

Science leading to Actions  
Local Initiatives  
on  
Species Selection and Conservation Targets  
Puerto Rico

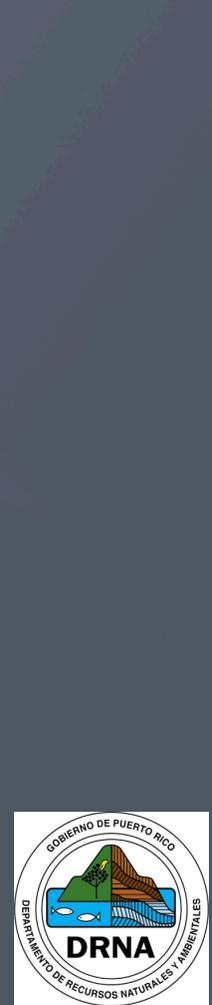


# Outline

- ▣ Species and Populations



- ▣ Ecosystems, Landscape and Regions



# 1. Species and Populations

- ▣ Legal/Statutory Responsibilities
  - Endangered/Threatened/Candidate Species
  - Wildlife Restoration
  - Sportfish Restoration
  
- ▣ Comprehensive Wildlife Conservation Strategy
  - Species of Greatest Conservation Need (SGCN)

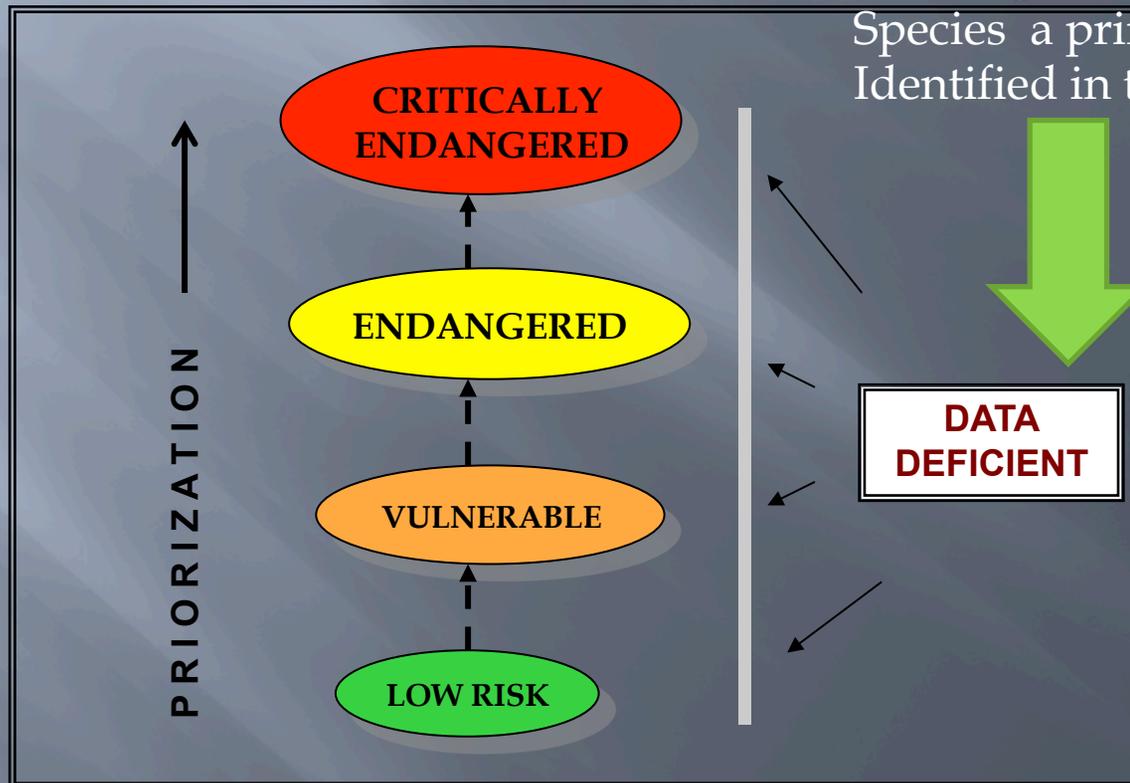


# Species of Greatest Conservation Need

Taxon	CR	EN	VU	DD	LR	Total
Amphibians	4	1	4	6	0	15
Birds	10	5	7	58	2	82
Reptiles	3	6	3	8	0	20
Marine Mammals	0	4	1	12	0	17
Terrestrial Mammals	0	0	2	10	1	13
Fresh Water Fish Marine Fish	2	1	2	27	0	32
Terrestrial Invertebrates Fresh Water Invertebrates Marine Invertebrates	3	0	2	14	7	26
Plants	*	*	*	*	*	*
<b>Total</b>	<b>22</b>	<b>17</b>	<b>21</b>	<b>135</b>	<b>10</b>	<b>205</b>



