



U.S. DEPARTMENT OF COMMERCE
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CRUISE REPORT¹

VESSEL: *Oscar Elton Sette*, Cruise 08-11 (SE-68)

CRUISE PERIOD: November 20–December 4, 2008

AREA OF OPERATION: Main Hawaiian Islands, Kohala-Kona Coast of the Island of Hawaii (Fig. 1)

TYPE OF OPERATION: In support of a Pacific Islands Fisheries Science Center (PIFSC) and State of Hawaii, Department of Aquatic Resources (DAR) research project to conduct trap and handline fishing operations for juvenile bottomfish.

ITINERARY:

- 20 November Embarked scientific personnel: Kurt Kawamoto, Bert Kikkawa, Robert Moffitt, Ryan Nichols, Paul Shiota, Clay Tam, and Karen Underkoffler. Departed Pearl Harbor, Oahu at 14:00; began transit to Kohala and Kona Coast, Island of Hawai'i.
- 21 November Arrived Kohala Coast, Hawai'i at 0600. At 0800, commenced trap deployment of two large single traps and two strings of four small traps per string. Trap locations were off of Kiholo Bay at depths of 40-80 fm (Table 3). At 1200, deployed three safeboats for handline fishing gear test at Kawaihae location lat. 20° 04.019'N, long. 155° 52.414'W (Table 1). At 1400, initiated three transects to test acoustic Doppler current profiler (ADCP). Conducted handline fishing for juvenile snappers and groupers from safeboats at depths of 35–70 fm through 1630. Retrieved two trap sets (one single large trap and one string of four traps) at 1800; aborted remaining trap retrieval due to low light conditions. At 2000, arrived on station for conductivity-temperature-depth (CTD) recordings over depths of 98 and 130 fm.

¹ PIFSC Cruise Report CR-09-005
Issued 20 March 2009



- 22 November Commenced small boat operations at 0800; deployed two safeboats for handline fishing at lat. 19° 54.942'N, long. 155° 59.347'W. At 0900 retrieved traps soaked overnight. Redeployed traps (two large and two stings) off Nawaikulua Point at depths of 40–80 fm (Table 3) from 1000 to 1100. Continued ADCP transects of previous day from 1130 to 1245. Concluded handline fishing operations at 1430. Retrieved single large and one string of small traps from 1525 to 1540. At 1750, arrived on site for CTD recording over a depth of 56 fm. From 1900 to 2130 commenced night light dip netting for larval fish at depths of 35–45 fm.
- 23 November Commenced small boat operations at 0800; deployed two safeboat for handline fishing off previous Kawaihae location. Retrieved traps and redeployed at Mano Point in depths of 40–80 fm from 0830 to 1000. Calibrated ADCP on test transect during 1050–1430. Concluded safeboat fishing operations at 1600. Arrived on site at 1745 for CTD recordings over a depth of 75 fm. From 2040 to 2200 commenced surface night-light dip netting for larval fish over bottom depths of 25–35 fm.
- 24 November Commenced small boat operations at 0800; deployed two Safeboats for handline fishing off Kawaihae locations. Retrieved and redeployed all traps during 1000–1345. Concluded handline fishing operations at 1600. Arrived on station for CTD recording over a depth of 70 fm at 1720.
- 25 November Commenced small boat operations at 0800; deployed two safeboats for handline fishing off Kawaihae locations. Retrieved traps at 0900–1100. Inclement weather and gear handling complications resulted in parted floatlines on one large and one small string of traps. Redeployed remaining traps 1230–1300. Conducted ADCP transect 1300–1600. Retrieved safeboats at 1630. Arrived on site for CTD recording over a depth of 140 fm at 1730.
- 26 November Retrieved traps 0800–0900. At 1200, transited to Kailua-Kona Harbor for handline fishing operations and change out of scientific personnel. Disembarked Kawamoto and Tam; embarked Megan Sundberg. Secured anchorage in Kailua- Kona Harbor at 1630. Concluded small boat handline operations at 1700.

