your chosen area. Put on your bird hat and assess the possibility of moving in. Could you live here?
- Use the 11 tips in the attached pdf from the National Fish and Wildlife Service as a guide for your assessment. For instance, how much vegetation variety is present? Is there a water source nearby? Is there ample food? Are cats present? Outdoor cats are one of the most serious threats that birds face.
- As you walk around, do you see any evidence of birds? Feeding? Perched in branches? Flying overhead?
- Use sketches and words to make notes about this potential habitat.

STEP FOUR: Draw existing habitat.

- After you have assessed your chosen area, make a bird's eye view drawing on one or two pages of your fieldbook. Imagine you are flying directly over the area, looking down, and then drawing a map of what you see (If you imagine yourself as a particular bird, draw yourself into the corner of a page).
- Keep your drawing simple if you would like. You can either make a black and white outline, or add color.
- If you want to start with an existing base, you could look at your area through a zoomed in view from Google Earth. This is a great way to start.
- Draw in the basic map of your area. For instance, if you are assessing your backyard, block out your house, any paved areas, and the edges of your property.
- Don't worry too much about getting the proportions just right, a rough sketch will do.
- Next, add what you found during your assessment. For example: Is there water present? Are there trees? How about shrubs? Or native grasses? Is there a birdfeeder? Are there shady areas? Include notes in your drawing.
- You could come up with a key on the side of your drawing and assign colors or symbols to elements such as grasses, water, trees, feeders.
- Or you could label your sketch with notes. Or a mixture of both!
- Consider what you would change if you were a bird. Here, those things are underlined.



STEP FIVE: Add to your habitat.

- Now that you have assessed your existing habitat, make a sketch of what you could do to add to this habitat to make it more desirable for birds.
- Begin with a new sketch, or draw on top of what you have already done.
- Draw in the elements that would make this an ideal habitat for birds.
- Based on the map above, I will address the things underlined in red. For instance, I'll suggest that the owners reduce the amount of lawn and replace it with native flowers and grasses, get rid of all pesticides, and add water.

If you are a property owner and would like to know which plants you could grow in your yard to support bird habitat, we recommend starting with this Audubon Native Plants database, which is searchable by zip code. If you are interested in exploring further, here are some great resources on creating bird habitat in your own backyard:

- How to create a bird-friendly yard (Audubon)
- Bird Friendly Home and Yard (National Zoo and Audubon)
- The Wildlife Value of a Messy Garden (Cornell Lab, TNC)
- How to Turn Your Yard into an Ecological Oasis
- Create a backyard wildlife habitat

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