# Ranking of Priorities



Working with Data Deficient Species a primary goal Identified in the State Wildlife Plan

# Example SGCN

- Family: Mugilidae
- Scientific Name: *Agnostomus monticola*
- Common Name: Mountain Mullet
- Habitat: Rivers and creeks
- Population Estimate: Unknown
- Reasons for Designation: Suspected reduction in number/range, habitat loss
- pollution, and overfishing
- Category: Data Deficient (DD)

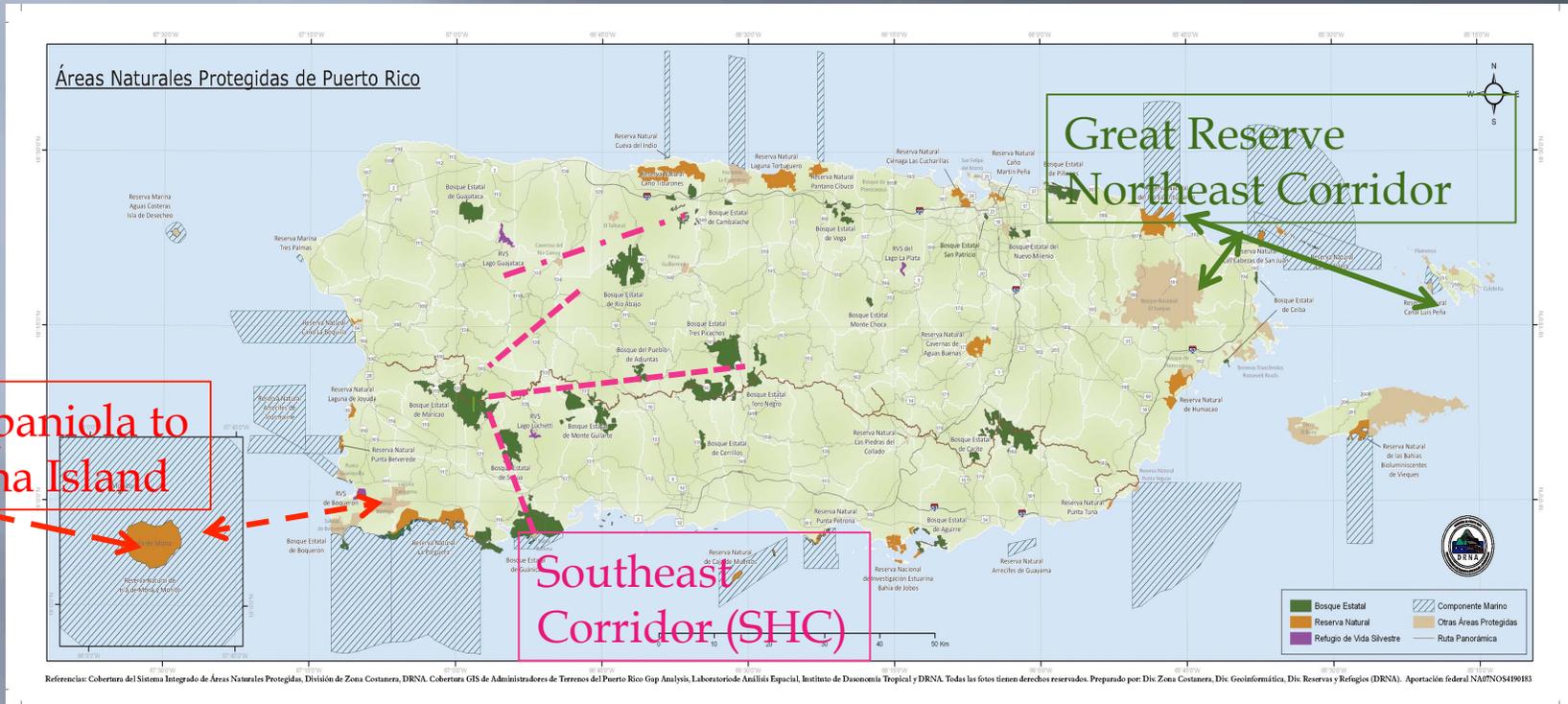


## 2. Ecosystems, Landscape and Regions

- ▣ Biological Corridors
- ▣ Heritage Rivers
  
- ▣ Strategic Habitat Conservation (SHC)
- ▣ Landscape Conservation Cooperatives
  - Puerto Rico and the American Virgin Islands
  