27 November potential operations handline	Aborted trapping operations due to loss of traps and conflict with commercial/recreational fishing fleet of Kona Coast and private company (Liquid Robotics, Inc.) of an Automated Underwater Vehicle (AUV) within our trapping locations. At 0900, resumed small boat operations off Kailua-Kona at lat. 19° 36.417'N, long. 156° 00.932'W. Commenced second calibrations of ADCP during 1045–1130. Conducted three ADCP transects off Keauhou Point during 1145–1430. At 1830, arrived on site for CTD operations over depths of 120 fm.
28 November	Commenced small boat operations at 0800; deployed two safeboats for handline fishing off Keauhou Point at lat. 19° 33.584'N, long. 156° 00.227'W. Conducted ADCP-CTD transect off Keauhou Point during 0900–1522. Concluded handline fishing operations at 1630. Arrived at Coral Reef Ecosystem Division's (CRED) designated location HAW05 to conduct CTD cast over depth of 620 fm at 1730. Resumed ADCP transects at 2100.
29 November	Concluded ADCP transects at 0253. Deployed safeboats at previous Keauhou Point location at 0800. Conducted ADCP-CTD transects during 0900–1400. Interrupted ADCP-CTD transect to retrieve small boats at 1530 due to inclement weather. Resumed conduct of ADCP-CTD transects (1600–1800). From 1800 to 2245 commenced surface night-light dip netting for larval fish over bottom depth of 50 fm.
30 November	Commenced small boat operations at 0800; deployed two safeboats for handline fishing off Kealakekua Bay at lat. 19° 28.818'N, long. 155° 57.630'W. Conducted gurdy bottomfishing for juveniles off the <i>Sette</i> during 0910–1500 over depths of 50–120 fm. Concluded small boat operations at 1630. From 1900 to 2300 commenced surface night-light dip netting for larval fish over a depth of 40 fm.
1 December	Arrived on location at South Point, Hawai'i (lat. 18° 53.024'N long. 155° 42.130'W) at 0600. Commenced small boat operations at 0800; deployed two safeboats for handline fishing around South Point. Conducted ADCP-CTD transects during 0815–1500. Concluded small boat operations at 1735. Arrived at CRED designated location HAW03 at 2000 to conduct CTD casts over a depth of 923 fm. At 2100, began transit to Kailua-Kona Harbor.

- 2 December Arrived at Kailua-Kona harbor 0730. Commenced small boat operations at 0800; deployed two safeboats for handline fishing around Kailua-Kona. From 0900 to 1100 conducted gurdy bottomfishing for juveniles along the 100-fm contour off the *Sette*. At 1400, disembarked Moffitt at Kailua-Kona. Concluded small boat operations at 1530 due to inclement weather. From 1700 to 2300 conducted ADCP transects.
- 3 December Commenced small boat operations at 0800; deployed two safeboats for handline fishing at Keahole Point (lat. 19° 44.748' long. 156° 04.876'W). Conducted ADCP-CTD transects during 1000–1230. Interrupted CTD cast at 1300 to embark three NOAA/PMEL (Pacific Marine Environmental Laboratory) technicians. Concluded fishing operations at 1330 due to inclement weather. Resumed ADCP-CTD transects during 1430–1746. Concluded operations and departed Kona for DART (Deep-ocean Assessment and Reporting of Tsunamis) buoy, 50 nmi off the Island of Oahu.
- 4 December Arrived on site of DART tsunami monitoring mooring (lat. 20° 32.95'N long. 157° 51.68'W) at 0600. Commenced haul back and battery service to DART buoy at 0820. Concluded operations and headed towards Pearl Harbor, Oahu at 1000. Arrived Pearl Harbor; end of cruise.

MISSIONS AND RESULTS:

- A. Conduct bottom handline operations from small boats and the ship to obtain juvenile specimens of snapper/grouper species from nursery ground sites along portions of the Kohala, Kona and Kau Coasts (Fig. 1). For handline fishing, four Henry Ching electric reels were spooled with a 200-lb test Dacron backing and a 180-lb test Power-pro® mainline. Terminal gear consisted of a 3 m long dropper with 6 branch lines of 12-lb monofilament test attached to 2–3 lb lead weight. However, due to continued breaking of branch lines, 50-lb monofilament test branch lines was added. Four to six H&K barbed hooks ranging in sizes from 14 to 22 were baited with strips of squid.
1. A total of 29 bottomfish handline operations (Table 1) took place during this cruise. Operations focused primarily along depth contours ranging from 35 to 140 fathoms all within the proximity of the starting locations. The drift time varied from 1 to 145 minutes for a total of 240 line hours between the three small boats.

