

## Annual report for HSU ML: August 2007 to May 2008

### Faculty Research 2007-2008

1. **Frank Shaughnessy, Greg Crawford, Steve Steinberg, Tim Mulligan.** Humboldt CICORE (Center for Integrative Coastal Observation, Research and Education).

### MS Thesis Projects Completed 2007-2008

1. **Ashok Sadrozinski.** Cross-shelf ichthyoplankton distributions in relation to hydrography off northern California, with special attention to larval rockfishes. Dr. Bjorkstedt advisor.

### MS Thesis Projects in Progress 2007-2008

1. **Mark Lomeli.** Site fidelity of juvenile black rockfish, *Sebastes melanops*, in intertidal waters of northern California. Dr. Mulligan advisor.
2. **Jolyon Walkley.** Habitat utilization of fishes in Fourmile Creek, Upper Klamath Lake, Oregon. Dr. Mulligan advisor.
3. **Kirsten Acker.** Correlating Fish Populations to physical parameters in two eelgrass beds, Humboldt Bay, California. Dr. Mulligan advisor.
4. **David Kyle.** Movement patterns of bat ray (*Myliobatis californica*) and surfperch (Embiotocidae) near commercial oyster beds in Humboldt Bay, California. Dr. Mulligan advisor.
5. **Matthew Nelson.** Species richness, predation, and invasion resistance in subtidal marine communities in Humboldt Bay, California. Dr. Craig advisor.
6. **Gregory O'Connell.** Who is chlorophyll-a? The composition of fluorescence readings from Humboldt Bay, California. Dr. Shaughnessy advisor.
7. **David Franklin.** *Darlingtonia californica* fens and fire: a comparative analysis of techniques for detecting nitrogen in a heterogeneous serpentine landscape. Dr. Abell, Dr. Jules advisors.

### Undergraduate Student Projects

#### Summer 2007

#### Senior Thesis, BIOL 490

1. **Julie Koepfel.** Diet of three species of *Mopalia* chiton in Humboldt Bay, California. Dr. Craig advisor
2. **Kyle Derr.** Patterns of larval settlement in Trinidad Bay, California. Dr. Donahue advisor.

## Summer and Fall 2007

### Senior Field Cruise, OCN 495

1. **Ben Gire, Anne Williamson, Patrick Buckwalter, Yuko Yokozawa, Simon Kang.** Upwelling of Iron from the Eel River along the Northern California continental shelf. Dr. Abell, Dr. Goldthwait advisors

## Fall 2007

### Senior Thesis, BIOL 490

1. **Robert Koepfel.** Diversity of invertebrate species within mussel beds of Elk Head, Trinidad, California. Dr. Craig advisor.
2. **Amber Taylor.** Elytron Growth in the scaleworm *Halosydna brevisetosa*. Dr. Craig advisor.

### Directed Study, FISH 499

1. **Colby Johnson, Jacob Stagg.** Experimental development of self-producing populations of white cloud mountain fish (*Tanichthys albonubes*): effects of substrate and spawning materials. Dr. Hankin advisor.

### Biological Oceanography, OCN 310

1. **Gregory O'Connell, Lisa Eigner.** Testing the vertical structure of phytoplankton at CICORE (Center for Integrative Coastal Observation, Research and Education) data loggers. Dr. Goldthwait.

## Winter 2007-2008

### Senior Thesis, BIOL 490

1. **Jacob Huggins.** Role of varices in prey detection and acquisition in *Ceratostoma foliatum*. Dr. Craig advisor.

## Spring 2008

### Senior Project, OCN 499

1. **Ben Gire.** Variability in chaetognath abundances off Trinidad, California. Dr. Goldthwait, Dr. Bjorkstedt advisors.

### Directed Study, FISH 499

1. **Colby Johnson.** Experimental development of self-producing populations of fairy cichlid (*Neolamprologus brichardi*): effects of substrate and spawning materials. Dr. Hankin advisor.

### **Intertidal Ecology (BIOL 430) projects 2008**

1. Colin Wardman, Noelle Boring, Katie Mulder. Raising the red octopus, *Octopus rubescens*. Dr. Craig advisor.
2. Emily Wilson, Susan Sebring. Optimum depth at which facilitation, by *Watersipora subtorquata*, occurs in the fouling community of Humboldt Bay, California. Dr. Craig advisor.
3. Brian Starks, Lacy-Jean Rhodes. The madreporite function as it relates to salinity in *Pisaster ochraceus*. Dr. Craig advisor.
4. Kyle Wakeman, Narineh Nazarian. The effects of temperature on the growth rate of the purple urchin *Strongylocentrotus purpuratus*. Dr. Craig advisor.
5. Joe Armento, Brent Warner. Chemical and structural defense in algae as deterrent to herbivory in the black turbin snail *Tegula funebris*. Dr. Craig advisor.
6. Alex Godinez, Mark Morrissette. The role of claw size as it relates to predation on porcelain crabs (*Petrolisthes* spp.) by shore crabs (*Hemigrapsus* spp.) and rock crabs (*Cancer* spp.). Dr. Craig advisor.
7. Daniel Raemer. The effect of temperature on the growth and mineral content of barnacles (*Balanus* sp.). Dr. Craig advisor.
8. Ian Prothero. The effect of dissolved phosphates on the growth of the bay mussel. Dr. Craig advisor.
9. Andrew Klock, Kyle Franklin. Preferential feeding of the sea star *Pycnopodia helianthoides* on injured and uninjured sea urchins (*Strongylocentrotus* sp.)
10. Randy Renn, Erin Fillmore. Hermit crab shell preference. Dr. Craig advisor.

