

JOSEPH STEVEN DAVIS

CURRICULUM VITAE

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3993, e-mail: jsd@botany.University of Florida.edu

Date of birth: 18 July, 1929

Marital status: Married, two sons

Health: Excellent

Professor Emeritus: December 31, 2007

Educational Background:

State University of Iowa	Botany	PhD	1960
State University of Iowa	Science Education	MS	1956
State University of Iowa	Zoology	BA	1951

Post Doctoral Study:

1961 - Hopkins Marine Station, Stanford University (Summer)

1962 - Hopkins Marine Station, Stanford University (Summer)

1963 - Botanical Institute, University of Vienna (Academic Year)

1964 - Freshwater Biological Association, Ambleside, England (Summer)

1985 - Station Biologique de Roscoff, Roscoff, France

Languages:

German - read scientific literature with ease.

Employment:

University of Florida	Professor	1977-2007
University of Florida	Associate Professor	1969 -1977
	(tenure-accruing)	
University of Florida	Assistant Professor	1966-1970
	(tenure-accruing)	
Southern Illinois University	Assistant Professor	1960-1966
	(tenure-accruing)	
Southern Illinois University	Instructor	1959-1960
	(tenure-accruing)	
Southern Illinois University	Co-Chairman, biology department, 1960-1964.	

#### Areas of Specialization

Specializations lie with ecological and taxonomic aspects of soil and airborne algae of Florida, taxonomy and morphology of marine and freshwater algae, effects of fire on soil algae, biological and chemical aspects of tUniversity of Floridaa formation, and ecological aspects of hypersaline organisms relative to their management for the production of sodium chloride from seawater and inland brines.

#### Courses Taught at the University of Florida, Gainesville

**General Botany (BOT 180).** Responsible for all the lectures, test construction and administration, and student advisement.

**General Botany (BOT 181).** Responsible for all the lectures, test construction and administration, and student advisement.

**Cells, Organisms, and Genetics (BSC 2005).** Responsible for all the lectures, test construction and administration, and student advisement.

**Principles of Biology I (BSC 2010).** Responsible for the lectures of the plant half of the course, test construction and administration, and student advisement.

**Algology (BOT 5405).** Responsible for the lectures and laboratory parts of the course, test construction and administration, field trips, and student advisement

**Seaweeds and Algae of Florida (BOT 4935/6935).** Responsible for lecture-discussions, field trips, test construction and administration

**Cells, Organisms, and Genetics (BSC 2007).** Responsible For lecture-discussions, test construction and administration.

Membership in Professional Organizations:

Florida Academy of Science

Phycological Society of America

The Global Network for Environmental Science and Technology (Global NEST)

Military Experience

1952

Rank of Second Lieutenant

Duty Stations:

Signal School, Ft. Monmouth, New Jersey

24th Signal Service Bn., Ft. Devens, Massachusetts

516th Signal Company, Salzburg, Austria

1953

Promoted to First Lieutenant

Commanding Officer, The Signal School, Linz, Austria

German Interpreter

1954

Honorably discharged

Reviewer:

Manuscripts:

Phycological Society of America

Ecological Society of America

Florida Academy of Science

Aquatic Botany

Science

Castanea

Bioresource Technology

Phycologia

Research Proposals:

(NSF)      (EPA)

1969      1983

1970

1971

1973

External Ph.D. thesis examiner:

2001 University of Port Elizabeth, South Africa

2005 Nelson Mandela Metropolitan University, South Africa

2006 Nelson Mandela Metropolitan University, South Africa

Memberships on Committees at the University of Florida (UNIVERSITY OF FLORIDA)

1968 - Undergraduate Courses Committee (Departmental)

1969 - Petitions Committee (University)

1970 - Colloquium Committee (Division)

1974 - Library Liaison (Departmental)

1975 - American Cancer Society Institutional Research Grant Committee (University)

1976 - Search Committee (Departmental)

1976 - Space Committee (Departmental)

1977 - American Cancer Society Institutional Research Grant (University)

1978 - American Cancer Society Institutional Research Grant (University)

1980 - American Cancer Society Institutional Research Grant (University)

1981 - American Cancer Society Institutional Research Grant (University)

1982 - American Cancer Society Institutional Research Grant (University)

1983 - American Cancer Society Institutional Research Grant (University)

1988 - Graduate Student Affairs (Departmental)

1988 - Seminar Committee (Departmental)

1989 - Merit Raises Committee (Departmental)

1990 - Space Committee (Departmental)

