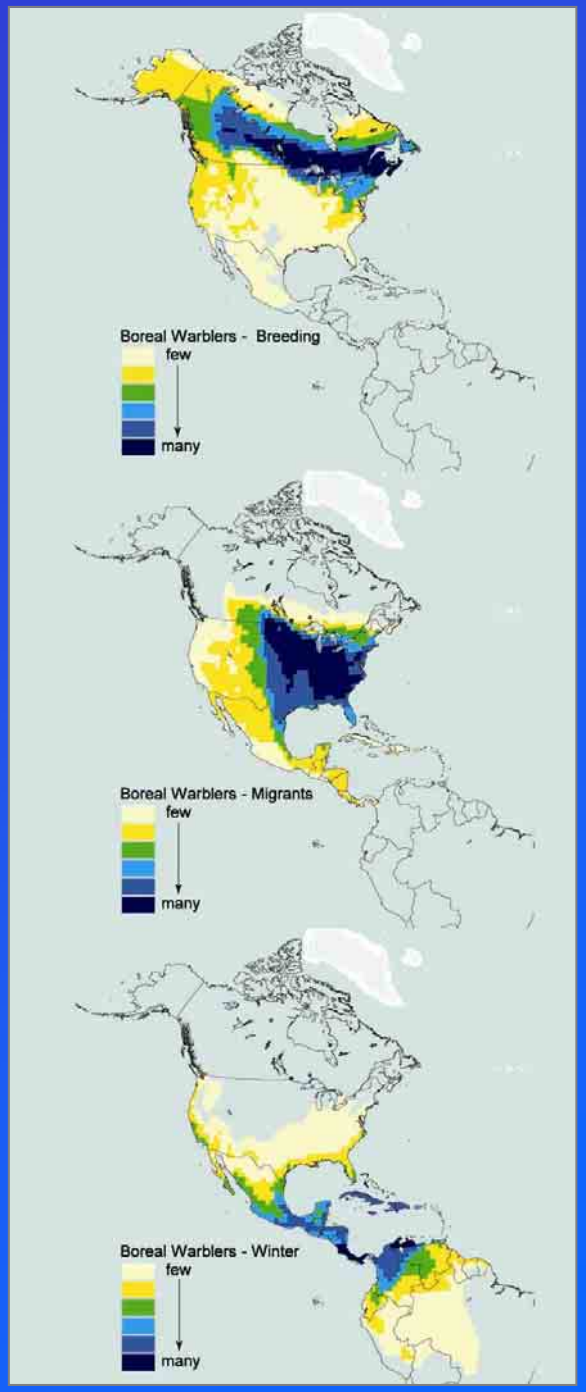
U.S. Fish & Wildlife Service

Integrating Goals and Objectives on the National Wildlife Refuge System

Populations, Biodiversity, and Habitats


Copper River Delta
Kachemak Bay
Beaver Hill
Last Mountain Lake
Gull Lakes
Chaplin/Old Wives/Reed Lakes
Grays Harbor
Springfield Bottoms
Benton Lake
Bay of Fundy
Lahontan Valley
Great Salt Lake
Chautauqua
San Francisco Bay
Mono Lake
The Grasslands
Cheyenne Bottoms
Quivira
Salt Plains
Delaware Bay
Maryland/Virginia barrier islands
Cape Romain
Estero Rio Colorado
Bolivar Flats
Bracorio
Marismas Nacionales
ATLANTIC OCEAN
PACIFIC OCEAN
Coppename
Wia Wia
Bigi Pan
Maranhão
Parnaiba
Mar Chiquita
Lagoa do Peixe
San Antonio Oeste
Tierra del Fuego
SHOREBIRD NETWORK SITES
Hosts more than 500,000 shorebirds or 30% of a flyway population
Hosts more than 100,000 shorebirds or 10% of a flyway population
Hosts more than 20,000 shorebirds or 2% of a flyway population
Spring migration
Fall migration

