

## **Project 1016: *Santa Ana Watershed Vireo Monitoring and Breeding Bird Surveys***

### **Avian Monitoring and Management Work Plan Proposed for 2011-2013 by SAWA Biologists**

SAWA biologists will play an active role in the watershed program, managing field projects involving avian, herpetological, and small mammal populations. SAWA's proposed project, "Santa Ana Watershed Vireo Monitoring and Breeding Bird Surveys" will focus on the organization's avian programs. Biologists will monitor invasive removal projects to protect both endangered and the more common wildlife species and manage a monitoring program for the endangered Least Bell's Vireo that includes surveys, nest monitoring, and cowbird management. Management strategies to improve environmental conditions for the vireo and other endangered or sensitive species will be implemented.

The biological staff will include 1 Lead Biologist, 1 Field Biologist II, and 5 Field Biologists, and 2 half-time Natural Resource Specialists, both with bachelor's degrees in biology.

#### **Least Bell's Vireo Monitoring**

Intensive nest monitoring will be conducted at several sites in the watershed: the San Jacinto River, San Timoteo Canyon, Mockingbird Canyon, March Stephens' Kangaroo Rat Preserve, Temescal Canyon, Santiago Creek at Irvine Regional Park, and along the Santa Ana River in Norco, Hidden Valley Wildlife Preserve, and Anza Narrows Park. Monitoring begins in mid-March and ends around August. Riparian habitat is walked and territories of the endangered bird are mapped with GPS. Frequent trips are made to these sites to determine breeding status and to locate and monitor nests. The breeding cycle for one nesting pair is approximately 33 days. A pair of vireos may double brood and may try up to 5 times to successfully fledge young. More than 3,200 field hours may be logged monitoring vireos during one season. Biologists will be in the field between dawn and late afternoon 5 days per week during the season. Once territories are located, birds will be observed for nesting behaviors. Nests will be checked approximately every 7 days to remove the chicks or eggs of cowbirds, and to document vireo reproductive success. Biologists operate on a buddy system. They usually work alone but check in and out with an assigned "buddy" every field day for safety reasons.

Previous results of our vireo management program were used by the US Fish and Wildlife Service in its five-year assessment of the status of the Least Bell's Vireo. The 2009 Vireo and Flycatcher Management Report is attached as Appendix A and contains 10 years of SAWA's vireo, flycatcher, and cowbird management activities.

#### **Cowbird Trapping/Management Program**

Control of the Brown-headed cowbird is integral to the vireo management program. Each biologist will manage the cowbird trapping program at his/her vireo sites. Up to 8

seasonal assistants will be hired to service the approximately 50 traps throughout the watershed. The assistants are trained in bird identification and handling. An administrative orientation will be held for the seasonal employees immediately after hiring.

Cowbird traps will be deployed in late February and opened then or in early March, before the season begins. Most of the traps will be closed by the end of July. However, those traps still catching cowbirds will remain open through the fall. Traps deployed at the San Jacinto dairies will be kept open throughout the winter because winter trapping usually catches a few thousand cowbirds. Traps must be serviced 7 days a week by agreement with USFWS and the State of California in order that all non-target birds get released back into the habitat in a timely manner and to ensure that the bait cowbirds have food and water. Assistants report in at the start of the work day to the biologist and check out at the end of the day. This requirement assures the program that the traps have been serviced and provides a safety check for personnel in the field.

### **Cooperative Agreements for Vireo and Cowbird Programs**

The success of our extensive vireo and cowbird management program is due to many public and private entities that have contributed to our efforts by allowing us access to their property. Private property owners in Mockingbird Canyon, San Timoteo Canyon, Norco, Riverside, and San Jacinto greatly aided our efforts to enhance local riparian habitat by allowing us to place cowbird traps on their property. Private companies and public agencies whose cooperation has contributed to the success of SAWA's cowbird management program or to its vireo management program include 3M, the Green River Golf Club, Paradise Knolls Golf Course, River Trails Stables in Norco, Canyon RV Park, KB Home, Fisherman's Retreat in San Timoteo, Lake Elsinore West Marina and RV Resort, San Jacinto Wildlife Area, the County of Riverside Regional Parks and Open Space District, State of California Department of Parks and Recreation, City of Riverside Public Works Department, County of Riverside Department of Transportation, Elsinore Valley Municipal Water District, Railroad Canyon Water Treatment Facility, Western Municipal Water District, Gage Canal, Eastern Municipal Water District, the Center for Natural Lands Management, and Harbor, Beaches, and Parks, County of Orange.

### **Breeding Bird Surveys (including vegetative analyses)**

Each biologist will be responsible for a bird study plot on which both breeding bird and winter bird surveys will be done. These sites will be located where invasive plants have been or will be removed. Study sites are a minimum of 25 acres of riparian habitat. Eight surveys will be done at each site between mid February and the end of July. Repeated surveys during the season are necessary for determining territorial and breeding status. Surveys will begin in the early morning. Surveys usually take 2 to 3 hours but may last longer given that vireo management may be done during this time. All birds exhibiting breeding behavior will be mapped per the Resident Bird Count protocol of the Cornell Laboratory of Ornithology (Attachment 1, Pages 7-10 of the PDF). Results will be published in the Institutes of Bird Populations by PRBO Observatory and the Cornell

Laboratory of Ornithology (Attachments 2 & 3, Pages 11-27 of the PDF). A baseline vegetative analysis will be conducted for new plots and vegetative analysis of current plots will be conducted every few years as appropriate for the change in habitat and the scale of measurement. California Rapid Assessment Method (CRAM) analyses are also done on each plot. Plots to be surveyed in 2011 will be: San Jacinto River, San Timoteo, Mockingbird Canyon, the Santa Ana River at Van Buren Blvd., at Norco, and at Corydon and Bluff Streets, Hidden Valley Wildlife Preserve (2 plots), and Featherly Park.

### **Winter Bird Surveys**

Winter bird surveys will be conducted on the above plots (see Breeding Bird Surveys section above). Winter surveys will be done according to Haven Kolb, "The Audubon Winter Bird-Population Study" (Attachment 4, Page 28 of the PDF). As in the breeding bird surveys, habitat is walked and birds are mapped. Eight visits will be made in the early morning hours and 2 surveys will be made in late afternoon or early evening hours to detect those species more active later in the day. Reports for 2011 will be completed by February 2012.

### **Raptor Surveys**

Raptor surveys will be conducted at four sites: San Jacinto, Lake Perris, Cajon, and San Timoteo Canyon. One survey per month will be done at each site. Surveys are done by car, driven safely and at speeds not to exceed 55 mph. A biologist or field assistant will drive. A second biologist or field assistant with excellent identification skills will map each raptor seen. The car may be stopped at the side of the road to make a difficult identification. The following behaviors will be noted: foraging, flying, perching and any interactions among raptors. Locations of all raptors will be entered into GIS. The survey route in San Jacinto is a replication of a study done in the 1980s and results will be compared to determine any changes in abundance over time. A report will be drafted by the end of calendar year 2011.

In 2008, thirteen raptor species were detected with San Jacinto having the more diverse complement of species. Species detected were Red-tailed Hawk, *Buteo jamaicensis*, Red-shouldered Hawk, *Buteo lineatus*, American Kestrel, *Falco sparverius*, Osprey, *Pandion haliaetus*; Peregrine Falcon, *Falco peregrines*; Prairie Falcon, *Falco mexicanus*; Merlin, *Falco columbarius*; Cooper's Hawk *Accipiter cooperii*, Northern Harrier, *Circus cyaneus*; Swainson's Hawk, *Buteo swainsoni*; Ferruginous Hawk, *Buteo regalis*, Turkey Vulture, *Cathartes aura*; and Golden Eagle, *Aquila chrysaetos*. Biologist Allyson Beckman heads up SAWA's raptor study program. In addition to these raptor surveys, we will survey Chino Hills State Park for the Golden Eagle.

### **California Least Tern**

The nesting population of the endangered California Least Terns at Huntington Beach will be monitored in association with California State Parks, California Department of Fish and Game, and the U.S. Fish and Wildlife Service. This 8.6-acre fenced colony,

located at the mouth of the Santa Ana River, has been set aside for the endangered California Least Tern. The USFWS asked SAWA to take over monitoring of this colony 3 years ago. The colony will be visited twice a week between mid-May and the end of July to count nests, eggs, and fledglings, and to note hatchings, depredation, and abandonment of nests and eggs. Three to four biologists participate in each survey and will use individual 'blinds' upon entering the colony. The blinds prevent the entire colony from flushing upon the approach of humans. Assigned routes through the colony will be walked. Nests will be mapped. Nests will be marked with 2 tongue depressors, marked with a unique nest number, to the south and west approximately 2 ft. from the nest. The number of eggs or chicks will be documented at each visit. Results will be reported to the Department of Fish and Game via its formatted results file before December 31. An annual report will be submitted to USFWS by December 31.

Management of the Least Tern will also include the preparation of a new site on the Tern Island in the Santa Ana Marsh in cooperation with the Army Corps of Engineers. This island was originally meant to be a tern nesting site but funds were not available and it has remained underutilized for many years. SAWA took the lead in preparing the site for nesting by sponsoring a volunteer Tern Island Weed Pull Day in December 2008. Vegetation management continued in 2009. The site was not used by Least Terns in 2009 but the site management will continue.

### **Santa Ana River Levee Surveys**

Spring and winter surveys on avian utilization of the Santa Ana River from Weir Canyon Road in Yorba Linda to Chapman Avenue in Orange will be conducted. This study is an examination of the use of the constructed sand berms at the Orange County Water District's recharge basin. Biologists drive the levee, stopping to count all birds observed in the river and, during the spring counts, to document nesting behavior. Surveys take place approximately every 2 weeks. Surveys begin around 8 a.m. and end between 10 a.m. and noon. The 2010 spring survey (report in progress) detected many nesting Black-necked stilts, *Himantopus mexicanus*; Killdeer, *Charadrius vociferans*; Wood Ducks, *Aix sponsa*; and Mallards, *Anas platyrhynchos*. The winter 2009-2010 report is attached.

### **Focal Species Surveys**

Because of the success of the vireo management program, SAWA biologists are developing a program to monitor sensitive species in the watershed. While not listed, many species are declining due to habitat loss or degradation. These species are listed by the State of California as Species of Concern and by the Western Riverside County Multiple Species Habitat Conservation Program as Focal Species. SAWA biologists will continue to document the presence of these species in the watershed during the vireo monitoring efforts and the breeding and winter bird surveys. Sensitive species detected in 2009 include the Yellow Warbler, *Dendroica petechia*; and the Yellow-breasted Chat, *Icteria virens*. A minimum of 424 Yellow Warblers and 210 Yellow-breasted Chats were detected in the watershed in 2009. SAWA will continue to map the presence of the Burrowing Owl, *Athene cunicularia*. We will document the presence of the San Diego Coast Horn Lizard, *Phrynosoma coronatum blainvillii*, in the watershed through a study

of transects established in Featherly Park, Hidden Valley Wildlife Preserve, Goose Creek Golf Club in Norco, Chino Hills State Park, Gavilan Hills, and Rancho Cucamonga. Field work will also be done on the Loggerhead Shrikes, *Lanius ludovicianus*; and rufous-crowned sparrow, *Aimophila ruficeps*. Other sensitive species will be studied opportunistically and major efforts may be made.

SAWA biologists participate in multi-agency working groups for Tri-colored Blackbird, *Agelaius tricolor*. Melody Aimar, Biologist II, leads the Riverside/San Bernardino sub-working group for the recovery of the Cactus Wren, *Camphylorhynchus brunneicapillus*.

Some focal species activities will be done in partnership with the Western Riverside County Multi-species Habitat Conservation Plan. In 2011 SAWA plans to participate in surveys for sensitive avian riparian and coastal sage species, including the Yellow Warbler, Yellow-breasted Chat, Yellow-billed Cuckoo, California Gnatcatcher, *Polioptila californica*, Bell's Sage Sparrow, *Amphispiza belli*, Rufous-crowned Sparrow, *Aimophila ruficeps*, and Cactus Wren.

SAWA biologists will support biological activities at the Chino Creek Wetlands Park at the Inland Empire Utilities Agency. Biologist David McMichael monitored 25 Tree Swallow, *Tachycineta bicolor*, nesting boxes at the ponds in the park in 2009. Twenty-one of the boxes were used for an 84% utilization rate. Nesting success was 93% and a minimum of 93 fledglings was confirmed.

Biologists will continue to write fact sheets on the status and distribution of endangered, threatened, or other sensitive species. These information sheets are being developed for community outreach to educate the public on the presence and the needs of wildlife in the watershed. New accounts developed in 2009 include the rubber boa, and San Diego Pocket Mouse. Fact sheets on other species can be found on the SAWA website, sawatershed.org, and include the Orange-throated Whiptail, Southwestern Willow Flycatcher, *Empidonax traillii extimus*, Cactus Wren, Tri-colored Blackbird, Cooper's Hawk, *Accipter cooperii*, Loggerhead Shrike, *Lanius ludovicianus*, Osprey, *Pandion haliaetus*, Yellow Warbler, Rufous-crowned Sparrow, , San Diego Horned Lizard, Arroyo Toad, *Bufo californicus*, Western Spade foot Toad, *Spea hammondi*, Western Red Bat, *Lasiurus blossevillii*, and Stephen's Kangaroo Rat, *Dipodomys stephensi*. A fact sheet on the noxious weed, bladder flower, *Araujia sericifera*, is also available.

### **Information Sharing Activities of SAWA**

SAWA biologists will continue to provide information and advice to agencies and project developers. SAWA will work with the U.S. Army Corps of Engineers to mitigate the project to reinforce the Santa Ana River downstream of Prado Dam. When originally planned, this section of river contained few vireo territories. In the intervening years the quality of the cottonwood-willow forest has dramatically increased with a commensurate increase in the number of vireo territories. Terry Reeser will lead this project. SAWA will work with the developers at Mockingbird Canyon Estates II to protect the riparian corridor adjacent to its construction zone. SAWA will work with the California Department of Fish and Game and the Goose Creek Golf Club to develop a mitigation

plan. SAWA will work with local agencies as problems arise, e.g., we cooperated with the City of Chino Hills on landscaping projects that impacted local owls.

Biologists will participate in professional society activities and community public outreach. SAWA assisted “Keep America Beautiful” in its annual clean-up work in Temescal by providing information on the presence of endangered birds in the clean up area. SAWA participated in environmental education for high school students at the Prado Wetlands.

Biologists will create final reports on seasonal activities including reports on the 2011 Least Bell's Vireo and the Southwestern Willow Flycatcher, which contains 10 years of monitoring and management activities, the 2011 California Least Tern, the 2011 Santa Ana River Levee Surveys, 2011 Raptor Surveys, and numerous progress reports on focal species activities, including new focal species information data sheets for the public.

Biologists will continue to participate in conferences on the status of the Southwestern Willow Flycatcher, the Least Bell's Vireo, and the California Least Tern at the U.S. Fish and Wildlife Service offices in Carlsbad. Biologists will attend the monthly Multispecies Habitat Conservation Plan meetings for reserve land managers and the Wildlife Society Western Section meeting to be held in Riverside in 2011.

## **Summary**

SAWA biologists will continue our vireo and cowbird management programs and continue to work with public and private agencies to resolve issues dealing with wildlife management. SAWA biologists will investigate sensitive species, leading to the implementation of adaptive management strategies to improve their status. Issues that need to be addressed include vegetation management during the breeding season and off-road vehicle use. SAWA will continue to work to educate the public on wildlife and habitat needs.

# INSTRUCTIONS FOR THE BREEDING BIRD CENSUS

Cornell Laboratory of Ornithology  
Resident Bird Counts  
159 Sapsucker Woods Road  
Ithaca, New York 14850  
(607) 254-2413

The Breeding Bird Census (BBC) is a standardized monitoring program that estimates breeding bird densities in specific habitat types throughout North America. The program uses the spot-mapping technique and is best suited for territorial species with relatively small home ranges. For historical information on the program, refer to the back cover of the Journal of Field Ornithology (Suppl.) 61:(1990).