### **Mariculture (FISH 375) projects 2008**

1. Brian Pike. Spawning and rearing of the clown fish *Amphiprion ocellaris* and the sea horse *Hippocampus reidii*. Dr. Mulligan advisor.

### **3. Service**

a) Tours

b) Projects- Grant helped obtain a second large squid specimen, a Humboldt squid (*Dosidicus gigas*), that he fixed and preserved for public display. It now resides in a 50 gallon aquarium in room 121 at the HSU marine laboratory with another large preserved squid (*Onychia robusta*).

Grant constructed an eight foot long flume with linear flow for a senior thesis project (The role of varices in prey detection and acquisition in *Ceratostoma foliatum*. Jacob Huggins).

Grant repaired Dr. Mulligan's 6' deep, 150' long beach seine that was extensively damaged.

Grant collects and sends samples of razor clam meat to the Department of Public Health Services Microbial Disease Laboratory in Richmond, CA to be tested for the presence of domoic acid, a poisonous toxin. This is strictly voluntary to supply much needed data from Humboldt County that is currently lacking.

c) Events

d) Monthly Summary of Visitor log

## 4. Operations

### Aquarium:

#### Maintenance-

Grant does most of the maintenance on the aquaria, especially during the summer months. During the school year, he usually has plenty of student help feeding and cleaning the aquaria, but during the summer Grant takes over many of those responsibilities. He also does most of the culturing of organisms to feed the aquarium animals. The 3 species of algae (*Tetraselmis*, *Isochrysis* and *Nannochloropsis*), brine shrimp (*Artemia*) and rotifers (*Brachionus*) are also used in various courses and to feed research animals.

Grant completely gutted and rebuilt the southern California and the subtidal display aquaria that were overdue for a good maintenance cleaning.

#### New acquisitions-

9/11/07- The Trinidad Rancheria began pulling in the summer moorings in the bay and donated an octopus (*Octopus rubescens*).

9/18/07- The Rancheria donated 5 saddleback gunnels (*Pholis ornata*) and 3 hermit crabs (*Pagurus granosimanus*).

9/19/07- The Rancheria donated a young giant pacific octopus (*Enteroctopus dofleini*)

9/24/07- The Rancheria donated a juvenile wolf eel (*Anarrhichthys ocellatus*)

11/6/07- Two silverspot sculpins were caught and donated by the fish ecology class.

2/28/08- A hagfish was donated by a student. Her husband got it in a crab pot bait container.

#### Exchanges-

No exchanges were made this year.

c) Repair issues resolved-

A new chest freezer was purchased in August 2007 to replace the Ward chest freezer which has been tripping GFI breakers. The new freezer is an energy star rated Kenmore model #253. It was located in room 111 which is less corrosive than the old location in the wet lab.

d) Repair issues remaining-

All of the hallway aquaria need to be replaced. They are part of the original building (1965) and are constructed of steel frames covered in fiberglass. In several places, salt water has gotten into the steel frame, causing corrosion and expansion, which has caused further damage. Many of the screws that hold the glass windows in place have corroded away. I suspect that silicone and water pressure are what is holding many of the aquaria together.

The netting that covers the aquaria to prevent the fish from jumping out is 11 years old and needs to be replaced as it is disintegrating. Some of the frames that support the netting need minor repair as well.

e) Other-

The marine laboratory was inspected twice by the Institutional Animal Care and Use Committee (IACUC). The first inspection was conducted on 10/17/07 by Dr. Rick Brown and Dr. Steve Smith. The second inspection was also conducted by Dr.'s Brown and Smith on 3/07/08. We passed both inspections with no deficiencies. The IACUC protocols that were in effect for projects conducted at the marine laboratory this year include:

1. Directed Study (FISH 499)- Colby Johnson, Jacob Stagg. Experimental development of self-producing populations of white cloud mountain fish (*Tanichthys albonubes*): effects of substrate and spawning materials. Dr. Hankin project leader. Approved 8/31/07.
2. Renewal from 1/04/06. PaCOOS NorCal: Ocean observing off Northern California. Dr. Bjorkstedt project leader. Approved 1/28/08.
3. Mariculture (FISH 375) – Ornamental fish culture/breeding of longsnout seahorse (*Hippocampus reidi*), clownfish (*Amphiprion ocellaris*), and green banded goby (*Gobiosoma multifasciata*). Dr. Mulligan project leader. Approved 3/12/08.
4. Renewal from 3/22/07. Master's Thesis (FISH 690) Mark Lomeli – Site fidelity and homing behavior of young-of-the-year rockfish (*Sebastes*) in rocky intertidal areas of northern California. Dr. Mulligan project leader. Approved 3/17/08.
5. Renewal from 3/13/07(FISH 375 & FISH 435) – Growth of juvenile surfperch at Telonicher Marine Lab. Tim Mulligan project leader. Approved 3/17/08
6. Early Life History (FISH 540)- Developmental patterns of the sheepshead minnow, *Cyprinodon variegatus*. Dr. Helen Mulligan project leader. Approved 3/27/08.

