

NOAA Fisheries, Coral Reef Ecosystem Division Marine Debris Program, PIFSC

SYNOPSIS OF THE 2004 MARINE DEBRIS FIELD SEASON

OVERVIEW AND GOALS

Under the direction of the Coral Reef Ecosystem Division (CRED) of the Pacific Islands Fisheries Science Center (PIFSC), NOAA divers have successfully completed the seventh multi-agency supported field season to remove derelict fishing nets from the shallow water atolls and islands in the Northwestern Hawaiian Island (NWHI) archipelago. Operations conducted in 2004 at Pearl and Hermes Atoll, Kure Atoll, Lisianski and Laysan Islands, Maro Reef and French Frigate Shoals netted a record total of 123 standard tons (112 metric tons) of derelict fishing gear. The newly appointed NOAA charter vessel, the M/V Casitas hosted this year's 4 month field cruise. The main objectives for the 2004 marine debris field season were:

- To continue to document and remove derelict fishing gear from the reefs and beaches of the Northwestern Hawaiian Islands.
- To continue to assess and monitor debris accumulation in the previous defined High Entanglement Risk Zones (HERZ).
- To assist with ongoing data collection efforts and/or pilot studies in support of several multi-disciplinary research projects that include: a baseline population study of black-lipped pearl oyster (*Pinctada margaritifera*), a distribution and abundance study of the Crown-of-Thorns sea star (*Acanthaster planci*), a pilot study for the role of ecological succession in algal communities associated with net removal scars, and an ongoing effort to collect data on internal reef currents using a shallow draft drifter buoys.
- To continue to expand the net analysis database.

THE 2004 MARINE DEBRIS FIELD SEASON

The 2004 Marine Debris field season commenced with the departure of the 160' M/V Casitas from Honolulu Harbor on the 19th of June. Delivery of the Protected Species Division (PSD) 17' Boston Whaler at French Frigate Shoals allowed for in-field training of crane and launch protocols for the 16 NOAA-certified debris specialists and charter crew. Marine debris removal efforts began while surveying the HERZ at Lisianski Island and Kure Atoll using standard manta towboard protocols. The majority of the 2004 field survey effort was focused at Pearl and Hermes Atoll. Efforts highlighted: 1) previously unsurveyed areas of inner reticulated reefs

(Maze) and sand margins, 2) the HERZ, and 3) revisiting selected back reef and Maze habitats thought to have high potential of net accumulation. Surprisingly, towing efforts along the sand



Marine debris divers pull in a net at Pearl and Hermes Atoll. Photo by Jake Asher.

46,740 kg of debris was recovered by divers, which averages 2.5 metric tons a day removed from the reef.

Marine debris that washed up on land was collected at the following locations: French Frigate Shoals, Laysan, Lisianski, Kure, and Pearl and Hermes Atolls. Marine debris divers were assisted in the removal of land debris from the islands by personnel and crew from the US Fish and Wildlife Service, PSD, and the Hokule'a who all played a big part in getting a large amount of the land based debris hauled to their camps.

The field season at Pearl and Hermes was marked by several unique reportings. Although no live entanglements were witnessed, two carcasses were found by the divers. Both a fully intact skeleton of a sub-adult loggerhead sea turtle (*Caretta caretta*) and a partially decomposed carcass of what is thought to

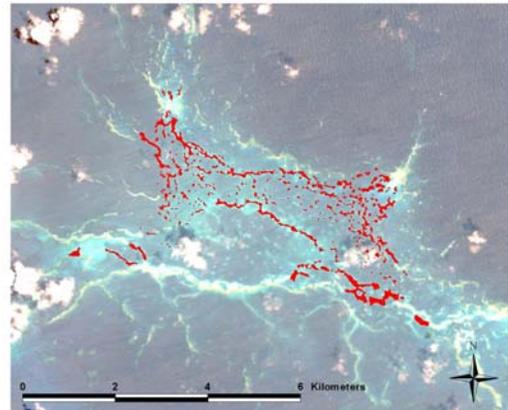


Marine debris specialist Jeremy Jones removes a loggerhead turtle skeleton from a net at Pearl and Hermes Atoll. Photo by Jake Asher.

margins on the south and east sides of the atoll and areas adjacent to Seal- Kittery Island resulted in high densities and overall large net sizes. Removal of the majority of net was performed by free diving. Only two large nets required the use of SCUBA and lift-bags. The marine debris divers logged a total of 46 operational days at Pearl and Hermes Atoll.

