

Meeting Date
12/06/16



AGENDA	
Section	Consent
Item No.	II.02

**AGENDA REPORT**  
 BREVARD COUNTY BOARD OF COUNTY COMMISSIONERS

<b>SUBJECT:</b>	Re-appointments to the Environmentally Endangered Lands Program Selection and Management Committee – All Districts  There is no fiscal impact as a result of this action.
<b>DEPT/OFFICE:</b>	Community Services Group / Parks and Recreation Department

**Requested Action:**  
 It is requested the Board of County Commissioners re-appoint members to the Environmentally Endangered Lands (EEL) Program Selection and Management Committee for an additional two-year term.

**Summary Explanation & Background:**

On May 27, 2014, the Board of County Commissioners (BOCC) appointed D. Scott Taylor to the EEL Program Selection and Management Committee (SMC) with a term expiring on December 31, 2016.

On August 19, 2014, the BOCC re-appointed David Breininger, Sue Hann, C. Ross Hinkle, Paul Schmalzer, Laurilee Thompson and Kim Zarillo to the EEL Program SMC with their terms expiring on December 31, 2016.

Per the EEL Program Land Acquisition Manual, SMC members serve a two-year term. These re-appointments will extend each of their terms for an additional two years, until December 31, 2018. Members have indicated a desire to continue to volunteer their time to serve on this committee.

Contact: Mike Knight, EEL Program Manager  
 Phone: 321-255-4466 [mike.knight@brevardfl.gov](mailto:mike.knight@brevardfl.gov)

**Clerk to the Board Instructions:**

**Exhibits Attached:** SMC Members Resumes/CVs

**Contract /Agreement (If attached):** Reviewed by County Attorney    Yes     No     PR

County Manager	Assistant County Manager,	Jack Masson, Parks & Recreation Department Director <a href="mailto:jack.masson@brevardparks.com">jack.masson@brevardparks.com</a> ; 633-2046 
Stockton Whitten	Assistant County Manager, Venetta Valdengo	



Tammy Rowe, Clerk to the Board, 400 South Street • P.O. Box 999, Titusville, Florida 32781-0999

Telephone: (321) 637-2001  
Fax: (321) 264-6972  
Tammy.Rowe@brevardclerk.us

December 7, 2016

Kim Zarillo  
6830 Sheridan Road  
Melbourne Village, FL 32904-2216

Dear Ms. Zarillo:

The Board of County Commissioners, in regular session on December 6, 2016, reappointed you to the Environmentally Endangered Lands Program Selection and Management Committee. Said term of appointment expires December 31, 2018.

Your continued willingness to serve the citizens of Brevard County in this capacity is greatly appreciated.

Sincerely,

BOARD OF COUNTY COMMISSIONERS  
SCOTT ELLIS, CLERK

*Tammy Rowe*

Tammy Rowe, Deputy Clerk

cc: Each Commissioner  
EEL Program Manager



Tammy Rowe, Clerk to the Board, 400 South Street • P.O. Box 999, Titusville, Florida 32781-0999

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Tammy.Rowe@brevardclerk.us

December 7, 2016

Laurilee Thompson  
PO Box 307  
Mims, FL 32754

Dear Mr. Thompson:

The Board of County Commissioners, in regular session on December 6, 2016, reappointed you to the Environmentally Endangered Lands Program Selection and Management Committee. Said term of appointment expires December 31, 2018.

Your continued willingness to serve the citizens of Brevard County in this capacity is greatly appreciated.

Sincerely,

BOARD OF COUNTY COMMISSIONERS  
SCOTT ELLIS, CLERK

Tammy Rowe, Deputy Clerk

cc: Each Commissioner  
EEL Program Manager



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Tammy.Rowe@brevardclerk.us

December 7, 2016

D. Scott Taylor  
676 Acacia Avenue  
Melbourne Village, FL 32904-2302

Dear Mr. Taylor:

The Board of County Commissioners, in regular session on December 6, 2016, reappointed you to the Environmentally Endangered Lands Program Selection and Management Committee. Said term of appointment expires December 31, 2018.

Your continued willingness to serve the citizens of Brevard County in this capacity is greatly appreciated.