## **Marine Lab Maintenance and Repair**

### Issues Resolved:

1. Installed 6 new computers in the Student Computer Lab
2. Moved all ML computers over to HSU-AD
3. Replaced coupler and brake actuator on the pontoon boat trailer.
4. Replaced outboard engine on Commander with Evinrude E-tec 50 hp.
  - a. Replaced gauges and cables on Commander.
5. Replaced axle on pontoon boat trailer
6. Wetlab sliding door was repaired by Plant Ops.
7. Pontoon Boat haul out June 12, 2007. Pontoon Boat back in the water July 19.
  - a. Engine tune-up
  - b. Clean and re-paint pontoons.
8. Purchased computers and server for Coral Sea (NSF Grant).
9. Key card lock installed on back door of main hallway.
10. Pontoon Boat haul out February 8, 2008. Pontoon Boat back in the water February 22.
  - a. Replace hydraulic engine tilt
  - b. Install mounting apparatus for the ADP current profiler.

### Repair Issues Remaining:

1. Rebuild/Replace pipe rack
2. Ice Machine

### Plans for 2008/09:

1. Annual summer clean-up inside lab
2. Annual summer clean-up outside (mainly back parking lot area)
3. Build net hanger for trawl nets, seines and gill nets. Locate on cement wall.

Student Personnel at the Marine Lab

Current:

Emily Xanders	Lab Technician	hired 1/17/06
Natalie Grace	Lab Technician	volunteer service 4/13/07 to 8/20/07 hired 8/21/07
Jennifer Kavanaugh	Lab Technician	volunteer service 5/21/07 to 8/20/07 hired 8/21/07

New Hires:

Vanessa Guerra	Lab Technician	hired 1/22/08
Susan Sebring	Lab Technician	volunteer service starting 5/19/08

Graduating:

Alyssa Firkus,	Lab Technician	hired 1/17/06 Alyssa will work through May 2008
Zoe Dagan,	Marine Naturalist	hired 3/5/07 Zoe will work through August 2008

### HSU Marine Lab Filter Backwash Schedule

CLOSE VALVE TO SEND WATER TO STORAGE TANKS BEFORE TAKING READINGS

Flow Rate (gpm) & Pressure (psi)

switch pump every 3 months

DATE	System Flow Rate		PUMP PRESSURE		PRESSURE IN		PRESSURE OUT		LAB PRESSURE		PUMP #	BACKWASH	
	before	after	before	after	before	after	before	after	before	after		Time (min)	Flow Rate
5/9/07	90.0	114.0	40.0	38.5	41.0	34.5	36.0	36.0	28.5	31.5	1	20	340
6/6/07	111.0	n/a	38.5	36.5	29.0	30.0	36.5	36.5	23.0	27.0	1	10	350
6/26/07	99.0	115.0	39.0	38.0	31.5	32.0	37.0	37.0	27.0	30.0	1	10	360
8/29/07	80.0	118.0	42.0	39.0	35.0	38.0	29.5	30.0	24.5	35.0	1 --> 2	20	330
10/24/07	90.0	106.0	41.0	40.0	41.5	36.0	27.5	27.5	31.0	32.5	2	20	320
12/12/07	87.0	109.0	40.0	37.0	35.0	34.0	27.0	27.5	22.5	29.0	2 --> 1	20	340
2/11/08	n/a	110.0	41.0	38.5	35.0	34.5	29.5	29.5	24.5	30.0	1	20	323
4/1/08	n/a	145.0	37.0	34.0	26.0	33.0	29.0	29.5	17.0	27.5	1 --> 2	10	340
5/15/08	105.0	125.0	41.0	39.0	32.0	30.0	33.0	34.0	21.0	28.0	2	20	340
												Total	Gallons
												150	50,350

