



CHARLOTTE HARBOR NATIONAL ESTUARY PROGRAM
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**Research & Restoration Partners Projects
FY2009 Proposal Review Subcommittee**

THIS MEETING IS OPEN TO THE PUBLIC

Friday, October 10, 2008 9:00 am – 4:30 pm
Charlotte Co. Utilities/Eastport campus - Training Room B
25550 Harborview Road Port charlotte, FL 33980

Agenda

- 9:00 – 9:05 A.M. Introductions**
9:05 – 9:15 A.M. Review Process
9:15 – 10:15 A.M. Discussion of Proposals and Issues for Consideration
Committee members will need to collate questions for each applicant during this period.
- 10:15 A.M. – 12:00 P.M. Question and Answer Period for Applicants**
Each of the 12 applicants will have 15 minutes to answer questions from Committee members as needed.
- 10:15 Determining Bio-indicators Suitable for Assessing Restoration Success in San Carlos Park Waterbodies** (Demers, Nora & Ceilley, David - FGCU)
- 10:30 Identifying Potential Pollution Sources to an Impaired Estero Bay Tributary using a Stakeholder Driven Approach** (Greenawalt-Boswell, Jaime & Roberts, Church - Johnson Engineering)
- 10:45 Comparison of Field Measurement Techniques used in the CHEVWQMN: Then and Now** (Leary, Ray - FDEP CHAPs)
- 11:00 Development of a Bioenergetic-based Mercury Mass Balance Model for Gray Snappers (*Lutjanus griseus*) as a Tool to Identify Sources of Methylmercury to Southwest Florida Estuaries** (Rumbold, Darren - FGCU)
- 11:15 Does Degradation of mangrove Creeks have Estuary Wide-Impacts?** (Adams, Aaron - Mote)
- 11:30 Hardee county Peace River Submerged Aquatic Vegetation Study** (Nedza, Kayton - Hardee Co. Outdoor Classroom)
- 11:45 The Impacts of *Melaleuca quinquenervia* Removal on the Ecohydrology of a *Melaleuca* Infested Pine Flatwoods** (Wewerka, Laura - FGCU)

Description of FY09 Research and Restoration Partners Grant Applications

Research & Restoration Partners Projects FY2009 Applications Project Title, Organization	Abstract from Proposal	Total Project Cost	Grant Request	Match
A. Comparison of Field Measurement Techniques used in the CHEVWQMN: Then and Now (Leary, Ray - FDEP CHAPs)	<p>In 1998, the Charlotte Harbor Estuaries Volunteer Water Quality Monitoring Network (CHEVWQMN) was formed through cooperative efforts of the Charlotte Harbor Aquatic Preserves (CHAPs), Estero Bay Aquatic Preserve (EBAP), Charlotte Harbor Environmental Center (CHEC) and the Charlotte Harbor National Estuary Program (CHNEP). The purpose of the CHEVWQMN is to collect baseline water quality data, monitor trends and identify critical water quality parameters throughout the 5 CHAPs, EBAP and surrounding waters, through citizen monitoring. The original methodology, approved by the EPA and FDEP in 1998, for collecting field parameters included: temperature measured with a thermometer; transparency measured with a Secchi disk; dissolved oxygen (DO) measured using a LaMotte Micro Winkler Titration kit; pH measured with a LaMotte Color Compactor; and salinity (density) using a hydrometer and thermometer.</p> <p>However, the approved methods for surface water monitoring, per the Clean Water Act (CWA) and listed in Title 40 of the Code of Federal Regulations (CFR) Section 136 and approved for use by FDEP, have changed. Thermistors are now recommended for temperature measurements; and the use of electronic probes is required for measurements of DO, pH and salinity (specific conductance). Therefore, CHAPs/EBAP purchased handheld DO meters and multi-parameter (pH, temperature and specific conductance) sondes with the intent of collecting field measurements by means of approved methods beginning in 2009. Both methods will be used to compare in situ results of water quality data within the CHEVWQMN from January through December 2009 at 18 locations (three per Aquatic Preserve), while bringing the program into compliance with state and federal regulations.</p> <p>All new field, laboratory and documentation methods adhere to FDEP and EPA QA/QC policies. Monthly field, laboratory, and QA data will be entered into the CHEVWQMN MS Access database. Data will be reviewed for outlier values and transcription errors, then uploaded to Florida STORET. Analyses of data will be conducted using SPSS. Results of the CHEVWQMN data will continue to be used to guide CHAPs and CHNEP resource management through identification of priority parameters by water bodies and locations and through trend analyses, as well as in the TMDL process.</p>	\$33,394	\$16,537	\$16,857 50%