- ▣ National and International Initiatives
  - Atlantic Coast Joint Ventures (ACJV)
  - Caribbean Challenge
  - Caribbean Biological Corridor



# System of Natural Protected Areas and Functional Corridors



# Important Corridor Attributes

- ▣ Total Extension
  
- ▣ Habitat Representativeness
  - How many? How much of each one?
  
- ▣ Actual Connectivity
  - Linking what to what?



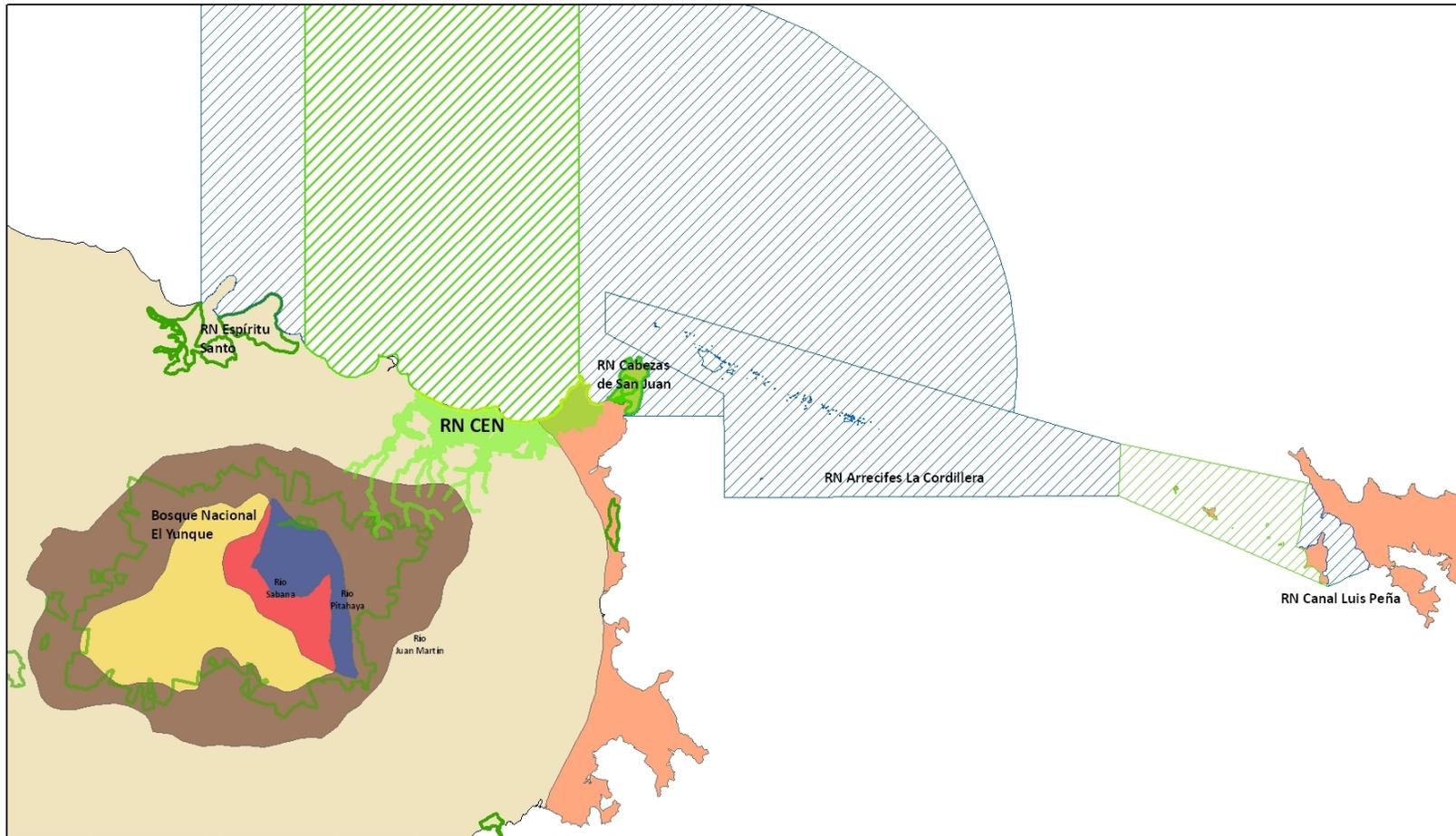


## Great Reserve Northeast Corridor





# Zonas de vida



Daniel J. Galán Kercadó  
Secretario

- Límite Reserva  
(4,125 cds / 16.21 km<sup>2</sup>)
- Límite Marino  
(65,582 cds / 257.76 km<sup>2</sup>)
- Zonas de Vida**
- dF-S (Bosque Seco Subtropical)
- mf-S (Bosque Húmedo Subtropical)
- rf-LM (Bosque Lluvioso Montano Bajo)
- rf-S (Bosque Lluvioso Subtropical)
- wf-LM (Bosque Montano Bajo Muy Húmedo Subtropical)
- wf-S (Bosque Muy Húmedo Subtropical)



# Surrogates Species Approach

- ▣ Collaboration is essential
- ▣ Consistency in Objectives and Definition
  - Wildlife for DNER= Fish, plants and other animals
  
- ▣ Types of Surrogates Species
  - Flagship/Iconic
    - ▣ Puerto Rican Parrot
