U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE/NOAA FISHERIES

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CRUISE REPORT[1]

VESSEL: *Oscar Elton Sette*, Cruise OES-06-01 (OES-37)

CRUISE PERIOD: 18 January to 12 February 2006

AREAS OF OPERATION: In and around American Samoa targeting seamounts and ledges (Fig. 1)

ITINERARY:

18 Jan After a 6-day delay because of ship mechanical problems, embarked scientists Brendtro, Capossela, Kopf, Landgren, Pace, and Musyl from Snug Harbor at 0900. Began transit to American Samoa. Affixed seven archival and pop-up satellite archival tags (PSATs) on the *Oscar Elton Sette*'s superstructure (in observation platform above wheelhouse) for long-term study and the optimization of a new light-based geolocation algorithm.

18 Jan Conducted troll fishing operations during transit (weather permitting). Visiting scientists familiarized themselves with the ship and assisted in making and repairing longline fishing gear. Troll caught specimens are listed in Table 1.

18-19 Jan Scientist Brendtro complained to the ship's Medical Officer, Jane Powell, of sea sickness. The patient was admitted to sick bay.

20-21 Jan After patient Brendtro was administered electrolytes and fluids through an IV on a continued basis. an evaluation by Medical Officer Powell, Commanding Officer Mike Devaney, Chief Scientist Mike Musyl, and Pacific Islands Fisheries Science Center (PIFSC) personnel determined the best course of action was to medevac

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Issued 16 June 2006

the scientist. Based on her medical condition and logistic considerations, it was decided to medevac Brendtro to Christmas Island (Kiritimati) in the island nation of Kiribati. It was assumed that once on the island, Brendtro could be discharged from the NOAA research vessel, examined by local medical personnel, and put on a commercial flight back to Honolulu, Hawaii via Pacific Air. Began transit to Christmas Island to medevac scientist Brendtro. Personnel from the U.S. State Department, NOAA, and officials from the nation of Kiribati coordinated the medevac operation.

22 Jan Arrived at New London pier at Christmas Island at around 1600. Disembarked scientists Brendtro and Musyl along with Medical Officer Powell from safeboat. Discharged scientist Brendtro from the NOAA vessel after consultation with local medical personnel and immigration officials. Embarked Medical Officer Powell on return to research vessel at ca. 1800. Musyl accompanied Brendtro to monitor her condition overnight and to escort her to the airport the next morning.

23 Jan Scientist Brendtro was put aboard a Pacific Air flight back to Honolulu at ca. 0900. Embarked scientist Musyl from the pier at New London for return to *Oscar Elton Sette* ca. 1100

28 Jan Arrived at Pago Pago Harbor, American Samoa ca. 2300.

29 Jan While ship took on provisions ca. 0900, Musyl met with Mr. Ray Tulafono, Director and Dr. Karl Brookins, Chief Fisheries Scientist of the Department of Marine and Wildlife Resources. Embarked scientist Kikkawa from Pago Pago International Airport ca. 1030.

30 Jan Continued trolling operations during the day. Approximately 713 circle hooks (18/0) were deployed (12 sec. between droppers=gangions; 12 droppers formed a "basket") at lat. 14º26S, long. 170º43W. In other words, there were 12 baited (sanma *Cololabis saira*) droppers (ca. 6 fathoms long made of 450# monolfilament with a 12-in stainless steel leader terminating with the circle hook) clipped to the mainline (made of ca. 1200# monofilament) between successive floats (floatlines ca. 10 m polypropylene). As indicated by attached time-depth recorders, this arrangement of hooks between floats "fished" at desired depths (ca. 40 to 80 m). Deployment of gear started at 1900 and was finished by 2131. Details of longline deployments and catch are given in Table 2.

31 Jan Haul back commenced at 0805 and operations were around 1132. Catch details are provided in Tables 1 and 2. Potentially severe weather warnings were issued for the area. Continued trolling operations during the day. Set approximately 510 hooks starting at 1903 and finished at 2048.

1 Feb Haul back of the line was delayed as a virtual "White Out," high wind gusts (up to 50 mph) and variable sea conditions (10-12-ft swells) prevented ship personnel from locating radar beacons and/or floats. After first sighting of floats, haul back commenced at 1250 and operations finished around 1601. Continued trolling operations during the day. Because of adverse sea and weather conditions, no hooks

were deployed in the evening. Ship transited to the mouth of Pago Pago Harbor. At ca. 1500, deployed safeboat for transit to inner harbor. Embarked scientist Lemuela Kitiona of the Department of Marine and Wildlife Resources.

2-3 Feb Adverse weather prevented fishing operations. U.S. Navy weather advisories dictated movements of ship to avoid severe weather systems. Continued trolling operations during the day (weather permitting).

4 Feb Continued trolling operations during the day. Set approximately 608 hooks starting at 1903 and the operation finished at 2102.

5 Feb Retrieved longline gear starting at 0934 and finished activity at 1413. Continued trolling operations during the day. Set 595 hooks starting at 1958 and finished deploying them at 2156.