Sincerely,

BOARD OF COUNTY COMMISSIONERS  
SCOTT ELLIS, CLERK

*Tammy Rowe*

Tammy Rowe, Deputy Clerk

cc: Each Commissioner  
EEL Program Manager



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Fax: (321) 264-6972  
Tammy.Rowe@brevardclerk.us

December 7, 2016

Paul Schmalzer  
Mail Code IHA-300  
Kennedy Space Center, FL 32899

Dear Mr. Schmalzer:

The Board of County Commissioners, in regular session on December 6, 2016, reappointed you to the Environmentally Endangered Lands Program Selection and Management Committee. Said term of appointment expires December 31, 2018.

Your continued willingness to serve the citizens of Brevard County in this capacity is greatly appreciated.

Sincerely,

BOARD OF COUNTY COMMISSIONERS  
SCOTT ELLIS, CLERK

Tammy Rowe, Deputy Clerk

cc: Each Commissioner  
EEL Program Manager



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Tammy.Rowe@brevardclerk.us

December 7, 2016

Charles Ross Hinkle  
University of Central Florida  
Department of Biology  
PO Box 162368  
Orlando, FL 32816-0112

Dear Mr. Hinkle:

The Board of County Commissioners, in regular session on December 6, 2016, reappointed you to the Environmentally Endangered Lands Program Selection and Management Committee. Said term of appointment expires December 31, 2018.

Your continued willingness to serve the citizens of Brevard County in this capacity is greatly appreciated.

Sincerely,

BOARD OF COUNTY COMMISSIONERS  
SCOTT ELLIS, CLERK

*Tammy Rowe*

Tammy Rowe, Deputy Clerk

cc: Each Commissioner  
EEL Program Manager



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Telephone: (321) 637-2001  
Fax: (321) 264-6972  
Tammy.Rowe@brevardclerk.us

December 7, 2016

Sue Hann  
1365 Corey Road  
Malabar, FL 32950

Dear Ms. Hann:

The Board of County Commissioners, in regular session on December 6, 2016, reappointed you to the Environmentally Endangered Lands Program Selection and Management Committee. Said term of appointment expires December 31, 2018.

Your continued willingness to serve the citizens of Brevard County in this capacity is greatly appreciated.

Sincerely,

BOARD OF COUNTY COMMISSIONERS  
SCOTT ELLIS, CLERK

Tammy Rowe, Deputy Clerk

cc: Each Commissioner  
EEL Program Manager



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Telephone: (321) 637-2001  
Fax: (321) 264-6972  
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December 7, 2016

David R. Breininger  
413 Tortoise View Circle  
Satellite Beach, FL 32937

Dear Mr. Breininger:

The Board of County Commissioners, in regular session on December 6, 2016, reappointed you to the Environmentally Endangered Lands Program Selection and Management Committee. Said term of appointment expires December 31, 2018.

Your continued willingness to serve the citizens of Brevard County in this capacity is greatly appreciated.

Sincerely,

BOARD OF COUNTY COMMISSIONERS  
SCOTT ELLIS, CLERK

Tammy Rowe, Deputy Clerk

cc: Each Commissioner  
EEL Program Manager

**David R. Breininger**

07/12/2016

*Work:*

Wildlife Biologist  
NASA Ecological Programs  
Kennedy Space Center, FL 32899  
Phone: (321) 289-5130  
Email: david.r.breininger@nasa.gov

*Home:*

413 Tortoise View Circle  
Satellite Beach, FL 32937  
Phone (321) 777-837  
dbreininger@cfl.rr.com

***Experience & Expertise***

Thirty years' experience integrating research, monitoring, management, conservation area design, environmental assessment, regulatory analyses, and education. Experience emphasizes field surveys, mark-recapture, remote sensing, radio telemetry, geographical information systems, statistical modeling, population analyses and landscape modeling. Collaborations with scientists and managers from federal, state, and local governments, and non-government organizations to integrate science and management to inform decision making. Expertise includes endangered species biology, biodiversity conservation, fire ecology, habitat quality, landscape dynamics, population demography, dispersal biology, and community composition.

***Education***

**2009** *Ph.D., Conservation Biology, University of Central Florida*

**1981** *M.S., Ecology, Florida Institute of Technology*

**1978.** *B.S., Marine Biology, Florida Institute of Technology*

***Employment History***

**2015-present** *Senior Scientist, Integrated Mission Support Services, Kennedy Space Center.* Conduct research on endangered species, habitat and ecosystem dynamics to support adaptive management and develop strategies for restoration, and habitat management.

