



Department of Defense

# Partners in Flight

Strategic Plan

***T*he Conservation and Management  
of Neotropical Migratory Birds and Their  
Habitats on Department of Defense Lands**



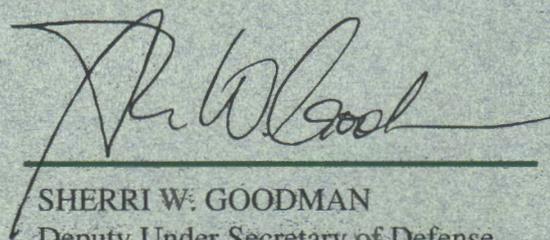
## *A* Message of Support

In 1991, the Department of Defense (DOD), through each of the military services, joined the Partners in Flight initiative. DOD is working in partnership with over 110 other Federal and State agencies and nongovernmental organizations for the conservation of neotropical migratory birds. Through participation in this partnership, DOD will actively pursue a sound conservation ethic in managing its public lands for the benefit of neotropical migratory birds.

The DOD Partners in Flight program described here offers a coordinated framework for integrating neotropical migratory bird management efforts into existing natural resource and land management programs consistent with the military mission. Following the intent of the National Partners in Flight effort, as well as regional approaches to neotropical migratory bird conservation, DOD's strategy will focus on inventory, on-the-ground management practices, education, and long-term monitoring to determine changes in populations of these birds on DOD installations.

Our vision is to be a vital and supportive partner in the neotropical migratory bird conservation program by implementing projects and programs on DOD lands in conjunction with our partners to benefit the health and well-being of neotropical migratory birds and their habitat.

I wholeheartedly and enthusiastically support this endeavor and look forward to DOD's cooperative leadership role in Partners in Flight and the neotropical migratory bird conservation effort.



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SHERRI W. GOODMAN  
Deputy Under Secretary of Defense  
(Environmental Security)

# DOD Partners in Flight Strategic Plan

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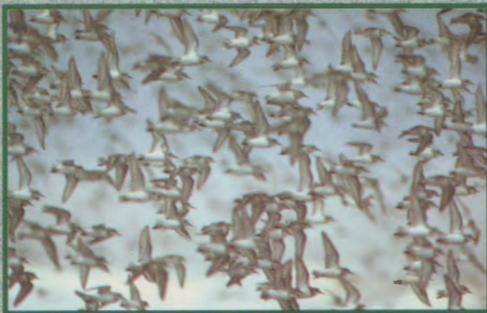
## Introduction

### What are Neotropical Migratory Birds?

*Neotropical migratory birds are those species that nest in the United States and Canada and migrate south to the tropical regions of Mexico, Central America, South America, and the Caribbean for the winter. Over half of all bird species nesting in the United States are classified as neotropical migratory birds. These 360 species include many of our waterfowl, birds of prey, shorebirds, and songbirds.*



*The Painted Redstart, found throughout North America, is featured on the National Partners in Flight logo.*



*Many shorebirds are neotropical migrants. These birds are some of the earliest migrants and travel in large flocks, requiring undisturbed areas for feeding and resting. Conservation of shorebirds is promoted through the Western Hemisphere Shorebird Reserve Network.*

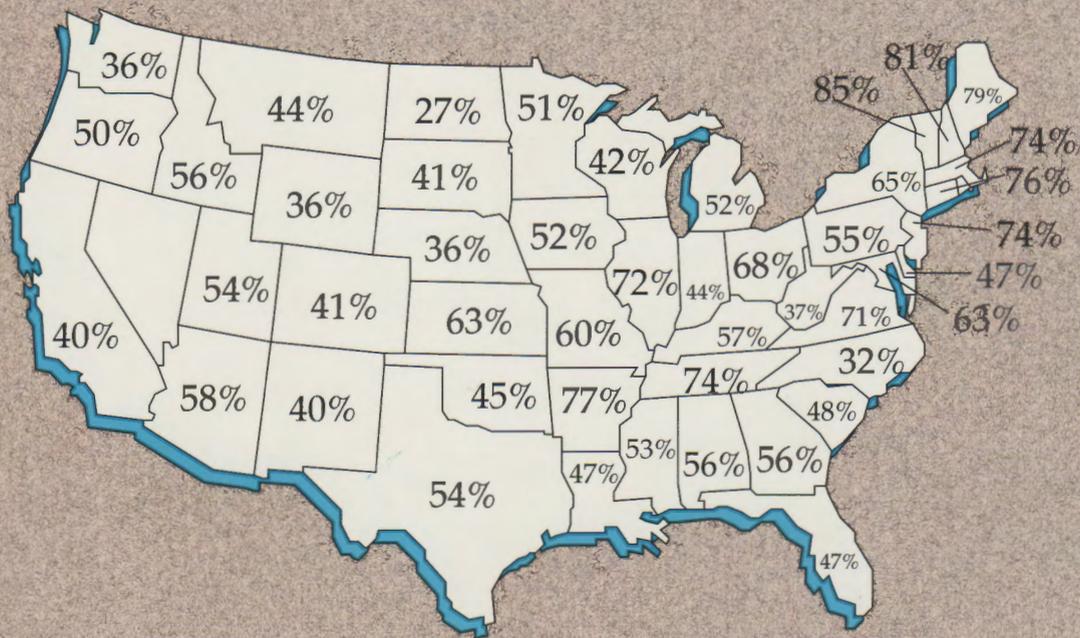


*Some of the most popular neotropical migrants are waterfowl which migrate in very distinct flyways. The North American Waterfowl Management Program enhances waterfowl populations and protects their wetland habitat. DOD has implemented waterfowl enhancement plans at 13 installations.*



## History - Cause for Concern

"Migratory birds are under stress as never before, both in their North American breeding grounds and on their tropical and south temperate wintering grounds," states John Terborgh in his book Where Have All The Birds Gone? These birds, commonly referred to as neotropical migratory birds, are of special concern to biologists who have observed their populations over many years. Populations of these birds have been declining in recent years due to fragmentation of habitat on breeding grounds, deforestation and adverse agricultural practices on wintering grounds, pesticide poisoning, nest parasitism, and the cumulative effects of habitat changes along migration routes. Long-term monitoring programs have indicated a precipitous decline in many neotropical migrants over the last 10 to 20 years. A 70% decline in some of these species has been noted in the eastern states (figure 1).



