

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

PROGRESS REPORT-2008  
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INTRODUCTION

In 2008, 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 a new 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 the lake and lies on a major riparian corridor to the lake. Habitats include a brook, a 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 proper 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

Migrating and resident passerines were sampled on the Navarre Unit of the Ottawa National Wildlife Refuge and various sites in the Great Lakes region (Figure 1). Sites operated in 2008 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 2008 began mid-April and continued through early-June. Fall migration banding was July 1 to early November. All sites were monitored through both migration periods except Creek Bend site which was run only during fall.

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. 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.

## RESULTS AND DISCUSSION

### SPRING

Spring migration was monitored, weather permitting, daily in the Navarre Unit and when personnel were available at the Shaker Lakes and Petersburg sites in 2008. Above average temperatures in April resulted in good waves of birds while the month of May was below average temperature and saw fair wave development. 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 2008, this wave materialized 26-28 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 06-09 May with the second pulse on 14 and 16-20 May in 2008. The third wave normally comes around Memorial Day weekend and is dominated by female Magnolia Warbler, American Redstart, Mourning Warbler, vireos, and flycatchers. In 2008, the third wave appeared 25-27 May.

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

In spring 2008, the Navarre banding station was operated on 55 days for 7,244.6 net hours. Including hummingbirds, 7,822 new birds were banded and a total of 9,246 birds handled (Table 1). The capture rate was 127.6 birds/100 net hours. One hundred and four species plus one hybrid warbler were banded in Navarre during spring 2008 (Table 2). The most unusual species included Eastern Screech Owl, Hairy Woodpecker, Red-headed Woodpecker, Gambel's White-crowned Sparrow, Yellow-throated Vireo, Brewster's Warbler, Yellow Palm Warbler, and Prairie Warbler. The ten most abundant species banded were Myrtle Warbler (1,078); White-throated Sparrow (756); Gray Catbird

(460); Magnolia Warbler (414); Yellow Warbler (393); Traill's Flycatcher (339); Nashville Warbler (299); Western Palm Warbler (287); American Redstart (250); and Red-winged Blackbird (213).

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 52 days during spring 2008. One hundred and thirty-eight species with 23,818 individuals were recorded (Table 3). Northern Cardinal, Red-winged Blackbird, and Brown-headed Cowbird were observed each count day. The most abundant species recorded was Blue Jay (4,381) followed by Red-winged Blackbird (3,662), Canada Goose (1,746), Tree Swallow (1,411), and Cedar Waxwing (1,250).

#### 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. 2008 was the 14<sup>th</sup> year of banding at this site. Banding operations were conducted on seven days with 162 new birds banded in 1,113.3 net hours (14.6 birds/100 net hours) (Table 4). Thirty-nine species (Table 5) were banded with the six most abundant species banded being Slate-colored Junco (39); American Robin (21); Gray Catbird (10); Northern Cardinal (7); Common Grackle (6); and Myrtle Warbler (6).

Point counts were conducted on seven days during spring 2008. Thirty-two species with 272 individuals were recorded (Table 6). American Robin, Northern Cardinal, and Common Grackle were observed each count day. The most abundant species recorded was American Robin (49) followed by Northern Cardinal (42), Common Grackle (32), Brown-headed Cowbird (20), and Blue Jay (12).

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

This site is located east of Cleveland at the Nature Center of Shaker Lakes and 2008 was the seventh 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 days, with 333 new birds banded in 681 net hours (48.9 birds/100 net hours). A total of 433 birds were handled (63.6 birds/100 net hours) during spring migration (Table 7). Fifty-two species (Table 8) were banded with the ten most abundant species banded being White-throated Sparrow (30); Magnolia Warbler (26); Wilson Warbler (26); Gray Catbird (24); Ruby-crowned Kinglet (24); American Goldfinch (17); American Redstart (14); American Robin (13); Canada Warbler (11); and House Wren (11).

Point counts were conducted on 20 days during spring 2008. Sixty species with 925 individuals were recorded (Table 9). The most abundant species recorded was American Goldfinch (86) followed by Canada Goose (65), Red-winged Blackbird (57), Rock Pigeon (53), and Song Sparrow (43).

#### 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. 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 65 days for 6,650.1 net hours. Two thousand seven hundred and ninety birds were banded with a total of 3,420 birds handled (Table 10). This was the 16th fall season in which an extensive netting effort had been conducted on a daily basis. The capture rate for 2008 51.4 birds/100 net hours. A total of 88 species were banded during fall 2008 (Table 11). The ten most abundant species banded were Swainson's Thrush (391); Blackpoll Warbler (228); White-throated Sparrow (224); Gray-cheeked Thrush (202); Gray Catbird (200); Hermit Thrush (169); Golden-crowned Kinglet (140); Myrtle Warbler (104); Magnolia Warbler (88); and Black-throated-blue Warbler (71).

Fall point counts were run on 57 days during 2008. A total of 20,995 individuals of 108 species were recorded (Table 19). The Northern Cardinal was observed on all days of the counts. The most abundant species were Red-winged Blackbird (9,908); European Starling (1,748); Common Grackle (1,358); Canada Goose (1,030); and White-throated Sparrow (618).

For the 16th year, additional nets were run on a newly formed beach ridge just outside the lake front dike near the main study site. This ridge has one band of 30-60 feet tall Cottonwoods about 60 feet wide and 150 yards long. The ridge presents the opportunity to document avian use as the habitat matures. This ridge has seen considerable loss of sand the past two years with major narrowing of the vegetated portion resulting in reduced habitat with higher levels of Lake Erie. Five nets were run on 53 days for 1,148.5 net hours (Table 13). The capture rate for fall 2008 was 64.9 birds/100 net hours. Seven hundred and forty-five birds of sixty species were banded on the new beach ridge (Table 14). The top ten species banded were Myrtle Warbler (124); Blackpoll Warbler (91); Gray Catbird (88); White-throated Sparrow (53); Swainson's Thrush (43); Ruby-crowned Kinglet (30); Common Yellowthroat (24); Gray-cheeked Thrush (21); Golden-crowned Kinglet (20); and Hermit Thrush (17).

#### 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 26 days with 1,008 new birds banded in 437.3 net hours (230.5 birds/100 net hours) (Table 15). Forty-seven species (Table 16) were banded with the ten most abundant species being Song Sparrow (285); White-throated Sparrow (87); Swamp Sparrow (67); American Goldfinch (63); Lincoln Sparrow (57); American tree Sparrow (52); Myrtle Warbler (46); White-crowned Sparrow (37); Indigo Bunting (36); and Field Sparrow (29).

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

Banding operations were conducted on 12 days with 280 new birds banded in 1,743 net hours (16.1 birds/100 net hours) (Table 17). A total of 325 birds were handled (18.6 birds/100 net hours). Forty-six species (Table 18) were banded with the nine most abundant species being Gray Catbird (27); American Robin (25); Magnolia Warbler (22); Hermit Thrush (20); Swainson's Thrush (17); Ruby-crowned Kinglet (15); Northern Cardinal (10); Chestnut-sided Warbler (9); and Blackpoll Warbler (9).

Point counts were conducted on 12 days during fall 2008. Twenty-five species with 2,340 individuals were recorded (Table 19). Blue Jay and American Robin was observed each count day. The most abundant species recorded was Common Grackle (993) followed by European Starling (696), American Robin (299), Blue Jay (368), and Gray Catbird (32).

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

Banding operations were carried out on Mondays, Wednesdays, and Fridays and were conducted on twenty-seven days with 683 new birds banded in 832 net hours (82.1 birds/100 net hours). A total of 770 birds were handled (92.6 birds/100 net hours) during fall migration (Table 20). Sixty-seven species (Table 21) were banded with the ten most abundant species being White-throated Sparrow (92); Myrtle Warbler (86); American Goldfinch (65); Swainson's Thrush (40); Gray Catbird (35); Magnolia Warbler (34); Song Sparrow (29); Ruby-crowned Kinglet (22); Wilson's Warbler (21); and Hermit Thrush (19).

Point counts were conducted on 14 days during fall 2008. Thirty-nine species with 1,027 individuals were recorded (Table 22). American Goldfinch was observed each count day. The most abundant species recorded was Chimney Swift (615), followed by American Goldfinch (88); Rock Pigeon (40); Gray Catbird (27); and American Robin (26).

### SUMMARY BANDINGS

Total combined bandings for passerine migration 2008 for the Black Swamp Bird Observatory is shown in parentheses in Table 23. Totals before parentheses are for the National Wildlife Refuge Complex. The ten most abundant species banded on Ottawa NWR complex were Myrtle Warbler (1,306); White-throated Sparrow (1,033); Gray Catbird (748); Swainson's Thrush (563); Magnolia Warbler (517); Yellow Warbler (421); Blackpoll Warbler (410); Nashville Warbler (348); Traill's Flycatcher (345); and American Redstart (302). Inclusive totals of all sites were topped by Myrtle Warbler (1,445); White-throated Sparrow (1,253); Gray Catbird (869); Swainson's Thrush (639); Magnolia Warbler (606); Yellow Warbler (430); Blackpoll Warbler (423); Nashville Warbler (389); Song Sparrow (366); and Ruby-crowned Kinglet (365). A combined total of 116 species and one hybrid of 11,357 individuals (75.5 birds/100 net hrs) were banded. Totals for each study site and for each season are shown in Table 24. Species with greater than 50 individuals sampled had age ratios generally similar to 2007 and above the long-term average (Table 25).

