



U.S. DEPARTMENT OF COMMERCE
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NATIONAL MARINE FISHERIES SERVICE
Pacific Islands Fisheries Science Center
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CRUISE REPORT¹

VESSEL: *Oscar Elton Sette*, Cruise 08-07 (SE-64)

CRUISE PERIOD: August 1–8, 2008

AREA OF OPERATION: Main Hawaiian Islands (Fig. 1)

TYPE OF OPERATION: In support of a Pacific Islands Fisheries Science Center (PIFSC) research project to conduct surveys using cameras, hydroacoustic and instrument deployments.

ITINERARY:

- August 1 Embark scientists Parrish, Boland, Rooney, Bare, Donham, Grimshaw, Jabanoski, Domokos, and Cruz. Departed Pearl Harbor at 1030 for Kealakekua Bay, Hawaii.
- August 2 Arrived Kealakekua Bay, Hawaii at 0600 and conducted hydroacoustic calibration exercise. Departed for Maalaea Bay, Maui at 2200.
- August 3-5 Arrived Maalaea Bay at 0800 and conducted surveys of contours off Olowalu using a live feed underwater camera and hydroacoustics. Attention was focused in areas of patches of deep *Leptoseris* sp. coral that had been previously identified.
- August 6-7 Continued with surveys and deployed two anchored instrument arrays.
- August 8 Departed study site at 0200 and returned to Pearl Harbor at 1330. End of cruise.



¹ PIFSC Cruise Report CR-08-011
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MISSIONS AND RESULTS:

A. Hydroacoustic surveys

1. The hydroacoustic calibration exercise was successfully conducted by divers using a single anchor. For the first time, a good calibration was achieved for the 70 khz system. Although the calibration for the 38 khz was acceptable, it was marginally acceptable because the swing of the boat using a single anchor complicates the effort, as it did in this exercise. Future efforts should involve employing two anchors. A hydraulic problem with the aft system used for setting the stern anchor prevented securing the ship at two points on this cruise.
2. Twenty-two survey transects were conducted using the 38, 70, and 120 khz frequencies (Table 1). The surveys, which included both longshore and cross contour sampling, overlapped the area identified finding it to have coral assemblages. Each transect type was repeated in such a manner that data was collected in the middle of the day, in the middle of the night, and during the dawn and dusk crepuscular hours. Sampling was conducted to look for changes in scattering relative to sites with and without coral.

B. Camera surveys

1. Habitat was appraised using a live feed video camera (TOAD) with the purpose of surveying the habitat of the contours between 50 and 150 m to look for patches of mesophotic coral. Of particular interest was the *Leptoseris* sp. of coral. Thirty camera deployments were made to inspect the habitat across the contours (Table 2). The survey focused on the 50 and the 100 m contours but did work as deep as 150 m. *Leptoseris* sp. was identified at a number of locations and across depths. The camera was lost on the last day of planned operations.
2. Observations on the fish community were made and recorded while the camera system traveled over the bottom. Surveys were conducted on 21 of the camera tows, 15 during the day, and 6 at night. Observations were conducted through the forward facing camera only (not the downward looking camera). Depths of observations ranged from 61 to 158 meters. A total of 56 taxa were seen on the surveys, and these fish ranged from small cryptic reef fish to large bodied snappers, jacks, and sharks.

C. Oceanographic arrays

1. Two oceanographic arrays were deployed to monitor environmental variables for a period of 1 year (Table 3). One of the arrays was anchored in 83 m depth at the top edge of a *Leptoseris* patch, and the other was placed at 128 m depth at the bottom edge of the coral patch. From the bottom up each array had a 1200 lb lead anchor, 2 ORE SWR acoustic release systems, seabird temperature recorder,

single-point Aandera acoustic current meter, Sonteck upward looking acoustic Doppler current profiler (ADCP), and onset thermographs every 10 m to the top of the 30 m array that is held up with six floatation spheres.