**Figure 1.**  
*Declines in neotropical migratory bird populations are widespread. Numbers on the map represent the percentages of neotropical migratory bird species with population declines in individual states between 1980-1989.*







Neotropical migratory birds are a diverse group, occupying a wide range of habitats during their breeding and nonbreeding seasons. Effective conservation programs for these birds clearly require simultaneous conservation efforts on their breeding and wintering grounds as well as migration routes. Given the vast geographic ranges of neotropical migrants, the variety of species, and the lack of complete information on most species, it is clear that a major effort must be implemented for their conservation.

In 1990, the Neotropical Migratory Bird Conservation Program was initiated by the National Fish and Wildlife Foundation and christened with the popular name, "Partners In Flight-Aves De Las Americas," stressing the importance of international conservation partnerships. The purpose of the program is to establish a mechanism to bring together the diverse array of Federal, State, and nongovernmental organizations involved in the conservation and management of these birds. The objectives of the program are to determine the status and causes of population changes, to maintain habitat for healthy neotropical migratory bird populations, and to facilitate a cooperative partnership effort among concerned



groups. Coordinating efforts and pooling resources will ensure consistency in research, monitoring, education, and management of neotropical migratory birds and their habitats across international borders.

Consistent and reliable survey and monitoring programs give important early warning signs of population declines and also provide a framework for managing population recovery. Long-term population

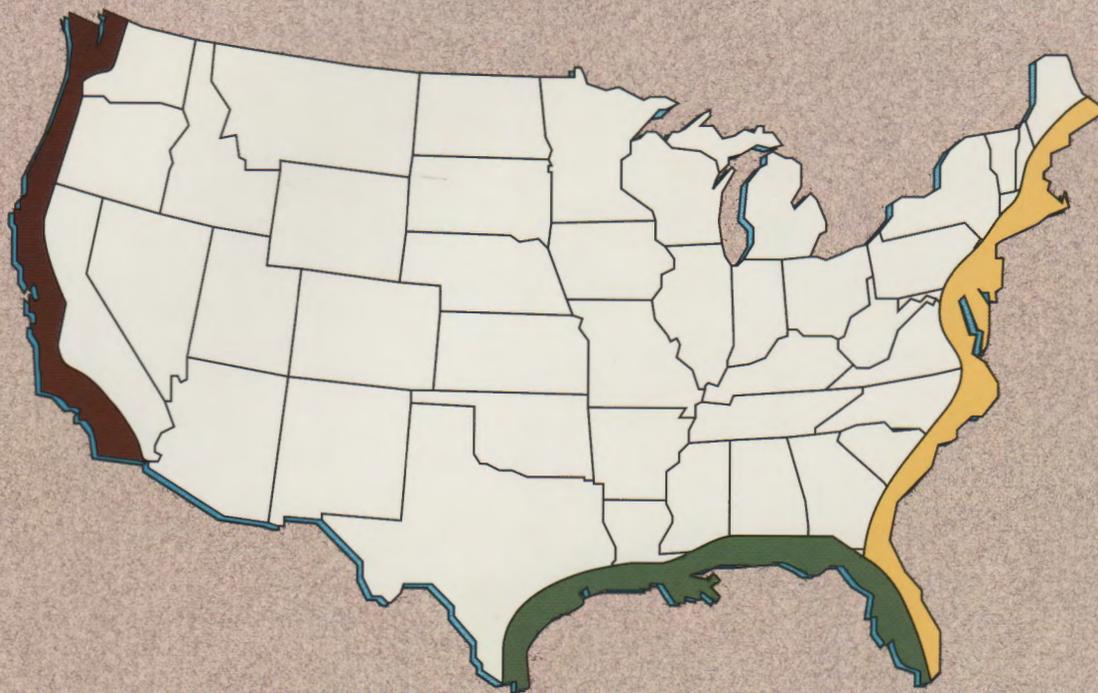
monitoring provides us with baseline data from which changes in populations can be detected. Having this type of data offers DOD land managers the opportunity to "do conservation when it should be done," that is, before species become threatened or endangered. By implementing the neotropical migratory bird conservation program now, it may be possible to preclude further declines and avoid listing more neotropical migrants as threatened or endangered.

National and regional working groups have been established to focus on research and monitoring needs, information and education, legislation, and management programs to enhance and maintain the health of neotropical migratory birds and their habitat. Although aimed primarily at neotropical migratory land birds, the Partners in Flight Program complements existing efforts to enhance neotropical migratory shorebird and waterfowl populations through the Western Hemisphere Shorebird Reserve Network and the North American Waterfowl Management Program.



# The Migration Cycle

Radar tracking indicates that, during peak migration, 80,000 birds per mile may arrive on U.S. coastlines each day. This thin ribbon of land at the water's edge is critical to migratory birds arriving here after strenuous hours of nonstop flight from southern wintering grounds. As these in-between resting and refueling areas are developed or modified (figure 2), migratory birds may be forced to fly on. Many die from overexhaustion before they can reach a suitable resting site.



