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RESEARCH

Center Completes Study of Grassland Birds Within Mid-Atlantic Region

Results from the annual, U.S. Fish and Wildlife Service's breeding bird survey (BBS) suggest that species associated with grasslands or shrublands have experienced annual population declines that in many cases are equal to or greater than those experienced by forest-dwelling birds. Between 1966 and 1991, 28 species associated with grasslands and shrublands in eastern North America showed a negative population trend. Although a number of explanations have been advanced to explain recent declines in early successional species, the most pervasive is that the availability of habitats to support these species has declined. Changes in landuse patterns across eastern North America have resulted in both a decline in the availability of open habitats and a change in the character of remaining open patches.

In the mid-Atlantic region, some of the most exemplary examples of early successional habitats remaining are located on military installations. In 1994, the Center, in cooperation with the U.S. Department of Defense, initiated a research project to investigate the habitat requirements of early successional species. The study examined the influence of successional stage and patch size on breeding density and incidence rates. Both breeding and winter bird communities were sampled within a network of study sites located on the Coastal Plains of Maryland and Virginia. During both seasons, habitat type and patch size were important determinants of community organization.

The results of this study provide regionalized insights into the habitat requirements of grassland and shrubland birds that are important to the development of appropriate management guidelines. One of the most significant findings in this regard is that habitat area is an important requirement for species that depend exclusively on open grasslands but not for birds that use shrublands. For example, the Grasshopper Sparrow, a species of major concern in the mid-Atlantic region, exhibited a two-fold increase in density between grassland patches of 10 and 30 hectares. None of the shrubland species showed an indication of being area sensitive.

Eastern Meadowlark

The Eastern Meadowlark may often be seen perched on fenceposts and telephone wires along roadways where it may be heard singing its "spring-of-the-year" song. It is a grassland obligate species that is often associated with pastures and farmland. The species requires open patches of grassland habitat where it builds a domed nest on the ground. Even small amounts of woody vegetation will result in site abandonment. In recent years, the Eastern Meadowlark has declined throughout its range, likely due to the reduction in suitable grasslands.

The grassland bird study found meadowlarks to be fairly common within the mid-Atlantic region even in relatively small grassland patches. This finding contrasts with studies elsewhere that have shown the species to breed only in the largest patches. These contrasting results suggest that the degree of area sensitivity in some species may depend on the size of the regional population.

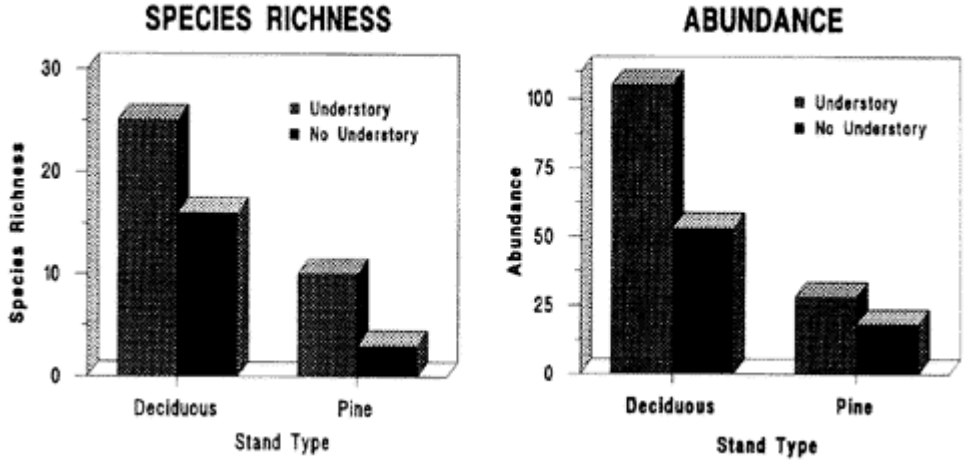
Eastern Meadowlark (r) singing from fencepost. This species and Grasshopper Sparrows accounted for 65 % of the birds detected within grassland patches during the breeding season. Artwork by Marian Urbi Watts.