## 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 2008, 271 birds of 18 species were captured as returning birds at the Navarre sites (Table 26). This total includes 37 Yellow Warblers with the oldest being banded in 2003, 75 Gray Catbirds, 29 Common Yellowthroats (oldest from 1999), 37 Red-winged Blackbird (oldest from 1999), 32 Northern Cardinals (oldest from 1999), and 10 Baltimore Orioles. 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 35 birds of 14 species were return captures at Shaker Lakes in 2008 (Table 27). Petersburg had 21 returns of 8 species (Table 28). Several foreign captures were made of study birds and are reported in Table 29.

## 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 2008, 35 species (Table 30) had adequate sample sizes in both 2007 and 2008 to look at the changes in average fat deposits during spring migration. Only the Golden-crowned Kinglet had significantly higher ( $p < .05$ ) lipid reserves in 2007. Three species had higher average in 2007, but these differences were not significant. Twenty-eight species showed significantly higher fat in 2008, and fat levels in three additional species were higher, but not significantly 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 2007 and 2008 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 2008, fall fat composition had a tendency to be higher in 14 of 18 species with seven species significantly higher ( $p < .05$ ) (Table 31).

## ENVIRONMENTAL EDUCATION

A secondary goal of this study is to educate the general public on avian migration, research, habitat management, and ecosystems. Project personnel entertained eleven groups at Navarre and three at Shaker Lakes totaling 160 people and ranging from elementary school age to adults. In addition, eight presentations were made to 320 people on avian ecology and migration. As a part of International Migratory Bird Day events, banding demonstrations were done on the refuge for some 5,000 people. Public banding demonstrations were conducted each Saturday in May at the Black Swamp Bird Observatory Nature Center with a total of 175 people attending.

## 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.

### ACKNOWLEDGMENTS

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Table 1. Daily banding totals for Navarre, spring 2008.

Date	Net Hour	Banded	Banded/ 100 net hr	Returns	Recaptures	Total birds*	Total bird/ 100 net hr
413	84.00	82	97.62	5	0	87	103.57
414	126.00	77	61.11	5	11	93	73.81
415	105.00	30	28.57	5	10	46	43.81
416	108.50	31	28.57	2	10	43	39.63
418	122.50	74	60.41	4	8	87	71.02
419	115.50	43	37.23	5	8	56	48.49
420	143.50	78	54.36	2	14	94	65.51
421	108.50	30	27.65	2	9	42	38.71
422	103.25	20	19.37	2	8	30	29.06
423	131.25	133	101.33	1	4	138	105.14
424	120.75	51	42.24	0	7	58	48.03
425	126.00	195	154.76	0	6	201	159.52
426	122.50	261	213.06	0	8	269	219.59
427	168.00	287	170.83	1	11	299	177.98
428	108.50	277	255.30	2	23	302	278.34
429	129.50	183	141.31	7	30	220	169.88
430	143.50	130	90.59	1	48	179	124.74
501	131.25	138	105.14	0	25	163	124.19
502	105.00	170	161.91	5	9	184	175.24
503	96.25	86	89.35	3	22	113	117.40
504	161.10	219	135.94	5	18	242	150.22
505	134.75	201	149.17	6	19	226	167.72
506	129.50	188	145.17	2	10	200	154.44
507	150.50	230	152.82	5	10	248	164.78
508	147.00	142	96.60	7	18	167	113.61
509	164.50	190	115.50	7	28	225	136.78
510	147.00	106	72.11	7	29	142	96.60
511	69.40	65	93.66	5	5	75	108.07
512	122.50	93	75.92	6	11	112	91.43
513	140.07	123	87.81	7	52	182	129.94
514	111.93	289	258.20	3	5	297	265.34
515	147.00	147	100.00	9	30	187	127.21
516	147.00	185	125.85	9	53	248	168.71
517	168.00	334	198.81	11	33	378	225.00
518	141.75	264	186.24	6	42	312	220.11
519	147.00	151	102.72	8	67	226	153.74
520	147.00	333	226.53	4	32	369	251.02
521	147.00	117	79.59	5	42	164	111.57
522	155.75	278	178.49	9	47	334	214.45
523	147.00	217	147.62	7	43	267	181.63
524	147.00	102	69.39	3	37	144	97.96
525	150.50	158	104.98	6	30	194	128.90
526	147.00	387	263.27	5	17	409	278.23
527	162.75	181	111.21	3	45	229	140.71
528	132.93	100	75.23	2	25	127	95.54
529	147.00	85	57.82	3	29	117	79.59
530	161.07	181	112.37	2	22	205	127.27
531	147.00	126	85.71	3	20	149	101.36
601	126.00	72	57.14	4	17	93	73.81
602	131.25	53	40.38	2	22	77	58.67
603	98.07	21	21.41	0	11	32	32.63
604	110.25	22	19.96	2	9	33	29.93
605	126.00	39	30.95	2	14	55	43.65
606	122.49	14	11.43	2	14	30	24.49
607	110.25	33	29.93	5	9	47	42.63
<b>TOTAL</b>	<b>7,244.56</b>	<b>7,822</b>	<b>107.97</b>	<b>224</b>	<b>1,186</b>	<b>9,246</b>	<b>127.63</b>

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

Table 2. Spring banding totals, Navarre, 2008.

Species	Banded	Species	Banded	Species	Banded
American Woodcock	2	Lincoln Sparrow	43	Blackburnian Warbler	18
Sharp-shinned Hawk	12	Swamp Sparrow	86	Black-th.-Green Warbler	53
Eastern Screech Owl	1	Fox Sparrow	10	Pine Warbler	3
Yellow-billed Cuckoo	1	Eastern Towhee	7	Western Palm Warbler	287
Black-billed Cuckoo	3	Northern Cardinal	58	Yellow Palm Warbler	1
Hairy Woodpecker	1	Rose-breasted Grosbeak	21	Prairie Warbler	1
Downy Woodpecker	9	Indigo Bunting	49	Ovenbird	140
Yellow-bellied Sapsucker	2	Scarlet Tanager	5	Northern Waterthrush	96
Red-headed Woodpecker	1	Summer Tanager	2	Kentucky Warbler	3
Yellow-shafted Flicker	7	Tree Swallow	13	Connecticut Warbler	8
Whip-poor-will	2	Cedar Waxwing	12	Mourning Warbler	88
Ruby-th.Hummingbird	45	Red-eyed Vireo	96	Common Yellowthroat	211
Eastern Kingbird	12	Philadelphia Vireo	11	Yellow-breasted Chat	4
Great-crested Flycatcher	12	Warbling Vireo	13	Hooded Warbler	6
Eastern Phoebe	2	Yellow-throated Vireo	1	Wilson's Warbler	186
Olive-sided Flycatcher	2	Blue-headed Vireo	19	Canada Warbler	106
Eastern Wood Pewee	34	White-eyed Vireo	14	American Redstart	250
Yellow-bellied Flycatcher	149	Black and White Warbler	81	Gray Catbird	460
Acadian Flycatcher	11	Prothonotary Warbler	11	Brown Thrasher	16
Trail's Flycatcher	339	Worm-eating Warbler	3	Carolina Wren	5
Least Flycatcher	56	Blue-winged Warbler	12	House Wren	103
Blue Jay	36	Brewster's Warbler	2	Winter Wren	16
Red-winged Blackbird	213	Golden-winged Warbler	1	Brown Creeper	25
Baltimore Oriole	34	Nashville Warbler	299	White-breasted Nuthatch	2
Rusty Blackbird	2	Orange-crowned Warbler	20	Red-breasted Nuthatch	10
Common Grackle	29	Tennessee Warbler	125	Black-capped Chickadee	2
Purple Finch	2	Northern Parula	21	Golden-crowned Kinglet	26
American Goldfinch	18	Cape May Warbler	42	Ruby-crowned Kinglet	178
White-crowned Sparrow	51	Yellow Warbler	393	Blue-gray Gnatcatcher	47
Gambel's W-c Sparrow	1	Black-th.-Blue Warbler	55	Wood Thrush	30
White-throated Sparrow	756	Myrtle Warbler	1078	Veery	53
Chipping Sparrow	6	Magnolia Warbler	414	Gray-cheeked Thrush	30
Field Sparrow	7	Chestnut-sided Warbler	104	Swainson's Thrush	129
Slate-colored Junco	3	Bay-breasted Warbler	17	Hermit Thrush	95
Song Sparrow	25	Blackpoll Warbler	91	American Robin	19

Table 3. Number of days observed and totals of species seen on point counts, Navarre spring 2008.

