

# **Curriculum Vitae: Robert J. Livingston (December 2015)**

Professor Emeritus, Department of Biological Science  
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## **Phone**

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## **Education**

Princeton University - A.B. (1955-1959)  
Columbia University - Post-Graduate Study (1961-1963)  
Scripps Institute of Oceanography (University of California, San Diego) - Post-Graduate Study (1963)  
Institute of Marine and Atmospheric Sciences (University of Miami) - M.S., Ph.D. (1964-1970)

## **Fellowships and Honors**

Undergraduate Fellowship - Princeton University  
Graduate Cum Laude - Princeton University  
Dean's List - Columbia University  
Aerojet General Fellowship - Scripps Institution of Oceanography  
Robert E. Maytag Fellowship - Institute of Marine & Atmospheric Sciences  
Third Annual Conservator Award - Apalachicola Seafood Festival  
Conservation Award - Woodmen of the World, Life Insurance Society  
Florida Scientist of the Year (1982) - Museum of Science and Industry (Tampa, Florida)

## **Academic and Research Positions**

Research Aide - Institute of Marine & Atmospheric Sciences (1964)  
Graduate Assistant - Institute of Marine & Atmospheric Sciences (1967-1970)  
Assistant Professor - Department of Biological Science, Florida State University (1970-1976)  
Associate Professor - Department of Biological Science, Florida State University (1977-1981)  
Professor - Department of Biological Science, Florida State University (1981-present)  
Director - Center for Aquatic Research and Resource Management (1984-present)

**Principal Investigator (Over 100 research grants)**  
**Reviewed Publications (Over 150 publications and 5 books)**  
**Major Professor: Graduated 47 Graduate Students (M.S. and Ph.D.)**

Robert J. Livingston is Professor Emeritus of the Department of Biological Science, Florida State University. He has worked as a field ecologist for the past 53 years in a series of aquatic systems of the southeastern United States. His overall research effort has involved continuous, long-term analyses of lakes, rivers and coastal systems along the Gulf and Atlantic coasts. A 43-year ecosystem-level database has been coupled with laboratory and field experimentation to evaluate how aquatic systems work and how they are affected by human activities. Livingston has graduated 47 graduate students (M.S., Ph. D.) whose research was based on behavioral and physiological ecology of individual aquatic populations and communities. He has published a series of books and peer-reviewed scientific papers on his research.

### **Research Activities and Interests**

The long-term research effort has included multidisciplinary (ecosystem) analyses, population/community studies, determinations of food web organization, and the impacts of various anthropogenous stress factors. The databases are currently being analyzed, modeled, and published in peer-reviewed journals and in a series of books.

### **Overall Approach**

The overall research effort of R. J. Livingston for the past 37 years has involved continuous, long-term analyses of various river and coastal systems including the Econfina and Fenholloway River/Estuary Systems, Apalachicola Drainage System, Choctawhatchee Drainage System, Perdido Drainage System, Escatawpa-Pascagula Drainage System, Mobile River/Estuary System and the Winyah Bay System (including the Sampit River). A descriptive database has been coupled with laboratory and field experimentation to evaluate how such systems work and how human activities affect the various parts of these drainage basins. This work has included multidisciplinary systems analyses, population/community structure, trophic interactions, and the impact of various forms of anthropogenous stress on a range of physical-chemical and biological processes. The validation or verification of bioassay results with field data from rivers and coastal areas has been an integral part of the research effort. The data taken over the past 23 years are currently being analyzed, modeled, and published in peer-reviewed journals and in a series of books.

### **Project Headings**

Ecological (field) study of Florida Bay and inshore waters of the Florida Everglades (P.I. , Dr. Durbin Tabb)  
Acute toxicity studies of effects of Dieldrin on estuarine fishes of South Florida (P.I., Drs. C. Richard Robins and Richard Wade)  
Behavioral and ecological studies on circadian rhythms of reef fishes (R. J. Livingston)  
Studies on the long-term physiological effects of chlorinated hydrocarbons and oil on estuarine organisms (R. J. Livingston)

Laboratory studies on the effects of inorganic mercury on fresh water fishes (R. J. Livingston)

Field and laboratory studies on the impact of pulp mill effluents on coastal organisms, Apalachee Bay (P.I. and R. J. Livingston)

Field studies on the effect of dredging and eutrophication on areas of Escambia Bay (R. J. Livingston)

Field and laboratory studies on the impact of pesticides on the behavior and ecology of estuarine organisms, Apalachicola Bay (R. J. Livingston)

Ecosystems management and the application of scientific data to planned development of estuarine and coastal systems (R. J. Livingston)

Field and laboratory studies concerning the effects of clear-cutting and storm water runoff on estuarine populations and communities R. J. Livingston)

Analysis of recovery of bay systems previously affected by anthropogenic disturbance with an emphasis on productivity, trophic structure and community response (R. J. Livingston)

Ecosystem functions in coastal areas of North Florida (R. J. Livingston)

Trophic relationships of coastal species associations (R. J. Livingston)

Comparison of the effects of pulp mill wastes on drainage systems in Florida, Mississippi, Alabama, and South Carolina. (R. J. Livingston)

Experimental ecology and the validation concept with respect to the impact of toxic substances on aquatic systems. Dr. Livingston was chosen to lead a team from the E.P.A., the Virginia Institute of Marine Science and F.S.U. to test the validation hypothesis (R. J. Livingston)

Validation of laboratory and field experimental data for 3 river systems in the southeastern U. S. (R. J. Livingston)

Comparative analysis of long-term, multidisciplinary data in a series of river-estuarine systems

Ecosystem analysis of the Choctawhatchee River-Bay System. (R. J. Livingston)

Ecological studies of Lake Jackson. (R. J. Livingston)

Ecosystem analyses of the Perdido Drainage System. (R. J. Livingston)

Experimental studies applied to the ecology of oysters (*Crassostrea virginica*)

Modelling analysis of the temperature/salinity relationships of estuaries along the eastern Gulf of Mexico. (R. J. Livingston)

Comparative analyses of a series of river/estuarine systems along the East and Gulf coasts

Comparative analysis of North Florida lakes

Ecosystem analysis of the Perdido Drainage System. (R. J. Livingston)

Comparative Analysis of long-term Research in the NE Gulf of Mexico and SE Atlantic Ocean (R. J. Livingston)

Ecosystem analysis of the Rice Creek-St. Johns River/Estuary R. J. Livingston)

Native American Training Program in Aquatic Ecology (Lake Analyses). (R. J. Livingston)

## **Research Grants and Funding: R. J. Livingston, Principal Investigator**

- F.S.U. COFRS: \$5,000 (Effects of Inorganic and Organic Mercury on Fish Physiology and Behavior, 1971-1973)
- Florida Department of Transportation: \$19,800 (Effects of Dredging and Eutrophication on Escambia Bay)
- National Oceanic and Atmospheric Administration (Sea Grant): \$134,000 (Estuarine Analysis: Field and Laboratory Studies on Chronic Effects of Pesticides and Other Pollutants on Estuarine Animals and Communities, 1972-1974)
- Florida Department of Pollution Control: \$5,500 (Study of the Impact of a Cattle Ranch on the Apalachicola Drainage System, 1973)
- Board of County Commissioners, Franklin County: \$57,000 (Physico-chemical and Biological Analysis of Apalachicola Bay, 1972-1977)
- Coastal Coordinating Council, Florida Department of Natural Resources: \$5,800 (Effects of Pulp Effluent on Apalachee Bay, 1972)
- Buckeye Cellulose Corporation: \$32,000 (Determination of Recovery of Heavily Polluted Portions of Apalachee Bay after Cessation of Pulp Mill Effluents, 1974-1975)
- Buckeye Cellulose Corporation: \$15,000 (Study of the Impact of the Storm Water Runoff of a Clearcut Area on the Apalachicola Drainage System, 1974-1975)
- National Oceanic and Atmospheric Administration (Sea Grant): \$80,000 Franklin County Board of County Commissioners: \$24,000 (Energy Relationships and Role of Dissolved Nutrients/Detritus in the Productivity of the Apalachicola Drainage System, 1975-1976)
- N.O.A.A. (Florida Sea Grant): \$73,506 (Impact of Storm Water Runoff on Apalachicola Bay with D.C. White, 1977)
- Environmental Protection Agency: \$128,000 (Analysis of Statistical Methods Using Determine Effects of Pollutants on Aquatic Populations and Species Assemblages, 1974-1976)
- National Commission on Water Quality: \$10,000 (Assessment of the Economic Benefits Which Will Accrue from Incremental Improvements in the Quality of Coastal Waters as Associate Investigator with Dr. Frederick Bell, Department of Economics)
- Florida Department of Environmental Regulation: \$4,000 (Study of the Impact of Clearcutting on a Bay System, 1975)
- General Development Corporation: \$5,000 (Computerized Analysis of Estuarine Data, 1977)
- U.S. Environmental Protection Agency: \$100,000 (Analysis of Trophodynamic Processes, Apalachee Bay, 1977-1978)
- Buckeye Cellulose Corporation: \$30,000 (Field and Laboratory Analysis of Factors controlling Grassbed Productivity in Apalachicola Bay, 1978)
- Florida Department of Environmental Regulation: \$10,000 (Analysis of Forestry Operations on Apalachicola Bay, 1978)
- Franklin County Board of County Commissioners: \$30,000 (Study of Impact of Clearcutting, 1977-1978)
- Environmental Protection Agency: \$6,000 (Ground Truth Data Supporting Remote Sensing Analysis of Apalachicola Estuary, 1977-1980)
- N.O.A.A. (Florida Sea Grant): \$81,000 (Development of Models Concerning Long-term (8-year) Changes in the Biota of the Apalachicola Estuary, 1978-79)
- Thompson Hayward Chemical Company: \$24,000 (Life cycle toxicity tests, long-term effects of dimilin on *Fundulus heteroclitus*, 1977-1978)

National Science Foundation (Ecology Program, Washington, D.C.): \$36,450 (Specialized Research Equipment Program, Instrumentation for Biochemical Analysis in Ecosystems with Drs. D. White, D. Simberloff, and D. Strong, 1978-1979)