6 Feb Retrieval of longline gear started at 0800 and finished at 1839. Longline had drifted overnight and became partially entangled on reef. Lost ca. 250 droppers and 10-15 floats. Because of the "Standards for Training of Certified Watch Standards" (STCW) regulations, longline gear could not be deployed by ship's crew in the PM because they exhausted their allotted 12 h for that day. Continued trolling operations during the day.

7 Feb Continued trolling operations during the day. Set 621 hooks starting at 1934 and finished deploying them at 2131.

8 Feb Haul back of the line commenced at 0805 and finished around 1211. Affixed PSAT #7307 to an approximately 100# yellowfin *Thunnus albacares* tuna caught on longlines and hauled aboard with sling. Continuous trolling operations during transit. Set 583 hooks starting at 1901 and finished deploying them at 2056.

9 Feb Haul back of the line commenced at 0756 and finished around 1041. Adverse weather and sea conditions and advisories from the U.S. Navy temporarily suspended operations as the ship transited northwards. Weather permitting, continued trolling operations during transit.

10 Feb Adverse weather and sea conditions and advisories from the U.S. Navy temporarily suspended operations as the ship transited. Continued trolling operations during transit (weather permitting). Set 620 hooks starting at 1859 and finished deploying them at 2100.

11 Feb Haul back of the line commenced at 0802 and finished around 1025. Continued trolling operations during transit. PSAT tagged blue marlin *Makaira mazara* (ca. 200#) from rod and reel. Scientists hit a temperature break and several strikes of large blue marlin on the trolling gear were obvious. The PSAT tag on blue marlin is especially noteworthy because no tag information exists in this area for blue marlin movements and previously PSAT tagged blue marlin in and around Kona, Hawaii (about 40 tags – some at-liberty for 8 months) did not migrate to this area.

12 Feb Arrived Pago Pago Harbor. Disembarked remaining scientists. End of cruise.

MISSIONS AND RESULTS:

A. Test an experimental chemical shark repellent and delivery system(s).

The delivery system for the repellent was not operational at the time of the cruise and therefore this activity was postponed to a later date.

B. Capture small tunas for cardiac function experiments investigating the limiting effects of changes in temperature with depth on vertical movements and distribution of yellowfin, skipjack, and bigeye tunas. External parasites will be taken from pelagic fishes for later examination.

Took tissue samples from tunas, billfishes, mahimahi, escolar, lancet fish, snake mackerel, barracuda, and blue sharks (Tables 1 and 2) for ongoing physiological, biochemical, and anatomical studies.

C. Monitor cetacean movements and possible interaction with fishing gear to examine spatial and temporal patterns. Take biopsy samples for ongoing genetic research.

No interactions were noted.

D. Capture escolars and other pelagic fishes to determine visual capabilities.

Took tissue samples from escolar for genetic study and performed experiment on visual capabilities.

E. Escolar tissues will be used for population genetic study.

Took tissue samples from escolar for genetic study and performed experiment on visual capabilities.

F. Capture large spawning-size marlin and bigeye tuna for attachment of PSATs for long-term migration studies.

Captured and PSAT tagged blue marlin from trolling operations.

G. Conduct neustonic trawls to collect larval and egg specimens to confirm billfish spawning in the immediate area. Samples are also to be used in stable isotope analyses for trophic ecology studies.

Weather and sea conditions prevented deployment of the trawl.

H. Incidentally captured adult tuna and shark species (excluding blue sharks) will also be opportunistically tagged with PSATs and/or with plastic conventional tags. Place PSATs on sharks and tunas for long-term migration studies.

Two tunas (one yellowfin and one bigeye) were tagged with PSATs for the SPC (Secretariat of the Pacific Commission).

I. Acquire long-term ambient light-level data for the purpose of optimizing a new light-based geolocation algorithm.

Seven archival and PSAT tags were affixed to the *Oscar Elton Sette*.

NARRATIVE SUMMARY:

A total of seven operational longline sets were conducted during the cruise (Table 2) with catch details by gear provided in Tables 1 and 2. A medical situation and later medevac to Christmas Island, adverse sea and weather conditions plus STCW regulations prevented scientists from conducting operations on approximately 7 days of the cruise (cruise was delayed at the onset by 6 days because of ship's mechanical problems). Nevertheless, scientists and crew were able to perform some cruise activities. Trolling operations were important in capturing blue marlin to be tagged with PSATs. Barbless hooks were tested as to their efficacy to retain bait and thus catch equivalent numbers as regular barbed hooks. Seven light-gathering archival and PSAT tags were affixed to the *Oscar Elton Sette*'s superstructure in the observation platform (above the wheelhouse) to acquire long term ambient light-level data. Scientists (Anders Neilsen, John Sibert, and Mike Musyl) at University of Hawaii/JIMAR are optimizing a new light-based geolocation algorithm. Especially important will be the data collected during the crossing of the Equator and the abilities to improve calculations during Equinox periods. Biological samples for ongoing physiological and hearing studies were obtained from select live fish. Narrative reports on the objectives and results from the various cooperative studies are provided.