Anyone who is able to identify, both by sight and sound, all bird species likely to be encountered on a study plot is qualified to participate. The goals of the program require that participants pay careful attention to the guidelines for establishing a site, characterizing habitat, and to the censusing methodology. Since the value of a plot's data increases with each annual census, participants are encouraged to conduct counts on an annual basis. Annual results are entered into the BBC data base at the Cornell Laboratory of Ornithology and are published in the Journal of Field Ornithology, the official publication of the Association of Field Ornithologists. Along with contributing to a national conservation program and having results published in a professional journal, censusing a plot over time allows participants to learn about the natural history of the location and the ecology of its avian inhabitants.

Characterizing a plot's habitat is an essential component of the program. To facilitate consistent and standardized habitat descriptions, participants are required to complete a **Habitat Classification Form**, which may be obtained from the above address. All of the information on this form may be collected during a field visit, and from a topographic map. We recommend that an additional quantitative survey of the plot's vegetation be conducted to augment the data obtained for the above form. Quantitative vegetation surveys maximize the utility of bird census data collected on an annual basis by establishing a baseline from which changes in a plot's vegetation can be evaluated. Over the long term, these data enable changes in bird populations to be related to measurable changes in habitat. Instructions and data forms for quantitative surveys may be obtained from the above address.

## Selecting a Plot

Studies of birds in native habitats are invaluable because these habitats are disappearing rapidly. Bird counts in urban, suburban, or other highly modified landscapes also are important because these habitats now dominate the landscape in certain regions. Although convenience and accessibility are important considerations when selecting a plot, several criteria need to be met. To ensure that a plot will fulfill the program's goals, we request that before establishing a site you submit a description of the proposed plot (e.g., size, general habitat, etc.) a sketch of the plot indicating features such as streams, ponds, cliffs, changes in habitat, roads, etc., and a xerox copy of the plot's location on a topographic map. Below are the basic criteria that need to be assessed when selecting a plot.

1. Plots in forested habitats must be at least 10 ha (25 acres) in size (preferably 25 ha), and those in open habitats such as farmland or grassland must be at least 60 ha (150 acres).

2. Plots should be square if possible. Linear, narrow plots should be avoided.
3. A plot's habitat should be fairly uniform (e.g., forest, grassland, marsh, but not a combination of those habitats). Plots **surrounded** by the same habitat as that found within the plot are preferred because distinct changes in habitat along plot edges usually attract bird species different from those associated with the plot's main habitat.
4. An observer must be able to walk through the entire plot.

### **Gridding the Plot and Making Maps**

Knowing your own location during a census is essential for keeping track of the birds within a plot. Gridding the plot and creating a map facilitates efficient travel through a plot and enables observers to more accurately plot the locations of individual birds. Establishing a grid of field markers at regular intervals is the first step in creating a map. Use a compass and a measuring tape or measured rope to lay the grid. Stakes with brightly painted bands or colored, plastic tape are useful grid markers, or tape may be wrapped around tree trunks at eye level. Label each grid marker with a unique letter/number combination (e.g., A1, A2, A3, etc.). The winter season, when deciduous plants are bare, is the best time to establish the grid. The distance between grid points should be approximately 50 meters in closed, forested habitat and up to 100 meters in open habitat.

Grid points should be superimposed on a base map that includes outstanding features such as trails, treefall gaps, streams, etc. This reference map is particularly helpful if, in the future, responsibility for the plot is transferred to another observer. For census visits, use a sheet of paper that includes only the grid system, thereby leaving room for plotting the locations of individual birds, and space to record the date, start and end time, temperature, weather, and observer(s). Use a new grid map for each visit.

### **Organization of the Counts**

**Season** - The sampling period should encompass the nesting cycle of the majority of species found on the plot. Intensive sampling should be limited to 4-6 wk. Additional visits before or after this period should be used only for those species whose breeding cycles begin earlier or end later than the majority of species.

**Time of day** - Visits should be made at times when singing activity is greatest, usually early morning or late afternoon/early evening. The recommended start time is within 30 minutes after local sunrise.

**Visit duration** - Visits should be long enough to maximize detection of individuals of all breeding species. General guidelines for visit duration are 10-12 min/ha in forested habitats and 4-5 min/ha in open habitats. All parts of a plot should be covered during one visit; large forested plots (> 20 ha) may be divided in half, with each half covered on alternate days. Partial visits should be avoided.

**Route** - To insure even coverage of the plot across all visits, different routes, with different start and end points, should be followed during each visit. A series of parallel routes should be followed that enable the observer to concentrate on detecting only those birds occurring within 50 m of either side of the observer in closed habitats (e.g., forest), and within 100 m in open habitats. Establishing a grid on the plot facilitates such a system, and provides a convenient way to follow alternate routes.

**Number of visits** - The minimum number of visits needed is 8, 12 is recommended.

**Number of observers** - To reduce disturbance and increase detectability, only one or two people should visit a plot at one time.

**Annual counts** - Counts should be operated consistently over time. Once the minimum recommended standards have been achieved, the same number of visits, start and end dates, and starting times, should be maintained from year to year.

**Conditions** - Counts should not be conducted during heavy rains or high winds (Beaufort wind factor > 3; see below), for those conditions severely reduce detectability.

#### Method of Recording

Before beginning a census, be sure to record the date, start time, temperature, wind, and snow depth (high altitude and high latitude plots often receive snow well into the breeding season). Air temperature should be recorded in the shade and from the same location each census. If weather data is not taken directly on site, identify on the BBC data form the source for your data and the distance between the source and the plot.

The standard methodology for BBC field work is detailed in Robbins (1970). With a visit map on a clipboard, survey the entire plot with a minimum of duplication. Mark the approximate position (and sex when possible) of birds as they are encountered (visually and/or aurally). Record all birds using the plot. Birds simply flying over the plot should not be included. Maintaining a table that lists the species encountered by visit makes summary work at the end of the study much easier. We recommend that the Bird Banding Laboratory's four-letter abbreviated bird names be used for recording observations on grid sheets, and that the standard, international symbols given in Robbins (1970) be used for recording sightings, vocalizations, and interactions among individuals. Copies of both may be obtained from the address at the top of page 1.

#### Completing the Breeding Bird Census Form

The BBC data form has been revised for 1991. The form is designed to facilitate entry of the data into the BBC computer data base. It is important that the entire form be completed. New participants also are required to complete a **Habitat Classification Form** (see above).

**Compiler(s):** The name(s) given here should be those that will appear in the publication's heading. A person's name must be provided. Those containing only the name of an organization will not be accepted.

**Plot Name:** Give the plot a concise name that best describes important gross features such as the general habitat type (forest, prairie, marsh, etc.), dominant overstory species, and relative age of plot (successional, second-growth, mature, old-growth). Examples include, "Isolated Beech - Maple Woods," and "Mature Longleaf Pine Forest."

**Site Name:** The local name of the study area (e.g., Sapsucker Woods).

**Latitude and Longitude:** This may be determined from a U.S.G.S. topographic map of the area.

**U.S.G.S. Quad:** The name of the U.S. Geological Survey map for the area.

**Plot Size:** Measure plot size carefully, either from actual ground measurements or an aerial photo. Provide data in hectares and round to the nearest 0.1 ha.

**Years the Results have been Published:** Applies only to counts published in Bird Lore, Audubon Field Notes, American Birds, and Journal of Field Ornithology.

**Reference for most recent Habitat Description:** Provide reference of the most recent complete habitat description that appeared in one of the above journals [e.g., Journ. Field Ornithol. 61 (suppl.):390-392. (1990)].

**Coverage and Weather Summary:** All that is needed to complete the Weather Summary is a thermometer. A **Beaufort Wind Scale** is provided on the data form for estimating wind conditions. If available, obtain more extensive data from a local weather station on total precipitation for the period and on deviations in temperature and precipitation from the long-term average. Report this information (including source of data) in the space given for a narrative description of weather conditions, and **please provide Metric Units**. Coverage data is essential, for it provides researchers a means to compare the effort expended among observers. Forms with incomplete data on coverage will not be considered for publication.

**Species Count:** List species in order of abundance. Round territories to nearest 0.5. Use a "+" if  $\leq 25\%$  of a species' territory is included within the plot.

**Nests and Fledglings:** If nests or fledglings are found, indicate the number of each in the shaded box adjacent to the species list.

**Visitors:** Bird visitors should be only those species that potentially could nest on the study site, not migrants or vagrants. Visitor lists should be ordered according to the American Ornithologist's Union Checklist (sixth ed.).

**Remarks:** Keep remarks concise, in a style suitable for publication, and limited to factors that may affect populations on your study plot (e.g., striking population fluctuations, observations of predators, nest parasitism, and potential sources of disturbance to birds).

#### References

Engstrom, R.T. 1981. The species-area relationship in spot-map censusing. Studies in Avian Biology No. 6:421-425.

Robbins, C.S. 1970. Recommendations for an international standard for a mapping method in bird census work. Aud. Field Notes 24:723-726.

\_\_\_\_\_, D.K. Dawson, and B.A. Dowell. 1989. Habitat area requirements of breeding forest birds of the middle Atlantic states. Wildlife Monogr. No. 103.

Supplies for gridding plots and quantifying vegetation may be obtained from:

**Forestry Suppliers Inc.**, P.O. Box 8397, Jackson, MS 39284. 1-800-647- 5368.

**Ben Meadows Company**, 3589 Broad St., Atlanta, GA 30341. 1-800-241-6401.

## THE 2005 AND 2006 NORTH AMERICAN BREEDING BIRD CENSUS WITH ADDITIONS FOR 2003 AND 2004

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*Abstract.* The Breeding Bird Census (BBC) is the longest, continuously-run bird monitoring program in North America. Here we publish BBC reports for 2005 and 2006, with an additional nine reports from 2003 and 2004 that were not included in the previous publication (Gardali and Lowe 2007) due to late submission. Breeding Bird Censuses were conducted at 21 sites in 2005 and 20 in 2006.

### EL CENSO DE AVES REPRODUCTORAS DE NORTEAMERICA DE 2005 Y 2006, CON DATOS ADICIONALES DE 2003 Y 2004

*Resumen.* El Censo de Aves Reproductoras (BBC) es el programa de monitoreo de aves continuo más longevo de Norteamérica. Publicamos los informes del BBC para 2005 y 2006, con nueve informes adicionales de 2003 y 2004 que no se incluyeron en la anterior publicación (Gardali y Lowe 2007) por retrasos en su elaboración. Se llevaron a cabo conteos del BBC en 21 sitios en 2005, y 20 en 2006.

### INTRODUCTION

The Breeding Bird Census (BBC) is the breeding season component of the Resident Bird Counts (RBC), which also include the Winter Bird Population Study. The BBC uses the spot- or territory-mapping method to estimate densities of breeding birds. More information on methods, history, and uses of BBC data can be found in Lowe (2006).

A total of 41 BBC reports were submitted for 2005 and 2006, similar to 2003 and 2004 (47 reports) but down considerably from 2001 and 2002 (68 reports). The length of effort among censuses ranges from new to 47 yr with the majority being > 30 yr.

Two reports from 2003 and 2004 are also included herein as they were received too late for publication in *Bird Populations* 8.

Please contact Tom Gardali (tgardali@prbo.org) for BBC instructions and data forms. To understand layout of the reports, see Gardali and Lowe (2006).

### THE 2003 AND 2004 BREEDING BIRD CENSUS

Here, for years 2003 and 2004, we add an additional two reports (Table 1), which were submitted too late for inclusion in volume 8 of *Bird Populations*. These two reports are from

California and they raise the total reports for 2001 and 2002 to 22 and 25, respectively.

plot (2006, report #10) being published for the first time.

### THE 2005 AND 2006 BREEDING BIRD CENSUS

A total of 41 Breeding Bird Census reports are included, 21 in 2005 and 20 in 2006 (Tables 2 and 3). The counts come from 7 U.S. states, 1 Canadian province, and the District of Columbia. Similar to 2003 and 2004, California, Connecticut, and Ontario each had the most counts; 7 in 2005 and 8 in 2006 in California, 5 in 2005 and 5 in 2006 in Connecticut, and 3 in 2005 and 3 in 2006 in Ontario. Included here is one

### LITERATURE CITED

- GARDALI, T., AND J. D. LOWE. 2006. Reviving resident bird counts: the 2001 and 2002 Breeding Bird Census. *Bird Populations* 7: 90-95.
- GARDALI, T., AND J. D. LOWE. 2007. The 2003 and 2004 North American Breeding Bird Census with additions for 2001 and 2002. *Bird Populations* 8:116-120.
- LOWE, J. D. 2006. An annotated bibliography of Breeding Bird Census publications. *Bird Populations* 7:128-135.

TABLE 1. Summary of Breeding Bird Census reports from 2003 and 2004 for sites not included in Gardali and Lowe (2007).

Habitat (Year)	State/ Prov.	Author(s)	Plot Size (ha)	Terr. per 40 ha	Num. spp.	Hrs. Obs.	Yrs. Study
<b>Non-forested Wetlands (2003)</b>							
22. Desert Riparian-Freshwater Marsh	CA	E. A. Cardiff	15.4	356	30	26.0	26
<b>Non-forested Wetlands (2004)</b>							
25. Desert Riparian-Freshwater Marsh	CA	E. A. Cardiff	15.4	332	29	24.5	27

TABLE 2. Summary of Breeding Bird Census reports from 2005.

Habitat	State/ Prov.	Author(s)	Plot Size (ha)	Terr. per 40 ha	Num. spp.	Hrs. Obs.	Yrs. Study
<b>Broadleaf Forests</b>							
1. Mixed Hardwood Poletimber	CT	D. Rosgen	8.5	586	51	19.0	39
2. Second-Growth Hardwood Forest	CT	D. Rosgen	10.1	269	38	15.0	39
3. Mixed Upland Broadleaf Forest	DC	M.E. D'Imperio	14.2	321	28	35.0	47
4. Red Oak-Ironwood Savannah	ON	B. Gendreau	12.0	457	30	34.5	7
5. Red Oak-Sugar Maple Savannah	ON	B. Gendreau	10.5	623	31	36.7	6
6. Oak-Maple-Poplar Hollow	PA	L. Ingram	11.3	71	9	17.7	13
7. Virgin Hardwood Swamp Forest	SC	M. Dawson	8.9	393	19	11.4	14
8. Mature Maple-Beech-Birch Forest	TN	H. Wilson et al.	10.2	216	9	21.2	13
<b>Needleleaf Forests</b>							
9. Tamarack Slough	ON	C. Friis	8.8	627	34	26.4	9
<b>Broadleaf/Needleleaf Forests</b>							
10. Climax Hemlock-White Pine Forest with Transition Hardwoods	CT	D. Rosgen	10.5	371	36	20.0	39
11. Young Mixed Hardwood-Conifer Stand	CT	D. Rosgen	8.5	306	38	12.0	28
12. Riparian Woodland	ID	S.R. Robinson	8.9	200	20	14.0	9
<b>Mixed Habitats</b>							
13. Riparian Scrub Basin	CA	M. Aimar	12.7	526	25	22.1	2
14. Streamside Riparian Woodland I	CA	T. Reeser	17.8	213	21	26.5	2
15. Streamside Riparian Woodland II	CA	S. Hoffman	12.3	429	32	19.1	2
16. Forest Wetland and Bordering Cliff and Talus	NY	L. Bowdery et al.	22.3	105	30	27.2	3
<b>Non-forested Wetlands</b>							
17. Desert Riparian-Freshwater Marsh	CA	E.A. Cardiff	15.4	358	35	28.0	28
18. Shrubby Swamp & Sedge Hummocks	CT	D. Rosgen	8.1	1032	48	26.0	39
<b>Shrublands</b>							
19. Coastal Scrub	CA	S. Jennings	8.1	311	19	201.6	31
20. Disturbed Coastal Scrub A	CA	C. Snow, S. Jennings	4.7	357	28	149.0	31
21. Disturbed Coastal Scrub B	CA	K. Neijstrom, S. Jennings	8.1	356	22	211.3	31

TABLE 3. Summary of Breeding Bird Census reports from 2006.