**2009-2015.** *Lead Wildlife Biologist, InoMedic Health Applications, Kennedy Space Center.* Conduct research on endangered species, habitat and ecosystem dynamics to support adaptive management and develop strategies for restoration, and habitat management. Coordinate activities of 5 biologists.

**1995-2009.** *Senior Scientist and Lead, Dynamac Corporation, Kennedy Space Center.* Conducted research on wildlife and habitat dynamics to support environmental management, mitigation, restoration, and habitat management. Coordinated activities of 4 to 8 biologists.

**1993-1995.** *Research Scientist, Florida Institute of Technology* Conducted field studies and population risk modeling to support the Brevard County Scrub Conservation Plan.

**1984-1994.** *Lead (1994), Supervisor, (1991-1993), Wildlife Biologist (1984-1990), Bionetics Corporation, Kennedy Space Center.* Conducted studies to predict and interpret environmental impacts and develop strategies for mitigation, restoration, and habitat management. Coordinated 4-7 biologists.

**1982-1984.** *Engineer, Planning Research Corporation.* Analyzed regulatory requirements and prepared regulatory documents for NEPA, endangered species, ground water, surface water, floodplain, and wetland topics to support the Kennedy Space Center Environmental Management Office.

**1981-1982.** *Teacher, Brevard County School District.* Taught math and biology.

**1981.** *Research Assistant, Technology Incorporated, Kennedy Space Center.* Investigated effects of the space vehicle launches on vegetation.

**1978-1981.** *Graduate Teaching Assistant, Laboratory Supervisor, Florida Institute of Technology,* Performed field and lab instruction for Ecology, Advanced Field Ecology, Environmental Biology, Plant

Biology, Vertebrate Zoology, Vertebrate Anatomy, and General Biology. Field instruction included Florida, Great Smokey Mountains, Central and Southern Rocky Mountains.

#### **Honors and Awards**

2016	Outstanding Alumni Knight, University of Central Florida
2016	Regional Director's Conservation Award, U.S. Fish and Wildlife Service
2014	Employee of the Month. NASA Medical and Environmental Support Contract
2009	Most Productive, NASA Life Sciences Support Contract
1997	Visionary Award, NASA Life Sciences Support Contract
1996	JFK Award for Leadership, NASA Life Sciences Support Contract
1995	Conservation Colleague Award, Nature Conservancy
1978	Graduated with High Honors, Florida Institute of Technology
1978	Beta Beta Beta Honor Society
1974-1978	Dean's List every quarter, Florida Institute of Technology

#### **Appointments**

2016- Research Associate, University of Central Florida  
 2015- Board of Directors, Allen Broussard Conservancy (Forever Florida)  
 2014- Judge, River Fest Sustainability Award, Keep Brevard Beautiful  
 2013- Editorial board, Advances in Ecology  
 2010- Research Professor, Florida Institute of Technology  
 2010-Graduate Faculty Scholar, University of Central Florida  
 2009- Board, Florida Institute of Conservation Science  
 1997- Brevard County Environmentally Endangered Lands Selection and Management Committee  
 1997- Florida Scrub-Jay Recovery Team  
 1999–2001 Florida Scrub-Jay Fire Strike Team Advisory Board  
 1999-2000 Brevard County Crucial Habitat Conservation Planning Committee  
 1998-1999 Interagency Fire Science Team  
 1995-1997 South Florida Ecosystem Multi-Species Recovery Team  
 1997-1998 Florida Ornithological Society's Grants and Awards Committee Chair  
 1994-1996 Florida Ornithological Society's Research Awards Committee  
 1994-1995 Florida Scrub-Jay Habitat Conservation Guidelines Committee  
 1994-1995 Indian River Lagoon Biodiversity Symposium Planning Group, National Estuary Program  
 1993 Scientific Advisory Group for the Brevard County Scrub Habitat Conservation Plan, Chair

#### **Journal Articles**

Bauder, J.M., D.R. Breininger, M.R. Bolt, M.L. Legare, C.L. Jenkins, B.B. Rothermel, and K. McGarigal. 2016. The influence of sex and season on conspecific overlap in a large actively-foraging Colubrid snake. **Plos One**: 11:1-19.

