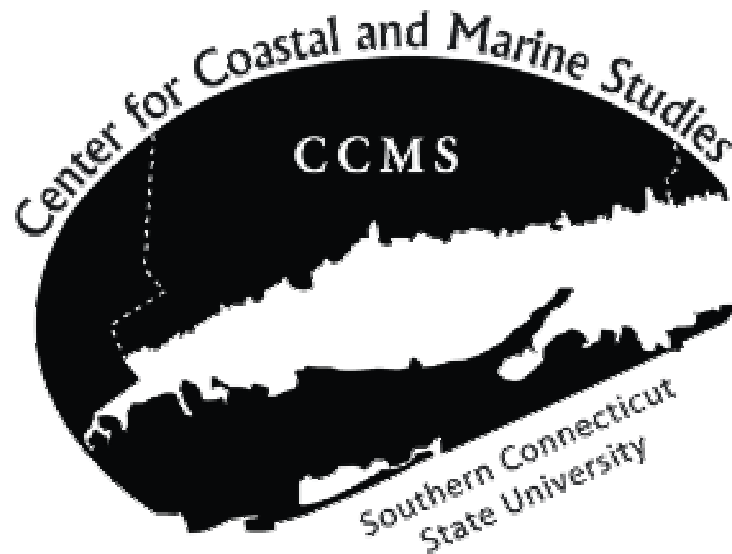


Southern Connecticut State University

Center for Coastal and Marine Studies



CCMS Annual Report 2007-2008

Prepared by:

Vincent T. Breslin, Associate Professor
Science Education and Environmental Studies

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Biology

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Science Education and Environmental Studies

Prepared for:

The Werth Family Foundation
Woodbridge, CT

February 2008

CCMS Annual Benchmark/Evaluation Report 2007-2008

Each year the participating faculty of the CCMS will prepare and submit to the Werth Family Foundation an annual report describing the Center activities. This report will be generated each year and will be made available in electronic and hard copy form. It will provide definitive information and detailed summaries of all yearly projects, events, activities, forums, and accomplishments conducted/achieved by the Center and its personnel. The CCMS Annual Report will be completed and submitted to the Werth Family Foundation during February of each year. Contents of the CCMS 2007-2008 Annual Report are described below.

I. Research Projects

Student and faculty research projects conducted each year are a central focus of the center. This year (2007-2008), CCMS participating faculty were involved in laboratory and field research programs involving fourteen undergraduate and graduate SCSU students. A complete description of 2007 initiated and ongoing research projects are described below.

Faculty: Dr. James Tait
Science Education and Environmental Studies

Student Participant(s)

Summer 2007

Kevin Dennis, Liberal Studies, Undergraduate
Carrie Javins, Earth Sciences, Undergraduate
Ellen Bulger, Science Education and Environmental Studies, Graduate

Spring 2008

Kevin Dennis, Liberal Studies, Undergraduate
Jeb Stevens, Geography, Undergraduate

Project Description

The presence of metal contaminants in marine sediments can have significant impacts on bottom-dwelling marine organisms. Breslin and others have conducted high-resolution sampling of sediments in Connecticut's harbors, including Norwalk, Bridgeport, and New Haven and have found metal contamination to be elevated. The spatial distribution of metal concentrations depends on sediment properties as well as sources and fluxes of contaminants. A pattern of decreasing metal concentration and increasing average grain size, moving from inner harbor to outer, was found and presents an interpretive problem. Do sediment contaminant concentrations decrease seaward because one is getting farther from river and local industrial sources, or is concentration decreasing because sediment grain size is increasing? Smaller grain sizes have more

surface area for metal to adhere to per unit volume, have more clay minerals with electrostatic charges, and tend to have more organic material. All of these tend to increase metal concentrations. This research seeks to isolate the role of sediment characteristics in metal concentration in Connecticut's harbors so that the contribution of proximity to sources and magnitude of flux can be more clearly interpreted.

Results to date/Significance

Sediment characterization of contaminated sediments is being upgraded by improvements in lab techniques and equipment. A particle size analyzer is being added to the abs capabilities allowing for more accurate and precise characterization of grain size parameters. In addition, different techniques for determining organic content of muddy sediments are being investigated for reliability and accuracy. This is expected to produce better correlations between metal concentration and sediment parameters.