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	<p>Data will continue to be used by CHAPs, CHNEP, CHEC and Sanibel Captiva Conservation Foundation (SCCF) in conjunction with CHAPs/EBAP seagrass data to determine management priorities for local estuaries. In addition, the data will be used by local citizens and agencies to evaluate water quality concerns and impacts of proposed projects. The purpose this study is to compare results of the methods used in the previous ten years with the new methodology and to verify the validity of the first ten years' data, while continuing to meet the original objectives of the CHEVWQMN. Results will be presented to the TAC and a technical report of the findings will be submitted to CHNEP.</p>			
<p>B. Determining Bio-indicators Suitable for Assessing Restoration Success in San Carlos Park Waterbodies (Demers, Nora & Ceilley, David - FGCU)</p>	<p>Southwest Florida has witnessed tremendous urbanization in recent years. To accommodate this growth in population, resource managers have been forced to develop and manage watersheds, thereby compromising the habitat of aquatic organisms and impacting estuarine ecosystems downstream. Many anthropogenic activities occurring in urbanized communities have degraded former wildlife habitat. Stormwater detention ponds are becoming critical forage areas for wading birds, and drainage systems through residential neighborhoods have become wildlife corridors for many species, in addition to providing residents with desirable but fleeting and impaired connections to their natural environment. We seek to develop a suite of bioindicators stable Nitrogen isotope ratios ($\delta^{15}N$) to help determine sources of nutrients.</p> <p>This project addresses all the three priority problems identified: hydrologic alterations, water quality degradation, and fish/wildlife habitat loss. Through this study we propose to examine a sub-basin watershed restoration project currently underway within the Estero Bay Watershed. We intend to use these funds to determine the impact of anthropogenic nutrients in the sub-basin on bio-indicators, and to assess current status of aquatic waterways and water bodies that make up the East Mullock drainage district in San Carlos Park.</p>	<p>\$29,372</p>	<p>\$12,269</p>	<p>\$17,103 58%</p>

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	<p>We will examine the $\delta^{15}\text{N}$ ratio in biological samples, and better characterize the established (invertebrate and fish) biological indicators at various sites in the community. These results will provide baseline data for tracking improvements to water quality in the Mullock Creek, an outstanding Florida waterway that flows into the Estero Bay in comparison to other systems. These data and methods should be pertinent to land use management decision making within the Charlotte Harbor region that will be needed in order to restore the workings of the ecosystem vital to our future. Undergraduate and graduate students will be involved in all aspects of the work, gaining valuable hands-on learning experience. A report summarizing our findings will be submitted at the end of the project to the Charlotte Harbor National Estuary Program (CHNEP), a series of presentations will be prepared for members of the local community; a webpage detailing the research will be launched and maintained, and our results will be presented to professional audiences, environmental scientists, and resource managers.</p>			
<p>C. Development of a Bioenergetic-based Mercury Mass Balance Model for Gray Snappers (<i>Lutjanus griseus</i>) as a Tool to Identify Sources of Methylmercury to Southwest Florida Estuaries (Rumbold, Darren - FGCU)</p>	<p>Florida's Department of Health has issued guidance advising the public to limit consumption of 59 species of commercially and recreationally valued fishes from coastal waters off Florida (FDOH, 2006). This guidance was issued because of the amount of toxic mercury (Hg) contained in the fish's flesh. The water quality degradation leading to the elevated mercury has added significance because the principal pathway for mercury exposure to humans is through the consumption of marine fish and fish products. Because these consumption advisories encompass Southwest Florida estuaries, the Florida Gulf Coast (water body identification [WBID] 8999) along with 22 other water bodies in the Charlotte Harbor, Caloosahatchee River and Everglades West Coast Basins have been identified on the 303d list as impaired by the Florida Department of Environmental Protection (2008 verified list; http://www.dep.state.fl.us/water/tmdl/verified_gp1-c2.htm)(environmental indicator WQ-a).</p> <p>A state-wide total maximum daily load (TMDL) is currently under development by FDEP but will focus on reducing the risk to human health from consumption of freshwater fish. Further, it will do little to protect the health of ecosystem (either freshwater or marine), unless the increased awareness ultimately results in actions that reduce mercury loading or methylation rates. Besides potential harmful effects to the fish themselves (especially sharks), several studies have reported elevated mercury levels in upper trophic level wildlife in Florida, including coastal birds and dolphins (Sepulveda et al. 1998, Frederick et al. 2002, Durden et al. 2007, Stavros et al. 2007, Woshner et al. 2008). Nonetheless, there is no evidence to support the idea that a TMDL that focuses solely on human health will be protective of the environment.</p>	<p>\$35,563</p>	<p>\$17,094</p>	<p>\$18,469 52%</p>