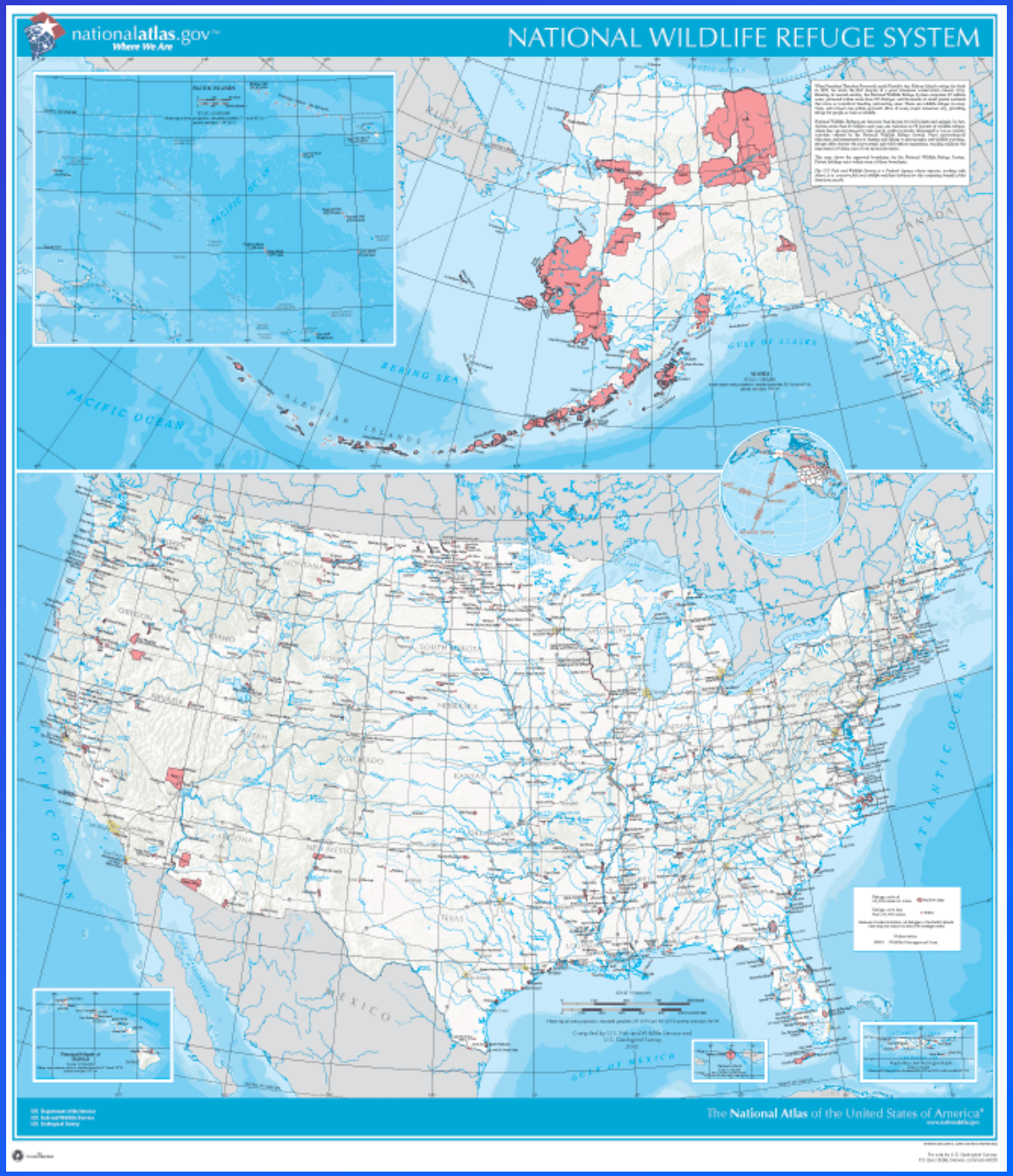


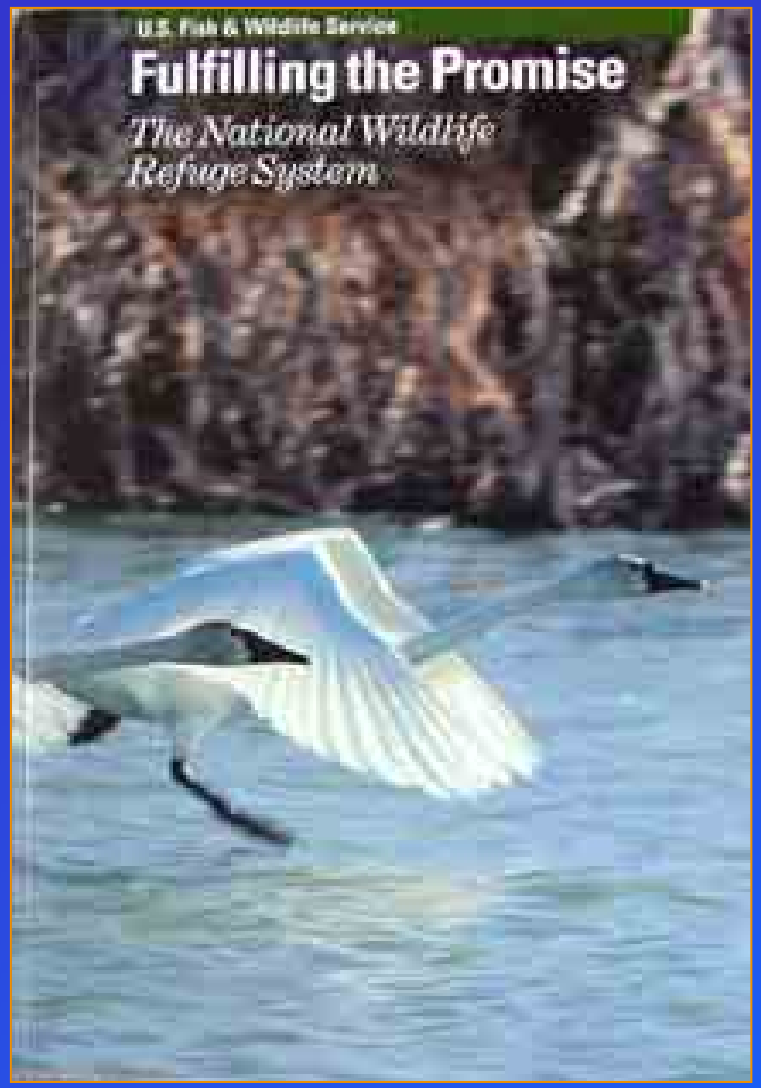
Number of boreal-breeding warblers occurring in each lat-long block (a) during the breeding season, (b) during migration, and (c) during winter, illustrating important linkages among boreal forest, habitats in eastern U.S., and tropical habitats in Central America, northern South America, and the Greater Antilles.

(2003 Draft: North American Landbird Conservation Plan. Pg 14.)

Refuge System

- 95 million acres
- 542 refuges
- 26,000 WPAs





Fulfilling the Promise

- Wildlife and Habitat
- Leadership
- People

Promises **included 20 wildlife/habitat recommendations.**

The first 3 addressed goal/objective setting for:

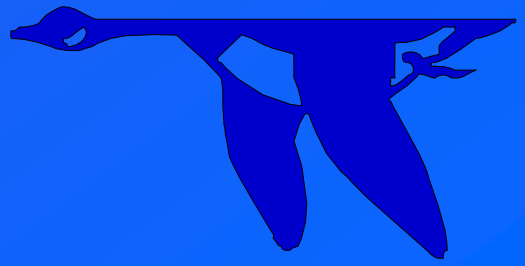
WH-1: Fish and Wildlife Populations

WH-2: Wildlife Habitat

WH-3: Biodiversity

To manage the existing network and to grow the System.

How does an individual refuge know how to manage its lands to provide the greatest contribution to conservation of our trust species and to biodiversity?



Process for Stepping Down Objectives from Plans

1. Use existing objectives in National/regional plans
2. Identify conservation targets (species, species groups or habitats)
3. Convert population objectives to habitat objectives by season (at least at ecosystem level)
4. Determine the availability and deficits of habitats for each conservation target within the conservation estate (GAP land status 1, 2, and 3) for each ecosystem.
5. Work with partners to develop strategies at ecosystem level.
6. Modify our refuge management to meet stated FWS objectives.

