

# National Protected Area Systems Analysis

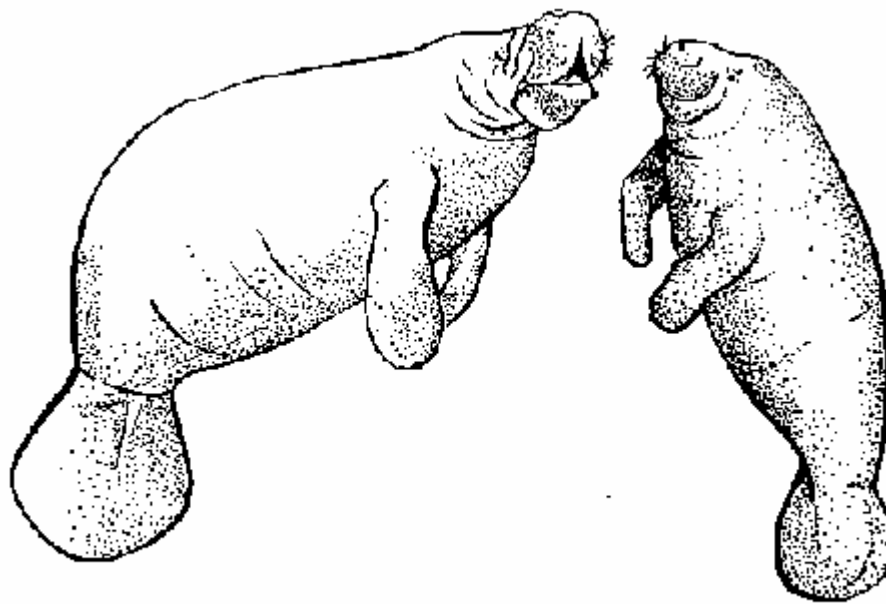
## Case Study: Manatees

### Problem statement:

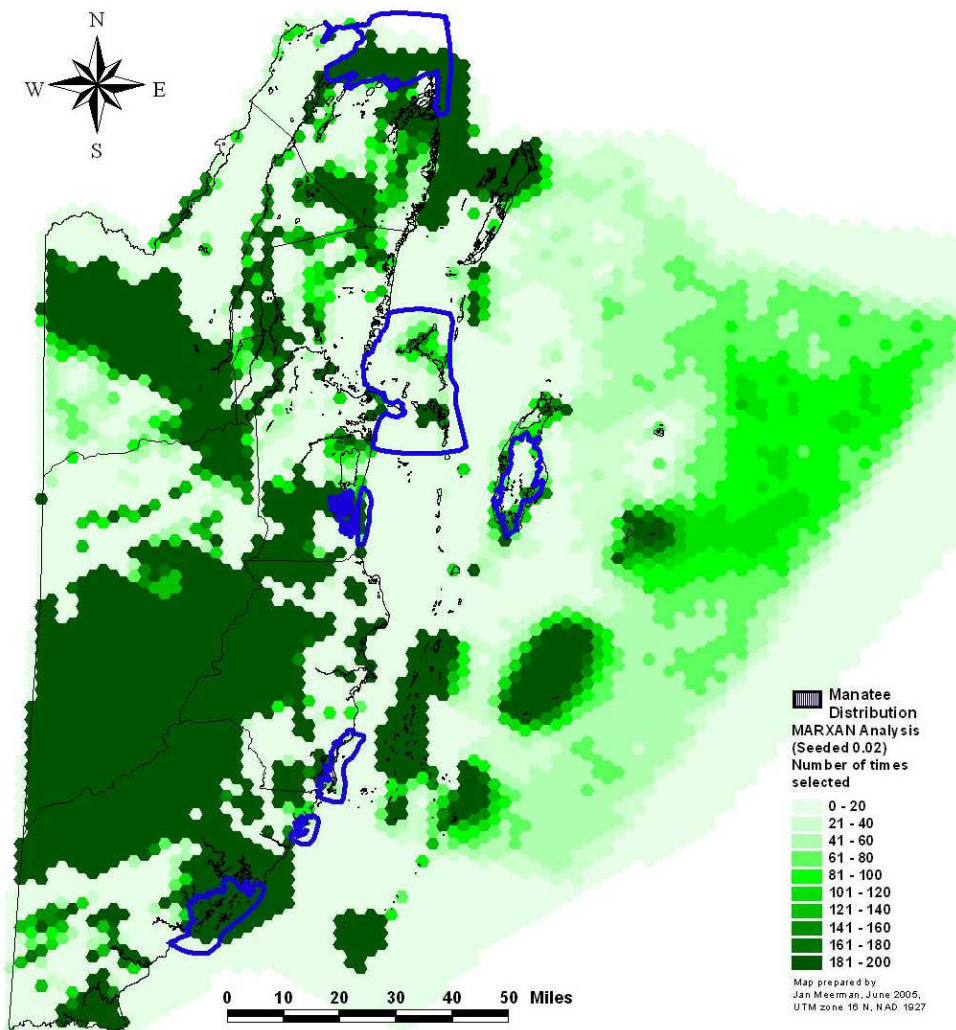
Which MARXAN Analysis best serves the protection of the Manatee?

### Introduction:

**The Antillean Manatee** (*Trichechus manatus manatus*), is a subspecies of the **West Indian manatee** and is sometimes referred to as the Caribbean manatee. Antillean manatees are sparsely distributed throughout the Caribbean and the NW Atlantic Ocean; They are threatened by loss of habitat, poaching, entanglement with fishing gear, and increased boating activity.