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	<p>The objective of this project is to develop a bioenergetic-based model for mercury bioaccumulation in gray snappers (<i>Lutjanus griseus</i>) to aid in more effective management of coastal ecosystems, i.e., control of non-point sources and of influential parameters driving methylation. This model will allow us to deconvolve and thus prioritize influential factors controlling mercury bioaccumulation, such as biogeochemistry and mercury methylation, ontologic or habitat related shifts in diet, ingestion rate, assimilation efficiency, growth rate, loss rates. Once validated, the model would serve as a tool to better quantify and interpret</p>			
<p>D. Does Degredation of Mangrove Creeks have Estuary-Wide Impacts? (Adams, Aaron - Mote)</p>	<p>Anthropogenic alterations of freshwater flows into estuaries are of particular concern to resource managers because such changes impact estuarine ecology. The increase in impervious surfaces and loss of wetland habitats associated with coastal development alter the source, timing, and velocity of freshwater flows, which influences salinity patterns. When > 10% of a watershed's acreage is converted to impervious surface, the water bodies become seriously degraded, and are less diverse, productive, and stable. The ecology of Charlotte Harbor is especially prone to freshwater flow alterations within its watershed because the watershed-to-open water ratio is 12:1. Habitats that are being especially affected by alterations of upland drainages are mangrove creeks that transverse the margin between uplands and the estuary.</p> <p>Mangrove creeks are important habitats for juveniles of many fish species that use estuary and coastal habitats as adults. Of particular concern is common snook (<i>Centropomus undecimalis</i>), an economically and ecologically important fish in Charlotte Harbor and southwest Florida that uses mangrove creeks during the juvenile life stage. Previous research has demonstrated that alterations of freshwater flow into mangrove creeks impact the habitat quality of these creeks: there are more fish species, more total fishes, and the diet of juvenile snook is twice as diverse in 'less degraded' creeks than in 'more degraded' creeks. This proposed research will use tag-recapture methods (using recreational anglers and guides for sampling) to examine the extent to which the differences in habitat quality in the creeks affect the survival of juvenile snook into adulthood. In other words – is mangrove creek (juvenile snook habitat) degradation manifest at the estuary scale (adult snook population)?</p>	<p>\$39,010</p>	<p>\$19,010</p>	<p>\$20,000 51%</p>

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<p>E. Hardee county Peace River Submerged Aquatic Vegetation Study (Nedza, Kayton - Hardee Co. Outdoor Classroom)</p>	<p>This project will identify the types of SAV present in approximately 25 miles of the Peace River. From this determination, management strategies can be developed to enhance/improve the water quality and habitat. Approximately every 1000 meters from the Hardee/Polk county line in the north, to the Hardee/DeSoto county line in the south, we will run a transect across the river and determine the make up of the river bottom (sand, rock vegetation etc.). If vegetation is present we will determine the type and percent of coverage in the transect area. Junior High and Senior High School students will help conduct the studies. We anticipate having the two local papers do at least one article each on the study. We will work with the Hardee County GIS department to provide a computer software map showing the locations and results of the study. The locations will be overlaid on aerial photographs to provide clearer understanding of the ecosystem.</p>	<p>\$40,810</p>	<p>\$18,544</p>	<p>\$22,266</p>	<p>55%</p>
<p>F. Identifying Potential Pollution Sources to an Impaired Estero Bay Tributary using a Stakeholder Driven Approach (Greenawalt-Boswell, Jaime & Roberts, Church - Johnson Engineering)</p>	<p>Estuaries are widely recognized as highly productive ecosystems that are both ecologically and economically valuable. Water quality degradation is a serious threat to the health of estuaries in Southwest Florida, and as such is one the priority problems for the Charlotte Harbor National Estuary Program (CHNEP). In recognition of the critical importance of water quality, the Clean Water Act mandates that each state assess the quality of surface waters, and submit a list of water bodies that do not meet specified water quality standards to the EPA. Those water bodies that exceed the specified criteria for one or more water quality parameters are listed as impaired. Numerous water bodies within the CHNEP boundaries are on the impaired waters list, including four tributaries to Estero Bay.</p> <p>This project, through a unique public/private partnership between Johnson Engineering, the Florida Department of Environmental Protection (FDEP) South District Office and Lee County, will explore a stakeholder driven approach to identifying the potential pollutant sources in one of the impaired water bodies within the Estero Bay watershed. The objective of the project is to thoroughly examine an impaired tributary using the best available data, local knowledge, and on-the-ground reconnaissance, and to assess the utility of data derived from watershed assessment models. This project will draw on the strengths of pre-existing data and analyses, additional analyses, model simulations, and stakeholder input to identify pollution sources within an impaired water body. The stakeholder group will be a component of the Everglades West Coast (EWC) Basin Management Action Plan (BMAP) Technical Working Group. Coordination with the technical working group will ensure that the resulting recommendations will provide the basis for the Basin Management Action Plan (BMAP) within the study area, and provide guidance for future BMAP development in other watersheds.</p>	<p>\$38,647</p>	<p>\$19,130</p>	<p>\$19,517</p>	<p>51%</p>