Species	# days	#Observed	Species	# days	#Observed	Species	# days	#Observed
Pied-billed Grebe	11	17	Eastern Wood Pewee	12	26	Golden-winged Warbler	1	1
Herring Gull	19	50	Yellow-bel. Flycatcher	1	1	Nashville Warbler	14	36
Ring-billed Gull	39	139	Acadian Flycatcher	1	1	Orange-cr. Warbler	1	2
Caspian Tern	5	7	Alder Flycatcher	4	4	Tennessee Warbler	21	154
Common Tern	2	3	Willow Flycatcher	16	50	Northern Parula	16	38
Dou.-cr. Cormorant	38	419	Traill's Flycatcher	1	5	Cape May Warbler	7	17
Hooded Merganser	4	4	Least Flycatcher	19	48	Yellow Warbler	44	798
Mallard	24	82	Blue Jay	46	4,381	Black-th.-Blue Warbler	22	32
Gadwall	10	62	American Crow	1	2	Myrtle Warbler	30	185
American Wigeon	1	6	Eastern Starling	48	262	Magnolia Warbler	21	71
Northern Shoveler	1	1	Bobolink	3	4	Chestnut-sided Warbler	22	50
Wood Duck	20	56	Brown-headed Cowbird	52	499	Bay-breasted Warbler	1	1
Lesser Scaup	1	3	Red-winged Blackbird	52	3,662	Blackpoll Warbler	23	87
Canada Goose	51	1,746	Orchard Oriole	5	8	Blackburnian Warbler	1	1
Trumpeter Swan	12	28	Baltimore Oriole	37	525	Black-th.-Green Warbler	22	48
Least Bittern	1	1	Rusty Blackbird	15	51	Western Palm Warbler	15	66
Great.-blue Heron	41	166	Common Grackle	51	526	Ovenbird	21	33
Great Egret	15	27	Purple Finch	9	58	Northern Waterthrush	23	50
Green Heron	10	18	American Goldfinch	41	484	Connecticut Warbler	3	3
Black-cr. N. Heron	6	6	Pine Siskin	3	17	Mourning Warbler	7	15
Virginia Rail	1	1	White-crowned Sparrow	8	14	Com. Yellowthroat	41	301
Sora	4	5	White-throated Sparrow	40	758	Hooded Warbler	3	3
American Coot	6	11	Slate-colored Junco	1	22	Wilson's Warbler	19	44
American Woodcock	1	1	Song Sparrow	51	268	Canada Warbler	6	12
Solitary Sandpiper	3	6	Lincoln Sparrow	5	5	American Redstart	27	89
Least Sandpiper	1	1	Swamp Sparrow	27	66	Gray Catbird	40	559
Lesser Yellowlegs	1	1	Fox Sparrow	1	1	Brown Thrasher	28	63
Dunlin	2	14	Eastern Towhee	14	36	Carolina Wren	45	102
Killdeer	9	10	Northern Cardinal	52	685	House Wren	44	202
Mourning Dove	38	103	Rose-breasted Grosbeak	21	61	Winter Wren	2	2
Sharp-shinned Hawk	1	1	Indigo Bunting	28	74	Brown Creeper	2	2
Bald Eagle	7	8	Scarlet Tanager	14	29	White-breasted Nuthatch	1	1
American Kestrel	1	2	Purple Martin	26	265	Red-breasted Nuthatch	7	7
Osprey	1	1	Cliff Swallow	4	11	Tufted Titmouse	2	2
Yellow-billed Cuckoo	5	9	Barn Swallow	30	199	Black-capped Chickadee	3	3
Black-billed Cuckoo	7	12	Tree Swallow	51	1,411	Ruby-crowned Kinglet	27	124
Downy Woodpecker	30	56	Bank Swallow	23	327	Blue-gray Gnatcatcher	30	102
Red-h. Woodpecker	4	5	Rough-winged Swallow	10	24	Wood Thrush	14	25
Red-b. Woodpecker	3	3	Cedar Waxwing	24	1,250	Veery	5	5
Yellow-shafted Flicker	23	51	Red-eyed Vireo	20	80	Gray-cheeked Thrush	8	14
Whip-poor-will	2	2	Warbling Vireo	30	95	Swainson's Thrush	14	28
Chimney Swift	29	275	Yellow-throated Vireo	1	1	Hermit Thrush	1	2
Ruby-th. Humming.	9	15	Blue-headed Vireo	6	6	American Robin	42	140
Eastern Kingbird	24	81	White-eyed Vireo	8	13	Eastern Bluebird	3	4
Great-cr. Flycatcher	13	15	Black & White Warbler	28	70	Unk. warbler	32	296
Eastern Phoebe	1	1	Prothonotary Warbler	32	68	Unk. Flycatcher	1	1
Olive-sided Flycatcher	5	6	Blue-winged Warbler	2	2			

Table 4. Daily banding totals for Petersburg, spring 2008.

Date	Net Hour	Banded	Banded/ 100 net hr	Returns	Recaptures	Total birds	Total bird/ 100 net hr
405	148.33	43	28.99	2	0	45	30.34
406	163.33	30	18.37	0	2	32	19.59
426	126.60	12	9.48	1	5	18	14.22
427	175.00	16	9.14	0	2	18	10.29
509	173.40	20	11.53	4	4	28	16.15
516	191.67	23	12.00	5	9	37	19.30
518	135.00	18	13.33	4	6	28	20.74
<b>TOTAL</b>	<b>1,113.33</b>	<b>162</b>	<b>14.55</b>	<b>16</b>	<b>28</b>	<b>206</b>	<b>18.50</b>

Table 5. Daily banding totals Petersburg, spring, 2008.

Species	Banded	Species	Banded	Species	Banded
Hairy Woodpecker	1	Swamp Sparrow	1	Canada Warbler	2
Downy Woodpecker	1	Fox Sparrow	1	American Redstart	4
Least Flycatcher	2	Eastern Towhee	1	Gray Catbird	10
Brown-headed Cowbird	3	Northern Cardinal	7	House Wren	1
Red-winged Blackbird	2	Rose-breasted Grosbeak	3	Winter Wren	1
Baltimore Oriole	1	Blue-winged Warbler	1	White-br. Nuthatch	1
Common Grackle	6	Nashville Warbler	4	Tufted Titmouse	2
American Goldfinch	5	Orange-crowned Warb.	1	Golden-crowned Kinglet	1
White-throated Sparrow	4	Black-th.-blue Warbler	1	Ruby-crowned Kinglet	2
American Tree Sparrow	1	Myrtle Warbler	6	Veery	3
Chipping Sparrow	2	Magnolia Warbler	1	Swainson's Thrush	4
Slate-colored Junco	39	Northern Waterthrush	1	Hermit Thrush	2
Song Sparrow	2	Common Yellowthroat	1	American Robin	21

Table 6. Point count days conducted and species totals, spring season, Petersburg, 2008.

Species	# days	# birds	Species	# days	# birds	Species	# days	# birds
Ring-billed Gull	1	9	Br.-headed Cowbird	6	20	Eastern Towhee	3	3
Mallard	1	1	Red-winged Blackbird	4	10	Northern Cardinal	7	42
Canada Goose	1	4	Baltimore Oriole	2	3	Yellow Warbler	1	1
Killdeer	2	3	Rusty Blackbird	2	8	Magnolia Warbler	1	1
Ring-necked Pheasant	1	2	Common Grackle	7	32	Gray Catbird	3	6
Mourning Dove	5	8	Am. Goldfinch	4	5	Brown Thrasher	2	2
Downy woodpecker	1	1	White-th. Sparrow	2	4	Tufted Titmouse	2	2
Red-b. Woodpecker	4	4	Chipping Sparrow	2	5	Black-cap Chickadee	3	3
Blue Jay	4	12	Field Sparrow	3	3	American Robin	7	49
Am. Crow	5	11	Slate-colored Junco	2	4	Eastern Bluebird	3	3
European Starling	1	1	Song Sparrow	6	10			

Table 7. Daily banding totals for Shaker Lakes, spring 2008.

Date	Net Hour	Banded	Banded/ 100 net hr	Returns	Recaptures	Total birds	Total bird/ 100 net hr
416	33.48	11	32.86	4	0	15	44.80
418	33.48	5	14.93	3	2	10	29.87
421	32.52	8	24.60	0	0	8	24.60
423	31.98	7	21.89	3	1	11	34.40
425	37.98	14	36.86	0	3	17	44.76
428	19.02	8	42.06	1	1	10	52.58
430	31.98	3	9.38	2	1	6	18.76
502	32.52	27	83.03	4	2	33	101.48
507	34.02	18	52.91	0	5	23	67.61
509	36.48	41	112.39	2	6	49	134.32
512	28.98	27	93.17	4	4	35	120.77
514	36.00	38	105.56	2	5	45	125.00
516	30.48	21	68.90	1	5	27	88.58
519	40.98	20	48.80	0	7	27	65.89
523	37.98	13	34.23	1	8	22	57.93
526	36.48	22	60.31	1	4	27	74.01
528	38.52	12	31.15	3	6	21	54.52
530	39.48	21	53.19	1	1	23	58.26
604	34.50	11	31.88	0	4	15	43.48
606	34.50	6	17.39	0	3	9	26.09
<b>TOTAL</b>	<b>681.36</b>	<b>333</b>	<b>48.87</b>	<b>32</b>	<b>68</b>	<b>433</b>	<b>63.55</b>

Table 8. Daily banding totals Shaker Lakes, spring 2008.