Habitat	State/ Prov.	Author(s)	Plot Size (ha)	Terr. per 40 ha	Num. spp.	Hrs. Obs.	Yrs. Study
<b>Broadleaf Forests</b>							
1. Mixed Hardwood Poletimber	CT	D. Rosgen	8.5	621	50	19.0	40
2. Second-Growth Hardwood Forest	CT	D. Rosgen	10.1	277	39	14.5	40
3. Hardwood Swamp Forest	SC	M.R. Dawson	8.1	375	19	13.7	14
4. Mature Maple-Beech-Birch Forest	TN	L.M. Lewis	10.2	161	8	13.3	14
<b>Broadleaf/Needleleaf Forests</b>							
5. Climax Hemlock-White Pine Forest with Transition Hardwoods	CT	D. Rosgen	10.5	381	42	21.0	40
6. Young Mixed Hardwood-Conifer Stand	CT	D. Rosgen	8.5	322	35	11.0	29
7. Riparian Woodland	ID	S.R. Robinson	8.9	227	20	11.8	10
8. Mixed Upland Forest	NY	L. Bowdery et al.	42.3	171	43	33.1	8
8. Intergrading Dune-Swale Savannah	ON	C-A. Wegenschimmel	11.0	135	11	49.7	9
<b>Mixed Habitats</b>							
10. Riparian Scrub	CA	J. Coumoutso	14.6	205	19	16.8	New
11. Riparian Scrub Basin	CA	M. Aimar	12.7	485	28	20.2	3
12. Streamside Riparian Woodland I	CA	T. Reeser	17.8	352	24	38.8	3
13. Streamside Riparian Woodland III	CA	S. Hoffman	12.3	493	31	27.0	3
14. Field, Ridge, Shrubby Trees, and Woods	ON	M.F.G. Clark	5.8	641	16	12.1	11
15. Sedge-Tamarack Dune Pond	ON	M. Boyd	10.0	420	25	39.5	5
<b>Non-forested Wetlands</b>							
16. Desert Riparian-Freshwater Marsh	CA	E.A. Cardiff	15.4	436	31	25.5	29
17. Shrubby Swamp and Sedge Hummocks	CT	D. Rosgen	8.1	1007	52	27.0	40
<b>Shrublands</b>							
18. Coastal Scrub	CA	J. Musina et al.	8.1	212	21	236.4	32
19. Disturbed Coastal Scrub A	CA	E. Porzig, S. Jennings	4.7	277	31	143.5	32
20. Disturbed Coastal Scrub B	CA	S. Jennings	8.1	259	24	203.9	32

## BREEDING BIRD CENSUS: 2004

### 1. MIXED HARDWOOD POLETIMBER BOSQUE MIXTO MADERERO

DAVID ROSEGEN  
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**Site Number:** CT1265009. **Location:** Connecticut; Litchfield Co.; Litchfield; White Memorial Foundation–Wheeler Hill; 41°42'N, 73°13'W; Litchfield Quadrangle, USGS. **Continuity:** Established 1965; 38 yr. **Size:** 8.5 ha. **Description of Plot:** See *Aud. Field Notes* 19:609–610 (1965), *J. Field Ornithol.* 64(Suppl.):36 (1993), and 2003 report (this volume). Succession is continuing, including the area that was logged last year. Non-native, invasive species of vines, shrubs, and herbaceous plants are continuing to take over despite limited control efforts. White-tailed deer grazing is doing significant damage to the ground cover and some damage to native shrub cover. **Weather:** Mean start temp., 19.3°C (range 11–25°C). This year's weather was ideal for breeding activity. The only exceptions were a few cold nights in May. Overall, temperatures were below average from May through August. May's mean temperature was 15.9°C, June's was 17.7°C, and July's was 20.8°C. No days exceeded 32.2°C. Rain fell on 19 days in May with precipitation totaling 11.2 cm (about normal). During June, there were 12 days with rainfall totaling 5.7 cm (5 cm below average). Most of June's rainfalls were light, not exceeding 1.3 cm each. During July, there were 14 wet days with total precipitation amounting to 11.9 cm (1 cm below average). The only significant rainstorm in July (on the 28th) produced 3 cm of rain. **Coverage:** 19.5 h; 10 visits (1 sunrise, 6 sunset); 4, 11, 20, 27 May; 4, 12, 21, 29 June; 10, 19 July; 2004. Maximum number of observers/visit, 3. **Census:** Red-eyed Vireo, 16.5 (78; 1N,22FL); Veery, 13.5 (64; 23FL); Ovenbird, 13.0 (61; 1N,22FL); Gray Catbird, 12.0 (56; 5N,30FL); American Redstart, 9.0 (42; 5N,24FL); Eastern Towhee, 7.5 (35; 18FL); Wood Thrush, 6.5 (31; 2N,13FL); American Robin, 5.0 (24; 2N,14FL); Common Yellowthroat, 5.0 (10FL); Black-capped Chickadee, 4.0 (19; 1N,19FL); Chestnut-sided Warbler, 4.0 (1N,6FL); Scarlet Tanager, 4.0 (1N,7FL); Tufted Titmouse, 3.0 (14; 1N,14FL); Yellow Warbler, 3.0 (2N,8FL); Black-and-white Warbler, 3.0 (9FL);

Northern Cardinal, 3.0 (3N,9FL); American Crow, 2.0 (2N,8FL); Baltimore Oriole, 2.0 (1N,4FL); Wild Turkey, 1.5 (6FL); Mourning Dove, 1.5 (1N,3FL); Downy Woodpecker, 1.5 (4FL); Blue Jay, 1.5 (1N,6FL); Song Sparrow, 1.5 (3FL); Red-bellied Woodpecker, 1.0 (2FL); Great Crested Flycatcher, 1.0; Warbling Vireo, 1.0 (2FL); White-breasted Nuthatch, 1.0 (3FL); Cedar Waxwing, 1.0; Blue-winged Warbler, 1.0 (3FL); Rose-breasted Grosbeak, 1.0; Brown-headed Cowbird, 1.0; House Finch, 1.0 (1N,4FL); American Goldfinch, 1.0; Red-tailed Hawk, 0.5; Barred Owl, 0.5 (1N,2FL); Northern Flicker, 0.5; Eastern Wood-Pewee, 0.5; House Wren, 0.5 (5FL); Golden-crowned Kinglet, 0.5; Blue-gray Gnatcatcher, 0.5; Magnolia Warbler, 0.5; Black-throated Green Warbler, 0.5; Eastern Phoebe, +; Eastern Kingbird, +; Yellow-throated Vireo, +; Carolina Wren, +; Purple Finch, +. **Total:** 47 species; 138.0 territories (649/40 ha). **Visitors:** Hairy Woodpecker, Pileated Woodpecker, Fish Crow, Black-throated Blue Warbler. **Remarks:** The number of species breeding in the plot decreased to 47 (from 50 in 2003 and 2002 and 49 in 2001 and 2000). This is equal to the 1994–2003 average. The species composition was similar to previous years except for the loss of Cooper's Hawk, Broad-winged Hawk, Chipping Sparrow, and Common Grackle; all were found last year. New species found were Carolina Wren and Golden-crowned Kinglet. The kinglet had never before shown breeding evidence. The number of territories in the plot increased to 138.0, the second highest total ever recorded; the record was 139.5 in 2002. The number of territories increased by 16 from 2003, with the total being 34 more than the 10-yr average of 104. Species that increased by one or more territories over last year included Red-eyed Vireo (+ 4.0), Veery (+ 3.0), Ovenbird (+ 1.0), Gray Catbird (+ 1.0), American Redstart (+ 4.0), American Robin (+ 1.0), Chestnut-sided Warbler (+ 1.0), Yellow Warbler (+ 1.0), and Baltimore Oriole (+ 1.5). The only species that declined dramatically this year was Eastern Towhee (– 1.5). Red-eyed Vireo remained the most abundant species, but Veery moved into the number two spot this year. **Other Observers:** Eric Adam, John Eykelhoff, John Grabowski, Richard Kania, Marie Kennedy, and Pamela Velez. **Acknowledgments:** Marie Kennedy was instrumental in helping to compile our Breeding Bird Census data this year.

## 2. SECOND-GROWTH HARDWOOD FOREST BOSQUE SECUNDARIO DE MADERAS DURAS

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**Site Number:** CT2765006. **Location:** Connecticut; Litchfield Co.; Morris; White Memorial Foundation–Van Winkle Road; 41°42'N, 73°12'W; Litchfield Quadrangle, USGS. **Continuity:** Established 1965; 38 yr. **Size:** 10.1 ha. **Description of Plot:** See *Aud. Field Notes* 19:590–591 (1965), *J. Field Ornithol.* 64(Suppl.):37–38 (1993), and 2003 report (this volume). **Weather:** Mean start temp., 19.3°C (range 14–26°C). This year's weather was ideal for breeding activity. The only exceptions were a few cold nights in May. Overall, temperatures were below average from May through August. May's mean temperature was 15.9°C, June's was 17.7°C, and July's was 20.8°C. Rain fell on 19 days in May with precipitation totaling 11.2 cm (about average). During June, there were 10 days with rainfall totaling only 5.7 cm (5 cm below average). During July, there were 14 days with precipitation that amounted to a total of 11.9 cm (1 cm below average). **Coverage:** 17.5 h; 10 visits (1 sunrise, 5 sunset); 6, 15, 22, 29 May; 10, 21 June; 2, 9, 19, 30 July; 2004. **Maximum number of observers/visit,** 3. **Census:** Red-eyed Vireo, 13.5 (53; 6FL); Veery, 12.0 (48; 12FL); Ovenbird, 11.5 (46; 13FL); Yellow-bellied Sapsucker, 3.5 (14; 1N,10FL); Black-capped Chickadee, 3.0 (12; 16FL); Tufted Titmouse, 3.0 (1N,11FL); Wood Thrush, 3.0; American Robin, 3.0 (1N,6FL); Scarlet Tanager, 3.0 (4FL); Red-bellied Woodpecker, 2.0 (2N,7FL); American Redstart, 2.0 (3FL); Downy Woodpecker, 1.5 (5FL); Eastern Wood-pewee, 1.5 (2FL); American Crow, 1.5 (1N,7FL); Gray Catbird, 1.5 (2FL); Wild Turkey, 1.0 (6FL); Red-tailed Hawk, 1.0 (1N,2FL); Great Crested Flycatcher, 1.0; Blue Jay, 1.0 (1N,4FL); White-breasted Nuthatch, 1.0 (4FL); Black-and-white Warbler, 1.0 (3FL); Common Yellowthroat, 1.0; Chipping Sparrow, 1.0 (3FL); Northern Cardinal, 1.0 (2FL); Mourning Dove, 0.5; Eastern Phoebe, 0.5; Blue-gray Gnatcatcher, 0.5; Cedar Waxwing, 0.5; Pine Warbler, 0.5; Eastern Towhee, 0.5; Broad-winged Hawk, +; Barred Owl, +; Hairy Woodpecker, +; Northern Flicker, +; Eastern Kingbird, +; Yellow-throated Vireo, +; Chestnut-sided Warbler, +; Louisiana Waterthrush, +; Rose-breasted Grosbeak, +; Brown-headed Cowbird, +; Baltimore Oriole, +; American Goldfinch, +. **Total:** 42 species; 77.5 territories (307/40 ha). **Visitors:** None. **Remarks:** The number of breeding species (42) was similar to last year (41) and is only one less than the 10-yr average. Species found this year but not last year included Red-tailed Hawk, Northern Flicker, and Pine Warbler. The latter two species were visitors last year. Species found last year but not this year included Ruby-throated Hummingbird and Brown Creeper. The total number

of territorial males crashed for no obvious reason. Only 77.5 were counted, compared to 99.5 last year, 99.0 in 2002, and 100.0 in 2001. The previous 10-yr average was 99.0 territories. Red-eyed Vireo remained the most abundant species and only declined by 1.5 territories from last year. Veery was the second most numerous species, declining by only 0.5 territories from last year. Ovenbird dropped to third place with a decrease of 2.0 territories from last year. Wood Thrush, American Robin, and American Redstart also declined. **Other Observers:** Eric Adam, John Eykelhoff, Marie Kennedy, Pamela Velez, Edward Yescott, James Zingo, and Amy Zingo. **Acknowledgments:** Marie Kennedy was instrumental in helping to compile our Breeding Bird Census data this year.

## 3. MIXED UPLAND BROADLEAF FOREST BOSQUE MIXTO DE HOJA ANCHA DE ALTURAS

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Washington DC 20016

**Site Number:** DC1060009. **Location:** District of Columbia; Washington; Glover-Archbold Park; 38°55'N, 77°5'W; Washington West Quadrangle, USGS. **Continuity:** Established 1959; 46 yr. **Size:** 14.2 ha. **Description of Plot:** See *Aud. Field Notes* 14:502–503 (1960). **Weather:** Mean start temp., 13.8°C (range 7–21°C). Six days were clear, one was partly cloudy, and nine were cloudy. **Coverage:** 32.0 h; 16 visits (16 sunrise); 28 March; 3, 7, 9, 17, 24 April; 1, 8, 14, 18, 22, 31 May; 4, 13, 19, 27 June; 2004. **Census:** Carolina Wren, 17.0 (48; 11FL); Northern Cardinal, 11.0 (31; 4FL); Red-bellied Woodpecker, 9.0 (25); Gray Catbird, 8.0 (23; 2FL); Red-eyed Vireo, 6.0 (17); White-breasted Nuthatch, 6.0; Veery, 6.0; Downy Woodpecker, 5.0 (14; 9FL); Northern Flicker, 3.0 (8); Acadian Flycatcher, 3.0; American Crow, 3.0; Eastern Towhee, 3.0; Hairy Woodpecker, 2.0; Blue-gray Gnatcatcher, 2.0 (1FL); House Sparrow, 2.0; Chimney Swift, 1.0; Pileated Woodpecker, 1.0; Eastern Wood-pewee, 1.0; Great Crested Flycatcher, 1.0; House Wren, 1.0; Wood Thrush, 1.0; Song Sparrow, 1.0; Common Grackle, 1.0; Mourning Dove, +; American Robin, +; European Starling, +. **Total:** 26 species; 94.0 territories (265/40 ha). **Visitors:** Mallard, Red-shouldered Hawk, Yellow-billed Cuckoo, Eastern Phoebe, White-eyed Vireo, Blue Jay, Carolina Chickadee, Tufted Titmouse, Northern Mockingbird, Brown-headed Cowbird, House Finch. **Remarks:** The periodical cicadas provided an unusual food source for birds and small mammals this year. Still, even fewer birds were seen on average than last year or previous years. There were few crows, and almost no jays, titmice, or chickadees. The Red-shouldered Hawks nested further north, near the community gardens. There were fewer territories for most species.

