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Aquatic Conservation: Marine and Freshwater Ecosystems / Volume 19, Issue 4 / pp. 408-420

Research Article

Identification of a spatially efficient portfolio of priority conservation sites in marine and estuarine areas of Florida

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First published: 25 November 2008

https://doi.org/10.1002/aqc.992

PDF

Abstract

1. A systematic conservation planning approach using benthic habitat and imperilled species data along with the site prioritization algorithm, MARXAN, was used to identify a spatially efficient portfolio of marine and estuarine sites around Florida with high biodiversity value.

2. Ensuring the persistence of an adequate geographic representation of conservation targets in a particular area is a key goal of conservation. In this context, development and testing of different approaches to spatially-explicit marine conservation planning remains an important priority.

3. This detailed case study serves as a test of existing approaches while also demonstrating some novel ways in which current methods can be tailored to fit the complexities of marine planning.

4. The paper reports on investigations of the influence of varying several algorithm inputs on resulting portfolio scenarios including the conservation targets (species observations, habitat distribution, etc.) included, conservation target goals, and socio-economic factors.

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6. The priority sites identified in this analysis can be used to guide allocation of limited conservation and management resources.

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REFERENCES

Ardron J. 2002. A recipe for determining benthic complexity: an indicator of species richness. In *Marine Geography: GIS for the Oceans and Seas*, J Breman (ed.). ESRI Press: Redlands, CA; 169–175.

Google Scholar

Ball I, Possingham H. 2000. *MARXAN (V1.8.2): Marine Reserve Design Using Spatially Explicit Annealing, a Manual*. The Ecology Centre, University of Queensland: Brisbane.

Google Scholar

Beck M. 2003. The sea around: marine regional planning. In *Drafting a Conservation Blueprint: a Practitioners' Guide to Planning for Biodiversity*, CR Groves (ed.). Island Press: Washington, DC; 319–344.

Google Scholar

Beck M, Odaya M. 2001. Ecoregional planning marine environments: identifying priority sites for conservation in the northern Gulf of Mexico. *Aquatic Conservation: Marine and Freshwater Ecosystems* **11**: 235–242.

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Davis Jr R. 1997. Geology of the Florida Coast. In *The Geology of Florida*, A Randazzo, D Jones (eds). University of Florida Press: Gainesville; 155–168.

Google Scholar

DeBlieu J, Beck M, Dorfman D, Ertel P. 2005. *Conservation in the Carolinian Ecoregion: An Ecoregional Assessment*. The Nature Conservancy: Arlington, VA.

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Gardner JV, Hughes Clarke J, Mayer L. 2003. Bathymetry and Acoustic Backscatter of the Mid and Outer Continental Shelf, Head of De Soto Canyon, Northeastern Gulf of Mexico — Data, Images, and GIS. US Geological Survey Open-File Report OF 02–396.

Google Scholar

Geselbracht L, Torres R, Cumming G, Dorfman D, Beck M. 2005. *Marine/Estuarine Site Assessment for Florida: A Framework for Site Prioritization*. The Nature Conservancy: Gainesville, FL.

Google Scholar

Groves C. 2003. *Drafting a Conservation Blueprint: a Practitioner's Guide to Planning for Biodiversity*. Island Press: Washington, DC.

Google Scholar

Hockey PAR, Branch GM. 1997. Criteria, objectives and methodology for evaluating marine protected areas in South Africa. *South African Journal of Marine Science* **18**: 369–383.

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Jarrett BD, Hine AC, Halley RB, Naar DF, Locer SD, Neumann AC, Twichell D, Donahue CHBT, Jaap WC, Palandeo D, Cembronowicz 2004. Strange bedfellows — a deep-water hermatypic coral reef superimposed on a drowned barrier island; southern Pulley Ridge SW Florida platform margin. *Marine Geology* **24**: 295–307.

Google Scholar

Koenig CC, Coleman FC, Grimes CB, Fitzhugh GR, Scanlon KM, Gledhill CT, Grace M. 2000. Protection of fish spawning habitat for the conservation of warm temperate reef fish fisheries of shelf-edge reefs of Florida. *Bulletin of Marine Science* **66**: 593–616.