Species	Banded	Species	Banded	Species	Banded
Hairy Woodpecker	1	Indigo Bunting	2	Connecticut Warbler	1
Downy Woodpecker	2	Red-eyed Vireo	4	Mourning Warbler	4
Eastern Phoebe	2	Warbling Vireo	2	Common Yellowthroat	7
Yellow-bellied Flycatcher	3	Black and White Warbler	6	Wilson's Warbler	26
Trail's Flycatcher	3	Worm-eating Warbler	1	Canada Warbler	11
Least Flycatcher	7	Blue-winged Warbler	1	American Redstart	14
Brown-headed Cowbird	4	Nashville Warbler	6	Gray Catbird	24
Baltimore Oriole	4	Tennessee Warbler	3	House Wren	11
Purple Finch	1	Yellow Warbler	8	Tufted Titmouse	2
American Goldfinch	17	Black-th.. Blue Warbler	7	Black-capped Chickadee	3
White-throated Sparrow	30	Myrtle Warbler	1	Ruby-cr. Kinglet	24
Field Sparrow	2	Magnolia Warbler	26	Wood Thrush	2
Slate-colored Junco	1	Chestnut-sided Warbler	2	Veery	2
Song Sparrow	5	Black-th.-Green Warbler	1	Gray-cheeked Thrush	1
Lincoln Sparrow	5	Western Palm Warbler	1	Swainson's Thrush	5
Swamp Sparrow	5	Ovenbird	1	Hermit Thrush	2
Northern Cardinal	5	Northern Waterthrush	7	American Robin	13
Rose-breasted Grosbeak	5				



Table 9. Point count days conducted and species totals, spring season, Shaker Lakes, 2008.

<b>Species</b>	<b># days</b>	<b># birds</b>	<b>Species</b>	<b># days</b>	<b># birds</b>	<b>Species</b>	<b># days</b>	<b># birds</b>
Herring Gull	8	17	Blue Jay	2	6	Yellow Warbler	13	28
Ring-billed Gull	11	16	American Crow	1	1	Magnolia Warbler	2	4
Mallard	5	8	European Starling	2	2	Chestnut-sided Warbler	1	1
Wood Duck	5	7	Brown-headed Cowbird	12	23	Western Palm Warbler	1	1
Canada Goose	14	65	Red-winged Blackbird	19	57	Northern Waterthrush	2	2
Great Blue Heron	11	15	Baltimore Oriole	12	42	Wilson's Warbler	1	1
Solitary Sandpiper	2	2	Common Grackle	6	8	American Redstart	3	5
Spotted Sandpiper	1	1	American Goldfinch	17	86	Gray Catbird	10	22
Mourning Dove	5	7	White-throated Sparrow	5	8	House Wren	11	32
Rock Pigeon	10	53	Chipping Sparrow	1	1	White-breasted Nuthatch	6	7
Yellow-billed Cuckoo	1	1	Song Sparrow	19	43	Tufted Titmouse	13	26
Belted Kingfisher	2	2	Eastern Towhee	1	1	Black-capped Chickadee	17	33
Hairy Woodpecker	5	6	Northern Cardinal	18	41	Ruby-crowned Kinglet	4	4
Downy Woodpecker	6	8	Rose-breasted Grosbeak	1	1	Blue-gray Gnatcatcher	1	1
Yellow-bellied Sap.	1	1	Scarlet Tanager	2	2	Wood Thrush	9	21
Red -bell. Woodpecker	17	26	Barn Swallow	1	1	American Robin	18	36
Yell-shafted Flicker	8	14	N. Rough-wing Swallow	6	7	Unk. duck	1	2
Chimney Swift	7	19	Red-eyed Vireo	6	9	Unk. Sparrow	2	3
Ruby-th. Hummingbird	3	3	Warbling Vireo	13	33	Unk. Swallow	1	1
Great-cr. Flycatcher	8	13	Blue-headed Vireo	2	2	Unk. Warbler	6	12
Eastern Phoebe	6	8	Nashville Warbler	2	2	Unk. Woodpecker	7	7
Eastern Wood Pewee	3	7	Tennessee Warbler	1	1			

Table 10. Daily banding totals for Navarre, fall 2008.

Date	Net Hour	Banded	Banded/100 net hr	Returns	Recaptures	Total birds	Total bird/ 100 net hr
0704	92.75	17	18.33	2	13	32	34.50
0714	105.00	34	32.38	4	15	53	50.48
0720	87.50	45	51.43	4	5	54	61.71
0806	136.50	29	21.25	2	8	40	29.30
0820	105.00	14	13.33	1	4	19	18.10
0821	105.00	10	9.52	0	1	11	10.48
0822	94.50	11	11.64	1	1	13	13.76
0823	94.50	7	7.41	0	0	7	7.41
0824	105.00	9	8.57	0	1	10	9.52
0825	94.50	14	14.82	0	3	17	17.99
0826	98.07	16	16.32	1	4	21	21.41
0827	94.50	5	5.29	0	2	7	7.41
0828	105.00	10	9.52	0	1	11	10.48
0829	101.50	7	6.90	0	0	7	6.90
0830	94.50	25	26.46	0	3	28	29.63
0831	105.00	25	23.81	0	2	27	25.71
0901	90.93	19	20.90	0	5	24	26.39
0902	99.75	12	12.03	0	3	15	15.04
0903	87.50	13	14.86	0	2	15	17.14
0904	92.75	21	22.64	0	4	25	26.95
0905	84.00	17	20.24	0	4	21	25.00
0906	92.75	47	50.67	0	3	50	53.91
0907	119.07	59	49.55	0	3	62	52.07
0908	101.50	56	55.17	0	7	63	62.07
0909	89.25	26	29.13	0	10	36	40.34
0910	96.25	32	33.25	0	5	37	38.44
0911	94.50	40	42.33	0	6	46	48.68
0913	57.75	11	19.05	0	2	13	22.51
0914	101.50	29	28.57	0	6	35	34.48
0915	89.25	50	56.02	1	5	56	62.75
0916	110.25	90	81.63	0	6	96	87.08
0917	119.07	79	66.35	0	9	88	73.91
0918	101.50	57	56.16	0	8	65	64.04
0919	92.75	48	51.75	1	13	62	66.85
0920	131.25	84	64.00	0	21	105	80.00
0921	98.07	40	40.79	0	13	53	54.04
0922	89.25	39	43.70	0	20	59	66.11
0923	89.25	42	47.06	0	9	51	57.14
0924	94.50	40	42.33	0	6	46	48.68
0925	119.07	85	71.39	0	10	95	79.79
0926	105.00	39	37.14	0	14	53	50.48
0927	174.93	44	25.15	0	22	66	37.73
0928	115.50	61	52.81	0	12	73	63.20
0929	110.25	79	71.66	0	13	92	83.45
0930	90.93	34	37.39	0	8	42	46.19
1001	94.50	67	70.90	0	19	86	91.01
1002	147.00	115	78.23	1	18	134	91.16
1003	126.00	80	63.49	0	20	100	79.37
1004	99.75	83	83.21	0	29	113	113.28
1005	105.00	62	59.05	0	20	82	78.10
1006	94.50	38	40.21	0	17	55	58.20
1007	94.50	54	57.14	0	13	67	70.90
1009	105.00	62	59.05	1	17	80	76.19
1010	110.25	66	58.86	1	12	79	71.66
1011	105.00	50	47.62	0	13	63	60.00
1012	119.00	65	54.62	0	13	79	66.39
1013	105.00	62	59.05	0	15	77	73.33
1014	105.00	32	30.48	0	8	40	38.10
1015	110.25	124	112.47	0	13	137	124.26
1016	99.75	51	51.13	0	8	59	59.15
1017	110.25	80	72.56	2	9	91	82.54
1018	105.00	44	41.90	0	13	57	54.29
1019	110.25	46	41.72	0	25	72	65.31
1031	87.00	20	22.99	0	9	29	33.33
1109	60.00	18	30.00	0	1	19	31.67
TOTAL	6,650.14	2,790	41.95	22	604	3,420	51.43

Table 11. Fall banding totals, Navarre 2008.

<b>Species</b>	<b>Banded</b>	<b>Species</b>	<b>Banded</b>	<b>Species</b>	<b>Banded</b>
American Woodcock	3	Song Sparrow	6	Blackburnian Warbler	3
Mourning Dove	2	Lincoln Sparrow	4	Black-th.-Green Warbler	9
Cooper's Hawk	1	Swamp Sparrow	17	Ovenbird	65
Eastern Screech Owl	1	Fox Sparrow	6	Northern Waterthrush	18
Yellow-billed Cuckoo	3	Eastern Towhee	4	Connecticut Warbler	3
Black-billed Cuckoo	1	Northern Cardinal	38	Mourning Warbler	5
Downy Woodpecker	14	Rose-breasted Grosbeak	1	Common Yellowthroat	66
Yellow-bellied Sapsucker	3	Indigo Bunting	4	Yellow-breasted Chat	1
Red-bellied Woodpecker	1	Scarlet Tanager	1	Wilson's Warbler	3
Yellow-shafted Flicker	11	Cedar Waxwing	4	Canada Warbler	9
Whip-poor-will	1	Red-eyed Vireo	31	American Redstart	51
Ruby-th. Hummingbird	6	Philadelphia Vireo	8	Gray Catbird	200
Great-crested Flycatcher	1	Warbling Vireo	6	Carolina Wren	13
Eastern Phoebe	6	Yellow-throated Vireo	1	House Wren	57
Eastern Wood Pewee	5	Blue-headed Vireo	11	Winter Wren	35
Yellow-bellied Flycatcher	15	White-eyed Vireo	3	Marsh Wren	2
Traill's Flycatcher	5	Black and Wh. Warbler	11	Brown Creeper	30
Blue Jay	2	Prothonotary Warbler	3	Red-breasted Nuthatch	1
Red-winged Blackbird	3	Nashville Warbler	36	Tufted Titmouse	1
Baltimore Oriole	3	Orange-crown. Warbler	4	Black-capped Chickadee	3
Rusty Blackbird	1	Tennessee Warbler	16	Golden-crowned Kinglet	140
Common Grackle	46	Northern Parula	2	Ruby-crowned Kinglet	69
Purple Finch	3	Cape May Warbler	9	Wood Thrush	6
American Goldfinch	2	Yellow Warbler	26	Veery	31
White-crowned Sparrow	3	Black-th-Blue Warbler	71	Gray-cheeked Thrush	202
Gam. Wh.-cr. Sparrow	1	Myrtle Warbler	104	Swainson's Thrush	391
White-throated Sparrow	224	Magnolia Warbler	88	Hermit Thrush	169
Chipping Sparrow	1	Chestnut-sided Warbler	13	American Robin	64
Field Sparrow	1	Bay-breasted Warbler	11		
Slate-colored Junco	7	Blackpoll Warbler	228		

