The Use of Protected Area Management Effectiveness (PAME) Monitoring Through Visualization

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The Nature Conservancy

USAID FROM THE AMERICAN PEOPLE

Important Observations/Concerns

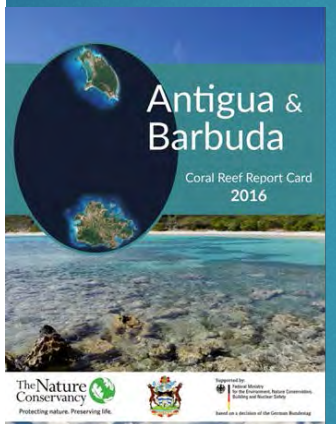
- Conservation goals **depend** on **effective management**
- Management effectiveness (ME) **surveys** have been **completed**
- **No coordination** or repository of ME information
- **Results** are **less understood** at the scale of the protected area (PA) network

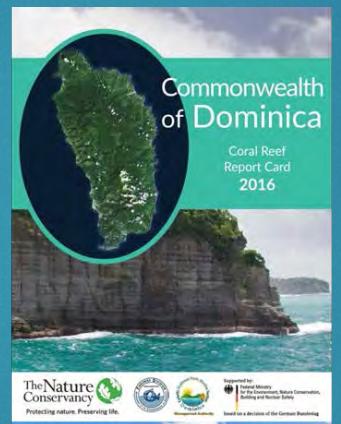
Coral Reef Health Report Cards

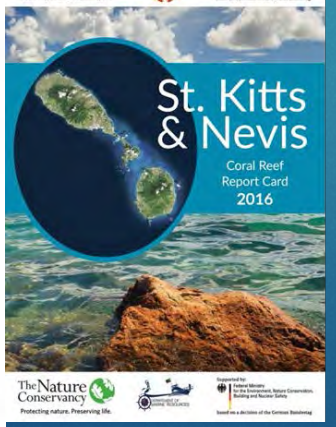
Coral Health Index Maps (using existing survey data)

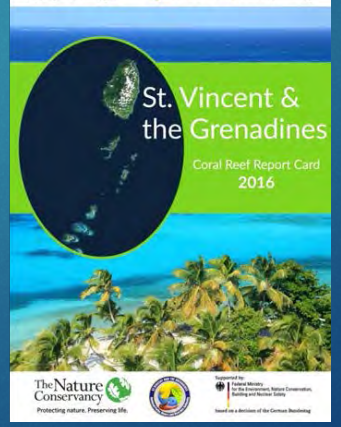
# sites	Reef Health Index	Score
St. Kitts & Nevis 25		2.3
Antigua & Barbuda 29/121		2.3
Dominica 16		2.8
Saint Lucia 17		2.8
St. Vincent & Grenadines 42		2.8
Grenada 27		2.5