4. MATURE BROADLEAF FOREST  
BOSQUE DE HOJA ANCHA MADURA

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**Site Number:** OH1591043. **Location:** Ohio; Hamilton Co.; Hooven; Miami Whitewater Forest; 39°14'42"N, 84°45'38"W; Hooven Quadrangle, USGS. **Continuity:** Established 1991; 10 yr. **Size:** 16.0 ha. **Description of Plot:** See *J. Field Ornithol.* 63(Suppl.):52 (1992) and 65(Suppl.):59 (1994). **Weather:** Mean start temp., 17.9°C (range 14–22°C). **Coverage:** 25.2 h; 10 visits (10 sunrise); 29, 30 May; 5, 6, 12, 13, 19, 20, 27 June; 10 July; 2004. **Census:** Wood Thrush, 16.0 (40; 3FL); Red-eyed Vireo, 12.5 (31); Acadian Flycatcher, 6.5 (16; 1N); Northern Cardinal, 5.5 (14; 2FL); Red-bellied Woodpecker, 5.0 (13); Brown-headed Cowbird, 5.0 (5FL); Tufted Titmouse, 4.5 (11); White-breasted Nuthatch, 4.5; Blue Jay, 4.0 (10); Scarlet Tanager, 4.0; American Robin, 3.5 (9; 6FL); Downy Woodpecker, 3.0 (8); Eastern Wood-Pewee, 3.0; Carolina Chickadee, 2.5; Yellow-throated Vireo, 2.0; Great Crested Flycatcher, 1.5; Carolina Wren, 1.5; Broad-winged Hawk, 1.0; Yellow-billed Cuckoo, 1.0; Hairy Woodpecker, 1.0; Northern Flicker, 1.0; Pileated Woodpecker, 1.0; Ovenbird, 1.0; Louisiana Waterthrush, 1.0; Kentucky Warbler, 1.0; Cooper's Hawk, 0.5; Red-tailed Hawk, 0.5; Ruby-throated Hummingbird, 0.5; Eastern Phoebe, 0.5. **Total:** 29 species; 94.5 territories (236/40 ha). **Visitors:** Wild Turkey, Barred Owl, Blue-gray Gnatcatcher, Hooded Warbler, Summer Tanager, Common Grackle, American Goldfinch. **Remarks:** The total number of territorial males was up from 88.0 in 2003, and within one standard deviation of the mean number from the eight censuses from 1991–98 ( $97 \pm 2.6$ ). This year, two species (Red-eyed Vireo and Brown-headed Cowbird) were present in numbers greater than one standard deviation above their mean from 1991–98. In contrast, six species (Hairy Woodpecker, Eastern Wood-Pewee, Tufted Titmouse, Hooded Warbler, Scarlet Tanager, and Rose-breasted Grosbeak) declined more than one standard deviation from their 1991–98 mean. Of particular concern are Hooded Warbler and Rose-breasted Grosbeak, both absent as breeding species in 2004, compared to  $3.3 \pm 1.2$  and  $2.4 \pm 1.1$  territorial males, respectively, from 1991–98. **Acknowledgments:** We thank John Klein and the Hamilton County Park District for the use of the land.

5. RED OAK–SUGAR MAPLE FOREST  
BOSQUE DE ROBLE ROJO–ARCE DULCE

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**Location:** Ontario; Municipality of Haldimand-

Norfolk; Port Rowan; Long Point National Wildlife Area; 15.3 km W of Long Point Lighthouse; 42°33'45"N, 80°14'30"W; Little Creek Ridges Quadrangle; DEMR. **Continuity:** Established 1973; 7 yr. **Size:** 11.0 ha. **Description of Plot:** See *Am. Birds* 27:967 (1973), *J. Field Ornithol.* 63(Suppl.):57–58 (1992) and 66(Suppl.):50–51 (1995). **Weather:** Mean start temp., 16.7°C (range 10–27°C). **Coverage:** 38.2 h; 10 visits (9 sunrise, 1 sunset); 3, 7, 13, 16, 20, 23, 26, 28, 30 June; 1 July; 2004. **Census:** House Wren, 24.5 (89; 1N,4FL); Tree Swallow, 17.0 (62; 11N,12FL); Common Yellowthroat, 14.5 (53); Eastern Wood-Pewee, 12.0 (44); Baltimore Oriole, 12.0 (5N,4FL); Song Sparrow, 9.0 (33; 3FL); Gray Catbird, 8.0 (29; 5FL); Indigo Bunting, 8.0; Red-winged Blackbird, 6.5 (24; 3FL); Eastern Kingbird, 6.0 (22); European Starling, 5.5 (20; 1N,3FL); Yellow Warbler, 5.5; Red-eyed Vireo, 4.5 (16); Mourning Dove, 4.0 (14); Northern Flicker, 4.0 (1N); Brown-headed Cowbird, 4.0; Great Crested Flycatcher, 3.5 (13); Red-bellied Woodpecker, 3.0 (11; 1N,1FL); Downy Woodpecker, 3.0 (1N,2FL); Warbling Vireo, 3.0; Eastern Towhee, 3.0; Common Grackle, 3.0 (1N,3FL); Whip-poor-will, 2.5; American Robin, 2.5 (2FL); Yellow-billed Cuckoo, 2.0; Blue Jay, 2.0 (1FL); Black-capped Chickadee, 2.0 (1FL); White-breasted Nuthatch, 2.0; American Redstart, 2.0; Northern Cardinal, 2.0; Rose-breasted Grosbeak, 2.0; Field Sparrow, 1.5; American Woodcock, 1.0 (1FL); Black-billed Cuckoo, 1.0; Hairy Woodpecker, 1.0; Blue-gray Gnatcatcher, 1.0; Scarlet Tanager, 1.0; Red-tailed Hawk, 0.5; Swamp Sparrow, +. **Total:** 39 species; 189.5 territories (689/40 ha). **Visitors:** Wood Duck, Bald Eagle, Great Horned Owl, Ruby-throated Hummingbird, Belted Kingfisher, Wood Thrush, Brown Thrasher, Cedar Waxwing, Worm-eating Warbler, American Goldfinch. **Remarks:** This study is part of a long-term project designed to monitor the response of plant and breeding bird communities to a reduction in deer browsing at Long Point, Lake Erie. **Acknowledgments:** I thank Jon McCracken for project supervision, Jane Bowles and Michael Bradstreet for measuring vegetation parameters, Stu Mackenzie for field assistance, and the Canadian Wildlife Service for financial support.

6. RED OAK–SUGAR MAPLE SAVANNAH  
SAVANA DE ROBLE ROJO–ARCE DULCE

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Port Rowan ON N0E 1M0

**Location:** Ontario; Municipality of Haldimand-Norfolk; Port Rowan; Long Point National Wildlife Area; 16.7 km from Long Point Lighthouse; 42°33'40"N, 80°15'W; Big Rice Bay Quadrangle, DEMR. **Continuity:** Established 1979; 5 yr. **Size:** 10.5

ha. **Description of Plot:** See *Am. Birds* 34:51 (1980), *J. Field Ornithol.* 63(Suppl.):58–59 (1992) and 66(Suppl.):51–52 (1995). **Weather:** Mean start temp., 15.2°C (range 10–20°C). **Coverage:** 44.8 h; 10 visits (9 sunrise, 1 sunset); 1, 5, 12, 17, 21, 24, 27, 29 June; 1 July; 2004. **Census:** House Wren, 18.5 (70; 1N,5FL); Common Yellowthroat, 14.0 (53; 1N); Tree Swallow, 12.0 (46; 3N,10FL); Yellow Warbler, 12.0 (1N); Song Sparrow, 11.5 (44; 5FL); Eastern Wood-Pewee, 10.5 (40; 1N); Red-winged Blackbird, 10.0 (38; 2FL); Baltimore Oriole, 9.0 (34; 5N,5FL); Gray Catbird, 8.0 (30; 1N,3FL); Eastern Kingbird, 7.0 (27); Warbling Vireo, 7.0 (1FL); Indigo Bunting, 6.0 (23); European Starling, 5.0 (19; 2N,2FL); American Robin, 4.0 (15; 1FL); Field Sparrow, 4.0 (1FL); Blue Jay, 3.5 (13); Black-capped Chickadee, 3.5 (3FL); Northern Flicker, 3.0 (11; 1FL); Great Crested Flycatcher, 3.0; Red-eyed Vireo, 3.0 (1FL); White-breasted Nuthatch, 3.0; Common Grackle, 3.0 (1FL); Red-bellied Woodpecker, 2.0; Eastern Towhee, 2.0; Northern Cardinal, 2.0 (1N); Brown-headed Cowbird, 2.0; Downy Woodpecker, 1.5 (1N,1FL); Yellow-billed Cuckoo, 1.0; Ruby-throated Hummingbird, 1.0; Hairy Woodpecker, 1.0 (1FL); Blue-gray Gnatcatcher, 1.0; Chestnut-sided Warbler, 1.0. **Total:** 32 species, 175.0 territories (667/40 ha). **Visitors:** Wood Duck, Great Blue Heron, Bald Eagle, Red-tailed Hawk, American Woodcock, Mourning Dove, White-eyed Vireo, Eastern Bluebird, Brown Thrasher, Cedar Waxwing, Scarlet Tanager, Chipping Sparrow, Swamp Sparrow, Rose-breasted Grosbeak, American Goldfinch. **Remarks:** This study is part of a long-term project designed to monitor the response of plant and breeding bird communities to a reduction in deer browsing at Long Point, Lake Erie. **Other Observer:** Stu Mackenzie. **Acknowledgments:** I thank Jon McCracken for project supervision, Jane Bowles and Michael Bradstreet for measuring vegetation parameters, Stu Mackenzie for field assistance, and the Canadian Wildlife Service for financial support.

#### 7. OAK-MAPLE-POPLAR HOLLOW BOSQUE DE ROBLE-ARCE-ALAMO HUECO

LINDA INGRAM  
Nolde Forest Environmental Education Center  
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Reading PA 19607

**Site Number:** PA1093123. **Location:** Pennsylvania; Berks Co.; Reading; Nolde Forest, Buck Hollow; 40°17'N, 75°57'W; Reading Quadrangle, USGS. **Continuity:** Established 1993; 12 yr. **Size:** 11.3 ha. **Description of Plot:** See *J. Field Ornithol.* 65(Suppl.):61 (1994). **Weather:** Mean start temp., 15.6°C (range 8–25°C). Grounds were damp with winds calm to light. May 2004 received near normal precipitation,

however observers avoided days with heavy rain. Normal May temperatures: mean 16.7°C, minimum 11.1°C, maximum 22.2°C. **Source:** National Climatic Data Center, Asheville, NC (2000). **Coverage:** 16.5 h; 9 visits (9 sunrise, 0 sunset); 1, 5, 9, 10, 11, 12, 16, 20, 25 May; 2004. **Census:** Wood Thrush, 5.0 (18); Ovenbird, 5.0; Red-eyed Vireo, 3.0 (11); Veery, 2.5; Northern Cardinal, 2.5; Red-bellied Woodpecker, 1.0; Pileated Woodpecker, 1.0; Blue Jay, 1.0; American Crow, 1.0; Tufted Titmouse, 1.0; Scarlet Tanager, 1.0. **Total:** 11 species; 24.0 territories (85/40 ha). **Visitors:** Mourning Dove, Downy Woodpecker, Northern Flicker, Eastern Wood-Pewee, Great Crested Flycatcher, White-breasted Nuthatch, American Robin, Gray Catbird, Chipping Sparrow, Rose-breasted Grosbeak, American Goldfinch. **Other Observers:** Lynn Scheirer, Patricia Mangas, Phyllis Reynolds, and David Reynolds.

#### 8. HARDWOOD SWAMP FOREST BOSQUE DE MADERAS DURAS PANTANOSO

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336 Sanctuary Road  
Harleyville SC 29448

**Location:** South Carolina; Dorchester Co.; Harleyville; Francis Beidler Forest Sanctuary, Four Holes Swamp; 33°11'N, 80°19'W; Pringletown Quadrangle, USGS. **Continuity:** Established 1979; 13 yr. **Size:** 8.1 ha. **Description of Plot:** See *Am. Birds* 34:50 (1980) and *J. Field Ornithol.* 64 (Suppl.):56 (1993). The plot is still recovering from the effects of hurricane Hugo in 1989. Post-hurricane profusion of bushes is thinning as the understory trees grow up and shade the forest floor. Coarse woody debris is rotting away, further opening up the forest floor. The plot vegetation was resurveyed in 1996 (unpublished). **Weather:** Mean start temp., 15.6°C (range 7–20°C). Temperatures were normal. Water levels were very low due to a springtime dry spell. **Coverage:** 14.7 h; 11 visits (11 sunrise); 30 April; 1, 5, 6, 7, 11, 15, 19, 23, 27(2) May; 2004. **Census:** Blue-gray Gnatcatcher, 29.0 (143); Northern Parula, 10.5 (52); Red-eyed Vireo, 8.0 (40); Tufted Titmouse, 7.0 (35); Prothonotary Warbler, 6.0 (30); Acadian Flycatcher, 5.0 (25); Great Crested Flycatcher, 5.0; Northern Cardinal, 3.0 (15); Yellow-billed Cuckoo, 2.5; White-eyed Vireo, 2.5; Red-bellied Woodpecker, 2.0; Carolina Wren, 2.0; Pileated Woodpecker, 1.5; Swainson's Warbler, 1.5; Hooded Warbler, 1.5; Yellow-throated Vireo, 1.0; American Crow, 1.0. **Total:** 17 species; 89.0 territories (440/40 ha). **Visitors:** Great Blue Heron, Yellow-crowned Night-Heron, White Ibis, Downy Woodpecker, Yellow-throated Warbler. **Other Observer:** Norman Brunswig.

9. MATURE MAPLE-BEECH-BIRCH FOREST  
BOSQUE MADURO DE ARCE-HAYA-ABEDUL

DAVID F. VOGT & LAURA M. LEWIS\*

\*Cherokee National Forest

2800 N. Ocoee Street

Cleveland TN 37312

**Site Number:** TN2392102. **Location:** Tennessee; Monroe Co.; Whigg Ridge, Cherokee National Forest; 35°19'N, 84°2'W; Big Junction Quadrangle, USGS. **Continuity:** Established 1992; 12 yr. **Size:** 10.2 ha. **Description of Plot:** See *J. Field Ornithol.* 64(Suppl.):57-58 (1993) and 66(Suppl.):63 (1995). **Weather:** Mean start temp., 18.0°C (range 14-21°C). The 2 July visit followed heavy rain; stream noise was considerable. **Coverage:** 19.8 h; 8 visits (6 sunrise, 2 sunset); 29 May; 11, 18, 19, 24 June; 2, 3, 9 July; 2004. **Census:** Veery, 13.5 (53); Blue-headed Vireo, 11.5 (45); Dark-eyed Junco, 10.0 (39; 3FL); Ovenbird, 9.5 (37); Black-throated Blue Warbler, 5.5 (22; 1FL); Blackburnian Warbler, 4.5 (18); Chestnut-sided Warbler, 1.5; Rose-breasted Grosbeak, 1.0; Ruffed Grouse, 0.5 (4FL). **Total:** 9 species; 57.5 territories (225/40 ha). **Visitors:** Barred Owl, Hairy Woodpecker, Red-eyed Vireo, Common Raven, Carolina Chickadee, Black-capped Chickadee, Tufted Titmouse, Red-breasted Nuthatch, Winter Wren, Cedar Waxwing. **Remarks:** Flyovers included Northern Bobwhite, Chimney Swift, American Crow, and American Goldfinch. Mammals sighted included red squirrel, wild boar, and black bear (in plot). **Acknowledgments:** Logistical and financial support provided by USDA Forest Service, Cherokee National Forest.