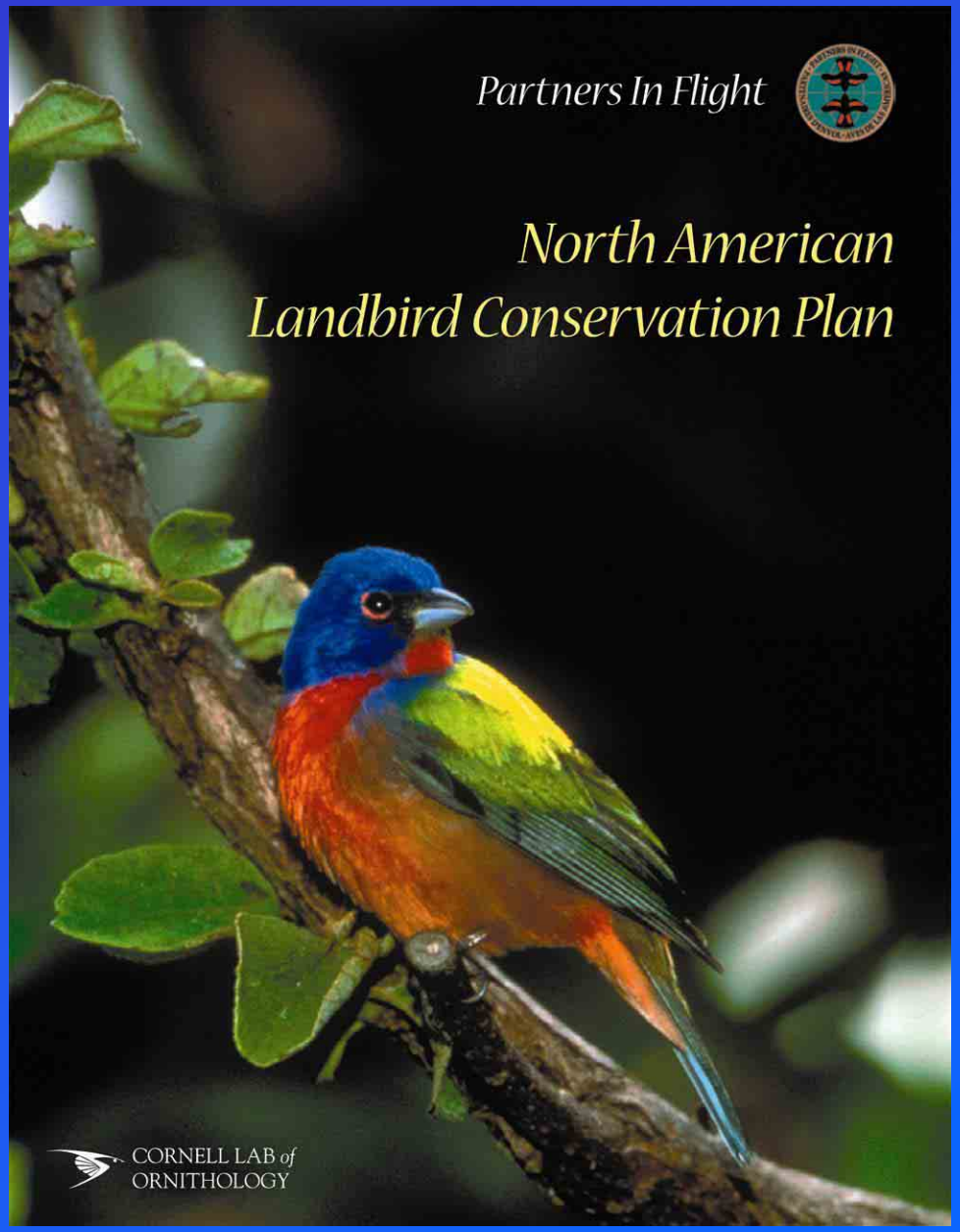
Examples of existing plans

- T&E Recovery Plans
- Marine Mammal population plans
- Fishery plans by stock
- North American Waterfowl Management Plans
  - Flyway plans for geese
- Partners in Flight Plans (Continental, BCR, Physiographic Area plans)
- Waterbirds conservation plan
- Seabirds Conservation Plan
- Others…..

- Continental population estimates for all 448 spp. of landbirds
- Population Objectives for 195 ‘watch list’

Draft plan available for review.

