

**VIRGINIA INSTITUTE OF MARINE SCIENCE
GRANT AND CONTRACT AWARDS
FISCAL YEAR 2003**

FEDERAL AWARDS

Allen, Standish K., "Oyster Rack Construction-York River," National Oceanic and Atmospheric Administration/National Marine Fisheries Service, \$15,000

Allen, Standish K., Mark W. Luckenbach, Kimberly S. Reece, Mark D. Camara, "A Consortium Based Approach for Genetic Rehabilitation of oysters in the Mid-Atlantic," National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$300,028

Anderson, Iris C., "Cycling of Nitrogen and Carbon in a Coastal Lagoon," National Science Foundation, \$10,000

Austin, Herbert A., A. Deane Estes, Donald Seaver, "Estimation of Juvenile Striped Bass Relative Abundance in the Virginia Portion of Chesapeake Bay," U. S. Fish and Wildlife Service/Virginia Marine Resources Commission, \$112,944

Austin, Herbert A., Marcel M. Montane, "Estimating Relative Juvenile Abundance of Ecologically Important Finfish and Invertebrates in the Virginia Portion of Chesapeake Bay," National Oceanic and Atmospheric Administration/National Marine Fisheries Service, \$353,934

Austin, Herbert A., Todd Mathes, "Assessing Virginia's Estuaries and Tidal Tributaries to the Chesapeake Bay and Atlantic Ocean: National Coastal Assessment, 2002," Environmental Protection Agency, \$45,100

Bauer, James E., "Collaborative Research: Delivery and Fate of Old Terrestrial Carbon in a Riverine Ecosystem," National Science Foundation, \$322,731

Berman, Marcia R., "Development of a Comprehensive Shoreline Inventory for the State of Maryland: Phases 1-3," National Oceanic and Atmospheric Administration/Coastal Zone Program, \$163,000

Berman, Marcia R., "Development of a Protocol for Evaluating the Suitability of Shorelands for Waterfront Development," National Oceanic and Atmospheric Administration/Coastal Zone Program, \$45,518

Bonzek, Christopher F., "Preparation of 2002 Chesapeake Bay Blue Crab Advisory Report", National Oceanic and Atmospheric Administration, \$5,380

Bonzek, Christopher F., Herbert A. Austin, John M. Hoenig, "Design and Pilot Implementation

of a Chesapeake Bay Monitoring and Assessment Program (CHESMMAP),” National Marine Fisheries Service, \$498,763

Bronk, Deborah A., Walker O. Smith, Deborah K. Steinberg, "Quantification and Modeling of DOC and DON Release in Marine Systems: A Study of Increasing Trophic Complexity," National Science Foundation, \$1,699,795

Burreson, Eugene M., “Elucidating the Life Cycle of the *Haplosporidium nelsoni* (MSX) Using an Experimental Approach and Molecular Diagnostics," National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium \$82,989

Burreson, Eugene M., “Infectivity, Pathogenicity, and Epizootiology of the Clam Parasites *Perkinsus chesapeaki* and *Perkinsus andrewsi* in the Chesapeake Bay Oysters: Have We Been Misinterpreting the *Perkinsus marinus* Epizootiology?” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$68,432

Burreson, Eugene M., Howard I. Kator, Martha W. Rhodes, “Parasites of *Crassostrea ariakensis* Held in Chesapeake Bay and Comparative Elimination Kinetics of Fecal Coliforms and Male-Specific Coliphage from *C. ariakensis* and *C. virginica*," National Oceanic and Atmospheric Administration/Maryland Sea Grant, \$34,834

Burreson, Eugene M., Kimberly S. Reece, “Oyster Herpes Virus Threat to U.S. Oyster Producers," National Oceanic and Atmospheric Administration/Sea Grant w/Pacific Shellfish Institute, \$20,430

Burreson, Eugene M., Lisa Ragone Calvo, Kimberly S. Reece, “In Situ Determination of *Perkinsus marinus* Transmission Dynamics in Low Salinity Habitats: Implications for Disease Avoidance Management Strategies and Oyster Restoration,” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$40,300

Burreson, Eugene M., Standish K. Allen, Kimberly S. Reece, “Potential Pathogens of *Crassostrea ariakensis* in Its Native Range in China and in Established Populations in Washington, USA," National Marine Fisheries Service, \$77,187

Calvo, Lisa Ragone, Eugene M. Burreson, “Evaluation of Potential for Transfer of QPX via Seaside to Bayside Clam Transplantations,” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$7,907

Canuel, Elizabeth A., “Collaborative Research: How Temporal Changes in River Discharge and Storms Affect the Source and Age Distribution of Sedimentary Organic Carbon Across a River-Dominated Margin,” National Science Foundation, \$115,000