1990 - Graduate Affairs Committee (Departmental)

1990 - CLAS nominating Committee

1991 - Space Committee

1991 - Graduate Affairs Committee

1991 - CLAS Nominating Committee

1992 - Space Committee

1992 - Graduate Affairs Committee

1992 - CLAS Nominating Committee

1993 - Space Committee, Transport Coordinator (Departmental)

1994 - Space Committee, Transport Coordinator (Departmental)

1995 - Space Committee, Transport Coordinator (Departmental)

1996 - Space Committee, Transport Coordinator (Departmental)

1997 - Space Committee, Transport Coordinator (Departmental)

1998 - Boat Committee (University) Dr. Frank Maturo, Chair

1999 - Merit Raises Committee (Departmental)

2000-2007 Space and Transport Committee

Participation in Non-Botany Courses

Bioprocess Microbiology AGC 4660

Integrated Marine Biology (ZOO 4403C). Responsible for the collection, identification, and discussion of the marine algae collected in Florida coastal waters adjacent to Seahorse Key and Crystal Bay.

Membership on Editorial Boards

1997 - The Global Network for Environmental Science and Technology

1997 - International Journal of Salt Lake Research

1998 - Advisory Scientific Committee of Salt 2000, The Hague

Awards and Grants Received

1961 - National Science Foundation for post doctoral study of marine algae at Stanford University's Hopkins Marine Station, Pacific Grove, California

1964 - Awarded 12 months of sabbatical leave from Southern Illinois University.

1966 - Direct Presidential Research Grant (President Delyte Morris, Southern Illinois University) \$2000.00. The result of this work was the publication of "The Life Cycle of *Pediastrum simplex*."

1966 - Sponsored Research (University of Florida) for the purchase of laboratory equipment \$4000.00.

1966 - 1967 - Diamond Crystal Salt Company to study the hypersaline ecosystem at Long Island, Bahamas.

Total value in excess of \$20,000.00.

1968 - OCO contest winner for funds to obtain literature for review article "Survival records in the algae and the survival value of fat, pigments and mucilaginous substances."

1971 - Sponsored Research (University of Florida) for travel funds to lead a team of ecologists to Long Island, Bahamas, to obtain of productivity data from brine ponds.

1975 - Hatch Project for study of soil algae as nitrogen sources for cropping systems.

1978 - Awarded 6 months sabbatical leave from the University of Florida.

- 1981 - Awarded research and travel expenses from Growers Association for soil algae study of potato farms at Homestead, Florida, during fallow seasons.
- 1983 - Appointed Adjunct Professor, Southern Illinois University.
- 1984 - Awarded 12 months sabbatical leave from the University of Florida.
- 1985 - Awarded 1 month as exchange scientist, from United States National Research Council, to Bulgaria.
- 1991 - Awarded Fall Semester sabbatical leave from University of Florida.
- 1992 - Chosen by the Salt Science Research Foundation (Japan) and cosponsors of the Seventh International Symposium on Salt to select papers for oral presentation and publication in the abstract book, and to select and edit full papers for publication in the proceedings volume.
- 1996 - Recognition of teaching achievements during the year: 1996 Anderson Scholar Faculty Honoree.
- 1999 – Awarded travel expenses to present an invited seminar on Samos, Greece.
- 2000 – Awarded \$1000 for travel expenses by Microscopy and Analyses.
- 2000 – Awarded \$350 for travel expenses by the 8<sup>th</sup> World Salt Symposium.
- 2008 – Awarded membership on the Advisory Scientific Committee, 9<sup>th</sup> Salt Symposium.
- 2008 – Awarded Emeritus Professor from the University of Florida.

#### Contracts and Grants Since the Last Promotion (10 years)

Title: Hydrobiology of the Colchester Salt Ponds

Principal Investigators: Dr. Eileen Campbell and J.S. Davis

Agency: National Salt Limited, Johannesburg, South Africa

Dates: Ongoing.

#### Invited Seminars and Addresses on Hypersaline Ecosystems in Solar Saltworks

- 1968 - Exchange Club, Gainesville.
- 1969 - Zoology-Engineering-Botany faculty, University of North Carolina.
- 1969 - University of Miami International Oceanographic Foundation.
- 1970 - Environmental Engineering Department (UNIVERSITY OF FLORIDA).