Sediment studies are being expanded in scope to identify sedimentary characteristics of current Connecticut oyster beds and to identify potential new locations for oyster cultivation. CCMS has recently been awarded a grant in the current U.S. agriculture appropriation to conduct environmental studies to of oyster habitat on the Connecticut coast to help bolster the industry which used to dominate the U.S. market.

Faculty: Dr. Vincent T. Breslin
Science Education and Environmental Studies

Student Participant(s)

Summer 2007

Erica Ogalin, Liberal Studies, Undergraduate
Joshua Conklin, Liberal Studies, Undergraduate
James Santanelli, Biology, Undergraduate
Sean Garvey, Geography, Undergraduate

Spring 2008

Joshua Conklin, Liberal Studies, Undergraduate
James Santanelli, Biology, Undergraduate
David Oshana, Environmental Education, Graduate

Project Descriptions

Harbor sediments, due to the restricted water circulation and the proximity to multiple sources of industrial and municipal wastewater, are often contaminated with metals of environmental concern. Sediment metal contents vary as a function of sediment type and coastal harbors are usually characterized by a variety of sedimentary environments. The presence of contaminated sediment in Connecticut harbors is an issue of concern. Our new research examines the sediment metal contamination within the

Thames River and New London harbor complex. The Thames River watershed and New London harbor have been historically characterized by industrial activity and portions of each are urbanized. Previous studies are inadequate in describing the extent of sediment metal contamination within the river and harbor. Results of this study will allow for an assessment of the extent of sediment metal contamination within the river/harbor complex. This knowledge is critical for assessing current and future impacts of contaminated sediments on commercial activities and living marine resources within the watershed.

Metal concentrations in bottom sediments vary at different geographic locations in Long Island Sound but the highest concentrations generally occur in the western end of the Sound and decline toward the east. Are there similar east-west trends in oyster tissue metal concentrations; are concentrations higher in the western end of the Sound and lower in the eastern end? Eastern oysters are excellent targets for measuring heavy metal concentrations since they are sessile, have an affinity for the most important pollutants and have high concentration factors (10^2 to 10^5) for metals. Although oysters are good integrators of sediment and water quality, there is no systematic statewide data set for Long Island Sound concerning heavy metal concentrations in oysters. This research seeks to determine if the commercially important eastern oyster tissue metal contents differ in proportion to exposure to an east-west gradient in sediment and water column metal concentrations located in four different watersheds along the Connecticut coastline.

Results to date/Significance

Twenty surface sediment samples were collected along the Thames River on August 21st, 2007 aboard the R/V Lowell Weicker. Sampling stations were located along the entire length of the Thames River from Norwich south the entrance to New London harbor. Results show that the sediment metal contents ranged from 0.47-3.68% for iron, 6.6-93 mg/kg for copper and 11-217 mg/kg for zinc. Although sediment metal concentrations varied greatly, they generally reflected differences in sediment type, with higher metal concentrations associated with high loss on ignition, well sorted, fine-grained sediment. Results show that sediment copper and zinc contents are elevated above their respective crustal abundances and are similar or higher than previously reported NOAA (1994) New London harbor mean sediment metal concentrations.

Since 2001, faculty and students from the Center for Coastal and Marine Studies (CCMS) at SCSU have sampled and determined sediment metal contents from almost 200 stations located in Norwalk, Bridgeport, New Haven, Branford and New London harbors. Interactive GIS maps of sediment metal contamination have been developed and are now accessible on-line at the CCMS website (<http://www.southernct.edu/departments/ccms/index.html>). Data available for each station includes the station number, location (latitude and longitude), metal content (copper, iron, lead, zinc and nickel) and loss on ignition.

Faculty: Dr. Dwight Smith
Biology

Student Participant(s)

Summer 2007

Tiffany Al-Maquitari, Biology, Undergraduate
Erin Pinsince, Biology, Undergraduate

Spring 2008

Erin Pinsince, Biology, Undergraduate

Project Description

The Monk Parakeet is an invasive species that contributes biodiversity to otherwise bleak urban landscapes. Unfortunately, the Monk Parakeet nests on transformers cause occasional local power outages. In Fall 2005 the Connecticut UI initiated an eradication program to remove nests from transformers and destroy the birds. Wildlife organizations responded by suing UI which temporarily stopped slaughtering the birds, pending research to alleviate the problem.