Chu, Fu-Lin E., “Evaluation of Inherent and Induced Thermal-Tolerance in Protection of Oyster Populations from Summer Mortality Caused by Dermo and MSX Parasitism and Thermal Stress,” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science

Consortium, \$63,675

Chu, Fu-Lin E., Kimberly S. Reece “Lipid Metabolism in the Oyster Protozoan Parasite, *Perkinsus marinus*: Incremental Funding for International Travel and Research Experience for Undergraduates,” National Science Foundation, \$17,000

Chuenpagdee, Ratana, “Assessing Stakeholders' Preferences for Ecosystem Management Options for the Chesapeake Bay Using the Damage Schedule Approach,” National Marine Fisheries Service, \$59,260

Clark, Vicki P., Susan E. Haynes, John E. Graves, “Professional Development Programs for Science Teachers in the Chesapeake Bay Watershed,” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$41,500

Diaz, Robert J., “Technical Support to SAIC for the Development of a NOAA WebSite on the Topic of Benthic Habitat Mapping,” National Oceanic and Atmospheric Administration, \$15,000

Diaz, Robert J., Jesse E. McNinch, “Mapping Benthic Habitats in the York River, Virginia,” National Oceanic and Atmospheric Administration, \$99,500

DuPaul, William D., “Development and Construction of Modified Sea Scallop Dredge Gear to Reduce Sea Turtle Interactions,” National Marine Fisheries Service, \$7,000

DuPaul, William D., “Enhancement of the Value and Product Quality of Commercially Caught Striped Bass,” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$7,519

DuPaul, William D., “Marina Technical Advisory Program,” National Oceanic and Atmospheric Administration/Coastal Resource Management, \$78,000

DuPaul William D., “Regional Award for the Fisheries Extension Enhancement Program,” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$15,000

DuPaul, William D., “Special Issue of Virginia Marine Science Bulletin,” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$9,004

DuPaul, William D., “Turtle By-Catch Reduction Project Oversight, Training, and Data Entry,” National Marine Fisheries Service, \$94,415

DuPaul, William D., “Virginia Sea Grant Marine Advisory Program, 2003,” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$483,000

DuPaul, William D., Thomas J. Murray, “Coastal Community Development, Year 3,” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$50,000

Ducklow, Hugh W., “LTER Supplement: Climate Change and Ecosystem Migration: Research Experience Support for Undergraduates,” National Science Foundation, \$52,000

Ducklow, Hugh W., “Palmer Station: Antarctic Long-Term Ecological Research Project on the Antarctic Marine Ecosystem: Climate Change, Ecosystem Migration and Teleconnections in an Ice Dominated System,” National Science Foundation, \$4,290,000

Friedrichs, Carl T., “Forecasting Scour Related Mine Burial Using a Parameterized Model” , Office of Naval Research, \$99,660

Friedrichs, Carl T., “TIDE: Trophic Cascade and Interacting Control Processes in a Detritus-Based Aquatic Ecosystem,” National Science Foundation, \$50,701

Friedrichs, Carl T., “Upscaling Simple Models for Energetic Shelf Sediment Transport,” Office of Naval Research, \$19,627

Gammisch, Robert A., “Anacostia River Coring,” National Oceanic and Atmospheric Administration, \$30,576

Gartland, James, Christopher F. Bonzek, John Walter, Robert J. Latour, “Age-Specific Trophic Interactions of Bluefish (*Pomatomus saltatrix*) in the Mainstream Chesapeake Bay,” National Marine Fisheries Service, \$10,000

Graves, John E., “Administrative and Travel Management Support for the Advisory Committee to the U. S. Section to the International Commission for the Conservation of Atlantic Tunas (ICCAT),” National Marine Fisheries Service, \$150,000

Graves, John E., “Billfish Population Assessment: Student Support from Southeast Fisheries Center,” National Marine Fisheries Service/Southeast Fisheries Management Center, \$59,372

Graves, John E., “Cooperative Marine Education and Research Program: Summer Intern Support,” National Marine Fisheries Service, \$6,000

Graves, John E., “Population Structure Analysis of Atlantic Bluefin Tuna Using Hypervariable, Nuclear DNA Markers,” National Marine Fisheries Service, \$126,793

Graves, John E., “Use of Pop-Up Satellite Archival Tags to Determine Survival and Habitat Preference of White Marlin (*Tetrapterus albidus*) Released from the U.S. Recreational and

Commercial Fisheries,” National Marine Fisheries Service, \$79,200

Graves, John E., Jan R. McDowell, “Molecular Systematics of the Billfishes (*Istiophoridae* and *Xiphiidae*),” National Marine Fisheries Service, \$34,359

Graves, John E., Vicki P. Clark, Susan E. Haynes, “Marine Fisheries Science and Management: A Summer Course for Secondary Science Teachers,” National Marine Fisheries Service, \$24,999