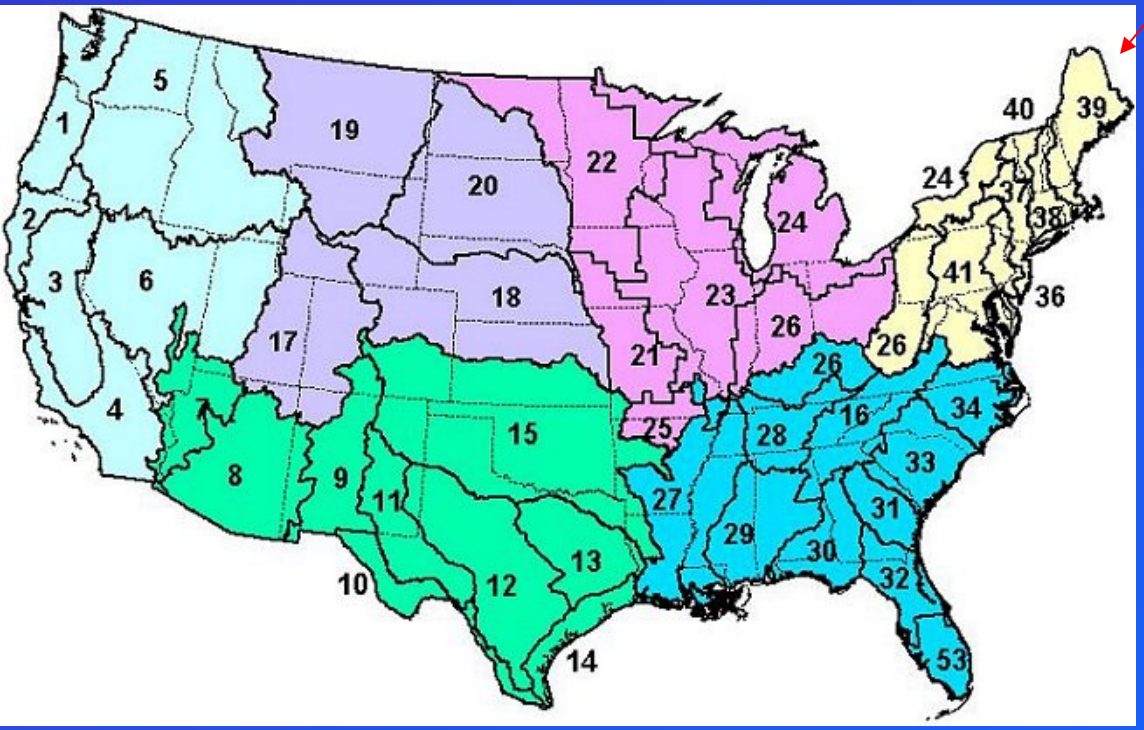
Comments by Oct 31st



Wood Thrush (*Hylocichla mustelina)*

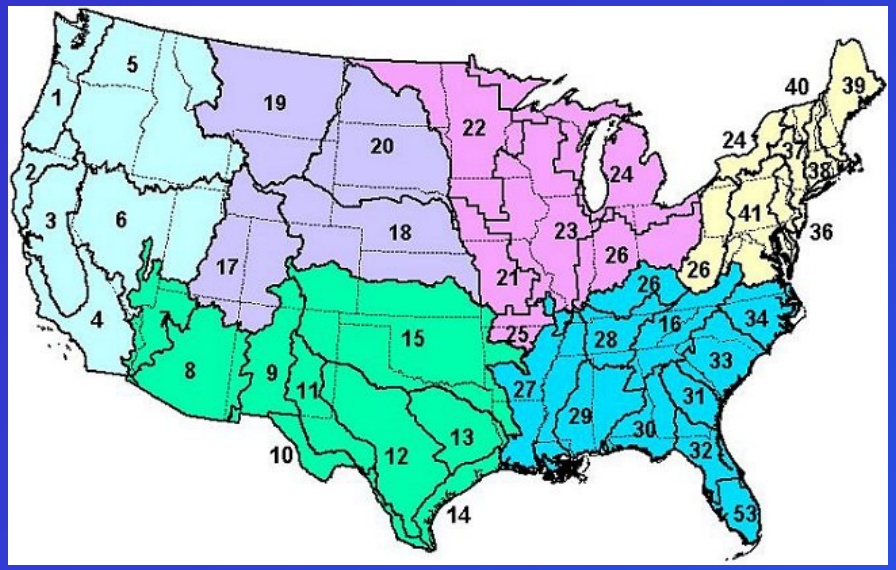
- **Global population estimate = 14 Million**
- **All breed within Canada and U.S.**
- **Draft population objective = “increase 50%” (i.e. 21 milion)**

Wood Thrush in the Gulf Of Maine Ecosystem (FWS #39)

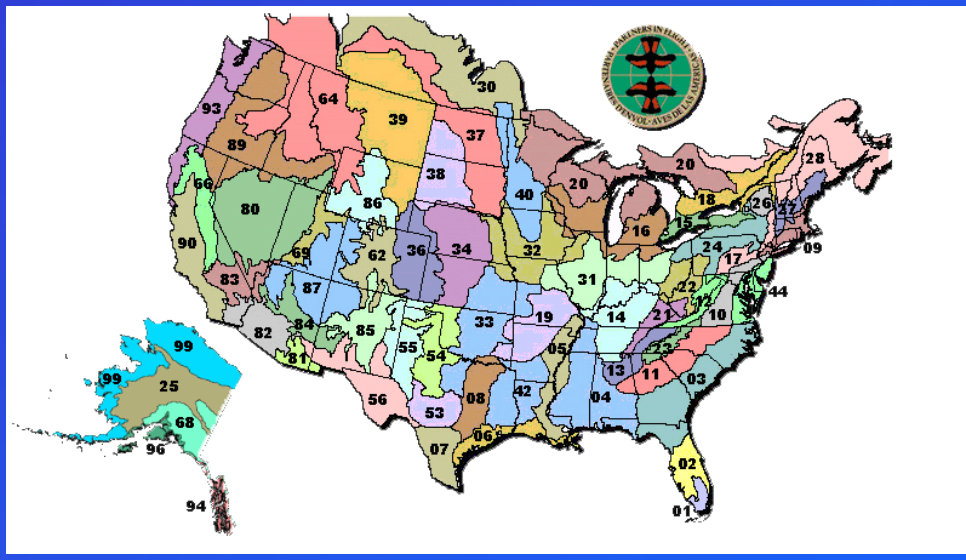


Artist: Denis Kania

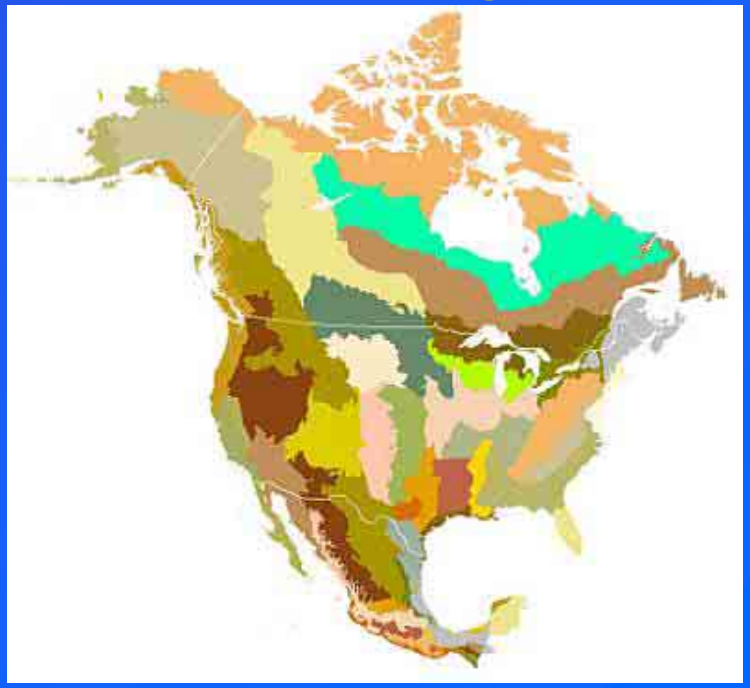
FWS Ecosystems



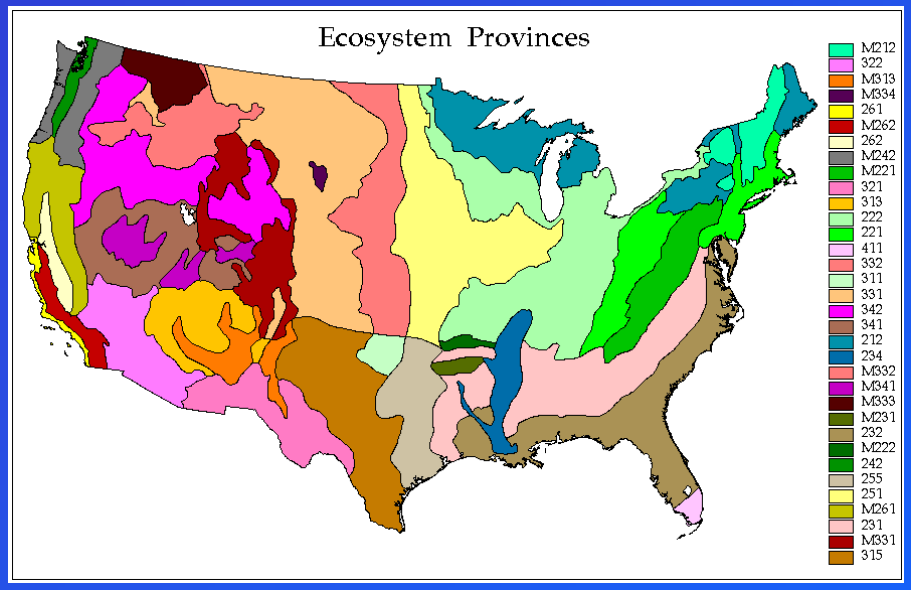
PIF Physiographic Areas



Bird Conservation Regions (BCR)