In addition to Pearl and Hermes, survey efforts were also focused at Maro Reef, where derelict fishing gear densities were previously unknown. Marine debris divers surveyed for approximately 18 days and covered an estimated 67% of the inner reticulated reefs using swim surveys.

Maro Reef: Survey Coverage 2004



Area covered by swim surveys at Maro Reef in 2004, total area = 1.72 km².

be a small cetacean were found entangled. There was no obvious dentition or baleen found to assist with the cetacean identification; therefore divers collected tissue samples and skeletal remains.

Of great media interest was the unexpected discovery of several unique shipwreck sites, including what may be the whaling vessels Pearl and Hermes who reportedly ran aground on the reef in 1822. Marine debris divers assisted in

efforts to document and survey artifacts under consultation with Dr. Hans Von Tilburg, the regional maritime heritage coordinator. This discovery generated much media attention and garnered the marine debris program recognition.

This year, at French Frigate Shoals, a Sea Surface Temperature (SST) buoy was deployed in June and a Coral Reef Early Warning System (CREWS) buoy was removed in August. These buoys will continue to provide data regarding environmental variables (sea surface temperature, weather conditions, etc.) to CRED over the next several years.

For the third year in a row, Hawaii Metals Recycling has been instrumental in donating their services to transport and cut up the recovered derelict fishing gear from the NWHI, allowing it to be incinerated by Covanta Energy and converted to electricity for the City and County of Honolulu. A company whose normal focus is the recycling of scrap metal, HMR has become a valuable partner in closing the marine debris loop.



Marine debris divers survey wreck areas of possible Pearl or Hermes.
Photo by Kelly Curtis

TIMELINE OF OPERATIONS

- 06/19 Embark leg 1, transit to French Frigate Shoals (FFS).
- 06/20 Transit to FFS.
- 06/21 FFS operations: delivery of PSD whaler.
- 06/22-06/23 Transit to Lisianski.
- 06/24-06/25 Lisianski operations: collection of land debris and survey of HERZ.
- 06/26 Transit to Kure.
- 06/27-06/29 Kure Operations: collection of land debris, survey of HERZ, with additional towboard and swim surveys on the back reef. Two days of photographic documentation by National Geographic photographers, removal of SST buoy, and transit to Pearl and Hermes Atoll.
- 06/30-07/07 Pearl and Hermes operations, survey of HERZ, towboard and swim surveys.
- 07/08 Transit to/from Midway (disembark Joe Chojnacki/embark Amy Hall).
- 07/09-07/15 Pearl and Hermes operations: towboard and swim surveys.
- 07/16 Transit to/from Midway, pickup of PSD personnel, Chad Yoshinaga and Charles Littnan.
- 07/17-8/01 Pearl and Hermes operations: collection of land debris, towboard and swim surveys.