10. CLIMAX HEMLOCK-WHITE PINE FOREST  
WITH TRANSITION HARDWOODS  
BOSQUE CLIMAX DE PICEA-PINO BLANCO EN  
TRANSICION A MADERAS DURAS

DAVID ROSGEN

White Memorial Conservation Center

P.O. Box 368

Litchfield CT 06759

**Site Number:** CT2765008. **Location:** Connecticut; Litchfield Co.; Litchfield; White Memorial Foundation-Catlin Woods; 41°43'N, 73°12'W; Litchfield Quadrangle, USGS. **Continuity:** Established 1965; 38 yr. **Size:** 10.5 ha. **Description of Plot:** See *Aud. Field Notes* 19:594-595 (1965), *J. Field Ornithol.* 67(Suppl.):60 (1996), and 2003 report (this volume). Succession is continuing in the areas where blow-downs have occurred in the past few years. These areas are thick with seedling and sapling eastern hemlocks, black birches, various other trees, and hobblebush. **Weather:** Mean start temp., 19.8°C (range 13-25°C). This year's weather was ideal for breeding

activity, except for a few cold nights in May. Overall, temperatures were below average from May through August; May's mean temperature was 15.9°C, June's was 17.7°C, and July's was 20.8°C. No days exceeded 32.2°C. Rain fell on 19 days in May with precipitation totaling 11.2 cm (average); there were 10 days of rain totaling 5.7 cm during June (5 cm below normal); and 14 days of rain totaling 11.9 cm during July (1 cm below normal). The only significant rainstorm in July (on the 28th) produced 3 cm of rain. **Coverage:** 24.5 h; 12 visits (1 sunrise, 5 sunset); 1, 7, 14, 21, 29 May; 8, 15, 26 June; 6, 16, 24, 31 July; 2004. Maximum number of observers/visit, 3. **Census:** Black-throated Green Warbler, 16.0 (61; 3N,46FL); Ovenbird, 15.0 (57; 2N,19FL); Veery, 14.0 (53; 20FL); Blackburnian Warbler, 12.0 (46; 6FL); Red-eyed Vireo, 11.5 (44; 16FL); Hermit Thrush, 6.0 (23; 14FL); Scarlet Tanager, 5.0 (19; 8FL); Wood Thrush, 4.5 (17; 1N,13FL); Black-capped Chickadee, 3.5 (13; 1N,17FL); Pine Warbler, 3.0 (11; 3FL); Great Crested Flycatcher, 2.5 (5FL); Black-and-white Warbler, 2.5 (6FL); Eastern Wood-Pewee, 2.0 (4FL); Blue-headed Vireo, 2.0; American Crow, 2.0 (2N,8FL); American Robin, 2.0 (10FL); Purple Finch, 2.0 (5FL); Wild Turkey, 1.5 (10FL); Blue Jay, 1.5 (4FL); Red-breasted Nuthatch, 1.5 (3FL); Brown Creeper, 1.5; Yellow-rumped Warbler, 1.5 (5FL); Northern Cardinal, 1.5 (3FL); Pileated Woodpecker, 1.0 (2FL); Tufted Titmouse, 1.0 (5FL); White-breasted Nuthatch, 1.0 (1N,5FL); Brown-headed Cowbird, 1.0 (1FL); Broad-winged Hawk, 0.5; Mourning Dove, 0.5; Barred Owl, 0.5; Yellow-bellied Sapsucker, 0.5; Downy Woodpecker, 0.5; Hairy Woodpecker, 0.5 (2FL); Gray Catbird, 0.5 (3FL); Cedar Waxwing, 0.5; American Redstart, 0.5; Rose-breasted Grosbeak, 0.5; Great Horned Owl, +; Eastern Kingbird, +; Common Yellowthroat, +; Eastern Towhee, +; Chipping Sparrow, +; American Goldfinch, +. **Total:** 43 species; 123.5 territories (470/40 ha). **Visitors:** Blue-gray Gnatcatcher, Canada Warbler. **Remarks:** The total number of species found (43) was three more than last year, six fewer than 2002, and similar to the long-term average. No new species were found. Several species were found again after having been missed last year: Eastern Kingbird, Cedar Waxwing, and Eastern Towhee. Species found last year but missed this year included Ruby-throated Hummingbird and Louisiana Waterthrush. Despite an increase in the number of breeding species, the total number of territories decreased to 123.5. This is only one below the previous 10-yr average, but it is 13.0 fewer than last year. This was the third year of a decline following a record high number of territories, of 141.0, found in 2001. The six most abundant species this year were the same and in the same order of abundance as last year. This was despite the fact that all except Hermit Thrush declined by as much as 2.5 territories. **Other Observers:** John Eykelhoff, Lukas Hyder, Richard

Kania, Marie Kennedy, Russ Naylor, Hugh Schoelzel, Perry Stafford, Pamela Velez, Edward Yescott, James Zingo, and Amy Zingo. **Acknowledgments:** Marie Kennedy was instrumental in helping to compile our Breeding Bird Census data this year.

#### 11. YOUNG MIXED HARDWOOD-CONIFER STAND

BOSQUE JOVEN-MIXTO DE MADERAS  
DURAS/RODAL DE CONIFEROS

DAVID ROSEN  
White Memorial Conservation Center  
P.O. Box 368  
Litchfield CT 06759

**Site Number:** CT2778262. **Location:** Connecticut; Litchfield Co.; Morris; White Memorial Foundation-Pitch Road; 41°42'N, 73°10'W; Litchfield Quadrangle, USGS. **Continuity:** Established 1978; 27 yr. **Size:** 8.5 ha. **Description of Plot:** See *Am. Birds* 33:72 (1979). **Weather:** Mean start temp., 19.4°C (range 12–23°C). This year's weather was ideal for breeding activity, except for a few cold nights in May. Overall, temperatures were below average from May through August. May's mean temperature was 15.9°C, June's was 17.7°C, and July's was 20.8°C. No days exceeded 32.2°C. Rain fell on 19 days in May with precipitation totaling 11.2 cm (average); there were 10 days of rain totaling 5.7 cm in June (5 cm below normal); and 14 days of rain totaling 11.9 cm in July (1 cm below normal). The only significant rainstorm in July (on the 28th) produced 3 cm of rain. **Coverage:** 13.5 h; 8 visits (1 sunrise, 6 sunset); 13, 20, 28 May; 11, 22 June; 2, 15, 26 July; 2004. **Census:** Ovenbird, 11.0 (52; 14FL); Veery, 10.5 (49; 12FL); Red-eyed Vireo, 10.0 (47; 4FL); Wood Thrush, 5.0 (24; 2N, 7FL); Scarlet Tanager, 3.5 (16; 5FL); Hermit Thrush, 3.0 (14; 2FL); Yellow-bellied Sapsucker, 2.5 (3FL); American Robin, 2.5 (5FL); Black-capped Chickadee, 2.0 (12FL); American Redstart, 2.0; Downy Woodpecker, 1.5 (5FL); Eastern Wood-Pewee, 1.5 (2FL); Tufted Titmouse, 1.5 (5FL); Gray Catbird, 1.5; Northern Cardinal, 1.5 (4FL); Blue Jay, 1.0 (4FL); Black-throated Blue Warbler, 1.0; Black-throated Green Warbler, 1.0; Black-and-white Warbler, 1.0; Louisiana Waterthrush, 1.0; Common Yellowthroat, 1.0; Rose-breasted Grosbeak, 1.0; Ruby-throated Hummingbird, 0.5; Northern Flicker, 0.5; Great Crested Flycatcher, 0.5; American Crow, 0.5; White-breasted Nuthatch, 0.5 (4FL); Blackburnian Warbler, 0.5; Eastern Towhee, 0.5; Brown-headed Cowbird, 0.5 (1FL); American Goldfinch, 0.5; Wild Turkey, +; Barred Owl, +; Red-bellied Woodpecker, +; Eastern Phoebe, +; Blue-gray Gnatcatcher, +; Cedar Waxwing, +; Canada Warbler, +; Chipping Sparrow, +; Baltimore Oriole, +. **Total:** 40 species; 71.0 territories (334/40 ha). **Visitors:** Mourning Dove, Pileated Woodpecker, Blue-headed Vireo, Pine Warbler.

**Remarks:** The number of breeding species decreased to 40 (from 43 last year and 50 in 2002). The 1994–2003 average is 44.5 species. The continued harassment of wildlife by dirt bikers, ATV users, and partiers partly may be to blame. The only species found on territory this year but not last year were Canada Warbler and Chipping Sparrow. Species that were missed entirely included Broad-winged Hawk, Mourning Dove, and Chestnut-sided Warbler. The number of territorial males declined by 23 to 71, compared to last year, and is 21 birds fewer than the previous 10-yr average. This shows that something was really wrong. Species declining by more than 1.0 territory from last year included Red-eyed Vireo (–2.0) and Hermit Thrush (–1.5). A total of 29 species decreased in number of territories. The only species showing increases were Northern Flicker, Black-throated Green Warbler, and Rose-breasted Grosbeak. Ovenbird was the most common species, followed by Veery and Red-eyed Vireo. **Other Observers:** Lukas Hyder, Russ Naylor, and Ed Yescott. **Acknowledgments:** Marie Kennedy was instrumental in helping to compile our Breeding Bird Census data this year.

#### 12. RIPARIAN WOODLAND ARBOLADO RIVEREÑO

SCOTT R. ROBINSON  
Bureau of Land Management  
3815 N. Schreiber Way  
Coeur d'Alene ID 83815

**Location:** Idaho; Kootenai Co.; Coeur d'Alene; Blackwell Island; 47°41'N, 116°48'W; Coeur d'Alene Quadrangle, USGS. **Continuity:** Established 1997; 8 yr. **Size:** 8.9 ha. **Description of Plot:** See 1997 BBC report (unpublished) and *Bird Populations* 7:106 (2006) and 7:123 (2006). This is the second year post construction of the day-use recreation site. **Weather:** Mean start temp., 9.7°C (range 6–14°C). The seven sunrise visits explain the lower starting temperatures than during the first five years of the census. No flooding this year. This year's mosquito hatch between 15 and 22 June was less than last year's hatch for the same time period. **Coverage:** 11.5 h; 7 visits (7 sunrise); 3, 11, 17 May; 1, 8, 15, 22 June; 2004. **Census:** American Robin, 6.5 (29); Mallard, 4.0 (18; 11FL); Tree Swallow, 4.0 (2N); Yellow Warbler, 4.0; Song Sparrow, 3.0 (13); Brown-headed Cowbird, 3.0; Spotted Sandpiper, 2.5 (3FL); European Starling, 2.0; Red-winged Blackbird, 2.0; Bullock's Oriole, 2.0; Canada Goose, 1.0; Calliope Hummingbird, 1.0; Hairy Woodpecker, 1.0; Northern Flicker, 1.0; Violet-green Swallow, 1.0 (1N); Black-capped Chickadee, 1.0; Gray Catbird, 1.0; Cedar Waxwing, 1.0; Common Yellowthroat, 1.0. **Total:** 19 species; 42.0 territories (189/40 ha). **Visitors:** California Quail, Great Blue Heron, Osprey, Killdeer, Ring-billed Gull, Mourning

Dove, Red-naped Sapsucker, Downy Woodpecker, Western Wood-Pewee, Warbling Vireo, Black-billed Magpie, American Crow, Common Raven, Barn Swallow, Pygmy Nuthatch, Yellow-rumped Warbler, American Redstart, Chipping Sparrow, Black-headed Grosbeak. **Remarks:** The second artificial nest box fell from a tree within the census plot. Swallows have continually occupied these nest boxes in place of Wood Ducks.

### 13. DRY COTTONWOOD-JUNIPER SAVANNAH SAVANA DE ALAMO SECO-JUNIPERO

JANUS ETHELBERG  
*Bird Studies Canada*  
P.O. Box 160

Port Rowan ON NOE 1M0

**Location:** Ontario; Municipality of Haldimand-Norfolk; Port Rowan; Long Point National Wildlife Area; 42°32'35"N, 80°6'30"W; Gravelly Bay Quadrangle, DEMR. **Continuity:** Established 1991; 4 yr. **Size:** 10.5 ha. **Description of Plot:** See *J. Field Ornithol.* 63(Suppl.):81 (1992) and 67(Suppl.):64-65 (1996). **Weather:** Mean start temp., 15°C (range 12-20°C). **Coverage:** 34.0 h; 8 visits (7 sunrise, 1 sunset); 3, 6, 7, 20, 22, 23, 28, 30 June; 2004. **Census:** Song Sparrow, 8.5 (32); Chipping Sparrow, 6.0 (23; 2N); Field Sparrow, 4.0 (15); Mourning Dove, 2.0 (2N); Eastern Kingbird, 2.0; Tree Swallow, 2.0 (2N); Red-winged Blackbird, 2.0; Yellow Warbler, 1.5; Eastern Towhee, 1.5; House Wren, 1.0; American Robin, 1.0; Northern Mockingbird, 1.0; Brown Thrasher, 1.0; Common Grackle, 1.0; House Finch, 1.0; **Total:** 15 species, 35.5 territories (135/40 ha). **Visitors:** Killdeer, Whip-poor-will, Black-capped Chickadee, Blue-gray Gnatcatcher, Eastern Bluebird, Gray Catbird, European Starling, Cedar Waxwing, Common Yellowthroat, Brown-headed Cowbird. **Remarks:** This study is part of a long-term project designed to monitor the response of plant and breeding bird communities to a reduction in deer browsing at Long Point, Lake Erie. **Acknowledgments:** I thank Jon McCracken for project supervision, Jane Bowles and Michael Bradstreet for measuring vegetation parameters, and the Canadian Wildlife Service for financial support.

### 14. INTERGRADING DUNE-SWALE SAVANNAH SAVANA CON GRADIENTE DE DUNA A CIENAGA

JANUS ETHELBERG  
*Bird Studies Canada*  
P.O. Box 160

Port Rowan ON NOE 1M0

**Location:** Ontario; Municipality of Haldimand-Norfolk; Port Rowan; Long Point National Wildlife

Area; 42°32'45"N, 80°4'0"W; Gravelly Bay Quadrangle, DEMR. **Continuity:** Established 1965; 8 yr. **Size:** 11.0 ha. **Description of Plot:** See *Aud. Field Notes* 19:630 (1965), *J. Field Ornithol.* 63(Suppl.):82-83 (1992), 65(Suppl.):85-86 (1994), and 67(Suppl.):65-66 (1996). **Weather:** Mean start temp., 16.8°C (range 12-25°C). **Coverage:** 34.8 h; 8 visits (7 sunrise, 1 sunset); 5, 9, 15, 16, 18, 24, 26, 27 June; 2004. **Census:** Tree Swallow, 10.5 (38; 10N); Chipping Sparrow, 7.0 (25; 1N); Eastern Kingbird, 2.5 (2N); Killdeer, 2.0; Mourning Dove, 2.0 (2N); House Wren, 2.0; Northern Mockingbird, 2.0 (1N); Brown Thrasher, 2.0; Field Sparrow, 2.0; Common Grackle, 2.0; Whip-poor-will, 1.0, European Starling, 1.0 (1N). **Total:** 12 species, 36.0 territories (131/40 ha). **Visitors:** American Woodcock, Black-billed Cuckoo, Northern Flicker, American Robin, Common Yellowthroat, Song Sparrow, Indigo Bunting, Red-winged Blackbird. **Remarks:** This study is part of a long-term project designed to monitor the response of plant and breeding bird communities to a reduction in deer browsing at Long Point, Lake Erie. **Other Observer:** Christian Friis. **Acknowledgments:** I thank Jon McCracken for project supervision, Jane Bowles and Michael Bradstreet for measuring vegetation parameters, and the Canadian Wildlife Service for financial support.