Bailey's Ecosystem Provinces



Objectives from PIF plans

28 **Eastern Spruce Hardwood Forest: "Suite Goal" "*a total of 1.9 million ha (4.75 million acres) of suitable northern hardwood and mixed forest habitat is required to support the habitat-suite, based on density for Veery of 7-8 pairs per ha.*"**

27 Northern New England: "*stabilize or reverse declining population trends for Wood Thrush; maintaining long-term population of 250,000 breeding pairs.*"

9 Southern New England: "*halt population declines and maintain stable breeding population of 170,000 pairs of Wood Thrushes (10-13 bird/BBS route) distributed throughout the physiographic area.*"

GOM Objective

Stabilize and maintain the breeding population of wood thrush and associated forest birds by providing 1.6 million hectares (~4 million acres) of mid-successional northern hardwood-mixed forest and mature deciduous forests.

Multiple replicates of >100 blocks of unfragmented habitat approx. 340ha or larger are recommended to reduce nest parasitism.

Process for Stepping Down Objectives from Plans

1. Use existing objectives in National plans
2. Identify conservation targets
3. Convert population objectives to habitat objectives by season (at regional and/or ecosystem level)
4. Determine the availability and deficits of habitats for each conservation target within the conservation estate (GAP land status 1, 2, and 3) for each ecosystem.
5. Work with partners to develop strategies at ecosystem level.
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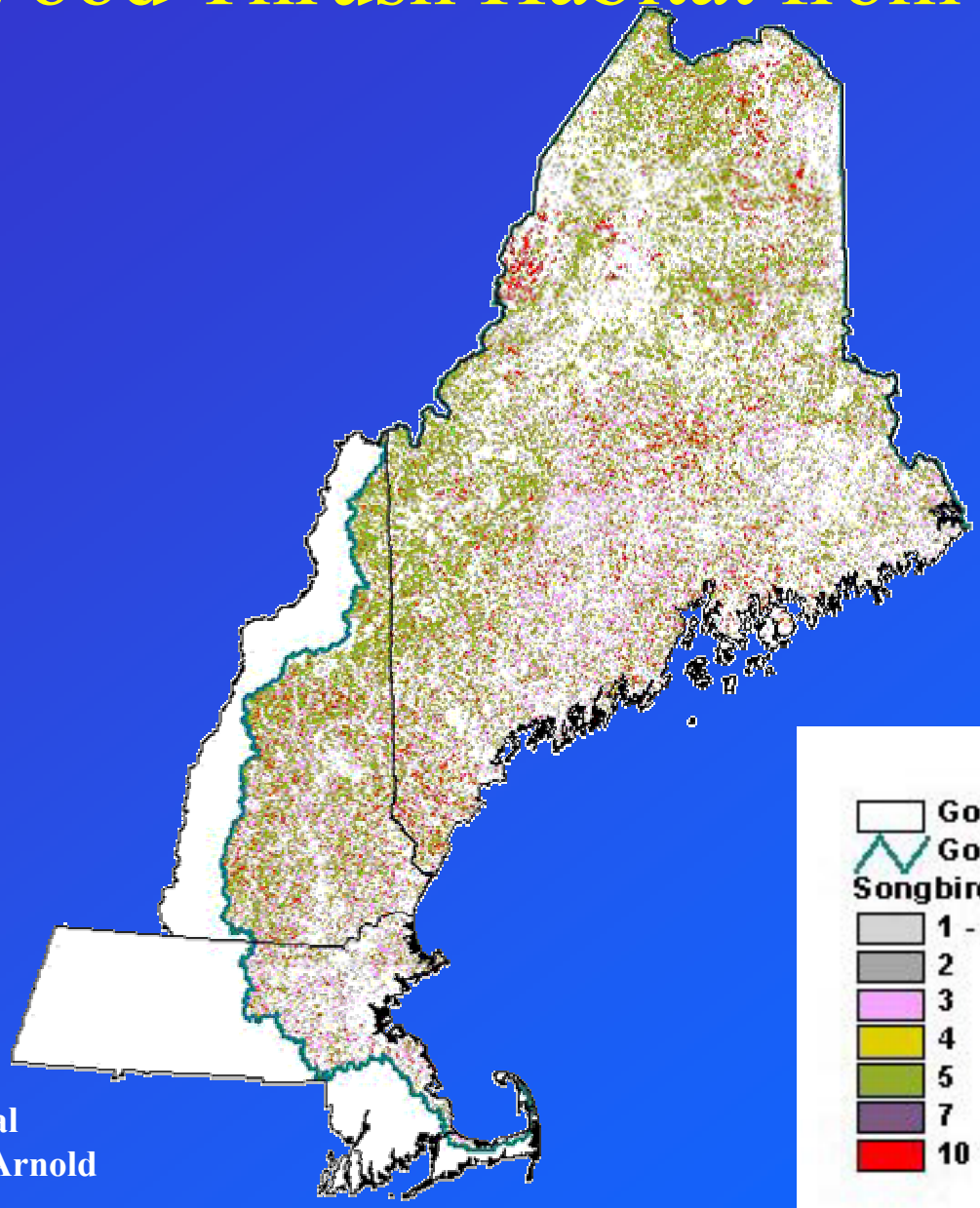
Habitat Models

- Habitat quality, size and distribution are key elements.
- Need to be able to map Habitat Models using available coverages (Landsat etc..)
- Models and objectives must be complementary
- Remember “garbage in = garbage out”, but also be realistic.
- Coarse models must be tracked and ultimately improved.