Table 12. Number of days observed and totals of species seen on point counts, Navarre fall 2008.

Species	# days	#Observed	Species	# days	#Observed	Species	# days	#Observed
Herring Gull	15	37	Ruby-th. Humm.ing.	3	4	Black & Wh. Warb.	4	4
Ring-billed Gull	47	363	Eastern Kingbird	2	3	Nashville Warbler	2	2
Bonaparte's Gull	10	89	Great-cr. Flycatcher	1	1	Tennessee Warbler	4	7
Caspian Tern	3	4	Eastern Phoebe	7	12	Northern Parula	1	1
Forster's Tern	1	2	Eastern Wood Pewee	3	4	Cape May Warbler	4	6
D-c. Cormorant	12	75	Willow Flycatcher	2	3	Yellow Warbler	1	1
Mallard	30	293	Blue Jay	51	198	Bl.-th.-Blue Warbler	4	4
Am. Black Duck	3	9	European Starling	48	1,748	Myrtle Warbler	23	172
Gadwall	7	24	Brown-hd. Cowbird	16	118	Magnolia Warb.	8	14
American Wigeon	7	68	Red-wi. Blackbird	56	9,908	Chest.-sid. Warbler	1	1
Green-winged Teal	2	17	Baltimore Oriole	17	54	Blackpoll Warbler	25	84
Northern Pintail	2	13	Rusty Blackbird	3	292	Blackburnian Warb.	1	1
Wood Duck	15	37	Common Grackle	53	1,358	Black.-th-gr. Warbler	3	3
Lesser Scaup	1	40	Purple Finch	11	94	Ovenbird	4	4
Canada Goose	50	1,030	House Finch	5	16	No. Waterthrush	2	4
Trumpeter Swan	4	8	American Goldfinch	38	128	Com. Yellowthroat	12	13
American Bittern	1	1	Pine Siskin	12	55	Wilson's Warbler	1	1
Great-blue Heron	35	82	White-cr. Sparrow	1	1	American Redstart	4	4
Great Egret	5	6	White-th. Sparrow	25	618	Gray Catbird	46	272
Green Heron	2	2	Slate-colored Junco	1	1	Brown Thrasher	15	19
American Woodcock	1	1	Song Sparrow	5	6	Carolina Wren	54	188
Pectoral Sandpiper	3	11	Fox Sparrow	1	1	House Wren	25	39
Lesser Yellowlegs	10	21	Eastern Towhee	5	6	Winter Wren	12	25
Greater Yellowlegs	2	2	Northern Cardinal	57	473	Brown Creeper	4	4
Killdeer	24	48	Rose-br. Grosbeak	5	6	Red-br. Nuthatch	10	15
Mourning Dove	12	22	Indigo Bunting	1	2	Black.-ca. Chickadee	8	14
Cooper's Hawk	3	3	Purple Martin	10	25	Golden-cr. Kinglet	19	81
Red-tailed Hawk	2	2	Cliff Swallow	1	2	Ruby-cr. Kinglet	16	32
Bald Eagle	16	35	Barn Swallow	14	183	Wood Thrush	2	2
Great Horned Owl	2	2	Tree Swallow	17	84	Veery	6	6
Belt Kingfisher	2	2	Bank Swallow	8	128	Gray-cheek. Thrush	20	135
Downy Woodpecker	48	128	No. Ro.-wing Swal.	5	12	Swainson's Thrush	30	239
Yel.-bel. Sapsucker	7	10	Cedar Waxwing	45	378	Hermit Thrush	4	11
Red-bellied Wood.	2	2	Red-eyed Vireo	7	8	American Robin	52	517
Yellow-sh. Flicker	25	64	Philadelphia Vireo	2	2	Unk. warbler	42	325
Common Nighthawk	1	1	Warbling Vireo	4	7	Unk. flycatcher	1	2
Chimney Swift	32	212	Blue-headed Vireo	2	3			

Table 13. Daily banding totals for Navarre Beach, fall 2008.

Date	Net Hour	Banded	Banded/100 nh	Returns	Recaptures	Total birds	Totalbird/100nh
0820	23.63	3	12.70	0	2	5	21.16
0821	23.18	5	21.57	0	0	5	21.57
0822	21.38	4	18.71	1	1	6	28.06
0823	21.75	5	22.99	1	2	8	36.78
0824	23.98	7	29.19	0	0	7	29.19
0828	23.25	8	34.41	0	1	9	38.71
0829	22.13	1	4.52	0	0	1	4.52
0830	19.13	11	57.50	1	1	13	67.96
0831	23.98	14	58.38	0	1	15	62.55
0901	21.38	3	14.03	0	2	5	23.39
0902	18.75	7	37.33	0	0	7	37.33
0903	20.63	3	14.54	0	0	3	14.54
0905	20.25	5	24.69	0	0	5	24.69
0906	12.61	2	15.86	0	0	2	15.86
0907	15.75	24	152.38	0	5	29	184.13
0908	23.63	18	76.17	0	5	23	97.33
0909	21.02	4	19.03	0	2	6	28.54
0910	21.38	4	18.71	0	0	4	18.71
0911	21.38	6	28.06	0	1	7	32.74
0913	14.99	11	73.38	0	1	12	80.05
0914	20.94	6	28.65	0	2	8	38.20
0915	20.25	6	29.63	1	1	8	39.51
0916	25.82	5	19.37	0	2	7	27.11
0917	27.38	48	175.31	0	2	50	182.62
0919	21.75	22	101.15	1	4	27	124.14
0920	28.13	23	81.76	1	3	27	95.98
0921	17.25	5	28.99	0	0	5	28.99
0922	20.25	5	24.69	0	1	6	29.63
0923	19.88	3	15.09	1	2	6	30.18
0924	19.88	13	65.39	0	2	15	75.45
0925	27.00	37	137.04	1	5	43	159.26
0926	15.75	1	6.35	0	1	2	12.70
0927	9.00	2	22.22	0	2	4	44.44
0928	24.75	5	20.20	0	1	6	24.24
0929	24.75	5	20.20	0	1	6	24.24
0930	22.50	8	35.56	1	1	10	44.44
1001	22.50	10	44.44	1	3	14	62.22
1002	32.63	66	202.27	1	6	73	223.72
1003	27.75	42	151.35	0	6	48	172.97
1004	22.50	15	66.67	0	5	20	88.89
1005	23.63	27	114.26	0	5	32	135.42
1006	16.52	5	30.27	0	1	6	36.32
1009	23.63	88	372.41	1	3	92	389.34
1010	23.63	36	152.35	0	5	41	173.51
1011	23.25	8	34.41	0	1	9	38.71
1012	25.11	8	31.86	0	4	16	63.72
1013	22.50	23	102.22	0	5	28	124.44
1014	22.50	7	31.11	0	1	8	35.56
1015	27.72	31	111.83	0	1	32	115.44
1016	21.38	8	37.42	0	0	8	37.42
1017	9.92	8	80.65	0	1	9	90.73
1018	22.50	8	35.56	0	2	10	44.44
1019	21.38	16	74.84	0	2	18	84.19
<b>TOTAL</b>	<b>1,148.51</b>	<b>745</b>	<b>64.87</b>	<b>12</b>	<b>105</b>	<b>866</b>	<b>75.40</b>

Table 14. Fall banding totals, Navarre Beach 2008.

