Jason J. Roberts

Marine Geospatial Ecology Lab, Duke University

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EDUCATION

Duke University   Durham, North Carolina
Master of Environmental Management, Coastal Environmental Management   2006
Certificate in Geospatial Analysis
Thesis: Separating Sea Turtles from Fisheries: Oceanographic Habitat Models of Olive Ridley Sea Turtles
Encountered in the Eastern Tropical Pacific Purse Seine Tuna Fishery

Virginia Polytechnic Institute and State University (Virginia Tech)   Blacksburg, Virginia
Bachelor of Science, Computer Engineering and Philosophy (double major)   1996

RESEARCH EXPERIENCE

Marine Geospatial Ecology Lab, Duke University   Durham, North Carolina
Research Associate   2006-Present

- Led the development of Marine Geospatial Ecology Tools (MGET), an open-source collection of geoprocessing tools for marine ecology, implemented in Python, R, C++, and MATLAB. Between 2009 and 2015, MGET was installed over 6500 times in 118 countries.

- Coauthored studies of the spatial distribution, ecology, bycatch, conservation, and management of marine megavertebrates (cetaceans, sea turtles, sea birds, fish) using data derived from a variety of sources (line transect surveys, satellite telemetry, fisheries catch and bycatch records, and *in situ* collection)

- Developed and applied tools for modeling and predicting marine species distributions using multivariate statistical and machine learning methods

- Developed tools for detecting oceanographic features in remote sensing imagery, including fronts in sea surface temperature images and mesoscale eddies in sea surface height images, and utilized the results as predictors in species distribution studies

- Co-developed and applied tools for simulating the hydrodynamic dispersal of planktonic larvae by ocean currents, for the purpose of modeling connectivity between habitat patches such as coral reefs

- Assisted in the utilization of tools, oceanographic data, and biological data in international conservation planning processes, national regulatory processes, and conservation actions undertaken by industry

RELATED PROFESSIONAL EXPERIENCE

Microsoft Corporation   Redmond, Washington
Lead Software Design Engineer   1996-2003

- Co-architected the Windows Update service
    - Lead the design of the SOAP-based protocol used by Windows computers to efficiently and securely query the Windows Update service's database of updates
    - Lead the design of the core Windows Update XML and SQL database schemas
    - Collaborated with other architects on company-wide software distribution strategy

- Managed a team of five developers that implemented the Windows Update server-side components

- As an individual contributor, implemented various server and client components in the Microsoft Windows operating system and Microsoft Systems Management Server, programming in C, C++, C#, Visual Basic

AWARDS

Special Achievement in GIS Award 2012
For development of the Marine Geospatial Ecology Tools (MGET) toolbox
Environmental Systems Research Institute, Inc. (ESRI)

Spatial Ecology and Telemetry Working Group Award 2012
For providing "a spatial function, tool or service that has significantly enhanced the field of
wildlife conservation and management"
The Wildlife Society

Lawrence W. I'Anson Memorial Scholarship 2005
Duke University

PEER-REVIEWED PUBLICATIONS

Mannocci L, **Roberts JJ**, Halpin PN, Authier M, Boisseau O, Bradai MJ, Cañadas A, Chicote C, David L, Di-
Méglio N, Fortuna CM, Frantzis A, Gazo M, Genov T, Hammond PS, Holcer D, Kaschner K, Kerem D, Lauriano G,
Lewis T, Notarbartolo di Sciara G, Panigada S, Raga JA, Scheinin A, Ridoux V, Vella A, Vella J (2018) Assessing
cetacean surveys throughout the Mediterranean Sea: a gap analysis in environmental space. Scientific Reports 8:
3126.

Mannocci L, Boustany AM, **Roberts JJ**, Palacios DM, Dunn DC, Halpin PN, Viehman S, Moxley J, Cleary J,
Bailey H, Bograd SJ, Becker EA, Gardner B, Hartog JR, Hazen EL, Ferguson MC, Forney KA, Kinlan BP, Oliver
MJ, Perretti CT, Ridoux V, Teo SLH, Winship AJ (2017) Temporal resolutions in species distribution models of
highly mobile marine animals: Recommendations for ecologists and managers. Diversity and Distributions 23:
1098-1109.

Mannocci L, **Roberts JJ**, Miller DL, Halpin PN (2017) Extrapolating cetacean densities to quantitatively assess
human impacts on populations in the high seas. Conservation Biology 31(3): 601-614.