Coral Reef Report Cards

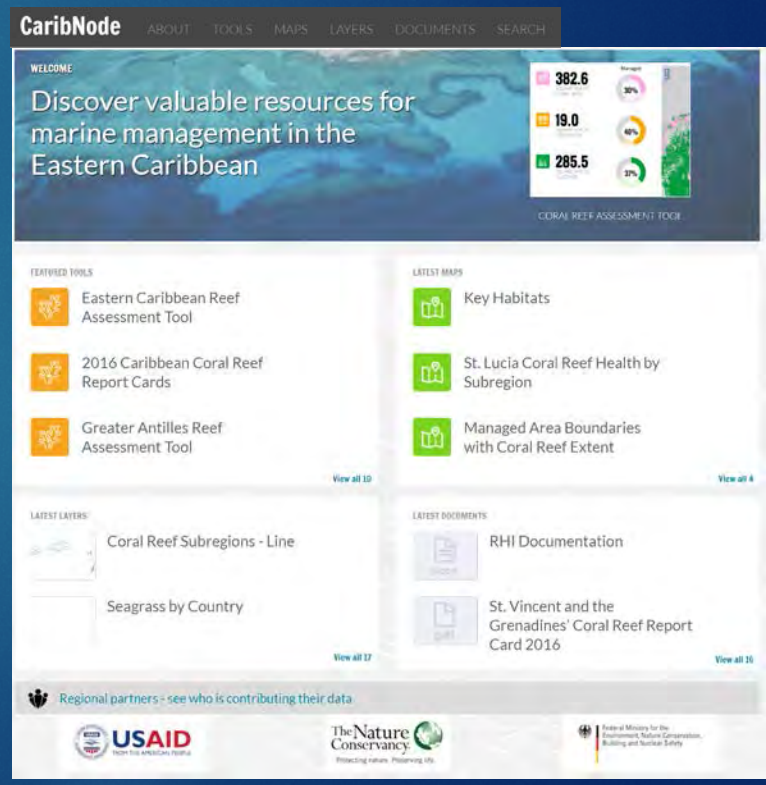






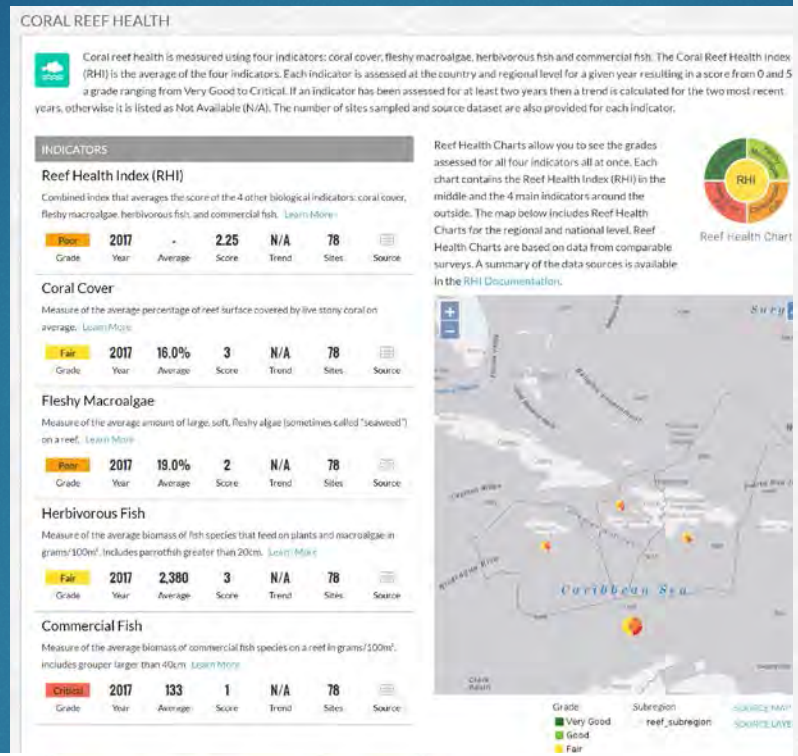


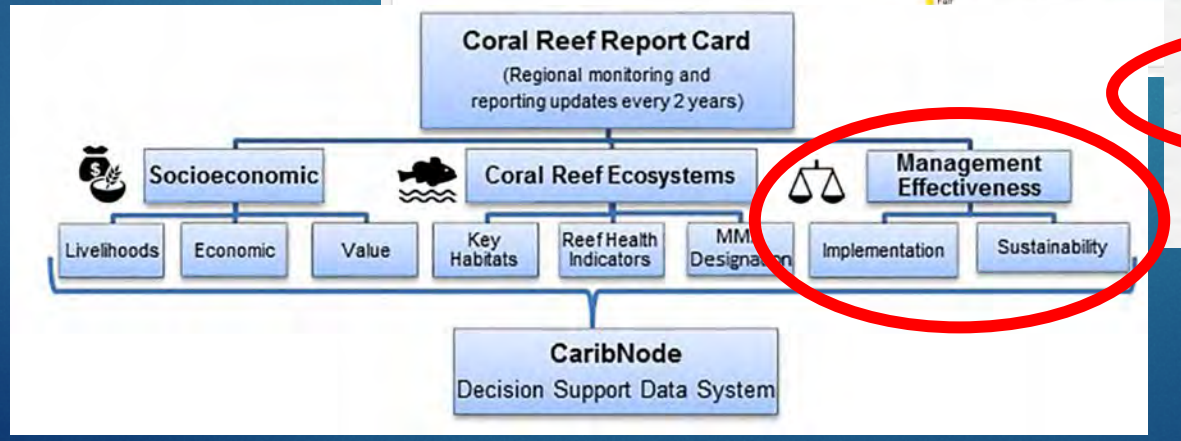
All Accessible on an easy to understand online platform