Breininger, D.R., R.D. Breininger, and C.R. Hall. 2016. Effects of surrounding land use and water depth on seagrass dynamics with attention to a catastrophic algal bloom. **Conservation Biology**. 000-000.

Bauder, J.M., D.R. Breininger, M.R. Bolt, M.L. Legare, C.L. Jenkins, B.B. Rothermel, and K. McGarigal. 2016. Seasonal variation in Eastern Indigo Snake (*Drymarchon couperi*) movement patterns and space use in peninsular Florida at multiple temporal scales. **Herpetologica** 72:000-000.

Bauder, J.M., D.R. Breininger, M. R. Bolt, M. L. Legare, C.L. Jenkins, and K. McGarigal. 2015. The role of the bandwidth matrix in influencing kernel home range estimates for snakes using VHF telemetry data. **Wildlife Research** 42:437-453.

- Duncan, B., P. A Schmalzer, D.R. Breininger, E.D. Stolen. 2015. Comparing fuels reduction and patch mosaic fire regimes for reducing fire spread potential, a spatial modeling approach. **Ecological Modeling** 314:90-99.
- Zimmerman, M., E. Stolen, D. Oddy, D. Breininger, and C. Pruett. 2015. Microspatial sampling reveals cryptic influences on gene flow in a threatened mammal. **Conservation Genetics** 16:1-12.
- Breininger, B. Duncan, M. Eaton, F. Johnson, J. Nichols. 2014. Integrating land cover modeling and adaptive management to conserve endangered species and reduce catastrophic fire risk. **Land** 3:874-897.
- Stolen E.D, D M. Oddy, M. L. Legare, D. R. Breininger, S.L. Gann, S. A. Legare, S. K Weiss, K. G. Holloway-Adkins. 2014. Preventing tracking-tube false detections in occupancy modeling of southeastern beach mouse. **Journal of Fish and Wildlife Management** 5:270-281.
- Breininger, D.R., E. D. Stolen, G. C. Carter, D. M. Oddy, S. A. Legare. 2014. Quantifying how territory quality and sociobiology affect recruitment to inform fire management. **Animal Conservation** 17:72-79.
- Breininger, D. R., M. J. Mazerolle, M. R. Bolt, M. L. Legare, J. H. Drese, J. E. Hines. 2012. Using multistate models to quantify habitat fragmentation impacts of eastern indigo snake survival. **Animal Conservation** 15:361-368.
- Breininger, D.R., R. M. Bolt, M. L. Legare, J. H. Drese, E. D. Stolen. 2011. Factors influencing home range size of Eastern Indigo Snakes (*Drymarchon couperi*) in central Florida. **Journal of Herpetology** 45:484-490.
- Johnson, F. A., D. R. Breininger, B. W. Duncan, J. D. Nichols, M. C. Runge, B. K. Williams. 2011. A Markov decision process for managing habitat for Florida Scrub-Jays. **Journal of Fish and Wildlife Management** 2:234-2470.
- Williams, B. K., M. J. Eaton, D. R. Breininger. 2011. Adaptive resource management and the value of information. **Ecological Modeling** 222:3429-3436.
- Carter, G. M., D. R. Breininger, E. D. Stolen, D. M. Oddy. 2011. Determinants of nest survival in a managed Florida Scrub-Jay population. **Condor** 113:629-636.
- Breininger, D. R., J. D. Nichols, B. W. Duncan, E. D. Stolen, G. M. Carter, D. Hunt, J. H. Drese. 2010. Multistate modeling of habitat dynamics: factors affecting Florida scrub transition probabilities. **Ecology** 91:3354-3364.
- Breininger, D. R., E. D. Stolen, D. M. Oddy and G. C. Carter. 2010. A model selection approach to predicting whether Florida Scrub-Jays delay breeding. **Condor** 112:378-389.
- Breininger, D. R., J. D. Nichols, G. M. Carter, D. M. Oddy. 2009. Habitat-specific breeder survival of Florida Scrub-Jays: inferences using multistate models. **Ecology** 90:3180-3189.
- Carter, G.M., M. L. Legare, D. R. Breininger, and D. M. Oddy. 2007. Nocturnal nest predation: a potential obstacle to recovery of a Florida Scrub-Jay population. **Journal of Field Ornithology** 78:390-394.
- Breininger, D. R., B. Toland, D. M. Oddy, and M. L. Legare. 2006. Landcover characterizations and Florida Scrub-Jay (*Aphelocoma coerulescens*) population dynamics. **Biological Conservation** 128:169-181.
- Carter, G. M., E. D. Stolen, D. R. Breininger. 2006. A rapid approach to modeling species-habitat relationships. **Biological Conservation** 127:237-244.
- Breininger, D. R. and D. C. Oddy. 2004. Do habitat potential, population density, and fires influence Florida Scrub-Jay source-sink dynamics? **Ecological Applications** 14:1079-1089.
- Akçakaya, H. R., J. L. Atwood, D. R. Breininger, C. T. Collins, B. W. Duncan. 2003. Metapopulation dynamics of the California Least Tern. **Journal of Wildlife Management** 67:829-842
- Breininger, D. R. and G. C. Carter. 2003. Territory quality transitions and source-sink dynamics in a Florida Scrub-Jay population. **Ecological Applications** 13:829-842.

