

Bucks County Audubon Society: Then and Now

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It was a daunting request. Take a 36-year-old report from the Honey Hollow Watershed, combine it with recent data from eBird, and come up with an analysis of bird trends in an article for *Cassinia*. Editor David Long knew of my involvement with the Watershed now known as Bucks County Audubon Society (BCAS) when he made the request, so I felt compelled to give it a try.

BCAS lies in Solebury, Bucks County, PA, just down the road from New Hope, among working farms, private estates, and historic buildings. The visitor's center is surrounded by several hundred acres of preserved land with the Honey Hollow Creek flowing through the middle. There are a variety of habitats including riparian woods, open fields, shallow ponds, and a small area of marsh.

The lands along the Honey Hollow Creek have a storied past. Lenape Indians roamed this area for hundreds of years. European settlers began farming there in the early 18th century. By the early 1900's, advances in farming techniques (e.g., tractors and metal plows) were taking their toll on the topsoil. This damage to the soil was common in farming and led to a man-made catastrophe we now know as "the dust bowl." In the 1930's the farmers in the watershed sought help from the U.S. Soil Conservation Service and formed a model for watershed management that would become a National Historic Landmark. In 1934 architect Bernhard Okie designed a stone barn that has become the visitor center for BCAS.

This area still maintains a reputation as a bedroom community for New York City with many notable and wealthy residents. This may have insulated it somewhat from the development scourge of similar neighborhoods, but not entirely. Increased traffic, housing developments, and commercial endeavors, such as New Hope and Peddler's Village in Lahaska, have put

increasing pressure on land use with accompanying fragmentation.

Several miles away, the Peace Valley Nature Center provides a good comparison site with a similar degree of fragmentation and commercialization, however, it has a much larger acreage and substantially more water. Importantly, Peace Valley has been a site for regular guided bird walks, and data on recent sightings is readily available.

Over the last few years birding has become more of a focus at BCAS, and weekly bird walks have provided information on sightings through Bucks County Birders, eBird and leaders' sighting lists. However, we must be very careful in drawing comparisons between data reported 36 years ago and information today. The basis of the historical information on bird sightings is *Birds of Honey Hollow* by Joseph E. Pearson – Ornithologist.¹ Additional sources of more recent information include eBird² and bird walk reports from BCAS.

Let's examine what we can learn from this anecdotal information. Unfortunately, we will not be able to determine directly whether changes from the historical record to the present are genuine or an artifact of the data collection process. None of the historical or recent records indicate the skill of the observers, the frequency of the observations, or the numbers of birds observed. We have no idea whether a sighting represents a single bird, a breeding pair or a thriving population. Without this information, it is impossible to know whether populations are increasing or decreasing in the study area. For example, without knowing size of the historical population, a sighting of multiple Wood Thrushes would carry the same weight in our data as a sighting of a single Wood Thrush in the recent logs, thus masking a serious decline in the species. Conversely, it could mask an increase in the population.

¹Pearson, J., *Birds of Honey Hollow, Natural Resources of Honey Hollow Watershed*, P. Alston Waring, Ed., 1978: pages 22-25

²ebird.org/content/ebird/about/ © Audubon and Cornell Lab of Ornithology

As a result, based on the information we have, we cannot say much about the status of birds at BCAS then or now. This is particularly true for birds that were sighted in the historical as well as the more recent records. However, we can examine the differences between the historical and more recent records to see if they agree with trends established by more scientifically rigorous methods. This will apply in both directions; that is, species that have been seen historically but not more recently and species seen recently but not in the historical record. There are two reasons a bird might be in on one list and not on the other; the species population may be increasing or decreasing in the region, or the species may be changing its range, either moving its range into the area or out of it.

My method was to compare the historical list, which included bird sightings and breeding birds over a span of 41 years from 1931 to 1978, with recent trip logs and eBird reports. Species with both a historical entry and a recent entry were ignored, as the data cannot tell us anything about the population status. For those species appearing on one list but not the other, additional comparisons were done with recent Peace Valley records to cross check the validity of the discrepancy.

Additional analyses were conducted using the species' IUCN³ status and *Birder's Conservation Handbook*.⁴

The results were very interesting. Figure 1 contains the counts used in the analysis:

What do these figures mean? Perhaps the most startling find is the difference between the number of species seen recently at BCAS and those seen at nearby Peace Valley — almost four times as many at Peace Valley. There are two factors that might explain this discrepancy. First, Peace Valley is a much larger area and has considerably more water than BCAS. While BCAS has a diversity of habitats, Peace Valley has many more acres of those habitats available. Secondly, Peace Valley has been a focus of birding activity for

Figure 1. Species Counts for BCAS (both historical and recent)

Species seen at BCAS in the historical record	143
Species seen at BCAS recently	74
Lost birds (not seen recently at BCAS)	69
New birds (seen recently but not historically)	6
Lost birds experiencing regional declines	46
Lost birds experiencing increases	19
Species at risk or near threatened	8
Recent species count at Peace Valley	≈ 280

many years. It has only been recently that BCAS has encouraged bird walks and record keeping. In addition, Peace Valley has attracted some of the best birders in the area for years whereas BCAS is building the birding expertise of its visitors. The combination of larger habitat, birding intensity, and birder skill may be responsible for the drastic difference between Peace Valley and BCAS and skews any comparison in any but the most general sense.