Research was completed documenting types of behaviors exhibited by Monk Parakeet specifically with respect to nest site selection, nest construction, and foraging episodes. The research goal was to evaluate Monk Parakeet behavior with respect to factors that may influence decisions to nest in and on locations other than transformers and telephone poles. This goal is specific because much of the controversy surrounding Monk Parakeet colonies concerns their use of transformers and utility poles. The second basic component of this research is to identify behaviors regarding foraging and food selection in urban neighborhoods. Information regarding foraging bouts and types of food used is important to ascertain potential competition of Monk Parakeets with other urban wildlife species.

Results to date/Significance

Results of these behavior surveys clearly demonstrate that some percentage of the Monk Parakeet population will select alternate nesting sites following nest removal (but not destruction of the birds). These alternate nesting sites include trees and artificial platforms. Adoption of artificial platforms for nesting throughout the year and also adoption of artificial nest sites for breeding provides a significant, suitable and welcome alternative for wildlife enthusiasts, urban planners, and city urban wildlife personnel that may now remove the offending nests while providing the Monk Parakeets with equally useful platforms. Behaviors at the artificial nest platforms conclusively demonstrate that they provide year around sites for the parakeets. Construction and placement of a series of artificial platforms will provide common ground for all concerned.

Faculty: Dr. Sean P. Grace
Biology

Student Participant(s)

Summer 2007

Colleen Giannini, Biology, Graduate
Kristina Clark, Biology, Undergraduate
Jennifer Adolfsen, Biology, Graduate

Spring 2008

Kristina Clark, Biology, Undergraduate

Project Description

Research was completed to determine the age of American lobster (*Homarus americanus*) in the Gulf of Maine (GOM) from multiple orbital carapace lengths (mm). The purpose was to document the age and levels of the aging pigment lipofuscin in lobsters from the GOM. It also will aid in the management of this resource. Recent studies on western rock lobster (*Panulirus cygnus*) indicate that the aging technique proposed in this research would allow independent assessment of population parameter estimates and has shown that most juvenile lobsters are 3-5 years old immediately prior to recruitment (Sheehy 1998). Another study on the European lobster (*Homarus gammarus*) yielded reproducible catch age structures with year-class resolution. In addition, a recent study performed on the European Lobster demonstrated that lipofuscin quantification produced more accurate estimates of age in the species than carapace length (Huglem *et. al.* 2005). This finding has important implications for stock assessments that employ traditional models which include age as an input parameter (Sheehy 1996). We are on our second year of data collection to determine if lipofuscin concentrations change with season and between years. This is a 3 year grant funded by the State of Maine, Department of Marine Resources.

Results to date/Significance

We are in the process of completing this project and anticipate in total at least one manuscript. In short, we have isolated tissue samples from the esophageal ganglia of Gulf of Maine lobsters. 204 lobsters were collected for us from the Gulf of Maine by the Maine Department of Marine Resources. The initial grant application called for the bidder to purchase 10-20 lobsters from each of the following size class ranges (mm carapace length): 82.5-90.4mm, 90.5-98.4mm, 98.5-106.4mm, 106.5-114.4mm, 114.5-122.5mm, 122.5-130.4mm, and >130.5mm. Rationale for the size ranges chosen was an effort to capture the possibility of 5-8 age classes per molt increment based on research performed by Sheehy *et al.* (1996) in the United Kingdom. Twenty percent of the lobsters were within the size ranges listed above. Eighty percent were below the legal

size range but will allow for a more complete analysis of lipofuscin concentrations throughout the size ranges completed. Laboratory processing, clearing and fixing of tissues, and confocal microscopy has taken place at SCSU to determine lipofuscin levels in the neural tissue of 45 lobsters sampled. Up to five sections (5-7 μ m) of the cell mass was analyzed for each lobster. Each of these sections quantify the percent of the olfactory lobe cell mass occupied by lipofuscin, the density of lipofuscin granules in the olfactory lobe cell mass, and the mean diameter of the lipofuscin granules. Data collected with this research is being compared to data collected on known-age lobsters by the Connecticut State Department of Environmental Protection, lobster biologist Colleen Giannini. This comparison will help to delineate the potential age classes of the lobsters collected.

One graduate Master's thesis for Colleen Giannini has been completed because of the funds provided by the center, this project and outside monies.