Hale, Robert C., “Analysis of Blood Samples for Polybrominated Diphenyl Ether Congeners,” Environmental Protection Agency, \$32,400

Hardaway, C. Scott, “Shoreline Management Survey for Coastal Beaches and Dunes at Little Creek NAB Dam Neck and Camp Pendleton,” NAVFAC, \$19,478

Hardaway, C. Scott, Donna A. Milligan, “Shoreline Management Plan Phase II: York River Shoreline,” National Park Service/Colonial National Historical Park, \$44,272

Hardaway, C. Scott, Donna A. Milligan, “Tangier Island, Virginia: Shoreline Management Plan for the Uppards Coast,” Army Corps of Engineers, \$27,000

Hardaway C. Scott, Lyle M. Varnell, “Chesapeake Bay Dune Systems: Ongoing Monitoring and Management Analysis,” National Oceanic and Atmospheric Administration/Coastal Resource Management, \$110,000

Hargis, Jr., William J., “Oyster Reef Mapping Project,” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$8,000

Harris, Courtney K., “Sediment Redistribution and Seabed Modification in the Western Adriatic,” Office of Naval Research, \$50,000

Havens, Kirk J., “Draft Woody Depressional Wetland HGM Model Development for the Coastal Plain of Virginia,” Environmental Protection Agency, \$202,203

Havens, Kirk J., “Initiating Development of a Forested Headwater Wetland HGM Model for Wetlands Management in Virginia,” Environmental Protection Agency, \$163,199

Haynes, Susan E., “Blue Crab Bowl 2003: Sea Grant Support,” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$2,961

Hershner, Carlton H., “Albemarle-Pamlico National Estuary Program: Chesapeake 2000 Agreement Coordination for VA Department of Conservation and Recreation,” Environmental Protection Agency, \$46,800

Hershner, Carlton H., “Aquaculture Management,” National Oceanic and Atmospheric

Administration/Coastal Resource Management, \$76,500

Hershner, Carlton H., “Consortium for Atlantic Regional Assessment (CARA): Proposed Assessment in the Mid- and Upper-Atlantic Region (MUAR),” Environmental Protection Agency, \$30,000

Hershner, Carlton H., “Development, Testing, and Application of Ecological and Socioeconomic Indicators for Integrated Assessment of Aquatic Ecosystems of the Atlantic Slope in the Mid-Atlantic States: Estuarine Ecosystems,” Environmental Protection Agency, \$588,565

Hershner, Carlton H., “Enhancement of Wetlands Regulatory Program,” National Oceanic and Atmospheric Administration/Coastal Resource Management, \$90,500

Hershner, Carlton H., “Tidal Wetlands Management Technical Support,” National Oceanic and Atmospheric Administration/Coastal Resource Management, \$40,000

Hershner, Carlton H., Anamarija Frankic, “International Workshop: Innovative Approaches in Biocomplexity and Sustainable Ecosystem Management: Integrating Natural, Social, and Economic Sciences,” National Science Foundation, \$12,769

Hershner, Carlton H., Jian Shen, Harry V. Wang, “Development of Shellfish TMDL's (Total Maximum Daily Loading),” Environmental Protection Agency, \$501,600

Hobbs, Carl H., C. Scott Hardaway, Jesse E. McNinch, “Continuing Studies on the Southeastern Virginia Inner Continental Shelf including Studies Related to Beach Nourishment,” Minerals Management Service, \$50,000

Hobbs, Carl H., Robert J. Diaz, C. Scott Hardaway, Jerome P-Y. Maa, Jesse E. McNinch, “Field Testing of a Physical/Biological Monitoring Methodology for Offshore Dredging and Mining Operations,” Minerals Management Service, \$172,108

Hoening, John M., Daniel A. Hepworth, Romuald N. Lipcius, Marcel M. Montane, “Tagging Studies of Blue Crabs in Chesapeake Bay: Year 2,” National Marine Fisheries Service , \$139,434

Hoening, John M., “Developing Improved Assessment Methods for American Shad in the York River,” U. S. Fish and Wildlife Service/Virginia Marine Resources Commission, \$22,407

Hoening, John M., “NMFS Toolbox: Programming Modules,” National Marine Fisheries Service, \$30,000

Kaattari, Stephen L., “Induction of Potential Pathological State in *Perkinsus marinus* by Exposure to Oyster Tissue Extracts: Modulation of Cell Morphology and Protease/Antigen Production,” National Oceanic and Atmospheric Administration/ Virginia Graduate

Marine Science Consortium, \$115,454

Kator, Howard I., Carlton H. Hershner, "Shellfish TMDL Site Data Base Development," Environmental Protection Agency, \$212,188

