

Nathan P. Formel, M.S.

4301 Rickenbacker Causeway, Miami, FL 33149

(305) 361-4514

nathan.formel@noaa.gov

Education

- M.S. Marine Affairs & Policy**, University of Miami, Miami, FL
Thesis work focused on ecosystem indicator development for coral reefs utilizing long-term survey data to enhance current coral monitoring. (2013)
- B.S. Biology with a Concentration in Marine Biology**, Northeastern University, Boston, MA
Three Seas Program/East West Marine Biology: A year-long intensive program focused on independent research in three marine ecosystems in coastal Massachusetts, California, and French Polynesia. (2008)

Work & Research Experience

Senior Research Associate I, University of Miami CIMAS & NOAA AOML Ocean Chemistry and Ecosystems Division, Miami, FL

Enhancing and informing coral restoration to improve restoration efficacy and survivorship of outplanted corals through development of stress hardening and coral genotype performance assays.

Research Associate II, University of Miami CIMAS & NOAA AOML Ocean Chemistry and Ecosystems Division, Miami, FL

The design, construction, and testing of novel subsurface automated sampling equipment for researching carbonate chemistry of coral reefs (SAS) and environmental DNA research (SASe). Website design and maintenance for open-source access to SAS construction and user guide (www.coral.noaa.gov/sas). Fieldwork surveying coral reef ecosystems, performing water chemistry analysis in the lab, and maintaining and carrying out experiments in the experimental research wetlab. (2017-2019)

Coastal Biologist, Miami-Dade County Division of Environmental Resource Management, Miami, FL

Process applications for construction in, on, or adjacent to tidal waters to avoid, minimize, and mitigate impacts to marine resources and habitats. (2016-2017)

Staff Coordinator, Pacific Whale Foundation, Wailuku, HI

Manage staff and supplies for non-profit ecotourism programs and excursions. Double as onboard marine biologist and first mate on snorkel and whale watching trips for education and safety of passengers. (2013-2015)

Graduate Research Assistant, University of Miami, Miami, FL

Maintain and repair wetlab aquariums and plumbing systems as well as general preparation and husbandry of coral samples, survey and maintain *in situ* coral nurseries, outplant corals for reef restoration, and participate in research for Dr. Diego Lirman and Dr. Andrew Baker (2011-2013)

Teaching Experience

Teaching assistant for graduate level GIS classes, University of Miami, Miami, FL (2012-2013)

Science instructor for hands-on marine biology, coastal ecology, and conservation to school groups, grades 4-12, Biscayne Nature Center, Key Biscayne, FL (2011-2013, 2016)

Science and SCUBA instructor for grades 4-12, Catalina Island Marine Institute (CIMI), Catalina Island, CA (2006, 2008-2010, 2013)

Journal Reviewer

Hardware X, *Frontiers in Marine Science*

Field Experience

Dry Tortugas NCRMP survey cruise (NOAA AOML, 2018 & 2021)
Mayreau CO₂ vent coral surveys (NOAA AOML, 2018 & 2019)
Flower Garden Banks coral survey cruise (NOAA AOML, 2019)
Cheeca Rocks coral surveys (NOAA AOML, 2017, 2018, & 2019)
South Florida water quality cruise (NOAA, 2016)
Maui coral reef surveys (HI Department of Aquatic Resources, 2015)
Kingdom of Tonga coral health survey cruise (Living Oceans Foundation, 2013)
Florida Everglades field sampling (Florida International University, 2011)
St. John, USVI coral recruitment research (California State University, Northridge, 2007 & 2008)
Bahamas juvenile gorgonian survey cruise (University of Buffalo, 2007)

Relevant Skills and Qualifications

AAUS Scientific Research Diver (100ft, 15 years)
NAUI Scuba Instructor, Naui Nitrox Diver
DAN DFA Pro (CPR, AED, O₂ Administration)
Experienced boat driver (small boats and sailboats)
Circuit design and physical programming (Autodesk Eagle, Arduino IDE)
Statistics (R Studio)
3D modeling and analysis (Google Sketchup, Onshape, Autodesk Fusion 360)
Spatial analysis (ArcGIS)
Image analysis (ImageJ, CPCe)
Image editing (Adobe Photoshop, Adobe Illustrator)
Conversational Spanish

Publications

Lirman, D., **Formel, N.**, Schopmeyer, S., Ault, J. S., Smith, S. G., Gilliam, D., & Riegl, B. (2014). Percent recent mortality (PRM) of stony corals as an ecological indicator of coral reef condition. *Ecological indicators*, 44, 120-127. <https://doi.org/10.1016/j.ecolind.2013.10.021>

Enochs, I. C., **Formel, N.**, Shea, L., Chomiak, L., Piggot, A., Kirkland, A., & Manzello, D. (2020). Subsurface automated samplers (SAS) for ocean acidification research. *Bulletin of Marine Science*, 96(4), 735-752. <https://doi.org/10.5343/bms.2020.0018>

Enochs, I. C., **Formel, N.**, Manzello, D., Morris, J., Mayfield, A. B., Boyd, A., ... & Hendee, J. (2020). Coral persistence despite extreme periodic pH fluctuations at a volcanically acidified Caribbean reef. *CORAL REEFS*, 39, 523–528. <https://doi.org/10.1007/s00338-020-01927-5>

Donovan, C., Towle, E.K., Blondeau, J., Eakin, M., Edwards, K., Edwards, P., Enoch, I., Fleming, C., **Formel, N.**, Geiger, E., Gorstein, M., Grove, J., Groves, S., Johnson, M., Kelsey, H., Manzello, D., Miller, N., Viehman, S. (2020). 2020 Status Report Scoring Methodology for Atlantic Jurisdictions. <https://doi.org/10.25923/xagj-1854>

Awards

2019 CIMAS Silver Award for Role in Development of the Subsurface Automated Sampler (SAS)