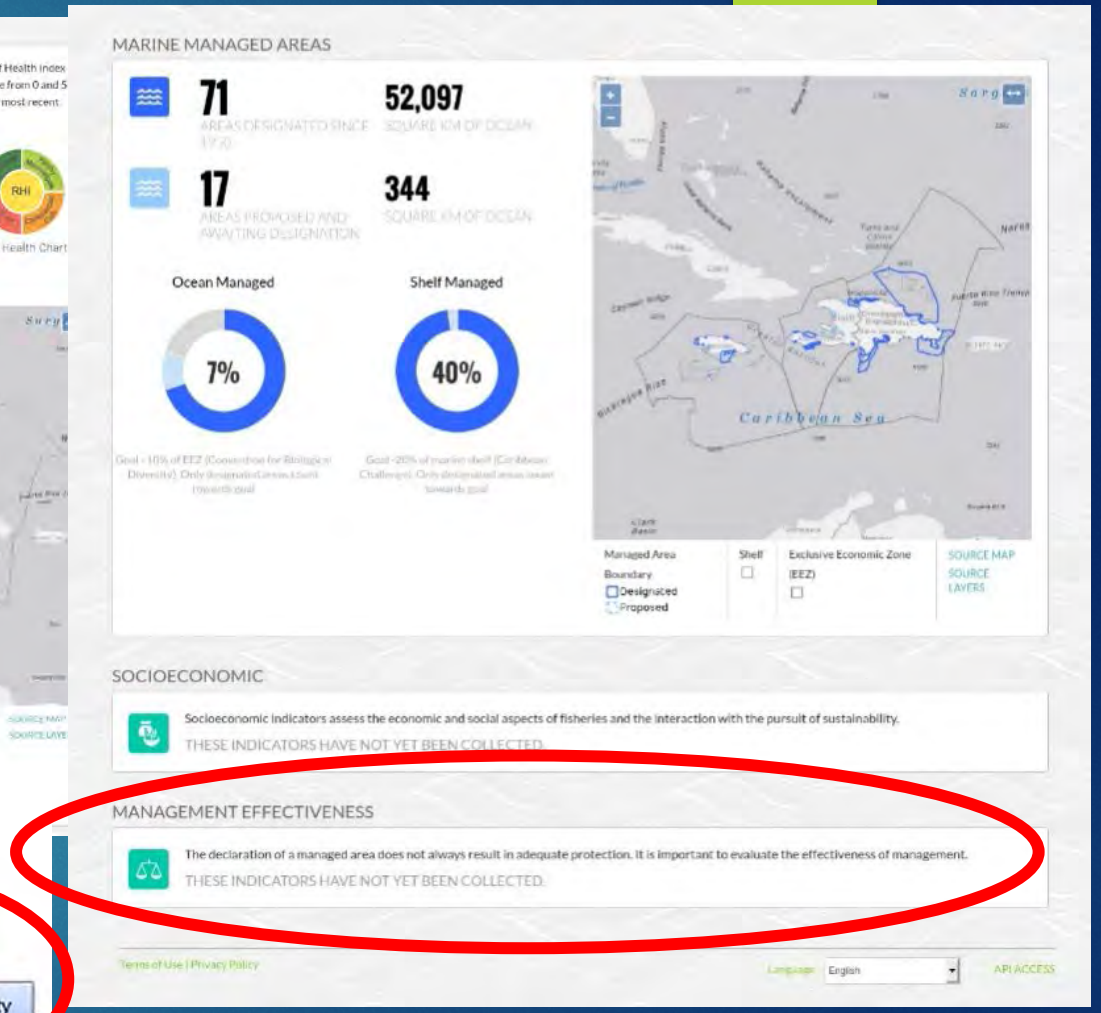


http://www.caribnode.org/

Coral Reef Assessment Tool







IMETT Visualization

BIOPAMA IMET MANAGMENT EFFECTIVENESS

From Knowledge to Action for a Protected Planet

Sections

- OVERALL IMET VALUES
- CONTEXT
- PLANNING
- INPUTS
- PROCESS
- OUTPUTS
- OUTCOMES

Imet Forms examples

From ID: 105

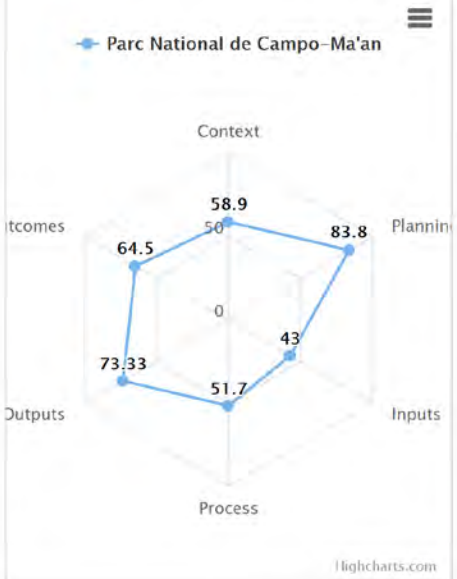
From ID: 117

Parc National de Campo-Ma'an | OVERALL RESULTS

Overall IMET values

INDICATOR	VALUE
Context	58.9
Planning	83.8
Inputs	43
Process	51.7
Outputs	73.33
Outcomes	64.5

Managment Effectiveness Visualization



BIOPAMA IMET MANAGMENT EFFECTIVENESS

From Knowledge to Action for a Protected Planet

Sections

- OVERALL IMET VALUES
- CONTEXT
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- OUTCOMES

Imet Forms examples

From ID: 105

From ID: 117

Parc National de Campo-Ma'an | CONTEXT

Context IMET values (B)

CODE	INDICATOR	VALUE
c1	Value and Importance	63.4
c2	Contraint or supporting factors from the external political and civil environment	25.93
c3	Threats	-49.78