Franklin County Board of County Commissioners: \$20,000 (Analysis of Long-term Changes in the Physical, Chemical, and Biological Function of the Apalachicola Bay System, 1980)

U. S. Department of State - Secretariat to the U. S. National Commission for UNESCO: \$3000 (Application of Scientific Data to Planning and Management Processes, 1980)

U. S. National Science Foundation: \$3000 (Secondary Science Training Lectures, 1975-1980)

Conservation Foundation (Washington, DC): \$5000 (Use of Scientific Data to Aid in Development of a Comprehensive Management for Franklin County, Florida, 1980)

International Paper Company: \$720,000 (Comparison of the impact of paper mill discharges on drainage systems in Mississippi, Alabama, and South Carolina, 1980-1981)

Coastal Plains Regional Commission (Florida Department of Community Affairs): \$25,000 (Apalachicola Critical Habitat Assessment)

N.O.A.A. (Florida Sea Grant) and Franklin County Board of Commissioners: \$90,000/\$40,000 (Management Plan for the Apalachicola Estuarine Sanctuary, 1981-1982)

Coastal Plains Commission: \$25,000 (One year Apalachicola Critical Habitat Assessment, 1981)

N.O.A.A. (Florida Sea Grant and the Office of Coastal Zone Management): \$90,000 (Development of an Apalachicola Resource Atlas, 1981-1982)

Franklin County Commission: \$20,000 (Matching funds for N.O.A.A. grant, 1981-1982)

Buckeye Cellulose Corporation: \$7,000 (three-month review of information concerning the Flint River of Georgia, 1982)

Florida Department of Environment Regulation: \$15,000 (Fifteen months of analysis of impact of dredging on Apalachicola Bay, 1982-1983)

U. S. Environmental Protection Agency: \$1,200,000 (Field and Semi-field Validation of laboratory-derived Aquatic Test Systems with D. White and R. Diaz, 1982-1984)

Franklin County Commission: \$20,000 (Studies in the Apalachicola Bay System, 1983)

U. S. Environmental Protection Agency: \$380,000 (Validation Studies in three river systems of the southeastern U. S. with W. Cooper, Department of Chemistry, 1983-1985)

Philadelphia Academy of Natural Sciences: \$37,800: (Ecosystem studies in the Flint River System, Georgia, 1983)

U. S. Environmental Protection Agency: \$40,000 (Characterization of offshore grass beds in the Gulf of Mexico and as background for offshore validation experiments, 1983-1984)

Florida Legislature through the Florida Department of Natural Resources and the Franklin County Commission: \$69,000 (Identification and analysis of sources of pollution in the Apalachicola Bay System, 1983)

Florida Resources and Environmental Analysis Center: \$6,800 (Water quality/sediment analysis of Old Pass Lagoon in Destin, Florida, 1983-1984)

Franklin County Board of Commissioners: \$40,000 (Ecology of the Apalachicola Oyster Beds, 1984-1986)

U. S. Environmental Protection Agency: \$350,000 (Validation of estuarine microcosms and effects of toxic substances on laboratory-field assemblages of macroinvertebrates with R. J. Diaz and D. White, 1984-1985)

Man in the Biosphere Program, U. S. Department of State: \$4000 (Computer analysis of long-term multidisciplinary field data, 1985-1986)

Florida Legislature: \$150,000 (Ecosystem analysis of the Choctawhatchee River-Bay System, 1985-1986)

Florida Department of Environmental Regulation: \$100,000 (Impact of toxic waste sites on rivers, 1985-1986)

U.S. Environmental Protection Agency: \$200,000 (Validation of estuarine microcosms with R. J. Diaz, 1985-1986)

Florida State University: \$150,000 (Establishment of the Center for Aquatic Research and Resource Management, 1984-1987)

U.S. Army Corps of Engineers: \$9,500 (Analysis of salinity-defined populations in the Apalachicola estuary, 1985)

Florida State University (SRAD grant): \$1,325 (Update of microcomputer equipment)

Florida State University (summer research grant, COFRS): \$1,500 (Analysis of oysters, 1985)

Florida Department of Environmental Regulation: \$100,000 (Development of conference concerning the rivers of Florida, 1986-1987)

Florida Department of Community Affairs: \$30,000 (Biological characterization of the Choctawhatchee Bay of Florida. A grant awarded by Renaissance Plaza, Inc., 1986-1987)

Florida Department of Community Affairs: \$30,000 (Continued field research in Choctawhatchee Bay, Florida, 1987-1988)

Northwest Florida Water Management District: \$165,000 (Critical habitat assessment of the Choctawhatchee River System, 1987-1988)

National Oceanic and Atmospheric Administration: \$9,416 (Distribution of oyster larvae in Apalachicola Bay, Florida, with Gary Ray, 1986-1987)

Florida Department of Environmental Regulation: \$42,000 (Chemical analysis of water and sediments of the Choctawhatchee River/Bay System, 1987)

U.S. Environmental Protection Agency: \$41,184 (Potential effects of long-term climate changes in the southeastern U.S., 1987-88)

Florida Department of Environmental Regulation: \$5,991 (Atlas of diatoms and other algal forms from selected drainage areas in Central and North Florida with A.K.S.K. Prasad, 1987)

Florida Department of Environmental Regulation: \$100,000 (Continuation funding for the Center for Aquatic Research and Resource Management, 1987-88)

Northwest Florida Water Management District: \$1,900 (Ranking matrix for the water bodies of regional significance in northwest Florida, 1988)

Caribbean Marine Research Center: \$23,000 (Aquaculture support at the FSU Marine Laboratory, 1988)

Northwest Florida Water Management District: \$85,000 (Phase II Assessment of the Choctawhatchee River Basin, 1988-1989)

U.S. Environmental Protection Agency: \$5000 (Development of a river model, 1988)

Florida Institute of Government: \$30,000 (A method for assessing the biological disturbances resulting from storm water and marine discharges in estuaries, 1988-1989)

Florida Department of Environmental Regulation: \$19,970 (Atlas of Phytoplankton, 1988-1989)

U. S. Department of State: \$16,500 (Wetlands research in the NE Gulf of Mexico, 1988-1989)

Northwest Florida Water Management District: \$85,000 (Phase II Assessment of the Choctawhatchee River Basin, 1988-1989)

Caribbean Marine Research Institute: \$23,000 (Aquaculture support at the F.S.U. Marine Laboratory, 1989)

U. S. Department of Commerce and NOAA: \$50,000 (Temperature/salinity profiles of a series of gulf estuaries, 1989)

Champion International Corporation: approximately \$2,000,000 (Ecosystem studies of the Perdido Drainage system, 1988-1993)

U. S. Department of Commerce: NOAA: \$50,000 (Temperature/salinity profiles of a series of gulf estuaries, 1990)

Man and the Biosphere Program, U. S. Department of State and National Park Service: \$48,000 (Analysis of the Kissimmee, Lake Okeechobee, Florida Everglades and Florida Bay System with E. Fernald, 1989-1990)

National Oceanic and Atmospheric Administration (through the Florida Department of Environmental Regulation): \$47,500 (Experimental analysis of factors affecting the growth and productivity of oysters in the Apalachicola estuary, 1989-1991)

Leon County Board of County Commissioners: \$49,200 (Comparative ecological study of North Florida lakes, 1991-1992)

Leon County Board of County Commissioners: \$50,000 (Comparative ecological study of North Florida lakes, 1992-1993)

Northwest Florida Water Management District: \$38,000 (Apalachicola River Basin computerized assessment, 1982-1983)

Proctor and Gamble Cellulose Corporation: approximately \$1,500,000 (Analysis and Comparison of the Econfina and Fenholloway Drainage Systems, 1992-1993)

Champion International Corporation: \$542,000 (Ecosystem studies of the Perdido Drainage System, 1993-1994)

Leon County Board of County Commissioners: \$50,000 (Comparative ecological study of North Florida lakes, 1993-1994)

Northwest Florida Water Management District: \$43,000 (Apalachicola River Basin computerized assessment, 1993-1994)

Leon County Board of County Commissioners: \$50,000 (Comparative ecological study of North Florida lakes, 1994-1995)

Northwest Florida Water Management District: \$53,337 (Apalachicola River Basin computerized assessment, 1994-1995)

Rayonier, Inc. \$610,000. (Ecosystem study of the Nassau and Amelia River/Estuarine systems, 1994-1996)

Leon County Board of County Commissioners: \$50,000 (Comparative ecological study of North Florida lakes, 1995-1996)

Leon County Board of County Commissioners: \$20,000 (Analysis of toxics in Lake Lafayette, 1995)

Northwest Florida Water Management District: \$62,302 (Apalachicola River-Basin computerized assessment, 1995-96)

Rayonier, Inc.: \$39,800.00 (Analysis of toxics in sediments of Amelia and Nassau River Estuaries, 1995-1996)

Champion International Corporation: \$125,000 (Ecosystem studies of the Perdido Drainage System, 1995-1996)

Buckeye, Florida: \$75,000 (Ecological monitoring, Econfina/Fenholloway Systems, 1996)

Champion International Corporation: \$104,000 (Ecosystem studies of the Perdido Drainage System, 1996)

Leon County Commission: \$20,000 (Analysis of the impact of Fluridone on Lake Jackson, 1996)

Leon County Board of County Commissioners: \$60,000 (Comparative ecological study of North Florida lakes: 1996-97)

Northwest Florida Water Management District: \$63,728 (Apalachicola River-Basin computerized assessment, 1996-1997)

Champion International Corporation: \$174,000 (Ecosystem studies of the Soldier Creek System, 1996)

Champion International Corporation: \$104,000 (Ecosystem studies of the Perdido Drainage System, 1997)

Rayonier, Inc.: \$310,000 (Analysis of effects of mill effluents on phytoplankton in the Amelia and Nassau River estuaries, 1996-1998)

Buckeye, Florida: \$75,000 (Ecological monitoring of the Econfina/Fenholloway Systems, 1997)

Champion International Corporation: \$340,000 (Ecosystem studies of the Perdido Drainage System, 1997)

Champion International Corporation: \$90,000 (Data review and publication of the Perdido Drainage System database, 1997-1998)

Champion International Corporation: \$75,000 (Field analysis of the Perdido Drainage System database, 1997-1998)