- Breininger D. R., B. W. Duncan, and N. J. Dominy. 2002. Relationships between fire frequency and vegetation type in pine flatwoods of east-central Florida, USA. **Natural Areas Journal** 22:186-193.
- Burgman, M. A., D. R. Breininger, B. W. Duncan, and S. Ferson. 2001. Setting reliability bounds on habitat suitability indices. **Ecological Applications** 11:70-78.
- Breininger, D. R., M. A. Burgman, and B. M. Stith. 1999. Influence of habitat, catastrophes, and population size on extinction risk on Florida Scrub-Jay populations. **Wildlife Society Bulletin** 27:810-822.
- Breininger, D. R. 1999. Florida Scrub-Jay demography and dispersal in a fragmented landscape. **Auk** 116:520-527.
- Duncan, B. A., S. Boyle, D. R. Breininger, and P. A. Schmalzer. 1999. Coupling past management practice and historical landscape change on John F. Kennedy Space Center. **Landscape Ecology** 14:291-309.
- Breininger, D. R., M. J. Barkaszi, R. B. Smith, D. M. Oddy, and J. A. Provanca. 1998. Prioritizing wildlife taxa for biological diversity conservation at the local scale. **Environmental Management** 22:315-321.
- Breininger D. R., V. L. Larson, B. W. Duncan, R. B. Smith. 1998. Linking habitat suitability to demographic success in Florida Scrub-Jays. **Wildlife Society Bulletin** 26:118-128.
- Breininger, D. R. 1997. Avifauna of an unimpounded salt marsh on Merritt Island. **Florida Field Naturalist** 25:1-10.
- Smith, R. B., D. R. Breininger and V. L. Larson. 1997. Home range characteristics of radiotagged Gopher Tortoises on Kennedy Space Center, Florida. **Chelonian Conservation and Biology** 23:358-362.
- Breininger, D. R., V. L., Larson, D. M. Oddy, R. B. Smith and M. J. Barkaszi. 1996. Florida Scrub-Jay demography in different landscapes. **Auk** 113:617-625.
- Breininger, D. R., V. L. Larson, B. W. Duncan, R. B. Smith, D. M. Oddy, and M. F. Goodchild. 1995. Landscape patterns of Florida Scrub-Jay habitat preference and demographic success. **Conservation Biology** 9:1442-1453.
- Duncan, B. A., D. R. Breininger, P. A. Schmalzer, and V. L. Larson. 1995. Validating a Florida Scrub-Jay habitat suitability model, using demography data on Kennedy Space Center. **Photogrammetric Engineering and Remote Sensing** 56:1361-1370.
- Smith, R. B., and D. R. Breininger. 1995. Wading bird populations of John F. Kennedy Space Center. **Bulletin of Marine Science** 57:230-236.
- Swain, H., D. R. Breininger, D. S., Busby, K. B. Clark, S. B. Cook, R. A. Day, D. E. DeFreese, R.G., Gilmore, A.W. Hart, C.R. Hinkle, D.A. McArdle, P.M. Mikkilsen, W.G. Nelson, and A.J. Zahhaorcak. 1995. Introduction to Indian River Biodiversity Conference. **Bulletin of Marine Science** 57:1-7.
- Breininger, D. R., P. A. Schmalzer, and C. R. Hinkle. 1994. Gopher Tortoise (*Gopherus polyphemus*) densities in coastal scrub and slash pine flatwoods in Florida. *Journal of Herpetology*. 28: 60-65.
- Breininger, D. R. 1992. Birds of swale marshes on John F. Kennedy Space Center. **Florida Field Naturalist** 20: 36-41.
- Breininger, D. R. and R. B. Smith. 1992. Relationships between fire and birds in coastal scrub and slash pine flatwoods in Florida. **American Midland Naturalist** 127: 233-240.
- Breininger, D. R., M. J. Provanca and R. B. Smith. 1991. Mapping Florida Scrub-Jay habitat for purposes of land-use management. **Photogrammetric Engineering and Remote Sensing** 57: 1467-1474.
- Breininger, D. R., P. A. Schmalzer and C. R. Hinkle. 1991. Estimating occupancy of Gopher Tortoise (*Gopherus polyphemus*) burrows in coastal scrub and slash pine flatwoods. **Journal of Herpetology** 25: 317-321.
- Breininger, D. R. 1990. Avifauna of hammocks and swamps on John F. Kennedy Space Center. **Florida Field Naturalist** 18:21-44.
- Breininger, D. R. and R. B. Smith. 1990. Waterbird use of coastal impoundments and management implications in east central Florida coast. **Wetlands** 10:1-19.