Managment Effectiveness Gauges

Context IMET values

30 MARCH 2017 | VOL 543 | NATURE

ARTICLE

doi:10.1038/nature21708

Capacity shortfalls hinder the performance of marine protected areas globally

David A. Gill[1,2]†, Michael B. Mascia[3], Gabby N. Ahmadia[4], Louise Glew[4], Sarah E. Lester[5], Megan Barnes[6,7], Ian Craigie[8], Emily S. Darling[9], Christopher M. Free[10], Jonas Geldmann[11,12], Susie Holst[13], Olaf P. Jensen[10], Alan T. White[14], Xavier Basurto[15], Lauren Coad[16,17], Ruth D. Gates[18], Greg Guannel[19], Peter J. Mumby[20], Hannah Thomas[21], Sarah Whitmee[22], Stephen Woodley[23] & Helen E. Fox[4,24]

Marine protected areas (MPAs) are increasingly being used globally to conserve marine resources. However, whether many MPAs are being effectively and equitably managed, and how MPA management influences substantive outcomes remain unknown. We developed a global database of management and fish population data (433 and 218 MPAs, respectively) to assess: MPA management processes; the effects of MPAs on fish populations; and relationships between management processes and ecological effects. Here we report that many MPAs failed to meet thresholds for effective and equitable management processes, with widespread shortfalls in staff and financial resources. Although 71% of MPAs positively influenced fish populations, these conservation impacts were highly variable. Staff and budget capacity were the strongest predictors of conservation impact: MPAs with adequate staff capacity had ecological effects 2.9 times greater than MPAs with inadequate capacity. Thus, continued global expansion of MPAs without adequate investment in human and financial capacity is likely to lead to sub-optimal conservation outcomes.

Awareness of human impacts upon global marine biodiversity has spurred the largest expansion in the number and coverage of marine protected areas (MPAs) in history[1,2]. As part of the 2011 Convention on Biological Diversity (CBD) Aichi Targets, 193 countries agreed to "effectively and equitably" manage 10% of coastal and marine areas within marine protected areas and "other effective area-based conservation measures" by 2020 (ref. 3). A 10% conservation target for MPAs has

Our dataset included MPAs from every tropical and temperate ocean basin, ranging in size from 0.006 to 989,836 km^2, and spans diverse social, political and biophysical contexts. First, to assess the efficacy and equity of MPA management processes, we drew on empirically supported governance and management theories[10,15–17] (Supplementary Table 1 and Extended Data Fig. 1) to identify key management process indicators from 433 MPAs. We extracted data on these indicators

Gill, D. A., Mascia, M. B., Ahmadia, G. N. et al. 2017. Capacity shortfalls hinder the performance of marine protected areas globally. Nature, 543: 665–669.

Article Introduction

- 193 countries agreed to "**effectively and equitably**" manage 10% of coastal and marine areas by 2020
- But the efficacy and equity of many MPAs remain **uncertain**
- **Key management process indicators** were identified from empirically supported governance and management theories

Indicator Categories

- Legally gazette
- Appropriate MPA regulations in place
- Implementing management plans
- Acceptable budget capacity
- Clearly defined boundaries
- Monitoring informs management activities
- Adequate staff capacity
- Inclusive decision-making
- Share/non-state management

Data Extraction

- Key questions from
  - The Management Effectiveness Tracking Tool (METT)
  - The World Bank MPA Score Card
  - The NOAA Coral Reef Conservation Program's (CRCP) MPA Management Assessment Checklist.
- A thresholds (adequate/inadequate) defined effective management