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Lodge T. 2005. *The Everglades Handbook–Understanding the Ecosystem*. CRC Press: Washington, DC.

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Lourie S, Vincent A. 2004. Using biogeography to help set priorities in marine conservation. *Conservation Biology* **18**: 1004–1020.

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Madley KA, Sargent B, Sargent FJ. 2002. Development of a System for Classification of Habitats in Estuarine and Marine Environments (SCHEME) for Florida. Report to the US Environmental Protection Agency, Gulf of Mexico Program (Grant Assistance Agreement MX-97408100). Florida Marine Research Institute, Florida Fish and Wildlife Conservation Commission, St. Petersburg.

Google Scholar

Pauly D. 1995. Anecdotes and the shifting baseline syndrome of fisheries. *Trends in Ecology and Evolution* **10**: 430.

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Possingham HP, Ball IR, Andelman S. 2000. Mathematical methods for identifying representative reserve networks. In *Quantitative Methods for Conservation Biology*, S Ferson, M Burgman (eds). Springer-Verlag: New York; 291–305.

Google Scholar

Pressey RL, Johnson IR, Wilson PD. 1994. Shades of irreplaceability: towards a measure of the contribution of sites to a reservation goal. *Biodiversity and Conservation* **3**: 242–262.

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Randazzo A, Halley R. 1997. Geology of the Florida Keys. In *The Geology of Florida*, A Randazzo, D Jones (eds). University of Florida Press: Gainesville; 251–260.

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Roberts CM, Branch G, Bustamante RH, Castilla JC, Dugan J, Halpern BS, Lafferty KD, Leslie H, Lubcenco J, McArdle D, *et al*. 2003a. Application of ecological criteria in selecting marine reserves and developing reserve networks. *Ecological Applications* **13**: S215–S228.

Web of Science® Google Scholar

Roberts CM, Andelman S, Branch G, Bustamante RH, Castilla JC, Dugan J, Halpern BS, Lafferty KD, Leslie H, Lubcenco J, McArdle D, *et al*. 2003b. Ecological criteria for evaluating candidate sites for marine reserves. *Ecological Applications* **13**: S199–S214.

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Salm RV, Clark J, Siirila E. 2000. *Marine and Coastal Protected Areas. A Guide for Planners and Managers*, 3rd edn. IUCN: Washington, DC.

Google Scholar

Scanlon KM. 2000. Surficial seafloor geology of a shelf-edge area off West Florida. In West Florida Shelf: Sidescan-sonar and Sediment Data from Shelf-edge Habitats in the NorthEastern Gulf of Mexico, Briere PR, Scanlon KM, Fitzhugh G, Gledhill CT, Koenig CC (eds) US. Geological Survey, Open-file Report 99–589.

Google Scholar

Scanlon KM, Koenig CC, Coleman FC, Rozycki JE. 2001. Paleoshorelines, drowned reefs, and grouper habitat in the northeastern Gulf of Mexico. Geology of Marine Habitat Session, Geological Association of Canada Annual Meeting, 2001, St. Johns, Vol. 26.

Google Scholar

Shaffer ML, Stein BL. 2000. Safeguarding our precious heritage. In *Precious Heritage: The Status of Biodiversity in the United States*, BA Stein, LS Kutner, JS Adams (eds). Oxford University Press: Oxford; 301–322.

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The Nature Conservancy, Greater Caribbean Ecoregional Plan Team. 2003. An Ecoregional Plan for Puerto Rico: Portfolio Design. Report to Bristol-Myers Squibb Company.

Google Scholar

Turpie JK, Beckley LE, Katua SM. 2000. Biogeography and the selection of priority areas for conservation of South African coastal fishes. *Biological Conservation* **92**: 59–72.

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US Fish and Wildlife Service. 1979. Classification of wetlands and deepwater habitats of the United States. Biological Services Program, FWS/OBS-79-31.

Google Scholar

Ward TJ, Vanderklift MA, Nicholls AO, Kenchington RA. 1999. Selecting marine reserves using habitats and species assemblages as surrogates for biological diversity. *Ecological Applications* **9**: 691–698.

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