**Marine Lab Technician Purchasing 2006/07**

<b>Lottery Funds (TU006)</b>								
<u>Vendor</u>	<u>Description</u>				<u>Date</u>	<u>Amount*</u>		
Englund Marine	9 PFD's work vests				10/8/07	377.70		
Fabcast	Axle for Pontoon boat trailer				11/15/07	109.67		
BRP, Inc	Parts Catalog				11/28/07	21.66		
Mundo Corp	Wireless Notebook Adapter				11/27/07	58.96		
BRP, Inc	50hp for Commander and misc boat stuff				1/24/08	6,362.86		
	3 computers				10/31/06	3,467.94		
						<b>Lottery TOTAL</b>		<b>10,398.79</b>
<b>Operating Expense (HM500)</b>								
True Value Hardware	Blanket P.O. for misc. items				7/2/07	500.00		
Bedliners Plus	Undercoating for ML truck				7/12/07	180.44		
Schir Parts (NAPA Auto)	Spark plugs for pontoon boat				7/11/07	16.22		
Costco	Receiver hitch for ML truck				7/10/07	214.46		
Englund Marine	Salt Terminator & misc for pontoon boat				7/10/07	59.09		
CDW-G	Presentation cart & mouse for projector				6/29/07	261.68		
Performance Center	Tie Downs for bed of ML truck				6/26/07	70.69		
Precision Fit	Truck seat covers				6/25/07	202.65		
Eastern Marine (Trailer Parts Superstore)	Coupler for pontoon boat trailer				7/25/07	157.57		
Lincoln Commercial Pool Equip.	Stark effluent pressure gauge				8/29/07	122.67		
Amazon.com	Computer notebook lock				8/29/07	57.35		
BRP, Inc	90 hp outboard for pontoon boat*				2/21/08	245.68		
Aqua Logic, Inc	8 Insulated Aquarium tanks*				2/25/08	81.19		
BRP, Inc	Control Cables for Commander				3/4/08	86.16		
Quality Control Services	Service Balances				4/8/08	585.00		
Purina Mills	Mazuri Gel Diet				4/11/08	57.59		
BRP, Inc	Misc Boat Supplies				5/7/08	633.91		
						<b>OE TOTAL</b>		<b>3,532.35</b>
<b>Student Lab Fees - Fall 2007</b>								
Aqua Logic	3 Insulated Aquariums				7/23/07	1,607.64		
Wildco	Messenger for alpha bottle				7/24/07	56.00		
Sigma-Aldrich	chemicals				7/24/07	109.75		
Fisher Scientific	Misc. Lab Supplies				8/15/07	424.24		
Fisher Scientific	Millipore filters				9/21/07	99.10		
<b>Student Lab Fees - Spring 2008</b>								
Reed Mariculture	Copepods & food				1/15/08	253.94		
Fisher Scientific	Misc. Lab Supplies				1/9/08	702.26		
Florida Aqua Farms	Micro Algae grow & rotifers				1/4/08	56.19		
UTEX	Algae Cultures				1/7/08	140.00		
Bulb Connection	UV Bulbs				1/4/08	29.59		
Aquatic Research Organisms	Sheephead Minnow				1/4/08	201.15		
Aquarium Plant	Bulbs for eelgrass tank				1/10/08	179.98		
Foster & Smith	Aquarium supplies				1/3/08	161.61		
Reichert, Inc	Stage Plates for dissecting scopes				1/7/08	111.54		
Olympus	Image Software for scopes in 114				1/8/08	114.75		
						<b>SLF TOTAL</b>		<b>4,247.74</b>
<b>ML Equipment Trust Account (TV028)</b>								
Petty Cash Reimbursement	Painting supplies for pontoon boat				7/5/07	39.04		
	computers (combined with lottery funds)				10/31/06	78.01		
	Misc. Hardware and fasteners				10/11/06	265.53		
	Fish food for projects & aquariums				2/19/07	468.83		
	Video Card				7/11/06	205.62		
	Parts for Spectrophotometer				4/4/07	92.95		
	Hardware for Trawl Doors				4/4/07	169.75		
	Service and Calibrate Balances				5/16/07	520.00		

							<b>ML Equip. Trust TOTAL</b>	<b>1,839.73</b>
<b>CNRS Equipment Augment</b>								
	BRP, Inc			90 hp outboard for Pontoon Boat*			2/21/2008	5,800.00
	Aqua Logic, Inc			8 Insulated Aquarium tanks*			2/25/2008	4,301.90
*note: dollar amounts from my original purchase orders or pcc; not from CMS. May not include tax and shipping.								
							<b>Above Accounts TOTAL</b>	<b>20,018.61</b>

## Spring 2008 Boating Safety Activity Report

During the Spring Semester 2008 the Humboldt State University Academic Boating Safety Program has accumulated the following information:

- 47 Boating Days
  - 18 -Academic Purpose
  - 7 –Training Purpose
  - 22-Athletic training (Men’s Crew)
- 111 Users during those days
- 153 Hours of operation
- 1-Boating Safety Course- 12 Person enrollment

### HSU Projects Assisted-9

1-Boating Safety Course with an enrollment of 12 persons

3-University courses

3- Contract Projects

1-Graduate Student Project

1-Athletic Club Sport

### Departments Assisted-4

Marine Lab

Kinesiology/ Physical Education

Fisheries

Oceanography

## **R/V Coral Sea Annual Report 2008**

### **2007/2008 Overview**

Progress continues in upgrades and completion of past deferred maintenance items aboard R/V Coral Sea. Below is a list of completed projects for fiscal year 2007/2008 as well as objectives for the upcoming fiscal year.

### **Goals for 2007/2008**

- Continue with and increase contract work opportunities.  
There are several additional contract possibilities for 2008/2009 involving NOAA in the area of the Klamath River and with an offshore buoy project with Jeff Abell. PaCOOS cruises will also continue and there may be significant future work involving the evolving offshore energy wave buoy projects.  
There is also the possibility of future work with Oregon State University if contract discrepancies between the states can be resolved.
- Increase the number of HSU academic cruise opportunities through increased contract cruise funding. Through more funding and contract revenues Coral Sea was able to increase the number of HSU academic cruises from 27 the previous year to 36 for 2007-2008. Student numbers also increased from 483 the previous year to 551 for 2008-2008.
- Ship yard for summer 2008, Sand blast Coral Sea bottom to bright metal and renew all bottom barrier and anti-fouling paint coatings. Install all necessary thru-hull transducers for equipment received on NSF grant. Estimated duration of ship yard is 2-3 weeks.  
All of the above is scheduled to occur at the Fred Wahl Marine shipyard in Oregon Between July 21 and August 09, 2008.
- 2007/2008 Purchase extended warranty for new Cummins KTA19 engines.  
This objective was abandoned due to the exorbitant cost.
- 2007/2008 Purchase a new inflatable rescue skiff for Coral Sea.  
Due to priorities in other areas purchase of the inflatable rescue skiff has not occurred as of this date and will remain on the objective list.
- 2007/2008 Retrofit and increase berthing accommodations on Coral Sea.  
This project has been put on hold at the moment due to priority issues and time spent concentrating on installation of the new Oceanographic equipment purchased through the NSF grant.
- 2007/2008 Purchase and install new aluminum water tight hatches (doors) for bridge of Coral Sea.  
This project is moving up on the priority list but due to the estimated \$10k for purchase of the hatches, the project is on hold.
- Installation of all new oceanographic equipment acquired through the NSF grant.  
This project is currently on going with completion expected during shipyard 2008.
- 2007/2008 Replace 2000 meters stainless 3/16" hydrographic winch wire.