- Breining, D. R. and P. A. Schmalzer. 1990. Effects of fire and mechanical disturbance on vegetation and birds in oak/palmetto scrub. **American Midland Naturalist** 123:64-74.
- Dreschel, T. W., R. B. Smith and D. R. Breining. 1990. Florida Scrub-Jay mortality on roadsides. **Florida Field Naturalist** 18:82-83.
- Breining, D. R. 1989. A new population estimate for the Florida Scrub-Jay on Merritt Island National Wildlife Refuge. **Florida Field Naturalist** 17:25-32.
- Smith, R. B. and D. R. Breining. 1988. Northern breeding range extension for the Roseate Spoonbill. **Florida Field Naturalist** 16:65-67.

### **Book Chapters**

- Stolen, E. D., D. R. Breining, and P. C. Frederick. 2005. Using waterbirds as indicators in estuarine systems: successes and perils. **Estuarine indicators**. Pages 409-422 in S. A. Bortone, editor. CRC Press, Inc.
- Breining, D. R., M. L. Legare, and R. B. Smith. 2004. Eastern Indigo Snakes: influence of edge effects on population viability. Pages 299-311 in H. R. Akçakaya, M. A. Burgman, O. Kindvall, C. C. Wood, P. Sjorgren-Gulve, J. S. Hatfield, and M. A. McCarthy, editors. **Species conservation and management: case studies**. Oxford University Press, New York.
- Breining, D. R., B. A. Burgman, H. R. Akçakaya and M. O. O'Connell. 2002. Use of metapopulation models in conservation planning, Pages 405-427 in K. J. Gutzwiller, editor. **Concepts and Applications of Landscape Ecology in Biological Conservation**. Springer-Verlag, N.Y.
- Breining, D. R., M. J. Provanca and R. B. Smith. 1994. Mapping Florida Scrub-Jay habitat for purposes of land-use management. Pages 251-258 in W.J. Ripple, editor. **The GIS applications book: examples in natural resources a compendium**. American Society for Photogrammetry and Remote Sensing, Bethesda, MD.

### **Conference Proceedings**

- Breining, D. R. and D. M. Oddy. 2001. Fire and Florida Scrub-Jay source-sink dynamics in mesic flatwoods. Pages 3-7 in D. P. Zatta (editor), *Proceedings of the Florida Scrub Symposium 2001*. U.S. Fish and Wildlife Service, Jacksonville, Florida.
- Duncan, B. A. and D. R. Breining. 1998. Quantifying habitat change: modeling historical and current Florida Scrub-Jay habitat suitability. *GIS/LIS Proceedings*, Dallas, Texas.
- Duncan, B. W., S. Boyle, P. A. Schmalzer, and D. R. Breining. 1996. Spatial quantification of historic landscape change within two study sites on John F. Kennedy Space Center. Sixteenth Annual ESRI Users Conference. Published on CD-ROM and on the World Wide Web at [www.esri.com](http://www.esri.com).
- Duncan, B. W., R. A. Reddick, R. B. Smith and D. R. Breining. 1994. Protecting the environment in the space age: GIS at the John F. Kennedy Space Center. *Geo Info Systems* 4:38-42.
- Ritchie, J. R., T. J. Jackson, R. M. Parry, K. S. Humes, J. E. Everitt, D. E. Escobar, M. R. Davis, D. M. Jacobs, D. L. Evans, D. R. Breining, B. W. Duncan, and C. R. Hinkle. 1994. Remote sensing studies using an airborne laser altimeter. *Proceedings of the First International Airborne Remote Sensing Conference and Exhibition*. 2:457-458.
- Smith, R. B., M. J. Barkaszi, and D. R. Breining. 1993. Saving space: wildlife research of Kennedy Space Center. *American Association of Zoological Parks and Aquariums Conference Proceedings 1993*:230-235.
- Bostater, C. R., C. R. Hall, and D. R. Breining. 1992. High-resolution optical signatures and band selection techniques for endangered species habitat management. *Proceedings of the International Symposium on Spectral Sensing Research* 1:556-569.