Buckeye, Florida: \$75,000 (Ecological monitoring, Econfina/Fenholloway systems, 1998)

Champion International Corporation: \$104,000 (Ecosystem studies of the Perdido Drainage System, 1998)

Northwest Florida Water Management District: \$63,728 (Apalachicola River Basin computerized assessment, 1997-1998)

Champion International Corporation: \$610,000 (Ecosystem studies of the Pensacola Drainage System, 1997-1998)

National Oceanic and Atmospheric Administration: \$50,000 (Analysis and publication of Apalachicola oyster data, 1998)

Florida Department of Environmental Protection: \$26,000 (GIS analysis of Apalachicola Bay, 1999)

Northwest Florida Water Management District: \$63,728 (Apalachicola River-Basin computerized assessment, 1998-1999)

Buckeye, Florida: \$515,000.00 (Recovery Studies, Econfina/Fenholloway Systems, 1998-2000)

Champion International Corporation: \$284,000 (Ecosystem studies of the Perdido Drainage System, 1998-1999)

Motiva, Inc. (Analysis of impact of polynucleated aromatic hydrocarbons on the Delaware River Estuary with L. Hall and C. Burton. Study undertaken by Federal Court Order, 1999-2002)

Champion International Corporation: \$284,000 (Ecosystem studies of the Perdido Drainage System, 1998-1999)

National Oceanic and Atmospheric Administration: \$30,000 (Analysis and publication of Apalachicola ecological data, 1999-2000)

Florida Department of Environmental Protection: \$18,500 (GIS analysis of Apalachicola Bay, 1999-2000)



Northwest Florida Water Management District: \$32,294 (Apalachicola River-Basin computerized assessment, 1999-2000)

Champion International Corporation: \$264,000 (Ecosystem studies of the Perdido Drainage System, 1999-2000)

Natural Resources Defense Council: \$56,800 (Analysis of mercury distribution in the Penobscot River/Estuary, Maine, 2000-2001)

Florida Department of Environmental Protection: \$8,500 (GIS analysis of Apalachicola Bay, 2000-2001)

Rayonier, Inc.: \$264,000 (Analysis of recovery of the Amelia River River Estuary, 2000-2001)

Buckeye, Florida: \$256,000 (Recovery Studies, Econfin/Fenholloway systems, 2000-2001)

Northwest Florida Water Management District: \$12,000 (Apalachicola River Basin computerized assessment, 2000-2001)

International Paper, Inc.: \$269,000 (Ecosystem studies of the Perdido Drainage System, 2000-2001)

Natural Resource Defense Council: \$14,000 (Analysis of data concerning the Everglades System in Florida, 2000-2001)

Motiva, Inc. PI's: (Analysis of impact of polynucleated aromatic hydrocarbons on the Delaware River Estuary with L. Hall and C. Burton. Study undertaken by Federal Court Order. Participation of Livingston as co-researcher and reviewer of results, 1999-2002)

Environmental Planning & Analysis, Inc.: \$6,000 (Establishment of a training program for Native Americans in Aquatic Ecology, 2001-2002)

Buckeye, Florida: \$190,000 (Recovery Studies, Econfin/Fenholloway Systems, 2001-2002)

Rayonier, Inc.: \$42,000 (Analysis of recovery of the Amelia River/Estuary, 2001)

National Oceanic and Atmospheric Administration: \$30,000 (Analysis and publication of Apalachicola ecological data, 2001-2002)

International Paper, Inc.: \$288,000 (Ecosystem studies of the Perdido Drainage System, 2001-2002)

Georgia Pacific Corporation: \$259,000 (Ecosystem analysis of the Rice Creek-St. Johns River Estuary, 2001-2002)

The Elizabeth Ordway Dunn Foundation: \$25,000 (Establishment of a training program for Native Americans in Aquatic Ecology, 2001-2002)

Environmental Planning & Analysis, Inc.: \$10,000 (Establishment of a training program for Native Americans in Aquatic Ecology, 2001-2002)

Environmental Planning & Analysis, Inc.: \$3,500 (Establishment of a training program for Native Americans in Aquatic Ecology, 2002-2003)

International Paper, Inc.: \$253,000 (Ecosystem studies of the Perdido Drainage System, 2002-2003)

Buckeye, Florida: \$90,000 (Recovery Studies, Econfin/Fenholloway Systems, 2002-2003)

National Oceanic and Atmospheric Administration: \$30,000 (Analysis and publication of Apalachicola ecological data, 2002-2003)

Environmental Planning & Analysis, Inc.: \$3,500 (Establishment of a training program for Native Americans in Aquatic Ecology, 2003-2004)

Buckeye, Florida: \$90,000 (Recovery Studies, Econfin/Fenholloway Systems, 2003-2004)

The Elizabeth Ordway Dunn Foundation: \$20,000 (Establishment of a training program for Native Americans in Aquatic Ecology, 2003-2005)

International Paper, Inc.: \$253,000 (Ecosystem studies of the Perdido Drainage System, 2003-2004)

International Paper, Inc.: \$30,607 (Marsh studies of the Perdido Drainage System, 2004)

Environmental Planning & Analysis, Inc.: \$3,500 (Establishment of a training program for Native Americans in Aquatic Ecology, 2004-2005)

International Paper, Inc.: \$316,876 (Ecosystem studies of the Perdido Drainage System, 2004-2005)

International Paper, Inc.: \$80,916 (Marsh studies of the Perdido Drainage system, 2004-2005)

Florida Department of Environmental Protection: \$6,000 (Analysis and modeling of Apalachicola ecological data, 2005-2006)

International Paper, Inc.: \$19,500 (Analysis of light distribution of the Perdido Drainage System, 2005)

International Paper, Inc.: \$385,876 (Ecosystem studies of the Perdido Drainage System, 2005-2006)

Apalachicola River Keepers: \$6,000 (Habitat stratification program in the Apalachicola Estuary, 2005)

International Paper, Inc.: \$376,800 (Ecosystem studies of the Perdido Drainage System, 2006-2007)

Apalachicola River Keepers: \$9,000 (Habitat stratification program in the Apalachicola Estuary, 2006)

Florida Department of Environmental Protection: \$5,000 (Analysis and modeling of Apalachicola ecological data, 2006-2007)

Apalachicola River Keepers: \$38,000 (Seagrass mapping and habitat stratification program in the Apalachicola Estuary, 2007)

City of Carrabelle, Florida: \$8,000.00. (Water quality analyses) of the Carrabelle River System, 2007)

### **Recent Collaborators**

T. A. Battista (National Oceanic and Atmospheric Administration), D. A. Birkholz (Envirotest Laboratories), Alan Niedoroda, J. D. Christensen (National Oceanic and Atmospheric Administration), C. J. Dawes (University of South Florida), T. Gallagher (Hydroqual, Inc.), B. Galperin (University of South Florida), W. Huang (Florida State University), R. L. Howell, IV (Florida State University), M. J. Kennison (Rutgers University), C. J. Klein (National Oceanic and Atmospheric Administration), F. Graham Lewis, III (Northwest Florida Water Management District), M. E. Monaco (National Oceanic and Atmospheric Administration), Xufeng Niu (Florida State University), A.K.S.K. Prasad (Florida State University), Glenn C. Woodsum (Florida State University).

**Publications (\*-denotes peer-reviewed publication)**

1. Livingston, R. J. 1968. *Living rhythms of the sea*. Sea Frontiers 14(5): 290-299.
2. Livingston, R. J. 1972. *Persistent pesticides and the aquatic environment*. Res. Rept. Soc. Sci. 14(2): 7-10.
- 3\*. Livingston, R. J. 1968. *A volumetric respirometer for long-term studies of small aquatic animals*. J. Mar. Bio. Ass. U.K. 48: 485-497.
- 4\*. Lane, C. E., and R. J. Livingston. 1970. *Acute and chronic effects of dieldrin on the sailfin mollie (Poecilia latipinna)* Trans. Amer. Fish.Soc. 99(3): 389-395.
- 5\*. Livingston, R. J. 1970. *New design for the long-term respirometry of small aquatic animals*. Copeia (4): 756-758.
- 6\*. Livingston, R. J. 1971. *Circadian rhythms in the respiration of eight species of cardinal fishes*. (Pisces:Apogonidae): Comparative analysis and adaptive significance. Marine Biology 9(3): 253-266.
- 7\*. Livingston, R. J., et al. 1974. *Synergism and modifying effects*. (Marine Technological Society, 1974) -Book Chapter (invited, in, Marine Bioassays, Workshop Proceedings. U.S. Environmental Protection Agency).
- 8\*. Livingston, R. J., R. L. Iverson, R. H. Estabrook, V. E. Keys, John Taylor, Jr. 1974. *Major features of the Apalachicola Bay system: Physiography, biota, and resource management*. Florida Scientist 37(4): 245-271.
- 9\*. Livingston, R. J. C. R. Cripe, C. C. Koenig, A. J. Tolman, and B. D. DeGrove 1974. *A sea water system designed for controlled experiments on the chronic effects of pesticides on marine organisms*. Sea Grant Publication, report #5.
- 10\*. Livingston, R.J. 1975. *Resource management and estuarine function with application to the Apalachicola drainage system (North Florida, U.S.A.)*. Office of Water and Hazardous Materials, U.S. Environmental Protection Agency: included in final collection of papers (reviewed and published for submission to the Congress of the United States), Estuarine Pollution Control and Assessment, Vol. 1, 3-17.
- 11\*. Livingston, R.J. and G. J. Kobylinski. 1975. *Translocation of mirex from sediments and its accumulation by the hogchoker Trinectes maculatus*. Bulletin of Environmental Contamination and Toxicology 14(6): 692-698. 1975.
- 12\*. Hooks, T. A., K. L. Heck, and R. J. Livingston. 1975. *An inshore marine invertebrate community: Structure and habitat associations in the N.E. Gulf of Mexico*. Bulletin of Marine Science 26: 99-109.

