

Scott B. Duncan

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Founder and President of Navocean Inc

Background Highlights

- Since 2000, Scott has designed and constructed small boats in an investigation of their potential as autonomous platforms for oceanographic and climate data collection. After demonstrating the concept with sail and motor-powered prototypes, he founded Duncan Design (now Navocean Inc) in 2003.
- Served as a Co-Pi of the HABs Assessment of Lake Okeechobee (HALO) project, funded by the Florida DEP Innovative Technology Program. This comprehensive water quality and Harmful Algal Bloom (HABs) study deployed and operated a year-long multifaceted observing system on Lake Okeechobee, Florida. A central feature of the observing system was a Nav2 ASV outfitted with a complex sensor suite for water quality, physical aquatic and meteorological weather measurements targeting data collection to improve understanding of HAB dynamics. Scott managed all aspects of technology development and mission operations of the ASV including data collection missions throughout the year 2021. The Nav2 ASV logged more than 10,000 km and took millions of measurements. DEP Innovative Technology Program senior managers highlight the Nav2 ASV as a "remarkable innovative success story".
- Chief Designer for the NavII ASV project funded by the Maine Technology Institute (2005-2007). Including project management, ASV design/construction, data collection/analysis, and sea trial testing.
- Developed a two-meter, electric powered, remote control catamaran for Orca Whale research in the San Juan Islands in Washington State. Collected sonar images of foraging Orca Whales presented at the 2001 Marine Mammal conference in Vancouver, BC. Developed a second electric catamaran for the University of British Columbia, Behavior @ Sea Project. This automated and remote-control vessel deployed a fish-finding sonar for research of Stellar sea lion foraging behavior in SE Alaska.
- Served as technical assistant for 3 months at sea aboard a research vessel classifying whale acoustic vocalizations with a passive sonar array (beamformer).
- Studied boat design under the tutelage of Ed Monk and Son Naval Architects.

Work Experience

2016-Present: President and Chief Designer, Navocean Inc

- Founded Navocean Inc and completed development of a self-navigating sailboat, the "Nav2 Sail and Solar ASV for Ocean Data Collection". Developed the overall vehicle design, mechanical and construction drawings and fabricated the prototype boats. Led all aspects of field testing, pilot project demonstrations, mission operations and science and research collaboration.

2008 to 2015: Co-founder and Director of Guanaja Mangrove Restoration, a project of BICA Guanaja and The Ocean Foundation

- Lived and worked on Guanaja Island, Honduras, part time for 6 years, pursuing mangrove forest and coastal wetlands restoration in the aftermath of Hurricane Mitch. Organized local and international volunteers, students and educators to complete the hand planting reforestation of over 100 hectares of mangrove forest wetlands. The ongoing program has now planted over 500,000 mangrove trees and engaged hundreds of students and volunteers while working in collaboration with local schools.

2008-2013: Co-Founder, Owner and Program Manager, Guanaja Getaways LLC

- While living and working in Honduras, developed the Guanaja Getaways, fly fishing lodge and international student travel program. Managed the business from start-up to a successful venture before acquisition by business partners. Guanaja Getaways remains a growing business providing distinctive guided Fly-Fishing adventures and life changing international travel experiences.

2003-2015: President and Chief Designer, Duncan Design (Navocean LLC)

- Founded Duncan Design (Navocean LLC) to pursue development and commercialization of Autonomous Surface Vehicles (ASVs) for oceanographic data collection. Designed and developed an autonomous electric powered catamaran with fish finding sonar for the University of British Columbia's Behavior @ Sea Project; Chief designer and builder of the Nav2 and Nav3 Sail and Solar ASV prototypes sponsored by the Maine Technology Institute and North Star Alliance

2002-2003: Lead Guide, Rippleffect, Portland, ME

- Led sea-kayaking programs including marine environmental learning, navigation and seamanship.

2001-2002: Autonomous Vessel Research and Development, Seattle, WA

- Designed and constructed a 1.5 m prototype, remote-control sailboat to demonstrate the potential of a sail-powered autonomous surface vehicle for oceanic and atmospheric data collection.
- Developed partnerships with scientists at the University of Washington Applied Physics Laboratory and Department of Oceanography.
- Designed and constructed a two-meter remote control catamaran for an American Cetacean Society sponsored Killer Whale research project. The catamaran was used by University of Washington researchers to image foraging whales with a fish-finding sonar.
- Delivered an award-nominated poster presentation at the 2001 Marine Mammal conference in Vancouver BC.

1999: Expedition Leader, Kayak to Alaska, Seattle, WA-Juneau, AK

- Designed and built two custom sea kayaks and tested the designs in exposed coastal waters of the Pacific Ocean in surf zones and gale force conditions.
- Secured grants for, organized and led a three month sea-kayaking expedition for an adventure-education website titled "Kayak to Alaska". Developed educational content focused on the topic of salmon ecology, fishing and conservation. In 1999, Kayak to Alaska was broadcast on-line to over 16 million students nation wide by N2H2 Inc.

1998: Crew, Sperm Whale Acoustics Research Expedition, Maine-Dominica

- Crewed for three months aboard a 43 ft sloop sailing from Brunswick, Maine to the Caribbean island nation, Dominica. Assisted with deployment of passive sonar to record Sperm Whale vocalizations to acoustically identify individual whales.

1994-2001: Lead Guide, Olympic Kayak Center, Poulsbo, WA

- Organized and directed a base-camp for sea-kayaking, whale watching and island hopping tours in the San Juan Islands for three years.
- Taught sea-kayaking classes of all levels.

Education

- B.A., History & Japanese language, studies in Calculus, Differential Equations, Linear Algebra and Physics. Whitman College, Walla Walla, WA. (1989-1993),
- Immersion studies in Japanese Language and History, Doshisha University, Kyoto, Japan (1991-1992).

Skills and Interests

- Sailboat and small vessel design and construction, calculus, 3-D modeling, expedition sea kayaking, coastal wetland ecology, ultimate frisbee and everything about inspirational non-profit environmental projects and teamwork!

Publications:

- Cole, R., Duncan, S., Jose, F., Kaur, A., Kinder, J. 2022. "SeaWARRDD": Coastal Warning and Rapid Response Data Density: *Rethinking Coastal Ocean Observing, Intelligence, Resilience, and Prediction. Marine Technology Society Journal, Advancements in Buoy Technology.*
- Duncan, S., et. al. 2022. Long Term Lake Okeechobee HAB and Water Quality Monitoring with the Nav2 Sail and Solar ASV, *SECOORA Webinar Series.*
- Beckler, J., Xomchuck, V., Moore, T., McFarland, M., Duncan, S., & Currier, B. 2021. *HALO Bulletin No. 7.*
- Cole, R. & Duncan, S. 2021. The Development of a Florida Coastal Ocean Observing System (FLCOOST™), *ECO Report, Rising Tides.*
- Beckler, J., Arutunian, E., Moore, T., Currier, B., Milbrandt, E., Duncan, S. 2019. Coastal Harmful Algae Bloom Monitoring via a Sustainable, Sail-Powered Mobile Platform, *Frontiers in Marine Science, Ocean Observation.*
- Duncan, S., et. al. 2010. Guanaja Mangrove Restoration, In the Aftermath of Natural Disaster Grow the Roots of Ecological Awareness, *Guanaja Mangrove Reforestation a Project of BICA Guanaja and The Ocean Foundation.*