Project Description

The temperate scleractinian coral *Astrangia poculata* is one of four corals known world-wide to exhibit a facultative symbiosis with its zooxanthellae and occupies many hard bottom and boulder communities in Narragansett Bay, however little is known about its morphology, growth rates, and distribution on subtidal surfaces in Long Island Sound. A study examining this coral's local distribution and growth rate would provide valuable information on how the scleractinia adapt to low energy waters with high sedimentation, higher temperatures and fresh-water input. Studies will quantify the ecological distribution of this coral in the Long Island Sound's many subtidal microhabitats.

Results to date/Significance

During the summer of 2007, 10 subtidal sites were examined for coral abundance at ~ 7m depth. Coral abundance was high (>200/m²) at all boulder sites examined (N=7) and low (< 7/m²) on all soft bottom sites (N=3). In addition, colonies were taken from a depth of 7 meters in two locations: Stamford, CT and Fort Wetherill in Jamestown, RI. Laboratory studies were completed to examine the effects of temperature on the basic metabolic rate of this species. There were two different temperature settings applied to zooxanthellae rich colonies of *A. poculata* and the same temperature conditions were applied to zooxanthellae poor colonies of *A. poculata* over 30 minute trials. Zooxanthellae densities were qualified initially by visual examination and quantified per one mL of tissue removed by Waterpik™. There was no observed effect of site or temperature on the metabolic rate of *Astrangia poculata* while zooxanthellae concentration did have an observed effect.

One graduate Master's thesis for Jennifer Adolfsen has been completed because of the funds provided by the center, and a CSU Research Grant to Sean Grace.

II. Center-Directed/Sponsored Seminars

A goal of the Center is to conduct interactive faculty/student research and educational outreach programs that elucidate findings and provide public education on Long Island Sound and environs at all levels, including public schools, parochial schools, communities, and governmental agencies. As such, the Center sponsors an annual seminar series in the spring of each year. Center faculty invited five regional experts during the Spring 2007 to discuss topics concerning the health and quality of Long Island Sound and its environs as part of the **Fourth Annual Seminar Series on Environmental Issues of Long Island Sound 2007**. Partial support for the seminar series was provided by a \$2,000 SCSU Faculty Development Grant awarded to Drs. Breslin, Tait and Smith.

The seminar series was comprised of five separate one-hour seminars by invited experts on Long Island Sound environmental issues during the Spring 2007 semester. The list of speakers and topics is given below. A number of faculty teaching marine science, marine biology, geography, zoology, environmental science and earth science courses during the Spring 2007 semester attended and encouraged their students to attend the seminar series.

Date	Seminar	Attendance
3/14/07	Seals, Students and the Sound Amy Ferland , The Maritime Aquarium at Norwalk, Norwalk CT	31

Amy Ferland presented the results of her studies concerning the ecology and migration of seals that commonly inhabit Long island Sound. Periodic counts of seals in the Sound beginning in the mid-1970's found a slow, steady increase in the population, almost all of them harbor seals. Since 1993, a sharp rise in their numbers has been observed and in the last three years, three other species, gray, harp and hooded seals, have begun to be sighted.

3/27/07	What is Long Island Sound For? Tom Andersen , Author, This Fine Piece of Water	43
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Tom Andersen's presentation discussed how the uses of Long Island Sound have changed from its early Indian inhabitants, the European colonists, to the more recent urbanization and industrial uses of the sound. The seminar focused on the environmental consequences of the changing uses and demands placed on Long Island Sound.

4/4/07	Perspectives of Long-term Hypoxic Conditions in LIS R. Lawrence Swanson , Associate Dean Marine Sciences research Center, SUNY at Stony Brook, NY	28
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Larry Swanson described the meteorological, physical and biological processes contributing to hypoxia in Long Island Sound. Recent studies of historical temperature

records show an earlier onset of thermal stratification in the water column in western LIS. Warmer surface water early in the spring, perhaps due to climate change, traps cooler bottom water extending the duration of hypoxic events. These observations cast doubts on the effectiveness of nitrogen reduction programs on reducing the extent and duration of hypoxic events in LIS.

4/24/07 Is Long Island Sound Improving? Status and Trends **45**
 in Water Quality and Living Resources
Mark A. Tedesco, Director EPA Long Island Sound
 Office, Stamford, CT

Mark Tedesco presented the results of the Sound Health 2006 report. This report is EPA report to the public on the environmental issues affecting Long Island Sound. Mark Tedesco highlighted recent information on water quality, the abundance of animal and plant life in the Sound, and trends in land use along the shore.

