

MIGRATIONAL MOVEMENTS AND HABITAT USAGE OF MIGRANT PASSERINES IN THE  
GREAT LAKES REGION: OTTAWA NATIONAL WILDLIFE REFUGE, OHIO

PROGRESS REPORT-2009  
BSBO-ONWR10-1

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INTRODUCTION

In 2009, Black Swamp Bird Observatory continued a long term passerine migration study on the Ottawa National Wildlife Refuge complex and various other sites in the region. Specific goals of the project are to monitor the population status of Neotropical migrants in the Great Lakes region and to better understand the relationship between en-route habitat and their breeding ecology. Lake Erie represents a barrier to most passerine migrants. Passerines' reluctance to navigate open water results in major concentrations along the southwestern shore of Lake Erie, unparalleled in the Midwest. With continuing habitat loss both along the Lake Erie coast and inland, this study will assist in monitoring the effects of habitat isolation and degradation. There are only four small segments of beach ridge habitat remaining west of Port Clinton along Ohio's Lake Erie shoreline. The intensive bird use of these ridges in contrast to the adjacent condominium complexes and marinas signify the importance of this habitat component in the Lake Erie marsh system. A wide range of migration corridor and stopover habitat occurs throughout the region, but these sites do not contain concentrations as high as the beach ridges. A wide variety of study sites are necessary to fully examine habitat use, migrational timing, and energetic condition of birds.

The importance of understanding avian migration and stopover habitat needs has greatly increased over the past two decades as tropical deforestation and temperate forest fragmentation expands and songbird populations decline. Little information is known about the "problems" migrants contend with along their migratory routes (Morse 1980), not to mention the transition between spring migration and the breeding period. To offset the energetic costs of migration, birds deposit substantial lipid reserves which may reach 50% body weight among long distance intercontinental migrants (Berthold 1975). As lipid stores are depleted during migration, birds are capable of replenishing reserves in a few days at rates approaching 10% body weight per day (e.g. Barlein 1985; Biebach *et al.* 1986; Moore & Kerlinger 1987). These lipid deposits are obviously critical for a successful migration, and they may also provide a selective advantage to the migrant with energy reserves remaining (see Sinclair 1983; Ojanen 1984; Krapu *et al.* 1985; Krentz & Ankney 1987). Adequate stopover habitat may play an important role in delivering migrating passerines to their breeding grounds with sufficient energy reserves to successfully nest.

## STUDY AREAS

Banding sites are centered along the western basin of Lake Erie in Ohio with additional coverage to the Ohio River and central basin of Lake Erie. The Navarre site is located on the largest remaining beach ridge along the western basin of Lake Erie and holds the most complete native beach ridge vegetative complex. Netting was also conducted on an active beach ridge outside the lakefront dike in Navarre during fall migration. This location allows the opportunity to study avian use of a beach ridge from its developmental origin. The primary Darby NWR site is on one of the three remaining small beach ridges and provides a comparison with the larger more complete ridge of Navarre. The Darby NWR inland site is approximately 0.5 miles from the beach ridge and is comprised of dogwood thickets and provides a comparison with the beach ridge for assessing habitat use. The Ottawa NWR station is located approximately 1 mile from the lake and is composed primarily of a dogwood thicket with a few remnant overstory trees. This site provides a comparison of large patches of scrub-shrub in the vicinity of the lake to the ridges. The Shaker Lake site near Cleveland is several miles from Lake Erie and lies on a major riparian corridor to the lake. Habitats include a brook, marsh, scrub-shrub, and the border of a woods. The Petersburg site in southern Michigan is shrub habitat that is located past the lake effect zone for bird migration. This site provides a comparison of a habitat away from the lake proper and potentially gives some indications to how quickly migrants spread out across the landscape. The Shawnee Lookout site is located between the Ohio River and Great Miami River west of Cincinnati and is the only site of great distance from Lake Erie. All ten nets are placed within the edge of a powerline cut of this hilly region with many deep cool valleys. Shawnee's vegetation is comprised of wild grape, Pawpaw, Hackberry, Black Walnut, elm, and oak species. Pawpaw, Hackberry, and especially wild grape are the dominant species. The Creek Bend site is located approximately 15 miles due south of Lake Erie and provides a comparison to Navarre for lake effect and spring and fall comparisons for different species groups. Habitat is dominated by dogwood, old field, and a riparian corridor. The variety of habitat types and distances from the lake surveyed allows us to document variation in migrational timing, habitat selection, and movement.

## METHODS AND MATERIALS

In 2009, migrating and resident passerines were sampled on the Navarre Unit of the Ottawa National Wildlife Refuge and three other sites in the Great Lakes region: Creek Bend, Shaker Lakes, and Petersburg (Figure 1). Sites operated near Cleveland and Lindsey, Ohio, and Monroe, Michigan provide comparisons to the refuge site that is located at a major passerine migration staging area. Banding and point count efforts covered a minimum of 75% of the migration period for the study site. Every attempt was made to equalize any un-sampled parts of the migration period at the beginning and ending time frame. The migration period covers both short distance and long distance (Neotropical) migrants. Spring migration operation in 2009 began mid-April and continued through early-June. Fall migration banding was July 1 to early November. Four sites were monitored through both migration periods.

Netting was conducted from one-half hour before sunrise to at least 11:00 AM on each day of operation, weather permitting. Birds were captured utilizing 2.6 x 12 meter mist nets of 30mm mesh

size. All birds were removed from the net, with the band and net recorded if previously banded, and placed in a mesh bag for holding until processing. During processing, each bird was banded with a standard U.S. Fish & Wildlife Service leg band, measured by closed wing chord, body mass recorded, and visually inspected for subcutaneous fat deposits using a 6-point ordinal scale (Helms & Drury 1960). Birds were sexed and aged by the use of plumage characteristics (Pyle 1997) and guidelines of the Bird Banding Manual and Woods Manual (Woods 1969). Weather data was compiled from hourly readings of Toledo Edison's Davis Besse Nuclear Power Station.

Point counts were conducted during both spring and fall migration. Counts were conducted at points spaced a minimum of 100 meters throughout the banding stations. Counts were conducted for five minutes in which all birds seen or heard were recorded. Counts were run after net set up each morning permitted by weather and avian abundance. Point counts were canceled on extremely high wind or high bird activity days.

Each station keep a daily Bird List to document presence/absence for the site. This method complements the banding and point counts by acknowledging all species seen on a given day. This assists in rare species documentation and provides more complete information on arrival and departure dates for all species.

## RESULTS AND DISCUSSION

### SPRING

Spring migration was monitored, weather permitting, daily in the Navarre Unit and when personnel were available at the Shaker Lakes, Creek Bend, and Petersburg sites in 2009. Early April temperatures were below average but an extreme warm front occurred 23-28 April with well above temperatures and a good migrant wave. May temperature was average with a major warm front 11-20 May bringing large numbers of birds. June was below normal in temperature. 2009 was marked by extremely consistent migration and bird volume from late April to late May. From our research, large numbers of Neotropical migrants arrive in three "waves". The first wave is dominated by male White-throated Sparrow, Hermit Thrush, male Myrtle Warbler, and male Ruby-crowned Kinglet, and occurs around 25 April. In 2009, this wave materialized 27-29 April. The second wave occurs 07-13 May and is represented by the greatest species diversity of the spring. It is dominated by female White-throated Sparrow, Swainson's Thrush, female Myrtle Warbler, female Ruby-crowned Kinglet, and male Magnolia Warbler. A second pulse of this wave comes five to seven days later, and usually has the largest volume and contains the same dominant species. This second wave occurred 08-11 May with the second pulse on 16-20 May in 2009. The third wave normally comes around Memorial Day weekend and is dominated by female Magnolia Warbler, American Redstart, Mourning Warbler, vireos, and flycatchers. In 2009, the third wave appeared 27-29 May.

### Navarre Banding Station, Ottawa County, Ohio (413-0830)

In spring 2009, the Navarre banding station was operated on 55 days for 7,760.7 net hours. Including

hummingbirds, 10,042 new birds were banded and a total of 11,792 birds handled (Table 1). The capture rate was 151.9 birds/100 net hours. One hundred and three species were banded in Navarre during spring 2009 (Table 2). The most unusual species and subspecies included Eastern Screech Owl, Hairy Woodpecker, Red-headed Woodpecker, Gambel's White-crowned Sparrow, Yellow Palm Warbler, Prairie Warbler, Whip-poor-will, the stations second Pine Siskin, and the first Chuck-wills-widow for this site. The ten most abundant species banded were Myrtle Warbler (1,412), Magnolia Warbler (686), White-throated Sparrow (634), Yellow Warbler (562), Gray Catbird (473), Nashville Warbler (432), Swainson's Thrush (349), Western Palm Warbler (317), American Redstart (315), and Traill's (Alder/Willow) Flycatcher (302).

Point counts were initiated in 1995 as a part of the data collection at the Navarre site. Counts provide the best data for larger birds not sampled by mist nets. Point counts were conducted on 48 days during spring 2009. One hundred and fifty-two species with 26,203 individuals were recorded (Table 3). Northern Cardinal, Red-winged Blackbird, Common Grackle, American Robin, Tree Swallow, and Brown-headed Cowbird were observed each count day. The most abundant species recorded was Red-winged Blackbird (4,710) followed by Blue Jay (4,669), Tree Swallow (1,531), Canada Goose (1,300), and Cedar Waxwing (1,231).

#### Creek Bend Banding Station, Sandusky County, Ohio (412-0832)

This site permits comparison to the Lake Erie coastal sites as a riverine travel lane. Banding operations were conducted on 23 days with 314 new birds banded in 674 net hours (46.6 birds/100 net hours) (Table 4). Fifty-one species (Table 5) were banded with the ten most abundant species being Gray Catbird (39), Indigo Bunting (18), Yellow Warbler (18), American Robin (13), American Goldfinch (12); Tree Swallow (12), Red-winged Blackbird (11), Cedar Waxwing (11), Eastern Bluebird (11), and White-throated Sparrow (10).

#### Petersburg Banding Station, Monroe County, Michigan (415-0833)

This site is located west of Lake Erie and north of Toledo and permits comparison to the Lake Erie sites as birds migrate around the lake and disperse through the landscape. 2009 was the 15<sup>th</sup> year of banding at this site. Banding operations were conducted on nine days with 204 new birds banded in 1,138.8 net hours (17.9 birds/100 net hours) (Table 6). Forty-seven species (Table 7) were banded with the eight most abundant species banded being Myrtle Warbler (24), Gray Catbird (18), American Robin (17), Western Palm Warbler (13), American Goldfinch (12), Northern Cardinal (12), Common Grackle (10), and Swainson's Thrush (10).

Point counts were conducted on nine days during spring 2009. Thirty-one species with 337 individuals were recorded (Table 8). American Robin, Northern Cardinal, and American Crow were observed each count day. The most abundant species recorded was American Robin (65) followed by Northern Cardinal (53), Common Grackle (35), Field Sparrow (22), and American Crow (20).

Shaker Lakes Banding Station, Cuyahoga County, Ohio (412-0813)

This site is located east of Cleveland at the Nature Center of Shaker Lakes and 2009 was the eighth year of the banding operation. This site permits comparison to western Lake Erie sites as birds migrate along Lake Erie and disperse through the landscape. Banding operations were conducted Mondays, Wednesdays, and Fridays and were conducted on twenty-three days, with 474 new birds banded in 756 net hours (62.7 birds/100 net hours). A total of 609 birds were handled (80.6 birds/100 net hours) during spring migration (Table 9). Sixty-two species (Table 10) were banded with the ten most abundant species banded being Ruby-crowned Kinglet (78), Gray Catbird (33), American Goldfinch (31), American Robin (26), Swainson's Thrush (23), Myrtle Warbler (22), White-throated Sparrow (21), Yellow Warbler (19), Western Palm Warbler (17), Nashville Warbler (14), and Common Yellowthroat (14).