However, BCAS can serve as a valuable model for viewing bird declines in smaller habitats. Without comparing actual population sizes, as discussed earlier, birds that are declining may still be seen at Peace Valley in smaller numbers, but not seen at BCAS due to the smaller and perhaps more degraded habitat. It seems reasonable to surmise that as species become scarcer, they will disappear from smaller areas of habitat or those of lower quality first.

BCAS lost 69 species between the historical record and recent counts. Is this what we would have expected based on the more rigorous data from IUCN and the *Birder's Conservation Handbook*? Of the 69 species lost, IUCN lists 41 species as “Decreasing.” An additional two species are listed as “Near Threatened.” The American Kestrel is listed as “Stable”; however, we know from the American Kestrel Partnership⁵ that the Kestrel has declined dramatically in our region and is

³International Union for the Conservation of Nature, www.iucnredlist.org/search: Aves, United States

⁴Wells, J., *Birder's Conservation Handbook: 100 North American Birds at Risk*, Princeton University Press 2007

⁵The American Kestrel Partnership – akp-beta.peregrinefund.org/index.php?action=intro

probably in overall decline. IUCN lists two species at “Least Concern,” the Ring-necked Pheasant and the Rock Pigeon. We know that the Pheasant is locally in decline,⁶ but I have no idea why Rock Pigeons⁷ were not seen at BCAS. Of special note is the Black-capped Chickadee, which is listed as “Increasing,” however we know that its range is moving north and therefore is decreasing in this area. Wells lists six of the lost birds “At Risk” in the *Birder’s Conservation Handbook*, further confirming our expectations. By my count that is 46 species of the 69 (67%) that are decreasing. So our results lean strongly in the direction of our expectations; birds that haven’t been seen recently at BCAS are in decline.

Interestingly, six species, 8% of the birds seen recently, were new birds to BCAS. We know that the Black Vulture is increasing its range northward and is a common sight across the region, but it would have been very rare in 1978. We also know that the Bald Eagle has been making a great recovery from its DDT-induced population crash in the 1960’s and is an increasingly common sight in the region. Wild Turkeys have also increased in numbers due to human intervention.⁸ The House Finch is well known for its continuing expansion in the east after introduction in New York City. There were two surprises in the mix — the Black-crowned Night-Heron, which is listed as “Decreasing” but was seen at BCAS recently, and the Lincoln’s Sparrow, which is listed as “Stable” but is certainly not a common bird. Again, these findings match our expectations; birds that are increasing in our area have been seen at BCAS.

There are an additional 34 species which IUCN lists as “Increasing” or “Stable”; these were seen at BCAS

historically, but they were not seen recently. This represents 24% of the total BCAS historical species count and may call any of our analyses into question. These birds could have been seen at BCAS — perhaps should have been seen there. Indeed, many of these species were seen at Peace Valley. Possible explanations include decreasing habitat suitability at BCAS. However, it is also possible that many of the species are there but have gone unobserved due to birder skill and birding intensity. As the birding effort at BCAS continues, it may be that some of the “Lost” birds are found.

In conclusion, what can we say about the decrease in species sighted at BCAS over the last 30 years? Technically we cannot even prove that there has been a decrease in the species present at BCAS since the difference in the historical record and current lists could be due to less skilled and less intense birding efforts. However, it is not likely that the discrepancy would be due to that alone. What we have shown is that there is a high degree of concurrence, 67%, between the decreases at BCAS and more rigorously researched decreases in species in the region. The data generally fit with our expectations. We can further hypothesize that species that are declining are more likely to disappear from smaller habitats first. If this is the case, smaller sites such as BCAS can be important for indicators of future declines. As habitat for birds decreases, it may be critical to determine the minimal size for refuges and, perhaps, to develop protocols for increasing diversity at smaller habitat sites.

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⁶Pheasants are an introduced bird and in decline in the east. www.allaboutbirds.org/guide/ring-necked_pheasant/lifehistory

⁷Rock Pigeons are so ubiquitous that they can be easily overlooked by birders intent on rarities.

⁸www.allaboutbirds.org/guide/Wild_Turkey/lifehistory