The use of qualitative and quantitative tools to optimize shorebird habitat at Cabo Rojo Wildlife Refuge, Puerto Rico

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Caribbean Islands, Greater and Lesser Antilles

Image from Google Earth
Salt Flat Production

[Map of Fraternidad Lagoon with labeled areas A, B, C, and D]

[Image of water channels in a salt flat]

[Image of a hand holding a salinity meter over a salt flat]

[Image of a salt deposit with a water pipe nearby]
Temporal Scope: Nesting and migration of shorebirds during wet and dry seasons

- Dry season (salt production)
- Rainy season
- Hurricane season
- Nesting season
- Migration season
GOAL: Provide high quality nesting and foraging habitat through the active management of hydrology while allowing salt production
Qualitative & Quantitative Approach

Open Standards for the Practice of Conservation

Queensland University of Technology

Elicitator Software
Open Standards for the Practice of Conservation

Step 1:
• Define scope, vision, targets
• Identify critical threats
• Complete situation analysis

Step 2:
• Develop goals, strategies, assumptions, and objectives

Conservation Measures Partnership Open Standards

1. Conceptualize
   • Define initial team
   • Define scope, vision, targets
   • Identify critical threats
   • Complete situation analysis

2. Plan Actions and Monitoring
   • Develop goals, strategies, assumptions, and objectives
   • Develop monitoring plan
   • Develop operational plan

3. Implement Actions and Monitoring
   • Develop work plan and timeline
   • Develop and refine budget
   • Implement plans

4. Analyze, Use, Adapt
   • Prepare data for analysis
   • Analyze results
   • Adapt strategic plan

5. Capture and Share Learning
   • Document learning
   • Share learning
   • Create learning environment
Scope: Shorebird nesting and foraging habitats during migrating season (late July to early January with peak times in late August to late October)

Vision: A managed system to support quality feeding and nesting habitat for aquatic birds and salt production
Conservation Targets

Nestling habitat
Clear, open spaces with slight elevations in micro-topology or "mounds" protected from minor flooding

Foraging habitat
Accessible (<10cm); salinity (<35ppt to 100ppt); abundant source of invertebrate prey (moist soils and substrates).
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Scenarios

Please think back to the past five years of your experience observing birds at Fraternidad lagoon. At the end of migration season (late November to early December, at the end of the hurricane season), what is the minimum number of birds, of all the birds present at Fraternidad lagoon, would you expect to see in cell/area C? How sure are you? 100% sure of your answer?? Can you bring in these limits – to be more informative – so that you’re 95% sure?
**Objective 1.** Maximize foraging opportunities by managing hydrology for aquatic bird populations

By July 2013 foraging habitat will increase by XX% increase (use average of the past five years as a baseline).

- Greater % of birds during the season use more habitat for foraging (BEHAVIOR)
- Improved nest success

Observations of foraging behavior

**Objective 2.** Manage hydrology to provide water quality (ppt) and quantity to allow for salt production

By July 2013 there will be XX amount of water at a salinity range over 120ppt available to be pumped for crystallizers for salt production during the months of Jan - March

- Salinity levels of water around crystallizers
- Observation of water quantity

Reports from salt operators