Kirkley, James E., Ratana Chuenpagdee, "Community Impact Assessment and Highly Migratory Species Management: An Analysis of the Effects of Highly Migratory Species Management and Regulation on Communities in the Charleston Bump Area," National Marine Fisheries Service, \$19,576

Kirkley James E., "Support for the North American Association of Fisheries Economists' 2003 Forum," National Marine Fisheries Service, \$25,000

Kuehl, Steven A., "Margins Workshop on the Waipaoa Source to Sink Focus Area," National Science Foundation, \$142,571

Larkin, Lee, Vicki P. Clark, "The BRIDGE: Continuation of Web-Based Education Resource for Marine Science Education," Office of Naval Research, \$99,647

Larkin, Lee, Vicki P. Clark, "Bridge: Online Ocean Science Teacher Center," National Oceanic and Atmospheric Administration/ Virginia Graduate Marine Science Consortium, \$215,550

Larkin, Lee, Vicki P. Clark, "COSEEweb: Support for Web Service for Centers for Ocean Science Education Excellence," National Science Foundation, \$87,941

Lipcius, Romuald N., Rochelle D. Seitz, Jacques Van Montfrans, "The Blue Crab, *Callinectes sapidus*: An Integrated Research of Basic Biology, Hatchery Technologies and the Potential for Replenishing Stocks," National Marine Fisheries Service, \$225,000

Lipcius, Romuald N., John M. Hoenig, "Spatial Distribution of the Blue Crab in the Lower Chesapeake Bay - Continental Shelf System," Army Corps of Engineers, \$67,586

Luckenbach, Mark W., "Water Quality Data Inventory," National Oceanic and Atmospheric Administration/Coastal Resource Management, \$42,000

Luckenbach, Mark W., "Evaluating and Enhancing the Success of Oyster Reef Restoration: The Effects of Habitat Complexity on Oyster Survival," National Oceanic and Atmospheric Administration/Coastal Resource Management, \$41,710

Luckenbach, Mark W., Harry V. Wang, "Estimating Carrying Capacity and Influence on Water Quality for Large-Scale Clam Aquaculture," National Oceanic and Atmospheric Administration/ Virginia Graduate Marine Science Consortium, \$77,065

Mann, Roger L., Juliana M. Harding, "Aquatic Nuisance Species Invasions: Ecological and

Commercial Impact, and Control of the Non-indigenous Marine Gastropod *Rapana venosa*,” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$101,356

Mann, Roger L., John A. Musick, Roy A. Pemberton, Jr., “Black Sea Bass: Collaborative Studies with Hampton University,” National Marine Fisheries Service, \$26,219

Mann, Roger L., Juliana M. Harding, “Oyster Advisory Report for NOAA/NMFS Chesapeake Bay Office,” National Marine Fisheries Service, \$5,380

Mann, Roger L., “Strategies for Restoring and Managing the Eastern Oyster in Chesapeake Bay: Quantitative Biological Analysis of Management Options,” National Marine Fisheries Service,” \$20,423

Mann, Roger L., Standish K. Allen, Eugene M. Bureson, Mark W. Luckenbach, “Oyster Reef Restoration in Chesapeake Bay: Consulting Services,” Army Corps of Engineers, \$90,000

McNinch, Jesse E., John D. Milliman, “SGER: Documenting the Regional and Global Importance of Halimeda Bioherms in the Calcium Carbonate Budget,” National Science Foundation, \$35,000

McNinch, Jesse E., “Young Investigator Program: Geological Influences on Nearshore Dynamics,” Army Research Office, \$74,000

Mills, Sally H., “A Regional Web Site on the Horseshoe Crab: Supporting Fisheries Conservation and Management Through Public Education,” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$1,001

Moore, Kenneth A., William G., Reay, “Chesapeake Bay Program: Nearshore Habitat Monitoring Program,” Environmental Protectional Agency, \$255,035

Murray, Thomas J., Jon A. Lucy, “Plan to Enhance Education and Outreach to the Mid-Atlantic Charter Boat Fisheries,” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$35,586

Murray, Thomas J., “Can the Recent Growth of the Hard Clam Aquaculture in Virginia and the U.S. Be Sustained?” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$10,681

Musick, John A., “Life History, Essential Habitat and Stock Assessment of Highly Migratory Sharks and Other Elasmobranchs in U. S. Waters (Including Hawaii and Alaska): Fisheries Research for the VIMS Shark Research Program 2002-2003,” National Marine Fisheries Service, \$331,250

Musick, John A., Daniel S. Ha, “Essential Fish Habitat of Juvenile Atlantic Sturgeon,

Acipenser oxyrinchus in Virginia,” National Marine Fisheries Service, \$30,838

Musick, John A., Katherine L. Mansfield "Loggerhead (*Caretta caretta*) Sea Turtle Behavior and Population Estimates in Virginia,” National Marine Fisheries Service, \$28,803