Wingfield JE, O'Brien M, Lyubchich V, **Roberts JJ**, Halpin PN, Bailey H (2017) Year-round spatiotemporal
distribution of harbour porpoises within and around the Maryland Wind Energy Area. PLoS ONE 12(5): e0176653.

Crochelet E, **Roberts J**, Lagabrielle E, Obura D, Chabanet P, Petit M (2016) A model-based assessment of reef
larvae dispersal in the Western Indian Ocean reveals regional connectivity patterns - Potential implications for
conservation policies. Regional Studies in Marine Science 7: 159-167.

Roberts JJ, Best BD, Mannocci L, Fujioka E, Halpin PN, Palka DL, Garrison LP, Mullin KD, Cole TVN, Khan
CB, McLellan WM, Pabst DA, Lockhart GG (2016) Habitat-based cetacean density models for the U.S. Atlantic and
Gulf of Mexico. Scientific Reports 6: 22615.

Wedding LM, Maxwell S, Hyrenbach D, Dunn DC, **Roberts JJ**, Briscoe D, Hines E, Halpin PN (2016) Geospatial
approaches to support pelagic conservation planning and adaptive management. Endangered Species Research 30:
1-9.

Benedetti-Cecchi L, Canepa A, Fuentes V, Tamburello L, Purcell JE, Piraino S, **Roberts J**, Boero F, Halpin P
(2015) Deterministic factors overwhelm stochastic environmental fluctuations as drivers of jellyfish outbreaks.
PLoS ONE 10(10): e0141060.

Hsu AC, Boustany AM, **Roberts JJ**, Chang J-H, Halpin PN (2015) Tuna and swordfish catch in the U.S. northwest
Atlantic longline fishery in relation to mesoscale eddies. Fisheries Oceanography 24(6): 508-520.

Schill SR, Raber GT, **Roberts JJ**, Treml EA, Brenner J, Halpin PN (2015) No reef is an island: Integrating coral reef connectivity data into the design of regional-scale marine protected area networks. PLoS ONE 10(12): e0144199.

Tamburello L, Maggi E, Benedetti-Cecchi L, Bellistri G, Rattray A, Ravaglioli C, Rindi L, **Roberts J**, Bulleri F (2015) Variation in the impact of non-native seaweeds along gradients of habitat degradation: a meta-analysis and an experimental test. Oikos 124: 1121-1131.

Treml EA, **Roberts J**, Halpin PN, Possingham HP, Riginos C (2015) The emergent geography of biophysical dispersal barriers across the Indo-West Pacific. Diversity and Distributions 21(4): 465-476.

Dunn DC, Boustany AM, **Roberts JJ**, Brazer E, Sanderson M, Gardner B, Halpin PN (2014) Empirical move-on rules to inform fishing strategies: a New England case study. Fish and Fisheries 15: 359-375.

Williams R, Kelly N, Boebel O, Friedlaender AS, Feindt-Herr H, Kock K-H, Lehnert LS, Maksym T, **Roberts J**, Scheidat M, Siebert U, Brierley AS (2014) Counting whales in a challenging, changing environment. Scientific Reports 4: 4170.

Álvarez-Romero JG, Devlin M, da Silva ET, Petus C, Ban NC, Pressey RL, Kool J, **Roberts JJ**, Cerdeira-Estrada S, Wenger AS, Brodie J (2013) A novel approach to model exposure of coastal-marine ecosystems to riverine flood plumes based on remote sensing techniques. Journal of Environmental Management 119: 194-207.

Crochelet E, Chabanet P, Pothin K, Lagabrielle E, **Roberts J**, Pennober G, Lecomte-Finiger R, Petit M (2013) Validation of a fish larvae dispersal model with otolith data in the Western Indian Ocean and implications for marine spatial planning in data-poor regions. Ocean and Coastal Management 86: 13-21.

Schick RS, **Roberts JJ**, Eckert SA, Halpin PN, Bailey H, Chai F, Shi L, Clark JS (2013) Pelagic movements of Pacific Leatherback Turtles (*Dermochelys coriacea*) highlight the role of prey and ocean currents. Movement Ecology 1:11.

Best BD, Halpin PN, Read AJ, Fujioka E, Good CP, LaBrecque EA, Schick RS, **Roberts JJ**, Hazen LJ, Qian SS, Palka DL, Garrison LP, McLellan WA (2012) Online Cetacean Habitat Modeling System for the U.S. East Coast and Gulf of Mexico. Endangered Species Research 18: 1-15.

Curtice C, Dunn DC, **Roberts J**, Carr SD, Halpin PN (2012) Why ecosystem-based management may fail without changes to tool development and financing. BioScience 62: 508-515.