- Department of Botany (UNIVERSITY OF FLORIDA).
- 1971 - Merck Microbiologists, Rahway, New Jersey.
  - Townspeople of Useless Loop, Western Australia.
  - Salt Institute, Chicago.
- 1972 - Department of Nutrition, Michigan State University.
- 1973 - Fourth International Symposium on Salt, Houston.
- 1974 - Environmental Engineering Department (UNIVERSITY OF FLORIDA).
  - Agricultural Engineering Department (UNIVERSITY OF FLORIDA).
- 1975 - Cryptogamic Botany Group (UNIVERSITY OF FLORIDA).
  - Department of Botany (UNIVERSITY OF FLORIDA).
- 1976 - Dow Chemical, Freeport, Texas.
  - Central Queensland Salt Industries, Rockhampton, Australia.
  - Imperial Chemical Industries, Port Alma, Australia.
- 1977 - Botany Department, UNIVERSITY OF FLORIDA.
  - Environmental Engineering Class of Dr. Jack Fox, UNIVERSITY OF FLORIDA.
  - Diamond Crystal Salt Co. Management Officials.
  - AKZONA company, Bonaire, Netherlands Antilles.
  - Chemical Engineering Department, UNIVERSITY OF FLORIDA, April.
- 1977 - Kalas Sel, Athens, Greece, July.
- 1978 - Microbiology Department, UNIVERSITY OF FLORIDA, January.
  - Mexican Government, Guerrero Negro, Baja California, August.
  - Weber State College, Ogden, Utah.
- 1979 - Freshwater Biological Association, Ambleside, Cumbria, England.
  - Geologisch-Palaontologisches Institut, University of Gottingen, Germany.
  - Environmental Laboratory, University of Oldenburg, Germany.
- 1981 - Empresa Nacional de Salinas directorship at Araya, Venezuela, June.
- 1981 - Instituto Oceanografico, Cumana, Venezuela, June.



- 1984 - Station Biologique, Roscoff, France.
- 1984 - Imperial Chemical Industries, Sydney, Australia.
- 1985 - Station Marine D'Endoume, Marseille, France.
- 1985 - University Marine Biological Station, Millport, Scotland.
- 1985 - Bulgarian State Saltworks, Burgas.
- 1985 - Bulgarian Academy of Science, Sofia.
- 1985 - TEKEL, Izmir, Turkey.
- 1986 - Murdoch University, Perth, Australia.
- 1986 - Turkish State Monopolies, Izmir, Turkey.
- 1986 - Turkish State Monopolies, Istanbul, Turkey.
- 1987 - Salt Research Institute, Tanggu, Tianjin, China.
- 1987 - Shandong College of Oceanography, Qingdao, China.
- 1988 - Salt Research Institute, Tanggu, Tianjin, China.
- 1988 - Salt Bureau, Qingdao, China.
- 1988 - Department of Botany, Tel Aviv University, Israel.
- 1989 - Department of Botany, Port Elizabeth University, Port Elizabeth, South Africa.
- 1990 - Shark Bay Salt, Useless Loop, Australia.
- 1991 - International Symposium on Biotechnology of Salt Ponds, Tanggu, China.
- 1991 - Agricultural Engineering Department, University of Florida.
- 1992 - Agricultural Engineering Department, University of Florida.
- 1993 - Universities at Mossoro and Cabo Frio, Brazil
- 1995 - Faculty of Whitney Marine Laboratory, University of Florida
- 1996 - Management Officials of Sua Pan Ltd., Botswana
- 1996 - Walvis Bay, Namibia
- 1996 - Management Officials of Hellenic Saltworks, Government of Greece, Lesvos, Greece.
- 1996 - Cumana, Venezuela (United Nations Invitation)
- 1997 - Management Officials of Tecnosol, Araya, Venezuela

1997 - Las Coloradas, Yucatan, Mexico

1997 – Department of Botany, Port Elizabeth, Republic of South Africa

1997 - Shark Bay, Western Australia

1997 – Botswana Ash, Sua Pan, Botswana (Government of Botswana)

2000 - Daytona Beach Community College, Florida

2003 - Rotary Club, Gainesville, Florida

2006 – International Conference on Salt 2006. January 19-20, Nirma University, Ahmedabad, India.

2007 – International Conference on Salinas, Margherita di Savoia, Italy

2007 – Internatioal Conference on Salinas, Cagliari, Sardinia.

#### CONSULTATIONS

##### Requests for biological assistance to solar saltworks

##### Anguilla:

2001 – One visit for advisement and management procedures.

##### Argentina:

1978 - One visit to San Luis Dos Anclas, for brine ecosystem advisement.