Center Continues to Investigate Habitat Use by Fall Migrants

Neotropical migrants (those species that breed in North America and winter in Latin America and the Caribbean) comprise 65 - 85% of the breeding birds found in forests of eastern North America. A considerable number of studies now suggest that many of these species have experienced significant population declines over the past 40 years. Although causes of recent declines are complex and species-specific, habitat fragmentation on the breeding grounds and general deforestation on the wintering grounds have been implicated. A contributing factor, and one of growing concern in recent years, is the loss or alteration of habitats located along major migration routes.

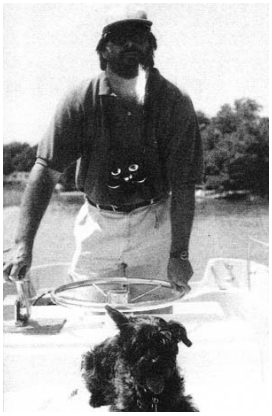
Within eastern North America one of the most significant migration routes for birds during the fall is along the Atlantic Coast where birds concentrate within a thin ribbon of habitat. Within the mid-Atlantic region, development pressures within this ribbon are extremely high. Government owned lands situated along the coast offer a significant opportunity to manage habitats for fall migrants. During the fall seasons of 1995 and 1996, Center staff, in cooperation with the U.S. Department of Defense have conducted field work to investigate patterns of habitat use by fall migrants on the Little Creek Amphibious Base. This base is located on the southern shore of the Chesapeake Bay very close to its mouth. Its position is directly across the Bay from the Delmarva Peninsula (a well known stopover area for fall migrants).

During the fall of 1996, a combination of banding operations, point counts, and intensive behavioral observations were conducted. Point counts were used to investigate the importance of stand type and understory presence on migrant distribution. Both pine and deciduous forest patches with, and without, understories were sampled over the course of the season. Both habitat factors had a significant influence on both the diversity and abundance of neotropical migrants. Deciduous forests supported 2.5 times more species and nearly 4 times more individuals when compared to pine forests. Understory removal resulted in a considerable reduction in migrants supported. Interestingly, however, some ground foraging migrants such as the Northern Flicker were more than 5 times more abundant in patches with the understory removed. Overall, the study has documented a diversity of fall migrants passing through the installation including 24 species of warblers. Analysis of habitat and foraging data is continuing.



Graphs: *The influence of forest stand type (deciduous vs. pine) and understory presence (natural understory vs. removed) on patch use by neotropical migrants on the Little Creek Amphibious Base. Patterns from data collected suggest that conversion of deciduous forests to pine plantations on the Coastal Plain may harm some fall migrants.*

Fieldwork Concluded on Bank-nesting Bird Study



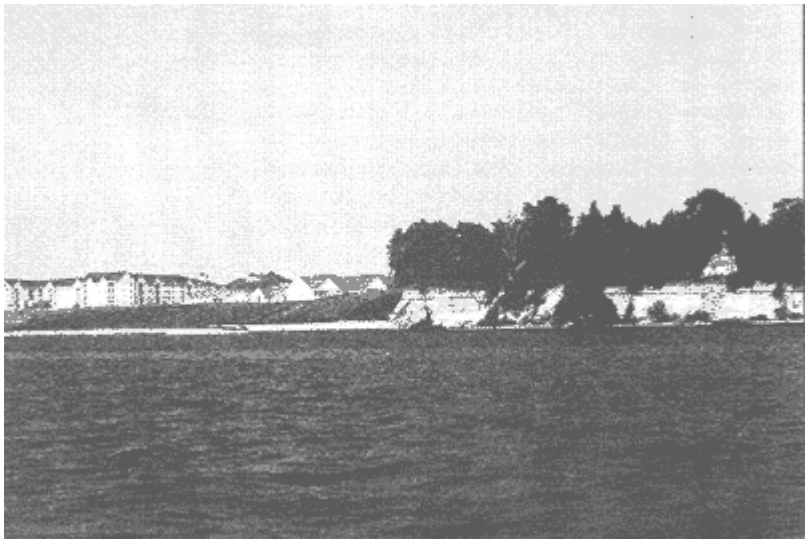
Dr. Watts pilots a boat with sea dog Sawyer in search of bank-nesting birds in the upper Chesapeake Bay of Maryland.
Photo by Marian Urbi Watts.