- New galvanized 3/16" hydrographic wire was installed February 2008.
- 2007/2008 Replace 1000 meters stainless 7/16" main winch wire.  
This project remains to be completed and will move up on the priority list as necessity and finances allow.

### **Additional Progress**

In addition previous goals, progress was made in other areas of long term goals with purchase and installation of the following. Some of this equipment was purchased through the NSF grant.

- New Northern Lights 55Kw Generator set installed in place of retired 471 Detroit Diesel Bow Thruster engine. Bow thruster hydraulics re-plumbed to port side Cummins 4BTA generator engine after removal of the AC electrical generator.
- Furuno FA-150 AIS system
- Furuno SC-60 Satellite Compass system
- Furuno RD-30 weather system and associated items for both bridge and lab
- Nuvico Digital Video Recorder with 19" View Sonic monitor and 8 remote cameras for safety and security of deck areas as well as unmanned lower areas of vessel
- ICOM, IC-M304 VHF radio for aft control station
- Philips 32" monitor for dry lab computer network
- Teledyne RD Instruments WH Mariner 300 KHz Coastal Vessel Mounted ADCP
- General Oceanics Inc. Model 1000DT Double Trip hydro wire mechanism
- YSI Inc. Dissolved Oxygen, Salinity, Conductivity, Temperature instrument with Calibrator, membrane and case
- Sound Ocean Systems Inc. Eco Winch with real Dataline cable and associated items
- Sea Bird Electronics Sea Logger CTD with SBE #25 cable, Dissolved oxygen sensor #25-5c, Underwater power data interface module #25-7a, CTD deck unit #36 and Micro Thermosalinograph SBE45
- Ocean Instruments Inc. CUFES (Constant Underway Fish Egg Sampler) system with inboard box system
- 208 3 phase AC dry pump system for CUFES
- National Instruments Co. Lab View Software full development system with Lab View Application Builder, Lab View Report generator, NI-USB-6259M, SH68-68-EP shielded cable and Data acquisition tutorial kit
- Aluminum Fish Sorting table
- Coral Sea now has a total of 32 PFD Type V work vests on board enabling all groups and crew of 32 or less to wear a PFD throughout the entire cruise thus enhancing safety aboard the vessels.

### **Contract Cruises 2007/2008**

Coral Sea actually experienced a slight decline in contract work revenues from the previous year for a variety of reasons such as expiring ongoing grant projects, NOAA budget cuts and the inability to successfully negotiate contract and insurance specifics at the Risk Management level. It should be noted that the inability to negotiate specifics was through no fault of HSU Risk Management.

There were a total of 22 contract work days which is more than the number of contract days from the previous year and generated gross revenues in excess of \$60k. Gross revenues were less than 2006/2007 due to shorter duration contracts. Of that total there were 7 PaCOOS cruises generating total revenues in excess of \$28k. There was also a missed opportunity with Oregon State University for several days of work due to contract complications. In addition there were other interested users from OSU that will be unable to use Coral Sea unless these contract issues can be resolved.

### **Academic Cruises 2006/2007**

Through additional funding and contract revenues, Coral Sea was able to increase the number of HSU academic cruises from 27 in 2006/2007 to 36 for 2007-2008. Student numbers also increased from 483 in 2006/2007 to 551 for 2008-2008.

The 2008 Senior Cruise will occur the last week of May and will be conducting 3 days of operations off of the Klamath River. Eric Bjorkstedt will be funding 1 additional day of operations, conducting NOAA operations with HSU students on the 4<sup>th</sup> day. I would strongly recommend that future Senior Cruises have some type of funding attached to help offset the cost burden to the vessel. A cost/benefit analysis should be considered in planning these cruises as they consume a considerable amount of the annual operating budget. Fuel costs for the 2008 Senior Cruise are expected to be between \$5,500-\$6,000 for a total of 4 students. Crew costs should be an additional \$600-700.

### **2006/2007 Ships Log**

See attached.

### **Crew**

Crew for 2007/2008 consisted entirely of HSU students. One student holds a USCG Masters License and has been training in vessel maneuvering which will enable him to serve as a Mate when needed.

There are several issues that will need to be addressed for the year 2008/2009.

#1, ALL crewmembers employed aboard R/V Coral Sea will be required to hold a U.S. Coast Guard Merchant Mariners Document (MMD). Due to the vessel being

documented as over 100 Gross Tons, there is a Federal Regulation (CFR 46 Part 12.02-7) requiring ALL crew members hold a current MMD.