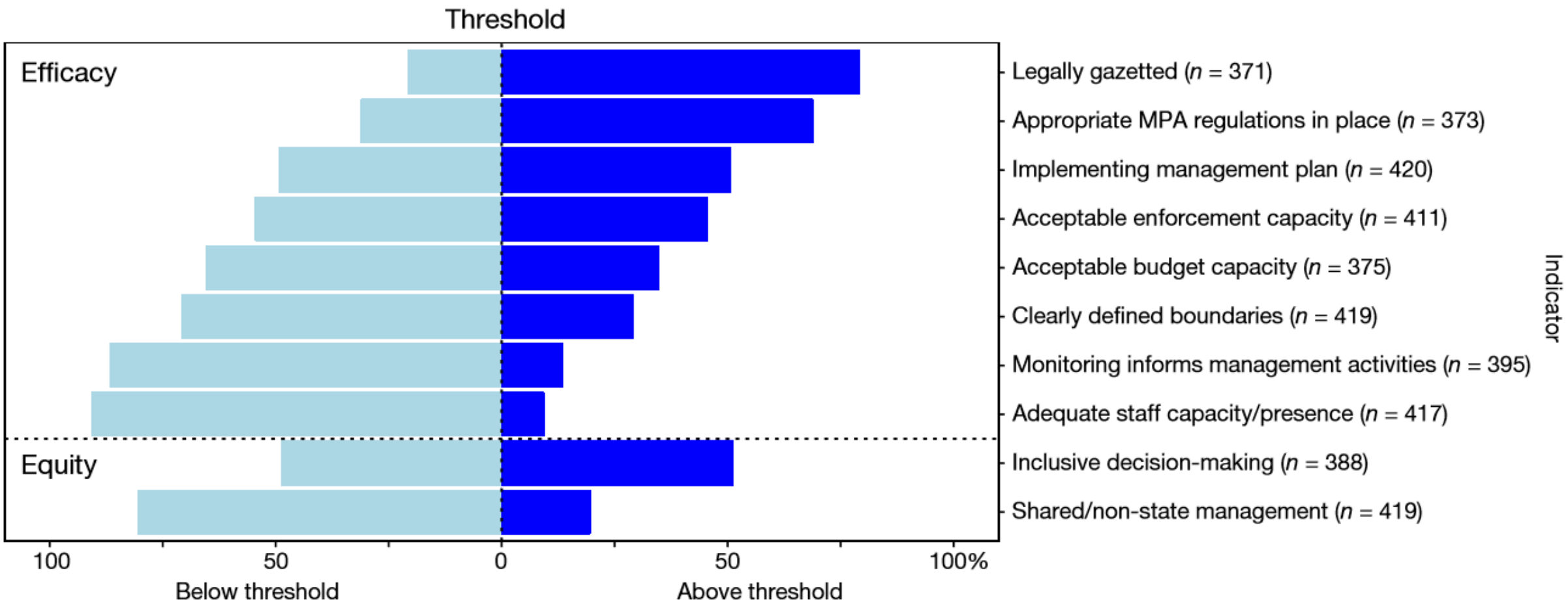


Figure 1 from Gill, D. A., Mascia, M. B., Ahmadia, G. N. et al. 2017. Capacity shortfalls hinder the performance of marine protected areas globally. Nature, 543: 665–669.

