

AT-SEA DETECTION OF DERELICT FISHING GEAR: UTILIZING A NOVEL APPROACH TO COMBAT MARINE DEBRIS

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Derelict fishing gear (DFG) is a threat to marine ecosystems, posing entanglement hazards for marine life, smothering the living substrate upon which it settles, and in at least one case serving as a vector for the introduction of alien species. Across the Pacific, DFG is now recognized as a major environmental threat to coastal and nearshore areas. A regional “hotspot” for DFG is the Hawaiian Archipelago, particularly the Northwestern Hawaiian Islands due to their proximity to the North Pacific Subtropical Convergence Zone, an area where ocean currents accumulate DFG from the North Pacific Ocean.

In response to the threats to endangered and threatened species posed by DFG in coral reef environments and the enormous cleanup costs of removal from the reefs, researchers have explored methods of detecting and removing DFG in the open ocean through the High Seas GhostNet Project. A workshop held in Honolulu, Hawaii, in December 2008 undertook an expanded and comprehensive, interdisciplinary approach to the problem, with participation from the public and private sectors and across a wide range of technical and practical fields. The workshop brought together technical experts in the fields of physical and biological oceanography, remote sensing, and unmanned aircraft systems to interact with individuals with practical expertise in fishing, economics (cost-benefit analysis), and marine debris.

The specific goals of the workshop included 1) seeking solutions to locating DFG for removal, and 2) a discussion of the concept of a census of large floating marine debris to assess the scale of the problem and determine the fraction of DFG that enters shallow-water sensitive environments. A paper created by workshop participants before and fleshed out during the meeting outlines the state of our knowledge of the required pieces of the puzzle: characteristics of DFG in the water column, circulation and productivity of the North Pacific, modeling approaches to locating and predicting movement of DFG, and remote sensing technologies for detecting DFG on the open ocean. The participants also identified gaps in our knowledge and capabilities, and steps that can be taken to improve our ability to measure, detect, and determine methods of addressing derelict fishing gear. Through this cross-pollination of ideas and understanding, an ongoing collaborative approach involving public-private partnerships was strengthened and broadened.

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