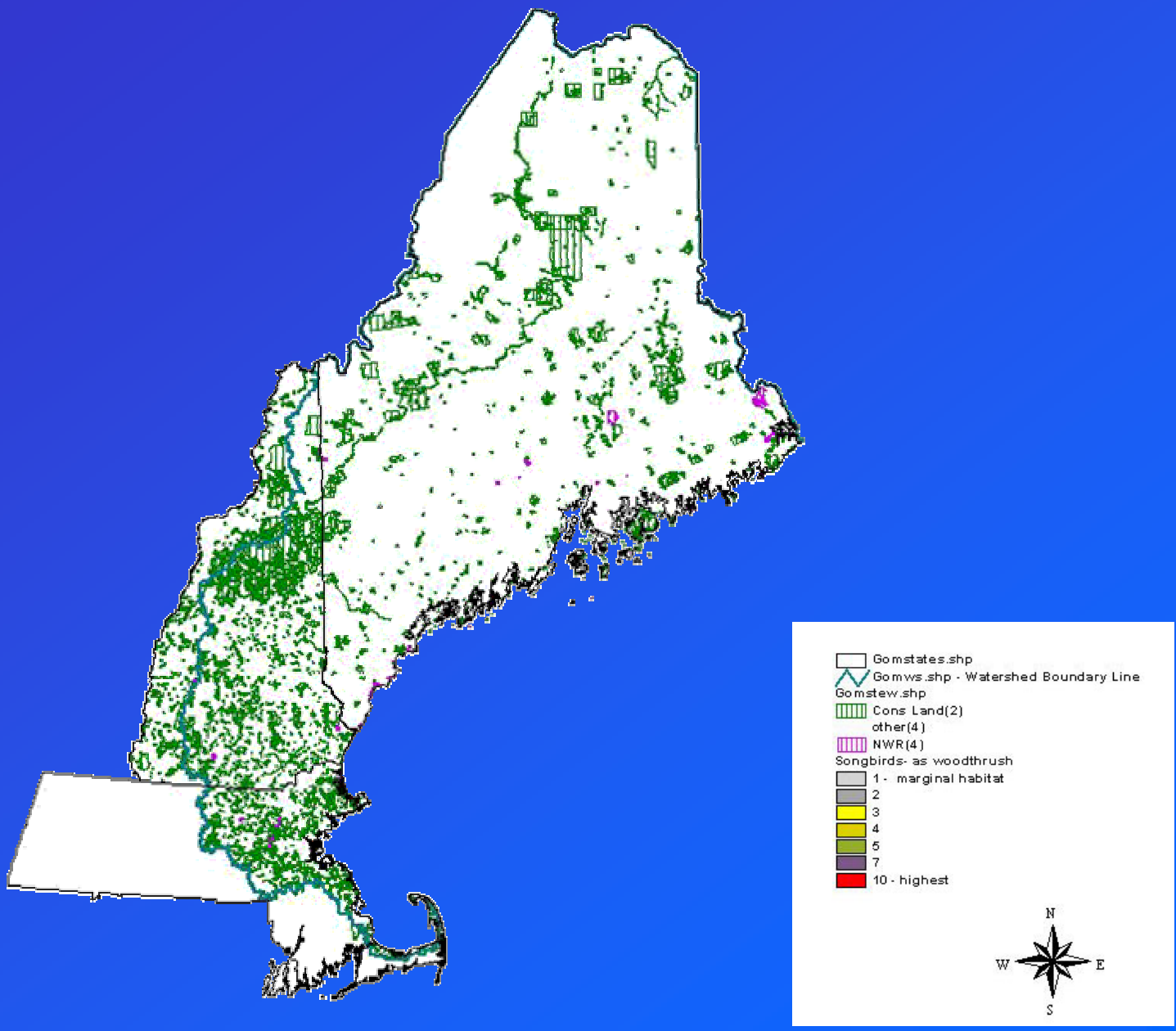
Wood Thrush Habitat from model



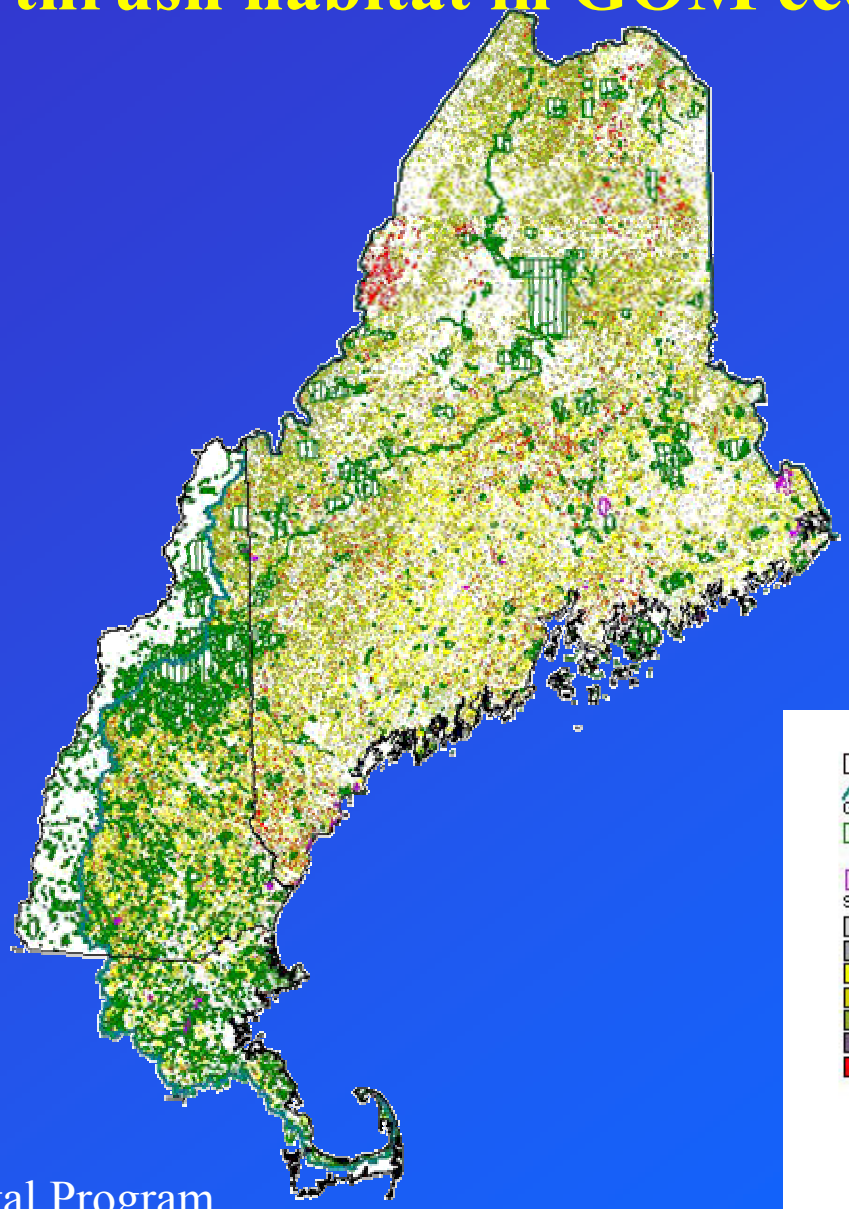
Gomstates.shp
Gomws.shp - Watershed Boundary
Songbirds- as woodthrush
1 - marginal habitat
2
3
4
5
7
10 - highest