5/2/07 A Switch from Polyandry to Serial Monogamy: Results **29**
 from a Four Year Mark-Recapture Study of Horseshoe Crabs
 in Long Island Sound
Jennifer Mattei, Associate Professor
 Sacred Heart University, Fairfield, CT

Despite its importance to humans, very little is known about the abundance and distribution of the horseshoe crab in Long Island Sound. Jennifer Mattei's monitoring teams are finding that the population trends are not good for the long-term survival of horseshoe crabs in the Sound. For example, they have consistently found that only 40 percent of the spawning population is female. And of the total adult population, not all are mating. In 2005, only 56 percent of the 2,200 horseshoe crabs tagged at Milford Point were found as mated pairs.

Attendance: Attendance was determined using a sign-in sheet, in addition to which, the faculty sponsors counted the attendees during each seminar, noting the names and number of faculty in attendance.

III. Collaborations and Partnerships

As part of our continuing efforts to strive for excellence in research and public education and outreach the Center will focus on establishing working relationships with different local, state, and federal groups and agencies that share this common interest and focus. Each year, the Center provides information concerning the number and nature of collaborations established. Examples of on-going Center partnerships include:

The CSU Oyster Research Project: Dr. Breslin along with Drs. Tait, Grace and Smith prepared a research proposal to comprehensively examine the economic viability and environmental health of the Eastern oyster in Long Island Sound. We propose a collaborative project designed to: (1) conduct a multidisciplinary laboratory and field-

based research program drawing upon the expertise of CSU faculty (WCSU, CCSU and SCSU) and community stakeholders to address issues of concern regarding the health and recovery of the Connecticut oyster industry; (2) create sustainable education, research and outreach projects at the participating CSU campuses, the Sound School, Schooner Inc., and the Maritime Aquarium at Norwalk; and (3) produce data and analyses that will provide the foundation for a recovery plan for the Connecticut oyster fishery. We have been notified that the proposal was funded in the amount of \$300,000 for this fiscal year. We are in the process of preparing the scope of work and will initiate the research during the Summer 2008.

University of New Haven and the Connecticut State Agricultural Experiment Station: Presentation of results of grain size studies and heavy metals at the most recent Long Island Sound Research Conference led to a proposed collaboration between Dr. Roman Zajac, a benthic ecologist at the University of New Haven, a plant pathologist at the Connecticut State Agriculture Experiment Station, and Dr. Tait in an interdisciplinary investigation of the processes of marsh degradation at U.N.H.'s wetland observation site in Stony Creek. This is an area that has been subject to severe "sudden wetland dieback", a condition of rapid marsh deterioration characterized by the sudden loss of vegetation. See for reference: <http://wetland.neers.org/>.

Drs Tait and Breslin serve as members of the Science Advisory Committee and participating scientists in the **New Haven Harbor Watershed Environmental Monitoring Program** supported by the National Fish and Wildlife Foundation, Long Island Sound Futures Fund. The watershed program is a collaborative effort among scientists and educators from UCONN, CT Department of Environmental Protection, University of New Haven, NOAA Marine Fisheries, Yale University and the Sound School Regional Vocational Aquaculture Center. The goal of this program is to help establish and maintain an accurate and comprehensive database of the living and non-living factors that are present in this region and Long Island Sound. Our participation in this program involves water quality monitoring, sediment chemistry and benthic community analysis. Dr. Carmela Cuomo and Dr. Vincent Breslin co-authored the approved Quality Assurance Project Plan for this work. Our contribution to the program includes the physical and chemical characterization of New Haven harbor sediment.

IV. Community Outreach, Education, and Research Communication

A continuing goal of the Center is to establish and maintain a variety of community outreach programs that include educational activities at many levels, as appropriate. An important function of the Center will be to prepare and distribute educational materials, including new curriculum, that focus on the importance of Long Island Sound and environs. Communication of research results will be an important role for this Center. It is an expectation that all participating faculty and students will communicate the results of their research to the scientific community, appropriate government agencies and the local community. A list of 2007-2008 research presentations is listed below:

The Ocean Conservancy, Washington, D.C. sponsors an annual Coastal Cleanup on the third Saturday of September where thousands of volunteers across the US remove litter and trash from the beaches. Dr. Breslin is a **Beach Captain and the Coordinator** for an annual beach cleanup at the beach located at Sandy Point, West Haven, CT. The annual beach cleanup occurred on Saturday September 15, 2007. This past year we had over 40 participants in the beach cleanup. This location serves as a field site for many of Dr. Breslin's Marine Studies class activities and the cleanup is one way that the SCSU students can give back to the community. Volunteers categorize and tabulate the items collected and the data cards provide information concerning the types and sources of marine debris. The data allow decision makers to develop strategies and regulations to further reduce the quantities of debris accumulating on our beaches.

