

## Results from a bird banding pilot study at Ashland Nature Center and Bucktoe Creek Preserve

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### Introduction

Bird-banding is a valuable tool for studying a variety of aspects of bird biology including migration, survival, and fidelity to a mate or location. Adult or juvenile birds are captured using cages or fine ‘mist-nets’ erected between two poles then a numbered metal band is placed around one of their legs. The data on the bird’s species, age and sex are submitted to the Bird Banding Lab (the ‘BBL’, a division of the US Geological Survey) together with the banding location. Since each band number is unique individual birds can then be tracked across time and space, provided they are later recaptured at the same location or by another bander at a different location, or are found dead by a member of the public or collected by a hunter.

Thanks to generous funding the Delaware Nature Society conducted a pilot bird banding project during the summer and early fall of 2015 at Ashland Nature Center in Hockessin, Delaware and the privately-owned Bucktoe Creek Preserve near Kennett Square, Pennsylvania. The aims of the pilot project were to estimate the abundance of the bird species using each property based on their frequency of capture and assess their local movements based upon the frequency with which they were recaptured. These data are to be used to formulate a formal study of species assemblage in relation to local habitat features such as age, diversity and origin of the main plant species present. The banding sessions were open to the public as part of the Nature Society’s mission of nature education so people could see birds close up and also learn about the process of banding and the science involved in data collection.

### Methods

Bird banding took place 1 – 2 days per week at Ashland Nature Center and 1 – 2 days per week at Bucktoe Creek Preserve between 10

June and 30 September 2015. Starting at approximately 7:00 a.m. we erected three 12-meter long mist-nets and one 9-meter long mist-net along walking trails delineated by woody vegetation on one or both sides then checked them every 10 – 15 minutes until about noon. Any birds found in the net were extracted, identified to species using a field guide, then aged and sexed using a combination of several field guides and Pyle (1997). Birds were placed into two age categories: adults (*i.e.* those hatched in 2014 or earlier) or juveniles (those hatched in 2015). We then banded each bird (under license from the BBL), recorded a variety of body size measurements and evidence of feather molt then released them near their site of capture. Sometimes we recaptured a bird which we had already banded earlier in the season, in which case it was simply weighed and released after noting its band number. Capture rates were relatively low for the first month of the project so we erected several bird feeders at each site to concentrate more birds into the banding areas. No birds were injured or harmed during the capturing or banding process.

### Results

We captured a total of 413 birds of 37 species (Table 1), of which 247 (60%) were juveniles. Fifty-nine of the birds we banded (14%) were later recaptured at least once at the site where they had been banded.

The three most frequently caught birds at Ashland were Gray Catbirds (37% of captures), Northern Cardinals (15% of captures) and Tufted Titmice (10% of captures). The three most frequently caught birds at Bucktoe Creek were Gray Catbirds (37% of captures), Eastern Towhees (15% of captures) and Northern Cardinals (9% of captures). For 10 species only a single individual was caught (Table 1).

Species with notably high recapture rates were Northern Cardinals (31% of those caught were previously banded by us), White-breasted Nuthatches (29% were already banded) and Downy Woodpeckers (23% were already banded). The species with a notably low recapture rate was the Gray Catbird (only 3% of those caught were previously banded by us). For most of the other species too few individuals were banded to make a meaningful estimate of their recapture rates.

We did not capture any birds at Ashland or Bucktoe Creek that had already been banded at another location by another bander, and none of

the birds banded at Ashland were recaptured at Bucktoe Creek (and vice versa). However, during a trial banding session conducted in early June at Coverdale Farm Preserve in nearby Greenville we caught a banded Gray Catbird. We submitted the band number to the BBL and found that the Catbird had been captured in September 2014 at a well-established banding station (Rushton Woods Preserve) near Newtown Square, Pennsylvania.

Table 1. Summary of birds captured during a banding program conducted June – Sept 2015 at Ashland Nature Center, Hockessin DE and Bucktoe Creek Preserve, Kennett Square PA.