- 13\*. Cripe, C. R., J. H. Cripe, and R. J. Livingston. 1975. *An apparatus for the quantitative determination of activity rhythms of aquatic organisms using infra-red light emitting diodes*. J. Fish. Res. Bd. Can. 32: 1984-1985.
- 14\*. Livingston, R. J. 1975. *Impact of pulp mill effluents on estuarine and coastal fishes (Apalachee Bay, Florida)*. Marine Biology 32: 19-48.
- 15\*. Zimmerman, M., and R. J. Livingston. 1976. *The effects of Kraft mill effluents on benthic macrophyte assemblages in a shallow bay system (Apalachee Bay, North Florida, U.S.A.)*. Marine Biology 34: 297-312.
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- 148\*. Livingston, R. J. 2007. *Phytoplankton bloom effects on a Gulf estuary: Water quality changes and biological response*. Ecol. Appl. 17: 110-128.
150. Livingston, Robert J. (2007). *Atlas concerning the effects of urban runoff on a series of sink hole lakes*. 70 pp. Lone Shark Publishers.

151. Livingston, R. J., D. A. Flemer, A. W. Niedoroda, A. K. S. K. Prasad, and K. Rhew. In manuscript. *Long-Term Trends of Nutrient Loading, Water Quality, Dissolved Oxygen distribution and Plankton Blooms in the Perdido River-bay System: 1988-2007*.
152. Livingston, R. J., In manuscript. *Importance of freshwater flow to a major river-estuarine system: Productivity, food web dynamics, and commercially important populations*.
153. Robert J. Livingston, Xufeng Niu, Glenn C. Woodsum, A. K. S. K. Prasad, Kyeongsik Rhew, In manuscript. *Phytoplankton Bloom Effects on a Gulf Estuary: Impacts of the Blue Green alga, Merismopedia tenuissima*.
154. Livingston, R. J. and A. K. S. K. Prasad. In Manuscript. *Response of Microalgae in Estuarine Marsh Ponds to Nutrient Loading and Associated Plankton blooms dominated by Heterosigma akashiwo and Synechococcus cf. elongatus*.
155. Livingston, R. J. 2010. IMPACTS OF ANTHROPOGENIC NUTRIENT LOADING IN COASTAL SYSTEMS OF THE EASTERN GULF OF MEXICO. Perdido River-Bay. Report for Florida Department of Environmental Protection.
156. Livingston, R. J. 2010. IMPACTS OF ANTHROPOGENIC NUTRIENT LOADING IN COASTAL SYSTEMS OF THE EASTERN GULF OF MEXICO. Pensacola Bay system. Report for Florida Department of Environmental Protection.
157. Livingston, R. J. 2010. IMPACTS OF ANTHROPOGENIC NUTRIENT LOADING IN COASTAL SYSTEMS OF THE EASTERN GULF OF MEXICO. Choctawhatchee River-Bay system. Report for Florida Department of Environmental Protection.
159. Livingston, R. J. 2010. IMPACTS OF ANTHROPOGENIC NUTRIENT LOADING IN COASTAL SYSTEMS OF THE EASTERN GULF OF MEXICO. Apalachee Bay system. Report for Florida Department of Environmental Protection.
- 160\* Livingston, R. J. (2011). *Ecosystem-based management of the Apalachicola system*. Invited paper in; The Gulf of Mexico: Ecosystem-based Management, Eds: J.W. Day, and A. Yanez-Arencibia. Texas A. & M Press.
161. Prasad, A.K.S.K., J. A. Nienow, R. J. Livingston, and A. Mast. (2011) Bacillariophyta (diatoms) of the Gulf Coast of north Florida. University Press of Florida.
162. Livingston, R. J. (2014). *'Effects of Nutrient Loading and Climate on Trophic Organization of Coastal Systems'* In press. CRC Press.
163. Livingston, R. J. (2014). *Slouching Toward Perdition*. A novel.
164. Livingston, R. J., 2013. Ecosystem-based management of the Apalachicola River-Apalachicola Bay system, Florida. In, Gulf of Mexico, Origin, Waters and Biota. Eds. J. W. Day and A. Yanez-Arancibia, Volume 4, Ecosystem-based management, Texas A&M University, pp. 53-69.

165. Livingston, R. J. 2014. Climate Change and Coastal Ecosystems: Long-term Effects of Climate and Nutrient Loading On Trophic Organization. CRC Press Inc., Boca Raton, Florida.
166. Livingston, R. J. 2014. Effects of climate and nutrient loading on marsh ponds in a Gulf estuary. In Review.

### **Papers Given at Scientific Meetings**

- "Circadian Respiration Rhythms of Cardinal Fishes" (ASIH, 1970) Chairman, Pesticide Section (Soc. Lim. Ocean., 1972)
- "The Effects of Dredging and Eutrophication on Mulat-Mulatto Bayou (Escambia Bay, Pensacola, Florida)" (ASIH, 1973)
- "The Impact of the Pesticide Mirex on Aquatic Ecosystems" (10th Annual Pesticide Residue Conference, 1973)
- "The Impact of Pulp Mill Effluents on Fishes of Apalachee Bay" (Virginia Institute of Marine Science, 1973)
- "The Impact of Pulp Mill Effluents on the Aquatic Biota of Apalachee Bay, Florida" (American Fisheries Society, Annual Meeting, 1973) with Kenneth L. Heck, Theresa A. Hooks and Michael S. Zimmerman.
- "Storm Water Runoff in Estuaries" (Gulf Estuarine Research Society; Ocean Springs, Mississippi, October, 1974)
- "Resource Management and Estuarine Function with Application to the Apalachicola Drainage System (North Florida, U.S.A.)" (Invited paper, E.P.A. Conference on Estuarine Pollution Control, February, 1975, Pensacola, Florida)
- "Diurnal and Seasonal Fluctuations of Estuarine Organisms in a North Florida Estuary: Sampling Strategy, Community Structure, and Species Diversity" (ASIH, 1975)
- "The Impact of Pulp Mill Effluents on Estuarine Plant and Fish Assemblages" (Invited paper, Philidelphia Academy of Sciences; March, 1975)
- "Methods of Sampling Estuarine Systems to Determine the Long-term Impact of Pollutants on Populations and Communities" (Invited paper, U.S. Department of Interior, Fish and Wildlife Service, Washington, D.C., April, 1975)
- "Avoidance Responses of Estuarine Organisms to Storm Water Runoff and pulp Mill Effluents" (Invited paper, the Third International Estuarine Research Federation Conference, Galveston, Texas, October, 1975)
- "Time as a Factor in Environmental Sampling Programs: Diurnal and Seasonal Fluctuations of Estuarine and Coastal Populations and Communities (Invited paper, Symposium on the Biological Monitoring Water ecosystems, Ed. J. Cairns, Jr., et al., Blacksburg, Virginia, Nov., 1975)
- "The Impact of Pesticides on an Estuarine System" (Invited paper, Old Dominion University; Norfolk, Virginia, February, 1976)
- "Environmental Status of the Apalachicola Bay System" (Florida Defenders of the Environment, Annual meeting; Gainesville, April, 1976)
- "Impact of Organochlorine Compounds on an Estuarine System" (North Carolina State Univ. Dept. of Zoology, July, 1976)



- "Organochlorine Compounds and Long-term Changes of Estuarine Fish Populations in the Apalachicola Bay System" (Invited paper, U.S. Environmental Protection Agency officials and visiting scientist from Russia, September, 1976)
- "The Apalachicola Drainage System" (Invited paper, the Conservation Foundation, Joint Meeting of State and Federal agencies. January, 1977)
- "Applications of Scientific Data to Architectural Design in Coastal Systems" (Invited paper, School of Architecture, Florida A & M University)
- "National Stake in the Apalachicola River" (Invited paper, The Conservation Foundation, March, 1977)
- "The Apalachicola Bay System" (Invited Talk, Coastal Zone Management Advisory committee, NOAA)
- "The Apalachicola Drainage System: Functional Interrelationships" (Invited paper, Annual Meeting; Florida Defenders of the Environment, March, 1977)
- "Impact of Development on Wetlands: Case Study, the Apalachicola System" (Invited paper, National Wetland Protection Symposium, Environmental Law Institute and the Fish and Wildlife Service, U.S. Department of the Interior, June, 1977)
- "Statistical Methods Applied to a Four-Year Multivariate Study of a Florida Estuarine System" (with Duane A. Meeter) (Invited paper, American Society for Testing and Materials; John Cairns, Jr., Ed., June, 1977)
- "Temporal Variation of an Estuarine Fish Community" (American Society of Ichthyologists and Herpetologists, June, 1977), Chairman, Session on Impact of Pollutants on Fishes.
- "The Estuarine Environment" (Invited paper, Symposium on the Coastal Zone, University of West Florida; Pensacola, 17-18 June, 1977)
- "Estuarine Ecology, Impact of Forest Management" (CFM Symposium, Flor. Department of Agriculture and Consumer Services; Gainesville, 17-18 August, 1977)
- "Effects of Forest Management Practices on Bay Habitat and Water Quality" (Invited paper, Apalachicola Planning and Management Program, Florida Division of Planning, Florida Division of Forestry; Bristol, 31 August, 1977)
- "Forestry Activities and the Impact on Apalachicola Bay" (Invited paper, Coastal Plains Interstate Advisory Board, Wakulla Springs, 14 September, 1977)
- "Multiple Factor Interactions: Experimental Design and Field Implications" (Invited paper, Symposium on Pollution and Physiology of Marine Organisms. Belle W. Baruch Institute for Marine Biology, South Carolina, 14 November, 1977)
- "Summary of Research Objectives" (EPA Ecological Advisory Committee, Corvallis, Oregon, 3 December, 1977). Plenary Address:
- "Coastal Ecosystems." Coastal Zone '78, Symposium on Aspects of Coastal Zone Planning and Management, San Francisco (14 March, 1978)
- "Long-term Trends in the Recovery of Florida Coastal Ecosystems Affected by Pulp Mill Effluents" (Invited paper, American Fisheries Society, Annual Meeting; Kingston,)
- "Temporal Variation and Impact Analysis in Coastal Systems" (Conference on Ecological Processes in Coastal and Marine Systems, Tallahassee, Florida)
- "The role of Barrier Island in the Productivity and Diversity of Lagoon Communities in Florida" (Invited paper, A.I.B.S.-Ecological Society of America, Annual Meeting; Athens, Georgia, August, 1978)
- "Long-term Changes in Coastal Systems" (Invited paper, Joint Workshop on American-Soviet Marine Research. U. S. E. P. A.; Gulf Breeze, Florida, September, 1978)