2. A total of 368 subadult-adult fishes were caught during handline operations (Table 2). Sixty-six percent were snapper/grouper species: 73 (19%) gindai, *Pristopomoides zonatus*; 58 (15%) ehu, *Etilis carbunculus*; 57 (15%) kalekale, *Pristopomoides seiboldi*; 50 (13%) opakapaka, *Pristopomoides filamentosus*; 3 (<1%) Hawaiian grouper, *Epinephelus quernus* and 1 (<1%) uku, *Aprion virescens*. The 41 species comprising the remaining 34% of the handline catch appear in Table 2.
 3. Subadults of snapper/grouper species, less than 30 cm FL, were retained for age and growth studies. A total of 161 subadults were retained, 52 gindai, 42 kalekale, 30 ehu and 30 opakapaka. All other fishes were released.
- B. Deployed 45 fish traps at 40–112 fm depths to collect juvenile specimens of snapper/grouper species from nursery grounds along portions of the Kohala and Kona Coasts. Traps consisted of two sizes: “large”, 6 ft long by 4 ft wide by 3 ft high, with 1.5 inch mesh, no added weight and “small”, 2 ft long by 1 ft wide by 1 ft high with 0.5 inch mesh and 10 lb of added weight. “Large” traps were set individually and “small” traps were configured as strings of four spaced 20 fm apart along a single-buoyed main line of 1/2-in polypropylene. Each trap was baited with 3–4 lb of whole Japanese mackerel, *Scomber japonicus*, separated into bait containers.
1. A total of nine strings of small traps and nine large traps were set over the course of 5 consecutive days. Fish traps were scheduled for 8 hr daytime soak; however, small boat operations required traps to soak overnight. Soak times for large traps ranged from 5 hours and 26 minutes to 25 hours and 20 minutes, small traps ranged from 3 hours and 26 minutes to 25 hours and 13 minutes (Table 3).
 2. A total of 113 fishes, representing five species, were caught in the traps. The total fish catch consisted of 105 (92%) blue-lined snapper, *Lutjanus kasmira*; 3 (3 %) white-margin moray eel, *Gymnothorax albimarginatus*; 3 (3%) berndt’s moray, *Gymnothorax berndti*; 1 (1%) Hawaiian mustache conger, *Conger marginatus* and 1 (1%) goldlined squirrelfish, *Neoniphon aurolineatus*. No targeted bottomfish species were collected during trapping operations.
 3. A string of small traps and one large trap was lost during operations; this was attributed to adverse weather conditions. As a result of weather, heavy holiday boat traffic and conflicting area of operations with the AUV of Liquid Robotics Inc., further trapping operations were cancelled to pursue ADCP transects.

- C. Conduct shipboard CTD casts in the vicinity of juvenile bottomfish grounds along the Kohala and Kona coastline to assess the environmental characteristics of the habitat.
1. A total of 28 CTD stations were performed during the cruise to obtain information on salinity, temperature and dissolved oxygen. The CTD casts were performed within the site locations of traps and along three previously established CRED sites. The bottom depth over the CTD cast sites ranged from 56 to 500 fm.
 2. The depths below the ship's transducer were uncalibrated; therefore bottom depths over the CTD sites are estimates. In addition, the fluorometer outputs were uncalibrated, and water samples were not collected during this cruise.
- D. Conduct Acoustic-Doppler-Current-Profiler (ADCP) transects to characterize the current field associated with juvenile bottomfish nursery grounds.
1. A total of 16 ADCP transects were performed during the cruise. Each transect was approximately 3 nmi long. Two calibration runs were performed in addition to the 16 transects.
 2. Three ADCP transects were interrupted due to overnight boat traffic and the need to retrieve the small boats during inclement weather.
- E. Conduct tag-and-release on species of jacks and adult eteline snappers/groupers that are incidentally captured during bottom handline and fish trapping operations.
1. Tagging equipment consisted of a 1-in wooden dowel to invert expelled stomachs, and a 4-in dart tag and drop shot attached to 30 fathoms of line. Only fishes that were brought to the surface and found viable for tagging were released with tags. Information collected for each tagged fish included (1) tag number, (2) date tagged, (3) species, (4) fork length, (5) time caught, (6) location caught and (7) depth caught.
 2. A total of 81 adult fishes were tagged and released from handline operations, no fishes collected in traps were tagged. The tagged fishes consisted of 24 (32%) ehu; 21 (25%) opakapaka; 12 (15%) kalekale; 11 (14%) gindai; 6 (7%) ulua, *Carangoides orthogrammus*; 3 (3%) almaco, *Seriola rivoliana*; 2 (2%) onaga; 1 (1%) yellowtail amberjack, *Seriola lalandi* and 1 (1%) uku. A single lehi, *Aphareus rutilans* was initially tagged; however, it did not survive.

- F. Collect larval billfish specimens associated with offshore surface slicks using surface towed Isaacs-Kidd (IK) trawl towed from the port-side J-frame. Tows will be conducted offshore from the small boat fishing grounds along portions of the Kohala and Kona Coasts.
1. Due to gear conflict with the J-frame hauling block between the use of fish traps and IK trawl, the IK was omitted from the research mission.