Species (scientific name)	Ashland (juveniles)	# recaptured	Bucktoe (juveniles)	# recaptured
Ruby-throated Hummingbird ( <i>Archilochus colubris</i> )	1 (1)		1	
Downy Woodpecker ( <i>Picoides pubescens</i> )	12 (7)	4	5 (3)	1
Hairy Woodpecker ( <i>Picoides villosus</i> )	1			
Northern Flicker ( <i>Colaptes auratus</i> )	1			
Acadian Flycatcher ( <i>Empidonax vireescens</i> )	1 (1)		1 (1)	
Willow Flycatcher ( <i>Empidonax traillii</i> )			1 (1)	
Eastern Phoebe ( <i>Sayornis phoebe</i> )			2 (1)	
Eastern Kingbird ( <i>Tyrannus tyrannus</i> )			1	
Red-eyed Vireo ( <i>Vireo olivaceus</i> )	3 (1)		1	
Blue Jay ( <i>Cyanocitta cristata</i> )	3 (3)		1	
Tufted Titmouse ( <i>Baeolophus bicolor</i> )	26 (15)	3	4	
Carolina Chickadee ( <i>Poecile carolinensis</i> )	16 (13)	1	12 (12)	6

Species (scientific name)	Ashland (juveniles)	# recaptured	Bucktoe (juveniles)	# recaptured
White-breasted Nuthatch ( <i>Sitta carolinensis</i> )	9 (3)	4	6 (2)	2
Carolina Wren ( <i>Thyrothorus ludovicianus</i> )	1		3 (1)	
House Wren ( <i>Troglodytes aedon</i> )	19 (15)			
American Robin ( <i>Turdus migratorius</i> )	4		2 (1)	
Wood Thrush ( <i>Hylocichla mustelina</i> )	1		5 (1)	1
Veery ( <i>Catharus fuscescens</i> )			1 (1)	
Gray Catbird ( <i>Dumatella carolinensis</i> )	96 (71)	1	56 (16)	4
Brown Thrasher ( <i>Toxostoma rufum</i> )	2 (1)			
American Redstart ( <i>Setophaga ruticilla</i> )	1		2 (2)	
Ovenbird ( <i>Seiurus aurocapillus</i> )	1		3	
Northern Waterthrush ( <i>Seiurus noveboracensis</i> )	1 (1)			
Mourning Warbler ( <i>Oporornis philadelphia</i> )			1 (1)	
Common Yellowthroat ( <i>Geothlypis trichas</i> )	1 (1)		3 (1)	
Yellow-breasted Chat ( <i>Icteria virens</i> )	1 (1)			
Northern Cardinal ( <i>Cardinalis cardinalis</i> )	38 (33)	19	13 (7)	4
Blue Grosbeak ( <i>Guiraca caerulea</i> )	1 (1)			
Indigo Bunting ( <i>Passerina cyanea</i> )	1 (1)			
Eastern Towhee ( <i>Pipilo erythrophthalmus</i> )	9 (8)	5	23 (18)	3

Species (scientific name)	Ashland (juveniles)	# recaptured	Bucktoe (juveniles)	# recaptured
Field Sparrow ( <i>Spizella pusilla</i> )			2 (1)	
Chipping Sparrow ( <i>Spizella passerina</i> )	1 (1)			
Song Sparrow ( <i>Melospiza melodia</i> )	3 (3)			
Brown-headed Cowbird ( <i>Molothrus ater</i> )	1 (1)			
Orchard Oriole ( <i>Icterus spurius</i> )	1		1	
House Finch ( <i>Carpodacus mexicanus</i> )	6 (4)			
American Goldfinch ( <i>Carduelis tristis</i> )	8 (1)	1	3	
Total	260 (176)	38	153 (71)	21

### Discussion

Our most obvious result was that the species we captured most frequently was also one of the most common birds observed by birdwatchers and breeding bird surveyors in northern Delaware and south-east Pennsylvania – the Gray Catbird (Hess *et al.* 2000; Wilson *et al.* 2012). The banding trail at Ashland was fairly short (about 100 meters long) and yet we caught a staggering 96 catbirds along it. Catbirds represented over a third of all captures at both sites and over half of them were juvenile birds that had probably hatched locally since many still possessed the prominent beak flanges and yellow mouths found in nestling birds. Remarkably, only 1 of the 96 Catbirds we banded at Ashland was later recaptured there, suggesting that Catbirds move around much more than we expected.