#2, New Federal Regulations that become effective April 15, 2009 require ALL crewmembers to hold a current Transportation Workers Identification Credential (TWIC). This is a security clearance card that is issued by TSA and will require TWO trips to a TSA TWIS center to acquire. The cost will be approx. \$140 per crewmember plus transportation costs because the nearest TWIC center is in Oakland CA. at this time. Hopefully a TSA TWIC center will open closer to Eureka in the near future but we should plan on some travel expenses at this time. My recommendation is that we pay for the TWIC cards for me, Chris Seitz and Ben Martin. I and Ben Martin currently hold a valid MMD however; Chris Seitz will require a valid MMD as well. At this time I have notified HR Tammy Curtis of the situation with the requirements for Chris Seitz. Tammy is researching the technicalities involved in requiring Chris Seitz to hold a MMD to maintain his employment as a crewmember aboard Coral Sea. The deadline for ALL crewmembers to have a current MMD is August 1, 2008.

#3, Due to all of the above requirements it is going to be difficult to recruit student crewmembers in the future. To serve as a crewmember aboard Coral Sea it will take a financial commitment from the students plus the time and hassle factor of acquiring all of the necessary documents.

#4, The HSU 20 hour rule policy is going to become more problematic as we expect to have a much smaller student deckhand pool to draw from. With an average 12 hour work day on weekends per cruise and additional weekday maintenance work it is extremely difficult to stay within the confines of the 20 work week especially if we are going to have less deckhand next year.

#5, If we are going to continue to increase the number of contract cruise days it will also become necessary to have an alternate Captain and Engineer available to handle the additional work load.

### **Goals for 2008/2009**

- Continue with and increase contract work opportunities. With a number of new Oceanographic instruments aboard the vessel, some of which are very unique except for NOAA vessels, expectations will be high that we can attract new users in the years to come.
- Increase the number of HSU academic cruise opportunities through increased contract cruise funding.
- Purchase a new inflatable rescue skiff for Coral Sea.
- Retrofit and increase berthing accommodations on Coral Sea.
- Purchase and install new aluminum water tight hatches (doors) for bridge of Coral Sea.
- Replace 1000 meters stainless 7/16" main winch wire.

**Future Goals:**

- Weather fax system for bridge.
- Replacement starboard AC generator.
- Acquire & install EEBD's (Emergency Escape Breathing Device's) in bunk areas and machinery space.
- Installation of a Carolina Cockpit or similar at aft engine control station to enable the installation of minimal electronic navigation equipment for operations from the aft station and offer protection from the elements.

**Coral Sea daily rates:**

R/V Coral Sea daily rates were last revised in 2006 at which time fuel costs were less than \$3.00 per gallon including tax. As of May 19, 2008 fuel costs are \$4.77 including tax. I would recommend that a fuel tariff or surcharge be applied to all contract cruises effective immediately. Fuel tariff or surcharges would be based on hours of actual operation and added to the total due at the end of the cruise. I would recommend that the tariff/surcharge rates be posted on the website as soon as possible. The below rates are based on the increased cost since the \$3.00 fuel cost. Below is a sample of the fuel tariff/surcharge.

<b>Fuel Surcharge in addition to posted daily rates. Average fuel burn for R/V Coral Sea is 20 gallons per hour. The below rates are based on the average 20 gallon per hour fuel burn. Please call for current surcharges. Fuel surcharges will be calculated at the end of contract.</b>	
<b>Fuel Cost Per Gallon including tax</b>	<b>Surcharge per hour operation</b>
\$3.25	\$5
\$3.50	\$10
\$3.75	\$15
\$4.00	\$20
\$4.25	\$25
\$4.50	\$30
\$4.75	\$35
\$5.00	\$40
\$5.25	\$45
\$5.50	\$50
\$5.75	\$55
\$6.00	\$60
\$6.25	\$65
\$6.50	\$70
\$6.75	\$75
\$7.00	\$80