  - Focal
    - ▣ Native fishes in rivers



# Puerto Rican Parrot



# Surrogate

- ▣ Umbrella Species
  - Habitat management and acquisition for several other species (native birds)
- ▣ Flagship Species
- ▣ Iconic Species



# Native Riverine Fishes



# Surrogates

- ▣ Ecological disturbance indicator species
- ▣ Cross-Taxon response indicator
- ▣ Focal Species
- ▣ Substitute Species



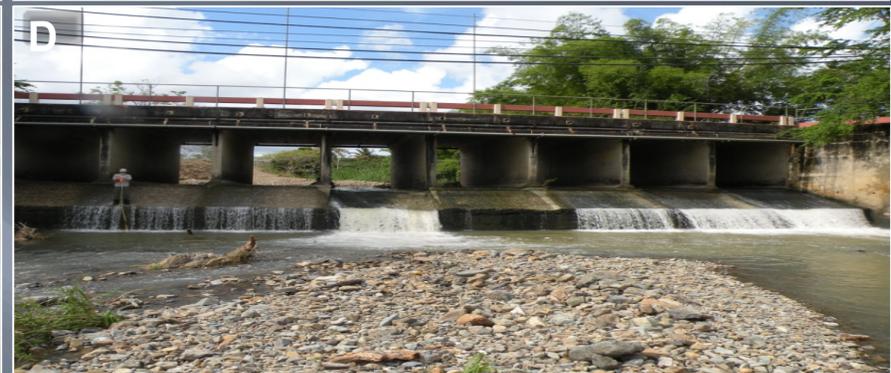
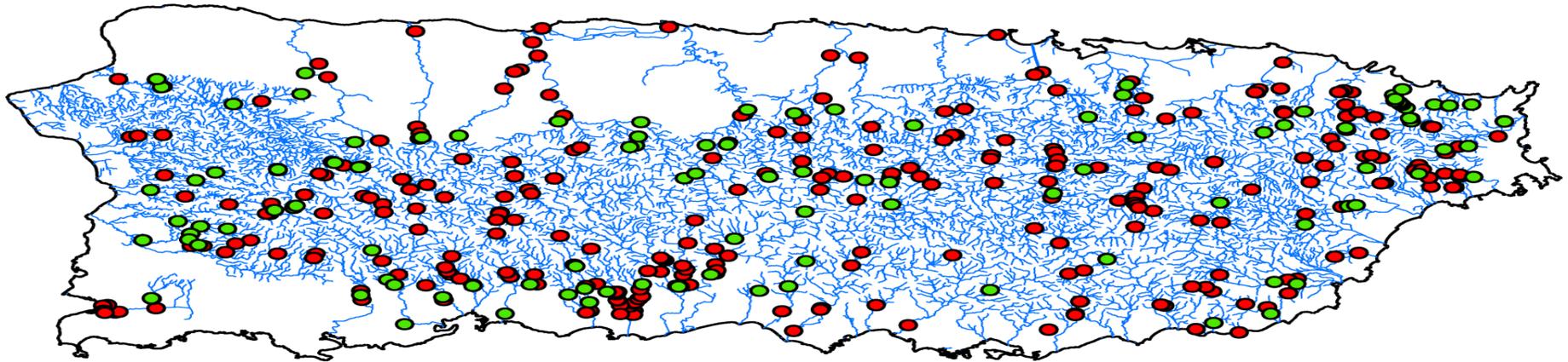


Figure 1. Dams and other instream barriers to diadromous fish migration come in many sizes and forms, including (A) large, high dams with regulated flow, (B) large, high-dams with run-of-the-river flow, (C) large, flood-control structures, (D) road crossings with various bridge and culvert designs, (E) small, low-head dams, and (F) natural waterfalls. Among these barrier types, A blocks migration of all native diadromous fish species; B, C, and F block migration of all species but gobies; D and E restrict, but do not block, migration of all species; and all instream barriers reduce fish migration and river habitat connectivity.