1979 - One visit to San Luis for advisement.

##### Australia:

1971 - One visit to Perth for discussions and a seminar on the brine ecosystem.

1971 - One visit to Shark Bay to establish procedures for brine management.

1973 - One visit to Dampier to establish monitoring procedures for ecosystem management.

1974 - One visit to Port Alma for advisement and reconstruction of system.

1975 - One visit to Shark Bay to reassess and adjust ecosystem management procedures.

1975 - One visit to Port Alma for system adjustment.

1983 - One visit to Shark Bay, Western Australia, for advisement.

1983 - One visit to Dampier, Western Australia, for advisement.

1984 - One visit to Port Alma, Queensland, for advisement.

1986 - One visit to Shark Bay for system adjustment.

- 1988 - One visit to Shark Bay for advisement.
- 1989 - One visit to Shark Bay for advisement.
- 1990 - One visit to Shark Bay for advisement.
- 1993 - One visit to Shark Bay for advisement.
- 1993 - One visit to Shark Bay for advisement.
- 1995 - One visit to Shark Bay for advisement.
- 1997 - One visit to Shark Bay for advisement (August).
- 1999 - One visit to Shark Bay for advisement (January)
- 2003 – One visit to Port Alma and Bajool, Queensland, for advisement.

Bahamas:

- 1967 - Six visits to Long Island to establish procedures, and to obtain information and baseline data for brine ecosystem management.
- 1968 - Six visits to Long Island to monitor ecosystem productivity.
- 1969 - Ten visits to Long Island for productivity data gathering, advisement, and system adjustment.
- 1971 - Two visits to Long Island for advisement, assessment of the system.
- 1972 - Four visits to Long Island for system adjustment.
- 1973 - Three visits to Long Island for advisement and data gathering.
- 1974 - Two visits to Long Island for system adjustment.
- 1975 - Two visits to Long Island for data gathering and advisement.
- 1976 - Two visits to Long Island for advisement, adjustment of system.
- 1977 - One visit to Inagua for advisement.
- 1977 - Two visits to Long Island for advisement.
- 1978 - Three visits to Long Island for advisement.
- 1979 - Two visits to Long Island for advisement.
- 1980 - Two visits to Long Island for advisement.

Botswana:

- 1996 - One visit to Botswana Ash for advisement.

1997 - One visit to Botswana Ash for advisement.

2000 – One visit to Botswana Ash for advisement.

Brazil:

1976 - By mail to governmental agency for management procedures.

1993 - One visit to Sal Cisne (Cabo Frio), and one visit to Norsal, Rio Branca.

Bulgaria:

1985 - One visit to Black Sea saltworks, Burgas, for advisement.

1986 - One visit to Black Sea saltworks, Burgas, for advisement.

1989 - One visit to Black Sea saltworks, Burgas, for advisement.

China:

1987 - One visit to Tanggu for Advisement.

1988 - One visit to Tanggu, Qingdao and Dian Bai for advisement

India:

1974 - By mail to private concern for management procedures.

Greece:

1977 - One visit to Messolonghi for advisement and management procedures.

1996 - One visit to Skala Kaloni for commissioning a new saltworks: advisement and management procedures.

1999 - One visit to Messolonghi for observation.

2002 - One visit to Skala Kaloni and Kitros for advisement.

Italy:

2007 – One visit to Atisale, Margherita di Savoia

2007 – One visit to Atisale, St. Antioco, Sardinia

Kenya:

2001 - One visit to Mombasa, Mombasa Saltworks, for advisement and management procedures.

2006 - One visit to Mombasa, Kensalt, for advisement and management procedures.

Mexico:

1978 - One visit for advisement.

1990 - One visit for advisement.

1990 - One visit to assess ecological damage caused by hurricane Gilbert.

1992 - One visit to Industria Salinera de Yucatan for advisement.

1997 - One visit to Industria Salinera de Yucatan for advisement.

1998 - One visit to Industria Salinera de Yucatan for advisement.

1999 - One visit to Industria Salinera de Yucatan for advisement.

2000 - One visit to Industria Salinera de Yucatan for advisement.

2001 - One visit to Industria Salinera de Yucatan for advisement.

2002 - One visit to Industria Salinera de Yucatan for advisement.

2003 - One visit to Industria Salinera de Yucatan for advisement.

2004 - One visit to Industria Salinera de Yucatan for advisement.

2005 - One visit to Industria Salinera de Yucatan for advisement.