Model by GOM Coastal Program (courtesy of Arnold Banner)

Wood thrush habitat and conservation estate



Wood thrush habitat in GOM ecosystem



Gomstates.shp
Gomws.shp - Watershed Boundary Line
Gomstew.shp
Cons Land(2)
other(4)
NWR(4)
Songbirds- as woodthrush
1 - marginal habitat
2
3
4
5
7
10 - highest

N
W
E
S

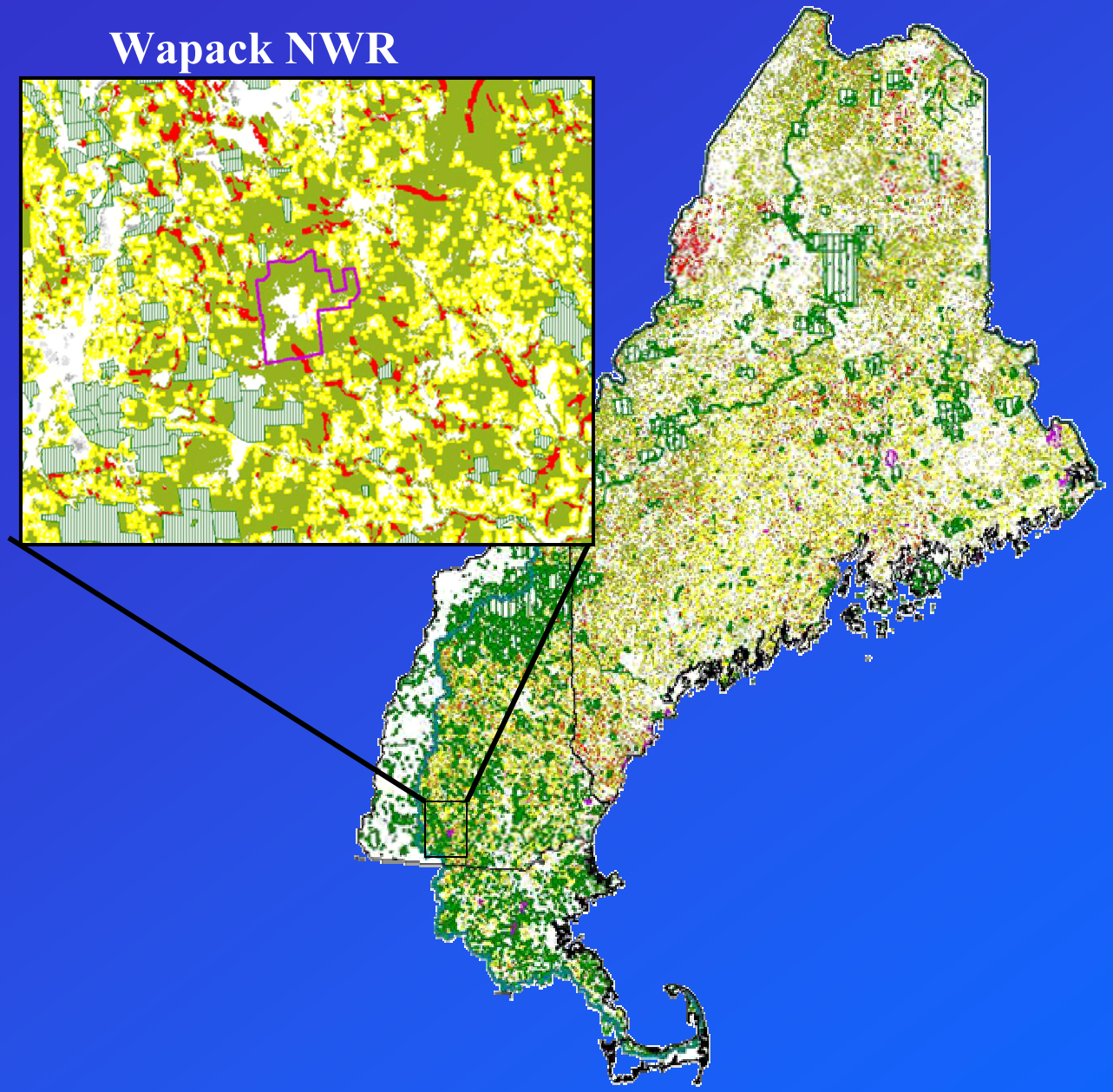
Model by GOM Coastal Program
(thanks to Arnold Banner)

Example of output from process

Conservation Target	Habitat[1] Objective	Currently Conserved	Current in NWRS	Deficit to meet Objective	Available on other lands
Wood Thrush	4 million acres (Hab. Qual. 5, 7 and 10)	1.5 million acres	22,300 acres	2.5 million acres	7.5 million acres (only 1 million is Hab. Qual. 10)

[1] "habitat" = mid-successional northern hardwood-mixed forest and mature deciduous forests

Wood thrush habitat and conservation estate



Cons. Target	Habitat	Objective	Current Conserve	Deficit in Ecosystem	Available on Refuges	Avail. on non-cons. lands
Wood Thrush	Mixed hardwood	4 million acres	1.5 million	2.5 million	22,300	7.5 million (1M = 10)
Woodcock	Early suc-cessional forest	3.3 million	2.7 million	600,000	113,470	7.9 million
Saltmarsh sharptailed sparrow	Maritime or Saltmarsh	41,000 acres	15,000	26,000 plus buffers	4,100	64,000
Redbellied cooter (a turtle)	Coastal plain ponds Plymouth	1200 acres	286	900	51	2420
Furbish Louswort	Riparian area along St John Riv.	8 to 13 miles	2 miles	6 to 11 miles	0	62 miles
Atlantic Salmon	7 Rivers w/ocean access	21,775 'units' ($100y^2$)	15,200	6,575	2,690	29,000

Ecosystem-level Team
(potential team members)

- **Refuge project leaders**
- **Migratory Birds**
- **BCR Coordinators**
- **Regional Refuge Biologist**
- **GIS technician**
- **Realty specialist**
- **Fisheries Resources**
- **Academia**
- **Tribal Gov’ts**
- **Ecological Services**
- **Marine Mammals**
- **JV Coordinators**
- **CCP Coordinators**
- **USGS**
- **NGO’s (GAP, ABI, TNC, Heritage)**
- **State Representatives**
- **Other Fed. Land Mgrs.**

Can it work in Alaska?