Musick, John A., Roy A. Pemberton, Jr., “Black Sea Bass (*Centropristis striata*) Biology and Population Dynamics,” National Marine Fisheries Service, \$23,731

Musick, John A., Katherine L. Mansfield, “Loggerhead Sea Turtle Diving Behavior,” Army Corps of Engineers, \$70,335

Newman, Michael C., “Establishment of Mid-Atlantic Center for Ocean Science Education Excellence (COSEE)” National Science Foundation, \$625,330

Newman, Michael C., “Peer Review and Technical Support for the Saltville NPL Site Natural Resource Damage Assessment and Restoration,” Fish and Wildlife Service, \$7,500

Oesterling, Michael J., “Exploring the Collaborative Learning Process for Management of Mid-Atlantic Fisheries,” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$1,751

Oesterling, Michael J., Thomas J. Murray, “Aquaculture Production of Spot (*Leiostomas xanthurus*) as Recreational Bait: Needs Assessment,” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$6,804

Olney, John E., “Developing Improved Assessment Methods for American Shad in the York River,” Fish and Wildlife Service/Virginia Marine Resources Commission, \$280,675

Olney, John E., “Striped Bass Monitoring and Tagging in Virginia: 2002-2003,” Fish and Wildlife Service/Virginia Marine Resources Commission, \$310,696

Olney, John E., “River to Estuary Migration of American Shad (*Alosa sapidissima*): Estimating the Value of Essential Rearing Habitat and Identifying Potential Population Bottlenecks During Year One,” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$37,741

Orth, Robert J., “2003 Submerged Aquatic Vegetation Distribution and Abundance Survey of Chesapeake Bay, its Tributaries and Delmarva Coastal Bays,” Environmental Protection Agency, \$175,009

Orth, Robert J., Elizabeth A. Canuel, “Use of Stable Isotopes for Developing a Food Web Model in a Recovering Seagrass System in Virginia Coastal Bays,” National Oceanic and Atmospheric Administration/Coastal Resource Management, \$10,000

Orth, Robert J., “2002 Submerged Aquatic Vegetation Distribution and Abundance in

Chesapeake Bay and Tributaries and the Coastal Bays of Maryland,” National Oceanic and Atmospheric Administration/Maryland Department of Natural Resources, \$60,051

Orth, Robert J., “2002 Submerged Aquatic Vegetation Distribution and Abundance Survey of Chesapeake Bay, its Tributaries and Delmarva Coastal Bays,” National Oceanic and Atmospheric Administration/Coastal Resource Management, \$59,010

Orth, Robert J., Kenneth A. Moore “Restoration of Seagrasses in Virginia Coastal Bays,” National Oceanic and Atmospheric Administration/Coastal Resource Management, \$85,000

Patterson, Mark R. “Flow Modulated Metabolism: Connection with Coral Bleaching and Reef Oxygen Crises?” National Oceanic and Atmospheric Administration/National Undersea Research Centers, \$33,877

Perry, James E., “Establishment of an Eco-tourism Certification Course for the Virginia Eastern Shore,” National Oceanic and Atmospheric Administration/Coastal Resource Management, \$12,250

Perry, James E., “Internship to Monitor Estuarine Nutrient Enrichment at Colonial National Historical Park,” National Park Service, \$12,657

Priest, Walter I., “Wetland Restoration Plan: Norfolk Naval Yard,” U. S. Navy, \$11,142

Reay, William G., “Chesapeake Bay National Research Reserve in VA: Combined Operations, Research, Monitoring, Education and Stewardship Award,” National Oceanic and Atmospheric Administration/National Estuarine Research Reserve, \$548,360

Reay, William G., “Property Acquisition: Chesapeake Bay National Research Reserve in Virginia: Harrison Tract,” National Oceanic and Atmospheric Administration/Coastal Resource Management, \$273,900

Reay, William G., “2002 Coastal Management Support for Virginia Department of Environmental Quality,” National Oceanic and Atmospheric Administration/Coastal Resource Management, \$134,749

Reay, William G., Robert A. Carroll, “Investigating Current Chesapeake Bay Fishery Issues: A Field Based Education Program,” National Marine Fisheries Service, \$10,636

Reece, Kimberly S., Standish K. Allen, “Analysis of Genetic Variation in *Crassostrea ariakensis*: Evaluation of Germplasm Resources for Broodstock Development,” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$43,680

Reece, Kimberly S., “Screening of *Crassostrea ariakensis* from its native range in Japan and China for Herpes Virus and *Perkinsus spp.* Infections,” National Oceanic and Atmospheric