2006 - One visit to Industria Salinera de Yucatan for advisement.

2007 – One visit to Industria Salinera de Yucatan for advisement.

2008 – One visit to Industria Salinera de Yucatan for advisement and new salt field planning.

Namibia:

1996 - One visit to Walvis Bay for advisement.

2004 – One visit to Walvis Bay for advisement.

2008 – One visit to Walvis Bay for advisement.

Netherlands Antilles (Bonaire):

1970 - One visit for monitoring and management of the biological processes in brine pond ecosystems.

1976 - One visit for system adjustment.

1977 - One visit for system adjustment.

South Africa:

1983 - One visit to Port Elizabeth for advisement.

1986 - One visit to Coega and Vreedenburg for advisement

1989 - One visit to Port Elizabeth for saltworks design and one visit to Saldahna for advisement.

1993 - One visit to Port Elizabeth for saltworks design and one visit to Saldahna for advisement.

1994 - One visit to Port Elizabeth for advisement.

1997 - One visit to Port Elizabeth and Saldahna for advisement.

1998 - One visit to Port Elizabeth and Saldahna for advisement, CDC report.

2000 – Coega Development Corporation, government of South Africa.

Turkey:

1985 - One visit to TEKEL, Izmir, for advisement.

1986 - One visit to Camalti, Ayvalik, Yavsan, Kaldirum and Kacik for system design and advisement.

United States:

1978 - One visit to Great Salt Lake Minerals and Chemicals Co. for advisement.

2001 – One visit to IMC Kallium for advisement.

2003 – One visit to Great Salt Lake Minerals and Chemicals Co. and Morton Salt.

2004 – One visit to Tucson, Arizona, for advisement to Eastman Chemical Co.

Venezuela:

1981 - One visit to Araya for biological management procedures.

1983 - One visit to Araya for advisement.

1996 - One visit to Araya to ascertain condition of the saltfields.

1997 - One visit to Araya for advisement

Surveys of Marine ecosystems

Biscayne Bay, Florida

1967 - Six visits to assess the impact of heated effluents on marine algae in the vicinity of the Turkey Point power generating station.

1968 - Five visits to assess the impact of heated effluents on marine algae at selected locations near the Turkey Point and Cutler Ridge power generating stations.

Ft. Pierce, Florida

1969 - One visit to obtain base line data to estimate the existing ecological situation around Hutchinson Island, near a proposed site for nuclear power generating stations.

Graduate Student Supervisory Chairmanship

M.S. Theses completed.

1969 - Rolando Parrando, thesis title: Airborne Algae Of The Gainesville area.

1973 - Jimmie Norton, thesis title: Soil Algae From North Central Florida.

1975 - Earl Tryon, An Ecological, Cultural And Cytological Study of Pediasstrum. Thesis title: The life cycle of the colonial green alga Pediasstrum simplex (Meyen) Lemm.

1977 - Robin VanTine: thesis title: Effects Of Thermal Effluents on Marine Algae Adjacent To The Crystal River power generating station.

1983 - Richard Ruble, thesis title: Soil Algae From The Homestead, Florida Winter Vegetable Growing Area.

1986 - Beth A. North, thesis title: The Airborne Algae of Peninsular Florida.

1988 - Bernard L. Sukala, thesis title: Algal Floral from Acidic Soils of North Central Florida.

1994 - Philip Myers, thesis title: Fire Effects on Soil Algae in a Pine-dominated Ecosystem in North Central Florida.

1995 - Margaret Hopson, thesis title: Temporal Variation in Biomass of the Dominant Submersed Macrophytes and Their Associated Algal Epiphytes in Lake Okeechobee, Florida.

2000 – Natalie Love, thesis title: Assessment of Species Composition and Succession Rates of Epilithic and Endolithic Microalgae on Coquina Beach Rocks at Marineland, Florida.

Ph.D. thesis completed:

1980 - William W. Brower, thesis title: Biological and Physical Investigations of Bodies of Water Beneath Dense Water Hyacinth Population Before and After Chemical Treatment.

Miscellaneous:

1960-1965 - Member of the Board, Campus Credit Union, Southern Illinois University.