2. Two smaller 10-m arrays were also deployed, one along a mid-depth (69 m) contour and the other one deeper at 84 m. The array was comprised of a 50 lb concrete plug anchor, ORE SWR release, onset thermograph, and a Vemco receiver supported by a 10-in floatation sphere. It was deployed to record temperature and occurrences of large transient fish, that have been tagged as part of other acoustic telemetry studies, in the coral habitat. .

D. Conductivity-temperature-depth (CTD) and light level measurements taken independently from small craft operations.

1. Thirty-six CTD stations were conducted using a handheld CTD system (Table 4). The casts were made all the way to the bottom or to a depth of 150 m, and all of them were made between the hours of 1000 and 1500. Initial casts were made in a wide dispersal pattern across the contours and longshore between Olowalu and McGregor Point. A cross-contour transect was then established and repeated for the last 2 days.
2. Light measurement profiles were taken at midday over a period of 4 days (Table 5). An instrument was lowered through the full water column to 100 m to derive from it an extinction coefficient. During the last 2 days, the light measurements were taken right over the *Leptoseris* coral.

SCIENTIFIC PERSONNEL:

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Submitted by: (/s/Frank Parrish)

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Samuel G. Pooley
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Attachments

Table 1.--Hydroacoustic surveys conducted on *Oscar Elton Sette* Cruise SE-08-07. Positions are in decimal degrees.

Activity		Date (2008)	Time (UTC)		Location	
Type	Number		Start	End	Start	End
PARTRAN1	1	08/03	22:37:14	23:06:15	20.76°N, 156.55°W	20.78°N, 156.61°W
TRANS1	1	08/04	3:20:03	5:29:40	20.75°N, 156.51°W	20.75°N, 156.52°W
PARTRAN1	2	08/04	9:57:47	10:27:08	20.78°N, 156.61°W	20.76°N, 156.55°W
TRANS1	2	08/04	15:03:28	18:19:28	20.79°N, 156.66°W	20.75°N, 156.52°W
PARTRAN2	1	08/04	22:26:57	22:58:52	20.75°N, 156.64°W	20.79°N, 156.70°W
TRANS2	1	08/05	3:30:08	6:35:34	20.79°N, 156.70°W	20.74°N, 156.56°W
PARTRAN3	1	08/05	9:30:13	10:57:49	20.75°N, 156.59°W	20.75°N, 156.59°W
TRANS2	2	08/05	15:19:45	18:10:50	20.79°N, 156.70°W	20.75°N, 156.63°W
PERTRAN	1	08/06	3:20:52	5:43:40	20.80°N, 156.67°W	20.73°N, 156.57°W
PERTRAN	2	08/06	8:07:15	10:14:06	20.80°N, 156.68°W	20.73°N, 156.57°W
PERTRAN	3	08/06	15:04:02	17:17:19	20.73°N, 156.57°W	20.80°N, 156.67°W
PERTRAN	4	08/06	20:52:03	22:58:03	20.80°N, 156.68°W	20.73°N, 156.57°W
INTER	1	08/06	23:02:57	23:58:04	20.72°N, 156.58°W	20.81°N, 156.70°W
PERTRAN	5	08/07	3:20:03	5:48:45	20.80°N, 156.68°W	20.73°N, 156.57°W
PERTRAN2	1	08/07	10:54:07	15:58:55	20.82°N, 156.71°W	20.76°N, 156.53°W
INTER	2	08/07	15:59:22	16:21:21	20.76°N, 156.53°W	20.73°N, 156.57°W
PERTRAN	6	08/07	16:28:57	18:06:36	20.73°N, 156.57°W	20.78°N, 156.65°W
INTER	3	08/08	2:37:25	3:47:36	20.79°N, 156.64°W	20.73°N, 156.57°W
PERTRAN3	1	08/08	3:52:27	7:38:10	20.73°N, 156.57°W	20.84°N, 156.71°W
INTER	4	08/08	7:39:16	9:11:21	20.85°N, 156.71°W	21.01°N, 156.88°W
TRMOL	1	08/08	9:12:18	15:33:14	21.01°N, 156.88°W	21.06°N, 157.09°W
INTER	5	08/08	15:33:54	21:30:42	21.06°N, 157.09°W	21.22°N, 157.85°W

Table 2.--Surveys conducted with the tethered live feed camera system (TOAD). Positions in decimal degrees.