Administration/Virginia Graduate Marine Science Consortium, \$19,378

Reece, Kimberly S., Lisa Ragone Calvo, Mark D. Camara, “Molecular Marker Based Strategies for Domestication and Genetic Improvement in the Hard Clam, *Mercenaria mercenaria*” U. S. Department of Agriculture, \$290,000

Reece, Kimberly S., Standish K. Allen, Mark D. Camara, “Molecular Marker-Informed Walk Back Selection for QPX Resistance in Hard Clams, *Mercenaria mercenaria*” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$86,018

Schaffner, Linda C., “Collaborative Research: A Linked Initiative for Developing Minority Doctoral Scholars in Ocean Sciences,” National Science Foundation, \$104,118

Schaffner, Linda C., Iris C. Anderson, Rochelle D. Seitz, “Research Experience for Undergraduates/REU/in Coastal Marine Science at the Virginia Institute of Marine Science,” National Science Foundation, \$269,816

Schaffner, Linda C., Iris C. Anderson, “An Integrated Approach to Assess the Impacts of Military Activities on Shallow Water Benthic Community Structure and Function in the Chesapeake Bay Ecosystem,” Department of Defense/Strategic Environmental Research and Development Program, \$663,256

Seitz, Rochelle D., “Impact of Craney Island Extension of Abundance, Biomass and Diversity of Dominant Benthic Species,” Army Corps of Engineers, \$55,439

Shields, Jeffrey D., Leonard W. Haas, “*Pfiesteria Shuwayae* Toxin Strain CCMP 2089,” National Institute of Environmental Health Science, \$40,000

Smith, Walker O., “Acquisition of Moored Water Sampling Equipment to Assess the Regulation of Phytoplankton Productivity in the Ross Sea,” National Science Foundation, \$266,654

Smith, Walker O., “Collaborative Research: Interactive Effects of Ultraviolet Light and Vertical Mixing on Phytoplankton and Bacterioplankton in the Ross Sea,” National Science Foundation, \$14,406

Van Montfrans, Jacques, “How Essential Fish Habitat Influences Population Structure for Spotted Seatrout, *Cynoscion nebulosus*, with Special Emphasis in Chesapeake Bay,” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$20,211

Vogelbein, Wolfgang K., Yasunari Kiryu, “*Aphanomyces invadans* in Chesapeake Bay Tributaries: Studies on Distribution and Environmental Influences on Proliferation and Zoospore Production,” U. S. Geological Survey, \$183,750

STATE AWARDS

Austin, Herbert A., Marcel M. Montane, "Estimating Relative Juvenile Abundance of Recreationally Important Finfish in the Virginia Portion of the Chesapeake Bay," Virginia Marine Resources Commission/Marine Recreational Fishing Advisory Board, \$49,270

Bonzek, Christopher F., "Establishment of a Chesapeake Bay Trophic Interaction Laboratory Services Program," Virginia Marine Resources Commission/Marine Recreational Fishing Advisory Board, \$89,475

DuPaul, William D., "Support for Virginia Mariculture Projects, Fiscal Year 2003," Virginia Marine Resources Commission, \$50,000

DuPaul, William D., Thomas J. Murray, "Fishery Resource Grant Program-Administrative Support for FY 2003/2004," Virginia Graduate Marine Science Consortium, \$30,000

Hale, Robert C., "Analytical Studies: Fish and Sediment Samples, FY 2003," Commonwealth of Virginia, Department of Environmental Quality, \$468,430

Haynes, Susan E., "Governor's School Program – 2003," Virginia Department of Education, \$5,500

Haynes, Susan E., "Outlook on Ocean Science: High School Marine Science Outreach Program 2002 Proposal," Chesapeake Bay Restoration Fund, \$2,780

Hoening, John M., Jon A. Lucy, "Determining Stock Status of Tautog in Virginia Waters Using Data from Virginia's Fishery," Virginia Marine Resources Commission/Marine Recreational Fishing Advisory Board, \$22,555

Lucy, Jon A., "Virginia Game Fish Tagging Program," Virginia Marine Resources Commission/Marine Recreational Fishing Advisory Board, \$38,888

Montane, Marcel M., "Estimating Relative Abundance of Young-of-Year American Eel, *Anguilla rostrata* in the Virginia Tributaries of the Chesapeake Bay," Virginia Marine Resources Commission/Marine Recreational Fisheries Advisory Board/Commercial Fisheries Advisory Board, \$23,492

Orth, Robert J., "Boat Scarring Effects on Submerged Aquatic Vegetation in Virginia: Recovery Patterns," Virginia Marine Resources Commission/Marine Recreational Fisheries Advisory Board, \$13,105

Orth, Robert J., "Enhancing Submerged Aquatic Vegetation (SAV) Habitat: Research and Education for Restoration," Virginia Marine Resources Commission/Marine Recreational Fisheries Advisory Board, \$95,116