- 1969 - Expert witness, Pinellas County Court.
- 1970 - Participation in the NSF-Heart Fund High School Program.
- 1971 - Participation in the NSF-Heart Fund High School Program.
- 1972 - Participation in the NSF-Heart Fund High School Program.
- 1982 - Organizer Southeastern Psychological Colloquy, at the University of Florida.
- 1986 - Participation in the course "Integrated Marine Biology (ZOO 4404)
- 1986 - United Nations emissary to Turkish State Monopolies, Istanbul, Turkey.
- 1987 - Participation in the course "Integrated Marine Biology" (ZOO 4404)
- 1987 - United Nations emissary to The Peoples' Republic of China
- 1987 - Participation in Florida Foundation for Future Scientists
- 1988 - Participation in the course "Integrated Marine Biology" (ZOO 4404)
- 1988 - United Nations emissary to The People's Republic of China
- 1988 - United Nations registered expert on biology of solar saltworks
- 1989 - Participation in the course "Integrated Marine Biology" (ZOO 4404)
- 1989 - Participation in photosynthesis research aboard RV Bellows, near Bimini Islands
- 1990 - Participated in a workshop sponsored by the United Nations, in Tanggu, China, entitled International Symposium on the Biology of Salt Ponds.
- 1990 - Participation in the course "Integrated Marine Biology"(ZOO 4404)
- 1990 - Invited to chair the biological section of the 7th International Symposium on Salt, in Kyoto, Japan.
- 1991 - Participation in the course "Bioprocess Biotechnology" (AGE 4660)
- 1991 - Consultation with four Chinese saltworks officials from the P.R.C., February 1, in Orlando.
- 1991 - Presentation of seminar "Ecology of a cave microlichen", Chipola Junior College, Marianna, Florida.
- 1992 - Participation in "Integrated Marine Biology," Seahorse Key.
- 1992 - Participation in "Bioprocess Biotechnology".
- 1992 - Shipboard study of photosynthesis of marine algae aboard R. V. Bellows
- 1993 - Participation in "Integrated Marine Biology" course at UF Marine Lab, Seahorse Key.
- 1994 - Participation in "Integrated Marine Biology."



- 1995 - Participation in "Integrated Marine Biology," Seahorse Key.
- 1996 - Participation in "Integrated Marine Biology," Seahorse Key.
- 2008 – Participation in “Marine Biology,” Seahorse Key.
- 1996 - Organizer of Eighteenth Annual Southeastern Phycological Colloquy
- 1997 - Organizer of Nineteenth Annual Southeastern Phycological Colloquy
- 2001 - Participated in study of tree banding for Florida Department of Environmental Protection
- 2001 - Host for Student Science Training Program (Usha Kumar)
- 2002 - Host for Student Science Training Program (Ricardo Gonzalez)
- 2002 - Host for Student Science Training Program (Sagar Vijapura)

#### Extra-Department Involvement

##### University of Florida

###### A. Botany Department

With Dr. G. Bowes for study of photosynthesis in marine algae

###### B. Fruit Crops Department

With Dr. Chesley Hall for study of soil algae of south Florida.

###### C. Entomology Department.

With Dr. Armen C. Tarjan, for study of anti-nematological properties in Florida benthic algae.

###### D. Fisheries and Aquaculture Department.

With Dr. Ed Philips for study of ecology of attached algae in Lake Okeechobee.

###### E. Mechanical Engineering Dept. With Dr. Herbert Ingley, on resesarch involving hydrogen production from algae.

###### E. Port Elizabeth University, Port Elizabeth, South Africa with Dr.

Eileen Campbell, for hydrobiological study of hypersaline ecosystems near Tankatara.

Other Universities and Companies

## A. Southern Illinois University.

With Dr. David Rands for the study of calcareous algae, and physical, chemical and biological aspects of the hypersaline ecosystem.

## B. Water and Air Research Incorporated, Gainesville.

With Mr. Michael K. Hein, for study of diatoms of tUniversity of Floridaa, Eocene rocks, stromatolites and shallow lagoons.

## C. Port Elizabeth University, South Africa

With Dr. Guy Bate, Director of a hydrobiological study of the Tankatara saltponds near Port Elizabeth