- "The Apalachicola Bay Ecosystem." Invited paper, Conservation Foundation (Washington, D. C.), Tallahassee, Florida (October, 1978)
- "Wetlands Food Chains." Invited paper, National Symposium on Wetlands. 14th Annual American Water Resources Conference. Lake Buena Vista, Florida (November, 1978)
- "Long-term Trends in Coastal Ecosystems." Environmental Engineering Sciences, University of Florida (March, 1979)
- "Systems Approaches to Ecological Problems." Invited paper, Australian Institute of Marine Science; Townsville, Australia (April, 1979)
- "Long-term (supra-annual) variability in coastal system--background noise and environmental stress." Invited paper, Marine Ecosystems Analysis Symposium on Ecological Effects of Environmental Stress. Estuarine Research Federation and New York Sea Grant Institute, New York (June, 1979).
- "Short-term Cycles and Long-term Trends in Two North Florida Coastal Systems." Invited paper, American-Soviet Symposium on Marine Ecol. Yalta, Russia (July, 1979)
- "Spatial/temporal Variability and Long-term Coastal Research in the N. E. Gulf of Mexico." Man and the Biosphere Program, U. S. State Department.
- "Design and Conduct of Research Programs for Marine Environment Management" (Coral Reef Workshop/Great Barrier Reef Marine Park Authority; Townsville, Australia, August, 1979)
- "Trophic Interactions of Coastal Fishes." Invited paper, International Research Conference (ERF, Biennial Meeting, October, 1979) "Scientific Research in Estuarine Sanctuaries." Invited paper, International Estuarine Research Conference (ERF, Biennial Meeting). Jekyll Island, Georgia (October, 1979)
- "Ecosystem Research in the N. E. Gulf of Mexico." Coastal Ecosystem Research Workshop, National Sea Grant Program; Baton Rouge, LA (November, 1979)
- "The Apalachicola River and Bay Estuarine Sanctuary." Banquet speaker, 18th Annual Southeast Regional ACM Conference; Tallahassee, Florida (March, 1980)
- "Application of Scientific Data to Resource Management Problems in Coastal Systems." Soviet-American Ecology Symposium, La Jolla (September, 1980)
- "Recent Problems in Aquatic Systems of Florida." F.L.A. Fishery Symposium, Tampa (September, 1980)
- "Hydrological Fluctuations, Detritus Movement, and Interactions of the Apalachicola Flood Plain with the Apalachicola Bay System." Panel chairman, National Symposium on Freshwater Inflow to Estuaries. U. S. Fish and Wildlife Service (September, 1980)
- "The Nature of Disturbance and Biological Variability in Estuarine Systems." Key-note Talk, Gulf Estuarine Research Society Symposium; Pensacola, Florida (October, 1980)
- "Man's Impact on the Distribution and Abundance of Sciaenid Fishes." Invited paper, Sixth Annual Marine Recreation Fisheries Symposium; Houston, Texas (April, 1981).
- "Development of a Regional Management Strategy for the Apalachicola Resource." Keynote talk, Regional Planning Council Annual Meeting, Blountstown (February 1981).
- "Managing Aquatic Resources: Can Science Help." Invited talk, 1-day seminar. Virginia Polytechnic Institute and State University; Blacksburg, Virginia (April, 1981).
- "The Validation Concept." Invited talk to heads of O.R.D. (E.P.A.) Laboratories (Corvallis, Athens, Duluth, Gulf Breeze, Naragansett), Gulf Breeze, Florida (May, 1981).

- "Effects of Predation on Benthic Infauna." With Bruce Mahoney. ASZ, Dallas (December, 1981). "Long-term Studies in Coastal Ecosystems." National Park Service Workshop on the Florida Everglades, Miami, Florida (January, 1982).
- "Seasonal Fluctuations of Benthic Infauna: Predation." With Bruce Mahoney. Benthic Ecology Meeting, Harvard (March, 1982).
- "The Application of Research to Long-term Planning and Management of the Tri-River System." Technical Workshop, Floodplain Processes in Nutrient Transport. U. S. Geological Survey (April, 1982).
- "Research Design in the Estimation of Natural Variability and Stress in Aquatic Systems." Workshop on "Meaningful Measures of Marine Pollution Effects"; N.O.A.A., E.P.A., Pensacola (April, 1982).
- "Floodplains and Wetlands--Values and Hazards of Natural Systems." Col. of Law Symposium on "Local Options for Floodplains and Wetlands Management." University of Florida, Gainesville (September 1982).
- "Apalachicola River/Bay Interactions." Apalachicola Oyster Industry Conference, Apalachicola (October, 1982).
- "Application of Research to Resource Management: Case History, the Apalachicola Estuary." Plenary Speaker, International Symposium on Utilization of Coastal Ecosystems. Rio Grande, Brazil (November, 1982).
- "Trophic Organization of a Seagrass Fish Association." Invited Paper. Oregon State University, Newport, Oregon (April, 1983). "Verification of Laboratory Results in the Field." Symposium on the Use of Multispecies Test Systems. Blacksburg, Virginia (May, 1983).
- "Trophic Organization of Seagrass Fishes." Annual Meeting, Association of Ichthyologists and Herpetologists. Tallahassee, Florida (June, 1983).
- "The Apalachicola Experiment." Banquet Speaker (invited). Annual meeting, Association of Ichthyologists and Herpetologists. Tallahassee, Florida (June, 1983).
- "Wetland Values of the Apalachicola Drainage." Symposium on Florida's Wetlands: Florida House of Representatives. Tallahassee, Florida (August, 1983).
- "Long-term Monitoring in Coastal Systems: Research Needs and Applications." Banquet Speaker (Invited), Workshop on Monitoring Considerations in the Siting and Operation of Hazardous Waste Disposal Facilities. Tallahassee, Florida (October, 1983).
- "Coastal Seagrass Meadows: Form and Function." Invited Paper, 7th Biennial International Research Conference, Estuarine Research Federation. Virginia Beach, Virginia (October, 1983).
- "Field and Experimental Work in Coastal Seagrass Systems." Oregon State University Marine Science Center, Newport, Oregon (November, 1983).
- "Research and Resource Management." Corporate Weekend, Florida State University Foundation. Tallahassee, Florida (November, 1983). Florida's Last Natural Waterway: Can Research and Conservation Rescue It?" Invited Paper, Royal Canadian Institute. Ontario, Canada (December, 1983).
- "Trophic Response and Community Structure of Macroinvertebrates and Fishes in a Coastal Seagrass System". Invited Paper, Dept. of Zoology, University of Texas. Austin, Texas (January, 1984).
- "Apalachicola River Basin: An Applied Study," Invited paper. 7<sup>th</sup> Annual Applied Geography conference. Tallahassee, Florida (November, 1984).

- "Effects of Barrier Island Development on Associated Lagoon Systems." Invited Paper, Management of Developed Barriers. National Science Foundation. Virginia Beach, (January, 1985).
- "Spatial-temporal Changes in Control of Benthic Communities." Chairman, Session I on Predation/Herbivory. Benthic Ecology Meeting. Columbia, South Carolina (March, 1985).
- "Field Verification of Toxic Waste Impact on Multispecies Microcosms of Stream Macroinvertebrates." Invited paper, Ninth Symposium: Aquatic Toxicology and Environmental Fate. A.S.T.M., Philadelphia, Pennsylvania (April, 1985).
- "Ecosystem Studies in the Gulf of Mexico." Cary Arboretum, New York (April, 1985). "Research Perspectives in Wetland Systems." National Wetland Assessment Symposium. Portland, Maine (June, 1985).
- "Periodic Hypoxic Conditions in the Apalachicola Estuary." Invited paper. Estuarine Research Federation Conference. Durham, New Hampshire (July, 1985).
- "Scaling Factors in Estuarine Systems--A Thirteen-year Perspective." Invited paper. Estuarine Research Federation Conference. Durham, New Hampshire (July, 1985). "Human Impacts on Tropical and Subtropical Seagrasses of the Southeast. U.S. Botanical Society of America. Gainesville, Florida (August, 1985).
- "Analysis of Apalachicola Oyster Beds." Apalachicola River and Bay Estuarine Sanctuary Meeting. Apalachicola, Florida (October, 1985).
- "Planning and Estuarine Research." Invited participant, North Carolina Coastal and Estuarine Preplanning Meeting. Duke Marine Laboratory, Beaufort, N.C. (January, 1986).
- "Scaling and Interpretation of Laboratory Field Tests," "Field Verification of Multispecies Microcosms Using Marine Macroinvertebrates." 10th Annual Meeting, American Society for Testing and Materials. Session Chairman: "Laboratory and Field Comparisons." New Orleans (May, 1986).
- "Relationship of Laboratory Results and Field Responses of Estuarine Assemblages to Toxic Agents." Invited paper, Gordon Research Conference on Estuarine Processes. Plymouth, N.H. (June, 1986).
- "The Choctawhatchee River/Bay System." Invited paper, American Water Resources Association. Wakulla Spring, Florida (April, 1986)
- "Ecological Processes of Recruitment in Coastal Epibenthic Macrobiota: A Comparative Approach." Invited paper, International Conference on Recruitment in Demersal Communities. Ciudad del Carmen, Mexico (April, 1986).
- "Use of Macroinvertebrate Microcosms in the Evaluation of Toxic Waste Sites." Invited paper, ASTM meeting. Bal Harbour, Florida (November, 1986).
- "Algal Microcosms in Toxic Waste Studies: Field Verification of Laboratory Results." "Use of Research in the Management of the Apalachicola Drainage System." Invited papers, Symposium on "Algae in Freshwater Systems." Madras, India (January, 1987).
- "Inadequacy of the Use of Species-level Designations in Ecological Studies." Invited paper, Sixth Biennial Conference on Ecological and Evolutionary Ethology of Fishes. Lamar University, Beaumont, Texas (17-20 May, 1987).
- "Ecosystem Research and Resource Management." Keynote address (invited), Florida Bay Symposium. Miami, Florida (31 May-5 June, 1987). "Conference on the Rivers of Florida." Conference coordinator.
- "Apalachicola River System"; "Choctawhatchee River System" (9-10 June, 1987).