Presentations

Grace, S. P. *Benthic Ecology Meeting*, Atlanta, Georgia, April 2007. "An New England Intertidal Scleractinian Coral."

Grace, S. P. *63rd Annual Northeast Fish and Wildlife Conference*, Groton, Connecticut, April 2007. "Aging the American Lobster (*Homarus americanus*)- Does Size Matter?" Co-authored with Ms. Colleen Giannini.

Breslin, V.T. and S. Garvey. 2008. Interactive GIS Maps of Sediment Metal Contamination in Connecticut Harbors. Abstract. CSU Faculty Research Conference, March 29th, 2008, Eastern Connecticut State University. Willimantic, CT.

Ramirez C.R. and Smith D.G. 2008. Ethnobiology of Monk parakeets in the Eastern United States. Paper Submitted to the Society of Ethnobiology, 31st Annual Conference, University of Arkansas-Fayetteville. April 16-19, 2008.

Publications

Grace, S. P., and J. Adolfsen. (Submitted) A New England Intertidal Scleractinian Coral, How Astrangia! Coral Reefs.

Breslin, V.T. and J. Tait. (2007). An Emerging Model: Science on the Connecticut Coast, Investigations of an Urbanized Shoreline. The SENCER Model Series. http://www.sencer.net/Resources/pdfs/Models_Print_Web_2007/Connecticut_Coast.pdf

Smith, Dwight G., and Mark Johnson. Smith, D. G., Building artificial nests to save monk parakeets. Action Line. Winter 2007 issue: pp. 32-35.

Participation

Breslin, V.T. Participant (Invited). Long Island Sound Synthesis Workshop. May 14-16, 2007. Danfords Inn, Port Jefferson, NY

V. CCMS Website Development

As part of our continuing research and public outreach efforts, the Center has developed and will maintain an internet website. The CCMS website is currently located at <http://www.southernct.edu/departments/ccms/index.html>. The website continues to be upgraded and expanded to provide a vehicle for communication and information to all interested parties. In addition to contact information, the website will provide a resume of the Center's goals/aims, foundation, research and ongoing activities.

VI. Equipment Acquisition and Training

Ecological/environmental research at any serious level requires equipment acquisition, equipment updates, and appropriate training in its use. One continuing goal of the Center is to acquire, via grants and gifts, equipment appropriate to data collection and analysis.

This past year we were able to acquire an additional freezer and refrigerator for sediment sample storage in our laboratories. An additional large capacity oven was also purchased in support of the sediment grain size studies. These purchases were made with funds from the Science Education and Environmental Studies Department. With the funding from the CSU oyster study, we intend to purchase a Horiba Particle Size Analyzer (\$60,000). The particle size analyzer is important for determining sediment properties in contaminated environments and for determining suitable habitat for oysters. Drs. Tait and Breslin recently purchased a water sampler to sample the water column for trace metals and a MobileMapper GPS system for mapping changes in the environment over time (\$2,920).

VII. Accounting, Budget Expenditures and Grant Writing

Academic Year 2007-2008 Itemized Budget Justification

Funds totaling \$35,000 were requested for Year 2 to support the research and educational mission of the Center (see attached budget spreadsheet). Three columns are shown in the budget sheet showing the Werth Foundation request, the Werth Foundation Fund Disbursement (how dollars were actually spent) and the SCSU Matching Funds (dollars committed by the University or obtained from other sources).

Professional Salaries

Werth Foundation funds were used in support of salaries for faculty mentoring students during the Summer 2007 (\$2,500). In addition, the CCMS contracted a web designer (\$1,000; Intersecting Technologies) to design and maintain the CCMS website. The website is an important component of our education and outreach activities. Sean Garvey (\$500; Undergraduate student, Geography Department) was contracted to provide GIS services for the development of the Connecticut harbors website. The CT harbors website is now accessible as a link from the CCMS website. The SCSU Dean of Arts & Sciences provided faculty reassigned time (3 credits time each for Breslin and Tait) in

support of managing the CCMS activities and programs. The reassigned time allow faculty a lesser teaching credit load and the 6 credits time are valued at \$9,419.00.