## D. Grahamstown University, Grahamstown, South Africa

With Dr. Peter Rose, Collaboration on highly alkaline brine ecosystems

## E. Eastman Chemical Company. Confidential.

## F. Salt Partners, Zurich, Switzerland. With Vladimir Sedivi.

Lectures, Speeches, or Posters Presented at Professional Conferences/Meetings

1961 American Institute of Biological Sciences (AIBS). The influence of bicarbonate ion concentration on *Pediastrum*.

1962 Illinois State Academy of Science. Methods for long-term algal maintenance.

1963 Iowa Academy of Science. Bicarbonate ion and cell orientation in colonial green algae.

1965 American Microscopical Society. Akinetes of *Sorastrum*.

1965 American Microscopical Society. Akinetes of *Tetraedron*.

1967 AIBS. Sexual reproduction in *Pediastrum simplex*.

1968 AIBS. The algae of the Diamond Crystal salt ponds.

1972 AIBS. A rotifer parasitizing *Vaucheria* in a Florida spring.

1972 AIBS. A *Dichotomosiphon* in Florida springs.

1973 Fourth International Symposium on Salt. The Role of Microorganisms in the production of solar salt.

- 1975 AIBS. Polymorphism in *Sorastrum*: production of unicells.
- 1978 Fifth International Symposium on Salt. Biological Management in Solar Salt Works.
- 1979 Artemia Symposium. Experiences with Artemia at Solar Salt Works.
- 1983 Sixth International Symposium on Salt, Toronto. Salina biotechnology
1984. Biomineralization Conference, Birmingham, England. A new cave alga from Missouri.
- 1987 Marine macroalgal photosynthesis is carbon limited in seawater. American Society of Plant Physiologists.  
St. Louis, Missouri.
- 1988 *Chlorocentrum leucocortex*: a new member of the Chlorophyta. Tenth Southeastern Phycological Colloquy
- 1990 Inorganic carbon acquisition in tropical marine macroalgae. American Society of Plant Physiologists
- 1991 Response of *Dunaliella salina* grown at high and low CO<sub>2</sub> to different sources of nitrogen. American  
Society of Plant Physiology
- 1991 Chipola Junior College, Marianna, Florida, Ecology of a cave microlichen.
- 1992 Biological management for a new generation of solar saltworks. Seventh International Symposium on Salt.
- 1992 Biological management for existing solar saltworks. Seventh International Symposium on Salt.
- 1993 A new tropical lichen from Missouri. Southeastern Phycological Colloquy
- 1994 Morphology of the Lichen *Caloplaca cinnabarina* from South Africa. Sixteenth Southeastern Phycological  
Colloquy.
- 1995 The effects of organic matter in saltworks. Seventeenth Southeastern Phycological Colloquy, Charleston,  
South Carolina.
- 1995 Temporal variations in biomass of the algal epiphytes associated with the dominant submersed  
macrophytes in Lake Okeechobee, Florida, (U.S.A.). SIL Conference, Brasilia.
- 1996 Algae on University of Florida campus buildings and structures. Eighteenth Annual Southeastern  
Phycological Colloquy, Marineland, Florida.
- 1996 Biological Management of the Caribbean solar saltworks. United Nations Conference on Biotechnology,  
Cumana, Venezuela.
- 1996 Some effects of soil algae in a Florida forest. Nineteenth Annual Southeastern Phycological  
Colloquy.

- 1997 Hypersaline biology. 9th Annual Southeastern Phycological Colloquy. Keynote Speaker, Cedar Key, Florida.
- 1998 Endolithic algae on beach coquina of North Central Florida. Twentieth Annual Southeastern Phycological Colloquy.
- 1999 Biological management for the seasonal solar saltworks. 6<sup>th</sup> International Conference on Environmental Science and Technology, Samos, Greece.
- 2000 Ten commandments for biological management of solar saltworks. 8<sup>th</sup> World Salt Symposium, The Hague, Netherlands, Salt 2000 conference.
- 2000 Diatoms as indicators of pond condition in solar saltworks. 8<sup>th</sup> World Salt Symposium, The Hague. Role of extremophyles in solar salt production. Microscopy and Microanalysis, Philadelphia, PA.
- 2001 Benefits and harm from production of valuable biological products in commercial solar saltworks. 7th Internantional Conference on Environmental Science and Technology, Syros, Greece.
- 2001 Commercially Valuable Biological Products from Solar Saltworks. Conference on Environmental Science and Technology, September 3-6, Syros, Greece.
- 2005 Recovery of a Commercial Solar Saltworks Damaged by a Hurricane: Role of Biological Management. Convergence on Environmental Science and Technology, September 1-3, Rhodes, Greece.
- 2005 *Aphanothece halophytica* and *Dunaliella salina*, Formidable Algal Enemies of Salt Production in Solar Saltworks. October 2-7, Conference on Harmful Algae, Asilomar, Pacific Grove, California
- 2006 Biological Management of Saltworks. Salt 2006, January 19-20, Nirma University, Ahmedabad, India.
- 2006 *Aphanothece halophytica* and *Dunaliella salina*, Formidable Algal Enemies of Salt Production in Solar Saltworks, First International Conference on the Ecological Importance of Solar Saltworks, Santorini
- 2006 Confronting Old and New Realities for Solar Saltworks, First International Conference on the Ecological Importance of Solar Saltworks, Santorini
- 2007 *Aphanothece halophytica* and *Dunaliella salina*, Formidable Algal Enemies of Salt Production in Solar Saltworks, Cagliari, Sardinia and St. Margherita di Savoia, Italy
- 2007 Confronting Old and New Realities for Solar Saltworks, Cagliari, Sardinia and St. Margherita di Savoia, Italy