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<p>G. The Impacts of Melaleuca quinquenervia Removal on the Ecohydrology of a Melaleuca Infested Pine Flatwoods (Wewerka, Laura - FGCU)</p>	<p>The invasive exotic, Melaleuca (<i>Melaleuca quinquenervia</i>) transpiration rates are thought to be greater than that of slash pine (<i>Pinus elliotii</i>), a native upland species common to south Florida. Some scientists also speculate that melaleuca's water-use leads to reductions in groundwater availability. While some information exists on melaleuca seedlings and saplings, little empirical evidence is available regarding whole-tree water-use in mature, unmanaged melaleuca trees, and as a result, our understanding of melaleuca's impact on local hydrology is inadequate. This study will provide a better understanding of melaleuca's <i>in situ</i> contribution to total ecosystem water-use by comparing its water-use with slash pine in a mature forest ecosystem. The data obtained from this study are important for understanding the role native and invasive exotic trees play in local hydrology. Such an understanding is paramount if we are to accurately assess and manage local, regional, and global water resources, especially in the face of predicted climate change.</p> <p>If in fact, melaleuca is responsible for significantly impacting the hydrology of natural plant communities, land managers, government agencies and funding agencies may need to shift their restoration and funding priorities to better accommodate local and regional water demands. The study site is located in a 5.8 ha. mesic flatwoods community with <50% melaleuca infestation on Galt Preserve, a 107 ha. preserve. Sap flow will be measured using thermal dissipation probes placed into randomly selected melaleuca and pine trees. In addition to measuring transpiration, climate factors (relative humidity, temperature, precipitation, wind speed and direction, soil moisture and photosynthetically active radiation) and groundwater will be measured along a transect of continuous groundwater level recorders to calculate evapotranspiration of the study site.</p> <p>After the first year of data collection, all melaleuca trees will be removed from the one half of the study site by hand crews, taking care to not damage the pine trees within the plot. Data will be collected for one additional year to determine the effects of removing the invasive exotic trees on the remaining pines and the hydrology of the study site. Grant funding will be used to purchase some of the monitoring supplies, as well as pay for the removal of the melaleuca from this portion of the preserve. A mid-point status report and presentation, documenting progress towards the project's objectives and any preliminary results will be provided by July 14th 2010. A fiscal-year final report including an analysis of results, discussion and recommendations for future research and management will be provided by September 30th 2010. This project will also provide educational and volunteer opportunities for the citizens living within the Charlotte Harbor NEP boundaries.</p>	\$64,557	\$16,939	\$47,618	74%