Point counts were conducted on 23 days during spring 2009. Sixty-six species with 2,952 individuals were recorded (Table 11). The most abundant species recorded was American Goldfinch (111) followed by Song Sparrow (82), American Robin (77), Yellow Warbler (69), and Red-winged Blackbird (68).

FALL

Fall migration starts in July for many species and some breeding Neotropical migrants (e.g., Yellow Warbler) have left the study area by mid-August. Average fall temperatures were normal but there was considerably more fluctuation with highs and lows in September and October. Late October temperatures were well above average. Fall bird migration is dominated by different stimuli than in spring. Weather conditions appear less important and food availability appears to be a key factor.

Navarre Banding Station, Ottawa County, Ohio (413-0830)

The Navarre main station was operated 67 days for 8,008.1 net hours. Three thousand six hundred and forty-five birds were banded with a total of 4,752 birds handled (Table 12). This was the 17th fall season in which an extensive netting effort had been conducted on a daily basis. The capture rate for 2009 was 45.5 birds/100 net hours (-11% from 2008). A total of 85 species were banded during fall 2009 (Table 13). The ten most abundant species banded were Blackpoll Warbler (433), Swainson's Thrush (317), White-throated Sparrow (256), Golden-crowned Kinglet (255), Hermit Thrush (212), Gray Catbird (202), Ruby-crowned Kinglet (200), Myrtle Warbler (177), Gray-cheeked Thrush (152), and Magnolia Warbler (115).

Fall point counts were run on 62 days during 2009. A total of 31,524 individuals of 121 species were recorded (Table 14). The Northern Cardinal was observed on all days of the counts. The most abundant species were Red-winged Blackbird (16,098); Common Grackle (2,778); Canada Goose (2,449); European Starling (1,202); and White-throated Sparrow (1,031).

For the 17th year, additional nets were run on an active beach ridge just outside the lake front dike

near the main study site. This ridge has one band of 50-60 feet tall Cottonwoods about 40 feet wide and 100 yards long. The ridge presents an opportunity to document avian use as the habitat matures. This ridge has seen considerable loss of sand the past three years with a major narrowing of the vegetated portion resulting in reduced habitat with higher levels of Lake Erie. Five nets were run on 56 days for 1,449.0 net hours (Table 15). The capture rate for fall 2009 was 46.9 birds/100 net hours. Six hundred and seventy-nine birds of 59 species were banded on the new beach ridge (Table 16). The top ten species banded were Blackpoll Warbler (106), Gray Catbird (70), Warbling Vireo (56), Ruby-crowned Kinglet (45), White-throated Sparrow (35), Swainson's Thrush (33), Golden-crowned Kinglet (30), Hermit Thrush (27), Common Yellowthroat (20), and Myrtle Warbler (19); .

#### Creek Bend Banding Station, Sandusky County, Ohio (412-0832)

Banding operations were conducted on 33 days with 1,938 new birds banded in 1,320.5 net hours (146.8 birds/100 net hours) (Table 17). Fifty-nine species (Table 18) were banded with the ten most abundant species being American Goldfinch (995), Song Sparrow (162), Indigo Bunting (93), White-throated Sparrow (82), American Tree Sparrow (52), Chipping Sparrow (48), Ruby-crowned Kinglet (45), Field Sparrow (44), Slate-colored Junco (42), and Swamp Sparrow (42). The large volume of American Goldfinches banded at this site was a direct result of a 5 acre patch of sunflowers planted next to the banding station. This food plot was part of the County Park District land management plan for the year. Changes to this management rotation will affect species captured and will need to be documented on an annual basis to interpret banding results over time.

#### Petersburg Banding Station, Monroe County, Michigan (415-0833)

Banding operations were conducted on 24 days with 441 new birds banded in 3,554.9 net hours (12.4 birds/100 net hours) (Table 19). A total of 514 birds were handled (14.5 birds/100 net hours). Fifty species (Table 20) were banded with the ten most abundant species being American Robin (74), Magnolia Warbler (37), Swainson's Thrush (37), Gray Catbird (29), Ovenbird (21), Ruby-crowned Kinglet (18), Hermit Thrush (18), American redstart (16), Gray-cheeked Thrush (16), and Slate-colored Junco (15).

Point counts were conducted on 24 days during fall 2009. Thirty-one species with 2,466 individuals were recorded (Table 21). Blue Jay and American Robin was observed each count day. The most abundant species recorded was Common Grackle (1,138) followed by American Robin (693), Blue Jay (258), Brown-headed Cowbird (74), and American Crow (72).

#### Shaker Lakes banding Station, Cuyahoga County, Ohio (412-0813)

Banding operations were carried out on Mondays, Wednesdays, and Fridays and were conducted on twenty-five days with 626 new birds banded in 719.5 net hours (87.0 birds/100 net hours). A total of 740 birds were handled (102.9 birds/100 net hours) during fall migration (Table 22). Fifty-four species (Table 23) were banded with the ten most abundant species being American Goldfinch (126), White-throated Sparrow (104), Swainson's Thrush (57), Gray Catbird (47), Magnolia Warbler (30),

Song Sparrow (24), Ruby-crowned Kinglet (22), Gray-cheeked Thrush (18), Wilson's Warbler (16), and Tufted Titmouse (13).

Point counts were conducted on 24 days during fall 2009. Fifty-seven species with 1,704 individuals were recorded (Table 24). American Goldfinch was observed each count day. The most abundant species recorded was Chimney Swift (511) followed by American Goldfinch (298), American Robin (174), Rock Pigeon (100), and Song Sparrow (68).

## SUMMARY BANDINGS

Total combined bandings for passerine migration 2009 for the Black Swamp Bird Observatory is shown in parentheses in Table 25. Totals before parentheses are for the National Wildlife Refuge Complex. The ten most abundant species banded on Ottawa NWR complex were Myrtle Warbler (1,608), White-throated Sparrow (925), Magnolia Warbler (810), Gray Catbird (745), Blackpoll Warbler (715), Swainson's Thrush (690), Yellow Warbler (637), Ruby-crowned Kinglet (501), Nashville Warbler (482), and Golden-crowned Kinglet (396). Inclusive totals of all sites were topped by Myrtle Warbler (1,681), White-throated Sparrow (1,157), American Goldfinch (1,093), Gray Catbird (941), Magnolia Warbler (911), Swainson's Thrush (834), Blackpoll Warbler (730), Ruby-crowned Kinglet (676), Yellow Warbler (675), and Nashville Warbler (546). A combined total of 119 species of 18,363 individuals (72.4 birds/100 net hrs) were banded. Totals for each study site and for each season are shown in Table 26. Species with greater than 50 individuals sampled had age ratios generally lower than 2008 and the long-term average (Table 27).

## RETURNS AND RECOVERIES

A long term study of this type has an added benefit to develop return rates and survival rates over time. One assumption that has not been verified is that passerines always return to the same breeding grounds to nest. There are substantial signs for this but more research is needed to confirm the rate of this phenomenon. In addition, little is known about site fidelity to migration stopover sites. During 2009, 265 birds of 21 species were captured as returning birds at the Navarre sites (Table 28). This total includes 37 Yellow Warblers with the oldest being banded in 2004, 73 Gray Catbirds, 23 Common Yellowthroats (oldest from 2001), 33 Red-winged Blackbird (oldest from 2001), 30 Northern Cardinals (oldest from 1999), and 13 Baltimore Orioles. A Tennessee Warbler first banded spring 2007 was recaptured in 2009 indicating that some individuals follow similar migration routes year to year. The long term study at Navarre has resulted in state longevity records for the Yellow Warbler, Prothonotary Warbler, Warbling Vireo, Eastern Wood Pewee, Brown Creeper, Northern Waterthrush, Ovenbird, Great-crested Flycatcher, Cedar Waxwing, and Hermit Thrush. The Yellow Warbler record surpasses the species record as reported by the Bird Banding Laboratory. Continued analysis in this area will hopefully shed some light on turnover rate and site fidelity in some species. An additional 48 birds of 18 species were return captures at Shaker Lakes in 2009 (Table 29). A Downy Woodpecker and Gray Catbird were captured that were first banded in 2003. Creek Bend has had little earlier field work but had 21 individuals of nine species banded in 2008 (Table 30). Petersburg had 27 returns of 10 species (Table 31). One American Robin was captured that was

banded in 2003. Several foreign captures were made of study birds and are reported in Table 32. In addition, two foreign banded birds were captured during the 2009 study year. Both were captured at Navarre. A Gray Catbird (band number 1991-79778) captured 09 May was banded near Dearborn, Michigan on 03 September 2008. An American Redstart (2530-33847) captured 31 May was banded near Thunder Cape, Ontario on 21 August, 2008.

### ENERGETIC CONDITION

The relationship between energetic condition during migration and breeding success is unknown in passerines. There are many factors that could affect the amount of fat a bird may carry at any given time. We are collecting data on several factors that may affect lipid deposition, but it will be several years before those trends may be tied to productivity. For 2009, 35 species (Table 33) had adequate sample sizes in both 2008 and 2009 to look at the changes in average fat deposits during spring migration. There was considerable variability in species when comparing 2008 and 2009. Thirteen species indicated higher fat deposits in 2009 and 22 in 2008.

For passerines it is extremely difficult to acquire an adequate sample of breeding pairs to assess annual production on the breeding grounds. Considerable work has been conducted on larger species, especially waterfowl, on the relationship of spring body condition and reproductive success that breeding season. One method of assessing annual production in passerines is to compare fall age ratios (e.g. production) to spring migration body condition where an adequate sample may be acquired. Of 11 species with adequate sample sizes of spring fat and fall age ratios, eight appeared to show a similar trend in fat between 2008 and 2009 and the percent change in age ratios for these species between the two years. This relationship will be monitored for potential usefulness in assessing species productivity.

In 2009, fall fat composition had a tendency to be higher in 13 of 18 species with three species significantly higher ( $p < .05$ ) (Table 34).

### ENVIRONMENTAL EDUCATION

A secondary goal of this study is to educate the general public on avian migration, research, habitat management, and ecosystems. During 2009, project personnel entertained 35 groups at Navarre and the Black Swamp Bird Observatory Nature Center educating 2,500 individuals on migration and banding. An additional three groups were received at Shaker Lakes totaling 170 people and ranging from elementary school age to adults. In addition, six presentations were made to 230 people on avian ecology and migration. As a part of International Migratory Bird Day events, banding demonstrations were done on the Magee Marsh State Wildlife Area for some 7,000 people.

### MANAGEMENT RECOMMENDATIONS

Adequate stopover habitat is a necessity if migrating birds are to successfully reach breeding and wintering home ranges each year. While the Lake Erie marsh region may contain extremely important breeding habitats for some species, it is of much greater importance in meeting migration



stopover needs. The combination of quality marshland, scrub-shrub upland and swamps, and wooded beach ridges provide food, water, and shelter for migrants. Intensively managed wetlands form the base for this habitat complex in the Lake Erie Marsh Region. The invertebrate populations required by the massive bird movement is born from these wetlands and shelters in the scrub and on beach ridges. This scrub-shrub and beach ridge habitat provides shelter from weather and protection from predators as well as their food source. Gray Dogwood dominates the shrub habitat providing vast surface area for invertebrates as well as fall migrating birds. Any management scheme at this latitude needs to recognize the over-riding importance of the region as stopover habitat for migrants. With the exception of the Gulf coast, no other region of eastern North America can demonstrate concentrations of avian migrants like Lake Erie's coast.