## Methodology:



*Figure 1. MARXAN Analysis locked version with key Manatee areas indicated*

The most straight forward solution is the locked version of the MARXAN analysis. This tried to put the conservation features first in existing protected areas (figure 1). This is overlain with a layer indicating the Manatee “hotspots” for Belize<sup>1</sup>. This layer was prepared by the NPAPSP consortium and based on years of research carried out on Manatees.

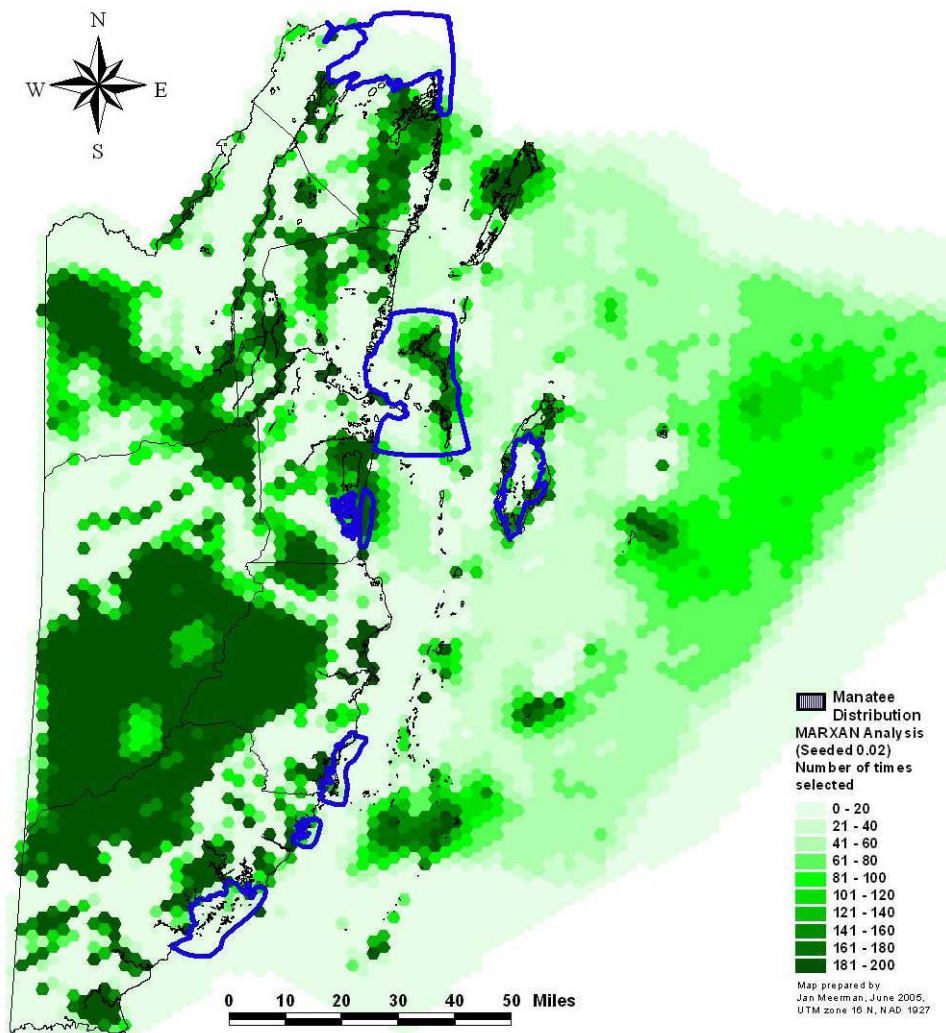
Based on GIS analysis, the Manatee “hotspot” layer covers an area of approximately 537,600 acres. Comparing the Manatee hotspot layer with the current protected areas map, it can be deducted that the Manatee distribution principally coincides with 4 protected areas (table 1).

<sup>1</sup> Available as ArcView file on the resource CD

*Table 1. Protected Areas with significant Manatee habitat.*

Corozal Bay Wildlife Sanctuary	180,500
Swallow Caye Wildlife Sanctuary	8,972
Gales Point Wildlife Sanctuary	9,097
Port Honduras Marine Reserve	<u>9,6731</u>
	<b>295,300</b>

Based on this calculation it appears that 55% of the Manatee hotspots are within current protected areas. This 55% is significantly more than the 30% target the marine working group of the NPAPSP consortium has set.



*Figure 2. MARXAN Analysis seeded version with key Manatee areas indicated*

Comparing the Manatee hotspots with the seeded version of the MARXAN analysis, the conclusion is very different. In this case, the analysis selected very few areas within the NPAPSP analysis case study: Manatees. Meerman, J. C. 2005

known Manatee hotspot distribution. Essentially only the areas around Belize City and in Southern Lagoon (Gales Point) were selected. While this satisfies the 30% target, the “seeded” outcome is obviously less attractive for the management of the Manatee.

### **Conclusions:**

The management of the Manatee, a very important species for Belizean conservation efforts, is better served by the current situation (as reflected in the “locked” analysis and assuming proper management of all the protected areas involved) than by the solution suggested by the seeded MARXAN analysis.

Given the fact that at least 3 of the current protected areas with significant Manatee habitat, were declared specifically with manatees in mind (and now covering approximately 55% of the significant Manatee distribution), the 30% target that was set for this conservation feature should be questioned.

In the case of the Manatee it seems advisable to review the 30% conservation feature target and possibly raise it to the current level of 55%.

In general, most marine targets were uniformly set to 30%, Internationally, 30% is an accepted target (WCS, Fisheries Dept., pers. comm). And even that may be too arbitrary. A target setting methodology based on attributes<sup>2</sup> as used for most other conservation features would be advisable.

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<sup>2</sup> See “Gap Analysis” and “MARXANanalysis” reports supplied on the resource CD.