

Cruise Plan

R/V New Horizon - Goldstein - 2/21 August 2009

Revised to include additional 7 days ship time

July 20, 2009

Cruise Objective

The purpose of the Scripps Environmental Accumulation of Plastic Expedition (SEAPLEX) is to quantitatively sample plastic across a transect of the central North Pacific Gyre (NPG). We will also intensively sample one reference site in the California Current and 2-3 high-plastic sites in the Gyre.

Research topics include:

- Transect of plastic distribution and abundance
- Investigation of floating plastics as a transport mechanism for invasive species
- Assessment of the impacts of plastic debris on phytoplankton, zooplankton, and mesopelagic fishes
- Study of persistent organic pollutant transport on plastic particles
- Bird and marine mammal observations

During the transect stations (approximately 5 days from San Diego to the NPG and 4 days from the NPG to Newport, OR), we will sample with 4 daily manta tows and 1 daily CTD cast. During the intensive sampling stations in the CA Current and the NPG, we will use manta tows, CTD casts, bongo tows, and Isaacs-Kidd midwater trawls to sample plastic and biota. If we encounter an area with high plastic density and conditions allow, we will deploy a small boat to sample fouling communities and debris with a hand net.

For the duration of the cruise, one bird and one marine mammal observer will be observing on 02 deck. There will also be an acoustic array towed during transit.

Additional Days

The extra seven days were funded by the nonprofit group Project Kaisei, who will be sending three people on the cruise. They would like to meet with their other vessel, the Kaisei, and transfer personnel if the conditions permit. The location of the transfer will be somewhere along our cruise track but the specific coordinates are yet to be determined.

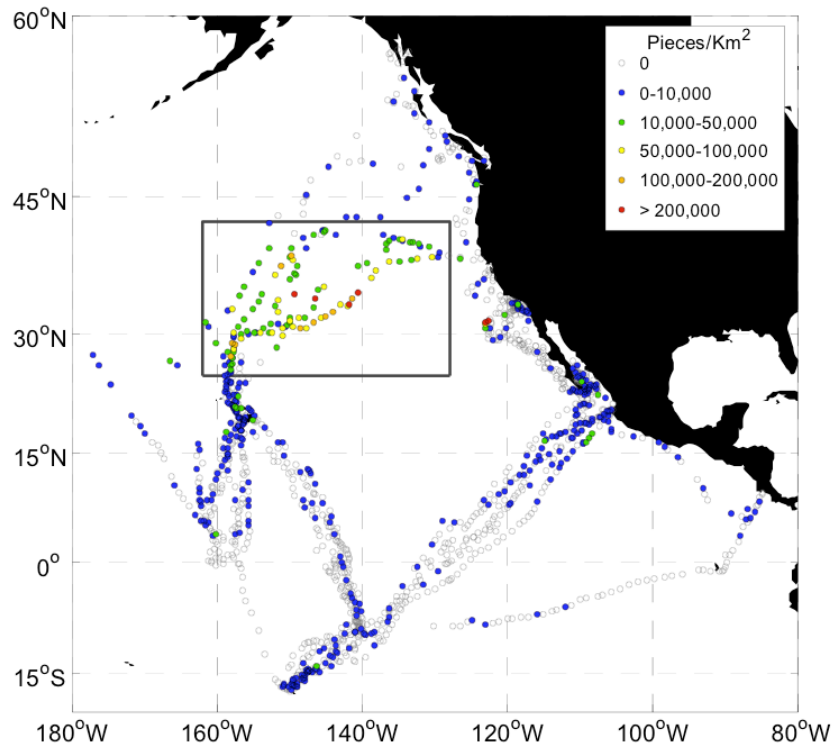
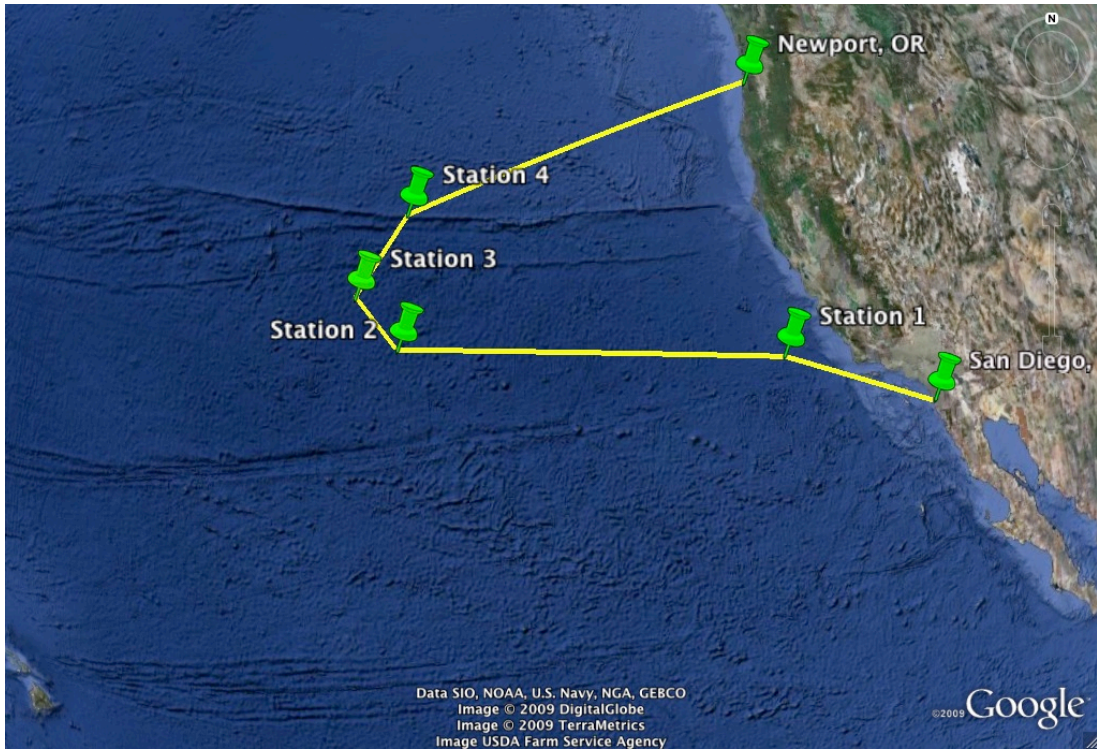