Trumpeter Swan Example Illustration

- **If the summer population objective for trumpeter swans in Region 7 (Alaska) was 13,000 adult swans, a team at the regional level may suggest objectives for each ecosystem. The ecosystem-level team would have to determine the appropriate objective.**
- **Assume the Kenai Peninsula were a complete FWS ecosystem (it is ~ 1/4 of FWS 47) with a swan population objective of 350 adults.**
- ***What happens next?***

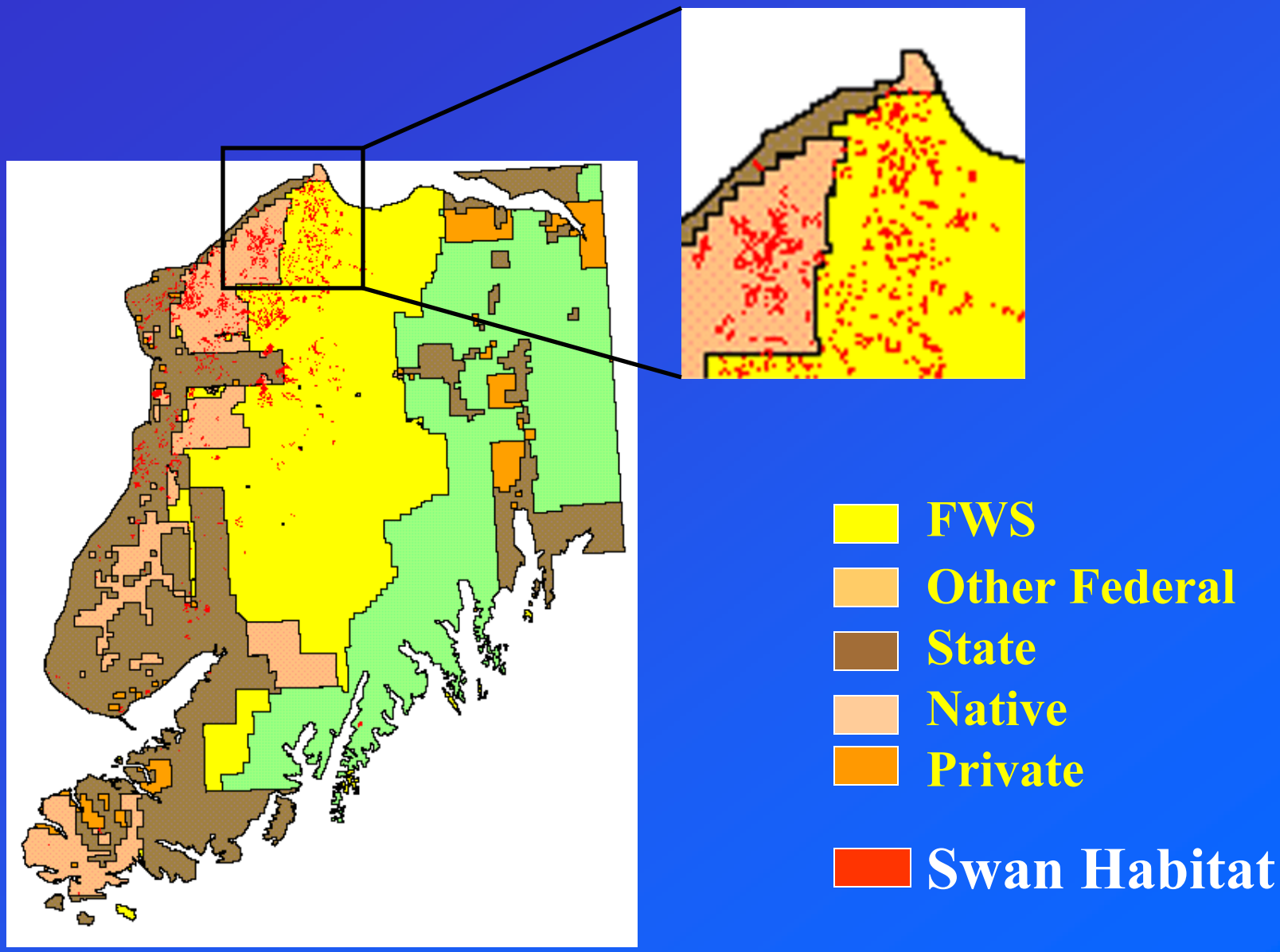
GIS & Biological Expertise

- **Population objectives translated to habitat objectives.**

  Maintain and protect at least 30,000 hectares of palustrine emergent wetlands, with a minimum size of 20 hectares, and within 500 meters of open water lakes or ponds.

- **Use GIS to identify habitats and determine occurrence within the conservation estate.**

Swan Habitat with Land Status



Results

Ownership	Hectares of swan habitat	
FWS	16,879	(Kenai NWR)
Other Federal	172	
State	8,522	
Native	13,378	
Private	41	
Total	38,992	

Habitat objective = 30,000 hectares of swan habitat

Examples of the Process at the Refuge Level

Use the matrix during the CCP process and/or habitat management planning

In the swan example, nearly half of the existing habitat occurs on non-conservation estate lands. This emphasizes the need for partnerships to protect swan habitat.

Link to Individual Refuges

- **Provides understanding of choices from an ecosystem context.**
- **Refuge system cannot meet national or regional objectives on its own - must include entire conservation estate.**
- **Allows for bottom-up flexibility at the refuge level where refuge-specific objectives are implemented through HMPs and CCPs.**

Partners in Flight

- Population objectives developed in Partners in Flight groups should also include the tie to habitat.
- PIF habitat objectives would be an enormous help.
- Habitat modeling will become increasingly more important in our management.
- Refining objectives based on new information