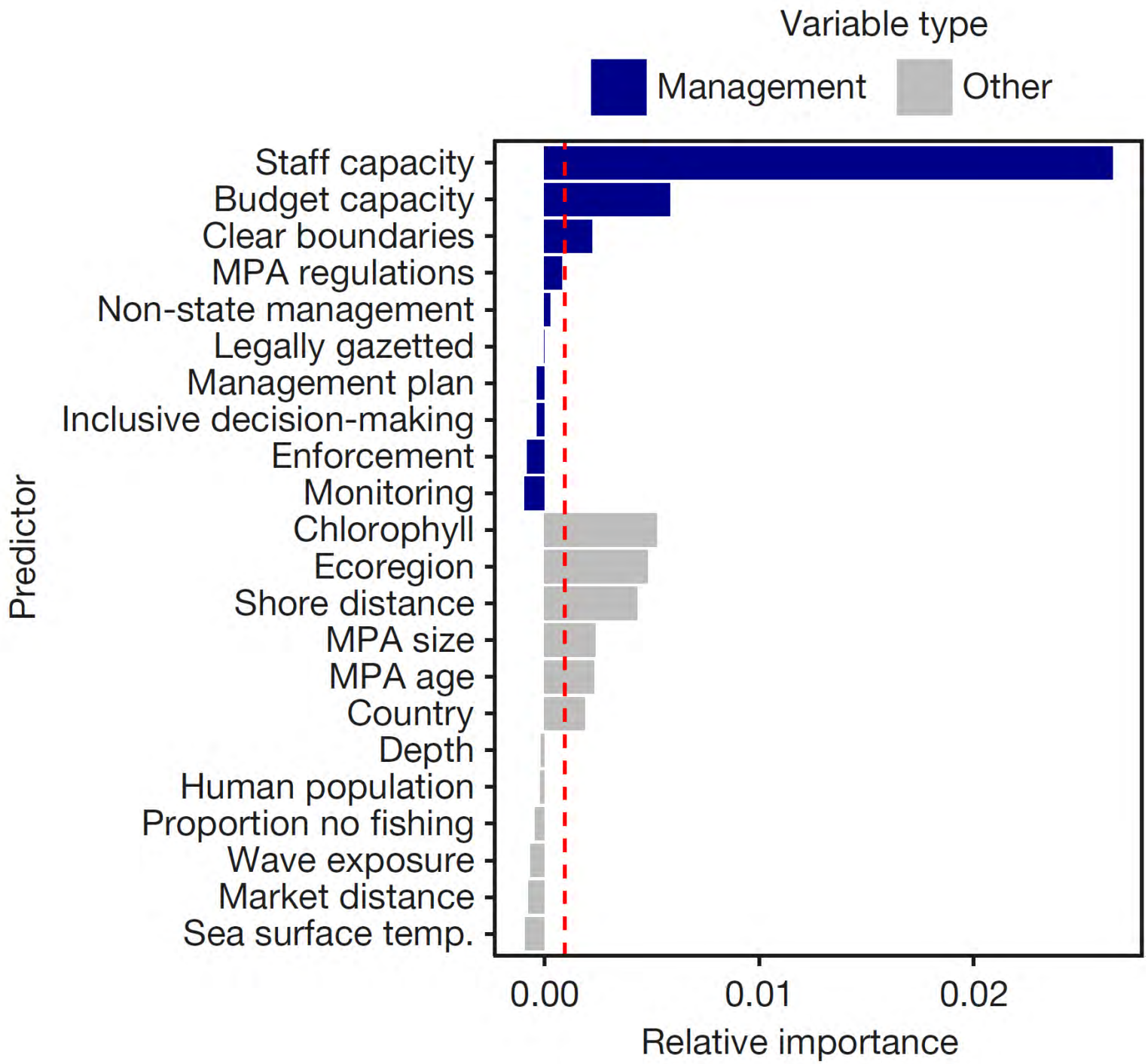
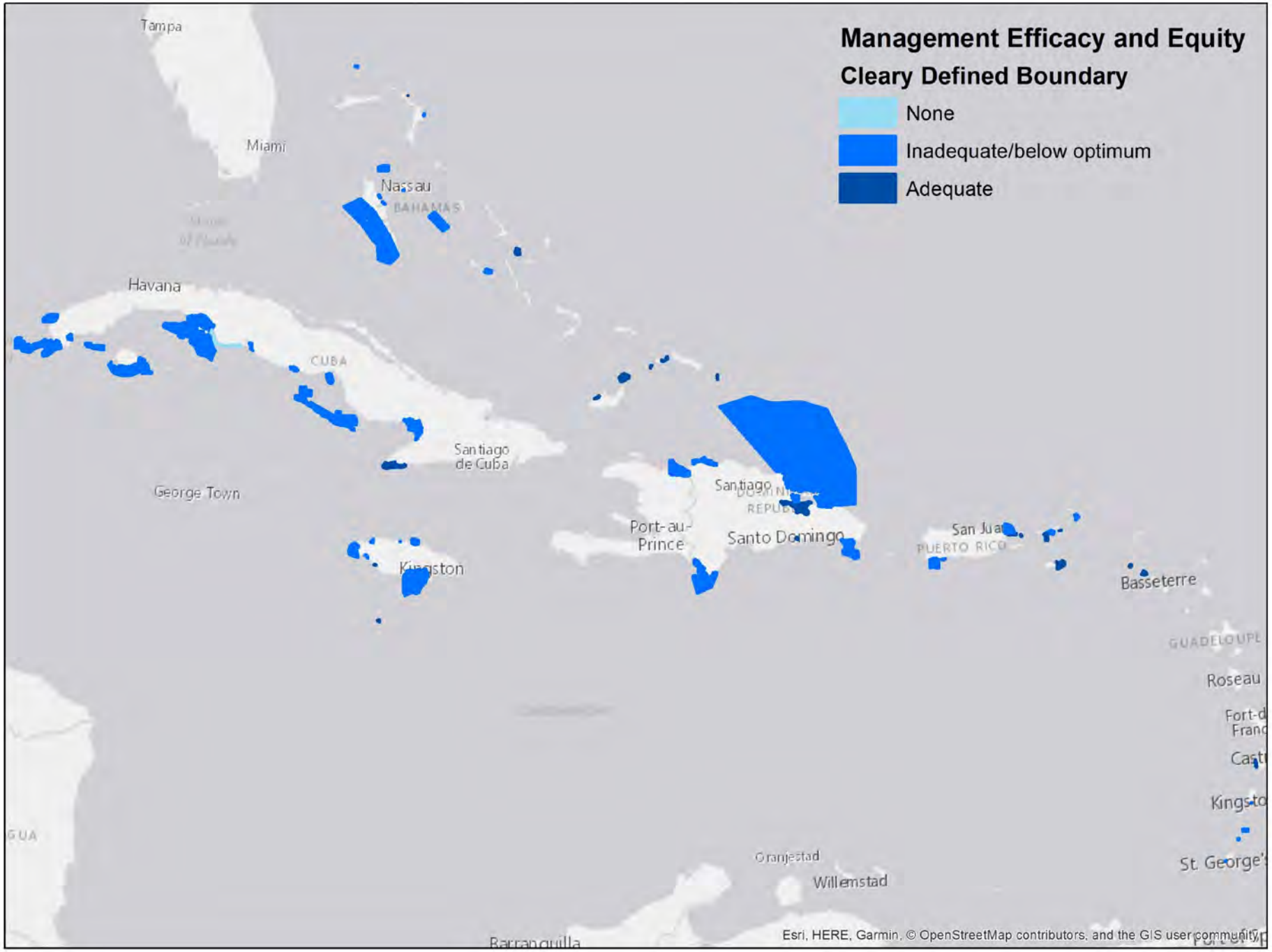


Figure 3 from Gill, D. A., Mascia, M. B., Ahmadia, G. N. et al. 2017. Capacity shortfalls hinder the performance of marine protected areas globally. Nature, 543: 665–669.