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<p>H. Oyster Reef Crab Populations as Indicators of Freshwater Inflow and Salinity conditions in Estero Bay (Schmid, Jeffrey - Conservancy of SW FL)</p>	<p>Urban areas to the north and east of Estero Bay rely on drainage canals for flood control that eventually flow into the bay's tributaries, thus affecting the quantity and quality of freshwater entering the estuary. The composition of stenohaline (limited range of salinity tolerance) and euryhaline (broad range of salinity tolerance) crab populations inhabiting oyster reefs can be used as a tool for investigating freshwater inflow alterations and salinity conditions in the estuarine environment. Oyster reefs located at or near the mouth of tributaries to Estero Bay will be sampled monthly using replicate Hester-Dendy substrates at each reef. Field water quality measurements will be recorded during sampling and streamflow data downloaded via the internet.</p> <p>The number of stenohaline crabs (<i>Petrolisthes armatus</i>) and euryhaline crabs (<i>Eurypanopeus depressus</i>) will be used to produce a ratio which will then be compared to the spatial and temporal patterns of salinity and streamflow within the bay. The resulting data would provide important information concerning the biological effects of the present freshwater inflow conditions to Estero Bay, and would establish the use of in situ environmental indicators as a tool for future efforts to manage the inflow rates to this and other estuaries in the Charlotte Harbor National Estuary Program. Addresses objective HA-1 and priority action HA-A of the 2008 CCMP.</p>	\$37,071	\$17,071	\$20,001	54%
<p>I. Responses of Coastal and Estuarine Zooplankton to Variation in Freshwater Inflow in the Caloosahatchee River and Estuary: A Sample Processing Effort (Tolley, Greg - FGCU)</p>	<p>The goal of this project is to establish relationships between variability in freshwater inflow and ecosystem condition by characterizing and quantifying the responses of estuarine zooplankton to inflow. The project therefore focuses on an important estuarine function that often goes overlooked when assessing ecosystem condition—the production of prey organisms for fishes that use estuaries as nursery habitat. This project is part of a collaborative partnership between Florida Gulf Coast University and the University of South Florida, funded by a Congressional Award from the U.S. Department of Education and by the South Florida Water Management District. Funding from the Charlotte Harbor National Estuary Program is being requested only to process a portion (6 months x 14 stations = 84 samples) of the total zooplankton samples currently being collected as part of this larger project.</p> <p>Zooplankton and water quality data are being collected monthly at 14 locations along the length of the tidal Caloosahatchee River and estuary. Plankton-net tows (500-µm mesh net equipped with flowmeter) are made on flood tides, at night, and sample the entire water column. Zooplankton sample processing will involve the identification and enumeration of target zooplankton organisms (i.e., fishes, decapods, gelatinous predators) under a microscope to the lowest taxon practical as well as identification of the developmental stage. Resulting organism density will be expressed as numbers/m-3.</p>	\$34,837	\$16,170	\$18,667	54%

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	<p>The relationships developed in this study between freshwater inflow and estuarine secondary production will also have applicability to other estuarine systems; this research has a high potential for transferability especially to water resource managers of estuaries that experience a great deal of seasonal variation in precipitation and the resulting freshwater inflow. It also has great demonstration value within the community, illustrating how science can be applied locally to address specific resource management issues that have regional implications. Specifically, the CHNEP will be provided with zooplankton project data and analyses for the entire sampling period, not just those samples related to CHNEP funding.</p> <p>Not only will the CHNEP receive data from six additional months of sampling and sample processing, but it will also benefit from data analysis and interpretation that is being supported by our research partners. Project reporting will include information on spatial and temporal trends in both basic water quality and the abundances of target organisms. Attention will also be given to examining potential relationships between biological and water quality parameters, especially between biological parameters and freshwater inflow. Toward this end, we will identify potential indicator species that can be used to develop a management tool that can be used by water managers to estimate the potential impacts of various flow regimes on the abundance of these indicator species.</p>			
<p>J. Sources of Fecal Indicator Bacteria in Nearshore and Inshore Waters; Local Versus Regional Influences (Milbrandt, Eric - SCCF)</p>	<p>Water quality degradation in Pine Island Sound and beach closures at Blind Pass, Bowman's Beach and Captiva are cause for concern for residents, resort owner/operators, and tourists to area beaches because of economic consequences. Pine Island sound is listed as impaired for fecal coliform causing conditional shellfish harvest and beaches are occasionally closed by high concentrations of fecal indicator bacteria, such as fecal coliform or <i>Enterococcus</i>. We propose to examine surface water, groundwater, and associated sands to determine the influence of local versus regional factors on fecal indicator bacteria.</p> <p>Local sources through groundwater discharge or "legacy" bacteria in surrounding intertidal and subtidal beach sands may be an important source of nearshore and inshore fecal indicator bacteria. To accomplish this, groundwater wells will be established from the shoreline landward for sampling potential sources of fecal indicator bacteria. Additionally, fecal indicators from beach sand will be analyzed to determine if fecal indicator bacteria are resident in the local beach environment. Regional influences will be determined through an analysis of CHNEP water quality monitoring and RECON data to determine to what degree tides, discharges, or other ambient water quality factors are contributing to high concentrations of fecal indicators in Pine Island Sound.</p>	<p>\$39,312</p>	<p>\$19,656</p>	<p>\$19,656 50%</p>