Figure 1: Map indicating distribution of plastic debris collected in 1435 neuston net tows (335- μ m mesh) from 2001-2008. Each symbol indicates the location of a tow, and color indicates the measured density of plastic microdebris (pieces/ Km^2). The dark gray box indicates the High Concentration Region, defined by the greatest observed plastic density in this data set.

Figure from Law et al. 2009

Cruise Track

1. Transit from San Diego to Point Conception
2. Transit to CA Current Station 1
3. Transit to Gyre Station 2- 35°N, 140°W
4. If time permits, additional station at 37°N, 142°W
5. Transit to Gyre Station 3 - 40°N, 140°W
6. Transit to Newport, OR



Transect Station Days (8 Days)

- 0900 Manta Tow (30 min.)
- 1500 Manta Tow (30 min.)
- 2100 Manta Tow (30 min.)
- 0300 Manta Tow (30 min.)
- 0330 (CTD (1 hour)

Transit Time = 21 hours
 Science Time = 3 hours

Intensive Stations (1 station in outer CA current (control), 3 stations in North Pacific Gyre)

Time Per Operation	Start Time	
1:00	20:00	CTD 1
3:00	21:00	IKMT 1 - Deep
0:30	0:00	Manta 1
1:00	0:30	IKMT 2 - Shallow
1:00	1:30	Bongo 1
1:00	2:30	CTD 2
1:00	3:30	Bongo 2
1:00	4:30	CTD 3
0:30	5:30	Manta 2

3:00	6:00	IKMT 3 - Deep
1:00	9:00	Launch small boat
0:30	10:00	Manta 3
1:00	10:30	CTD 4
0:30	11:30	Manta 4
1:00	12:00	Bongo 3
1:00	13:00	Retrieve small boat
1:00	14:00	CTD 5
0:30	15:00	Manta 5
1:00	15:30	Bongo 4
3:00	16:30	IKMT 4 - Deep
0:30	19:30	Manta 6

Science Time = 24 hours

Extra time for setup and overflow = 3 hours

Total estimated time over cruise = 84 hours

Estimated time in small boat

4 hours x 3 stations = 12 hours

Other

Collecting salps and debris with hand net as necessary

Total estimated time over cruise = 10 hours

Liaising with the Kaisei vessel

Estimated time = 5 hours

MAJOR EQUIPMENT

- Manta tow
- Bongo tow
- Isaacs-Kidd midwater trawl
- CTD with 12-place 10-L rosette
- RHI small boat
- Towed acoustic array
- EK60 echo sounder

SCIENCE CREW

Last	First	Title	Affiliation
Aguilera	Mario	Communications	SIO
Crawley	Annie	Filmmaker	Project Kaisei
Davison	Pete	Graduate Student	SIO
Dickens	Lara	Teacher	Patrick Henry High School, San Diego
Dubler	Jesse	Volunteer	Unified School District
Durham	Matthew	Resident Technician	SIO
Goldstein	Miriam	Graduate Student	SIO
Jones	Joshua	Technician	SIO
Leichter	James	Associate Professor	SIO
Malstrom	Karin	Volunteer	Project Kaisei
Powell	Jesse	Graduate Student	SIO
Rippy	Megan	Graduate Student	SIO
Rochman	Chelsea	Graduate Student	San Diego State University
Stillinger	Timothy	Volunteer	UC Berkeley
Taniguchi	Darcy	Graduate Student	SIO
Titmus	Andrew	Graduate Student	Hawaii Pacific University
Woodring	Doug	Founder	Project Kaisei