### 15. RIPARIAN SCRUB BASIN CUENCA CON MATORRAL RIBEREÑO

MELODY AIMAR  
*Santa Ana Watershed Association*  
25864-K Business Center Drive  
Redlands CA 92374

**Location:** California; Riverside Co.; Riverside; Mockingbird Canyon; 33°53'33"N, 117°24'47"W; Riverside West Quadrangle, USGS. **Continuity:** New. **Size:** 12.7 ha. **Description of Plot:** The irregularly shaped plot is within the Santa Ana River watershed, and is located in the basin between Mockingbird Canyon Reservoir and the adjoining narrow riparian canyon. In general the stream is mostly perennial, but it is only ephemeral on the plot. Site disturbance includes historical grazing and other human-related activities (e.g., paintball games and ATVs). The plot contains both riparian woodland and disturbed scrub; the dominant plants are black willow and mulefat. The study area originally contained a multitude of exotic plant species, most notably *Arundo donax*, castor bean (*Ricinus communis*), and mustard (*Brassica nigra*). Persons from the Santa Ana Watershed Association removed *Arundo* and castor bean throughout the plot in 2003. **Edge:** Between 26 and 50% of the plot's perimeter is bordered by the same habitat, and the plot lies within a tract of similar habitat 51-100 ha in size. Surrounding land use includes moderately dense riparian habitat north to the open-water reservoir, rural

and agricultural land use, and gentle slopes of historically grazed hillsides bisected by major roads and development. The southernmost edge of the plot is the upper canyon connection, which passes through a large underpass to a narrow, winding canyon surrounded by development. **Topography and Elevation:** The plot is nearly level with a slope of <5%. Elevation is 300 m. A sandy wash traverses the plot. **Weather:** Mean start temp., 21.4°C (range 11–33°C). Temperatures were mildly warm, as typical for southern California's Mediterranean climate. There was no precipitation during, or within 24 hours of, survey visits. **Coverage:** 23.2 h; 10 visits (3 sunrise, 0 sunset); 19, 25, 27 May; 7, 13, 24 June; 8, 14, 22, 23 July; 2004. **Census:** Spotted Towhee, 14.5 (46); California Towhee, 12.5 (39); Bewick's Wren, 9.0 (28); Black-headed Grosbeak, 6.0 (19); Lesser Goldfinch, 5.5 (17); Anna's Hummingbird, 5.0 (16); Phainopepla, 5.0; Song Sparrow, 4.0 (13); House Finch, 4.0; Mourning Dove, 3.0 (9); California Thasher, 3.0; Western Scrub-Jay, 2.5; California Quail, 2.0; Nuttall's Woodpecker, 2.0; American Goldfinch, 2.0; Black-chinned Hummingbird, 1.5; Black Phoebe, 1.5; Red-tailed Hawk, 1.0; Northern Flicker, 1.0; Ash-throated Flycatcher, 1.0; Bushtit, 1.0; House Wren, 1.0; California Gnatcatcher, 1.0; Hooded Oriole, 1.0; Downy Woodpecker, 0.5; Yellow-breasted Chat, 0.5; Lawrence's Goldfinch, 0.5. **Total:** 27 species; 91.5 territories (288/40 ha). **Visitors:** Cooper's Hawk, Say's Phoebe, Western Kingbird, Loggerhead Shrike, Least Bell's Vireo, American Crow, Northern Mockingbird, Orange-crowned Warbler, Common Yellowthroat, Brown-headed Cowbird, Bullock's Oriole. **Remarks:** Spotted and California towhees were the most abundant potential breeders. All species observed were common with the exception of California Gnatcatcher, Yellow-breasted Chat, and Least Bell's Vireo. The latter two species nested offsite and only partially used the plot. The Red-tailed Hawk nest was on the plot, but the territory was larger than the plot. The small number of Brown-headed Cowbirds on the plot is attributed to the Santa Ana Watershed Association's cowbird trapping program nearby. In addition to winter and breeding bird surveys, this site is currently being monitored for invasive plant re-growth and Least Bell's Vireo nesting. **Acknowledgements:** Special thanks to Gage Canal for site access.

## 16. STREAMSIDE RIPARIAN WOODLAND I

### BOSQUE RIBEREÑO I

TERRY REESER

*Santa Ana Watershed Association  
25864-K Business Center Drive  
Redlands CA 92374*

**Location:** California; Orange Co.; Yorba Linda; Featherly Regional Park; 33°52'24"N, 117°42'23"W;

Black Star Canyon and Prado Dam Quadrangles, USGS. **Continuity:** New. **Size:** 16.4 ha. **Description of Plot:** The plot is a narrow corridor of riparian forest approximately 2.3 km in length and 40–165 m in width edged by disturbed upland coastal sage scrub and chaparral elements set in a highly urban environment. It is part of a narrow wildlife corridor in the Santa Ana Canyon connecting two large wildlife reserve fragments, the Cleveland National Forest/Limestone Canyon Reserve and Chino Hills State Park. The keystone species, the mountain lion, is frequent in the plot area. Cottonwoods and black willow line the river, but sycamore, scrub oak, California walnut, eucalyptus, and Peruvian pepper occur in the upland edge of the plot. Patchy cobblestone and gravel floodplain occurs within the riparian understory, which is dominated by mulefat and elderberry and also includes toyon, cattail, wild grape, poison oak, and cocklebur. The upland plant community consists of California sage, California buckwheat, laurel sumac, conyza, brittle bush, and tarragon. Non-native invasive plants such as mustard, castor bean, tree tobacco, and giant reed occur in the plot. Invasive weed management is done sporadically. The river has a maximum depth of approximately 3 m. The maximum width is 15.2 m. Manholes for a hazardous waste line that runs under the river occur along the length of the plot. The plot is roughly bisected longitudinally by a dirt service road (6–13 m in width), which is maintained by the local sanitation district for access to the manholes. **Edge:** Between 51 and 75% of the plot's perimeter is bordered by the same habitat, and the plot lies within a tract of similar habitat 101–500 ha in size. The Santa Ana River forms the southern edge and is included in the plot. The plot will vary slightly from year to year due to river flow that is east to west. Similar habitat occurs on the south side of the river and upstream and downstream from the plot. Just outside the northern edge are citrus groves, a bike trail, and railroad tracks beyond which is a residential community. **Topography and Elevation:** The plot is nearly level with a slope of <5%. Minimum elevation 111 m, maximum 121 m. **Weather:** Mean start temp., 18.0°C (range 17–21°C). Temperatures were mild, as typical for southern California's Mediterranean climate. There was no precipitation during, before, or after (within 24 hours of) survey visits. **Coverage:** 36.8 h; 8 visits (7 sunrise, 0 sunset); 30 April; 12, 17 May; 3, 15, 23 June; 2, 9 July; 2004. **Census:** Common Yellowthroat, 34.5 (84; 2FL); Spotted Towhee, 21.5 (52); Song Sparrow, 21.5 (1FL); Yellow Warbler, 19.5 (48); Bewick's Wren, 17.5 (43); House Wren, 15.5 (38; 1FL); Black-headed Grosbeak, 11.5 (28; 2N,3FL); Least Bell's Vireo, 11.0 (27; 4N,3FL); Black Phoebe, 10.0 (24); Wrentit, 10.0; Anna's Hummingbird, 9.0 (22); California Towhee, 8.0 (20); Lesser Goldfinch, 8.0 (2FL); Nuttall's Woodpecker, 6.0

(15); Ash-throated Flycatcher, 4.0 (10); American Crow, 3.0 (7); Yellow-breasted Chat, 3.0; American Goldfinch, 3.0 (1N); Western Scrub-Jay, 2.5; California Thrasher, 2.0; Mallard, 1.0; California Quail, 1.0; Cooper's Hawk, 1.0; Downy Woodpecker, 1.0; Northern Rough-winged Swallow, 1.0 (2FL); Bushtit, 1.0; Savannah Sparrow, 1.0; Blue Grosbeak, 0.5. **Total:** 28 species; 228.5 territories (557/40 ha). **Visitors:** Red-shouldered Hawk, Red-tailed Hawk, Mourning Dove, Black-chinned Hummingbird, Western Wood-Pewee, European Starling, Orange-crowned Warbler, Wilson's Warbler, Western Tanager, Hooded Oriole, Bullock's Oriole, House Finch. **Remarks:** The breeding bird community includes riparian, coastal sage, and chaparral species. The endangered Least Bell's Vireo and California Species of Concern Yellow Warbler and Yellow-breasted Chat bred on the plot along with other species of local concern such as Downy Woodpecker. We possibly over-counted some species due to surveying only one side of the river, but we took this into account for some species. Nest monitoring for the Least Bell's Vireo and winter bird surveys take place on the plot. **Other Observer:** Susan Hoffman. **Acknowledgements:** I thank Harbors, Beaches, and Parks Resources and Development Department, County of Orange, for site access and its continuing logistical support.

#### 17. STREAMSIDE RIPARIAN WOODLAND II BOSQUE RIBEREÑO II

BONNIE NASH  
Orange County Water District  
14980 River Road  
Corona CA 92880

**Location:** California; Riverside Co.; Corona; Prado Basin; 33°55'N, 117°36'W; Corona North Quadrangle, USGS. **Continuity:** New. **Size:** 10.3 ha. **Description of Plot:** The plot is part of a 770 ha riparian preserve behind Prado Dam. It is approximately rectangular with shortest side 141 m and longest side 767 m. The site is recovering from a September 2002 fire that killed much of the vegetation above ground. The plot contains approximately 50% natives consisting of a mixed willow (black willow and arroyo willow)-cottonwood-mulefat plant community without an associated upland component. The dominant non-native plant is giant cane (*Arundo donax*), which is under spray management since the fire. The dominant ground cover plants are blackberry and mustard. As of September 2003, there has been significant regrowth of black willow, cottonwood, mulefat, and blackberry. Patches of *Arundo* still occur. Mature willows, cottonwoods, and eucalyptus are dense along the bluff side of the plot and spread sparsely throughout the rest of the plot. The plot contains a 1400 m<sup>2</sup> pond with a depth of 1–1.5 m. Vegetation

covers approximately one-third of the pond. Site disturbances include a newly constructed access road and human encroachment such as ATV, paintball, and equestrian activities. **Edge:** Between 26 and 50% of the plot's perimeter is bordered by the same habitat, and the plot lies within a tract of similar habitat >500 ha in size. The plot is bordered by the Santa Ana River to the north and a bluff with residential development to the south. Similar habitat occurs to the east and west, but there is also a busy two-lane road that borders the plot on the east. **Topography and Elevation:** The plot is nearly level with a slope of <5%. Minimum elevation 520 m, maximum 540 m. **Weather:** Mean start temp., 20.6°C (range 16–28°C). Temperatures were mildly warm, as typical for southern California's Mediterranean climate. **Coverage:** 13.4 h; 8 visits (1 sunrise, 0 sunset); 13, 20, 28 May; 4, 11, 18 June; 13, 23 July; 2004. **Census:** Song Sparrow, 17.0 (66); Common Yellowthroat, 16.5 (64); Spotted Towhee, 8.5 (33); Anna's Hummingbird, 7.5 (29); Yellow-breasted Chat, 7.5; Black-headed Grosbeak, 6.5 (25; 1FL); Yellow Warbler, 6.0 (23); Bewick's Wren, 5.0 (19); Ash-throated Flycatcher, 3.5 (14); California Thrasher, 2.5; California Towhee, 2.5; Common Ground-Dove, 2.0; Brown-headed Cowbird, 2.0; *Selasphorus* sp., 1.5; Nuttall's Woodpecker, 1.5; Downy Woodpecker, 1.5; Western Scrub-Jay, 1.5; House Finch, 1.5; Lesser Goldfinch, 1.5; Northern Flicker, 1.0; Black Phoebe, 1.0; Cassin's Kingbird, 1.0; Least Bell's Vireo, 1.0 (1N,2FL); American Crow, 1.0; Bushtit, 1.0; House Wren, 1.0; Bullock's Oriole, 1.0; Red-tailed Hawk, 0.5; American Kestrel, +; Wrentit, +. **Total:** 30 species; 104.5 territories (406/40 ha). **Visitors:** Cooper's Hawk, Hooded Oriole, American Goldfinch. **Remarks:** Snowy Egrets, Great Blue Herons, and Black-crowned Night-Herons foraged on the plot. Least Bell's Vireo nesting was monitored. This plot was damaged during 2004–2005 winter flooding and has not been accessible since then. Invasive giant cane grew in the plot and is currently being cut and sprayed. Whether surveys continue here, has not yet been determined.

#### 18. STREAMSIDE RIPARIAN WOODLAND III BOSQUE RIBEREÑO III

TALULA BARBEE  
Santa Ana Watershed Association  
14980 River Road  
Corona CA 92880

ALLYSON BECKMAN  
Santa Ana Watershed Association  
25864-K Business Center Drive  
Redlands CA 92374

**Location:** California; Riverside Co.; Redlands; San Timoteo Canyon; 33°59'5"N, 117°7'45"W; Sunnymead Quadrangle, USGS. **Continuity:** New. **Size:** 13.0 ha. **Description of Plot:** The linear plot is located along

San Timoteo Creek, in a fairly narrow canyon that drains approximately 198,000 ha of the San Bernardino Mountains and foothills in western Riverside and San Bernardino counties. It is approximately 1 km in length and varies from 46–200 m in width. Two wide, low-lying terraces within the canyon constitute the widest portions of the plot. The habitat is characterized by typical southern California riparian vegetation including a canopy of cottonwood and black willow. The understory is dominated by black willow, stands of mulefat, and arroyo willow, but also includes elderberry, mugwort, golden currant, and toyon. Associated upland plants include *Artemisia californica* and California buckwheat. A large portion of the ground cover is composed of leaf litter and bare soil. The study area originally was dominated by invasive plants, most notably giant cane (*Arundo donax*) and tamarisk. Removal of invasives in 1997–2001, however, has allowed restoration of the native plant community. The water is shallow (<1 m in depth) and meanders through the plot. The maximum width of the creek is 15 m. Water flow is usually perennial and predominantly from discharged treated water and agricultural and urban runoff. **Edge:** Less than 25% of the plot's perimeter is bordered by the same habitat, and the plot lies within a tract of similar habitat >500 ha in size. The plot is enclosed by 9–12 m steep cliff walls, and the surrounding upland area consists mostly of non-native grasslands used for grazing and agriculture. The riparian habitat along the stream, however, is continuous for approximately 20 km above and below the plot. **Topography and Elevation:** The plot is nearly level with a slope of <5%. Minimum elevation 515 m, maximum 533 m. **Weather:** Mean start temp., 20.8°C (range 12–29°C). Temperatures were mildly warm, as typical for southern California's Mediterranean climate. There was no precipitation during, or within 24 hours of, survey visits. **Source:** Western Regional Climate Center for Beaumont, CA. **Coverage:** 21.5 h; 8 visits (1 sunrise, 0 sunset); 14, 21, 28 May; 4, 8, 25 June; 2, 9 July; 2004. **Census:** Bewick's Wren, 12.0 (37); Spotted Towhee, 12.0; Song Sparrow, 12.0; Mourning Dove, 10.0 (31); House Wren, 9.0 (28); Least Bell's Vireo, 8.0 (25); California Towhee, 8.0; American Goldfinch, 7.0 (22); Ash-throated Flycatcher, 5.0 (15); Lesser Goldfinch, 4.5 (14); Barn Owl, 4.0 (12); Nuttall's Woodpecker, 4.0; Bushtit, 4.0; Brown-headed Cowbird, 4.0; Oak Titmouse, 3.0 (9); Yellow Warbler, 3.0; Yellow-breasted Chat, 3.0; Black-chinned Hummingbird, 2.0; Anna's Hummingbird, 2.0; Northern Flicker, 2.0; Common Yellowthroat, 2.0; Lark Sparrow, 2.0; California Quail, 1.0; Red-shouldered Hawk, 1.0 (1N); Red-tailed Hawk, 1.0; Downy Woodpecker, 1.0; Pacific-slope Flycatcher, 1.0; Black Phoebe, 1.0; American Crow, 1.0; European Starling, 1.0; Phainopepla, 1.0; Black-headed

Grosbeak, 1.0; Blue Grosbeak, 1.0; House Finch, 1.0; Bullock's Oriole, 0.5; Total: 35 species; 135.0 territories (415/40 ha). **Visitors:** White-tailed Kite, Cooper's Hawk, Southwestern Willow Flycatcher, Common Raven, Northern Rough-winged Swallow, Northern Mockingbird, California Thrasher. **Remarks:** The plot that has been undergoing passive restoration for three years after removal of over 80 ha of invasive giant cane that choked the entire canyon. Thirty-five avian species bred within it, including one endangered species, Least Bell's Vireo. Endangered Southwestern Willow Flycatchers have been reported as breeders here on occasion. Other breeding species that have suffered declines and are of state or local concern include Yellow-breasted Chat, Yellow Warbler, and Downy Woodpecker. Raptors are present, as are a number of cavity nesters, which previously had been sparse. Nest monitoring for the Least Bell's Vireo and winter bird surveys are also done on this plot. **Acknowledgements:** Special thanks to the U.S. Army Corps of Engineers for providing funding for the surveys.