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	<p>This effort complements a currently funded comprehensive baseline study characterizing anthropogenic pollution in and around Blind Pass and Captiva Island sponsored by the Lee County Tourism Development Council (TDC). This proposal directly addresses the CHNEP priority area <i>Water Quality Degradation/Nutrient Enrichment</i> and the environmental indicator and gaps immediate need to identify sources of pollution in impaired water bodies (from page 4 of request for proposals). As part of a larger effort to determine local and regional influences on water quality degradation, this project focuses on the causes of waterbody impairment and can be broadly applied as a management tool.</p>			
<p>K. Spectral and Epiphyte Attenuation Enhancement of an Existing charlotte Harbor Light Model with Respect to Seagrasses (Hall, Emily & Dixon, Kelly - Mote)</p>	<p>Light requirements of seagrasses in Charlotte Harbor have been established (Dixon Kirkpatrick, 1999) and optical models have been developed to determine the role of specific attenuators (McPherson and Miller, 1994; Dixon and Kirkpatrick, 1999; Corbett, 2006). However, there is a need to strengthen these models to account for both the spectral quality the various attenuating substances and to recognize the role of epiphytes (epiphytes have previously been shown to cause 21% to 44% light attenuation). Increasing urbanization and water quality degradation can lead to declines in seagrass populations, and seagrass beds are particularly susceptible to light degradation (which can be caused by increases in color, turbidity, CDOM, epiphytes, or chlorophyll).</p> <p>We propose to build on a model that allows for an assessment of areas which may be susceptible to degradation of water clarity under increased nutrient scenarios. This new optical model will be able to determine more accurate light requirements and if Charlotte Harbor is meeting those light requirements.</p> <p>A spectrally explicit optical model exists for all of Charlotte Harbor including specific attenuation coefficients for water, color, and chlorophyll (Dixon and Kirkpatrick, 1999). Average contributions to water column attenuation for color, turbidity, and chlorophyll in Charlotte Harbor as a whole were 65%, 31%, and 4%, respectively (Dixon and Kirkpatrick, 1999). Epiphyte attenuation (although not included in previous models) has been shown to reduce light available to seagrasses annually by 21% to 44%, significantly more than chlorophyll attenuation (Dixon and Kirkpatrick, 1999). This is a strong argument for including epiphytes the already developed model.</p>	<p>\$35,549</p>	<p>\$17,774</p>	<p>\$17,775 50%</p>

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	<p>Photosynthetically available radiation (PAR) is also not a complete description of light that reaches seagrass and is useable by the seagrass. We propose build on and improve the model presented by Dixon and Kirkpatrick (1999) by incorporating PUR (photosynthetically useable radiation) and spectral attenuation from epiphytes. The model will result in a spectral distribution of light at a selected depth and under selected or observed water quality conditions (color, turbidity, and chlorophyll). The resulting light will be further attenuated by spectrally specific values for epiphytes and the resulting at-plant spectra will weighted by literature PUR values to determine photosynthetic efficiency in the available light regime. The proposed research (in conjunction with related research) will contribute to the following priorities: WQ-B, C, E, I; FW-D. There will also be a contribution to the following environmental indicators and gaps: WQ-c(9,10).</p>			
<p>L. A Water Quality Monitoring Project to Ascertain the Extent Local Septic Systems Have on charlotte Harbor Waterways (Cook, Brettany - FDoH CCHD)</p>	<p>Charlotte County is home to a large number of onsite sewage treatment and disposal systems (OSTDS) the most common of which are referred to as septic systems. Charlotte County has approximately 300 miles of navigable canals, with an estimated 25,000 waterfront properties and 100,000 adjacent properties, many of which use septic systems to treat human waste. It has been estimated that over one third of these septic systems were improperly installed, have broken over time or are not operating properly, resulting in a septic system failure. The discharge from these failing systems have the potential to be detrimental to the water quality, biota and the aquatic habitat of Charlotte Harbor and its waterways.</p> <p>With such a large number of septic systems, it is reasonable to assume that in addition to fertilizer and storm water runoff, septic discharge has a potential to impact the waterways that lead to Charlotte Harbor. Previous studies in other areas have indicated that effluent from a septic system's drain field can migrate into aquifers and leach into adjacent surface waters. Constituents of septic discharge that may impact water quality, biota and habitat suitability include bacterial populations that may be virulent and cause pathogenecity, consumer chemicals, and increased rates of loadings with respect to Carbon, Nitrogen, Phosphorus, and Ammonia. Some water quality monitoring has been conducted previously within Charlotte Harbor; however, there is a dearth of information regarding the water quality of man-made canals in the area. The current proposal will build on previously collected data and augment it with examination of constituents of septic input into the canals leading to Charlotte Harbor.</p>	<p>\$49,670</p>	<p>\$20,000</p>	<p>\$29,670 60%</p>