INTERNATIONAL ACTIVITIES

These include aid to industries and governments in the design, and operation of installations concerned with obtaining salt from sea water using solar evaporation by properly managing the living organisms in the system. Major industrial and governmental establishments I have aided include Atisale S.p.a., Martherita di Savoia, Atisale S.P.a., St. Antiocho, and Cagliari, Sardinia; Diamond Crystal Salt Company, Long Island, Bahamas; Morton-Bahamas, Inagua, Bahamas; Road Bay Salt, Anguilla; Great Salt Lake Minerals and Chemicals Corp., Ogden, Utah; Yaciementos Petroliferos Fiscales, Buenos Aires, Argentina; Compania Introdutora de Buenos Aires, San Luis, Argentina; Kalas Sel, Athens, Greece; International Salt Company N.V., Bonaire Netherlands Antilles; Mombasa Salt and Kensalt, Gongoni, Kenya; Shark Bay Salt Joint Venture, Shark Bay, Western Australia; Leslie Salt Company, Port Hedland, Western Australia; Dampier Salt Limited, Dampier, Western Australia; Imperial Chemical Industries, Rockhampton, Queensland, Australia, Cheetham Salt, Port Alma and Bajool, Queensland, Australia; Cerebos Food Corporation, Port Elizabeth, South Africa; Bulgarian State Saltworks, Burgas, Bulgaria; Turkish State Monopolies, Izmir, Ayvalik, Kadirum, Kayacik, Yavsan; People's Republic of China, Tanggu, China; Empresa Nacional de Salines of Venezuela; Exportadora de Sal, Guerrero Negro, Mexico; Industria Salinera de Yucatan, Mexico; Sal Cisne at Cabo Frio, Brazil; Norsal at Rio Branco, Brazil; Botswana Ash, Botswana; Hellenic Saltworks, Lesvos and Kitros, Greece; Tecnosal, in Araya, Venezuela, Mombasa Saltworks, Malindi, Kenya; Kensalt in Malindi, Kenya; and Walvis Bay Salt, Namibia. Work done at solar salt works has become my research specialty centered on management and design of the hypersaline ecosystem for salt production; this is now the basis for several scientific papers; it has resulted in a number of domestic and foreign requests for the presentation of seminars on brine biology, and the concepts I have developed are widely accepted and implemented.

Published Abstracts

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### Service Activities

Each month I receive three to ten samples of marine, freshwater or parasitic algae with a request to identify the organisms. The materials come in mainly from Agriculture Experiment Stations throughout Florida, but some specimens are received from State and Federal agencies, private citizens and business concerns. Several times each year, individuals request on the telephone or by mail specific instructions to deal with algal "problems" such as green growths in swimming pools, blue-green algae blooms in livestock-watering farm ponds, and water pipes clogged by algae. The "please tell me everything you know about algae" letters from Florida school children doing science projects are received during certain months. All inquiries are answered. Requests from foreign governments, the United Nations Organization and private concerns to improve salt production in third world countries are honored as time permits.

Teaching Responsibilities at the University of Florida

Applied Biology

Bio-Science Integrated Sequence

Algology

Integrated Marine Biology (participant)

Seaweeds and Algae of Florida

General Research Interests

Interests lie with ecological and taxonomic aspects of soil and airborne algae of Florida, taxonomy and morphology of marine and freshwater algae, biological and chemical aspects of tUniversity of Floridaa formation, and with ecological aspects of hypersaline organisms relative to their management for the production of sodium chloride from seawater and inland brine.

Ongoing Research Projects

Biology and nitrogen-fixation of soil algae in field and forest environments

Biology, chemistry, and ecology of organisms associated with tUniversity of Floridaa deposits

Biological management of hypersaline organisms for salt manufacture

Taxonomy and morphology of cave algae

Ecology of soil algae before and after fire

Publications

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