#### 19. SHRUBBY SWAMP AND SEDGE HUMMOCKS PANTANO ARBUSTIVO-MOGOTE

DAVID ROSEN

White Memorial Conservation Center

P.O. Box 368

Litchfield CT 06759

**Location:** Connecticut; Litchfield Co.; Litchfield; White Memorial Foundation–North Shore Marsh; 41°43'N, 73°13'W; Litchfield Quadrangle, USGS. **Continuity:** Established 1965; 38 yr. **Size:** 8.1 ha. **Description of Plot:** See *Aud. Field Notes* 19:625–627 (1965) and *Bird Populations* 7:125–126 (2006). Succession is continuing with more shrubs and trees and less herbaceous vegetation present every year. Flooding last year caused several more trees in the 8–15 cm DBH size range to die. There are now quite a few snags in the plot. **Weather:** Mean start temp., 19.6°C (range 15–25°C). This year's weather was ideal for breeding activity. The only exceptions were a few cold nights in May. Overall, temperatures were below average from May through August. May's mean temperature was 15.9°C, June's was 17.7°C, and July's was 20.8°C. No days exceeded 32.2°C. Rain fell on 19 days in May with precipitation totaling 11.2 cm (average). There were 10 days of rain totaling only 5.7 cm in June (5 cm below normal), and 14 days of rain totaling 11.9 cm in July (1 cm below normal). The only significant rainstorm in July (on the 28th) produced 3 cm of rain. **Coverage:** 24.5 h; 12 visits (1 sunrise, 4 sunset); 1, 8, 17, 25 May; 3, 11, 18, 29 June; 9, 16, 24, 31 July; 2004. Maximum number of observers/visit, 3. **Census:** Swamp Sparrow, 35.0 (173; 6N,90FL); Red-winged Blackbird, 34.0 (168; 8N,74FL); Yellow Warbler, 30.0

(148; 16N,87FL); Common Yellowthroat, 23.0 (114; 58FL); Gray Catbird, 18.5 (91; 7N,61FL); Common Grackle, 9.0 (44; 7N,37FL); Song Sparrow, 6.0 (30; 21FL); Cedar Waxwing, 5.0 (25; 1N,11FL); American Goldfinch, 5.0 (1N,8FL); Eastern Kingbird, 4.0 (20; 3N,12FL); Willow Flycatcher, 3.5 (17; 1N,10FL); Tree Swallow, 3.5 (2N,18FL); Warbling Vireo, 3.0 (15; 1N,9FL); Baltimore Oriole, 3.0 (3N,14FL); Least Flycatcher, 2.5 (7FL); Black-capped Chickadee, 2.5 (2N,10FL); Blue-gray Gnatcatcher, 2.5 (2N,8FL); Veery, 2.5 (6FL); Alder Flycatcher, 2.0 (5FL); American Robin, 2.0 (2N,8FL); Mallard, 1.5 (11FL); Downy Woodpecker, 1.5 (1N,7FL); Northern Flicker, 1.5 (6FL); Great Crested Flycatcher, 1.5 (3FL); Yellow-throated Vireo, 1.5 (3FL); Black-and-white Warbler, 1.5 (4FL); American Redstart, 1.5 (4FL); Brown-headed Cowbird, 1.5 (2FL); Mourning Dove, 1.0 (2FL); Tufted Titmouse, 1.0 (6FL); White-breasted Nuthatch, 1.0 (1N,5FL); Northern Cardinal, 1.0 (1N,5FL); Mute Swan, 0.5 (1N); Wood Duck, 0.5 (6FL); Great Blue Heron, 0.5; Hairy Woodpecker, 0.5 (2FL); Eastern Wood-Pewee, 0.5 (3FL); Northern Waterthrush, 0.5; Spotted Sandpiper, +; Yellow-billed Cuckoo, +; Ruby-throated Hummingbird, +; Red-eyed Vireo, +; Purple Finch, +. **Total:** 43 species; 215.5 territories (1064/40 ha). **Visitors:** Canada Goose, Red-bellied Woodpecker, Yellow-bellied Sapsucker. **Remarks:** The number of breeding species decreased dramatically this year. The total of 43 species was 5 fewer than last year, but still higher than the previous 10-yr average of 36.8 species. The only species found this year but not last year were Yellow-billed Cuckoo and Purple Finch. Species found last year but not this year included Canada Goose, American Crow, Marsh Wren, Eastern Bluebird, Wood Thrush, Chestnut-sided Warbler, and Rose-breasted Grosbeak. The total absence of Chestnut-sided Warbler is perplexing. Despite the decrease in the number of species, the total number of territorial males rose to the second-highest total ever. The 215.5 territories counted this year is well above the previous 10-yr average of 175. Swamp Sparrow was the most abundant species with an increase of 6.0 territories over last year. **Other Observers:** Eric Adam, John Eykelhoff, Marie Kennedy, Bruce Sebastian, Pamela Velez, and Edward Yescott. **Acknowledgments:** Marie Kennedy was instrumental in helping to compile our Breeding Bird Census data this year.

## 20. COASTAL SCRUB MATORRAL COSTANERO

GERHARD EPKE & ELIZABETH PORZIG  
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**Location:** California; Marin Co.; Bolinas; Palomarin Field Station; 37°55'N, 122°45'W; Bolinas Quadrangle,

USGS. **Continuity:** Established 1971; 30 yr. **Size:** 8.1 ha. **Description of Plot:** See *Am. Birds* 25:1003-1004 (1971). The cover of Douglas-fir (*Pseudotsuga menziesii*) and shrubs continues to increase. **Weather:** Mean start temp., 10°C (range 5-14°C). **Coverage:** 170.5 h; 49 visits (24 sunrise, 0 sunset). 2004. **Census:** Wrentit, 11.0 (54; 8N,23FL); Bewick's Wren, 8.0 (40); Spotted Towhee, 7.5 (37; 2N); Wilson's Warbler, 5.5 (27; 1N); Orange-crowned Warbler, 4.5 (22; 2N); Allen's Hummingbird, 2.5; Hutton's Vireo, 2.0 (3N); Bushtit, 2.0; Swainson's Thrush, 2.0; Chestnut-backed Chickadee, 1.5; Red-breasted Nuthatch, 1.5; California Quail, 1.0; Purple Finch, 1.0; Pacific-slope Flycatcher, 0.5; Western Scrub-Jay, 0.5; Golden-crowned Kinglet, 0.5 (1N); Red-tailed Hawk, +; Mourning Dove, +; Northern Flicker, +; Olive-sided Flycatcher, +; Steller's Jay, +; American Robin, +; Song Sparrow, +; White-crowned Sparrow, +; Dark-eyed Junco, +. **Total:** 25 species; 51.5 territories (254/40 ha). **Visitors:** Sharp-shinned Hawk, Band-tailed Pigeon, Anna's Hummingbird, Hairy Woodpecker, Northern Mockingbird, American Goldfinch. **Remarks:** The increase in cover is likely responsible for some changes in bird numbers and species composition. **Other Observer:** Dennis Jongsomjit. **Acknowledgments:** We thank Point Reyes National Seashore for their cooperation. This is PRBO contribution No. 1605.

## 21. DISTURBED COASTAL SCRUB A MATORRAL PERTURBADO A

ERRIN KRAMER-WILT & ELIZABETH PORZIG  
PRBO Conservation Science  
3820 Cypress Drive #11  
Petaluma CA 94954

**Location:** California; Marin Co.; Bolinas; Palomarin Field Station; 37°55'N, 122°45'W; Bolinas Quadrangle, USGS. **Continuity:** Established 1972; 30 yr. **Size:** 4.7 ha. **Description of Plot:** See *Am. Birds* 26:987-988 (1972). **Weather:** Mean start temp., 10°C (range 5-14°C). **Coverage:** 136.1 h; 65 visits (22 sunrise, 0 sunset). 2004. **Census:** Wrentit, 4.5 (38; 5N,13FL); Allen's Hummingbird, 3.5 (30); Spotted Towhee, 3.0 (26; 2N); Bushtit, 2.5; Song Sparrow, 2.5 (10N,20FL); Purple Finch, 2.5; American Goldfinch, 2.5 (3N); California Quail, 2.0; Anna's Hummingbird, 2.0; Wilson's Warbler, 2.0; Bewick's Wren, 1.0; Orange-crowned Warbler, 1.0; Mourning Dove, 0.5; Hutton's Vireo, 0.5; Chestnut-backed Chickadee, 0.5; Red-breasted Nuthatch, 0.5; Swainson's Thrush, 0.5; White-crowned Sparrow, 0.5; Dark-eyed Junco, 0.5; Downy Woodpecker, +; Northern Flicker, +; Olive-sided Flycatcher, +; Pacific-slope Flycatcher, +; Steller's Jay, +; Western Scrub-Jay, +; Golden-crowned Kinglet, +; American Robin, +; California Towhee, +; Black-headed Grosbeak, +; Brown-headed Cowbird, +; House Finch, +. **Total:** 31 species; 32.5 territories

(277/40 ha). **Visitors:** Osprey. **Remarks:** Cover of trees (firs) and shrubs continues to increase. Overall territory density decreased by 23% from 2003. Species with notable decreases in density from last year include Wrentit (from 7.5 to 4.5 territories). This is the first year that Red-breasted Nuthatch was recorded breeding on the plot. **Other Observers:** None reported. **Acknowledgments:** We thank Point Reyes National Seashore for their cooperation. This is PRBO contribution No. 1606.

## 22. DISTURBED COASTAL SCRUB B MATORRAL PERTURBADO B

Laura Kaplan & Elizabeth Porzig  
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3820 Cypress Drive #11  
Petaluma CA 94954

**Location:** California; Marin Co.; Bolinas; Palomarin Field Station; 37°55'N, 122°46'W; Bolinas Quadrangle, USGS. **Continuity:** Established 1971; 30 yr. **Size:** 8.1 ha. **Description of Plot:** See *Am. Birds* 25:1002 (1971) and *J. Field Ornithol.* 66(Suppl.):104 (1995). **Weather:** Mean start temp., 10°C (range 5–14°C). **Coverage:** 204.2 h; 68 visits (25 sunrise, 0 sunset). 2004. **Census:** Song Sparrow, 10.0 (49; 5N,10FL); American Goldfinch, 9.0 (44; 6N); Wrentit, 7.0 (35; 6N,10FL); Swainson's Thrush, 4.0 (20); Bewick's Wren, 3.5 (17); Wilson's Warbler, 3.5 (1N); Spotted Towhee, 3.5 (3N); Anna's Hummingbird, 3.0 (15); Orange-crowned Warbler, 3.0; Allen's Hummingbird, 2.5; Purple Finch, 1.5; Mourning Dove, 1.0; Western Scrub-Jay, 1.0; Downy Woodpecker, 0.5; Bushtit, 0.5; Brown-headed Cowbird, 0.5; Northern Flicker, +; Steller's Jay, +; Chestnut-backed Chickadee, +; Golden-crowned Kinglet, +; American Robin, +; California Towhee, +; White-crowned Sparrow, +. **Total:** 23 species; 54.0 territories (267/40 ha). **Visitors:** California Quail, Band-tailed Pigeon. **Remarks:** Cover of trees (firs) and shrubs continues to increase. Overall territory density decreased by 24% from 2003. No single species decreased dramatically, but rather a majority of species exhibited slight declines. This is the first year that Downy Woodpecker was recorded with a territory in the plot. **Other Observers:** None reported. **Acknowledgments:** We thank Point Reyes National Seashore for their cooperation. This is PRBO contribution No. 1607.

## 23. RED OSIER DOGWOOD SHRUBLAND MATORRAL DE CORNEJO DE HOJAS ROJAS

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**Location:** Ontario; Waterloo; Laurel Creek

Conservation Area; 43°29'N, 80°35'W. **Continuity:** New. **Size:** 10.0 ha. **Description of Plot:** A roughly square plot located within the Laurel Creek Conservation Area. The park itself contains a variety of habitats: deciduous forest, coniferous woodland, wetland marsh, meadowland, and shrubland. The primary habitat of the plot is shrubland dominated by red osier dogwood, which is scattered in varying densities throughout. The dogwoods range from 1–3 m in height, and are tallest and most dense in the southeast end of the plot. Both the height and density of the dogwoods gradually decrease toward the northwest end such that the sparse shrubs are separated by a ground cover of tall grass. A few small deciduous trees are dispersed within the shrubland. Within the plot, there is a teardrop-shaped pond with a diameter of approximately 50 m. Also within the plot, there are grass- or gravel-covered trails and nine birdhouses. **Edge:** The plot is surrounded by a variety of habitats. There is a deciduous forest and a private residence to the north. To the east is marshland, Laurel Creek Reservoir, and Laurel Creek itself. The southern border is delineated by an east-west running powerline. To the southwest is a deciduous swamp forest, and to the west there is a long, thin, tall swath of trees (primarily cedar) and then more shrubland. **Topography and Elevation:** The plot is roughly level with a gentle slope down towards the reservoir at the eastern end. This area can be exceptionally wet. **Weather:** Mean start temp., 14.2°C (range 7–18°C). The 10 June visit was ended early due to heavy rain. The 27 May visit began with heavy fog, which soon lifted to clear skies. **Coverage:** 12.2 h; 6 visits (6 sunrise, 0 sunset); 13, 18, 27 May; 3, 10, 14 June; 2004. **Census:** Yellow Warbler, 19.0 (76; 1N); American Goldfinch, 18.0 (72); Song Sparrow, 14.0 (56); Tree Swallow, 10.0 (40); Red-winged Blackbird, 10.0; Willow Flycatcher, 8.0 (32); Gray Catbird, 6.0 (24); Brown-headed Cowbird, 5.0 (20); Black-capped Chickadee, 4.0 (16); American Robin, 4.0; Northern Flicker, 2.0; Blue Jay, 2.0; Common Yellowthroat, 2.0; Northern Cardinal, 2.0; Canada Goose, 1.0 (FL); Great Blue Heron, 1.0; Eastern Kingbird, 1.0; American Crow, 1.0; Brown Thrasher, 1.0; Indigo Bunting, 1.0; Baltimore Oriole, 1.0. **Total:** 21 species; 113.0 territories (452/40 ha). **Visitors:** Mallard, Ruby-throated Hummingbird, Downy Woodpecker, Red-eyed Vireo, Cedar Waxwing, Chestnut-sided Warbler, Clay-colored Sparrow, Rose-breasted Grosbeak. **Remarks:** Mosquitoes and dragonflies were numerous during the second half of the census. In general, the most intense amount of bird activity was in the southeastern corner of the plot where the dogwoods were the tallest and densest. The bordering powerlines and the birdhouses showed a considerable amount of bird activity. The powerlines were used by a variety of species including Brown-headed

Cowbird, Willow Flycatcher, Gray Catbird, Red-winged Blackbird, and Tree Swallow. The birdhouses were used by Tree Swallows.