Species	Banded	Species	Banded	Species	Banded
American Woodcock	1	Swamp Sparrow	8	Ovenbird	11
Yellow-billed Cuckoo	1	Fox Sparrow	2	Northern Waterthrush	3
Downy Woodpecker	8	Northern Cardinal	7	Mourning Warbler	1
Yellow-bellied Sapsucker	2	Cedar Waxwing	5	Common Yellowthroat	24
Yellow-shafted Flicker	3	Red-eyed Vireo	8	Wilson's Warbler	2
Ruby-th. Hummingbird	3	Philadelphia Vireo	2	American Redstart	1
Eastern Phoebe	16	Warbling Vireo	12	Gray Catbird	88
Eastern Wood Pewee	1	Blue-headed Vireo	2	Brown Thrasher	2
Yellow-bellied Flycatcher	3	Black & White Warbler	4	Carolina Wren	6
Traill's Flycatcher	1	Nashville Warbler	13	House Wren	11
Least Flycatcher	1	Orange-crowned Warbler	3	Winter Wren	3
Blue Jay	1	Tennessee Warbler	6	Marsh Wren	2
Red-winged Blackbird	10	Cape May Warbler	10	Brown Creeper	3
Baltimore Oriole	3	Yellow Warbler	2	Golden-crowned Kinglet	20
Common Grackle	6	Black-th.- Blue Warbler	7	Ruby-crowned Kinglet	30
Gambel's Wh.- cr. Sparrow	1	Myrtle Warbler	124	Veery	1
White-throated Sparrow	53	Magnolia Warbler	15	Gray-cheeked Thrush	21
Slate-colored Junco	3	Bay-breasted Warbler	1	Swainson's Thrush	43
Song Sparrow	8	Blackpoll Warbler	91	Hermit Thrush	17
Lincoln Sparrow	1	W. Palm Warbler	7	American Robin	1

Table 15 . Daily banding totals for Creek Bend County Park, fall 2008.

Date	Net Hour	Banded	Banded/ 100 net hr	Returns	Recaptures	Total birds	Total bird/ 100 net hr
0914	12.00	1	8.33	0	0	1	8.33
0916	12.00	35	291.67	0	0	35	291.67
0920	10.50	27	257.14	0	0	27	257.14
0921	12.00	21	175.00	0	0	21	175.00
0925	10.00	17	170.00	0	3	20	200.00
0926	16.50	22	133.33	0	0	22	133.33
0927	13.50	17	125.93	0	0	17	125.93
0928	66.00	40	60.61	0	5	45	68.18
1001	33.00	99	300.00	0	6	105	318.18
1006	18.00	71	394.44	0	2	73	405.56
1010	18.00	66	366.67	0	14	80	444.44
1012	22.00	53	240.91	0	5	58	263.64
1014	16.50	39	236.36	0	3	42	254.55
1016	17.50	137	782.86	0	2	139	794.29
1020	14.00	52	371.43	0	6	58	414.29
1022	16.50	48	290.91	0	5	53	321.21
1030	12.00	19	158.33	0	5	24	200.00
1031	12.00	10	83.33	0	3	13	108.33
1101	19.50	53	271.80	0	8	61	312.82
1104	12.50	26	208.00	0	7	33	264.00
1105	19.50	42	215.39	1	2	45	230.77
1106	16.50	33	200.00	0	0	33	200.00
1111	16.25	53	326.15	0	6	59	363.08
1112	12.00	13	108.33	0	2	15	125.00
1118	1.00	3	300.00	0	0	3	300.00
1123	8.00	11	137.50	0	1	12	150.00
<b>TOTAL</b>	<b>437.25</b>	<b>1,008</b>	<b>230.53</b>	<b>1</b>	<b>85</b>	<b>1,094</b>	<b>250.20</b>

Table 16. Fall banding totals for Creek Bend County Park, fall 2008.

Species	Banded	Species	Banded	Species	Banded
Downy Woodpecker	4	Fox Sparrow	2	Gray Catbird	25
Eastern Phoebe	4	Eastern Towhee	1	Carolina Wren	3
Red-winged Blackbird	1	Northern Cardinal	16	House Wren	7
House Finch	24	Indigo Bunting	36	Winter Wren	3
American Goldfinch	63	Nashville Warbler	10	Brown Creeper	5
Pine Siskin	1	Orange-crowned Warbler	2	White-breasted Nuthatch	1
Savannah Sparrow	6	Tennessee Warbler	10	Tufted Titmouse	3
White-crowned Sparrow	37	Black-th. Blue Warbler	1	Black-capped Chickadee	5
White-throated Sparrow	87	Myrtle Warbler	46	Golden-crowned Kinglet	15
American Tree Sparrow	52	Magnolia Warbler	6	Ruby-crowned Kinglet	25
Chipping Sparrow	28	Blackpoll Warbler	2	Gray-cheeked Thrush	3
Field Sparrow	29	Western Palm Warbler	1	Swainson's Thrush	10
Slate-colored Junco	12	Ovenbird	2	Hermit Thrush	3
Song Sparrow	285	Com. Yellowthroat	4	American Robin	1
Lincoln's Sparrow	57	American Redstart	2	Eastern Bluebird	9
Swamp Sparrow	67	Northern Mockingbird	1		

Table 17. Daily banding totals for Petersburg, fall 2008.

Date	Net Hour	Banded	Banded/ 100 net hr	Returns	Recaptures	Total birds	Total bird/ 100 net hr
0822	135.00	22	16.30	1	0	23	17.04
0823	143.33	24	16.74	1	2	27	18.84
0824	156.60	31	19.80	2	5	38	24.27
0905	165.00	31	18.79	0	2	33	20.00
0906	91.67	14	15.27	0	0	14	15.27
0919	171.67	29	16.89	0	2	31	18.06
0921	161.67	22	13.61	0	5	27	16.70
0926	150.00	25	16.67	0	4	29	19.33
0927	160.00	20	12.50	0	5	25	15.63
1017	155.00	33	21.29	2	5	40	25.81
1019	161.67	22	13.61	0	3	25	15.46
1024	91.67	7	7.64	0	6	13	14.18
<b>TOTAL</b>	<b>1,743.28</b>	<b>280</b>	<b>16.06</b>	<b>6</b>	<b>39</b>	<b>325</b>	<b>18.64</b>



Table 18. Daily banding totals Petersburg, fall 2008.

Species	Banded	Species	Banded	Species	Banded
Yellow-billed Cuckoo	1	Black and White Warbler	8	Brown Thrasher	1
Hairy Woodpecker	1	Nashville Warbler	3	Carolina Wren	2
Downy Woodpecker	1	Tennessee Warbler	3	Brown Creeper	2
Yellow-bellied Flycatcher	1	Black.-th.-Blue Warbler	8	Winter Wren	4
Traill's Flycatcher	3	Magnolia Warbler	22	White-breasted Nuthatch	2
Least Flycatcher	1	Chestnut-sided Warbler	9	Tufted Titmouse	1
Common Grackle	1	Bay-breasted Warbler	1	Black- capped Chickadee	6
House Finch	4	Blackpoll Warbler	9	Golden-crowned Kinglet	6
American Goldfinch	5	Black-th. Green Warbler	2	Ruby-crowned Kinglet	15
Slate-colored Junco	1	Ovenbird	9	Wood Thrush	1
White-throated Sparrow	7	Connecticut Warbler	1	Veery	1
Song Sparrow	6	Common Yellowthroat	1	Gray-cheeked Thrush	8
Northern Cardinal	10	Canada Warbler	2	Swainson's Thrush	17
Cedar Waxwing	7	American Redstart	9	Hermit Thrush	20
Red-eyed Vireo	2	Gray Catbird	27	American Robin	25
Blue-headed Vireo	2				

Table 19. Point count days conducted and species totals, fall season, Petersburg, 2008.

Species	# days	# birds	Species	# days	# birds	Species	# days	# birds
Mallard	1	6	Red-winged Blackbird	1	2	Cedar Waxwing	2	8
Canada Goose	4	14	Common Grackle	4	993	Gray Catbird	7	32
Killdeer	1	1	American Goldfinch	9	21	Winter Wren	1	2
Mourning Dove	4	16	White-th. Sparrow	1	2	White-br. Nuthatch	3	3
Downy Woodpecker	4	5	Field Sparrow	1	1	Red-br. Nuthatch	1	1
Blue Jay	12	169	Song Sparrow	1	1	Tufted Titmouse	1	1
American Crow	7	20	Northern Cardinal	7	16	Black-cap Chickadee	3	3
European Starling	11	696	Barn Swallow	1	2	American Robin	12	299
Brown-head. Cowbird	4	26						

Table 20. Daily banding totals for Shaker Lakes, fall 2008.

Date	Net hour	Banded	Banded/ 100 net hr	Returns Recaptures	Recaptures	Total birds	Total bird/ 100 net hr
0818	31.00	15	48.39	2	0	17	54.84
0820	31.00	14	45.16	0	1	15	48.39
0822	34.50	11	31.88	0	0	11	31.88
0825	31.00	11	35.48	0	3	14	45.16
0827	32.00	24	75.00	0	3	27	84.38
0829	33.00	17	51.52	0	1	18	54.55
0901	30.00	15	50.00	0	1	16	53.33
0903	31.50	19	60.32	1	3	23	73.02
0905	31.00	7	22.58	1	2	10	32.26
0908	30.50	12	39.34	0	1	13	42.62
0910	30.50	10	32.79	0	1	11	36.07
0915	31.50	25	79.37	1	1	27	85.71
0917	32.00	14	43.75	0	3	17	53.13
0919	31.00	12	38.71	0	1	13	41.94
0922	32.00	11	34.38	0	4	15	46.88
0924	33.00	20	60.61	0	3	23	69.70
0926	33.50	60	179.10	1	3	64	191.05
0929	29.00	24	82.76	0	2	26	89.66
1006	33.00	73	221.21	1	4	78	236.36
1008	24.50	18	73.47	0	1	19	77.55
1010	30.00	15	50.00	1	5	21	70.00
1013	37.00	87	235.14	0	2	89	240.54
1015	33.50	69	205.97	1	7	77	229.85
1017	27.50	30	109.09	1	5	36	130.91
1024	24.50	11	44.90	1	6	18	73.47
1031	24.00	22	91.67	0	5	27	112.50
1103	30.00	37	123.33	0	8	45	150.00
Total	832.00	683	82.09	11	76	770	92.55

Table 21. Daily banding totals Shaker Lakes, fall 2008.