## *Percent Increases in Human Population*

*Density Between 1940-1985*

PACIFIC-270%

GULF-239%

ATLANTIC-78%

### *Figure 2*

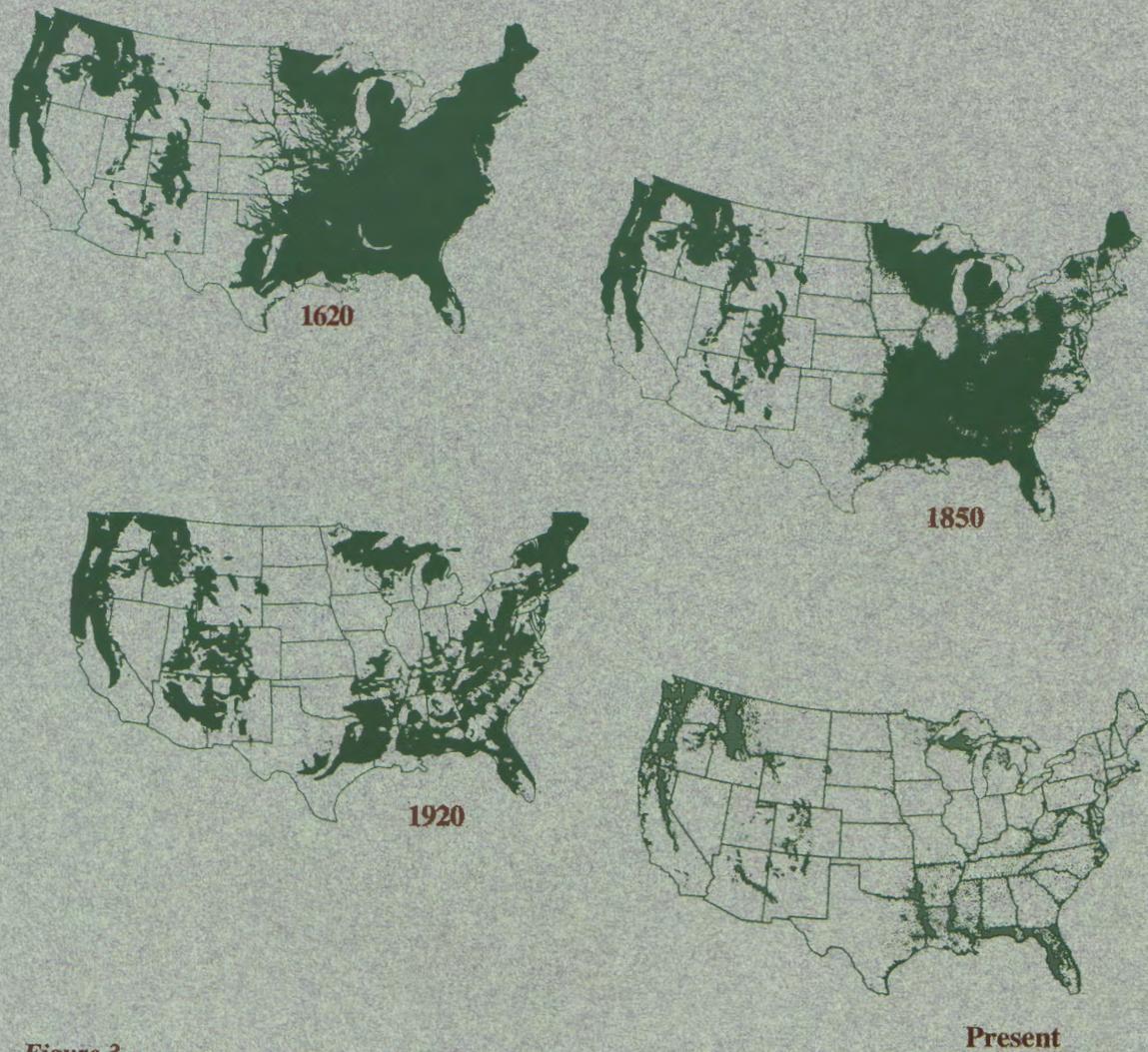
*As human population density increases along our coastlines, important neotropical migratory bird resting habitat is developed or modified. These in-between resting and refueling areas are critical to these migrants as they first reach our shorelines after long nonstop flights from southern wintering grounds.*







These migrants slowly filter northward to their breeding grounds, sometimes taking as long as six weeks to complete their journey. They travel in large flocks following closely behind the hatching of insect larvae on newly leafing trees. Here again it is critical that suitable habitat (figure 3) be found as these birds move northward toward their breeding grounds.



**Figure 3**  
*After a half century of recovery, forests are again on the decline. Some forest habitats have been virtually eliminated and others have undergone long-term, perhaps irreversible change. The impacts of these changes may adversely affect neotropical migratory birds as they look for resting, feeding, and nesting sites. Each dot represents 25,000 acres.*



Once at their breeding grounds, these neotropical migratory birds establish territories, form pair bonds, build nests, lay and incubate eggs, raise young, and prepare for fall migration. Throughout this period, they are subject to predation, foul weather, disease, and threats from human intervention.

In late summer, the southward exodus begins. Both young birds and adults prepare for the fall migration by consuming large amounts of food. Millions of neotropical migrants funnel down to Latin America searching for familiar tropical wintering grounds. These birds are eight times more concentrated there than on their breeding areas (figure 4), making the loss of habitat in Latin America particularly destructive to neotropical migratory bird populations.