- 08/02 Transit to Laysan.
- 08/03 Laysan operations: collection of land debris, and pickup of one net off the west side reef.
- 08/04-08/06 Maro Reef operations: swim surveys.
- 08/07 Transit to FFS.
- 08/08-08/09 FFS operations: towboard operations and removal of CREWS Buoy.
- 08/10-08/11 Transit to Oahu.
- 08/12 Arrival in Honolulu, end of leg 1.
- 08/13-08/21 Mid-season break: restock supplies, repair boats, and install hatches on the M/V Casitas.
- 08/22 Embark leg 2.
- 08/23-08/25 Transit to Maro Reef.
- 08/26-09/07 Maro operations: swim surveys.
- 09/08 Transit to Lisianski.
- 09/09 Lisianski operations: collection of land debris and transit to Pearl and Hermes.
- 09/09-09/10 Pearl and Hermes operations: towboard and swim surveys.
- 09/11 Pearl and Hermes operations and transit to Midway for medical evacuation.
- 09/12 Evacuation of marine debris specialist back to Honolulu by Coast Guard and transit back to Pearl and Hermes.
- 09/13-10/07 Pearl and Hermes operations: towboard and swim surveys.
- 10/08 Transit to Maro.
- 10/09-10/11 Maro operations: swim surveys.
- 10/12-10/13 Transit to FFS.
- 10/14-10/15 FFS operations: offload fuel, pickup of supplies, and breakdown of gear.
- 10/16-10/17 Transit to Honolulu.
- 10/18 Arrival in Honolulu.

DIVER MANIFEST

Jake Asher/Team Leader, Bonnie DeJoseph, Kyle Hogrefe (6/19-8/12), Joe Chojnacki (6/19-7/8), Kelly Curtis, Jennifer Stephenson (6/19-8/12), Susan Tharratt, Susan Cooper Alletto, Susanna Holst, Mark Defley, Mark Albins, Oliver Dameron, Joel Paschal, Stephane Charette, Jeremy Jones, Amy Hall (7/8-end of cruise), Dwayne Meadows, Kyle Koyanagi (8/22-end of cruise).

HERZ AREA COVERED

• Kure Atoll	Area covered	1.1074 km ²
	Number of Net Sites	24 nets
	Weight of debris recovered	273 kg

• Pearl and Hermes Atoll	Area covered	1.0539 km ²
	Number of Net Sites	38 nets
	Weight of debris recovered	196 kg
• Lisianski Island	Area covered	0.8343 km ²
	Number of Net Sites	16 nets
	Weight of debris recovered	130kg