Management of these habitats needs to ensure protection of the remaining beach ridges and to provide both healthy wetlands and adequate shrub habitat. The mature forests of the Great Black Swamp once held many breeding species, but this habitat should not be a management priority. While migrational needs can be addressed in concentrated habitat units, to meet acreage requirements to influence breeding volume is presently beyond management resources. Wetland and moist soil habitats need to be managed to ensure water inundation during critical spring months to provide the substrate required for abundant invertebrate production. A well planned rotation of management units must be incorporated for summer and fall management plans to accommodate the habitat needs of the different migrant species, including deep water marshes, shallow water marshes, and moist soil areas. Shrub and grassland habitat management should consider migration as well as breeding needs. Management scenarios should also include food and cover during migration as well as protection during breeding season. Dike systems should be designed to incorporate scrub borders to provide travel lanes for migrants to mimic the limited beach ridges and to augment passerine breeding in shrub management units. Research has not been conducted to determine to what extent dike nesting success may influence overall regional avian production. This needs to be assessed to fully utilize this habitat use. In theory, dikes should be looked to as additional habitat for breeders spilling over from more productive shrub habitat blocks. Scrub-shrub habitats need to be maintained to provide adequate surface area for invertebrates, cover for migrant and breeders, and to encourage fruit production for fall migration. This will require periodic rejuvenation of units on a rotational basis.

Wise management of wetlands, shrub, grasslands, and riparian woodlands will not only benefit passerines on a year-round basis, but will also enhance other avian groups, mammals, reptiles, amphibians, and native plant associations.

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Table 1. Daily banding totals for Navarre, spring 2009.

Date	Net Hour	Banded	Banded/ 100 net hr	Returns	Recaptures	Total birds*	Total bird/ 100 net hr
0402	31.00	27	87.10	0	0	27	87.10
0408	73.00	49	67.12	0	0	49	67.12
0409	84.00	38	45.24	2	2	42	50.00
0416	94.50	22	23.28	5	2	29	30.69
0417	93.40	20	21.41	0	1	21	22.48
0418	189.00	104	55.03	6	1	111	58.73
0419	106.80	58	54.31	4	7	69	64.61
0420	107.40	109	101.49	0	11	120	111.73
0421	109.25	68	62.24	3	21	92	84.21
0422	128.42	59	45.94	5	30	94	73.20
0423	130.41	50	38.34	2	28	80	61.34
0424	110.02	327	297.22	1	8	336	305.40
0425	70.90	173	244.01	1	9	185	260.93
0426	144.90	171	118.01	2	5	178	122.84
0427	104.65	334	319.16	2	7	343	327.76
0428	69.00	91	131.88	3	11	105	152.17
0429	212.75	593	278.73	5	33	631	296.59
0430	103.50	224	216.43	2	50	279	269.57
0501	157.17	170	108.16	2	22	194	123.43
0502	155.25	265	170.69	7	19	293	188.73
0503	143.75	210	146.09	3	15	228	158.61
0504	132.25	73	55.20	5	21	99	74.86
0505	126.50	61	48.22	4	19	84	66.40
0506	180.17	181	100.46	8	14	204	113.23
0507	161.00	124	77.02	9	21	154	95.65
0508	212.75	578	271.68	7	22	607	285.31
0509	117.30	392	334.19	6	22	421	358.91
0510	195.50	500	255.75	7	68	575	294.12
0511	161.00	327	203.11	7	93	427	265.22
0512	143.75	118	82.09	3	58	180	125.22
0513	176.40	281	159.30	6	54	342	193.88
0514	161.00	288	178.89	10	53	351	218.01
0515	161.00	252	156.52	8	42	302	187.58
0516	176.40	682	386.62	6	37	725	411.00
0517	184.00	458	248.91	4	92	556	302.17
0518	178.25	271	152.03	3	117	391	219.35
0519	176.40	347	196.71	2	68	417	236.39
0520	161.00	312	193.79	2	39	354	219.88
0521	176.40	281	159.30	3	33	317	179.71
0522	168.60	168	99.64	9	46	223	132.27
0523	157.17	103	65.53	3	30	136	86.53
0524	153.41	125	81.48	5	28	160	104.30
0525	124.58	57	45.75	2	19	78	62.61
0526	134.17	52	38.76	7	35	95	70.81
0527	161.00	170	105.59	4	17	191	118.63
0528	138.00	186	134.78	4	20	211	152.90
0529	157.17	110	69.99	0	37	147	93.53
0530	149.50	73	48.83	5	21	99	66.22
0531	145.59	51	68.00	4	23	78	53.58
0601	151.42	84	55.47	5	22	111	73.31
0602	130.41	42	32.21	4	15	61	46.78
0603	144.90	42	28.99	4	11	58	40.03
0604	138.00	18	13.04	1	8	27	19.57
0605	149.50	34	22.74	4	11	49	32.78
0606	157.17	39	24.81	5	12	56	35.63
<b>TOTAL</b>	<b>7,760.73</b>	<b>10,042</b>	<b>129.40</b>	<b>223</b>	<b>1,508</b>	<b>11,792</b>	<b>151.94</b>

\* Total birds include Brown-headed Cowbirds and European Starlings released unbanded.

Table 2. Spring banding totals, Navarre, 2009.

Species	Banded	Species	Banded	Species	Banded
Mourning Dove	1	Song Sparrow	42	Blackburnian Warbler	64
Yellow-billed Cuckoo	1	Lincoln Sparrow	81	Yellow-Throated Warbler	1
Black-billed Cuckoo	1	Swamp Sparrow	116	Black-th.-Green Warbler	85
Hairy Woodpecker	1	Fox Sparrow	24	Pine Warbler	4
Downy Woodpecker	6	Eastern Towhee	3	Western Palm Warbler	317
Yellow-bellied Sapsucker	1	Northern Cardinal	38	Yellow Palm Warbler	4
Red-bellied Woodpecker	1	Rose-breasted Grosbeak	13	Prairie Warbler	1
Yellow-shafted Flicker	10	Indigo Bunting	83	Ovenbird	197
Chuck-wills-widow	1	Scarlet Tanager	9	Northern Waterthrush	116
Whip-poor-will	1	Tree Swallow	17	Kentucky Warbler	5
Ruby-th. Hummingbird	47	Cedar Waxwing	20	Connecticut Warbler	9
Eastern Kingbird	1	Red-eyed Vireo	150	Mourning Warbler	109
Great-crested Flycatcher	20	Philadelphia Vireo	25	Common Yellowthroat	270
Eastern Phoebe	10	Warbling Vireo	23	Yellow-breasted Chat	6
Eastern Wood Pewee	32	Yellow-throated Vireo	3	Hooded Warbler	13
Yellow-bellied Flycatcher	105	Blue-headed Vireo	39	Wilson's Warbler	224
Acadian Flycatcher	18	White-eyed Vireo	14	Canada Warbler	125
Trail's Flycatcher	302	Black and White Warbler	87	American Redstart	315
Least Flycatcher	108	Prothonotary Warbler	6	Gray Catbird	473
Blue Jay	56	Worm-eating Warbler	5	Brown Thrasher	21
Red-winged Blackbird	149	Blue-winged Warbler	21	Carolina Wren	2
Orchard Oriole	1	Golden-wing. Warbler	3	House Wren	100
Baltimore Oriole	25	Nashville Warbler	432	Winter Wren	19
Rusty Blackbird	7	Orange-crowned Warbler	10	Brown Creeper	30
Common Grackle	31	Tennessee Warbler	198	Black-capped Chickadee	1
Purple Finch	1	Northern Parula	34	Golden-crowned Kinglet	111
American Goldfinch	24	Cape May Warbler	33	Ruby-crowned Kinglet	256
Pine Siskin	1	Yellow Warbler	562	Blue-gray Gnatcatcher	63
White-crowned Sparrow	57	Black-th.-Blue Warbler	62	Wood Thrush	22
Gambels W-c Sparrow	1	Myrtle Warbler	1412	Veery	94
White-throated Sparrow	634	Magnolia Warbler	686	Gray-cheeked Thrush	63
American Tree Sparrow	6	Chestnut-sided Warbler	200	Swainson's Thrush	349
Chipping Sparrow	9	Bay-breasted Warbler	75	Hermit Thrush	142
Field Sparrow	14	Blackpoll Warbler	176	American Robin	22
Slate-colored Junco	24				

Table 3. Number of days observed and totals of species seen on point counts, Navarre spring 2009.

Species	# days	#Observed	Species	# days	#Observed	Species	# days	#Observed
Pied-billed Grebe	32	119	E. Wood Pewee	19	41	Blue-winged Warbler	9	11
Herring Gull	35	126	Yellow-bel. Flycatcher	5	6	Golden-winged Warbler	2	2
Ring-billed Gull	39	113	Acadian Flycatcher	4	4	Nashville Warbler	21	71
Bonaparte's Gull	3	6	Alder Flycatcher	5	7	Orange-cr. Warbler	1	1
Caspian Tern	2	3	Willow Flycatcher	23	87	Tennessee Warbler	21	121
Common Tern	1	2	Traill's Flycatcher	1	1	Northern Parula	8	18
Dou.-cr. Cormorant	35	252	Least Flycatcher	17	60	Cape May Warbler	6	9
Hooded Merganser	1	1	Blue Jay	41	4,669	Yellow Warbler	41	954
Mallard	25	77	American Crow	2	3	Black-th.-Blue Warbler	10	26
Gadwall	6	21	E. Starling	47	429	Myrtle Warbler	27	265
Northern Shoveler	1	2	Bobolink	3	7	Magnolia Warbler	20	111
Wood Duck	30	150	Brown-headed Cowbird	48	528	Chestnut-sided Warbler	25	79
Lesser Scaup	2	8	Red-winged Blackbird	48	4,710	Bay-breasted Warbler	9	15
Canada Goose	45	1,300	Orchard Oriole	6	7	Blackpoll Warbler	19	133
Trumpeter Swan	6	14	Baltimore Oriole	37	493	Blackburnian Warbler	16	23
Least Bittern	1	1	Rusty Blackbird	18	129	Black-th.-Green Warbler	22	52
Gr.-blue Heron	45	151	Common Grackle	48	718	Pine Warbler	2	2
Great Egret	16	28	Purple Finch	7	39	W. Palm Warbler	15	53
Green Heron	2	2	Am. Goldfinch	37	253	Ovenbird	15	23
Black-cr. N. Heron	2	2	Pine Siskin	4	17	No. Waterthrush	23	47
Virginia Rail	5	6	Lapland Longspur	1	2	Connecticut Warbler	2	3
Sora	8	15	Savannah Sparrow	1	3	Mourning Warbler	13	24
Am. Coot	19	70	White-cr. sparrow	7	31	Com. Yellowthroat	39	301
Am. Woodcock	1	1	White-th. Sparrow	30	858	Yellow-breasted Chat	3	3
Solitary Sandpiper	4	7	American Tree Sparrow	1	1	Hooded Warbler	1	1
Lesser Yellowlegs	1	1	Chipping Sparrow	2	2	Wilson's Warbler	19	73
Greater Yellowlegs	1	1	Field Sparrow	2	2	Canada Warbler	5	6
Killdeer	5	9	Slate-colored Junco	6	10	American Redstart	22	151
Mourning Dove	31	79	Song Sparrow	46	177	Gray Catbird	40	550
Rock Pigeon	2	3	Lincoln Sparrow	6	9	Brown Thrasher	30	60
Sharp-sh. Hawk	5	5	Swamp Sparrow	25	54	Carolina Wren	24	53
Cooper's Hawk	1	1	Fox Sparrow	2	2	House Wren	40	194
Red-tailed Hawk	2	3	Eastern Towhee	11	14	Winter Wren	4	8
Bald Eagle	7	9	No. Cardinal	48	707	Sedge Wren	1	1
Am. Kestrel	5	8	Rose-br. Grosbeak	18	80	Marsh Wren	2	2
Merlin	1	1	Indigo Bunting	27	122	Brown Creeper	3	4
Yellow-billed Cuckoo	9	11	Scarlet Tanager	15	31	Red-breasted Nuthatch	1	1
Black-billed Cuckoo	8	16	Purple Martin	29	118	Black-capped Chickadee	10	12
Belted Kingfisher	2	2	Cliff Swallow	1	2	Golden-crowned Kinglet	7	46
Downy Woodpecker	35	105	Barn Swallow	30	102	Ruby-crowned Kinglet	25	158
hairy Woodpecker	1	1	Tree Swallow	48	1,531	Blue-gray Gnatcatcher	27	138
Red-h. Woodpecker	4	4	Bank Swallow	15	77	Wood Thrush	8	11
Red-b. Woodpecker	4	7	Rough-winged Swallow	10	43	Veery	15	37
Yellow-shafted Flicker	30	65	Cedar Waxwing	27	1,231	Gray-cheeked Thrush	9	18
Whip-poor-will	1	1	Red-eyed Vireo	25	117	Swainson's Thrush	26	143
Common Nighthawk	1	1	Warbling Vireo	29	73	Hermit Thrush	4	8
Chimney Swift	22	101	Philadelphia Vireo	1	1	American Robin	48	255
Ruby-th.	7	8	Blue-headed Vireo	10	14	Eastern Bluebird	1	2
Eastern Kingbird	21	56	White-eyed Vireo	6	7	Unk. warbler	33	586
Olive-sided Flycatcher	2	3	Black & White Warbler	23	57	Unk. Flycatcher	1	2
Great-cr. Flycatcher	8	12	Prothonotary Warbler	34	55	Unk. Buteo	1	2
Eastern Phoebe	1	1	Worm-eating Warbler	2	2			

Table 4. Daily banding totals for Creek Bend, spring 2009.