Tow ID	Start Date (UTC)	Time On Bottom (UTC)	Bottom Time	Min Lon	Max Lon	Min Lat	Max Lat
Cruise Total	-	-	-	156.5221095	156.7464357	20.7120985	20.8156223
Maui				156.5221095	156.7464357	20.7120985	20.8156223
MAI08001	8/3/2008	18:47:00	2:52:26	156.5221095	156.5244911	20.7224505	20.7574545
MAI08002	8/4/2003	0:09:25	2:32:15	156.5584096	156.5696816	20.7648459	20.7758657
MAI08003	8/4/2008	6:19:30	2:00:33	156.5750680	156.5856839	20.7743002	20.7494010
MAI08004	8/4/2008	9:05:00	0:25:00	156.6101354	156.6105657	20.7690846	20.7623965
MAI08005	8/4/2008	11:47:48	1:00:59	156.6959958	156.7014322	20.7886921	20.7787320
MAI08006	8/4/2008	13:47:17	0:49:49	156.6872837	156.6860140	20.7966834	20.7851845
MAI08007	8/4/2008	19:07:50	1:26:20	156.6098707	156.6179396	20.7484769	20.7636669
MAI08008	8/4/2008	21:06:08	0:40:12	156.6300147	156.6364957	20.7682197	20.7733596
MAI08009	8/4/2008	23:17:40	0:28:32	156.6859619	156.6864636	20.7768086	20.7839312
MAI08010	8/5/2008	0:23:50	0:28:12	156.6601313	156.6673883	20.7830394	20.7875350
MAI08011	8/5/2008	1:54:06	0:58:59	156.6686120	156.6738295	20.7793126	20.7828031
MAI08012	8/5/2008	7:52:30	1:09:30	156.5921660	156.5885299	20.7534843	20.7384205
MAI08013	8/5/2008	11:37:48	0:18:02	156.6081343	156.6104669	20.7479858	20.7432008
MAI08014	8/5/2008	12:30:25	0:25:35	156.6344269	156.6356691	20.7574987	20.7510850
MAI08015	8/5/2008	13:49:15	0:44:02	156.6403988	156.6481016	20.7627395	20.7518663
MAI08016	8/5/2008	18:35:30	0:34:45	156.6485567	156.6534479	20.7596273	20.7648263
MAI08017	8/5/2008	19:43:50	0:38:48	156.6628560	156.6657722	20.7606207	20.7687148
MAI08018	8/5/2008	20:50:38	0:58:22	156.6702035	156.6806321	20.7551219	20.7647158
MAI08019	8/5/2008	22:51:51	0:21:39	156.6666876	156.6721556	20.7706345	20.7763884
MAI08020	8/5/2008	23:49:27	1:32:52	156.6734723	156.6876356	20.7736617	20.7871204
MAI08021	8/6/2008	2:17:10	0:35:05	156.6683458	156.6742697	20.7725781	20.7817427
MAI08022	8/6/2008	6:40:13	0:47:36	156.6397477	156.6551172	20.7516833	20.7500822
MAI08023	8/7/2008	0:42:40	0:56:35	156.7120828	156.7165316	20.8065674	20.8156223
MAI08024	8/7/2008	2:05:30	0:34:00	156.7031632	156.7081976	20.7907337	20.7946430
MAI08025	8/7/2008	6:41:30	0:37:00	156.6287166	156.6330761	20.7224474	20.7260820
MAI08026	8/7/2008	8:12:25	0:26:13	156.6652034	156.6689353	20.7442661	20.7448277
MAI08027	8/7/2008	9:16:38	0:33:22	156.6797331	156.6847713	20.7252603	20.7266425
MAI08028	8/7/2008	18:48:40	1:00:15	156.5722506	156.5780525	20.7120985	20.7236453
MAI08029	8/7/2008	21:11:21	0:10:46	156.7448248	156.7464357	20.7262636	20.7630384
MAI08030	8/7/2008	0:00:00	0:00:00	156.6545623	156.6546409	20.7397937	20.7448898