Species	Banded	Species	Banded	Species	Banded
Downy Woodpecker	7	Cedar Waxwing	7	Wilson's Warbler	21
Yellow-bellied Sapsucker	2	Red-eyed Vireo	4	Canada Warbler	6
Red-bellied Woodpecker	1	Philadelphia Vireo	1	American Redstart	17
Eastern Phoebe	1	Blue-headed Vireo	8	Gray Catbird	35
Eastern Wood-Pewee	7	White-eyed Vireo	1	Brown Thrasher	1
Yellow-bellied Flycatcher	3	Black and White Warbler	1	Carolina Wren	2
Least Flycatcher	5	Nashville Warbler	18	House Wren	7
Blue Jay	1	Orange-crowned Warbler	2	Winter Wren	7
Common Grackle	2	Tennessee Warbler	2	Brown Creeper	1
Purple Finch	3	Yellow Warbler	1	White-breasted Nuthatch	2
American Goldfinch	65	Black-thr. Blue Warbler	9	Tufted Titmouse	5
Pine Siskin	1	Myrtle Warbler	86	Black-capped Chickadee	10
Savannah Sparrow	1	Magnolia Warbler	34	Golden-crowned Kinglet	12
White-crowned Sparrow	1	Chestnut-sided Warbler	5	Ruby-crowned Kinglet	22
White-throated Sparrow	92	Bay-breasted Warbler	2	Blue-gray Gnatcatcher	1
American Tree Sparrow	2	Blackpoll Warbler	2	Wood Thrush	2
Slate-colored Junco	5	Blackburnian Warbler	1	Veery	1
Song Sparrow	29	Black-th. Green Warbler	5	Gray-cheeked Thrush	5
Lincoln Sparrow	1	Ovenbird	2	Swainson's Thrush	40
Swamp Sparrow	2	Northern Waterthrush	4	Hermit Thrush	19
Fox Sparrow	1	Mourning Warbler	3	American Robin	13
Northern Cardinal	16	Common Yellowthroat	4		
Rose-breasted Grosbeak	3	Yellow-breasted Chat	1		

Table 22. Point count days conducted and species totals, fall season, Shaker Lakes, 2008.

Species	# days	# birds	Species	# days	# birds	Species	# days	# birds
Ring-billed Gull	2	4	R-th Hummingbird	9	10	Red-eyed Vireo	2	2
Mallard	7	10	Great-cr. Flycatcher	1	7	Warbling Vireo	6	7
Wood Duck	7	11	Olive-sided Flycatcher	5	5	Magnolia Warbler	1	1
Gr. Blue Heron	2	2	E. Wood-Pewee	8	16	Gray Catbird	13	27
Mourning Dove	7	13	Blue Jay	4	5	Carolina Wren	2	2
Rock Pigeon	8	40	Red-winged Blackbird	2	2	House Wren	2	2
Osprey	2	2	Baltimore Oriole	2	2	White-br. Nuthatch	6	7
Belted Kingfisher	3	4	Common Grackle	5	7	Tufted Titmouse	1	1
Hairy Woodpecker	2	2	House Finch	1	1	Black-cap. Chickadee	4	7
Downy Woodpecker	6	7	Am. Goldfinch	14	88	Wood thrush	1	1
Red-bell. Woodpecker	12	14	Song Sparrow	9	21	American Robin	10	26
Yellow-shaft. Flicker	2	2	No. Cardinal	10	16	Unk. flycatcher	2	3
Common Nighthawk	1	4	Rose-br. Grosbeak	1	2	Unk. warbler	3	8
Chimney Swift	12	615	Cedar Waxwing	4	19	Unk. woodpecker	2	2

Table 23. Total bandings Black Swamp Bird Observatory, passerine migration , 2008.

Species	Banded	Species	Banded	Species	Banded
American Woodcock	6	Field Sparrow	8 (39)	Bl.-th. Green Warbler	62 (70)
Eastern Screech Owl	2	Slate-colored Junco	13 (71)	Pine Warbler	3
Mourning Dove	2	<b>(9)</b> Song Sparrow	39 (366)	Western Palm Warbler	294 (296)
Sharp-shinned Hawk	12	Lincoln Sparrow	42 (105)	Yellow Palm Warbler	1
Cooper's Hawk	1	Swamp Sparrow	111 (186)	Prairie Warbler	1
Yellow-billed Cuckoo	5 (6)	Fox Sparrow	18 (22)	Ovenbird	216 (230)
Black-billed Cuckoo	4	Eastern Towhee	11 (13)	Northern Waterthrush	117 (129)
Hairy Woodpecker	1 (4)	Northern Cardinal	103 (157)	Kentucky Warbler	3
Downy Woodpecker	31 (46)	Rose-breasted Grosbeak	22 (33)	Connecticut Warbler	11 (13)
Yellow-bell. Sapsucker	7 (9)	Indigo Bunting	53 (91)	Mourning Warbler	94 (101)
Red-headed Woodpecker	1	Scarlet Tanager	6	Common Yellowthroat	301 (318)
Red-bellied Woodpecker	1 (2)	Summer Tanager	2	Yellow-breasted Chat	5 (6)
Yellow-shafted Flicker	21	Tree Swallow	13	Hooded Warbler	6
Whip-poor-will	3	Cedar Waxwing	21 (35)	Wilson's Warbler	191 (238)
Eastern Kingbird	12	Red-eyed Vireo	135 (145)	Canada Warbler	115 (136)
Great-crested Flycatcher	13	Philadelphia Vireo	21 (22)	American Redstart	302 (348)
Eastern Phoebe	24 (31)	Warbling Vireo	31 (33)	Northern Mockingbird	0 (1)
Olive-sided Flycatcher	2	Yellow-throated Vireo	2	<b>(3)</b> Gray Catbird	748 (869)
Eastern Wood-Pewee	40 (47)	Blue-headed Vireo	32 (42)	Brown Thrasher	18 (20)
Yellow-bell. Flycatcher	167 (174)	White-eyed Vireo	17 (18)	Carolina Wren	24 (31)
Acadian Flycatcher	11	Black and White Warbler	96 (111)	House Wren	171 (197)
Traill's Flycatcher	345 (351)	Prothonotary Warbler	14	Winter Wren	54 (69)
Least Flycatcher	57 (72)	Worm-eating Warbler	3 (4)	Marsh Wren	4
Blue Jay	39 (40)	Blue-winged Warbler	12 (14)	Brown Creeper	58 (66)
Brown-headed Cowbird	0 (7)	Brewster's Warbler	2	White-br. Nuthatch	2 (8)
Red-winged Blackbird	226 (229)	Golden-winged Warbler	1	Red-br. Nuthatch	11
Baltimore Oriole	40 (45)	<b>(8)</b> Nashville Warbler	348 (389)	Tufted Titmouse	1 (14)
Rusty Blackbird	3	Orange-crowned Warbler	27 (32)	Black-cap. Chickadee	5 (29)
Common Grackle	81 (90)	Tennessee Warbler	147 (165)	Golden-cr. Kinglet	186 (220)
Purple Finch	5 (9)	Northern Parula	23	<b>(10)</b> Ruby-cr Kinglet	277 (365)
House Finch	0 (28)	Cape May Warbler	61	Blue-gray Gnatcatcher	47 (48)
American Goldfinch	20 (175)	<b>(6)</b> Yellow Warbler	421 (430)	Wood Thrush	36 (41)
Pine Siskin	0 (2)	Black-th. Blue Warbler	133 (159)	Veery	85 (92)
Savannah Sparrow	0 (7)	<b>(1)</b> Myrtle Warbler	1306 (1445)	Gray-cheeked Thrush	253 (270)
White-crowned Sparrow	54 (92)	<b>(5)</b> Magnolia Warbler	517 (606)	<b>(4)</b> Swainson's Thrush	563 (639)
Gambel W-c Sparrow	3	Chestnut-sided Warbler	117 (133)	Hermit Thrush	281 (327)
<b>(2)</b> White-th. Sparrow	1033 (1253)	Bay-breasted Warbler	29 (32)	American Robin	84 (157)
American Tree Sparrow	0 (55)	<b>(7)</b> Blackpoll Warbler	410 (423)	Eastern Bluebird	0 (9)
Chipping Sparrow	7 (37)	Blackburnian Warbler	21 (22)	R-th. Hummingbird	54

**( ) numbers in bold are top ten banded species**

Table 24. Banding effort totals by area and by season, 2008.