RECORDS:

The following forms, logs, charts, and data records were kept and given to the Pacific Islands Fisheries Science Center upon termination of the cruise. These include all data captured onto computer storage media during the cruise. All the records are filed there unless indicated otherwise in parentheses.

SEAS system data files
Deck Log-Weather Observation Sheet
Marine Operations Log (NOAA)
Project Area and Operations Chartlets
Station Number and Activity Log
Fish catch record by species, hook number, bait disposition
Data from Temperature Depth Recorders (TDRs)

SCIENTIFIC PERSONNEL:

Kirsten Brendtro, Virginia Institute of Marine Science (VIMS)
Karen Capossela, VIMS
Eva Landgren, University of Lund, Sweden
Bert Kikkawa, Pacific Islands Fisheries Science Center (PIFSC), National Marine Fisheries Service (NMFS)
Lemuela Kitiona, Department of Marine and Wildlife Resources, American Samoa
Keller Kopf, Charles Sturt University, Wagga Wagga, New South Wales, Australia
Michael Musyl, Chief Scientist, University of Hawaii/Joint Institute for Marine and Atmospheric Research
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Attachments

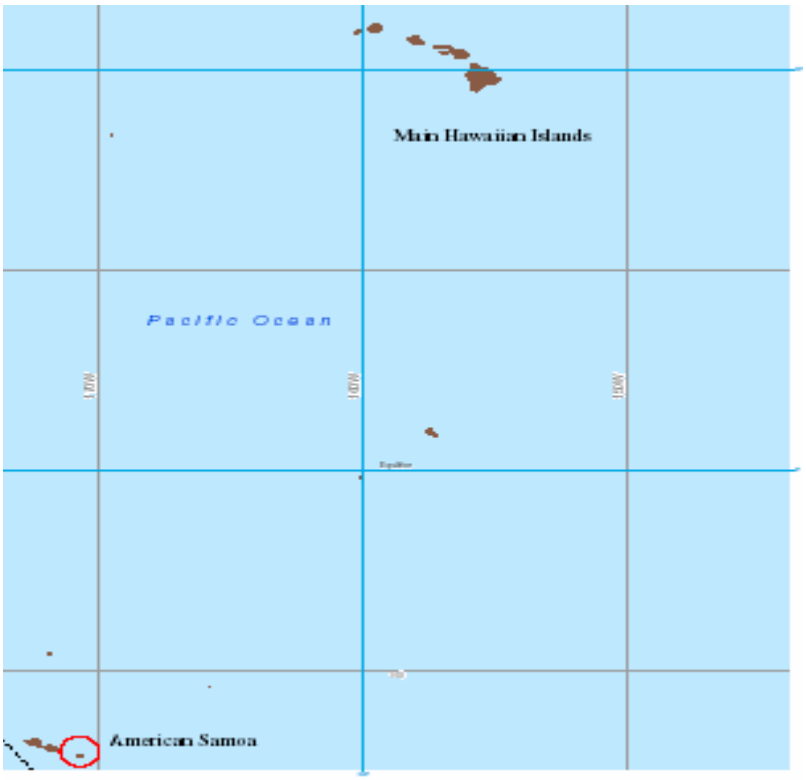

Figure1. Areas of fishing operation.

Table 1. Summary of catch details from trolling operations near American Samoa.

Common name	**Scientific name**	**No.**
Bigeye tuna	*Thunnus obesus*	2
Blue marlin	*Makaira mazara*	3
Mahi Mahi	*Coryphaena hippurus*	16
Great barracuda	*Sphyraena barracuda*	7
Skipjack (aku)	*Katsuwonus pelamis*	7
Wahoo (ono)	*Acanthocybium solandri*	9
Yellowfin tuna	*Thunnus albacares*	12
Shortbill spearfish	*Tetrapterus angustirostris*	2
Sailfish	*Istiophorus platypterus*	1

Table 2. Catches by family, station, number of hooks, and date during the OES-06-01 longline cruise in American Samoa. Note: B=barb hook and BL=barbless

Families Gempylidae and Sphyraenidae

Station No.	Location	Hooks	Date	Escolar		Barracuda	
				B	BL	B	BL
1	-14°26S, 170°43W	713	1/30/06				
2	-14°31S, 170°30W	510	1/31/06				
3	-14°25S, 170°09W	608	2/4/04			1	1
4	-14°10S, 170°05W	595	2/5/06			1	
5	-14°53S, 170°13W	621	2/7/06	1			
6	-14°59S, 170°18W	583	2/8/06	1			
7	-13°10S, 169°29W	620	2/10/06			2	

Family Scombidae

Station no.	Yellowfin tuna		Bigeye tuna		Albacore tuna		Skipjack tuna		Wahoo	
	B	BL	B	BL	B	BL	B	BL	B	BL
1	2	1								
2			1							
3										
4										
5	1				1					
6									1	
7							1			

Sharks and Ray

Station no.	Silky		Oceanic white tip		Blue shark		Manta ray	
	B	BL	B	BL	B	BL	B	BL
1		1						
2					1			
3	6	4	1					
4	5	8		4			1	
5	4		2					
6			2		1			
7	4							