Table 3.--Positions in decimal degrees of deployed instruments, including the lost camera system.

Instrument	Longitude	Latitude
ADCP Array "John"	156.67361667	20.77813333
ADCP Array "Frank"	156.67068333	20.77161667
Acoustic Receiver "Tele 1"	156.66898333	20.77315000
Acoustic Receiver "Tele 2"	156.68441667	20.80721667
Lost camera system "TOAD"	156.65530000	20.74100000

Table 4.--CTD casts made from small craft using handheld CTD.

Date	Record	Longitude	Latitude
8/2/2004	301.0	156.55571667	20.76406667
8/2/2004	302.0	156.57385000	20.74988333
8/2/2004	303.0	156.58878333	20.74678333
8/3/2004	401.0	156.68266667	20.82833333
8/3/2004	402.0	156.70966667	20.80966667
8/3/2004	403.0	156.69733333	20.80000000
8/3/2004	404.0	156.70733333	20.78766667
8/3/2004	405.0	156.69833333	20.77316667
8/3/2004	406.0	156.68550000	20.75733333
8/3/2004	407.0	156.66400000	20.78333333
8/3/2004	408.0	156.65683333	20.80033333
8/3/2004	409.0	156.65416667	20.80683333
8/3/2004	410.0	156.62166667	20.77766667
8/3/2004	411.0	156.62933333	20.75966667
8/3/2004	412.0	156.63200000	20.73416667
8/3/2004	413.0	156.57133333	20.73250000
8/3/2004	414.0	156.57550000	20.74933333
8/4/2004	501.0	156.73058333	20.75595000
8/4/2004	502.0	156.70163333	20.77960000
8/4/2004	503.0	156.67950000	20.77975000
8/4/2004	504.0	156.66758333	20.78420000
8/4/2004	505.0	156.65306667	20.79171667
8/4/2004	506.0	156.63918333	20.79831667
8/4/2004	507.0	156.62971667	20.80415000
8/4/2004	511.0	156.59545000	20.77375000
8/4/2004	510.0	156.62988333	20.74658333
8/4/2004	508.0	156.71016667	20.80261667
8/5/2004	5012.0	156.73058333	20.75595000
8/5/2004	5022.0	156.70163333	20.77960000
8/5/2004	5032.0	156.67950000	20.77966667
8/5/2004	5042.0	156.66758333	20.78420000
8/5/2004	5052.0	156.65306667	20.79171667
8/5/2004	5062.0	156.63918333	20.79831667
8/5/2004	5072.0	156.62971667	20.80415000
8/5/2004	5092.0	156.66285000	20.76946667
8/5/2004	5082.0	156.71016667	20.80261667

Table 4.--Light meter deployments conducted from small craft.

Date	Time	Cloud cover	Sea state	Depth m	Longitude	Latitude
8/03/08	13:26	100% overcast	Sea state 1	76	156.587	20.747
8/04/08	12:25	100% clear	Glassy	82	156.632	20.734
8/05/08	12:25	100% clear	Sea state 1	91	156.674	20.758
8/06/08	11:08	Partly cloudy	Sea state 1	95	156.675	20.758