**SCIENTIFIC
PERSONNEL:**

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Attachments

Table 1.--Handline fishing stations conducted on *Oscar Elton Sette* Cruise SE-08-11.
Positions are in decimal degrees.

Station #	Date	Latitude °N	Longitude °W	No. drifts	Median drift (min)	Depth range (fm)
5	11/21/2008	20° 04.019'	155 ° 52.414'	7	60	56 - 142
6	11/21/2008	20° 03.925'	155 ° 52.314'	4	60	54 - 128
7	11/21/2008	20° 03.965'	155 ° 52.237'	2	60	60 - 106
13	11/22/2008	19° 54.942'	155 ° 59.347'	8	18	74 - 164
14	11/22/2008	19° 54.952'	155 ° 59.413'	3	60	170 - 224
23	11/23/2008	19° 53.859'	156 ° 00.641'	8	33	74 - 162
24	11/23/2008	19° 53.913'	156 ° 00.807'	7	33	82 - 121
32	11/24/2008	20° 02.019'	155 ° 53.048'	8	23	47 - 178
33	11/24/2008	20° 02.150'	155 ° 53.100'	9	19	53 - 180
39	11/25/2008	20° 04.137'	155 ° 52.740'	11	25	30 - 202
40	11/25/2008	20° 04.083'	155 ° 52.574'	9	35	50 - 185
45	11/26/2008	19° 37.655'	156 ° 00.964'	6	12	55 - 137
47	11/27/2008	19° 36.684'	156 ° 01.395'	4	61	49 - 100
48	11/27/2008	19° 36.821'	156 ° 01.553'	10	15	40 - 124
49	11/27/2008	19° 36.965'	156 ° 01.698'	1	60	95 - 143
55	11/28/2008	19° 33.533'	156 ° 00.200'	6	43	70 - 135
56	11/28/2008	19° 36.521'	156 ° 00.227'	12	11	40 - 120
68	11/29/2008	19° 33.934'	156 ° 00.697'	13	19	36 - 136
69	11/29/2008	19° 36.965'	156 ° 00.763'	9	28	69 - 132
82	11/30/2008	19° 28.582'	155 ° 58.061'	10	19	53 - 100
83	11/30/2008	19° 28.507'	155 ° 58.122'	8	20	46 - 115
84	11/30/2008	19° 28.046'	155 ° 56.053'	6	22	60 - 105
86	12/01/2008	18° 56.918'	155 ° 35.748'	14	22	60 - 130
87	12/01/2008	18° 57.044'	155 ° 35.840'	17	10	55 - 120
90	12/02/2008	19° 36.396'	156 ° 01.179'	1	85	50 - 100
91	12/02/2008	19° 37.491'	156 ° 00.621'	8	24	70 - 120
92	12/02/2008	19° 37.533'	156 ° 00.548'	13	16	48 - 110
96	12/03/2008	19° 44.748'	156 ° 04.876'	6	11	60 - 120
97	12/03/2008	19° 44.830'	156 ° 04.854'	8	17	66 - 150

Table 2.--Fish species captured during handline fishing stations. Double dash lines indicate a fish that was released or lost overboard without a length being taken.