<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	120	15,043.2	11,357	75.50	13,532	89.95
Petersburg	19	2,856.6	442	15.50	531	18.59
Shaker Lakes	47	1,513.4	1,016	67.14	1,203	79.49
Creek Bend	26	437.3	1,008	230.53	1,094	250.20
<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	9,039.25	8,317	92.01	9,885	109.36
Fall	65	10,811.18	5,506	50.93	6,475	59.89
<b>TOTAL</b>		<b>19,850.43</b>	<b>13,823</b>	<b>69.64</b>	<b>16,360</b>	<b>82.42</b>
ONWR Stations						
Spring	55	7,244.56	7,822	107.97	9,246	127.63
Fall	65	7,798.65	3,535	45.33	4,286	54.96
<b>TOTAL</b>	<b>120</b>	<b>15,043.21</b>	<b>11,357</b>	<b>75.50</b>	<b>13,532</b>	<b>89.95</b>

Table 25. Fall age ratios of selected species, Navarre 2008.

Species	2008		2007		Percent Change	91-07 Ave. HY/AHY	2008 % Change from avg.
	Sample	HY/AHY	Sample	HY/AHY			
Baltimore Oriole	6	-	8	3.00	-	6.41	-
<b>Wh-th Sparrow*</b>	<b>277</b>	<b>2.85</b>	<b>367</b>	<b>1.51</b>	<b>+89</b>	<b>4.25</b>	<b>-33</b>
Song Sparrow	14	1.00	51	1.68	-40	2.22	-55
Cedar Waxwing	9	0.80	11	0.83	-4	1.79	-55
Red-eyed Vireo	39	12.00	47	22.50	-47	6.71	+79
Warbling Vireo	18	-	4	-	-	10.97	-
Bl. and Wh. Warbler	15	0.88	16	1.29	-32	2.12	-58
Nashville Warbler	49	1.33	40	1.00	+33	2.94	-55
Tenn. Warbler	22	10.00	53	4.89	+104	6.86	+46
Cape May Warbler	19	0.90	62	1.70	-47	1.16	-22
Bl-thr. Blue Warb.	78	4.57	49	1.58	+189	3.56	+28
<b>Myrtle Warbler</b>	<b>228</b>	<b>2.56</b>	<b>104</b>	<b>2.15</b>	<b>+19</b>	<b>2.06</b>	<b>+24</b>
<b>Magnolia Warbler</b>	<b>103</b>	<b>11.88</b>	<b>113</b>	<b>2.65</b>	<b>+348</b>	<b>3.09</b>	<b>+284</b>
<b>Blackpoll Warbler</b>	<b>319</b>	<b>3.25</b>	<b>554</b>	<b>3.29</b>	<b>-1</b>	<b>2.05</b>	<b>+59</b>
<b>Ovenbird</b>	<b>76</b>	<b>6.60</b>	<b>88</b>	<b>4.18</b>	<b>+58</b>	<b>7.38</b>	<b>-11</b>
No. Waterthrush	21	4.25	24	1.67	+154	4.41	-4
<b>Com. Yellowthroat</b>	<b>90</b>	<b>11.86</b>	<b>92</b>	<b>6.08</b>	<b>+95</b>	<b>6.85</b>	<b>+73</b>
<b>American Redstart</b>	<b>52</b>	<b>3.73</b>	<b>54</b>	<b>1.84</b>	<b>+103</b>	<b>2.51</b>	<b>+49</b>
<b>Gray Catbird</b>	<b>288</b>	<b>4.88</b>	<b>308</b>	<b>6.00</b>	<b>-19</b>	<b>9.06</b>	<b>-46</b>
<b>House Wren</b>	<b>68</b>	<b>2.58</b>	<b>48</b>	<b>11.00</b>	<b>-77</b>	<b>6.62</b>	<b>-61</b>
<b>Gray-cheek Thrush</b>	<b>223</b>	<b>2.84</b>	<b>219</b>	<b>1.74</b>	<b>+63</b>	<b>2.01</b>	<b>+41</b>
<b>Swainson's Thrush</b>	<b>434</b>	<b>1.82</b>	<b>502</b>	<b>1.37</b>	<b>+33</b>	<b>1.52</b>	<b>+20</b>
<b>Hermit Thrush</b>	<b>186</b>	<b>4.81</b>	<b>262</b>	<b>2.05</b>	<b>+135</b>	<b>5.42</b>	<b>-11</b>
American Robin	65	4.91	39	3.33	+47	3.36	+46

\*Species in bold have samples sizes for both 2007 and 2008 over 50.

Table 26. Banding year of returning birds captured at Navarre study site, 2008.

Species	2007	2006	2005	2004	2003	2002	2001	2000	1999	Total
Downy Woodpecker	2	1				1				4
Yellow-sh Flicker	1	1								2
Blue Jay	1		1							2
Red-winged Blackbird	14	9	2	5	4		2		1	37
Baltimore Oriole	2	2	5		1					10
Common Grackle	3									3
American Goldfinch	1									1
Song Sparrow	4	2	1		2	1				10
Northern Cardinal	20	2	6	1		2			1	32
Warbling Vireo		2	1	1						4
Prothonotary Warbler	1		2							3
Yellow Warbler	17	13	4	2	1					37
Com. Yellowthroat	8	6	5	5		2	2		1	29
Gray Catbird	36	18	9	7	2	3				75
Carolina Wren	4	2								6
Black-cap. Chickadee		1								1
House Wren	4		1							5
American Robin	3	3	1	1	2					10
Total	121	62	38	22	12	9	4	0	3	

Table 27. Banding year of returning birds captured at Shaker Lakes study site, 2008.

Species	2007	2006	2005	2004	2003	2002	2001	Total
Hairy Woodpecker	1							1
Downy Woodpecker		1						1
Blue Jay		1						1
Brown-headed Cowbird	1							1
Baltimore Oriole	1							1
American Goldfinch	3		1					4
White -th. Sparrow		1	1					2
Song Sparrow	6	1	1				1	9
Northern Cardinal			1	1				2
Warbling Vireo		1						1
Yellow Warbler	1							1
Gray Catbird	3	2			1			6
White-breasted Nuthatch			2					2
Black-capped Chickadee	2	1						3
Total	18	8	6	1	1	0	1	35



Table 28. Banding year of returning birds captured at Petersburg study site, 2008.

Species	2007	2006	2005	2004	2003	2002	Total
Downy Woodpecker	1	2	1				4
Blue Jay	1						1
Song Sparrow	1						1
Northern Cardinal	2		2			1	5
Rose-breasted Grosbeak	2						2
Gray Catbird	1			1			2
Black-capped Chickadee	4						4
American Robin	2						2
Total	14	2	3	1		1	21

Table 29. Foreign recoveries of study banded birds since last progress report.

Species	Band Number	Band Date	Band Location	Recovery Date	Recovery Location*
Mourning Dove	2003-13440	09-15-07	Navarre	09-02-08	Ohio 412-0830
Blue Jay	1232-80362	05-07-07	Navarre	11-01-08	Quebec 465-0755
Common Grackle	1603-49437	10-13-07	Navarre	06-25-08	Ohio 413-0830
American Goldfinch	2400-40008	10-05-07	Shaker Lakes	08-25-08	Ohio 412-0813
Northern Cardinal	1891-65639	07-13-07	Navarre	01-05-08	Ohio 413-0830
Yellow Warbler	2480-23424	05-19-07	Navarre	05-22-08	Pennsylvania 420-0811
Veery	2281-41981	05-23-07	Navarre	05-30-08	Quebec 464-0711
American Robin	1232-80431	05-04-08	Navarre	07-05-08	Ohio 413-0825

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

Table 30. Spring fat composition comparisons of selected species for 2007 and 2008, Navarre.

Sign. Higher 2008	Non-sign. Higher 2008	Sign. Higher 2007	Non- sign. Higher 2007
Yellow-bellied Flycatcher	Cape May Warbler	Golden-cr. Kinglet	Swamp Sparrow
Traill's Flycatcher	Bl.-gr. Gnatcatcher		Indigo Bunting
Least Flycatcher	Hermit Thrush		House Wren
Wh.-throated Sparrow			
Lincoln Sparrow			
Red eyed Vireo			
Black & White Warbler			
Nashville Warbler			
Tennessee Warbler			
Yellow Warbler			
Myrtle Warbler			
Magnolia Warbler			
Chestnut-sided Warbler			
Bay-breasted Warbler			
Blackpoll Warbler			
West. Palm Warbler			
Ovenbird			
No. Waterthrush			
Mourning Warbler			
Common Yellowthroat			
Wilson's Warbler			
Canada Warbler			
American Redstart			
Gray Catbird			
Ruby-cr. Kinglet			
Veery			
Gray-ch. Thrush			
Swainson's Thrush			

Table 31. Fall fat composition comparisons of selected species for 2007 and 2008, Navarre.

Sign. Higher 2008	Non-sign. Higher 2008	Sign. Higher 2007	Non- sign. Higher 2007
Swamp Sparrow	Red-eyed Vireo		Wh.-throated Sparrow
Blackpoll Warbler	Black & White Warbler		Cape May Warbler
Ovenbird	Myrtle Warbler		Magnolia Warbler
American Redstart	Gray Catbird		Common Yellowthroat
Golden-cr. Kinglet	House Wren		
Swainson's Thrush	Ruby-cr. Kinglet		
Hermit Thrush	Gray-ch. Thrush		

Figure 1. Migration field sites, 1989- 2008.