*NC Cooperative Fish and Wildlife Research Unit  
Dam survey (N=335) and fish assemblage (N=118) sampling sites*



- Fish sampling sites
- Artificial barrier sites

*Figure 2. Fish sampling sites (N = 118) and artificial barriers locations (N = 335) in Puerto Rico rivers.*

**NC Cooperative Fish and Wildlife Research Unit**  
Modeling results integrate dam surveys and fish occupancy  
Funded by PRDNER and USFWS

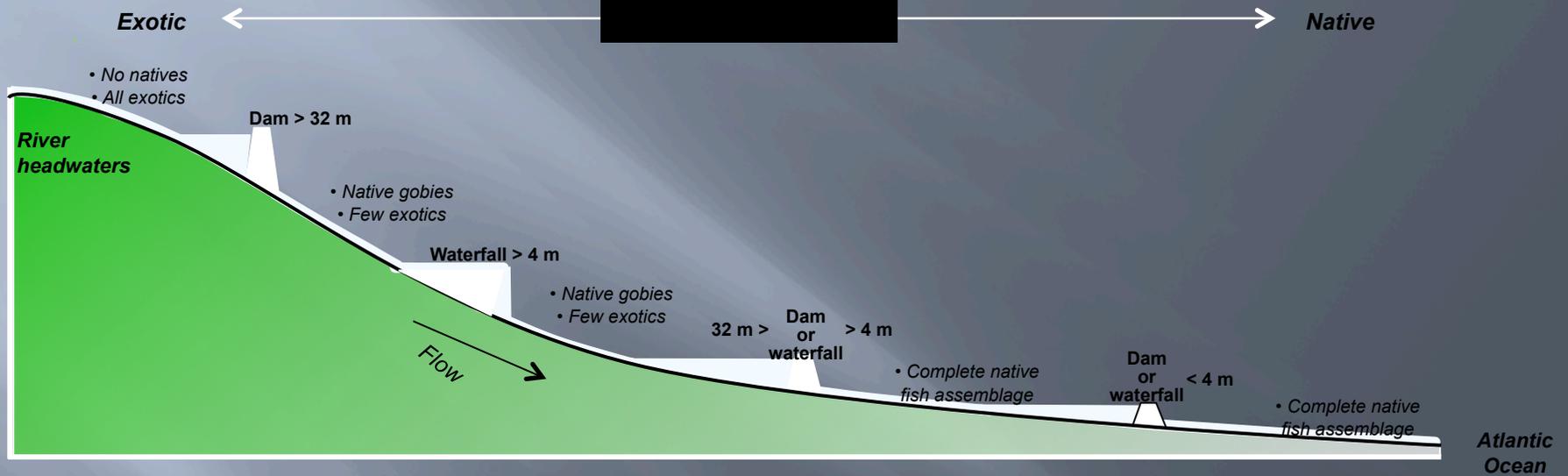
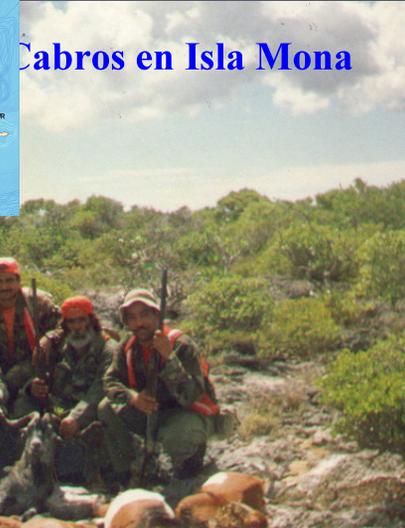


Figure 6. Instream barriers block upstream migration and limit distribution of native diadromous fish species at varying heights, forming a continuum in the fish assemblage from native to exotic species proceeding upstream.



## Cabros en Isla Mona