Perry, James E. III, "Assessment of Virginia Department of Transportation Vegetation

Mitigation Activities,” Virginia Department of Transportation, \$10,000

Perry, James E. III, Linda C., Schaffner, Ratana Chuenpagdee, “Asian Environmental Issues of the 21st Century: Curriculum Development,” College of William and Mary/Freeman Fund, \$16,200

Reay, William G., Robert A. Carroll, “Coastal Habitat Restoration: Empowering Teachers through a Field Based Education Program,” Chesapeake Bay Restoration Fund, \$2,500

Schaffner, Linda C., “A Study to Evaluate the Potential Impacts of the Route 175 Re-Alignment on Benthic Living Resources of Chincoteague Bay, VA,” Virginia Department of Transportation, \$16,084

Schaffner, Linda C., James E. Perry III, Ratana Chuenpagdee, “Distinguished Southeast Asian Science and Policy Fellows Series,” College of William and Mary/Freeman Foundation, \$7,500

Schaffner, Linda C., Ratana Chuenpagdee, “Coastal Ecosystems of Asia: Expanding Perspectives on Science and Policy of the Coastal Ocean,” College of William and Mary/Reves Center, \$12,000

Unger, Michael A., “Elizabeth River Tributyltin Monitoring Program,” Virginia Department of Environmental Quality, \$55,000

Unger, Michael A., “Kepone Analysis,” Virginia Department of Environmental Quality, \$8,000

Vogelbein, Wolfgang K., Kimberly S. Reece, “Development of Molecular Tools for in situ Hybridization Studies of Mycobacteriosis in the Striped Bass, *Morone saxatilis*,” Virginia Marine Resources Commission/Marine Recreational Fishing Advisory Board, \$96,567

OTHER SOURCES

Allen, Standish K., " Development of Triploid and Tetraploid Technology for the Chilean Scallop, *Argopecten purpuratus*" , 4C's Breeding Technologies, Inc, \$114,871

Allen, Standish K., "Triploid *crassostrea ariakensis*: Seed Contract, State of North Carolina" , North Carolina Department of Natural Resources, \$38,520

Cartwright, Grace, "Optical Backscatter Sensor (OBS) Calibrations and Water Column Profiles Surveys in Support of Mixed Sediment Mound Monitoring at Brunswick, Georgia" , Evans & Hamilton, Inc., \$34,820

Chu, Fu-Lin E., "Collaborative Research Program: Student Research Exchange, INFREMER (French Marine Science Institute)," INFREMER, \$11,000

Diaz, Robert J., "Bottom Imaging and Habitat Characterization of Potential Sand Borrow Areas Offshore Delaware and Maryland," VERSAR, Inc., \$52,000

Diaz, Robert J., "Bottom Imaging and Habitat Characterization of Potential Sand Borrow Areas Offshore Delaware and Maryland (Area G)," VERSAR, Inc., \$14,800

Diaz, Robert J., "Radiological Sampling Services, 2002," Newport News Shipbuilding Marine, \$10,174

Graves, John E., Jan R. McDowell, "Age Determination, Bluefin Fish in Icelandic Waters" , Iceland Marine Institute," \$50,000

Hale, Robert C., "Qualitative and Quantitative Studies of Organochlorine Pesticides and PCBs in Fish Tissues Collected in Lakes Pamvotis and Kastoria, Greece," Science Museum of Virginia , \$15,000

Hale, Robert C., "Sample Analyses, various entities," \$4,500

Hardaway, C. Scott, "Messick Point, Poquoson, VA: Wave Climate Analysis," VHB, Inc., \$3,000

Haynes, Susan E., "Blue Crab Bowl 2003," Consortium for Oceanographic Research and Education, \$7,500

Luckenbach, Mark W., "Evaluating and Enhancing the Success of Oyster Reef Restoration: The Effects of Habitat Complexity on Oyster Survival," Virginia Environmental Endowment/Department of Environmental Quality, \$41,710

Luckenbach, Mark W., "Virginia's Eastern Shore Watersheds Network: An Integrated Approach to Addressing Local Water Quality Issues," Eastern Shore Soil and Water Conservation District, \$42,777

Maa, Jerome P-Y., "Acoustic Approach for Studying Consolidation of Fine Sediments: Improvements on Hardware for Field Experiment," Korean Oceanographic Research and Development Institute, \$12,653

Maa, Jerome P-Y., "Field Deployment of VIMS Sea Carousel for Quantifying Contaminant Loading to Surface Waters," CSC/SPAWAR , \$76,309

Mann, Roger L., "Studies in Age Determination of the Ocean Quahog," Rutgers University, \$20,000

Mann, Roger L., Herbert A. Austin, John E. Graves, Robert J., Latour, Richard L. Wetzel, "Development of a Multi-species Tropho-dynamic Model in Support of Sustainable Fisheries Management in Chesapeake Bay," Virginia Environmental Endowment, \$207,957