Marian Watts on a calm day mapping shoreline segments from the front of the boat. The shoreline survey covered over two hundred and fifty 7.5 minute topographic quadrangles.
Photo by Bryan Watts.

In the Chesapeake Bay, three bird species including the Bank Swallow, the Rough-winged Swallow, and the Belted Kingfisher depend on highly dynamic shorelines with eroded banks for nesting. Each of these species requires a soft substrate in which to excavate subterranean burrows for nesting and high, sheer banks for protection from predators. Eroding banks are formed naturally throughout the Chesapeake Bay when spring flood waters scour the shoreline along bends in rivers and when high winds cause water to batter exposed shorelines.

As the human population stretches out along the Chesapeake Bay shoreline, a rising percentage of the available shoreline habitat is being hardened to protect adjacent uplands. The use of engineering structures such as bulkheads, seawalls, and groins are being used at an increasing rate. These structures suppress the natural dynamics of the shoreline and eliminate suitable breeding habitat.

In the fall of 1994, the Center for Conservation Biology formed a partnership with the U.S. Department of Defense and the Virginia Division of Natural Heritage to investigate the status, distribution, and habitat requirements of bank-nesting birds throughout the Chesapeake Bay. The entire Virginia portion of the lower Bay was surveyed during the breeding season of 1995. During the summer of 1996, Center staff spent nearly 40 days on the water surveying the shoreline of the upper Bay. During the two-year period, over 800 tributaries of the Bay were surveyed including several thousands miles of shoreline. Over 1,300 shoreline segments were mapped and surveyed for nesting birds. Analysis of data to generate population estimates, information on habitat requirements and distribution is ongoing.