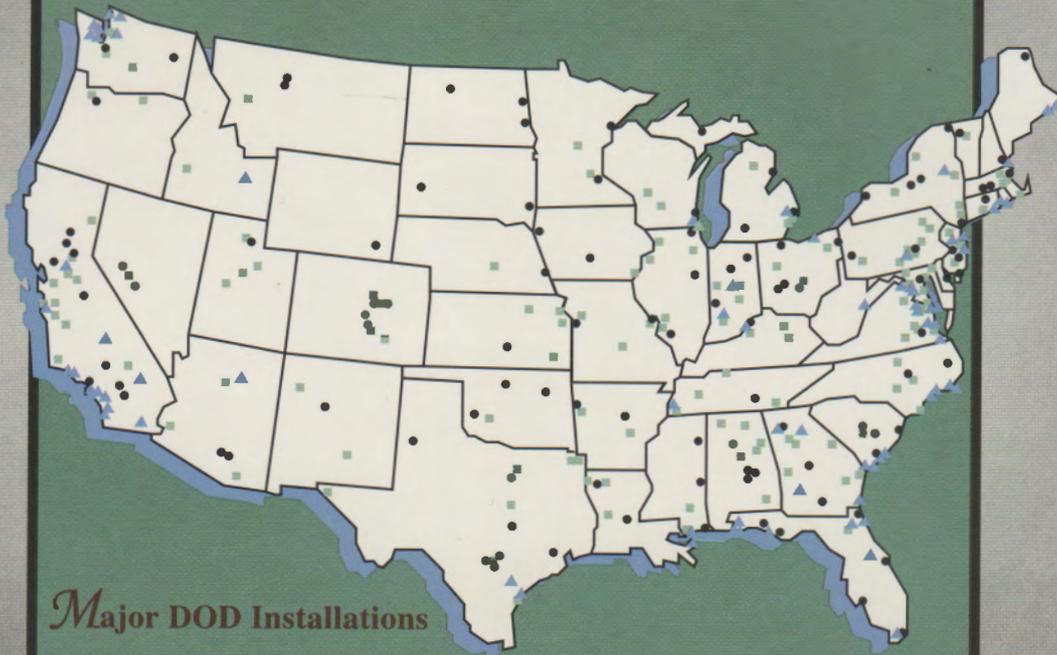
*Figure 4*  
*Neotropical migratory birds funnel from the continental expanse of North America into the small land masses of Mexico, Central America, and the West Indies.*





## Why is DOD Important to PIF?

Department of Defense lands represent a critical network of habitats for neotropical migrants, offering these birds migratory stopover areas for resting and feeding, and many suitable sites for nesting and rearing their young. As a vital partner in the PIF effort, DOD has contributed significant resources through the Legacy program and other funding sources to promote joint ventures and cooperative projects to advance the Partners in Flight program.

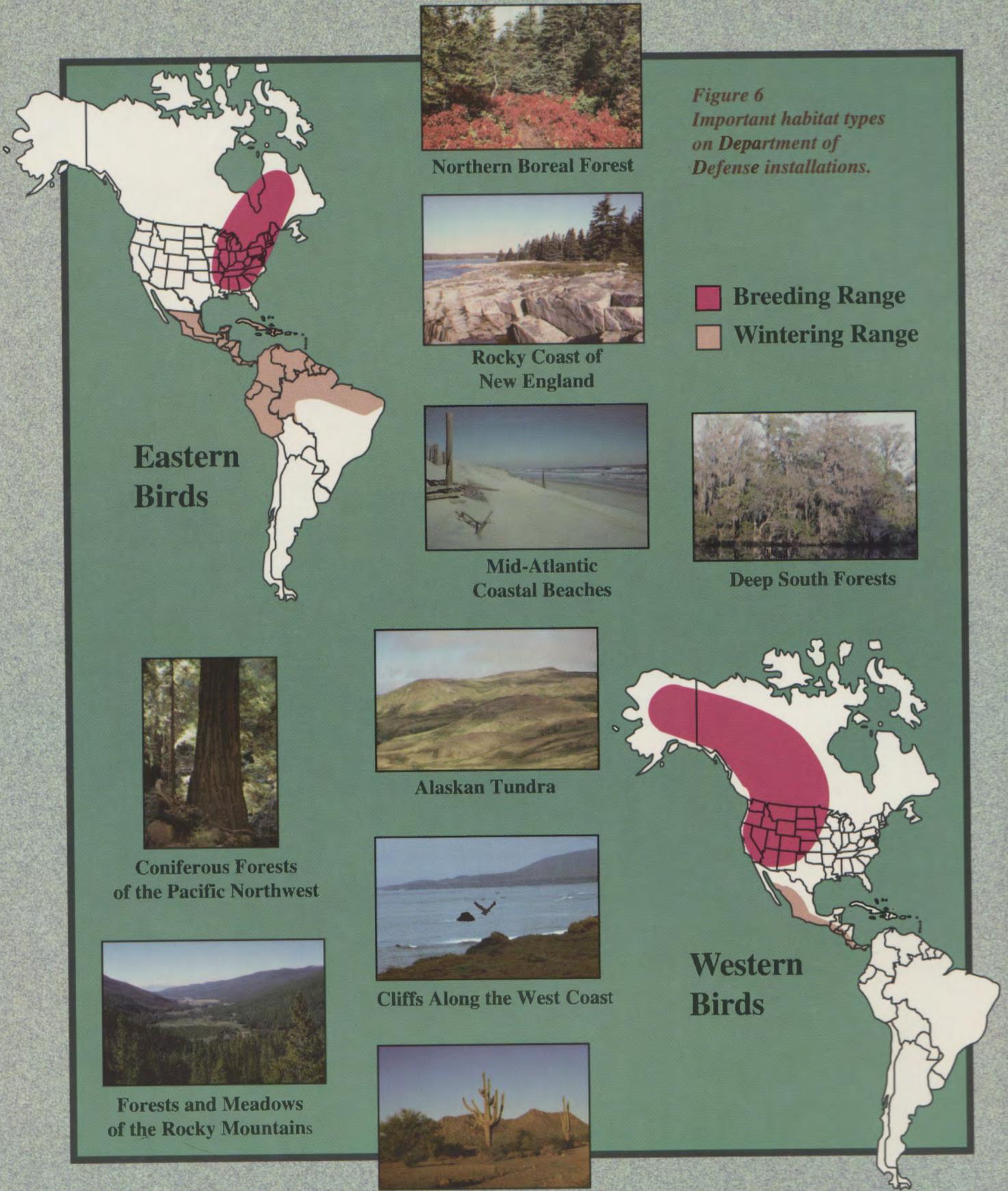


### Major DOD Installations in the United States

*Figure 5*  
The Department of Defense occupies approximately 25 million acres of land. Much of this area is used by neotropical migratory birds as they migrate north and south between breeding and wintering grounds.

AIR FORCE ●  
ARMY ■  
NAVY/MARINE CORPS ▲

Drawing for illustrative purposes only.