Date	Net Hour	Banded	Banded/ 100 net hr	Returns	Recaptures	Total birds	Total bird/ 100 net hr
0418	20.00	10	50.00	2	0	12	60.00
0422	20.00	18	92.50	0	1	19	95.00
0423	20.00	9	45.00	1	0	10	50.00
0424	20.00	2	10.00	0	0	2	10.00
0425	25.00	10	40.00	0	0	10	40.00
0427	30.00	12	40.00	0	1	13	43.33
0429	30.00	8	26.67	0	0	8	26.67
0430	18.00	10	55.56	0	1	11	61.11
0502	30.00	21	70.00	0	0	21	70.00
0505	31.50	11	34.92	2	0	13	41.27
0511	40.50	38	93.82	2	2	42	103.70
0512	33.00	21	63.64	1	5	27	81.82
0513	31.50	16	50.79	0	3	19	60.32
0515	27.50	21	76.36	0	2	23	83.64
0518	33.00	23	69.70	0	6	29	87.88
0519	33.00	9	27.27	1	4	14	42.42
0520	33.00	17	51.52	1	4	22	66.67
0521	33.00	8	24.24	2	3	13	39.39
0522	33.00	19	57.58	1	2	22	66.67
0523	33.00	10	30.30	0	3	13	39.39
0525	33.00	12	36.36	0	2	14	42.42
0527	33.00	4	12.12	0	0	4	12.12
0609	33.00	5	15.15	0	0	5	15.15
<b>TOTAL</b>	<b>674.00</b>	<b>314</b>	<b>46.59</b>	<b>13</b>	<b>39</b>	<b>366</b>	<b>54.30</b>

Table 5. Daily banding totals Creek Bend, spring, 2009.

Species	Banded	Species	Banded	Species	Banded
Solitary Sandpiper	2	Chipping Sparrow	1	Blackpoll Warbler	1
Downy Woodpecker	3	Field Sparrow	5	Western Palm Warbler	6
Eastern Kingbird	1	Song Sparrow	5	Common Yellowthroat	6
Great-crested Flycatcher	1	Lincoln Sparrow	5	Wilson's Warbler	7
Eastern Phoebe	1	Northern Cardinal	3	American Redstart	1
Eastern Wood-pewee	1	Indigo Bunting	18	Gray Catbird	39
Trail's Flycatcher	9	Tree Swallow	12	Brown Thrasher	9
Brown-headed Cowbird	8	Cedar Waxwing	11	Carolina Wren	1
Red-winged Blackbird	11	Red-eyed Vireo	2	House Wren	7
Orchard Oriole	5	Warbling Vireo	6	Black-capped Chickadee	1
Baltimore Oriole	15	Blue-headed Vireo	1	Ruby-crowned Kinglet	9
Common Grackle	2	White-eyed Vireo	1	Blue-gray Gnatcatcher	2
American Goldfinch	12	Black and White Warbler	1	Wood Thrush	6
Savannah Sparrow	4	Yellow Warbler	18	Gray-cheeked Thrush	2
Grasshopper Sparrow	1	Black-th.-blue Warbler	1	Swainson's Thrush	3
White-crowned Sparrow	5	Myrtle Warbler	3	American Robin	13
White-throated Sparrow	10	Magnolia Warbler	4	Eastern Bluebird	11

Table 6. Daily banding totals for Petersburg, spring 2009.

Date	Net Hour	Banded	Banded/ 100 net hr	Returns	Recaptures	Total birds	Total bird/ 100 net hr
0410	131.25	19	14.48	6	0	25	19.05
0418	126.25	16	12.67	3	2	21	16.63
0425	92.50	15	16.22	0	2	17	13.47
0426	128.75	56	43.50	2	2	60	46.60
0510	138.75	36	25.95	4	6	46	33.15
0517	140.00	38	27.14	3	4	45	32.14
0529	128.75	10	7.77	2	5	17	13.20
0530	105.00	7	6.67	1	3	11	10.48
0531	147.50	7	4.75	3	7	17	7.46
<b>TOTAL</b>	<b>1138.75</b>	<b>204</b>	<b>17.91</b>	<b>24</b>	<b>25</b>	<b>253</b>	<b>22.22</b>

Table 7. Daily banding totals Petersburg, spring, 2009.

Species	Banded	Species	Banded	Species	Banded
Wood Duck	1	Northern Cardinal	12	Common Yellowthroat	4
Black-billed Cuckoo	1	Rose-breasted Grosbeak	1	Canada Warbler	1
Downy Woodpecker	2	Indigo Bunting	2	American Redstart	6
Eastern Phoebe	1	Warbling Vireo	1	Gray Catbird	18
Blue Jay	2	White-eyed Vireo	2	House Wren	3
Brown-headed Cowbird	2	Black and White Warbler	1	Brown Creeper	1
Red-winged Blackbird	3	Nashville Warbler	5	Golden-crowned Kinglet	2
Baltimore Oriole	3	Tennessee Warbler	1	Ruby-crowned Kinglet	3
Common Grackle	10	Yellow Warbler	1	Wood Thrush	4
American Goldfinch	12	Black-th.-blue Warbler	1	Veery	3
White-throated Sparrow	6	Myrtle Warbler	24	Gray-cheeked Thrush	3
Chipping Sparrow	1	Magnolia Warbler	3	Swainson's Thrush	10
Field Sparrow	2	Blackpoll Warbler	1	Hermit Thrush	4
Slate-colored Junco	3	Western Palm Warbler	13	American Robin	17
Song Sparrow	2	Ovenbird	3	Eastern Bluebird	1
Swamp Sparrow	1	Northern Waterthrush	3		

Table 8. Point count days conducted and species totals, spring season, Petersburg, 2009.

Species	# days	# birds	Species	# days	# birds	Species	# days	# birds
Mallard	1	1	Eastern Phoebe	1	1	Song Sparrow	1	1
Wood Duck	2	4	Blue Jay	6	17	No. Cardinal	9	53
Canada Goose	4	12	Am. Crow	9	20	Yellow Warbler	1	1
American Coot	1	1	E. Starling	1	2	Gray Catbird	5	11
Killdeer	2	2	Br.-headed Cowbird	4	6	House Wren	5	7
Ring-necked Pheasant	5	13	Red-winged Blackbird	4	8	Tufted Titmouse	4	5
Wild Turkey	3	5	Common Grackle	8	35	Black-cap Chickadee	7	16
Mourning Dove	7	16	Am. Goldfinch	1	1	Veery	1	2
Downy woodpecker	2	2	White-th. Sparrow	1	1	American Robin	9	65
Yellow-sh. Flicker	1	1	Field Sparrow	8	22	E. Bluebird	1	1
Great-cr. Flycatcher	2	3						



Table 9. Daily banding totals for Shaker Lakes, spring 2009.

Date	Net Hour	Banded	Banded/ 100 net hr	Returns	Recaptures	Total birds	Total bird/ 100 net hr
0420	18.50	34	183.78	1	0	35	189.19
0422	22.00	26	118.18	4	4	34	154.55
0424	24.00	9	37.50	1	0	10	41.67
0427	33.00	30	90.91	2	1	33	100.00
0429	32.50	67	206.15	1	4	72	221.54
0501	32.50	31	95.38	3	4	38	116.92
0502	35.50	23	64.79	4	10	37	104.23
0504	32.50	13	40.00	0	8	21	64.61
0506	32.50	20	61.54	1	2	23	70.77
0508	36.00	23	63.89	3	7	33	91.67
0511	35.00	40	114.29	0	7	47	134.29
0513	35.00	22	62.86	1	9	32	91.43
0515	33.50	19	56.72	3	1	23	68.66
0518	35.00	20	57.14	4	4	28	80.00
0520	36.50	22	60.27	3	1	26	71.23
0521	38.00	7	18.42	2	2	11	28.95
0522	36.50	8	21.92	1	6	15	41.10
0525	35.50	17	47.89	1	4	22	61.97
0527	36.00	17	47.22	0	3	20	55.56
0529	30.50	6	19.67	0	3	9	29.51
0601	34.00	5	14.71	3	8	16	47.06
0603	35.50	8	22.54	1	5	14	39.44
0605	36.00	7	19.44	0	3	10	27.78
TOTAL	756.00	474	62.70	39	96	609	80.56

Table 10. Daily banding totals Shaker Lakes, spring 2009.

<b>Species</b>	<b>Banded</b>	<b>Species</b>	<b>Banded</b>	<b>Species</b>	<b>Banded</b>
Green Heron	2	Northern Cardinal	5	Common Yellowthroat	14
Hairy Woodpecker	2	Indigo Bunting	4	Hooded Warbler	2
Downy Woodpecker	3	Red-eyed Vireo	3	Wilson's Warbler	8
Great-crested Flycatcher	1	Warbling Vireo	2	Canada Warbler	4
Eastern Phoebe	1	Black and White Warbler	2	American Redstart	10
Eastern Wood Pewee	1	Prothonotary Warbler	1	Gray Catbird	33
Trail's Flycatcher	2	Nashville Warbler	14	Carolina Wren	2
Least Flycatcher	1	Orange-crowned Warbler	1	House Wren	8
Brown-headed Cowbird	5	Yellow Warbler	19	White-breasted Nuthatch	1
Red-winged Blackbird	4	Myrtle Warbler	22	Tufted Titmouse	4
Common Grackle	2	Magnolia Warbler	13	Black-capped Chickadee	2
Baltimore Oriole	2	Chestnut-sided Warbler	2	Golden-crowned Kinglet	3
House Finch	1	Blackpoll Warbler	1	Ruby-crowned Kinglet	78
American Goldfinch	31	Blackburnian Warbler	1	Blue-gray Gnatcatcher	5
Pine Siskin	4	Black-th.-Green Warbler	1	Wood Thrush	6
White-throated Sparrow	21	Western Palm Warbler	17	Veery	1
Chipping Sparrow	2	Yellow Palm Warbler	3	Gray-cheeked Thrush	1
Slate-colored Junco	1	Ovenbird	4	Swainson's Thrush	23
Song Sparrow	13	Northern Waterthrush	11	Hermit Thrush	3
Lincoln Sparrow	5	Connecticut Warbler	1	American Robin	26
Swamp Sparrow	4	Mourning Warbler	5		

Table 11. Point count days conducted and species totals, spring season, Shaker Lakes, 2009.