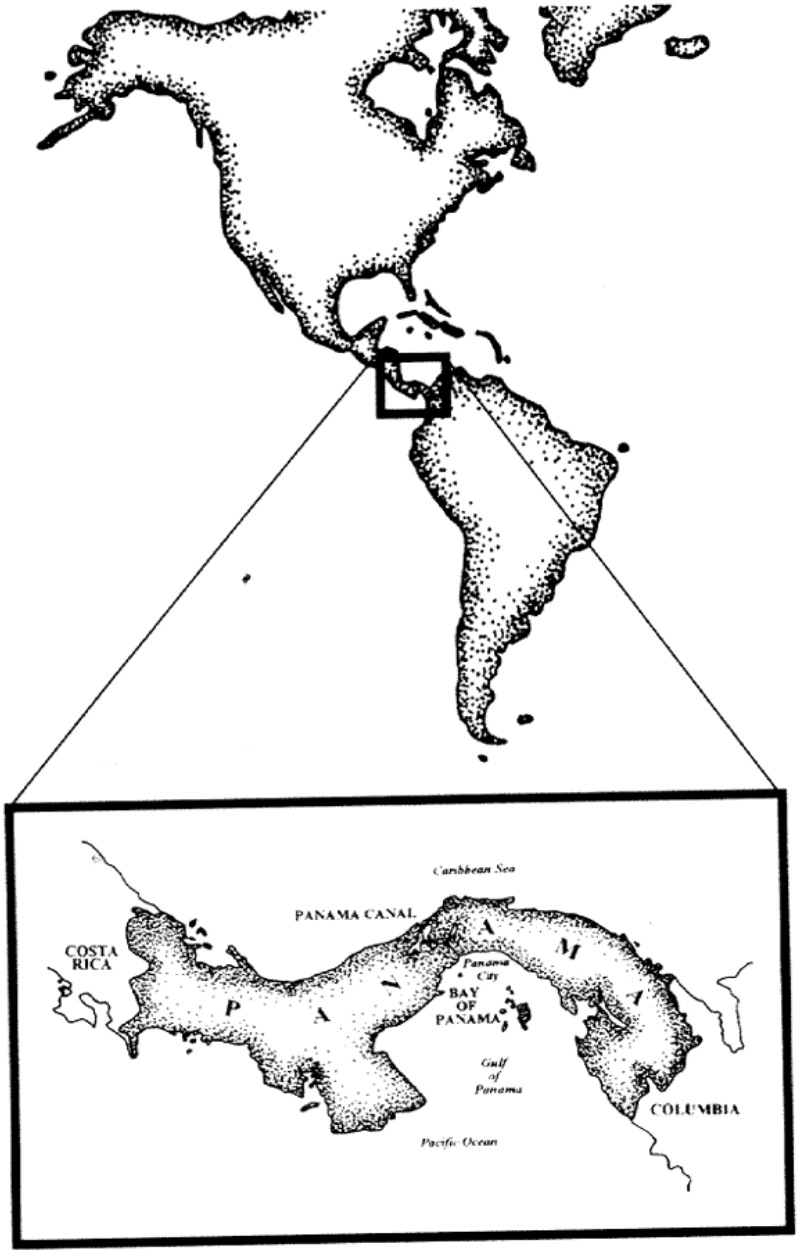


A section of dynamic shoreline on the lower Patuxent River in Maryland that has been graded and stabilized to accommodate new development. Such projects suppress the natural dynamics of the shoreline and reduce habitat availability for bank-nesting birds. Photo by Bryan Watts.

CENTER NOTES

Center to Conduct Study of Migrant Shorebirds in Panama
DoD, Smithsonian, College of William & Mary

Panama represents a continental crossroads for many bird groups that migrate between North and South America. During the fall of 1997, Center staff will travel to Panama to begin a comprehensive study of shorebirds migrating through the lands within and surrounding the Panama Canal Zone. The Bay of Panama at the Pacific entrance to the canal is the most significant wintering area for shorebirds in Central America. The study will involve population estimation for species moving through the region, as well as, an investigation of their migration ecology and prey base.



Location of upcoming shorebird migration study. Research area will include the Panama Canal Zone and the Bay of Panama at its Pacific entrance. This area is known to be a highly significant wintering area for shorebirds. However, less information is available on its role during fall migration.
Illustration by Marian Urbi Watts.

Center Forms Partnership with U.S. Department of Defense to Conduct 2 Bird Studies on Local Military Lands

The U.S. Department of Defense (DOD) controls over 10 million hectares of land within the United States making it the third largest land holder in the federal government. Because of the high concentration of military installations within the mid-Atlantic region, DOD lands may represent the most promising opportunity to manage lands for populations of declining species. In 1991, DOD, through each of the military services, joined the Partners in Flight initiative. Through this partnership, DOD has committed to integrate neotropical migratory bird management efforts into existing natural resource and land management programs that are consistent with the military mission.

During the breeding season of 1997 Center staff and students will begin research and monitoring projects on two military installations. The first of these projects will focus on populations of breeding birds on Fort Lee. This army installation is located between Petersburg and Hopewell and contains over 5,000 acres. In addition to training and housing areas, the installation has extensive tracts of pine and hardwood forests that likely support significant populations of neotropical migrants during the breeding season. Surveys will be conducted within available habitats and information will be used to better incorporate breeding birds into existing resource management plans. The second project will focus on breeding birds on Quantico Marine Corps Base. During the breeding season, Center staff and students will operate three MAPS (Monitoring Avian Productivity and Survivorship) stations to help the military fulfill their commitments to the Partners in Flight program.