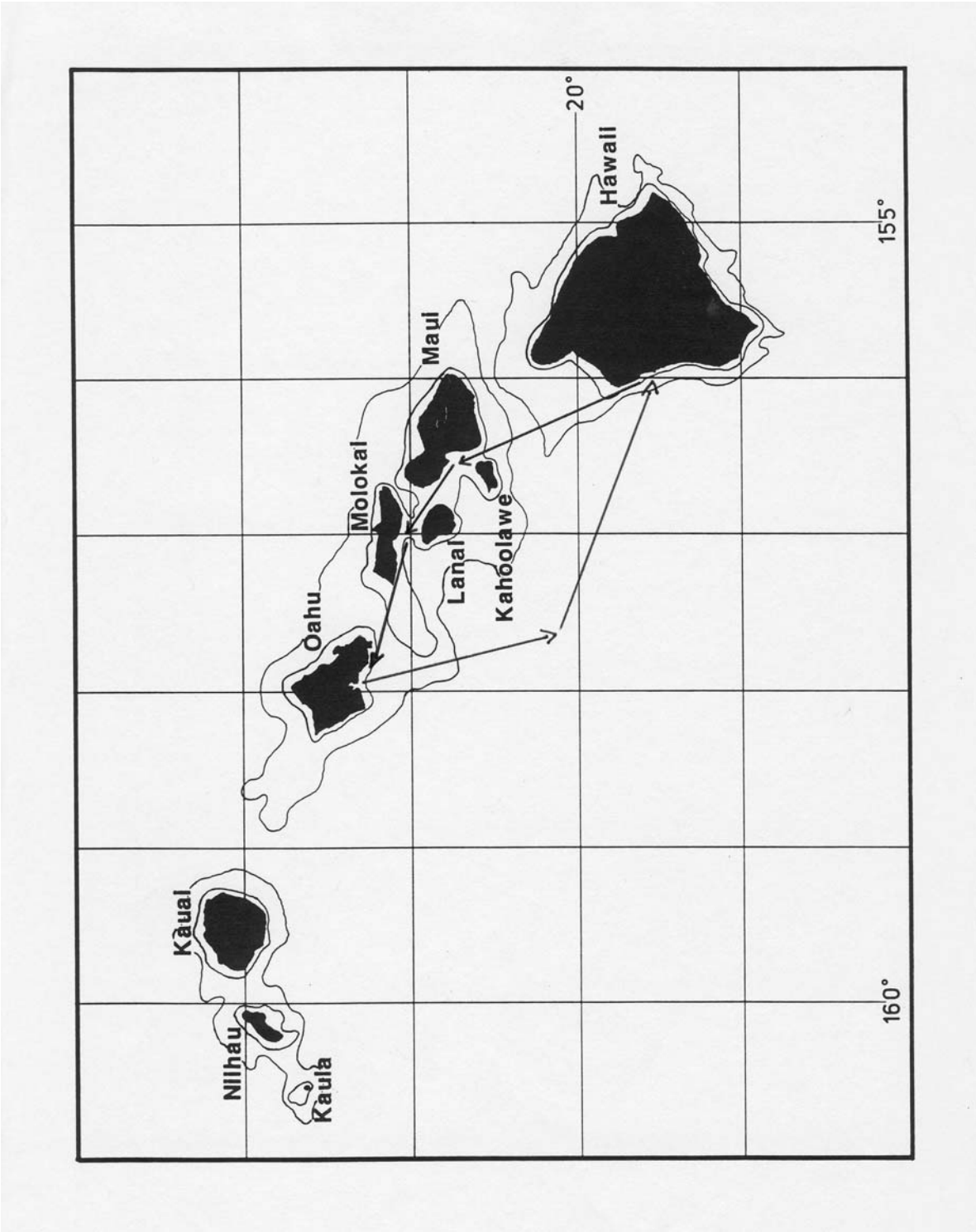


Figure 1.--Track of NOAA Ship *Oscar Elton Sette* Cruise SE-08-07 (SE-64), August 1-8, 2008.