Species	# days	# birds	Species	# days	# birds	Species	# days	# birds
Herring Gull	8	11	Blue Jay	1	2	Blackburnian Warbler	1	1
Ring-billed Gull	1	4	American Crow	3	3	West. Palm Warbler	3	7
Caspian Tern	1	1	European Starling	8	11	Northern Waterthrush	5	8
Mallard	9	15	Brown-head. Cowbird	15	27	Common Yellowthroat	4	5
Wood Duck	11	15	Red-wing . Blackbird	18	68	American Redstart	1	3
Canada Goose	11	37	Baltimore Oriole	15	25	Gray Catbird	19	41
Great Blue Heron	11	23	Common Grackle	8	16	Carolina Wren	14	18
Great Egret	1	1	American Goldfinch	21	111	House Wren	18	29
Green Heron	2	3	Wh.-throated Sparrow	6	9	Winter Wren	3	3
Solitary Sandpiper	3	3	Song Sparrow	23	82	White-br. Nuthatch	4	9
Mourning Dove	11	17	No. Cardinal	22	71	Tufted Titmouse	18	43
Rock Pigeon	11	65	Rose-br. Grosbeak	1	1	Black-cap. Chickadee	17	24
Osprey	1	1	N. Rough-wing Swal.	14	20	Ruby-cr. Kinglet	7	13
Hairy Woodpecker	5	5	Cedar Waxwing	1	3	Blue-gray Gnatcatcher	5	7
Downy Woodpecker	7	7	Red-eyed Vireo	10	20	Wood Thrush	12	22
Red-hd. Woodpecker	2	2	Warbling Vireo	20	42	Swainson's Thrush	3	3
Red -bell Woodpecker	20	32	Blue-winged Warbler	1	1	Hermit Thrush	1	1
Yell-shaft Flicker	9	10	Nashville Warbler	3	6	American Robin	23	77
Common Nighthawk	1	1	Tennessee Warbler	1	1	Unk. duck	1	2
Chimney Swift	2	4	Yellow Warbler	20	69	Unk. Warbler	3	3
Ru.-th. Hummingbird	5	5	Myrtle Warbler	1	15	Unk. Woodpecker	2	3
Gr-cr Flycatcher	12	17	Magnolia Warbler	1	1	Unk. Flycatcher	2	3
Eastern Phoebe	9	14	Chest.-sid. Warbler	1	1	Unk. Gull	7	16
Eastern Wood Pewee	9	9						

Table 12. Daily banding totals for Navarre, fall 2009.

Date	Net Hour	Banded	Banded/100 net hr	Returns	Recaptures	Total birds*	Total bird/ 100 net hr
0705	92.00	66	71.74	2	10	78	84.78
0713	138.00	55	39.86	2	11	69	50.00
0727	115.00	77	66.96	4	6	87	75.65
0806	92.00	23	25.00	0	4	27	29.35
0822	143.75	25	17.39	0	1	26	18.09
0823	130.41	13	9.97	1	0	14	10.74
0824	136.08	19	13.96	0	6	25	18.37
0825	139.17	7	5.03	0	3	10	7.19
0826	113.08	12	10.61	0	4	16	14.15
0827	130.41	21	16.10	1	2	24	18.40
0828	105.42	8	7.59	0	2	10	9.49
0829	111.17	16	14.39	0	1	17	15.29
0830	101.58	13	12.80	0	1	14	13.78
0831	111.17	33	29.68	0	2	35	31.48
0901	130.41	65	49.84	0	5	70	53.68
0902	111.17	21	18.89	0	6	27	24.29
0903	101.60	10	9.84	0	5	15	14.76
0904	126.50	20	15.81	0	5	25	19.76
0905	113.08	18	15.92	0	3	21	18.57
0906	122.59	20	16.31	0	6	26	21.21
0907	109.25	12	10.98	0	2	14	12.81
0908	92.00	7	7.61	0	4	11	11.96
0909	107.41	15	13.97	1	9	25	23.28
0910	116.92	15	12.83	0	3	18	15.40
0911	118.83	22	18.51	1	4	27	22.72
0912	101.58	8	7.88	0	4	12	11.81
0913	109.25	15	13.73	0	1	16	14.65
0914	120.75	32	26.50	0	2	34	28.16
0915	103.50	46	44.44	0	2	48	46.38
0916	109.25	21	19.22	0	3	24	21.97
0917	126.50	38	30.04	0	7	45	35.57
0918	120.75	28	23.19	0	7	35	28.99
0919	115.00	56	48.70	0	4	60	52.17
0920	111.17	36	32.38	0	6	42	37.78
0921	103.50	18	17.39	0	4	22	21.26
0922	138.00	80	57.97	0	11	91	65.94
0923	120.75	61	50.52	0	9	70	57.97
0924	115.00	52	45.22	0	8	60	52.17
0925	118.83	42	35.34	0	17	59	49.65
0926	155.25	82	52.88	0	16	98	63.12
0927	130.41	134	102.75	0	21	155	118.86
0928	96.60	104	107.66	0	13	117	121.12
0929	122.59	107	87.28	0	40	147	119.91
0930	153.41	132	86.04	0	67	199	129.72
1001	149.50	127	84.95	1	34	162	108.36
1003	132.25	79	59.74	0	51	130	98.30
1004	138.00	99	71.94	0	44	143	103.62
1005	118.83	71	59.75	0	31	102	85.84
1006	145.59	92	63.19	0	44	138	94.79
1007	107.40	30	27.93	0	36	66	61.45
1008	138.00	79	57.25	1	29	109	78.99
1010	187.83	130	69.21	0	51	181	96.36
1011	115.00	53	46.09	0	26	79	68.70
1012	126.50	87	68.77	0	35	122	96.84
1013	103.50	48	46.38	0	28	76	73.43
1014	49.83	83	166.57	0	17	100	200.68
1016	109.25	161	147.37	1	39	201	183.98
1017	138.00	175	126.81	0	37	212	153.62
1018	115.00	99	86.09	0	26	125	108.70
1019	120.75	42	34.78	0	25	67	55.49
1020	138.00	85	61.59	0	51	136	98.55
1021	111.17	50	44.98	0	27	77	69.26
1022	113.08	63	55.71	0	37	100	88.43
1024	111.17	61	54.87	0	17	78	70.16
1025	145.59	128	87.92	0	29	157	107.84
1027	116.92	54	46.19	1	19	74	63.29
1107	95.83	44	45.91	0	8	52	54.26
TOTAL	8,008.08	3,645	45.52	16	1,088	4,752	59.34

\* Total birds include Brown-headed Cowbirds and European Starlings released unbanded.

Table 13. Fall banding totals, Navarre 2009.

<b>Species</b>	<b>Banded</b>	<b>Species</b>	<b>Banded</b>	<b>Species</b>	<b>Banded</b>
American Woodcock	3	Swamp Sparrow	19	Western Palm Warbler	1
Sharp-shinned Hawk	1	Fox Sparrow	7	Ovenbird	60
Yellow-billed Cuckoo	1	Northern Cardinal	35	Northern Waterthrush	25
Hairy Woodpecker	1	Rose-breasted Grosbeak	5	Kentucky Warbler	1
Downy Woodpecker	26	Indigo Bunting	7	Connecticut Warbler	6
Yellow-bellied Sapsucker	8	Scarlet Tanager	1	Mourning Warbler	12
Red-bellied Woodpecker	1	Cedar Waxwing	42	Common Yellowthroat	63
Yellow-shafted Flicker	10	Red-eyed Vireo	46	Wilson's Warbler	13
Ruby-th. Hummingbird	7	Philadelphia Vireo	9	Canada Warbler	9
Great-crested Flycatcher	2	Warbling Vireo	3	American Redstart	45
Eastern Phoebe	6	Yellow-throated Vireo	1	Gray Catbird	202
Eastern. Wood Pewee	6	Blue-headed Vireo	15	Brown Thrasher	6
Yellow-bellied Flycatcher	11	Black and White Warbler	11	Carolina Wren	6
Traill's Flycatcher	3	Prothonotary Warbler	5	House Wren	43
Least Flycatcher	2	Nashville Warbler	38	Winter Wren	79
Blue Jay	3	Orange-crowned Warbler	7	Marsh Wren	2
Red-winged Blackbird	14	Tennessee Warbler	21	Brown Creeper	74
Baltimore Oriole	8	Northern Parula	2	White-breasted Nuthatch	1
Rusty Blackbird	6	Cape May Warbler	37	Red-breasted Nuthatch	7
Common Grackle	48	Yellow Warbler	67	Black-capped Chickadee	11
Purple Finch	4	Black-th.-Blue Warbler	56	Golden-crowned Kinglet	255
American Goldfinch	18	Myrtle Warbler	177	Ruby-crowned Kinglet	200
White-crowned Sparrow	21	Magnolia Warbler	115	Wood Thrush	10
White-throated Sparrow	256	Chestnut-sided Warbler	13	Veery	14
Chipping Sparrow	1	Bay-breasted Warbler	17	Gray-cheeked Thrush	152
Field Sparrow	5	Blackpoll Warbler	433	Swainson's Thrush	317
Slate-colored Junco	23	Blackburnian Warbler	3	Hermit Thrush	212
Song Sparrow	19	Black-th.-Green Warbler	5	American Robin	102
Lincoln Sparrow	6				

Table 14. Number of days observed and totals of species seen on point counts, Navarre fall 2009.

Species	# days	#Observed	Species	# days	#Observed	Species	# days	#Observed
Pied-Billed Grebe	1	1	Hairy Woodpecker	3	3	Red-eyed Vireo	13	21
Herring Gull	27	77	Yellow-bel. Sapsucker	5	6	Philadelphia Vireo	2	3
Ring-billed Gull	43	259	Red-head Woodpecker	1	2	Warbling Vireo	8	11
Bonaparte's Gull	8	37	Red-bell. Wood.	7	9	Bl. And Wh. Warbler	4	4
Caspian Tern	3	3	Yellow-sh. Flicker	33	65	Tennessee Warbler	4	6
D-c. Cormorant	15	295	Chimney Swift	18	138	Cape May Warbler	5	9
Mallard	39	433	Ruby-th. Hummingbird	1	1	Black-th.-Blue Warbler	1	1
American Black Duck	7	28	Eastern Kingbird	6	8	Myrtle Warbler	23	217
Gadwall	6	64	Great-cr. Flycatcher	3	3	Magnolia Warbler	15	23
American Wigeon	5	55	Eastern Phoebe	5	6	Bay-breasted Warbler	1	1
Blue-winged Teal	3	5	Eastern Wood Pewee	1	1	Blackpoll Warbler	27	78
Northern Pintail	5	26	Willow Flycatcher	1	1	Blackburnian Warbler	1	1
Northern Shoveler	1	2	Least Flycatcher	1	1	Blk.-th-green Warbler	2	2
Wood Duck	12	43	Horned Lark	5	8	Western Palm Warbler	1	1
Lesser Scaup	2	9	Blue Jay	58	207	Ovenbird	9	12
Canvasback	1	5	European Starling	60	1,202	No. Waterthrush	3	3
Common Goldeneye	1	8	Brown-headed Cowbird	10	23	Mourning Warbler	1	1
Hooded Merganser	1	1	Red-winged Blackbird	53	16,098	Common Yellowthroat	10	15
Canada Goose	58	2,449	Baltimore Oriole	13	35	Wilson's Warbler	1	1
Trumpeter Swan	4	8	Rusty Blackbird	11	416	Canada Warbler	1	2
Great- blue Heron	45	121	Common Grackle	59	2,778	American Redstart	8	10
Great Egret	19	40	Purple Finch	15	48	Gray Catbird	49	457
Black-cr. Night-Heron	4	4	House Finch	2	3	Brown Thrasher	13	14
Sora	2	4	American Goldfinch	34	153	Carolina Wren	28	51
King Rail	1	1	Pine Siskin	1	1	House Wren	20	27
Virginia Rail	5	5	White-cr. Sparrow	8	12	Winter Wren	23	48
Common Snipe	1	1	White-th. Sparrow	31	1,031	Marsh Wren	1	1
Dunlin	1	6	Slate-colored Junco	4	14	Brown Creeper	6	6
Solitary Sandpiper	1	1	Song Sparrow	15	17	Red-br. Nuthatch	9	11
Lesser Yellowlegs	5	6	Lincoln Sparrow	3	3	Black.-cap. Chickadee	14	21
Greater Yellowlegs	8	24	Swamp Sparrow	2	3	Golden-cr. Kinglet	18	131
Black-bellied Plover	1	1	Fox Sparrow	1	1	Ruby-cr. Kinglet	20	115
Killdeer	10	26	Eastern Towhee	8	10	Wood Thrush	1	1
Mourning Dove	11	14	Northern Cardinal	62	647	Veery	5	8
Sharp-shinned Hawk	2	2	Rose-br. Grosbeak	4	12	Gray-cheeked Thrush	27	190
Cooper's Hawk	1	1	Indigo Bunting	2	2	Swainson's Thrush	32	269
Red-tailed Hawk	3	3	Purple Martin	10	49	Hermit Thrush	12	47
Bald Eagle	13	15	Barn Swallow	10	56	American Robin	47	882
Great Horned Owl	1	1	Tree Swallow	19	127	Eastern Bluebird	3	3
Yellow-billed Cuckoo	3	3	Bank Swallow	8	45	Unk. Sparrow	1	1
Downy Woodpecker	58	163	Cedar Waxwing	58	920	Unk. Warbler	50	392

Table 15. Daily banding totals for Navarre Beach, fall 2009.