- "Ecosystem Research in the Open Ocean." Invited paper, panel member. Seventh International Ocean Disposal Symposium. Nova Scotia, Canada (21-25 September, 1987).
- "Recruiting Researchers." Invited paper, National Estuarine Research Reserve Workshop. Apalachicola, Florida (19 October, 1987).
- "Field Verification of Estuarine Macroinvertebrate Microcosms: The Use of Trophic Organization and Guilds for Predicting Toxic Impact." Invited paper.
- "Case Study of Application of Science to Management: The Apalachicola River-Bay System." Invited paper.
- "Interannual Variability of Biological Processes in Estuarine Systems: Trophic Units and Guilds." Invited paper. Ninth Biennial International Estuarine Research Conference. Estuarine Research Federation, New Orleans, Louisiana (25-27 October, 1987).
- "Impact of Climate Change on Yields of Estuarine Fisheries." Invited paper, North American Conference on Preparing for Climate Change. Washington, D.C. (27-29 October, 1987).
- "The Oklawaha: An Ecological Point of View." Invited paper, Florida Defenders of the Environment, Marion County, Florida (31 October, 1987).
- "Environmental Research: How Much is Enough?" Plenary address, invited, Eighth Annual Minerals Management Service, Gulf of Mexico OCS Region. New Orleans, Louisiana (1-3 December, 1987).
- "The Apalachicola Problem" Big Bend Sierra Club (18 April, 1988)
- "Ecological linkages: forests, rivers, and estuaries" Florida Audubon Society Annual Meeting. (27 October, 1988)
- "The Lake Jackson ecological situation." Council of Neighborhood Associations, Leon County. (14 November, 1988)
- "Lake Jackson ecology" Florida Wildlife Federation. (24 January, 1989)
- "Lake Jackson: Microcosm of Florida's Environmental dilemma." Florida Alumnae Association dinner. (January, 1989)
- "The ecology of Florida's estuarine systems: dark days ahead." Organization of Artificial Reefs. (9 March, 1989).
- "Perdido Bay, Alabama/Florida-an ecosystem perspective." with D. A. Flemer et al. 10th Biennial International Estuarine Research Conference. (8-12 October, 1989).
- "Ecology of the Perdido drainage system-poster session". with D. A. Flemer et al. 10th Biennial International Estuarine Research Conference. (8-12 October, 1989).
- "Historic changes in bottom sediment chemistry in northern Gulf of Mexico estuaries." with W. Isphording. Geological Society of America. (November, 1989.)
- "Impacts of longterm climate changes on wetlands and fisheries resources." Southeast Regional Climate Center, South Carolina Water Resources Commission. (18-21 February, 1990).
- "The comparative feeding ecology of Choctawhatchee River cyprinid fishes." with, Frank Jordan. Florida American Fisheries Society Meeting (2/28/90).
- "Long-term studies in the Apalachicola system: Applications to freshwater inflows". (Invited paper). Northwest Florida Water Management District Symposium for interdisciplinary research in the Apalachicola estuary.
- "Nutrient limitation of the Perdido estuary" D. A. Flemer and R. J. Livingston. 11th Biennial International Estuarine Research Conference. (13 November, 1991).
- "Long-term, multidisciplinary studies of the Perdido drainage system-poster session". with D. A. Flemer 11th Biennial International Estuarine Research Conference. (13 November, 1991).

- "Projected changes in the Apalachicola Estuary over the next 100 years." based on 20 years of research. (Invited paper) 11th Bienial International Estuarine Research Conference. (13 November, 1991).
- "Resilience of Natural Systems", Basin-wide Management Conference on Water Resources, American Water Resources Association and the Northwest Florida Water Management District. (1 April 1992).
- "Complex Issues in the Protection of Aquatic Ecosystems". Young Scholars Program, Florida State University, Tallahassee, Florida. (7 July 1992)
- "Review of Conditions in the Lakes of Leon County". Water Solutions. Florida Cooperative Extension Service, University of Florida and Leon County Cooperative Extension Office. (31 August 1992).
- "Comparative analyses in Aquatic systems". Invited seminar, East Carolina University, Greenville, North Carolina. (10 February 1993).
- "Eutrophication/hypereutrophication in Coastal Systems: the Dissolved Oxygen Question". Symposium concerning "Sustainable Development in the Southeastern Coastal Zone". Mar. Sci. Vol. 20, Belle W. Baruch Library, The U. of South Carolina, Columbus, S. C. (2-5 March 1993).
- "Man and the Decline of Aquatic Ecosystems". FSU Young Scholars Program. Tallahassee, Florida. (6 July 1993).
- "Ecology of the Choctawhatchee River-Bay system", South Walton Tourist Development Council, Fort Walton County (1 December 1993).
- "Benthic Invertebrates and Hypoxia", Chairman, Benthic Invertebrates Ses., N. Am. Benthological Society,. Orlando, FL. (23-27 May 1994).
- "The Light and nutrients as organizing features of phytoplankton assemblages in a Gulf coastal system." Invited paper. Fifth International Phycological Congress, Qingdao, P. R. China. (26 June-2 July 1994).
- "Symposium on Urban Runoff". International Lake Symposium (Organizers: Dr. M Kasha, Dr. R. Livingston, Mr. H. Swanson. FSU, Tallahassee, Florida. (December 1994).
- "Symposium on Urban Runoff". Session Chairman. Given paper: The Ecology of urban stormwater runoff: effects on freshwater systems."(December 1994).
- "The Ecology of the Apalachicola system: fresh water input." Invited paper. Northwest Florida Water Management District, Technical Working Group. (February 1995).
- "Coastal Waters; the Apalachicola Estuary." First Annual Public Interest Environmental Conference. Gainesville, FL. (March 1995).
- "Keynote Address: Marinas as toxic waste sites in coastal systems." Southeastern Chapter of SETAC. (May 1995).
- "The Ecology of Lake Jackson". Invited paper, AARP. (June 1995).
- "The Ecology of Lake Jackson". Invited paper, Lake Jackson Action Team. (August 1995).
- "Polynuclear aromatic hydrocarbons: sediment and plant interactions." S. McGlynn and R. J. Livingston. Seventh annual Florida lake Management Society Symposium. Ocala, Florida, (May 1999).
- "The Choctawhatchee River-Bay system." R. J. Livingston. Choctawhatchee River-Bay Symposium. Niceville, FL. (June 1999).
- "Nutrient Loading and Phytoplankton Blooms in a Gulf Estuary. 8<sup>th</sup> International Conference on Applied Algology. Montecatini Terme, Italy. (September 1999).

- “The Current State of Our North Florida Aquatic Systems”. Northwest Florida Regional Economic Symposium”. Sandestin, Florida. (October 1999).
- “Plankton Blooms in Coastal Systems.” International Conference on Aquatic Ecosystems. New Zealand. (May 2000).
- “Effects of Phytoplankton Blooms on Gulf Systems”. NRAC, Pensacola Florida. (August 2000).
- “Nutrient Loading, the Buzz and the Reality?”. Northwest Florida Regional Economic Symposium”. Sandestin, Florida. (October 2000).
- “Long-term response of sinkhole lakes to stormwater runoff: blue-green algae blooms and deterioration of secondary production in Lake Jackson.” Florida lake Management Society Symposium. Tallahassee, Florida, (April 2001)
- “Effects of Nutrient loading and phytoplankton blooms in the Choctawhatchee System.” National Meeting, River/Coast Keepers. (June 2001).
- “Effects of Nutrient loading and phytoplankton blooms on Gulf coastal systems.” National Meeting, Estuarine Research Federation, Tampa, Florida. (November 2001).
- “Nutrient loading and phytoplankton blooms in Gulf coastal systems: controlling factors and effects on secondary production.” IEEE International Symposium, Oceans 2001 MTS/IEEE, Honolulu, Hawaii. (November 2001).
- “Ecosystem Ecology: the Myth and the Reality” Keynote address; Waterkeeper Alliance National Conference. (June 2002).
- “Design of Ecosystem Studies in Coastal Systems.”Invited Lecture Series. Bay of Fundy Coordinating Committee, Canada. (October 2002).
- “Ecology of the Apalachicola Bay system. Sierra Club. Tallahassee, Florida. (October 2002).
- “Plankton blooms and ecosystem response.” Invited Lecture Series. University of South Carolina. (November 2002).
- “The Apalachicola Ecosystem and Freshwater Runoff.” Florida Department of Environmental Protection and Riverkeeper Groups. Tallahassee, Florida. (December 2002).
- “Trophic Organization in Coastal Systems: an Ecosystem Approach.” International Conference on Environmental Future. Invited paper. The Foundation for Environmental Conservation. Zurich, Switzerland. (March 2003).
- “Effects of long-term climatological conditions on the origin and effects of plankton blooms in coastal systems”. Invited paper. Annual Meeting, Estuarine Research Federation. Seattle, WA. (September 2003).
- “Scientific testimony in environmental trials”. Pew Fellows Program in Marine Conservation. Blaine, Washington (October 2003).
- “Comparison of nutrient loading effects on 3 coastal systems. American Society of Limnologists and Oceanographers-summer meeting, Santiago de Compostela (NW Spain) (May 2005).
- “Effects of blooms on phytoplankton community structure.” Session organizer (with A. K. S. K. Prasad), XVII International Botanical Congress, Vienna Austria (12-16 July 2005).
- “Long-term effects of coastal blooms on phytoplankton community structure. XVII International Botanical Congress, Vienna Austria (12-16 July 2005).
- “Comparison of long-term changes of trophic organization in 4 gulf coastal systems.” Invited paper, special session, Estuarine Research Federation, Norfolk, Virginia. (October 2005).

“Long-term impacts of plankton blooms on the Perdido Bay system. Invited paper, Estuarine Research Federation meeting, Delaware. (October 2007).

IMPACTS OF ANTHROPOGENIC NUTRIENT LOADING IN COASTAL SYSTEMS OF THE EASTERN GULF OF MEXICO. Perdido River-Bay. Report for Florida Department of Environmental Protection Nutrient Conference. (March 2010).

IMPACTS OF ANTHROPOGENIC NUTRIENT LOADING IN COASTAL SYSTEMS OF THE EASTERN GULF OF MEXICO. Pensacola Bay system. Report for Florida Department of Environmental Protection. (March 2010).