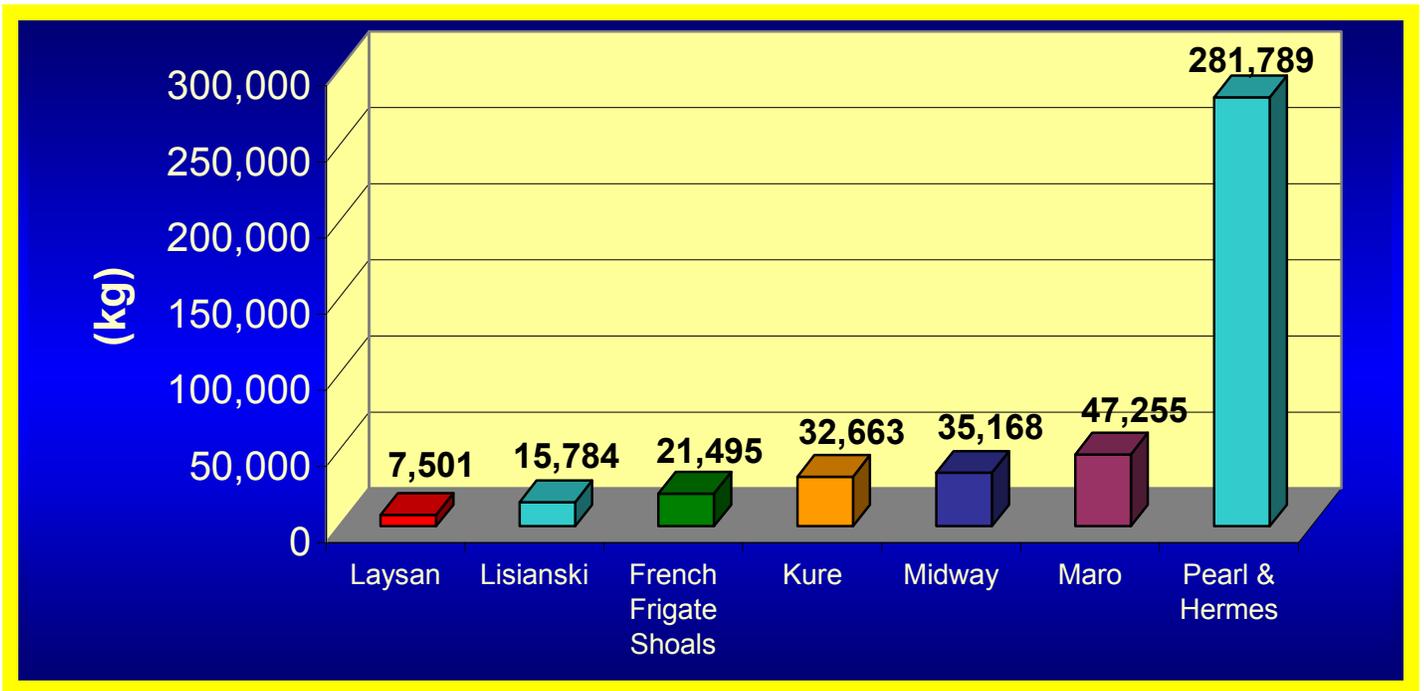
DEBRIS REMOVED BY WEIGHT 2004

• Kure Atoll	Land Debris	2,228 kg	(4,913 lbs)
	HERZ	273 kg	(602 lbs)
	<u>Reef (Swim)</u>	<u>166 kg</u>	<u>(366 lbs)</u>
	Total	2,667 kg	(5,881 lbs)
• Pearl and Hermes Atoll	Land Debris	1,658 kg	(3,655 lbs)
	HERZ	196 kg	(432 lbs)
	<u>Reef (Swim/Tow)</u>	<u>52,684 kg</u>	<u>(116,168 lbs)</u>
	Total	54,538 kg	(120,255 lbs)
• Lisianski Atoll	Land Debris	2,670 kg	(5,887 lbs)
	<u>HERZ</u>	<u>129 kg</u>	<u>(284lbs)</u>
	Total	2,799 kg	(6,171 lbs)
• Laysan Atoll	Land Debris	2570 kg	(5,667 lbs)
	<u>Reef (Swim)</u>	<u>470 kg</u>	<u>(1,036 lbs)</u>
	Total	3,040 kg	(6,703 lbs)
• Maro Reef	Reef (Swim)	46,740 kg	(103,062 lbs)
• French Frigate Shoals	Land Debris	1,032 kg	(2,276 lbs)
	<u>Reef (Tow)</u>	<u>370 kg</u>	<u>(816 lbs)</u>
	Total	1,402 kg	(3,091 lbs)

**Total Weight 2004: 111,803 kg (246,526 lbs)
(112 metric tons)**

**Total Weight 1996-2004: 441,655 kg (973,849 lbs)
(442 metric tons)**

MARINE DEBRIS TOTALS BY WEIGHT FROM 1996-2004



MARINE DEBRIS MULTI-AGENCY PARTNERS

- NOAA's Coral Reef Ecosystem Division
- NOAA's Coral Reef Conservation Program
- National Ocean Service
- Pacific Sea Grant College Programs
- Hawaii Metals Recycling, Inc.
- JIMAR (Joint Institute of Marine and Atmospheric Research)
- US Fish and Wildlife Service
- Hawaii State DBEDT
- City and County of Honolulu
- Hawaii State DLNR
- Hawaii Coastal Zone Management
- US Department of State
- Ocean Conservancy
- US Coast Guard
- Western Pacific Regional Fishery Management Council
- Hawaii Audubon
- Covanta Energy
- Hawaii Humpback Whale National Marine Sanctuary
- Hawaii Ocean Safety Team
- US Navy
- Natural Resource Consultants, Inc.
- Ocean Futures Society
- Horizon Waste Services, Inc.