

WhaleSafe AI

Preventing Whale–Vessel Collisions Through Maritime Artificial Intelligence

The Need

Every year, collisions between vessels and whales cause preventable deaths among some of the world's most vulnerable marine mammals, while also posing operational and financial risks to the global shipping industry. As maritime traffic increases and shipping routes expand into critical whale habitats, the risk of vessel strikes is rising across oceans worldwide.

Existing mitigation measures, including seasonal speed restrictions, passive acoustic monitoring, aerial surveys, and visual observers, remain limited. WhaleSafe AI addresses this challenge by adapting proven maritime artificial intelligence technologies into an operational conservation tool that can detect whales directly from vessels and provide real-time navigational decision support.

Project Overview

WhaleSafe AI will be housed within the [Kadas Nexus for Blue Solutions](#) at the University of Haifa's Leon H. Charney School of Marine Sciences. The program combines marine mammal ecology, artificial intelligence, computer vision, thermal imaging, radar technologies, and maritime operations to develop one of the world's first integrated vessel-based whale-detection and collision-avoidance systems. Building on [ORCA AI](#) and [WATCH.IT](#) technologies, the program will integrate whale detections with AIS, vessel movements, radar observations, sea state, and navigational parameters to generate intelligent collision-risk assessments.

Project Impact

WhaleSafe AI will enable vessels to detect whales before close encounters occur, helping reduce whale mortality while improving navigational safety. The program will also generate valuable ecological information for conservation planning and position the University of Haifa as an international leader in AI-enabled marine conservation.

Expected Five-Year Outcomes

- Operational AI whale detection models.
- Multi-region validation.
- Pilot deployment with maritime partners.
- Operational guidance for bridge teams.
- Collision-risk datasets.
- International leadership in AI-enabled marine conservation.

Evaluation and Assessment

Progress will be assessed through annual technical and operational reviews, field validation, scientific outputs, industry partnerships, detection accuracy, operational reliability, stakeholder adoption, and the development of management recommendations.

Academic Leadership

Dr. Aviad Scheinin

*Chief Scientist, Apex Marine Predator Lab
Morris Kahn Marine Research Station*

Dr. Scheinin leads long-term ecological research on marine megafauna, including coastal dolphins, sharks, rays, bluefin tuna, and swordfish. His lab develops advanced monitoring protocols using drones, acoustic surveys, mark-recapture methods, underwater observations, and molecular tools to study marine predators as sentinels of ocean health and human impact on marine ecosystems. He also heads the Dolphin & Sea Center, the educational center of Delphis NGO, serves as an elected member of the European Cetacean Society Council, and is a member of the International Whaling Commission's Strandings Expert Panel Committee. His expertise in marine mammal ecology, conservation monitoring, and applied field research provides a critical scientific foundation for WhaleSafe AI's vessel-based whale-detection and collision-avoidance system.



Dr. Dan Morick

Head, Blue Biotechnologies and Sustainable Mariculture Department

Dr. Morick is a veterinarian and researcher (DVM, PhD, CertAqV) with 18 years of experience in marine animal medicine. He leads research on the causes of illness and mortality among marine animals in the Mediterranean Sea, including pathogen emergence, disease transmission, and the effects of pollutants such as heavy metals. Through the Marine Pathology Laboratory, he uses advanced technologies and molecular biology to generate critical knowledge in an under-studied field with implications for marine ecology, nature conservation, marine agriculture, and public health. His expertise in wildlife diagnostics and conservation medicine will strengthen WhaleSafe AI's understanding of the biological and environmental pressures facing marine megafauna.



Industry Leadership

Our industry partners include **ORCA AI**, an operational maritime computer-vision platform specializing in vessel integration, and **WATCH.IT**, a sensor-fusion and 4D-radar platform. Together, they will support the development, testing, and validation of a vessel-based whale-detection and collision-avoidance system for real-world maritime use.



ORCA AI



Why Support Matters

Preventing whale–vessel collisions requires more than research; it requires translating proven technologies into a reliable tool that can operate in real maritime conditions. Traditional research grants rarely support the software engineering, commercial integration, sea trials, operational validation, and large-scale deployment needed to make this possible. Philanthropic investment provides the flexible funding required to move WhaleSafe AI from concept to implementation, creating a globally deployable conservation technology that can protect vulnerable whale populations while improving navigational safety.

Budget

Total Budget (4 years): US \$2 million
Personnel: \$700,000
Technology Development: \$600,000
Sea Trials & Field Operations: \$450,000
Communications & Evaluation: \$250,000

Giving Tiers

\$2M Founding Partner
\$1M Technology Innovation Partner
\$500K AI Development Fund
\$250K Sea Trial & Validation Program
\$100K Whale Conservation Innovation Fund

Sustainability

Long-term sustainability will be built through a combination of industry partnerships, commercial deployment, conservation collaborations, and competitive research funding. By working with maritime technology partners, vessel operators, ports, maritime authorities, and international marine conservation networks, WhaleSafe AI is designed to move beyond a research project and become an operational tool that can be adopted, scaled, and sustained in real-world maritime settings.

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