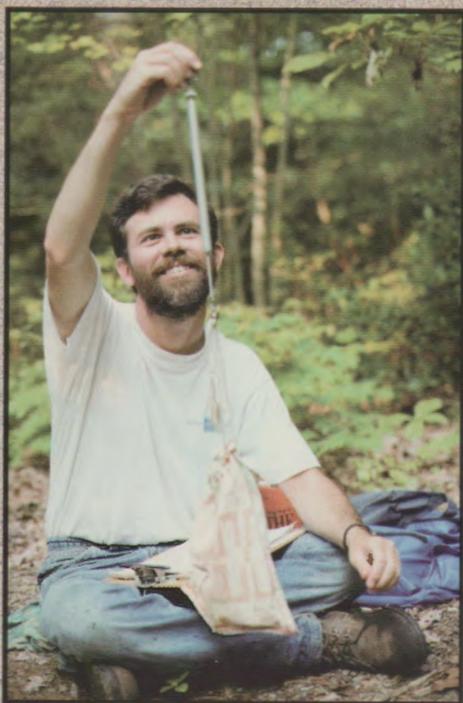


*Figure 6  
 Important habitat types  
 on Department of  
 Defense installations.*



# Why is PIF Important to DOD?

Partners in Flight is important to DOD because it offers DOD the opportunity to participate in an international partnering effort to enhance stewardship of natural resources on our lands. Through this collaborative effort, Partners in Flight offers DOD the unprecedented opportunity to become involved with the many other Federal, State, and local agencies, educational institutions, and nongovernmental organizations involved in natural resources stewardship and neotropical migratory bird conservation issues. Continued DOD participation in the Partners in Flight effort will foster improved communication among public and private sector natural resources specialists, provide DOD access to a broad range of current and emerging natural resources issues, allow DOD to identify opportunities for new initiatives and partnership opportunities, and provide a forum for DOD to communicate its unique stewardship role integrating



natural resources protection with its national defense mission requirements. Wise stewardship of the lands we occupy demonstrates DOD's commitment to maintaining healthy lands on which mission activities and natural resources conservation can coexist.

It is in DOD's best interest to work proactively with our partners in efforts such as the neotropical migratory bird program to conserve and enhance habitats on a landscape basis. Such partnership efforts are the most cost-effective and ecologically sound means for implementing conservation objectives across geographic and organizational boundaries before it becomes too late to maintain secure populations of neotropical migratory birds or the other flora and fauna found on DOD lands.

Other benefits to DOD should become more apparent over time as local, regional, and national-level data are collected, results of individual and cooperative efforts are analyzed and documented, and PIF generated information is made available for DOD installation use. Neotropical migratory birds occupy a wide range of habitats, and many species are very sensitive to environmental change. Therefore, they can be an excellent indicator of an area's biological diversity and the relative health of associated ecosystems. This can encourage protecting and restoring the nation's biological diversity on an ecosystem basis.





## The DOD / Partners in Flight Policy

It is DOD policy to promote and support our partnership role in the protection and conservation of neotropical migratory birds and their habitat by protecting vital habitat, enhancing biodiversity, and maintaining healthy and productive natural systems on our lands consistent with the military missions..

The strategy outlined in this document has been developed jointly by natural resource management personnel and other planners and decision makers from all the military services at all levels within each service. This strategy will enable us to better integrate projects and programs for neotropical migratory birds into our existing natural resource and land management programs, while recognizing new and innovative management techniques aimed at protecting neotropical migrants. Implementation of this policy will encourage our natural resource managers to determine best management practices based on regional or physiographic delineations rather than on a featured species basis. This ecosystem management approach gives us a framework to consider the biological diversity on DOD installations as well as on the surrounding landscape. Implementing a biogeographical approach to land management and neotropical migratory bird conservation will help us to better assess mission impacts on an installation specific scale as well as on a more regional or landscape scale. It will improve long-term planning and promote better integration of mission and resource requirements.

## Program-Wide Goals and Objectives

The primary goals and objectives of the DOD neotropical migratory bird conservation program are to:

- Facilitate cooperative partnership efforts in consonance with the requirements of the military mission.
- Determine the current status of neotropical migratory bird populations on DOD lands and the causes of population fluctuations.
- Identify and maintain priority habitats on DOD lands for neotropical migratory bird populations.
- Use information collected from this partnership program to better support DOD mission requirements.
- Take proactive management actions to prevent neotropical migratory birds from reaching threatened or endangered status.



## The Partnership Concept and Process

The Partners in Flight program is an umbrella network of which DOD's neotropical migratory bird conservation program is a vital part. The National Fish and Wildlife Foundation is the key partner through which DOD works to develop cooperative programs and projects with other Federal, State, and nongovernmental organizations. This concept ensures a focused and coordinated approach for the conservation of neotropical migratory birds and their habitat.

The Deputy Under Secretary of Defense (Environmental Security) has appointed a lead DOD representative to act as a catalyst to promote and coordinate PIF efforts within DOD. In addition, the Army, Navy, and Air Force are part of the National Joint Federal, State, and Nongovernmental Organizations Partners in Flight Committee. DOD has also established a network of biologists and land managers to represent DOD in the various regional and technical working groups. The role of the DOD working group representatives can be as basic as ensuring that installations in their area receive copies of newsletters, brochures, and other applicable publications. The DOD working group representatives will also cultivate and maintain a positive working relationship with our various partners to develop cooperative agreements to implement neotropical migratory bird conservation programs and projects on DOD installations.

This partnership concept and working group system promotes implementation of local and regional conservation objectives, while facilitating communication and coordination across geographical and organizational boundaries to ensure continent-wide success of neotropical migratory bird conservation efforts.

## A Strategy for DOD Action

DOD strategy for management of neotropical migratory birds and their habitat is built around the goals and initiatives of the regional and technical working groups. These groups identify the actions necessary to achieve the overall PIF goal of maintaining secure populations of neotropical migratory birds. DOD representatives in the various working groups work interservice-wide to ensure that actions are linked into the overall PIF strategy, harmonize with other collaborative actions, and are compatible with military mission requirements.