Date	Net Hour	Banded	Banded/100 nh	Returns	Recaptures	Total birds*	Totalbird/100nh
0822	31.25	23	73.60	0	0	23	73.60
0823	29.17	3	10.28	0	0	3	10.28
0824	31.65	18	56.87	0	1	19	60.93
0825	24.17	8	33.10	0	1	9	37.24
0826	25.00	50	200.00	2	3	55	220.00
0827	29.58	3	10.14	0	1	4	13.52
0828	13.35	0	0	1	0	1	7.49
0829	24.17	1	4.14	0	1	2	8.27
0830	24.17	0	0	0	1	1	4.14
0831	24.15	11	45.55	0	1	12	49.65
0901	28.75	12	41.74	0	5	17	59.13
0902	25.00	3	12.00	1	1	5	20.00
0903	23.35	2	8.56	0	0	2	8.56
0904	27.50	2	7.27	1	1	4	14.55
0905	25.85	2	7.74	0	0	2	7.74
0906	26.25	1	3.81	0	1	2	7.62
0907	22.50	3	13.33	0	0	3	13.33
0908	20.83	0	0	0	0	0	0
0909	17.50	0	0	0	0	0	0
0910	20.00	0	0	0	0	0	0
0911	20.00	2	10.00	0	1	3	15.00
0912	22.92	2	8.73	0	0	2	8.73
0913	24.17	5	20.69	1	0	6	24.82
0914	26.25	11	41.90	0	1	12	45.71
0915	23.35	4	17.13	0	2	6	25.70
0918	27.50	21	76.36	2	7	30	109.09
0919	27.50	10	36.36	0	1	11	40.00
0920	25.00	5	20.00	0	1	6	24.00
0921	22.50	2	8.89	0	1	3	13.33
0922	28.30	20	70.67	2	7	29	102.47
0923	25.00	19	76.00	0	6	25	100.00
0924	17.50	2	11.43	0	0	2	11.43
0926	35.00	45	128.57	1	9	55	157.14
0927	29.17	10	34.28	0	3	13	44.57
0928	23.63	14	59.25	0	0	14	59.25
0929	26.25	24	91.43	0	3	27	102.86
0930	32.50	29	89.23	0	6	35	107.69
1001	33.75	25	74.07	0	4	29	85.93
1003	28.35	17	59.96	0	3	20	70.55
1004	32.50	23	70.77	0	3	26	80.00
1005	26.65	14	52.53	0	4	18	67.54
1006	24.17	9	37.24	0	4	16	66.20
1007	24.17	0	0	0	2	2	8.27
1008	31.65	20	63.19	0	15	35	110.58
1010	42.08	29	68.92	0	12	42	99.81
1011	27.08	32	118.17	1	2	35	129.25
1012	27.50	16	58.18	0	10	26	94.55
1013	22.92	7	30.54	0	5	12	52.36
1018	25.00	26	104.00	0	2	28	112.00
1019	22.92	24	104.71	0	3	27	117.80
1020	27.50	25	90.91	1	4	30	109.09
1021	22.08	5	22.64	0	1	6	27.17
1022	24.58	2	8.14	0	1	3	12.21
1024	20.83	18	86.41	0	2	20	96.02
1025	30.00	9	30.00	0	4	13	43.33
1027	24.58	11	44.75	1	6	18	73.23
<b>TOTAL</b>	<b>1,449.04</b>	<b>679</b>	<b>46.86</b>	<b>14</b>	<b>152</b>	<b>849</b>	<b>58.59</b>

\* Total birds include Brown-headed Cowbirds and European Starlings released unbanded.

Table 16. Fall banding totals, Navarre Beach 2009.

Species	Banded	Species	Banded	Species	Banded
Downy Woodpecker	15	Cedar Wax wing	4	Ovenbird	3
Yellow-bellied Sapsucker	1	Red-eyed Vireo	1	Northern Waterthrush	6
Eastern Kingbird	1	Philadelphia Vireo	1	Mourning Warbler	2
Eastern Phoebe	12	Warbling Vireo	56	Common Yellowthroat	20
Eastern Wood Pewee	4	Blue-headed Vireo	13	American Redstart	5
Least Flycatcher	1	White-eyed Vireo	1	Gray Catbird	70
Red-winged Blackbird	2	Black and White Warbler	2	Brown Thrasher	1
Baltimore Oriole	14	Prothonotary Warbler	1	Carolina Wren	2
Common Grackle	8	Nashville Warbler	12	House Wren	9
American Goldfinch	1	Tennessee Warbler	2	Winter Wren	10
White- crowned Sparrow	2	Northern Parula	1	Marsh Wren	2
White-throated Sparrow	35	Cape May Warbler	10	Brown Creeper	7
Field Sparrow	1	Yellow Warbler	8	Red-breasted Nuthatch	1
Slate-colored Junco	5	Black-th. Blue Warbler	8	Golden-crowned Kinglet	30
Song Sparrow	11	Myrtle Warbler	19	Ruby-crowned Kinglet	45
Lincoln Sparrow	6	Magnolia Warbler	9	Veery	1
Swamp Sparrow	5	Blackpoll Warbler	106	Gray-cheeked Thrush	12
Fox Sparrow	1	Blackburnian Warbler	2	Swainson's Thrush	33
Northern Cardinal	5	Black-th.-Green Warbler	3	Hermit Thrush	27
Scarlet Tanager	1	Western Palm Warbler	3		



Table 17 . Daily banding totals for Creek Bend County Park, fall 2009.

Date	Net Hour	Banded	Banded/ 100 net hr	Returns	Recaptures	Total birds	Total bird/ 100 net hr
0907	17.50	20	114.29	0	0	20	114.29
0908	21.00	14	66.67	0	0	14	66.67
0909	24.00	25	104.17	0	1	26	108.33
0910	16.00	7	43.75	0	0	7	43.75
0911	40.00	44	110.00	1	0	45	112.50
0913	40.00	42	105.00	1	0	43	107.50
0915	35.00	34	97.14	0	2	36	102.86
0916	40.50	34	83.95	0	3	37	91.36
0919	45.00	28	62.22	0	3	31	68.89
0920	35.00	13	37.14	0	5	18	51.43
0926	85.00	190	223.53	1	3	194	228.24
0927	30.00	24	80.00	0	1	25	83.33
0930	32.00	53	165.63	1	5	59	184.38
1006	32.00	76	237.50	3	3	82	256.25
1008	40.00	32	80.00	1	4	37	92.50
1010	48.00	148	308.33	1	6	155	322.92
1011	40.00	128	320.00	0	0	128	320.00
1019	40.00	22	55.00	0	1	23	57.50
1020	50.00	25	50.00	0	2	27	54.00
1021	45.00	51	113.33	0	5	56	124.44
1022	47.25	65	137.57	0	1	66	139.68
1025	84.00	281	334.52	0	6	287	341.67
1026	52.50	72	137.14	0	11	83	158.10
1028	52.50	164	312.38	0	15	179	340.95
1103	38.00	133	350.00	0	18	151	397.37
1107	11.25	24	213.33	1	1	26	231.11
1108	34.00	43	126.47	0	4	47	138.24
1109	47.25	15	31.75	0	2	17	35.98
1111	29.75	41	137.82	2	4	47	157.98
1115	47.25	9	19.05	0	6	15	31.75
1123	32.00	33	103.13	0	2	35	109.38
1124	42.00	19	45.24	1	0	20	47.62
1128	47.25	29	61.38	0	5	34	71.96
<b>TOTAL</b>	1,320.50	1,938	146.76	13	119	2,070	156.76

Table 18. Fall banding totals for Creek Bend County Park, fall 2009.

<b>Species</b>	<b>Banded</b>	<b>Species</b>	<b>Banded</b>	<b>Species</b>	<b>Banded</b>
Downy Woodpecker	10	Fox Sparrow	4	Wilson's Warbler	5
Red-bellied Woodpecker	1	Northern Cardinal	23	American Redstart	2
Eastern Phoebe	2	Indigo Bunting	93	Northern Mockingbird	1
Blue Jay	2	Cedar Waxwing	2	Gray Catbird	30
Red-winged Blackbird	1	Red-eyed Vireo	3	Brown Thrasher	1
House Finch	9	Black and White Warbler	1	House Wren	23
American Goldfinch	995	Nashville Warbler	36	Winter Wren	6
Pine Siskin	1	Orange-crowned Warbler	1	Brown Creeper	5
Savannah Sparrow	3	Tennessee Warbler	14	White-breasted Nuthatch	1
White-crowned Sparrow	11	Black-th. Blue Warbler	2	Tufted Titmouse	2
White-throated Sparrow	82	Myrtle Warbler	21	Black-capped Chickadee	5
American Tree Sparrow	52	Magnolia Warbler	14	Golden-crowned Kinglet	18
Chipping Sparrow	48	Chestnut-sided Warbler	1	Ruby-crowned Kinglet	45
Field Sparrow	44	Blackpoll Warbler	1	Gray-cheeked Thrush	1
Slate-colored Junco	42	Western Palm Warbler	7	Swainson's Thrush	5
Song Sparrow	162	Ovenbird	1	Hermit Thrush	14
Lincoln's Sparrow	25	Northern Waterthrush	1	American Robin	1
Swamp Sparrow	42	Common Yellowthroat	16		

Table 19. Daily banding totals for Petersburg, fall 2009.

Date	Net Hour	Banded	Banded/ 100 net hr	Returns	Recaptures	Total birds	Total bird/ 100 net hr
0823	133.40	9	6.75	0	1	10	7.50
0824	170.00	17	10.00	0	4	21	12.35
0825	170.00	8	4.71	0	5	13	7.65
0829	166.67	28	16.81	0	4	32	19.21
0830	90.00	9	10.00	0	4	13	14.44
0831	165.00	14	8.48	0	2	16	9.70
0901	166.67	4	2.40	0	1	5	3.00
0911	160.00	28	17.50	0	5	33	20.63
0912	151.67	25	16.48	1	5	31	20.44
0913	96.67	5	5.17	0	1	6	6.21
0914	166.67	23	13.80	1	5	29	17.40
0915	163.33	17	10.41	0	4	21	12.86
0916	166.67	13	7.80	0	0	13	7.80
0917	166.67	17	10.20	1	2	20	12.00
0919	133.33	29	21.75	0	4	33	24.75
0924	163.33	34	20.82	0	3	37	22.65
0925	130.00	10	7.69	0	4	14	10.77
0927	156.67	16	10.21	0	2	18	11.49
0930	166.67	33	19.80	0	3	36	21.60
1001	161.67	14	8.66	0	2	16	9.90
1011	73.40	7	9.54	0	0	7	9.54
1017	146.60	42	28.65	0	2	44	30.01
1018	146.60	22	15.01	0	5	27	18.42
1025	143.33	17	11.86	0	2	19	13.26
<b>TOTAL</b>	<b>3554.88</b>	<b>441</b>	<b>12.41</b>	<b>3</b>	<b>70</b>	<b>514</b>	<b>14.46</b>

Table 20. Daily banding totals Petersburg, fall 2009.