R. Scott Martin  
Captain  
R/V CORAL SEA

Cruise #	Date Begin	Date End	Days	User	Class	Chief Sci
cs060507	6/5/2007	6/5/2007	1	CH2MHILL	No	Higgins
cs060607	6/6/2007	6/6/2007	1	CH2MHILL	No	Higgins
cs062907	6/29/2007	6/29/2007	1	NOAA PaCOOS	No	Bjorkstedt
cs070307	7/3/2007	7/3/2007	1	OCN495	OCN495	Abell
cs071407	7/14/2007	7/15/2007	2	RSNP Contract	No	Mulligan
cs091407	9/14/2007	9/15/2007	1	FISH435	FISH435	Mulligan
cs092907	9/29/2007	9/30/2007	1	NOAA, Squid Trip	No	Bjorkstedt
cs093007	9/30/2007	9/30/2007	1	Wildlife365	Wildlife365	Colewell
cs100607	10/6/2007	10/6/2007	1	OCN310/340	OCN310/340	Borgeld
cs100707	10/7/2007	10/7/2007	1	ZOO356/556	ZOO356/556	Goley
cs100807	10/8/2007	10/8/2007	1	CH2MHILL	No	Hope
cs101307	10/13/2007	10/13/2007	1	OCN109	OCN109	Crawford
cs101307	10/13/2007	10/13/2007	1	OCN109	OCN109	Crawford
cs101407	10/14/2007	10/14/2007	1	FISH380	FISH380	Kinzinger/Mulligan
cs102007	10/20/2007	10/20/2007	1	OCN109	OCN109	Genger/Abell
cs102007	10/20/2007	10/20/2007	1	OCN109	OCN109	Genger
cs102107	10/21/2007	10/21/2007	1	OCN109	OCN109	Abell
cs102107	10/21/2007	10/21/2007	1	OCN109	OCN109	Abell
cs102707	10/27/2007	10/27/2007	1	FISH335/435	FISH335/435	Mulligan
cs102807	10/28/2007	10/28/2007	1	OCN109	OCN109	Borgeld
cs102807	10/28/2007	10/28/2007	1	OCN109	OCN109	Borgeld
cs110407	11/4/2007	11/4/2007	1	ZOO356/556	ZOO356/556	Goley
cs110807	11/8/2007	11/8/2007	2	NOAA PaCOOS	No	Bjorkstedt
cs110907	11/9/2007	11/9/2007	1	HSU Photo Shoot	No	
cs111107	11/11/2007	11/11/2007	1	Shasta College	No	Reed
cs120107	12/1/2007	12/1/2007	2	Sea Well Project	No	Schieberl
cs121107	12/11/2007	12/11/2007	2	NOAA PaCOOS	No	Bjorkstedt
cs020908	2/9/2008	2/9/2008	1	OCN260	OCN260	Abell
cs021608	2/16/2008	2/16/2008	1	OCN320/330	OCN320/330	Abell
cs021708	2/17/2008	2/17/2008	2	NOAA PaCOOS	No	Bjorkstedt
cs030208	3/2/2008	3/2/2008	1	USCG Helo Ops.	No	None
cs030508	3/5/2008	3/6/2008	2	NOAA PaCOOS	No	Bjorkstedt
cs030808	3/8/2008	3/8/2008	1	OCN109	OCN109	Goldthwait/Borgeld
cs030808	3/8/2008	3/8/2008	1	OCN109	OCN109	Goldthwait
cs030908	3/9/2008	3/9/2008	1	OCN109	OCN109	Goldthwait
cs030908	3/9/2008	3/9/2008	1	OCN109	OCN109	Goldthwait
cs031508	3/15/2008	3/15/2008	1	OCN260	OCN260	Abell
cs040408	4/4/2008	4/4/2008	2	FISH540	FISH540	Mulligan
cs040608	4/6/2008	4/6/2008	1	OCN260/320/330	OCN260/320/330	Abell
cs041208	4/12/2008	4/12/2008	1	Wildlife365	Wildlife365	Colewell
cs041308	4/13/2008	4/13/2008	1	OCN260	OCN260	Abell
cs042308	4/23/2008	4/23/2008	1	Sea Grant	NO	Quackenbush
cs042708	4/27/2008	4/27/2008	1	OCN330	OCN330	Abell
cs050308	5/3/2008	5/3/2008	1	OCN260	OCN260	Abell
cs051008	5/10/2008	5/10/2008	1	Shasta College	No	Reed
cs051608	5/16/2008	5/17/2008	2	NOAA PaCOOS	No	Bjorkstedt
cs052708	5/27/2008	5/29/2008	3	Senior Cruise	OCN495	Goldthwait
cs053008	5/30/2008	5/30/2008	1	NOAA	No	Bjorkstedt

	Operations	Area or Lat/Long
Cruise #	Evergreen Pulp Mill Outfall line, Smith Mac Grab, Drogues	1 nm offshore Samoa Pos: 40 49.569N, 124 12.987W
cs060507	Evergreen Pulp Mill Outfall line, Smith Mac Grab, Drogues	1nm offshore Samoa Pos: 40 49.073N, 124 13.264W
cs060607	Bongo Nets, CTD, Paravet Net	Pacific W. of Trinidad Head to 28nm
cs062907	Rosette, Niskin Bottles, CTD, Smith Mac Grab	Pacific to 14nm W. of Eureka
cs070307	Bottom Trawl Net, Plankton Net, Hook & Line	Redwood National Park Trinidad Head and Crescent City
cs071407	Bottom Trawl Net, Plankton Net, Hook & Line	12 nm West of Humboldt Bay
cs091407	Hook & Line Humboldt Squid	Eel Canyon 12nm SW of Humboldt Bay
cs092907	Wildlife viewing	Eel Canyon 16nm SW of Humboldt Bay
cs093007	Bongo & Plankton Nets, Smith Mac Grab, Box Corer	
cs100607	Whale Viewing	10nm SW of Humboldt Bay
cs100707	Evergreen Pulp Mill Outfall line, Smith Mac Grab, Drogues	1nm offshore Samoa Pos: 40 49.073N, 124 13.264W
cs100807	Smith Mac Grab, Secci Disk, Plankton Net	Humboldt Bay Sea Buoy
cs101307	Smith Mac Grab, Secci Disk, Plankton Net	Humboldt Bay Sea Buoy
cs101307	Bottom Trawl Net	12nm West of Humboldt Bay
cs101407	Smith Mac Grab, Secci Disk, Plankton Net	Humboldt Bay
cs102007	Smith Mac Grab, Secci Disk, Plankton Net	Humboldt Bay
cs102007	Smith Mac Grab, Secci Disk, Plankton Net	Humboldt Bay
cs102107	Smith Mac Grab, Secci Disk, Plankton Net	Humboldt Bay
cs102107	Bottom Trawl	12nm West of Humboldt Bay
cs102707	Smith Mac Grab, Secci Disk, Plankton Net	Humboldt Bay Sea Buoy
cs102807	Smith Mac Grab, Secci Disk, Plankton Net	Humboldt Bay Sea Buoy
cs102807	Whale Viewing	10nm SW of Humboldt Bay
cs110407	Bongo Nets, CTD, Paravet Net	W. of Trinidad Head 28nm
cs110807	HSU Photo Shoot of R/V Coral Sea	Humboldt Bay
cs110907	Bottom Trawl, Smith Mac Grab, Plankton Net	4nm N. of Humboldt Bay
cs111107	Main deck winch & Knuckle Boom Crane	Eel Canyon 14nm SW of Humboldt Bay
cs120107	Bongo Nets, CTD, Paravet Net	West of Trinidad Head 28nm
cs121107	Rosette, Niskin Bottles, CTD	Humboldt Bay
cs020908	Rosette, Niskin Bottles, CTD	Humboldt Bay
cs021608	Bongo Nets, CTD, Paravet Net	West of Trinidad Head 28nm
cs021708	USCG Helecopter training operations	Humboldt Bay
cs030208	Bongo nets, Paravet & CTD	West of Trinidad Head 28nm
cs030508	Smith Mac Grab, Secci Disk, Plankton Net	Humboldt Bay Sea Buoy
cs030808	Smith Mac Grab, Secci Disk, Plankton Net	Humboldt Bay Sea Buoy
cs030808	Smith Mac Grab, Secci Disk, Plankton Net	Humboldt Bay Sea Buoy
cs030908	Smith Mac Grab, Secci Disk, Plankton Net	Humboldt Bay Sea Buoy
cs030908	Rosette, CTD	Humboldt Bay
cs031508	Kidd Issacs Trawl	Eel Canyon
cs040408	Smith Mac Grab, Rosette, CTD	
cs040608	Wildlife viewing	Eel Canyon
cs041208	Rosette, Niskin Bottles, CTD	16nm West of Humboldt Bay
cs041308	Sea Grant Humboldt Bay Symposium	S. Humboldt Bay
cs042308	Rosette, CTD, Niskin Bottles	16nm West of Humboldt Bay
cs042708	Rosette, CTD, Bongo, Plankton	12 nm West of Humboldt Bay
cs050308	Otter Trawl, Smith Mac,	Pacific West of Samoa & out to 10nm
cs051008	Bongo net, Rosette, CTD, Niskin bottles, Paravet net	West of Trinidad Head 28nm
cs051608	Bongo net, Rosette, CTD, Niskin bottles, Paravet net	Pacific Ocean, Klamath River
cs052708	Bongo net, Rosette, CTD, Niskin bottles, Paravet net	Pacific Ocean, Klamath River