The other species caught fairly often were those we also observed fairly often, such as the Northern Cardinal and Tufted Titmouse, which are both highly visible and vocal birds. However, some species were captured much more frequently than they were observed, including the Eastern Towhee, Downy Woodpecker and White-breasted Nuthatch.

During the summer months these species become easier to hear than see as they are partially hidden among the dense vegetation. The latter two species were also recaptured fairly often, suggesting that they are faithful to a particular feeding area. Almost all of the species we caught were known to be breeding in the general area and we caught only two definite non-residents (a Northern Waterthrush and a Mourning Warbler), which could indicate that the habitat alongside the banding trails was not appropriate for migrants.

One of the more rewarding aspects of the banding project was that it provided a greater appreciation of how certain species occupy distinct habitats or vertical zones, since some species known to be common at both sites were rarely or never caught along the banding trails. For example, Song Sparrows are very common birds at Ashland and Bucktoe but only 3 juveniles were caught, probably because Song Sparrows usually occupy edge habitat and do not enter woodlands. Indigo Buntings and Field Sparrows are also reasonably common but were rarely caught, likely because they prefer open meadow habitats. Red-bellied Woodpeckers were frequently seen and heard at both sites but were never caught, probably because they do not fly low enough to become captured in the nets.

We are hoping to continue to band at Ashland and Bucktoe Creek during future winters since this will determine which species are year-round residents, since it is possible that many of the individuals commonly found at these sites during the winter (e.g. Cardinals, Carolina Chickadees) actually bred much further north (e.g. Pennsylvania, New York) and moved south for the winter in search of food. By the same logic, many of the cardinals and chickadees which breed in Delaware and were banded during this project may actually leave in the winter and head south, in which case they may be captured and reported by another bander. Banding during future summers will also determine whether the same individuals return to the same sites to breed, particularly those banded as juveniles.

In sum, the bird banding pilot project produced interesting data on the frequency of capture and recapture of a variety of woodland species which will hopefully set the stage for a longer term study of habitat use by bird assemblages at Ashland and Bucktoe Creek as well as other potential sites.

## Visitors

Both banding stations proved popular and a total of 251 visitations were made (194 at Ashland and 57 at Bucktoe Creek). About half of these were multiple visits made by the same interested individuals but many people casually stopped by after seeing the signs advertising bird banding. Others visited because they had read about the banding program in the local media or the Delaware Nature Society releases and for some it was their first visit to either Ashland or Bucktoe. In addition to mist-netting we also banded several broods of Eastern Bluebirds (*Sialia sialis*), Tree Swallows (*Tachycineta bicolor*), Barn Swallows (*Hirundo rustica*), Tufted Titmice, Carolina Chickadees and House Wrens at both Ashland and Bucktoe. Wherever possible the broods were banded in front of visitors, particularly children attending summer camps who found this especially fascinating. Over 100 Eastern Bluebird nestlings were fitted with a unique combination of three colored plastic leg bands in addition to their numbered metal band, which means that individuals can be identified without having to capture them. This provides an opportunity for birdwatchers in these areas to re-sight color-banded bluebirds and thus determine whether these overwinter in Delaware and northern Pennsylvania.

## Literature Cited

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## Acknowledgements

We thank Angie Barbato, Steve Cottrell, Lauren Morgens, Kelley Nunn and Carol Spease for their assistance with mist-netting and data recording. We are grateful to the Brokaw family for permission to work at Bucktoe Creek Preserve and also to Brian Winslow and an anonymous donor for arranging funding.