Mann, Roger L., Michael Vecchione, "Census of Marine Life: Collaborative Travel Project with Russian Scientists," Sloan Foundation , \$40,000

McNinch, Jesse E., "Characterization of Bathymetric and Hydrodynamic Changes Associated with Channel Realignment at Cape Fear, NC (ETD Survey)," Evans & Hamilton, \$35,000

Milligan, Donna A., "Monitoring and Analysis: Yorktown Public Beach," York County, \$5,000

Montane, Marcel M., "Monitoring Relative Abundance of the Young of Year American eel, *Anguilla rostrata*, in the Potomac River," Potomac River Fisheries Commission, \$20,405

Moore, Kenneth A., "Restoration of Submerged Aquatic Vegetation in the Tidal Freshwater James River: 2002-2003," Hopewell Wastewater Treatment Facility, \$40,000

Musick, John A. "Technical Manual for the Management of Elasmobranchs," Asia Pacific Economic Cooperative Secretariat, \$58,000

Musick, John A., Daniel S. Ha, "Restoration of Atlantic Sturgeon *Acipenser oxyrinchus* in the James River, Virginia," Virginia Environmental Endowment, \$7,200

Nestlerode, Janet A., "Macrofauna Sampling," Delaware Department of Natural Resources, \$10,174

Newman, Michael C., "Acceptability of Pesticide Effects on Non-Target Species: Modelling the Effect of Pesticide on Non-Target Species to Improve Risk Assessment," Crane Associates, \$34,663

Patterson, Mark R., "A Biometric System to Detect Fish Wakes: The Production of a 'Proof of Concept' Desktop Sensors," Newport News Shipyard, \$30,

Tang, Kam W., "Copepods as Microbial Hotspots in DMSP Dynamics: Effects of Host Feeding Activities on Attached DMSP-consuming Bacteria," Jeffress Foundation, \$25,000

VanVeld, Peter A., "Biochemical and Steriod Responses of Fish Exposed to Pulp Mill Effluents," National Council on Air and Stream Improvements, \$30,000

Wang, Harry V., Jian Shen, "The Development of a Total Maximum Daily Loading (TMDL) Toxic Model for Middle River in the Upper Chesapeake Bay," Maryland Department of the Environment, \$108,508

STUDENT AWARDS

Conrad, Christine F., Student Award, Clay Minerals Society, \$1,770

Conrad, Christine F., w/Elizabeth A. Canuel, “Planar Oxides as a Novel Approach to Understanding Metal-Sediment Interactions in Natural Aquatic Systems,” Virginia Water Resources Research Council, \$2,650

Davies, Sarah B., James E. Perry, III, “Temporal Changes in Vegetation Patterns at Sweet Hall Marsh in Chesapeake Bay National Estuarine Research Reserve, VA,” National Oceanic and Atmospheric Administration/National Estuarine Research Reserve, \$17,500

Dowd, Wesley W., “Student Research Award: Physiology of the Sandbar Sharks in the Waters Around the Eastern Shore,” Oceanside Conservation, \$300

Earnhardt, Christopher D., “NSF Graduate Fellowship Award: Year 2,” National Science Foundation, \$32,000

France, Kristin E., “NSF Graduate Fellowship Award: Year 2,” National Science Foundation, \$32,000

Hoffman, Joel C., “NSF Graduate Fellowship Award: Year 1,” National Science Foundation, \$38,000

Ihde, Thomas F., “Student Award: Development and Application of Depletion Models That Accommodate Ancillary Information,” National Oceanic and Atmospheric Administration/Virginia Graduate Marine Science Consortium, \$95,001

Mansfield, Katherine L., “EPA Star Fellowship: Sea Turtle Migration Research ,” Environmental Protection Agency, \$15,000

Milliman, John D., “Student Support for Paul Liu,” Scripps Institute of Oceanography, \$9,780

Miselis, Jennifer L., “National Defense Science and Engineering Graduate Fellowship (NDSEG) Year 1: The Effect of Nearshore Geological Processes on the Variability of Shoreline Position,” Department of Defense, Army Research Office, \$23,000

Parker, Frank M. III, “Quantifying the Fate of Carbon and Nitrogen in Littoral Zone Estuarine Ecosystems Through the Use of Stable Isotopic Tracers,” National Oceanic and Atmospheric Administration/National Estuarine Research Reserve System, \$17,500

Walter, John F., “Student Award: Analysis of Stock Assessment Methodology and Spatial Recruitment patterns of Oysters, *Crassostrea virginica*, in the James River, Virginia,” National Oceanic and Atmospheric Administration/ Virginia Graduate Marine Science Consortium, \$95,001