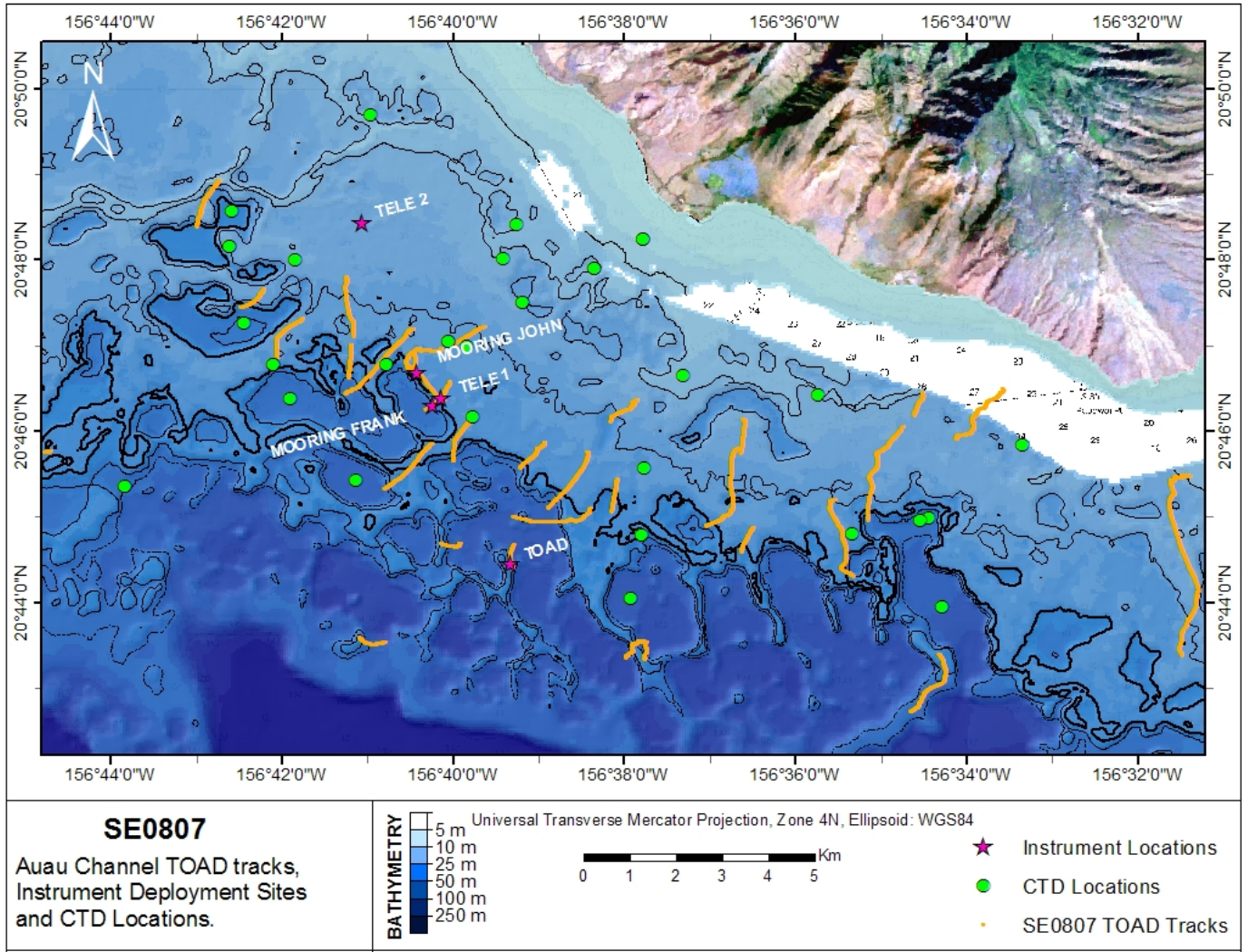


Figure 2.--Plot of the operations conducted on the NOAA Ship *Oscar Elton Sette* Cruise SE-08-07 (SE-64) for the Maui portion of the cruise.