Mora C, Treml EA, **Roberts J**, Crosby K, Roy D, Tittensor DP (2012) High connectivity among habitats precludes the relationship between dispersal and range size in tropical reef fishes. Ecography 35: 89-96.

Treml EA, **Roberts JJ**, Chao Y, Halpin PN, Possingham HP, Riginos C (2012) Reproductive output and duration of the pelagic larval stage determine seascape-wide connectivity of marine populations. Integrative and Comparative Biology 52: 525-537.

Scheidat M, Friedlaender A, Kock K-H, Lehnert L, Boebel O, **Roberts J**, Williams R (2011) Cetacean surveys in the Southern Ocean using icebreaker-supported helicopters. Polar Biology 10: 1513-1522

Schick RS, Halpin PN, Read AJ, Urban DL, Best BD, Good CP, **Roberts JJ**, LaBrecque EA, Dunn C, Garrison LP, Hyrenbach KD, McLellan WA, Pabst DA, Palka DL, Stevick P (2011) Community structure in pelagic marine mammals at large spatial scales. Marine Ecology Progress Series 434: 165–181.

Žydelis R, Lewison RL, Shaffer SA, Moore JE, Boustany AM, **Roberts JJ**, Sims M, Dunn DC, Best BD, Tremblay Y, Kappes MA, Halpin PN, Costa DP, Crowder LB (2011) Dynamic habitat models: Using telemetry data to project fisheries bycatch. Proceedings of Royal Society B 278: 3191–3200.

Roberts JJ, Best BD, Dunn DC, Treml EA, Halpin PN (2010) Marine Geospatial Ecology Tools: An integrated framework for ecological geoprocessing with ArcGIS, Python, R, MATLAB, and C++. Environmental Modelling & Software 25: 1197-1207.

Schick RS, Halpin PN, Read AJ, Slay CK, Kraus SD, Mate BR, Baumgartner MF, **Roberts JJ**, Best BD, Good CP, Loarie SR, Clark JS (2009) Striking the right balance in right whale conservation. Canadian Journal of Fisheries and Aquatic Sciences 66: 1399-1403.

Lennert-Cody CE, **Roberts JJ**, Stephenson RJ (2008) Effects of gear characteristics on the presence of bigeye tuna (Thunnus obesus) in the catches of the purse-seine fishery of the eastern Pacific Ocean. ICES Journal of Marine Science 65: 970-978.

PATENTS

Dehghan D, Reus E, Soy NR, Ma L, Shepard M, Hou J, Hennessey D, Thiruvillamalai V, Vidyasankar R, Sriram TR, **Roberts JJ**, Mohammed M, He X (2010) Update Distribution System Architecture and Method for Distributing Software. U.S. Patent 7,853,609, filed March 12, 2004, issued December 14, 2010.

Meulemans ME, Averbuch A, **Roberts J**, Showman K, Mohammed M, Dadzie JG (2009) System and Method for Managing and Communicating Software Updates. U.S. Patent 7,574,706, filed December 15, 2003, issued August 11, 2009.

Roberts J, Mohammed M, Wittel W, Shepard M (2009) Managing Software Updates and a Software Distribution Service. U.S. Patent 7,478,381, filed December 15, 2003, issued January 13, 2009.

WORKSHOPS LED

Spatial Models for Distance Sampling Data Using R and ArcGIS Durham, North Carolina
4 day workshop at Duke University; co-instructed with David L. Miller 2015

Species Distribution Modeling with Marine Geospatial Ecology Tools (MGET) Auckland, New Zealand
1 day workshop at the University of Auckland 2013

Species Distribution Modeling with Marine Geospatial Ecology Tools (MGET) Dunedin, New Zealand
1 day workshop at the University of Otago 2013

Species Distribution Modeling with Marine Geospatial Ecology Tools (MGET) Redlands, California
½ day workshop at ESRI Headquarters 2013

Habitat Modeling with Marine Geospatial Ecology Tools (MGET) Seaside, California
1 day workshop at California State University, Monterey Bay 2012

Practical Ecological Modelling and Analysis for Coastal and Marine Management Faro, Portugal
3 day workshop at the Centre of Marine Sciences, University of Algarve 2011

Census of Marine Life Mapping and Visualization Workshop Durham, North Carolina
2 day workshop at Duke University 2009

Census of Marine Life Workshop on Desktop Analysis Long Beach, California
½ day workshop as part of the Census of Marine Life Synthesis Workshops 2009