Species	Total number caught	Percentage of catch (%)	Size range (cm)	Mean size (cm)
<i>Pristipomoides zonatus</i>	73	19.84	18.4 - 39.3	27.5
<i>Pristipomoides sieboldii</i>	58	15.76	21.6 - 38.0	28.3
<i>Etelis carbunculus</i>	57	15.49	19.3 - 37.8	30.8
<i>Pristipomoides filamentosus</i>	50	13.59	21.7 - 38.9	28.5
<i>Lutjanus kasmira</i>	18	4.89	19.5 - 31.8	25.3
<i>Odontanthias fuscipinnis</i>	14	3.80	15.8 - 20.3	17.4
<i>Xanthichthys mento</i>	8	2.17	28.7 - 36.5	31.8
<i>Carangoides orthogrammus</i>	7	1.90	44.0 - 61.0	51.1
<i>Pontinus macrocephalus</i>	7	1.90	20.1 - 42.3	32.9
<i>Xanthichthys sp.</i>	7	1.90	29.4 - 30.3	31.5
<i>Bodianus bilunulatus</i>	6	1.63	17.0 - 39.0	32.2
<i>Antigonia capros</i>	5	1.36	18.0 - 22.7	20.1
<i>Erythrocles scintillans</i>	5	1.36	30.1 - 36.2	32.4
<i>Balistidae sp.</i>	4	1.09	20.3 - 30.8	27.5
<i>Epinephelus quernus</i>	3	0.82	50.0 - 58.1	56.5
<i>Mulloidichthys vanicolensis</i>	3	0.82	32.0 - 38.6	35.3
<i>Parupeneus multifasciatus</i>	3	0.82	19.5 - 25.4	22.5
<i>Seriola rivoliana</i>	3	0.82	62.0 - 84.5	73.0
<i>Sphoeroides pachygaster</i>	3	0.82	25.6 - 31.5	28.8
<i>Squalus mitsukurii</i>	3	0.82	47.3 - 56.5	53.1
<i>Etelis coruscans</i>	2	0.54	60.5 - 63.0	61.7
<i>Pristipomoides auricilla</i>	2	0.54	24.5 - 28.3	26.4
<i>Sufflamen fraenatum</i>	2	0.54	26.5 - 36.5	31.5
<i>Acanthurus xanthopterus</i>	2	0.54	47.0 - 47.5	47.2
<i>Aphareus rutilans</i>	1 0.27		64.5	64.5
<i>Aprion virescens</i>	1 0.27		53.2	53.2
<i>Canthidermis maculata</i>	1 0.27		29.5	29.5
<i>Caprodon longimanus</i>	1 0.27		41.0	41.0
<i>Coris flavovittata</i>	1 0.27		57.0	57.0
<i>Fistularia petimba</i>	1	0.27	--	--
<i>Gymnothorax elegans</i>	1 0.27		70.5	70.5
<i>Lagocephalus sp.</i>	1 0.27		38.2	38.2
<i>Liopropoma aurora</i>	1 0.27		17.0	17.0
<i>Mullidae sp.</i>	1	0.27	--	--
<i>Myctophidae sp</i>	1	0.27	--	--
<i>Naso maculatus</i>	1 0.27		26.5	26.5
<i>Parupeneus Chrysonemus</i>	1 0.27		20.3	20.3
<i>Plectroglyphidodon imparipennis</i>	1	0.27	--	--

Species	Total number caught	Percentage of catch (%)	Size range (cm)	Mean size (cm)
<i>Plectroglyphidodon johnstonianus</i>	1	0.27	--	--
<i>Polydactylus sexfilis</i>	1	0.27	--	--
<i>Pomacentridae sp.</i>	1	0.27	--	--
<i>Pseudanthias thompsoni</i>	1 0.27		18.7	18.7
<i>Scorpaenidae sp</i>	1	0.27	--	--
<i>Seriola lalandi</i>	1 0.27		77.0	77.0
<i>Synodus doaki</i>	1	0.27	--	--
<i>Synodus kaianus</i>	1 0.27		24.6	24.6
<i>Xanthichthys caeruleolineatus</i>	1 0.27		50.0	50.0

Table 3.--Locations of bottom fish trapping stations conducted.

Station #	Trap	Date	Latitude °N	Longitude °W	Soak time (hr:min)	Depth (fm)
1	Small	11/21/2008	19° 52.765'	155 ° 57.743'	9:15	47
2	Large	11/21/2008	19° 53.180'	155 ° 57.772'	10:05	57
3	Small	11/21/2008	19° 54.000'	155 ° 58.200'	24:30	63
4	Large	11/21/2008	19° 54.613'	155 ° 58.798'	23:46	77
15	Small	11/22/2008	19° 52.269'	155 ° 57.583'	3:26	45
16	Large	11/22/2008	19° 52.705'	155 ° 58.205'	5:26	57
17	Small	11/22/2008	19° 52.998'	155 ° 58.804'	23:09	66
18	Large	11/22/2008	19° 53.672'	155 ° 59.193'	23:17	73
25	Small	11/23/2008	19° 51.598'	155 ° 58.688'	24:54	48
26	Large	11/23/2008	19° 52.138'	155 ° 55.987'	24:38	65
27	Small	11/23/2008	19° 52.844'	155 ° 59.683'	25:13	59
28	Large	11/23/2008	19° 53.304'	155 ° 00.786'	25:20	73
34	Small	11/24/2008	19° 58.023'	155 ° 52.798'	Lost	47
35	Small	11/24/2008	19° 58.009'	155 ° 53.081'	20:34	65
36	Large	11/24/2008	19° 59.188'	155 ° 53.386'	Lost	112
37	Large	11/24/2008	19° 59.006'	155 ° 52.486'	21:32	100
41	Large	11/25/2008	19° 59.396'	155 ° 52.401'	20:48	90
42	Small	11/25/2008	20° 00.200'	155 ° 52.104'	20:02	90



Figure 1.– Proposed SE-08-11 fishing operations and survey areas along the Kohala and Kona coasts to be worked are delineated by arrows.