IMPACTS OF ANTHROPOGENIC NUTRIENT LOADING IN COASTAL SYSTEMS OF THE EASTERN GULF OF MEXICO. Choctawhatchee River-Bay system. Report for Florida Department of Environmental Protection. (March 2010).

IMPACTS OF ANTHROPOGENIC NUTRIENT LOADING IN COASTAL SYSTEMS OF THE EASTERN GULF OF MEXICO. Amelia-Nassau River-estuaries. Report for Florida Department of Environmental Protection. (March 2010).

IMPACTS OF ANTHROPOGENIC NUTRIENT LOADING IN COASTAL SYSTEMS OF THE EASTERN GULF OF MEXICO. Apalachee Bay system. Report for Florida Department of Environmental Protection. (March 2010).

Interannual Variability: the Elephant and the Blind Men. Coastal and Estuarine Research Federation meeting, Delaware. (October 2011).

EFFECTS OF CLIMATE CHANGE AND NUTRIENT LOADING ON PLANKTON BLOOMS AND TROPHIC ORGANIZATION IN PERDIDO BAY (NORTHEASTERN GULF OF MEXICO). 10<sup>th</sup> Annual Congress, International Phycological Congress, Florida. (9 September 2013)

Long-term effects of climate changes on trophic organization of coastal systems. Coastal and Estuarine Research Federation meeting, San Diego. (November 2013).

Apalachicola River and Bay System Symposium. Florida Agricultural and Mechanical University, School of the Environment Florida Lake Management Society (FLMS). Keynote address, Effect of Climate Change on North Florida Estuaries (May 2015).

Differential long-term effects of climate changes on ecologically different coastal systems. Coastal and Estuarine Research Federation meeting, Portland, OR. (November 2015).



**Reviewer of Manuscripts and Proposals:**

National Institute of Health  
National Science Foundation  
U. S. Environmental Protection Agency  
Biology and Physiological  
National Sea Grant Program (NOAA)  
Ecology; Environmental Biology  
National Water Quality Commission  
Virginia Journal of Science  
Florida Scientist  
Ecology  
Biogeography  
Ecological Monographs  
Transactions of the American  
Illinois Natural History Survey  
Fisheries Society  
Harper & Row, Publishers, Inc.  
Science  
Virginia Polytechnic Institute and  
Estuarine and Coastal Marine Science  
State University (review of faculty member)  
Northeast Gulf Science  
Estuaries  
American Society for Testing and Materials  
Canadian J. of Fisheries and Aquatic Sciences  
Florida Department of Environmental Regulation  
Contributions in Marine Science  
J. Experimental Marine Biology and Ecology  
National Geographic Society  
American Fisheries Society (book)  
Marine Biology  
Hydrobiologia  
Copeia  
American Institute of Biological Science  
Bulletin of Marine Science  
Science (book review)  
Fishery Bulletin  
Springer-Verlag  
Archives of Environmental Contamination and Toxicology Estuarine Research Federation  
Hudson River Foundation  
Estuarine and Coastal Shelf Research  
Journal of Coastal Research  
Journal of Experimental Marine Biology and Ecology

## **Undergraduate and Graduate Teaching**

### **Courses taught at Florida State University**

General Biology  
Fundamentals of Biology  
Fundamentals of Ecology  
Comparative Physiology  
Physiological Ecology of Fishes  
Tropho-dynamics of Aquatic Systems  
Advanced Ichthyology  
Vertebrate Seminar  
Biology of Fishes  
ISC 2937-01 (Natural Science Honors Seminar).  
Marine Biology  
Macroecology  
Conservation Biology  
Perspectives in Ecology and Evolution  
Experimental Field Biology  
Aquatic Pollution Biology  
Special topics: DIS, Honors DIS, Preceptorials

## **Major Professor for Graduate Students:**

1. Columbus H. Brown, M.S. (The effect of photoperiodism on the respiration of the channel catfish) - 1973.
2. Stephen Brice, M.S. (The effects of methyl mercury on the channel cat-fish *Ictalurus punctatus*) -. 1973.
3. Theresa Ann Hooks, M.S. (An analysis and comparison of the benthic invertebrate communities in the Fenholloway and Econfina estuaries of Apalachee Bay, Florida). 1973.
4. Bruce D. DeGrove, M.S. (The effects of mirex on temperature selection in the sailfin molly, *Poecilia latipinna*) - 1973.
5. Kenneth L. Heck, Jr., M.S. (The impact of pulp mill effluents on species assemblages of epibenthic marine invertebrates in Apalachee Bay, Florida). 1973
6. Gerard G. Kobylinski, M.S. (Translocation of mirex from sediments and its accumulation by the hogchoker (*Trinectes maculatus*)). 1974.
7. Frank G. Lewis, M.S. (Avoidance reactions of two species of marine fishes to kraft pulp mill effluents). 1974.
8. Aureal J. Tolman, M.S. (Effects of mirex on the activity rhythms of the diamond killifish, *Adinia xenica*). 1974.
9. Claude R. Cripe, M.S. (The effects of mirex on a simulated marsh system). 1974.
10. Michael Zimmerman, M.S. (A comparison of the benthic macrophytes of polluted system (Fenholloway River) and an unpolluted system (Econfina) in Apalachee Bay, Florida). 1974.
11. Paul Muessig, M.S. (The determination of pathways of mercury concentration and conversion within specific organs of channel catfish (*Ictalurus punctatus*)). 1974.
12. Christopher C. Koenig, Ph.D. (The synergistic effects of mirex and DDT on the embryological development of the diamond killifish, *Adinia xenica*) - 1975.
13. Susan Drake, M.S. (The effects of mercury on the development of the zebrafish). Fall quarter, 1975.
14. Allan W. Stoner, M.S. (Growth and food conversion efficiency of pin- fish (*Lagodon rhomboides*) exposed to sublethal concentrations of bleached kraft mill effluents). Winter quarter, 1976.

15. Roger A. Laughlin, M.S. (Avoidance of blue crabs (*Callinectes sapidus*) to storm water runoff). Spring quarter, 1976.
16. George Gardner, M.S. (Behavioral reactions of pinfish to pulp mill effluents). Summer quarter, 1976.
17. Peter Sugarman, M.S. (Effects of bleached kraft mill effluents on activity rhythms of the pinfish, (*L. rhomboides*)). Spring quarter, 1977.
18. Bruce Purcell, M.S. (Effects of storm water runoff on grass bed communities in East Bay). Spring quarter, 1977.
19. James Duncan, M.S. (Short-term impact of clearcutting activities on epibenthic fishes and invertebrates in the Apalachicola Bay system). Spring quarter, 1977.
20. Peter Sheridan, Ph.D. (Trophic relationships of fishes in the Apalachicola Bay system) - Spring quarter, 1978.
21. Allan Stoner, Ph.D. (Ecological relationships and feeding response of the pinfish, *Lagodon rhomboides*). Summer quarter, 1979.
22. Steven Osborn, M.S. (Ecological relationships of ophiuroids in Charlotte Harbor). Fall quarter, 1979.
23. Joseph Ryan, M.S. (Day-night feeding relationships of grassbed fishes). Spring quarter, 1981.
24. Holly Greening, M.S. (Spatial/temporal distribution of invertebrates in grassbeds of Apalachee Bay). Summer quarter, 1980.
25. Bruce MacFarlane, Ph.D. (Effects of variations in pH on topminnow physiology and behavior). Spring quarter, 1980.
26. Pat Dugan, M.S. (Long-term population changes of epibenthic macroinvertebrates in Apalachee Bay, Florida). Summer Quarter, 1980.
27. Brad McLane, M.S. (Impact of stormwater runoff on benthic macroinvertebrates). Fall Quarter, 1980.
28. Kathy Brady, M.S. (Larval fish distribution in Apalachee Bay).
29. Duncan Cairns, M.S. (Detrital processing in a subtropical southeastern drainage system) Fall Semester, 1981.
30. Bruce Mahoney, Ph.D. (The role of predation in seasonal fluctuations of estuarine communities). Summer, 1982.

31. Will Clements, M.S. (Feeding Ecology of Filefish in Apalachicola Bay, Florida). Summer, 1982.
32. Graham Lewis, Ph.D. (Habitat Complexity in a Subtropical Seagrass Meadow). Fall, 1982.
33. Ken Leber, Ph.D. (Feeding Ecology of Decapod Crustaceans). Summer, 1983.
34. Kevan Main, Ph.D. (Predator-prey Interactions in Seagrass Beds: The Response of *Tozeuma carolinense*). Winter, 1983.
35. Kelly Custer, M.S. (Gut Clearance Rates of Three Prey Species of the Blue Crab). Summer, 1985.
36. J. Michael Kuperberg, M.S. (Response of the marine macrophyte *Thalassia testudinum* to herbivory). Fall, 1986.
37. Susan Mattson, M.S. (The effect of post-settlement predation on community structure of epifauna associated with cockle shells). Fall, 1986.
38. Joseph L. Luczkovich, Ph.D. (The patterns and mechanisms of selective feeding on seagrass-meadow epifauna by juvenile pinfish, *Lagodon rhomboides*). Fall, 1987.
39. Jon A. Schmidt, Ph.D. (Patterns of seagrass infaunal polychaete recruitment: influence of adults and larval settling behavior). Fall, 1987.
40. David Bone, Ph.D. (Response of seagrass invertebrates to toxic agents). Fall, 1987.
41. Carrie Phillips, M.S. (Influence of physical disturbance on infaunal macroinvertebrates: seagrass beds vs. unvegetated areas). Spring, 1987.
42. Frank Jordan, M.S. (Trophic organization of fishes in the Choctawhatchee River.) Spring, 1989.
43. Schmidt-Gengenbach, Jutta (M.S.). (A study of the effects of pollutants on the benthic macroinvertebrates in Lake Jackson, Florida: A descriptive and experimental approach). Summer, 1991.
44. Holmquist, Jeff. (Ph. D.). (Disturbance, dispersal, and patch insularity on a marine benthic assemblage: influence of a mobile habitat on seagrasses and associated fauna). Summer, 1992.
45. Bevis, Todd. (M.S.). (Effects of urban runoff on fish assemblages in Lake Jackson, Florida). Fall, 1995.