Species	Banded	Species	Banded	Species	Banded
Sharp-shinned Hawk	1	Rose-breasted Grosbeak	1	Common Yellowthroat	1
Yellow-billed Cuckoo	1	Cedar Waxwing	2	Canada Warbler	9
Downy Woodpecker	8	Red-eyed Vireo	3	American Redstart	16
Red-bellied Woodpecker	1	Blue-headed Vireo	1	Gray Catbird	29
Yellow-shafted Flicker	2	Black and White Warbler	11	House Wren	1
Eastern Phoebe	1	Nashville Warbler	7	Winter Wren	4
Yellow-bellied Flycatcher	6	Orange-crowned Warbler	2	White-breasted Nuthatch	4
Traill's Flycatcher	3	Tennessee Warbler	4	Tufted Titmouse	6
Least Flycatcher	1	Black-th.-Blue Warbler	13	Black-capped Chickadee	8
Blue Jay	3	Cape May Warbler	1	Golden-crowned Kinglet	11
House Finch	1	Myrtle Warbler	1	Ruby-crowned Kinglet	18
Slate-colored Junco	15	Magnolia Warbler	37	Verry	2
Chipping Sparrow	1	Chestnut-sided Warbler	7	Gray-cheeked Thrush	16
White-throated Sparrow	9	Blackpoll Warbler	9	Swainson's Thrush	37
Song Sparrow	1	Blackburnian Warbler	2	Hermit Thrush	18
Fox Sparrow	1	Black-th. Green Warbler	3	American Robin	74
Northern Cardinal	7	Ovenbird	21		

Table 21. Point count days conducted and species totals, fall season, Petersburg, 2009.

Species	# days	# birds	Species	# days	# birds	Species	# days	# birds
Mallard	1	1	Chimney Swift	1	1	Scarlet Tanager	1	1
Canada Goose	6	18	Eastern Kingbird	1	1	Barn Swallow	1	3
Great Blue Heron	1	2	Blue Jay	24	258	Cedar Waxwing	1	1
Killdeer	1	1	American Crow	22	72	Gray Catbird	14	44
Mourning Dove	7	15	European Starling	15	45	White-br. Nuthatch	1	1
Rock Pigeon	1	5	Brown-headed Cowbird	9	74	Tufted Titmouse	1	1
Sharp-shinned Hawk	1	2	Common Grackle	11	1,138	Black-cap. Chickadee	2	2
American Kestrel	1	1	House Finch	1	2	Hermit Thrush	1	1
Downy Woodpecker	5	6	American Goldfinch	23	52	American Robin	24	693
Red-bellied Woodpecker	1	1	Northern Cardinal	12	17	Eastern Bluebird	1	5
Ruby-th. Hummingbird	1	2						

Table 22. Daily banding totals for Shaker Lakes, fall 2009.

Date	Net hour	Banded	Banded/ 100 net hr	Returns Recaptures	Recaptures	Total birds	Total bird/ 100 net hr
0817	33.00	19	57.58	0	1	20	60.61
0819	31.50	17	53.97	0	4	21	66.67
0821	31.50	9	28.57	0	3	12	38.10
0824	31.00	8	25.81	0	4	12	38.71
0826	32.00	11	34.38	0	4	15	46.88
0828	5.00	3	60.00	0	1	4	80.00
0831	31.50	28	88.89	1	4	33	104.76
0902	32.00	12	37.50	0	1	13	40.63
0904	31.00	7	22.58	0	1	8	25.81
0907	31.00	8	25.81	0	4	12	38.71
0909	30.00	22	73.33	0	3	25	83.33
0911	30.00	24	80.00	0	4	28	93.33
0914	28.50	18	63.16	0	3	21	73.68
0916	31.50	38	120.63	0	7	45	142.86
0921	28.50	17	59.65	0	4	21	73.68
0923	30.00	24	80.00	0	4	28	93.33
0925	28.50	20	70.18	0	4	24	84.21
0928	22.00	14	63.64	0	4	18	81.82
1005	30.00	31	103.33	1	1	33	110.00
1007	26.50	9	33.96	0	6	15	56.60
1014	36.00	79	219.44	1	7	87	241.67
1016	24.50	53	216.33	0	5	58	236.73
1021	26.00	18	69.23	0	11	29	111.54
1028	20.50	20	97.56	0	3	23	112.20
1104	37.00	117	316.22	6	12	135	364.86
Total	719.50	626	87.00	9	105	740	102.85

Table 23. Daily banding totals Shaker Lakes, fall 2009.

<b>Species</b>	<b>Banded</b>	<b>Species</b>	<b>Banded</b>	<b>Species</b>	<b>Banded</b>
Downy Woodpecker	6	Fox Sparrow	1	Canada Warbler	4
Yellow-bellied Sapsucker	1	Northern Cardinal	8	American Redstart	6
Red-bellied Woodpecker	1	Rose-breasted Grosbeak	6	Gray Catbird	47
Yellow-shafted Flicker	1	Eastern Towhee	1	Carolina Wren	2
Eastern Phoebe	3	Cedar Waxwing	1	House Wren	3
Eastern Wood-Pewee	1	Red-eyed Vireo	3	Winter Wren	12
Yellow-bellied Flycatcher	2	Blue-headed Vireo	1	Brown Creeper	1
Trail's Flycatcher	1	Black and White Warbler	1	White-breasted Nuthatch	2
Least Flycatcher	5	Nashville Warbler	2	Tufted Titmouse	13
Blue Jay	7	Black-thr. Blue Warbler	7	Black-capped Chickadee	9
Common Grackle	3	Myrtle Warbler	2	Golden-crowned Kinglet	2
House Finch	8	Magnolia Warbler	30	Ruby-crowned Kinglet	22
American Goldfinch	126	Blackpoll Warbler	2	Wood Thrush	6
White-throated Sparrow	104	Black-th. Green Warbler	1	Veery	4
Slate-colored Junco	2	Ovenbird	3	Gray-cheeked Thrush	18
Song Sparrow	24	Northern Waterthrush	11	Swainson's Thrush	57
Lincoln Sparrow	1	Mourning Warbler	3	Hermit Thrush	10
Swamp Sparrow	5	Wilson's Warbler	16	American Robin	8

Table 24. Point count days conducted and species totals, fall season, Shaker Lakes, 2009.

Species	# days	# birds	Species	# days	# birds	Species	# days	# birds
Caspian Tern	2	4	Blue Jay	12	21	Gray Catbird	16	38
Mallard	14	51	Brown-head Cowbird	1	12	Marsh Wren	1	1
Blue-winged Teal	1	14	Red-winged Blackbird	2	2	Brown Creeper	1	1
Wood Duck	4	14	Baltimore Oriole	2	2	White-br. Nuthatch	13	21
Canada Goose	4	49	Common Grackle	7	20	Red-breasted Nuthatch	1	2
Great Blue Heron	7	10	American Goldfinch	24	298	Tufted Titmouse	2	2
Killdeer	1	1	White-crowned Sparrow	2	3	Black-capped Chickadee	12	23
Mourning Dove	7	11	White-throated Sparrow	5	45	Golden-crowned Kinglet	1	1
Rock Pigeon	16	100	Slate-colored Junco	1	1	Ruby-crowned Kinglet	2	2
Cooper's Hawk	1	1	Song Sparrow	18	68	Blue-gray Gnatcatcher	1	3
Red-tailed Hawk	1	1	Swamp Sparrow	2	4	Wood thrush	1	1
American Crow	1	1	No. Cardinal	14	18	Veery	1	1
Belted Kingfisher	3	3	Rose-breasted Grosbeak	7	11	Swainson's Thrush	4	9
Hairy Woodpecker	7	7	Barn Swallow	1	2	Hermit Thrush	3	3
Downy Woodpecker	12	16	Cedar Waxwing	1	1	American Robin	18	174
Red-bellied Woodpecker	22	41	Warbling Vireo	1	1	Unk. warbler	2	5
Yellow-shafted Flicker	7	9	Magnolia Warbler	2	2	Unk. woodpecker	5	5
Chimney Swift	16	511	Northern Waterthrush	1	1	Unk. Blackbird	1	14
Ruby-th. Hummingbird	7	10	Wilson's Warbler	1	1	Unk. Gull	1	4
Eastern Phoebe	4	6	American Redstart	2	2	Unk. Kinglet	2	2
Olive-sided Flycatcher	1	1	Brown Thrasher	1	1	Unk. Thrush	2	2
E. Wood-Pewee	4	12						

Table 25. Total bandings Black Swamp Bird Observatory, passerine migration , 2009.

Species	Banded	Species	Banded	Species	Banded
Wood Duck	0 (1)	Field Sparrow	20 (71)	Blk.-th. Green Warbler	93 (98)
Green Heron	0 (2)	Slate-colored Junco	52 (115)	Pine Warbler	4
American Woodcock	3	Song Sparrow	72 (279)	Western Palm Warbler	321 (364)
Solitary Sandpiper	0 (2)	Lincoln Sparrow	93 (129)	Yellow Palm Warbler	4 (7)
Mourning Dove	1	Swamp Sparrow	140 (192)	Prairie Warbler	1
Sharp-shinned Hawk	1 (2)	Fox Sparrow	32 (38)	Ovenbird	260 (292)
Yellow-billed Cuckoo	2 (3)	Eastern Towhee	3 (4)	Northern Waterthrush	147 (173)
Black-billed Cuckoo	1 (2)	Northern Cardinal	78 (136)	Kentucky Warbler	6
Hairy Woodpecker	2 (4)	Rose-breasted Grosbeak	18 (26)	Connecticut Warbler	15 (16)
Downy Woodpecker	47 (79)	Indigo Bunting	90 (207)	Mourning Warbler	123 (131)
Yellow-bell. Sapsucker	10 (11)	Scarlet Tanager	11	Common Yellowthroat	353 (394)
Red-bellied Woodpecker	2 (5)	Tree Swallow	17 (33)	Yellow-breasted Chat	6
Yellow-shafted Flicker	20 (23)	Cedar Waxwing	66 (82)	Hooded Warbler	13 (150)
Chuck-wills-widow	1	Red-eyed Vireo	197 (211)	Wilson's Warbler	237 (273)
Whip-poor-will	1	Chipping Sparrow	10 (63)	Canada Warbler	134 (152)
Eastern Kingbird	2 (3)	Philadelphia Vireo	35	American Redstart	365 (406)
Great-crested Flycatcher	22 (24)	Warbling Vireo	82 (91)	No. Mockingbird	0 (1)
Eastern Phoebe	28 (37)	Yellow-throated Vireo	4	<b>(4)</b> Gray Catbird	745 (941)
Eastern Wood-Pewee	42 (45)	Blue-headed Vireo	67 (70)	Brown Thrasher	28 (38)
Yellow-bell. Flycatcher	116 (124)	White-eyed Vireo	15 (18)	Carolina Wren	10 (15)
Acadian Flycatcher	18	Black and White Warbler	100 (117)	House Wren	152 (197)
Traill's Flycatcher	305 (320)	Prothonotary Warbler	12 (13)	Winter Wren	108 (130)
Least Flycatcher	111 (118)	Worm-eating Warbler	5	Marsh Wren	4
Blue Jay	59 (73)	Blue-winged Warbler	21	Brown Creeper	111 (118)
Brown-headed Cowbird	0 (15)	Golden-winged Warbler	3	White-br Nuthatch	1 (9)
Red-winged Blackbird	165 (184)	<b>(10)</b> Nashville Warbler	482 (546)	Red-breasted Nuthatch	8
Orchard Oriole	1 (5)	Orange-crowned Warbler	17 (21)	Tufted Titmouse	0 (25)
Baltimore Oriole	47 (67)	Tennessee Warbler	221 (240)	Black-cap. Chickadee	12 (37)
Rusty Blackbird	13	Northern Parula	37	Golden-cr. Kinglet	396 (432)
Common Grackle	87 (104)	Cape May Warbler	80 (81)	<b>(8)</b> Ruby-cr Kinglet	501 (676)
Purple Finch	5	<b>(9)</b> Yellow Warbler	637 (675)	Blue-gray Gnatcatcher	63 (70)
House Finch	0 (10)	Black-th. Blue Warbler	126 (150)	Wood Thrush	32 (54)
<b>(3)</b> American Goldfinch	43 (1093)	<b>(1)</b> Myrtle Warbler	1608 (1681)	Veery	109 (119)
Pine Siskin	1 (6)	<b>(5)</b> Magnolia Warbler	810 (911)	Gray-cheek Thrush	227 (268)
Savannah Sparrow	0 (7)	Chestnut-sided Warbler	213 (223)	<b>(6)</b> Swainson Thrush	699 (834)
Grasshopper Sparrow	0 (1)	Bay-breasted Warbler	92	Hermit Thrush	381 (430)
White-cr. Sparrow	80 (96)	<b>(7)</b> Blackpoll Warbler	715 (730)	American Robin	124 (263)
Gambel's W-c Sparrow	1	Blackburnian Warbler	69 (72)	Eastern Bluebird	0 (12)
<b>(2)</b> White-th. Sparrow	925 (1157)	Yellow-throated Warbler	1	Ruby-th. Hummingbird	54
Am. Tree Sparrow	6 (58)				

( ) numbers in bold are top ten banded species



Table 26. Banding effort totals by area and by season, 2009.