Student Research Fellowships

A major portion of the Center budget consists of funds in support of undergraduate student summer research stipends. A major goal of the Center is to increase undergraduate student participation in the processes of “doing science” through participation in faculty guided research projects. The CCMS awarded Summer research fellowships in the amount of \$1500-\$2,000 (15-20 hours/week x \$10/hour). Eleven students received fellowships during the Summer 2007 totaling \$20,500. The student research fellowships were once again offered during the Spring 2008 semester to prepare students for summer research. CCMS faculty supported seven additional students (@\$500/student) during the Spring Semester (\$3,500). The CCMS has supported 14 different students in five different academic fields in support of faculty directed research during this past year (\$24,000).

Travel Funds

Travel funds totaling \$1,500 were budgeted to reimburse costs associated with travel in support of field sampling activities and attendance at local, regional and national scientific meetings. Students and faculty completing their research projects are expected to give talks or poster presentations at scientific meetings. Travel funds (\$237) were used in support of student and faculty travel to field sites in support of their respective research projects.

Permanent Equipment

Werth Foundation funds were used to purchase equipment in support of faculty and student research projects. No major permanent equipment purchases were made using Werth Family Foundation funds in 2007-2008. A 19” flat screen computer monitor was purchased (\$299) to replace an aging 14” office monitor.

Ship Time

Funds for chartering ship time were budgeted to provide access to field sample sites for research and education along the Connecticut shoreline and in Long Island Sound. Ship time was chartered aboard the *R/V Island Rover*, a 46 foot vessel equipped to conduct coastal research and education programs operated by the Sound School, New Haven, CT. We requested \$5,250 to be used to charter boats in support of research and education programs. We have currently used \$1,400 to charter the *R/V Island Rover* and a smaller CT DEP boat in support of coastal research projects. Matching funds for ship time were available this year in Connecticut State University grants to Dr. Breslin reducing the need to use Werth Foundation funds for ship time.

Expendable Supplies

Funds for laboratory and office supplies (\$2,500) were budgeted to allow the purchase of materials in support of the CCMS research and educational initiatives.

Supply funds were used to purchase laboratory chemicals and supplies for the sediment metals research and laboratory supplies and field supplies for the sediment grain size research (\$1,457). CCMS tee shirts and polo shirts (\$524.00) were designed and purchased for students and faculty participating in CCMS activities.

Balance of Funds

We are in the process of distributing the remaining Werth Family Foundation unencumbered funds (\$2,213). A portion of the funds will be used to purchase additional laboratory and office supplies. We also plan to use funds to support an educational cruise this spring 2008 to bring our students out into New Haven harbor and Long Island Sound to study marine ecosystems.

Matching Funds

Each of the grant awards listed have been used in support of CCMS research and education activities.

Connecticut State University Research Grant Award 2007-2008

Principal Investigator: Vincent T. Breslin

Project Title: Sediment Metal Contamination in the Thames River and New London Harbor Complex

Award Amount: \$4,800

Connecticut State University Research Grant Award 2007-2008

Principal Investigator: Dwight Smith

Project Title: Monk Parakeets in Crisis: Ecological and Economic Issues in Conservation and Management.

Award Amount: \$5000

Connecticut State University Research Grant Award 2007-2008

Principal Investigator: Sean Grace

Project Title: A Long Island Sound survey of the temperate scleractinian coral *Astrangia poculata*.

Award Amount: \$5,000

SCSU Faculty Development Grant 2007

Co-Authors: James Tait, Vincent Breslin, Dwight Smith

Title: Fourth Annual Seminar Series on Environmental Issues in Long Island Sound

Award Amount: \$ 2,000

SCSU Faculty Development Grant 2007

Mentored Research Studies/Center for Coastal and Marine Studies. CSUS Learning Assessment and Improvement Grant Program. Faculty Grants. PIs – D. Smith, V.T. Breslin, and J. Tait. Project Duration: July 2007-June 2008. Total Funds \$2,700.

SCSU Faculty Development Grant 2007

Marine Field and Laboratory Techniques Course (MAR 460). Curriculum Related Activities Grant. Office of Faculty Development, SCSU. PIs – J. Tait and V.T. Breslin. Project Duration: April 2007-June 2008. Total Funds \$2,920.