Cruise #	Hours	Contract	Crew	Students	Visitors
cs060507	6.5	Yes	3	0	2
cs060607	10.5	Yes	3	0	2
cs062907	12.25	Yes	3	0	3
cs070307	9	No	3	5	0
cs071407	26	Yes	3	0	7
cs091407	9.25	No	5	26	0
cs092907	8.5	Yes	4	0	9
cs093007		No	4	25	0
cs100607	6.5	No	4	14	0
cs100707		No	4	13	1
cs100807	12	Yes	3	0	2
cs101307	3.5	No	4	23	0
cs101307	4	No	4	22	0
cs101407	8.5	No	4	18	0
cs102007	3.5	No	4	27	0
cs102007	3.5	No	4	18	0
cs102107	3.5	No	4	20	0
cs102107	3.5	No	4	24	0
cs102707	7.5	No	4	17	0
cs102807	3.5	No	4	15	0
cs102807	3.5	No	4	25	0
cs110407	7.5	No	4	16	2
cs110807	12.5	Yes	3	0	5
cs110907	1	No	3	2	0
cs111107	6	Yes	3	0	22
cs120107	13	Yes	3	0	4
cs121107	13	Yes	3	0	7
cs020908	6	No	5	24	0
cs021608	6	No	5	10	0
cs021708	12.5	Yes	4	0	5
cs030208	3	No	7	0	3
cs030508	12.5	Yes	3	0	5
cs030808	3.5	No	4	22	0
cs030808	3.5	No	4	24	0
cs030908	3.5	No	3	20	0
cs030908	3.5	No	3	27	0
cs031508	5.5	No	5	11	0
cs040408	9	No	5	14	1
cs040608	7.5	No	5	13	0
cs041208	7.5	No	5	30	0
cs041308	8	No	5	19	0
cs042308	2	No	3	0	28
cs042708	8.25	No	4	7	0
cs050308	8	No	3	15	0
cs051008	6.5	Yes	4	0	37
cs051608	13.7	Yes	3	0	6
cs052708	36	No	3	5	2
cs053008	12	Yes	3	5	3
Sum	369.45		181	556	154

Marine Lab Events for 2007 – 2008  
Leslie Farrar

Annual Open House planning and event on August 11, 2007  
Dreamweaver training sessions July 11 and 13 in preparation for taking over web duties  
Reordered t-shirts, sweatshirts and hats for ML coordinating with Bookstore  
Billed tenants of Marine Lab South monthly  
Worked with campus Web Office for ML web site redesign and now manage the website  
Provided backup fish feeding over holiday breaks when lab techs were unavailable

**Tours**

Gave tours to prospective students and their families as needed

**Personnel**

Participated in United Way Campaign for HSU

**Administration**

**New equipment**

New color printer to use for Marine Lab promotional materials

Visitor Log:

2005: 9,200 (doesn't include class tours)

2006: January through May: 2007: 7,657 (have noticed many who do not sign in, don't really think that the visitors have decreased by 1,400)

2007: 9,450