46. McGlynn, S. E. (Ph. D). (Polynuclear aromatic hydrocarbons: Sediment and plant interactions). Fall, 1995.
47. Boschen, C. J. (M.S.). (Effects of urban runoff on feeding ecology of fish assemblages in a north Florida solution lake). Spring, 1996.
48. Julie Reardon (M.S.) (Ecology of phytoplankton communities in Lake Jackson). Spring 1999.
49. Barbara Shoplock (M.S.) (Ecology of zooplankton communities in Lake Jackson). Spring 1999.

## Public Service

### Local/State (\* = active)

Interstate 10 Environmental Study Team (1970), Florida Department of transportation.  
Chairman, Select Study Committee on Mirex, Governor's Natural Resources Committee  
Advisor to Department of Transportation on Dredging and Filling Activities.  
Advisor to Attorney General's Office on pollution issues.  
Member, Inter-institutional Technical Advisory Committee on Environmental Affairs for Florida  
Pollution Control Department.  
Advisor to numerous House and Senate Committees on Environmental Affairs.  
Advisor to Department of Natural Resources on determination of land acquisition under the  
environmentally endangered lands program.  
Advisor to Leon County School System for environmental education in north Florida.  
Testimony before State Cabinet on environmental affairs. Provided scientific data that  
went into determination of the Florida Cabinet's decision to reject a dam to be built on  
the Apalachicola River by the U. S. Army Corp of Engineers.  
Advisor to the Calhoun County Board of Commissioners concerning environmental issues  
associated with the Apalachicola Bay system.  
Environmental consultant on DRI for SW Florida Regional Planning Council.  
Program Chairman and Speaker, Florida Defenders of the Environment Annual Meeting (1976):  
Controversial Waterways with Emphasis on the Apalachicola Drainage System. Florida  
Defenders of the Environment Annual Meeting (1977): Three Florida Rivers.  
Advisor, Florida Department of Environmental Regulation, Florida Dept. of Natural Resources,  
Florida Game and Fresh Water Fish Commission, Florida Division of State Planning  
(Department of Administration) regarding the application of scientific data for a  
comprehensive management program for the Apalachicola Valley.  
Reviewer (at the request of the Franklin County Board of County Commissioners) of DRI  
associated with development of St. George Island (1977).  
Reviewer for various state agencies of reports concerning environmental impact studies (e.g.,  
the "Chesher Report" concerning the effects of canals and development on water quality  
in the Florida Keys).  
Trustee, Florida Defenders of the Environment. Provide scientific information for environmental  
problems.  
Member, Citizen's Advisory Committee on Coastal Zone Management for the Apalachee  
Regional Planning Council.  
Participant (at request of the Honorable Ralph Turlington, Commissioner of Education),  
Environmental Education Activities in the Apalachicola River and Bay Resource  
Management and Planning Program.  
Scientific advisor (unpaid), Franklin County Board of County Commissioners, 1972-present.  
Scientific advisor (unpaid), Wakulla County Board of Commissioners, 1980-present.  
Member, Science Advisory Board, Florida League of Anglers.  
Member, Shellfish Sanitation Task Force, Florida Department of Natural Resources. Advisor  
(unpaid), Franklin County School Board. Development of environmental science in  
secondary schools.  
Advisor (unpaid), Wakulla County Commercial Fisherman's Association.

Advisor (unpaid), Concerned Citizens Association of Wakulla County.  
 Advisor, Apalachee Regional Planning Council  
 Member, Board of Directors, Environmental Service Center (Florida Defenders of the Environment)  
 Member, Science Advisors Committee (Review of the Flint River; Chairperson: Ruth Patrick).  
 Member, Sanctuary Management Committee (in charge of research and education in the Apalachicola River and Bay National Estuarine Sanctuary).  
 Scientific advisor to Migrant Workers' Association concerning the use of the pesticide Temik  
 Scientific Advisor to the Florida Department of Environmental Regulation, the Audubon Society, and Getty Oil Company concerning oil drilling in the Pensacola Bay system  
 Scientific Advisor to the Apalachee Regional Planning Council and local citizen's groups concerning heavy metal pollution of the Chipola River  
 Member, Health Advisory Council, Florida Department of Health and Rehabilitative Services  
 Member, Dog Island Environmental Advisory Board Old Pass Lagoon Technical Advisory Committee (NFWFMD)  
 Bioassay Task Force (FDER)  
 Member, Apalachicola Bay Area Resource Planning and Management Committee Member, Apalachicola Bay Reserve Advisory Committee  
 Member, Scientific Review Committee, DOI Offshore Environmental Studies  
 Member, Basin Advisory Committee, Northwest Florida Water Management District  
 Member, Technical Advisory Group, Suwannee River Water Management District  
 Member, Perdido Bay Cooperative Management Project.  
 Participant, The Florida Water Story, educational film.  
 Trustee, The Barrier Island Trust, Inc.  
 Member, Sikes Cut Evaluation Committee. Florida Defenders of the Environment. Scientific testimony on proposed marina in south Florida. The Conservancy and the Florida Audubon Society.  
 Testimony on the proposed Texaco Tank farm in Lloyd, Florida for Friends of Lloyd, Inc.....  
 Advisor to Leon County Commission (Florida): Lake Ecology. Member,  
 Leon County Landfill Evaluation committee-Leon County Board of Commissioners.  
 Eastern Leon County Sector Review Committee. -Leon County Board of Commissioners.  
 \*Board member, McBride Institute for Preservation. State of Florida non-profit organization.  
 Science Advisory Committee. Environmental review group for the Leon County Board of Commissioners.  
 Producer, Movie on the Ecology of Lake Jackson.  
 Member, Bradfordville Lake Review Committee  
 \*Member, Technical Working Group, Freshwater Sources to the ACF Drainage system. Northwest Florida Water Management District.  
 President, Board of Directors, Millstone Institute of Preservation. Tallahassee, Florida.  
 Review and Advisory Team: The Rivers & Estuaries Center (Hudson River System)  
 Advisor, Florida Senate and Choctawhatchee Alliance, Restoration of the Choctawhatchee Bay system.  
 \*Advisor, Apalachicola Bay & River Keeper, Inc.  
 Advisor, Northwest Florida Legislative Natural Resources Advisory Committee (Florida House).  
 \*Consultant: Florida Department of Environmental Protection. Apalachicola-Chattahoochee-Flint River system proceedings.



\*Consultant: Florida Department of Environmental Protection. Apalachee Bay system (Econfina and Fenholloway systems), Perdido River-bay system.

**National/International** (\* = active)

Environmental Coordinator for U. S. Environmental Protection Agency.

Coordinator, Estuarine Management Proposal, Florida Sea Grant (1973, 1974).

Advisor to U. S. Senator Lawton Chiles on environmental affairs and the energy "crisis." Invited participant in formal presentation to the Reuss Committee on Conservation and Natural Resources (U. S. House of Representatives).

Advisor to the Select Study Committee on Mirex, Environmental Protection Agency. Chairman, STAEP panel on Kepone/mirex/hexachlorocyclopentadiene:

Reviewer of environmental and health implications for the National Academy of Sciences (Environmental Studies Board, National Research Council).

Member, Ad-hoc group to review the 1975 Water Research Strategy Doc of the Environmental Protection Agency. This included a review of research carried out by the E.P.A.

Participant in U. S. Environmental Protection Agency Conference and report (presented to the Congress of the United States) concerning Estuarine Pollution Control.

Special consultant to the National Commission on Water Quality (N.C.W.Q.) to determine the economic, social, and environmental impact of achieving or not achieving the goals of the Federal Water Pollution Control Act of 1972.

Advisor, Office of Coastal Zone Management (NOAA) concerning the Apalachicola Bay system for inclusion in the National Estuarine Sanctuary Program.

Coordinator (with the Conservation Foundation) of a series of meetings with federal and state agencies concerning the development of a management program for the Apalachicola Valley.

Participant in the "Operation Fish Bowl" planning and advisory group for the U S. Army Corps of Engineers regarding the development of "Principles and Standards for Planning Water and Related Land Resources" for the Tri-River (Flint-Chattahoochee-Apalachicola) system.

Participant in the development of a joint effort with the Office of Monitoring and Technical Support (U. S. Environmental Protection Agency), the Environmental Monitoring and Support Laboratory (U. S. Environmental Protection Agency), and the National Aeronautics and Space Administration (NASA) to apply remote sensing technology to the monitoring of stress due to upland runoff on the Apalachicola Bay system.

Member, Ecology Committee, Science Advisory Board, U. S. Environmental Protection Agency (1978-1982). (Review 5-year plan for environmental research, advise on "air/water" quality standards)

Testimony for Congressional Hearing, Barrier Islands National Parks Bill (H. R. 5981), Washington, DC (March, 1980)

Advisor, Australian Institute of Marine Science and Malcolm Fraser (Prime Minister of Australia) Research Program for the Great Barrier Reef.

Advisor, Nature Conservancy and Trust for Public Lands, Inc., concerning land purchases in Florida

Advisor to various federal environmental officers concerning environmental problems in Florida

Consultant, Environmental Effects, Transport/Fate Committee, U.S. Environmental Protection Agency  
Member, Extramural Review Board, U.S. Environmental Protection Agency  
Member, Habitat and Environmental Advisory Panel, Gulf of Mexico Fishery Management Council.  
Member, Advisory Committee to the Man and the Biosphere Program (United Nations).  
Member, Board of Scientific Advisors, The Wetlands Fund.  
Advisor, Alliance for Chesapeake Bay.  
Reviewer, Dissertations and research; Centre of Advanced Study in Botany, University of Madras, India.  
Consultant for the Natural Resources Defense Council concerning the Great Whale dam project, Can.. (New York and Wash. D. C. Offices).  
Consultant for the Sierra Club Legal Defense Fund, Inc. Honolulu, Hawai. concerning restoration efforts of fresh water-estuarine systems of Oahu and San Francisco Bay system restoration effort.  
Consultant; National Oceanic and Atmospheric Administration. Fresh-water runoff to the Apalachicola.  
\*Consultant for the Natural Resources Defense Council concerning 2 major federal cases (environmental), Can.. (New York Office).