TRINIDAD HEAD LINE SAMPLING PROTOCOLS

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This document provides a general description of the sampling protocols implemented on ocean observing cruises aboard the R/V Coral Sea along the Trinidad Head Line (Figure 1, Table 1). Cruises typically require approximately 12 hours to complete, and depending on the plankton samples to be collected may be conducted during the day (ring nets only) or from mid-afternoon into the night (ring nets and bongo nets). Detailed information associated with particular cruises or samples is available on request, and will be included in metadata served with data as they become available. An example data sheet is appended to this document and summarizes both operations and data collected at each station.

BONGO NET SAMPLES

Bongo net samples are collected with a CalCOFI standard bongo frame fitted with 505 um mesh on one side and 335 um mesh on the other. Both nets are fitted with 335 um mesh soft codends, and both are dyed a dark purple. General Oceanics flowmeters are fitted on rigid mounts in the center of each net mouth to provide estimates of volume filtered for each sample.

The nets are fished according to CalCOFI protocols with the exception that the maximum depth fished is 100m (140m wire out) or to within 5-10 m of the bottom as sea state allows. The nets are deployed at approximately 50 meters per minute while the ship is underway at approximately 2 knots. Upon reaching the target depth (wire out), the net is allowed to fish for 30 seconds, and then retrieved at 20 meters of wire per minute. Wire angles are checked every 10 meters of wire retrieved with a target wire angle of 45 and a tolerance range of 38 to 52 during the final 50 m of the retrieve.

Samples from the 505 um mesh net are preserved in a 5% buffered formalin solution (in filtered seawater). Samples from the 335 um mesh net are preserved in 95% ethanol. Upon return to shore, the ethanol samples are drained and transferred to fresh 95% ethanol within 24-36 hours. Labeling follows the same protocols as for formalin-fixed samples.

Cruise schedules are designed so that bongo samples are collected at night at stations off the shelf.

PAIROVET SAMPLES (prior to October 2008) and RING NET SAMPLES (October 2008 to present)

PairoVET samples were collected following CalCOFI protocols. The net frame is fitted with 153 um mesh, dyed deep purple. The sample is collected in a rigid codend with 153 um mesh windows. General Oceanics flowmeters is fitted on a rigid mounts in the center of the net mouth. The net is deployed and retrieved vertically (maximum acceptable wire angle is 15 degrees) from a maximum depth of 70 meters (or within 5-10 m of the bottom, depending on sea state).

Ring net samples are collected with a 0.5m ring net fitted with 202 um mesh and a TSK flowmeter. The net is fished to a maximum depth of 100 m or to within 5-10 m of the sea floor depending on sea state. Samples are preserved in 5% buffered formalin in filtered seawater.

CTD CASTS, UNDERWAY SAMPLING, and WATER SAMPLING

Hydrographic casts and water samples are collected with a SeaBird 19plus CTD, Seabird 43 dissolved oxygen sensor, WetLABS fluorometer, BioSpherical PAR sensor. Since XXX these instruments have been deployed on a SBE55 ECO carousel that has allowed collection of water samples from three to six pre-programmed depths. Chlorophyll-a samples are collected by filtering water samples (250 ml) onto glass-fiber filters for later analysis in the lab. Nutrient samples are collected and immediately frozen in 60 ml bottles for later lab analysis.

Nearsurface temperature, salinity, fluorescence and turbidity are measured with a Seabird 45 Microthermosalinograph, Seabird 38 Digital Oceanographic Thermometer, and a Turner SCUFA. Data are collated with NMEA output from the ship's naviagation instruments using NOAA SCS 4.0 software.

Water samples are also collected from surface bucket samples and from the outflow of the underway sampling instruments.

Table 1. Station locations and depths for stations typically sampled along the Trinidad Head Line. Stations marked with (*) are designated but not yet included in routine sampling.

Station	Latitude (N)	Longitude (W)	Depth (m)
TH01	41 03.50	124 12.25	35
TH02	41 03.50	124 16.00	77
TH03	41 03.50	124 20.50	155
TH04	41 03.50	124 26.00	480
TH05	41 03.50	124 35.00	780
TH06	41 03.50	124 45.00	910
TH07*	41 03.50	124 56.00	1990
TH08*	41 03.50	125 14.00	3070
TH09*	41 03.50	125 32.00	3080

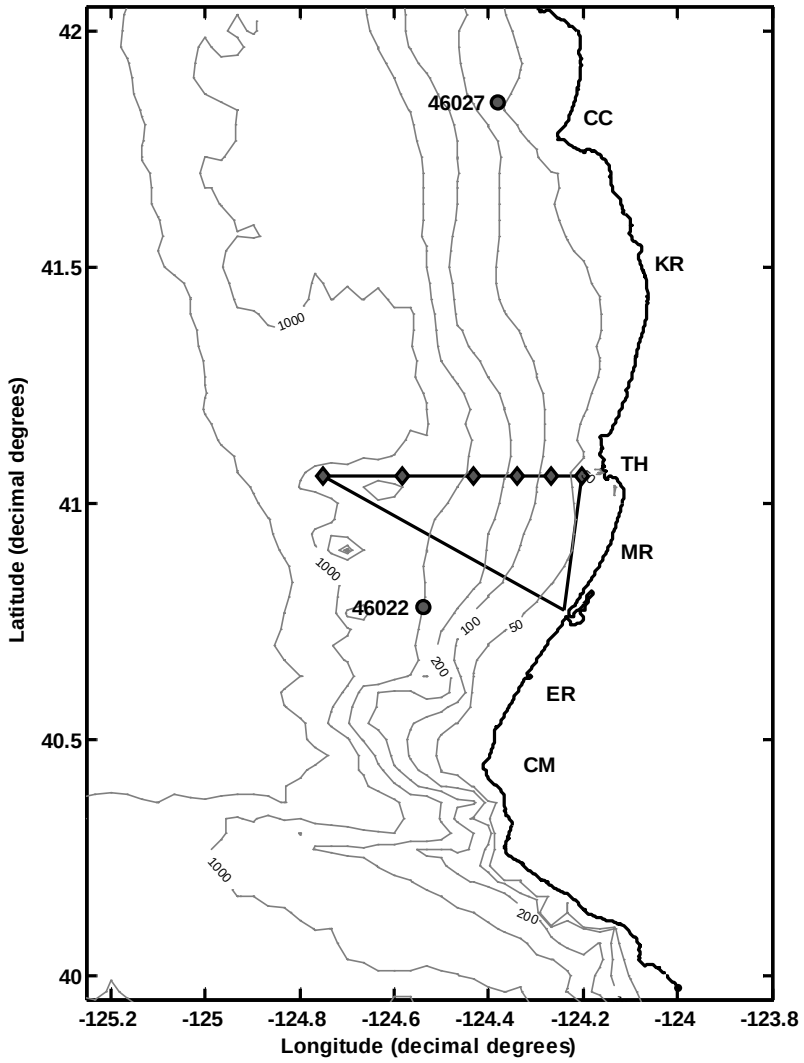

Figure 1. Trinidad Head Line showing location of stations (numbered TH01 to TH06 from onshore to offshore) and approximate cruise track. Landmarks include Crescent City (CC), Trinidad Head (TH), Cape Mendocino (CM), and the mouths of the Klamath River (KR), Mad River (MR), and Eel River (ER). NOAA NDBC Buoys 46027(Point St. George) and 46022 (Eureka) are also indicated.