The following four pages highlight the feature issues and problems facing each of the National Working Groups, their goals and objectives, and DOD priority support efforts.



## Northeast Working Group

Issues/Problems	PIF Working Group Goals	DOD Priorities
<ul style="list-style-type: none"> <li>➤ A uniform classification scheme for habitats in need of conservation for neotropical migratory birds is required so that these habitats can be inventoried, ranked, monitored, and conserved.</li> <li>➤ There must be a uniform ranking of species to ensure that management efforts conducted by various regional biologists are focused on the same concerns.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Collect population trend data for grassland birds, wetland birds, nocturnal birds, forest interior dwelling birds, raptors, and swallows in an effort to develop a regional ranking of species.</li> <li>➤ Identify important migration corridors and stopover locations.</li> <li>➤ Develop a strategy for protection of early successional habitats.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Establish monitoring stations and share data on population trends.</li> <li>➤ Participate with partners in developing a regional ranking system.</li> <li>➤ Determine which DOD installations are located in important migration corridors or stopover locations.</li> </ul>

## Southeast Working Group

Issues/Problems	PIF Working Group Goals	DOD Priorities
<ul style="list-style-type: none"> <li>➤ Land managers need a list of species groups (in priority order) that should occur in each physiographic area.</li> <li>➤ Communication between land managers in the various management units must be coordinated to ensure that management strategies complement one another.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Develop research, monitoring, and education programs in the Mississippi Alluvial Valley and implement habitat conservation and restoration efforts.</li> <li>➤ Develop a long-term planning process to ensure that the ecological values of the Interior Highlands are protected in the future.</li> <li>➤ Develop an international initiative between the U.S. and Mexico to reverse habitat deterioration and degradation in the Rio Grande Valley and adjacent lands in Texas and Mexico.</li> <li>➤ Develop gypsy moth management strategies that will not adversely affect neotropical migratory birds or their habitat.</li> <li>➤ Develop a coordinated Atlantic/Gulf coast radar monitoring program to determine movement patterns of neotropical migratory birds.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Identify DOD lands in this physiographic region and participate in local programs.</li> <li>➤ Participate in developing new IPM strategies that will not affect neotropical migratory birds or their habitat.</li> <li>➤ Integrate new pest management strategies as appropriate.</li> <li>➤ Support radar monitoring efforts on installations along the Gulf and Atlantic coasts.</li> </ul>

## Western Working Group

Issues/Problems	PIF Working Group Goals	DOD Priorities
<ul style="list-style-type: none"> <li>➤ Little information exists about the natural history of western neotropical migratory birds on their wintering grounds or during migration.</li> <li>➤ Land use patterns differ in the west relative to the east and present unique management problems.</li> <li>➤ Because this region is so large, there are communication gaps between researchers and managers in different areas.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Increase cooperative international Partners in Flight efforts in areas where western migrants winter.</li> <li>➤ Develop projects to research the cumulative effects of management activities on neotropicals on a landscape-scale/habitat relationship, especially in wintering and migration habitats, riparian areas, grassland and shrub/steppe areas, and coniferous forests.</li> <li>➤ Gather information from Federal and State agencies, and nongovernmental organizations to determine species/habitat priorities and existing guidelines and management plans to determine gaps in management efforts and to shift emphasis where needed.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Identify DOD installations or training grounds in wintering areas.</li> <li>➤ Provide access to DOD lands for use as research study areas.</li> <li>➤ Support research with funding and manpower as available.</li> <li>➤ Share all available data with other Federal and State agencies, and nongovernmental organizations.</li> </ul>

## Midwest Working Group

Issues/Problems	PIF Working Group Goals	DOD Priorities
<ul style="list-style-type: none"> <li>➤ A regional landscape management strategy for neotropical migratory birds that considers interactions between local habitat factors, the landscape context of habitats, context of biogeography, and population levels is needed.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Develop and implement management and monitoring programs for neotropical migratory birds.</li> <li>➤ Research landscape ecology, demography, and impacts of land use practices on neotropical migratory birds.</li> <li>➤ Train natural resource management personnel in monitoring techniques and ecology of neotropical migratory birds.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Share information on successful management and monitoring programs between installations. Adopt standards where appropriate.</li> <li>➤ Sponsor and attend workshops and training sessions nationally, regionally, and locally.</li> </ul>

## International Working Group

Issues/Problems	PIF Working Group Goals	DOD Priorities
<ul style="list-style-type: none"> <li>➤ Coordinated international partnerships among government and private organizations are limited.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Promote hemisphere-wide involvement in PIF activities.</li> <li>➤ Promote hemisphere-wide public awareness of PIF as it relates to local needs.</li> <li>➤ Identify and support regional institutions and conservation programs.</li> <li>➤ Identify and support projects in the neotropics, particularly in-country generated and collaborative efforts.</li> <li>➤ Promote in-country education and communications, projects, and programs.</li> <li>➤ Incorporate conservation of migrants with conservation of resident species.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Produce a DOD PIF brochure and display exhibit.</li> <li>➤ Place interested DOD personnel on regional teams.</li> <li>➤ Develop programs and management practices that benefit resident birds, including game birds as well as migrants.</li> </ul>

## Research Working Group

Issues/Problems	PIF Working Group Goals	DOD Priorities
<ul style="list-style-type: none"> <li>➤ Limited understanding of the factors contributing to the decline of neotropical migrants and insufficient data on the population status of many species prevent selective and comprehensive recommendations for management.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Publish both a Government publication and a book on the conservation and management of neotropical migrants based on the 1992 symposium in Estes Park, Colorado.</li> <li>➤ Develop and use a research needs assessment for land managers to identify current requirements.</li> <li>➤ Establish a peer review committee to review proposals and final products.</li> <li>➤ Publish proceedings from the 1993 Symposium on Conservation of Neotropical Migrants in Mexico.</li> <li>➤ Publish a glossary of avian conservation biology terms.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Assist with publication and distribution of the book. Provide a copy to all DOD land managers.</li> <li>➤ Ensure that needs assessments include the needs of DOD land managers.</li> <li>➤ Distribute PIF publications to all DOD land managers as appropriate.</li> </ul>