**24. ABANDONED UPLAND PASTURE II**  
**PASTIZAL DE ALTURAS ABANDONADO II**

LYNN BOWDERY, LIN FAGAN, ALLAN BOWDERY,  
 TOM SARRO, JANE VECCHIONE, RUTH ELWELL,  
 ELIZABETH MOFFET & BEA CONOVER

*Mohonk Preserve, Inc.*  
*Daniel Smiley Research Center*  
*P.O. Box 715*  
*New Paltz NY 12561*

**Site Number:** NY1394089. **Location:** New York; Ulster Co.; Marbletown; Spring Farm; 41°47'30"N, 74°7'30"W; Mohonk Lake & Rosendale Quadrangles, USGS. **Continuity:** Established 1994; 3 yr. **Size:** 30.0 ha. **Description of Plot:** See *J. Field Ornithol.* 66(Suppl.):114-115 (1995). Brush conditions in the fields were similar to 1999. Ash trees at the edges continue to die, and the dead elms are losing branches and rotting away. Woolly adelgid has killed some of the hemlocks in the surrounding woods. **Weather:** Mean start temp., 17.3°C (range 12-23°C). We enjoyed good observing weather for this census. In particular, there were no days in which wind noise prevented us from hearing the birds. **Coverage:** 33.0 h; 13 visits (12 sunrise, 1 sunset); 14, 17, 19, 24 May; 2, 4, 7, 9, 14, 16, 21, 23 June; 4 August; 2004. Maximum number of observers/visit, 9. **Census:** Indigo Bunting, 36.0 (48; 2N); Red-eyed Vireo, 17.0 (23; 1N); Field Sparrow, 12.0 (16); Tufted Titmouse, 9.5 (13; 3FL); Common Yellowthroat, 8.0 (11); Prairie Warbler, 7.0 (9); American Goldfinch, 7.0; Red-bellied Woodpecker, 6.0 (8); Northern Cardinal, 6.0; Chipping Sparrow, 5.0 (7; 2FL); Downy Woodpecker, 4.0 (5; 2FL); Black-capped Chickadee, 4.0 (3FL); Wood Thrush, 4.0; Gray Catbird, 4.0; Scarlet Tanager, 4.0; Brown-headed Cowbird, 4.0; Baltimore Oriole, 4.0; Eastern Wood-Pewee, 3.5 (5); Ruby-throated Hummingbird, 3.0 (4); Eastern Phoebe,

3.0 (1FL); Blue Jay, 3.0; Tree Swallow, 3.0 (3FL); White-breasted Nuthatch, 3.0; American Robin, 3.0 (2FL); Blue-winged Warbler, 3.0; Eastern Towhee, 3.0 (1FL); Rose-breasted Grosbeak, 3.0; Red-winged Blackbird, 3.0; Mourning Dove, 2.0; Great Crested Flycatcher, 2.0; Eastern Bluebird, 2.0 (5FL); American Redstart, 2.0; Wild Turkey, 1.0 (4FL); Yellow-billed Cuckoo, 1.0; Hairy Woodpecker, 1.0; Northern Flicker, 1.0; Pileated Woodpecker, 1.0; Eastern Kingbird, 1.0; Barn Swallow, 1.0 (1N); House Wren, 1.0 (1N); Blue-gray Gnatcatcher, 1.0; Cedar Waxwing, 1.0; Black-and-white Warbler, 1.0; Ovenbird, 1.0; Song Sparrow, 1.0; Sharp-shinned Hawk, 0.5; Yellow-throated Vireo, 0.5; American Crow, 0.5; European Starling, +; Yellow Warbler, +; Worm-eating Warbler, +; Common Grackle, +. **Total:** 52 species; 197.5 territories (263/40 ha). **Visitors:** Red-tailed Hawk, Black-billed Cuckoo, Acadian Flycatcher, Least Flycatcher, Carolina Wren, Golden-crowned Kinglet, Black-throated Blue Warbler, Yellow-rumped Warbler, Black-throated Green Warbler, Cerulean Warbler, House Finch. **Remarks:** New species this year were Sharp-shinned Hawk, Red-tailed Hawk, Black-billed Cuckoo, Acadian Flycatcher, Golden-crowned Kinglet, and Carolina Wren. Chestnut-sided Warbler had been seen on territory previously but was not seen this year. There were substantial declines in the numbers of territories of Field Sparrow, Common Yellowthroat, Prairie Warbler, Chipping Sparrow, American Redstart, American Robin, and Song Sparrow. Species that increased their numbers included Indigo Bunting, Red-eyed Vireo, Tufted Titmouse, Downy Woodpecker, Red-bellied Woodpecker, Eastern Wood-Pewee, Baltimore Oriole, and Ruby-throated Hummingbird. **Other Observers:** Barbara Rubin, David Arner, Betty Boomer, Tom Crepet, John Thompson, Ethan Pierce, Lauren McPhillips, and Clea Bowdery. **Acknowledgments:** Thanks to the Mohonk Preserve for its cooperation, and especially to the Daniel Smiley Research Center, for which these censuses are done.

## THE AUDUBON WINTER BIRD-POPULATION STUDY

By Haven Kolb

POPULATIONS OF BIRDS have been studied in the winter season for many purposes and by a number of methods. Most published studies have concentrated on game species and have been directed toward obtaining data that might increase ability to manipulate their populations for hunting purposes. In 1948 (Vol. 2: (3): 151-164) *Audubon Field Notes* inaugurated a scheme for a survey of winter bird-populations in an attempt to gather data on the characteristics of the total avian populations of specific areas. During the intervening years the Audubon Winter Bird-Population Study has accumulated a considerable body of information. On a few plots the winter populations have been studied through many years. In a few of the major North American biomes winter populations have been studied on a dozen or more different sample plots. But very few plots have been studied for more than a decade and some major biomes—to say nothing of dozens of significant habitats within biomes—have never yet been sampled in a single study. Indeed, the surface has scarcely been scratched; but enough has been done to indicate the high potential of the Audubon Winter Bird-Population Study for exploring many important problems of population dynamics.

Although many of the questions listed by Hall (*Audubon Field Notes* 18:413, 1964) as objectives for Breeding-bird Censuses apply equally well as objectives for winter studies, there is a basic difference in the methodology of the two undertakings. The breeding-bird study is a true census; the winter study, on the other hand, is a sampling procedure similar in some respects to studies of fish populations by the unit-of-effort method. Traversing a measured plot in a standard manner, we "catch" the bird population present at the time by recording our observations on a map. This procedure is repeated a number of times and all of the "catches" are averaged. This gives us not an enumeration but a statistic. It is important to keep in mind this difference in the results reported by the two kinds of studies.

**Selection of the Area.**—The overriding consideration in selecting a place in which to carry on a winter bird-population study is accessibility. The most beautiful primeval forest from which you may be barred by snow or mud for half the winter is of less value than a suburban park that you can reach consistently all winter by walking across the street from your home. All the remaining advice in this section is subject to exceptions. The editor invites correspondence from persons planning studies in what they may consider exceptional situations.

It is true that there is a pressing need for studying all the biotic phenomena in primeval areas, for, as such areas rapidly disappear, we lose forever a baseline for all future ecological studies. But we need to know things-as-they-are as well as things-as-they-were. Today the proportion of this continent covered by aboriginal vegetation is infinitesimal in compari-

son with the proportion covered by cropland. Therefore, we welcome well-planned and efficiently conducted winter bird-population studies from all kinds of habitats.

It is desirable that a study plot cover a *single* kind of habitat and that it be surrounded by more of the same habitat. Of course, it is difficult to define a "single kind of habitat." Not even a Kansas wheat-field is completely uniform throughout, but a plot covering wheat stubble only is clearly more uniform than one partially stubble and partially hayfield. Yet a plot containing a mosaic of croplands has a certain uniformity as compared to one that mixes stubble, grazed meadow and woodlot. We are attempting to secure comparable plots. The more variables there are in a plot the less easy it is to match it with other plots. A plot that cannot be compared to other plots furnishes a unique set of data, but a unique set of data is of little interest to anyone except the person who obtained it. Only by grouping comparable sets of data can we arrive at scientific generalizations. Therefore, uniform-as-possible study plots are desirable.

There is a tendency for observers to seek areas that are known to have large numbers of birds. Since bird-watchers like to have birds to watch this is a natural tendency, but it does introduce a bias. One way to cut down on this bias is to be sure that the study plot is sufficiently large. In general, study plots of less than twenty acres are likely to produce biased results.

The line of contact between adjacent habitats is, for some species, itself a kind of habitat. For such species study plots laid out in the midst of the uniform habitats on either side have a bias. Properly to measure populations of such species, counts should be made in a narrow strip along the line of contact. To determine the "density" of such populations only a linear measure (number of birds per mile, for example) rather than an areal measure (acres) is used. This strip-plot method has also been used along sea beaches and along irrigation ditches in arid lands.

**Mapping the Plot.**—The area for study having been chosen, the study plot should be laid out and mapped. The mapping need not be done with the accuracy of a professional surveyor, though an official plat, if you can locate one, will save some work. The greatest care is to be taken with the boundaries so that the acreage can be computed accurately. Features within the boundaries require less precise location. Sufficient landmarks should be mapped to enable you to follow a definite route through the plot. If landmarks are lacking, stakes or other markers must be placed on the plot and located on the map. However, a precise grid is not essential, since, in winter population studies, it is not necessary to outline territories.

**Manner of Counting.**—With a map on a clipboard, the observer traverses the plot in such a way

that all parts of it come under observation with a minimum of duplication. As birds are noted, they are recorded on the map at their approximate positions. The same route, or its reverse, should be followed on all trips. Occasionally it may be necessary to cover only part of the plot during a trip. In this case, the remainder should be covered at another time so that at the end of the study there will be an integral number of trips.

A pre-determined system of symbols to denote all expected species reduces the amount of writing in the field—an important consideration in very cold weather. Arrows may be used to indicate lines of flight. These are helpful in estimating errors caused by recounting the same birds in different parts of the plot. Birds that fly over the plot should be noted but they are not to be counted as part of the population unless there is evidence that they were foraging. For example, a flock of crossbills may be noted flying across a study plot in a meadow on their way from one wood lot to another; they would not be considered a part of the population of the meadow. But a Marsh Hawk quartering over the same plot is a significant factor in the meadow ecosystem; it would, therefore, be counted.

At the conclusion of each trip the individuals of each species are totaled, allowance being made for individuals that the flight lines on the map indicate may have been counted more than once. At least six trips should be made and preferably eight or ten. More than one trip (coverage) may be made in a day, but not more than two. The trips may be made in a few consecutive days or they may be spaced through the winter season. At the conclusion of the study the numbers of individuals of each species are totaled for all trips and the sum is divided by the number of trips (see under "The Report" below).

**Time of the Counts.**—"Winter" is a term of many meanings. For the purpose of this study it may be defined as a period of the year after the fall migration has ended and before the spring migration has begun. In some parts of North America north of Mexico the fall and spring migrations may almost overlap when we take all bird species into consideration. Also, in some places, the breeding season of a few resident species may begin before the influx of winter visitants has ceased, thus overlapping "winter" studies with breeding censuses. Roughly, for the northern half of the United States and for Canada, it has been customary for the purposes of the Winter Bird-Population Study to consider the last week in December through the first week in February as winter. But the observer on the spot is the only competent judge of "winter" for his region.

No particular time of the day is prescribed for the counts. Some students consider mid-morning to be the time at which the most full and accurate counts can be obtained. Others believe that the times of the counts should be varied through the day. Most agree that the before-sunrise hours, so important in the Breeding-Bird Studies, are not so productive in winter. In any case, the report should state the timing of the counts.

**The Report.**—A descriptive title should begin the report. This should indicate the general nature of the habitat and, if possible, it should not exceed one line of type. It need not be unique; many reports may be labeled "Mature Beech-Maple Forest," being distinguished from each other by their individual locations.

Location should be given in such a way that the study plot could be relocated at a later date by a different observer. The U. S. Land Office township notation should be used in states to which it applies; elsewhere distance and bearing from some conspicuous point on a U. S. Geological Survey topographical map may be given.

In submitting a first report on a given plot provide a map giving the shape and dimensions. State the way in which the dimensions were determined. State the size in acres. In subsequent reports only the size need be given.

In a first report the study plot should be described fully. The principal plants should be identified by both common and scientific names and a reference should be given for the nomenclature used. In forest areas the approximate percentage of each leading tree species should be given and the principal shrubs and herbs should be mentioned. In grassland the principal grass species and their approximate percentage in the stand should be given and then the more conspicuous forbs should be mentioned. In desert regions in addition to naming the principal plants the report should give an estimate of the percentage of the ground that is bare. Buildings, roads and other man-made features of the landscape should be described briefly. Useful subheadings in the description are: TOPOGRAPHY (the general elevation of the area and a brief description of the characteristics of the land surface); EDGE (a statement concerning the nature of the area around the plot and the nature of major discontinuities of habitat within it); WATER (description of springs, streams, or ponds within the plot or the nearest source of water); FOOD (any notes that might be helpful in assessing the support that the plot offers for bird populations). After the initial report a reference to the original publication of the description may be given followed by notes on any changes that have occurred. Good photographs of the study plot are of interest and will be published as space permits.

The weather during the period covered by the counts should be described succinctly. The monthly summary report of the closest U. S. Weather Bureau Station is a good basis for describing the weather, but allowance must be made for the differences in weather that even small differences in distance—and especially altitude—make.

Under the heading of "Coverage" the dates and times of day of the trips should be given, ending with a summary of the number of trips and their average length.

In the counts the species are listed in order of decreasing abundance; species of the same abundance are listed in taxonomic order. After each species, place the average number of individuals per trip rounded to the nearest *whole* number. To obtain this

average for each species simply add together the counts from all the trips and divide by the number of trips. When the average number of individuals per trip is less than 0.5 report no number but follow the name of the species by a "+". Following the average for each species place in parentheses the density of individuals per 100 acres. To get this number multiply the average individuals per trip by 100 and divide by the acreage of the study plot, rounding off to the nearest whole number. No density figure is to be calculated for species indicated by "+".

For the average total, add all of the average counts of the individual species; ignore species reported as "+". In parentheses place the total density of birds per 100 acres calculated in the manner given above.

Three principal items may appear under the heading of "Remarks": 1. The *frequency* of occurrence of the principal species. A single large flock of a certain species noted on only one trip may produce an average count larger than that of another species noted in small numbers on each trip. Ecologically the second species may be more important to the area than the first, but the figures reported in the count provide no evidence for such a judgment. If, however, the number of trips on which each species was noted is reported in the "Remarks" a reader will have the necessary information. 2. *Changes in status*. When a study is repeated on the same plot over a number of years the author may wish to point out what seem to him to be significant changes in the populations of some species. These remarks are of special interest when they can be correlated with variations in weather patterns. 3. Observed *relationships* between birds in the study plot and on surrounding areas. For example, the study plot may serve as a feeding place for birds that spend most of their time elsewhere, or vice versa. In addition to these three categories other remarks may occur to thoughtful students. But space limitations must be kept in mind and authors may expect the editorial blue pencil to be wielded most heavily in the final section of their reports.

**Model Study.**—The following model is purely synthetic. In submitting a report follow this form as closely as possible, but do not try to indicate the type styles except to indicate, by underlining, the italics of scientific names and the compiler's address.

#### UPLAND OAK-HICKORY FOREST.—

Location: On south side of State Highway 16, 3 miles east of Rockland, Illinois (Section 25, T23S, R13E). Size: 30 acres (rectangular, 330 x 440 yards, measured with steel tape). De-

scription of Area: Typical woodland of central Illinois; trees average about 50 feet high and about 1 foot DBH (diameter breast high). White Oak (*Quercus alba*), 50%; Black Oak (*Q. velutina*), 20%; Pignut Hickory (*Carya glabra*), 20%; miscellaneous hardwood species, 10%. The forest canopy is somewhat open with an understory of shrubs and saplings averaging 8 feet high; a sparse herbaceous layer occurs in spring. This woodland has been culled at various times in the past but has not been disturbed for at least thirty years. An old logging road is still discernible in the southeast corner. TOPOGRAPHY: Flat, elevation 800 feet. EDGE: The study plot is part of a woodland of about 75 acres. Beyond the eastern border there was extensive logging about five years ago. To the north, on the other side of the state highway, is a large pasture. WATER: A small sluggish brook flows diagonally across the plot and empties about a mile away into the Blue River. FOOD: There was a heavy crop of acorns and nuts this year, but very little fruit remained on shrubs at the time of the counts; dead wood, both standing and down, is abundant and contains many boring insects and grubs. Weather: During the 30-day study period the temperature remained below freezing on 8 days and remained above freezing on 4 nights. The range of temperature was from 3° to 61°F. There was little precipitation, but on four of the seven trips the ground was covered with one to two inches of snow. (Temperatures from Rockland Airport, 5 miles to the west.) Coverage: Dec. 29, 31; Jan. 2, 14, 15, 22, 28. Total: 7 trips, all between 8:30 and 11:30 a.m., averaging 100 minutes each. Count: Downy Woodpecker, 3 (10); Black-capped Chickadee, 3 (10); White-breasted Nuthatch, 2 (7); Slate-colored Junco, 2 (7); Brown Creeper, 1 (3); White-throated Sparrow, 1 (3); Yellow-shafted Flicker, +; Turkey Vulture, +; Red-bellied Woodpecker, +; Golden-crowned Kinglet, +. Average Total: 12 birds (density, 40 per 100 acres). Remarks: The Downy Woodpecker was noted on every trip, the chickadee was noted on six trips, the nuthatch and creeper on 4 trips, and the White-throated Sparrow on 3 trips. The juncos were in a flock that was seen only once. This woodland had a very small population compared to a similar one studied for five years about fifty miles east near Edgewood, Indiana.—GEORGE J. STONE, Box 31, Rt. 2, Dixon, Ill. 61663.