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	<p>Standard water quality measurements will be taken including Depth, pH, Temp, Conductivity, Salinity, Dissolved Oxygen, Ammonia and Phosphorus. Additionally, Total Kjeldahl Nitrogen (TKN), Biological Oxygen Demand (BOD) and Antibiotic resistant bacteria of the genus Escherichia as well as fecal coliform counts, and Enterococci sp counts will be performed. Funding dependent, caffeine and virus analysis may be performed at select locations. The areas to be targeted in this study will be areas where there is a large number of known failing septic systems based on repair rates. Results will then be compared to lesser impacted waterways in the county. Descriptive statistics, correlation rates and non parametric probability tests will be employed to determine if there is definable human impact on the canals leading to Charlotte Harbor.</p> <p>A final report will be prepared as well as a public presentation which will outline the results of the project. All reports will be submitted to all partnering agencies, CHNEP, USEPA, and copies maintained at the Florida Department of Health (FDOH). It is hoped that the information gained from this project will support the FDOH Managed Septic System Program, the goals of the CHNEP, and influence public policy and fiscal allocation by Charlotte County to reduce public health risks and improve environmental quality.</p>			
<p>M. Smokehouse Bay Preserve Restorationb (Olson, Cathy - Lee Co. Parks & Recreation's conservation 20/20)</p>	<p>Smokehouse Bay Preserve is a 268 acre environmental preserve that is part of the Lee County Conservation 20/20 program. The southern tract was purchased in 1999 and the northern tract was purchased in 2007 for its environmental qualities and restoration potential. This grant proposal is for a portion of the northern tract which consists of 51 acres of an abandoned palm grove and 59 acres of mangrove swamp. The entire Smokehouse Bay Preserve is managed according to the Conservation 20/20 guidelines and a land stewardship</p>	<p>\$73,927</p>	<p>\$20,000</p>	<p>\$53,927 73%</p>
<p>TOTALS</p>		<p>\$477,791</p>	<p>\$210,194</p>	<p>\$267,598 56%</p>

12:15 A.M. Lunch

1:30 – 3:00 P.M. Question and Answer Period for Applicants Continued

- 1:30 **Oyster Reef Crab Populations as Indicators of Freshwater Inflow and Salinity conditions in Estero Bay** (Schmid, Jeffrey - Conservancy of SW FL)
- 1:45 **Responses of Coastal and Estuarine Zooplankton to Variation in Freshwater Inflow in the Caloosahatchee River and Estuary: A Sample Processing Effort** (Tolley, Greg - FGCU)
- 2:00 **Sources of Fecal Indicator Bacteria in Nearshore and Inshore Waters; Local Versus Regional Influences** (Milbrandt, Eric - SCCF)
- 2:15 **Spectral and Epiphyte Attenuation Enhancement of an Existing Charlotte Harbor Light Model with Respect to Seagrasses** (Hall, Emily & Dixon, Kelly – Mote)
- 2:30 **A Water Quality Monitoring Project to Ascertain the Extent Local Septic Systems Have on charlotte Harbor Waterways** (Cook, Brettany - FDoH CCHD)
- 2:45 **Smokehouse Bay Preserve Restoration** (Olson, Cathy – Lee Co. Parks & Recreation's Conservation 20/20)

3:05 – 4:30 P.M. Discussion of funding recommendations

Committee members will make recommendations for funding to the full TAC which meets October 22, 2008.

The TAC makes recommendations to the Management and Policy Committees in October/November 2008.

Applicants will receive final funding approval in November 2008.

4:30 P.M. Adjourn