## Monitoring Working Group

Issues/Problems	PIF Working Group Goals	DOD Priorities
<p>Current monitoring programs do not allow satisfactory assessment of bird populations and habitat trends. Monitoring programs must also be standardized.</p>	<ul style="list-style-type: none"> <li>Encourage Federal and State agencies and some nongovernmental organizations to develop monitoring plans.</li> <li>Create new training and testing opportunities for individuals who participate in monitoring projects.</li> <li>Expand the Breeding Bird Survey to include at least three routes per degree block of latitude and longitude in the 48 contiguous states and in as much of Canada as possible.</li> <li>Work with partners to create regional priority lists.</li> </ul>	<ul style="list-style-type: none"> <li>Develop a DOD monitoring plan and establish standards to ensure compatibility of data between partners.</li> <li>Encourage attendance in regional training workshops for DOD land managers.</li> <li>Identify and offer DOD installations as potential sites for additional Breeding Bird Survey routes.</li> <li>Develop partnerships to establish radar tracking stations.</li> </ul>

## Information and Education Working Group

Issues/Problems	PIF Working Group Goals	DOD Priorities
<p>The public has limited understanding of large-scale international ecosystem changes and resultant problems, such as the decline of neotropical migratory birds.</p>	<ul style="list-style-type: none"> <li>Produce a new PIF brochure.</li> <li>Develop and promote an International Migratory Bird Day.</li> <li>Trademark the PIF logo.</li> <li>Prepare a booklet for the public to promote involvement in the PIF program.</li> <li>Develop PIF workshops to promote citizen involvement.</li> </ul>	<ul style="list-style-type: none"> <li>Develop a DOD display and brochure for public relations.</li> <li>Promote and advertise DOD accomplishments at various conferences and workshops.</li> <li>Publish articles describing DOD PIF efforts.</li> <li>Promote and support DOD participation in neotropical migratory bird workshops.</li> </ul>

## Program Funding

Funds to promote DOD's participation in the Partners in Flight program come from several sources. The primary source is the DOD Legacy Resource Management Program. A major theme of the Legacy Program will continue to be support of DOD's participation in the PIF program.

Other sources of revenue to support PIF efforts include Agricultural Outlease Program, Forestry Reserve Account, Fees and Permits (from hunting and fishing programs), and Operations and Maintenance funds.

In addition, many installation natural resource managers have developed cost share projects with other Federal and State agencies and conservation organizations. In some cases, grants from foundations and other groups have been directed to DOD natural resource managers to support neotropical partnership efforts.







# Major Program Support Initiatives

## *MAPS Program*

The Monitoring Avian Productivity and Survivorship (MAPS) program is a cooperative effort among Federal, State, and nongovernmental organizations and the bird banders of North America. The major objective of the MAPS program is to contribute to an integrated avian population monitoring system for North American land birds by providing annual regional indices and estimates for four population and demographic parameters for select target species in seven different regions of North America. The MAPS methodology provides annual regional indices of adult population size and post-fledgling productivity from data on the numbers and proportions of young and adult birds captured; annual regional estimates of adult population size, adult survivorship, and recruitment into the adult population from capture-recapture data on adult birds; and additional annual estimates of adult population size from point count data collected in the vicinity of MAPS stations. Without these critical data, it is difficult or impossible to account for observed population changes.

The Institute for Bird Populations has developed a program of standardized, constant-effort mist netting, and banding of land birds during the breeding season at a continent-wide network of stations to effectively provide these data. The long-term goal of the MAPS program is establishment and operation of approximately 260 stations across North America. To support this program, many DOD installations have developed partnerships with the Institute for Bird Populations to establish MAPS stations. DOD is helping to establish a network of MAPS stations in all seven biogeographical regions and build the program necessary to monitor neotropical migratory bird population changes.



# Major Program Support Initiatives

## Radar Ornithology

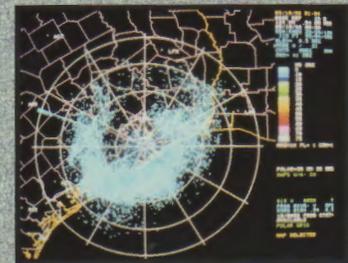
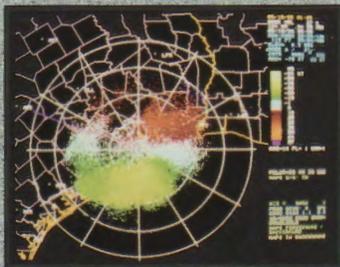
Since the early 1940's, radar has been used to monitor bird migration. The newest weather surveillance radar, WSR-88D or NEXRAD for Next Generation Radar, is ideal for studies of bird movements. This sophisticated radar system can be used to map geographical areas of high bird activity (e.g., stopover, roosting and feeding, and colonial breeding areas). It also provides information on the quantity, general direction, and altitudinal distribution of birds aloft.

The NEXRAD information is critically important for the protection of habitats used by migratory birds during stopover periods. This information is vital to DOD land managers who protect stopover areas on military land. The data is particularly important to land managers of military air stations where bird/aircraft collisions threaten lives and cost millions of dollars in damage every year.

Currently, there are only a few WSR-88D sites nation-wide. But within the next 5 years, the network will take shape as more units become operational. Many of these new units will be on DOD installations, providing an opportunity to collect site-specific data on bird movements and use of DOD lands. DOD has developed a Legacy funded partnership with the Department of Biological Sciences at Clemson University to collect, analyze, and use the biological information from the NEXRAD network. Initially efforts will be concentrated in the southeast to complement existing radar data from the Gulf coast. This partnership will enable collection and transfer of radar data from various DOD installations, via modem, to one remote station at Clemson University, where the data can be archived and analyzed. Information gathered through this partnership will be extremely valuable to all involved in the Partners in Flight program.