<b>Area</b>	<b>Sample Days</b>	<b>Net Hours</b>	<b>Birds Banded</b>	<b>Birds/ 100 Net Hr</b>	<b>Total Captured</b>	<b>Total/ 100 Net Hr</b>
Navarre	122	17,212.85	14,366	83.44	17,393	101.02
Petersburg	33	4,693.63	645	13.74	767	16.34
Shaker Lakes	48	1,475.50	1,100	74.55	1,349	91.43
Creek Bend	57	1,994.50	2,252	112.91	2,436	122.14
<b>Season</b>	<b>Sample Days</b>	<b>Net Hours</b>	<b>Birds Banded</b>	<b>Birds/ 100 Net Hr</b>	<b>Total Captured</b>	<b>Total/ 100 Net Hr</b>
All Stations						
Spring	55	10,329.48	11,034	106.82	13,020	126.05
Fall	76	15,052.00	7,329	48.69	8,925	59.29
<b>TOTAL</b>	<b>131</b>	<b>25,381.48</b>	<b>18,363</b>	<b>72.35</b>	<b>21,945</b>	<b>86.46</b>
ONWR Stations						
Spring	55	7,760.73	10,042	129.40	11,792	151.94
Fall	67	9,457.12	4,324	45.72	5,601	59.22
<b>TOTAL</b>	<b>122</b>	<b>17,217.85</b>	<b>14,366</b>	<b>83.44</b>	<b>17,393</b>	<b>101.02</b>

Table 27. Fall age ratios of selected species, Navarre 2009.

Species	2009		2008		Percent Change	91-08Ave. HY/AHY	2009 % Change from avg.
	Sample	HY/AHY	Sample	HY/AHY			
Baltimore Oriole	22	1.75	6	-	-	6.41	-73
<b>Wh-th Sparrow*</b>	<b>291</b>	<b>2.10</b>	<b>277</b>	<b>2.85</b>	<b>-26</b>	<b>4.18</b>	<b>-50</b>
Song Sparrow	30	2.33	14	1.00	+133	2.15	+8
Cedar Waxwing	46	2.07	9	0.80	+159	1.73	+20
Red-eyed Vireo	47	5.71	39	12.00	-52	7.01	-19
Warbling Vireo	59	5.56	18	-	-	10.97	-49
Bl. and Wh. Warbler	13	0.86	15	0.88	-2	2.05	-58
Nashville Warbler	50	1.17	49	1.33	-12	2.85	-59
Tenn. Warbler	23	2.83	22	10.00	-72	7.04	-60
Cape May Warbler	47	1.94	19	0.90	+116	1.16	+67
<b>Bl-thr. Blue Warb.</b>	<b>64</b>	<b>1.91</b>	<b>78</b>	<b>4.57</b>	<b>-58</b>	<b>3.61</b>	<b>-47</b>
<b>Myrtle Warbler</b>	<b>196</b>	<b>1.80</b>	<b>228</b>	<b>2.56</b>	<b>-30</b>	<b>2.08</b>	<b>-13</b>
<b>Magnolia Warbler</b>	<b>124</b>	<b>2.26</b>	<b>103</b>	<b>11.88</b>	<b>-81</b>	<b>3.58</b>	<b>-37</b>
<b>Blackpoll Warbler</b>	<b>539</b>	<b>2.01</b>	<b>319</b>	<b>3.25</b>	<b>-38</b>	<b>2.12</b>	<b>-5</b>
<b>Ovenbird</b>	<b>63</b>	<b>4.73</b>	<b>76</b>	<b>6.60</b>	<b>-28</b>	<b>7.33</b>	<b>-35</b>
No. Waterthrush	31	2.44	21	4.25	-43	4.40	-45
<b>Com. Yellowthroat</b>	<b>83</b>	<b>5.38</b>	<b>90</b>	<b>11.86</b>	<b>-55</b>	<b>7.13</b>	<b>-25</b>
<b>American Redstart</b>	<b>50</b>	<b>1.27</b>	<b>52</b>	<b>3.73</b>	<b>-66</b>	<b>2.58</b>	<b>-51</b>
<b>Gray Catbird</b>	<b>272</b>	<b>6.35</b>	<b>288</b>	<b>4.88</b>	<b>+30</b>	<b>8.87</b>	<b>-28</b>
<b>House Wren</b>	<b>52</b>	<b>5.50</b>	<b>68</b>	<b>2.58</b>	<b>+113</b>	<b>6.40</b>	<b>-14</b>
<b>Gray-cheek Thrush</b>	<b>164</b>	<b>2.90</b>	<b>223</b>	<b>2.84</b>	<b>+2</b>	<b>2.06</b>	<b>+41</b>
<b>Swainson's Thrush</b>	<b>350</b>	<b>1.38</b>	<b>434</b>	<b>1.82</b>	<b>-24</b>	<b>1.54</b>	<b>-10</b>
<b>Hermit Thrush</b>	<b>239</b>	<b>4.83</b>	<b>186</b>	<b>4.81</b>	<b>NC</b>	<b>5.38</b>	<b>-10</b>
<b>American Robin</b>	<b>102</b>	<b>1.62</b>	<b>65</b>	<b>4.91</b>	<b>-67</b>	<b>3.44</b>	<b>-53</b>

\*Species in bold have samples sizes for both 2008 and 2009 over 50.

Table 28. Banding year of returning birds captured at Navarre study site, 2009.

Species	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	Total
Eastern Screech Owl	1										1
Downy Woodpecker	8						1				9
Blue Jay	2		1								3
Red-winged Blackbird	10	6	7	6	2			2			33
Baltimore Oriole	5	2	4	2							13
Common Grackle	1		1		1	1					4
Song Sparrow	2					1					3
Northern Cardinal	16	5	1	1	2	1	2			2	30
Indigo Bunting	1		1								2
Tree Swallow	1		1								2
Warbling Vireo	2			1							3
Prothonotary Warbler	3	1				1					5
Nashville Warbler		1									1
Yellow Warbler	21	5	9	1	1						37
Com. Yellowthroat	8	5	5		2		2	1			23
Gray Catbird	36	17	10	8	2						73
Brown Thrasher	2										2
Carolina Wren				1							1
Black-cap. Chickadee	1		2								3
House Wren	7	1		1							9
American Robin	5	2	1								8
Total	132	45	43	21	10	4	5	3		2	265

Table 29. Banding year of returning birds captured at Shaker Lakes study site, 2009.

Species	2008	2007	2006	2005	2004	2003	Total
Hairy Woodpecker			1				1
Downy Woodpecker	3	1				1	5
Red-bellied Woodpecker			2		1		3
Eastern Wood Pewee	1						1
Brown-headed Cowbird	1						1
American Goldfinch	3	1					4
Slate-colored Junco	1			1			2
Song Sparrow	2	5	1	1			9
Northern Cardinal	1			2			3
Red-eyed Vireo	1						1
Warbling Vireo			1				1
Yellow Warbler	1	1					2
Gray Catbird	2	2	1		1	1	7
White-breasted Nuthatch	1						1
Tufted Titmouse	1						1
Black-capped Chickadee	1	1	1				3
Wood Thrush	2						2
American Robin			1				1
Total	21	11	8	4	2	2	48

Table 30. Banding year of returning birds captured at Creek Bend study site, 2009

Species	2008	Total
American Goldfinch	1	
American Tree Sparrow	1	
Field Sparrow	1	
Song Sparrow	10	
Northern Cardinal	1	
Indigo Bunting	4	
Gray Catbird	1	
Northern Mockingbird	1	
Black-capped Chickadee	1	
Total	21	

Table 31. Banding year of returning birds captured at Petersburg study site, 2009.

Species	2008	2007	2006	2005	2004	2003	Total
Downy Woodpecker	1						1
Blue Jay					1		1
Brown-headed Cowbird	1						1
Chipping Sparrow			1				1
Song Sparrow		1					1
Northern Cardinal	2	1					3
Gray Catbird	1	1			2		4
Tufted Titmouse	1						1
Black-capped Chickadee	3	2					5
American Robin	4	3	1			1	9
Total	13	8	2		3	1	27

Table 32. Foreign recoveries of study banded birds since last progress report.

Species	Band Number	Band Date	Band Location*	Recovery Date	Recovery Location
Cooper's Hawk	0845-50340	09-21-08	Navarre	01-03-10	Georgia 323-0833
American Goldfinch	2460-28477	05-06-09	Ottawa NWR	08-04-09	Ohio 413-0831
Cedar Waxwing	2251-78367	10-05-06	Navarre	05-21-09	Illinois 421-0882
Tennessee Warbler	2550-12553	04-29-09	Navarre	05-13-09	Ontario 483-0884
Gray Catbird	2301-36147	05-04-08	Navarre	05-11-09	Michigan 422-0843
Brown Thrasher	0912-24266	05-27-08	Ottawa NWR	05-09-09	Ohio 413-0831

\*Banding coordinates for study sites: Navarre 413-0830, Shaker 412-0813, Ottawa NWR 413-0831.

Table 33. Spring fat composition comparisons of selected species for 2008 and 2009, Navarre.

Sign. Higher 2009	Non-sign. Higher 2009	Sign. Higher 2008	Non- sign. Higher 2008
White-throated Sparrow	Lincoln Sparrow	Trail's Flycatcher	Yellow-bellied Flycatcher
Swamp Sparrow	Northern Waterthrush	Black & White Warbler	Least Flycatcher
Indigo Bunting	Golden-cr. Kinglet	Nashville Warbler	Red eyed Vireo
Myrtle Warbler	Ruby-cr. Kinglet	Tennessee Warbler	Cape May Warbler
Western Palm Warbler	Bl.-gr. Gnatcatcher	Magnolia Warbler	Yellow Warbler
Gray Catbird		Chestnut-sided Warbler	Ovenbird
House Wren		Bay-breasted Warbler	Mourning Warbler
Hermit Thrush		Blackpoll Warbler	Common Yellowthroat
		Wilson's Warbler	Canada Warbler
		American Redstart	Veery
			Gray-ch. Thrush
			Swainson's Thrush

Table 34. Fall fat composition comparisons of selected species for 2008 and 2009, Navarre.

Sign. Higher 2009	Non-sign. Higher 2009	Sign. Higher 2008	Non- sign. Higher 2008
Wh.-throated Sparrow	Swamp Sparrow	Golden-cr. Kinglet	Red-eyed Vireo
Myrtle Warbler	Black & White Warbler		Ruby-cr. Kinglet
Gray Catbird	Cape May Warbler		Gray-ch. Thrush
	Magnolia Warbler		Hermit Thrush
	Blackpoll Warbler		
	Ovenbird		
	Common Yellowthroat		
	American Redstart		
	House Wren		
	Swainson's Thrush		

Figure 1. Migration field sites, 1989- 2009.