Management Efficacy and Equity
Cleary Defined Boundary
None
Inadequate/below optimum
Adequate
Tampa
Miami
Nassau
BAHAMAS
Havana
CUBA
Santiago de Cuba
George Town
Kingston
Port-au-Prince
Santiago
Santo Domingo
San Juan
PUERTO RICO
Basseterre
GUADELOUPE
Roseau
Fort-de-France
Castries
Kingstown
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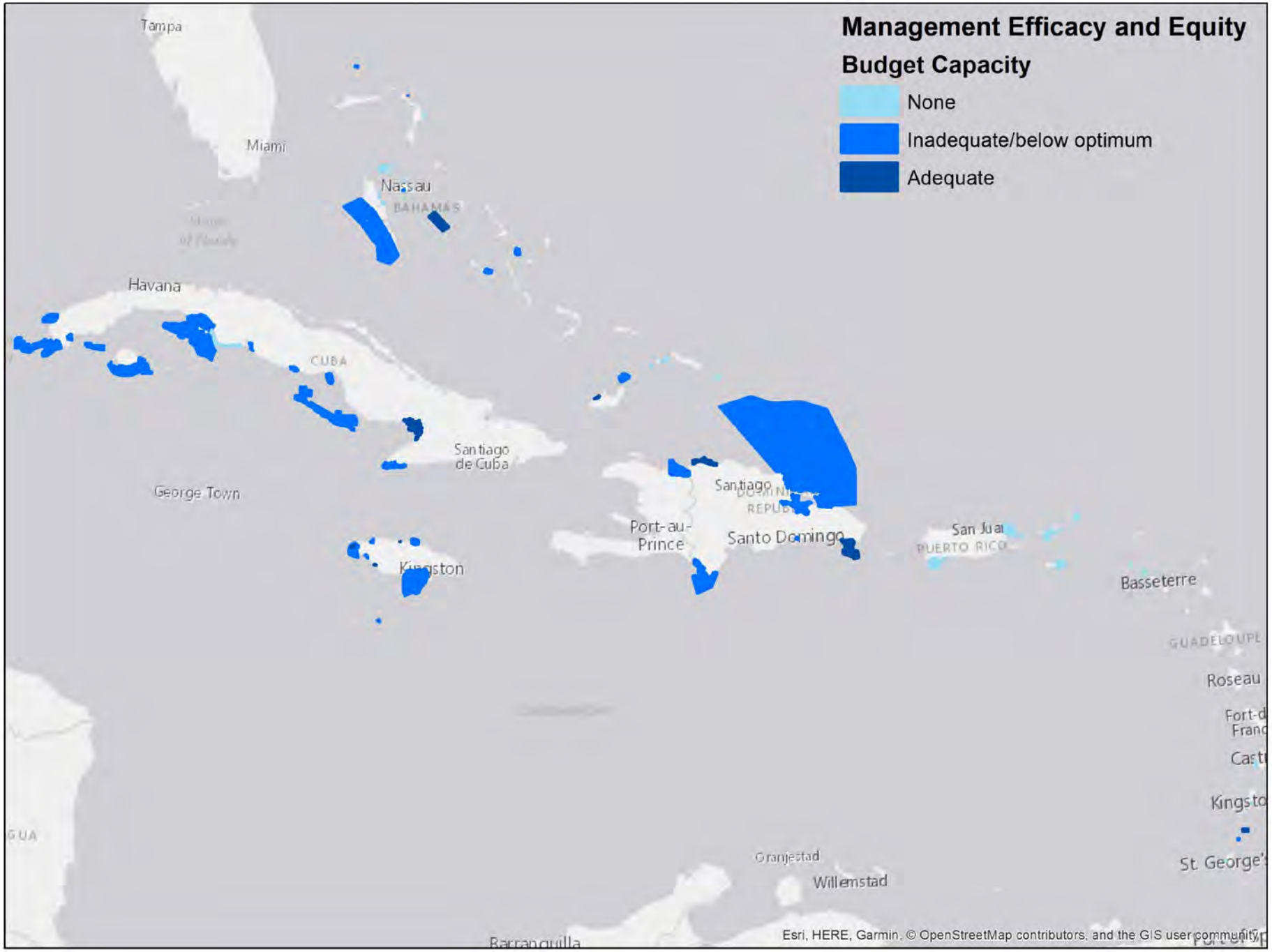
Management Efficacy and Equity
Budget Capacity
None
Inadequate/below optimum
Adequate
Tampa
Miami
Nassau
BAHAMAS
Havana
CUBA
Santiago de Cuba
George Town
Kingston
Port-au-Prince
Santiago
Santo Domingo
San Juan
PUERTO RICO
Basseterre
GUADELOUPE
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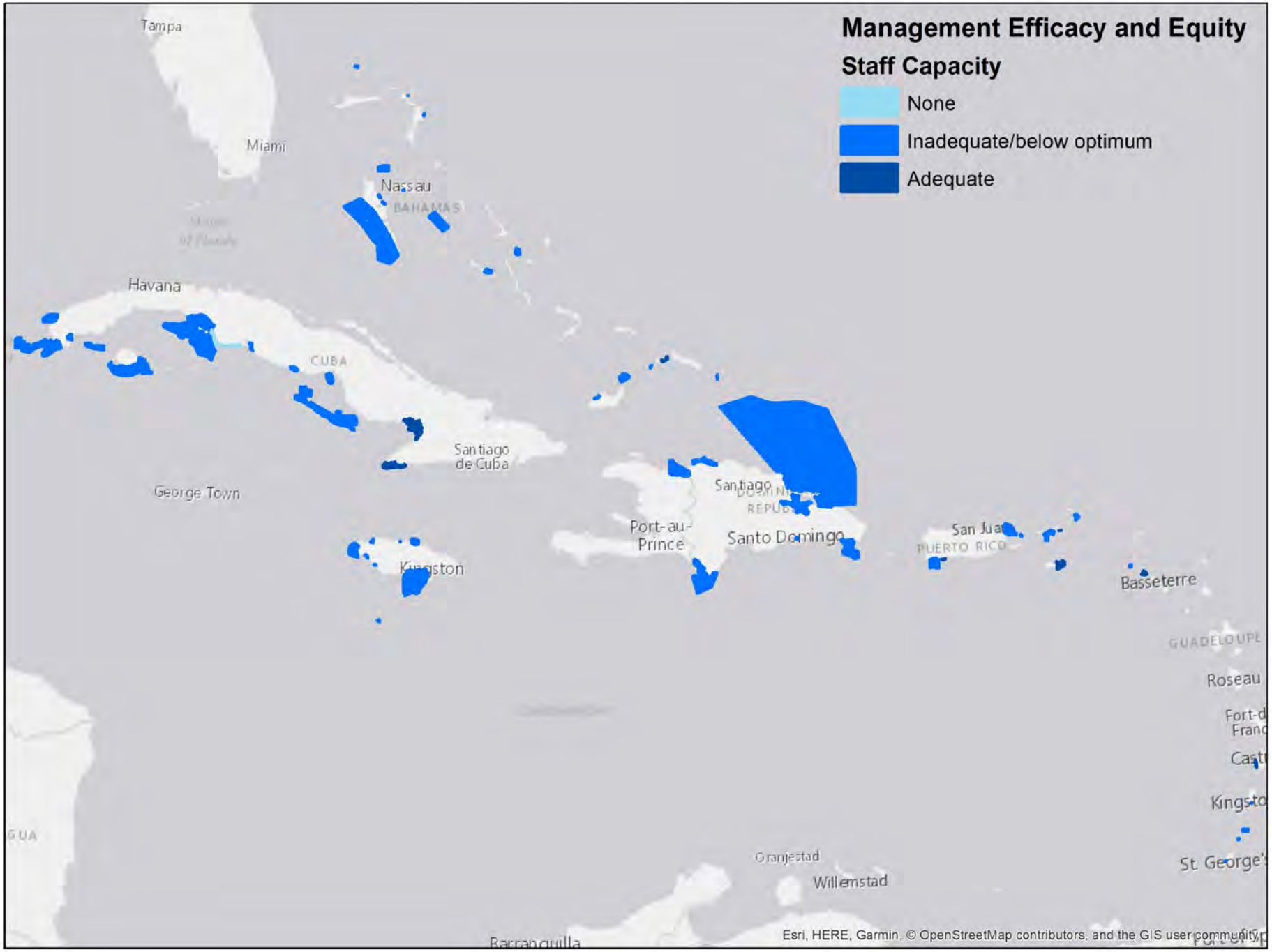
Management Efficacy and Equity
Staff Capacity
None
Inadequate/below optimum
Adequate
Tampa
Miami
Nassau
BAHAMAS
Havana
CUBA
Santiago de Cuba
George Town
Kingston
Port-au-Prince
Santiago
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Next Steps

- What aspects of management effectiveness should be visualized?
  - Elements of the Management Cycle (IMETT) vs.
  - Management Process Indicators (Gill et. al.) vs.
  - A combination
- What is the best way to visualize the data?
  - Spider graphs vs.
  - Color-coded threshold vs.
  - Something else
- Structure database
- Extract and populate with currently available
- Review graphics and maps

Thank you!