Taken from the reflectivity of a WSR-88D unit at Dickson, Texas, this picture shows thousands of flocks of migrating songbirds arriving over the Gulf of Mexico on April 10, 1992, at 00:58 GMT. The circles on the polar grid are in 30 nautical mile increments. The

absence of echoes to the west and north of the radar station (center) indicates that the arriving migrants are landing.



In this radial velocity display for the same location, date, and time, birds moving toward the radar are depicted in green, while those moving away appear as red. Birds moving tangential to the sweep of the radar beam appear as white or gray. This type of information allows the investigator to determine the general direction of migration.



# Accomplishments

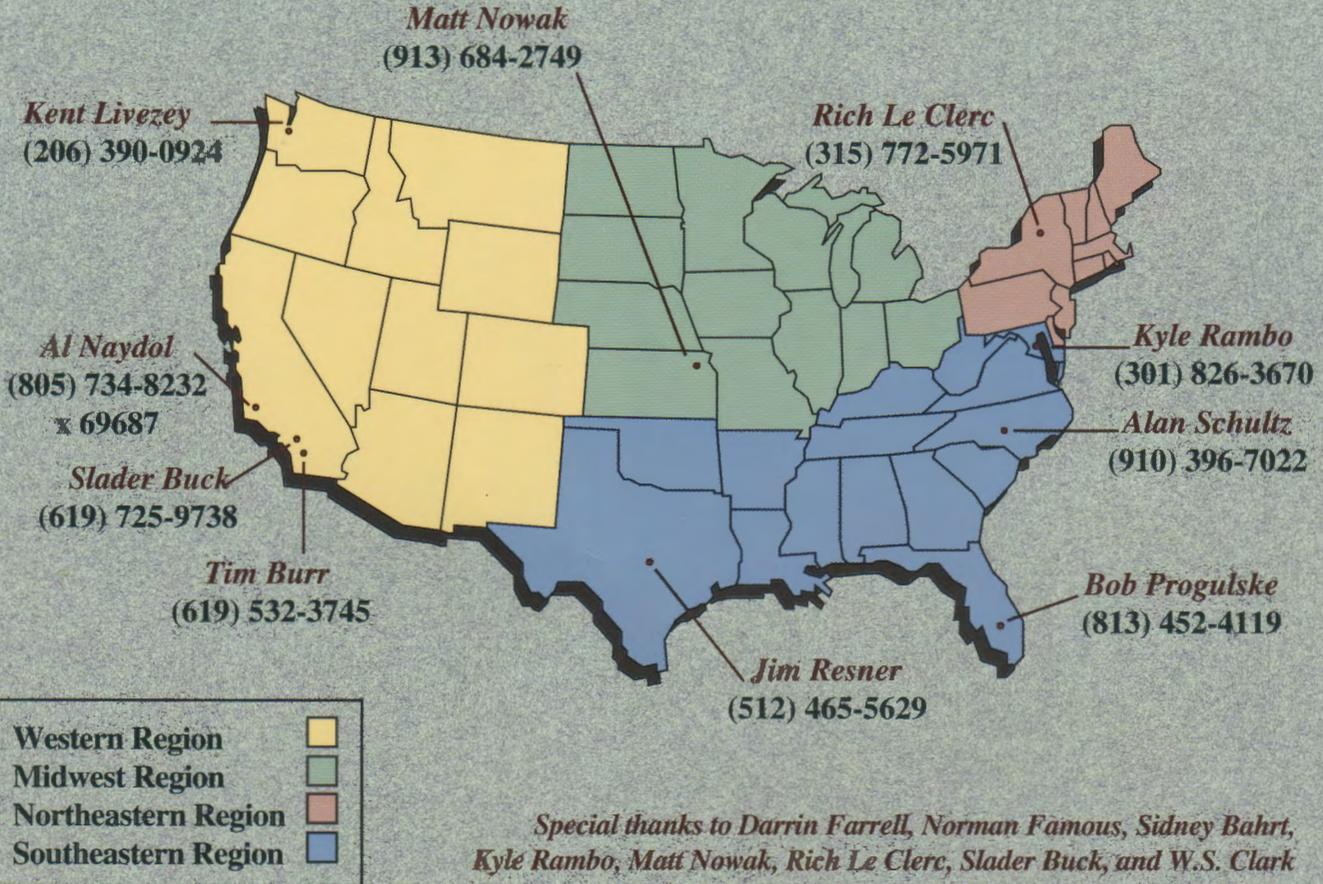
DOD has accomplished many noteworthy projects since the inception of the Neotropical Migratory Bird Conservation/Partners in Flight Program. Some of the more notable are listed below:

- Development of a network of biologists and land managers to represent DOD on the various National PIF Working Groups.
- Incorporation of neotropical migratory bird conservation techniques into existing natural resource and land management programs.
- Incorporation of neotropical migratory bird conservation efforts into existing programs to support the North American Waterfowl Management Plan and the Western Hemisphere Shorebird Reserve Network.
- Development of a DOD/PIF display.
- Support to the Colorado Bird Observatory for development of a neotropical migratory bird prioritization scheme.
- Establishment of MAPS (Monitoring Avian Productivity and Survivorship) stations on DOD installations throughout the country.
- Development of a cooperative agreement with Clemson University to monitor and track neotropical migratory bird movements on DOD lands with WSR-88D radar.
- Development of bird lists/brochures for selected DOD installations in support of the Watchable Wildlife program.
- Studies to determine the effects of timber harvesting on neotropical migratory bird habitat.
- Studies to determine the effects of various other land management activities and military impacts on neotropical migratory birds and their habitat.
- Wetland and other habitat enhancement projects for the benefit of neotropical migratory birds.
- Development of a DOD neotropical migratory bird workshop at the 1994 North American Wildlife and Natural Resources/National Military Fish and Wildlife Association Conference.



For further information about the  
**DOD Partners in Flight** program,  
 contact the representative nearest you.

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