**Published Reports**

- Hall, C.R., P.A. Schmalzer, D. R. Breininger, B.W. Duncan, J. H. Drese, D. A. Scheidt, R. H. Lowers, E. A. Reyier, K. G. Holloway-Adkins, D. M. Oddy, N. Cancro, J. A. Provanca, T. E. Foster, and E. D. Stolen, 2014. Ecological Impacts of the Space Shuttle Program at John F. Kennedy Space Center. NASA/TM-2014-216639. 241 p.
- Breininger, D. R. 2004. An adaptive approach to managing Florida Scrub-Jay habitat. NASA Technical Memorandum NASA/TM-2004-211532.
- Johnson, F. A. D. R. Breininger, B. Duncan, Marc Epstein. Adaptive Habitat Management for Florida Scrub-Jays at Merritt Island National Wildlife Refuge, Southeastern Adaptive Management Group, Florida Integrated Science Center.  
[http://cars.er.usgs.gov/SEAMG/seamg\\_2004\\_annual\\_report/seamg\\_2004\\_annual\\_report.html](http://cars.er.usgs.gov/SEAMG/seamg_2004_annual_report/seamg_2004_annual_report.html)
- Breininger, D. R. 2003. Biological criteria for the recovery of Florida Scrub-Jay populations on public lands in Brevard County and Indian River County. Final Report to Endangered Species Office, U. S. Fish and Wildlife Service, Jacksonville, FL. <http://northflorida.fws.gov/Scrub-Jays/breininger-2003-report.htm>
- Akçakaya, H. R., J. L. Atwood, D. R. Breininger, C. T. Collins, B. W. Duncan. 2001. California Least Tern: Metapopulation Dynamics and Risk Assessment. NASA/TM-2002-211172.
- Stolen, E. R, D. R. Breininger, and R. B. Smith. 2002. Analysis of wading bird use of impounded wetland habitat on the Kennedy Space Center / Merritt Island National Wildlife Refuge 1987-1989. NASA/TM-211173.
- Breininger, D. R., D. M. Oddy, M. L. Legare, and B. W. Duncan 2000. Developing biological criteria for the recovery of Florida Scrub-Jay populations on public lands in Brevard County: patterns of fire history, habitat fragmentation, habitat use and demography. In J.D. Brenner (editor). Ecological and economic consequences of the 1998 Florida wildfires: [http://flame.fl-dof.com/joint\\_fire\\_sciences/](http://flame.fl-dof.com/joint_fire_sciences/).
- Larson, V. L., S. P. Rowe, and D. R. Breininger. 1997. Temporal and spatial patterns in avian activity at the Shuttle Landing Facility, John F. Kennedy Space Center, Florida, USA. NASA/TM-97-206644.
- Breininger, D. R., V. L. Larson, R. Schaub, P. A. Schmalzer, B. W. Duncan, D. M. Oddy, R. B. Smith, F. Adrian and H. Hill, Jr. 1996. A Conservation Strategy for the Florida Scrub-Jay on John F. Kennedy Space Center/Merritt Island National Wildlife Refuge: an initial scientific basis for recovery. NASA/TM-111676.
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- Larson, L., S. P. Rowe, and D. R. Breininger. 1995. A review of Falconry as a bird control technique with recommendations for use at the Shuttle Landing Facility, John F. Kennedy Space Center, Florida USA. NASA/TM-110142.
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- Breininger, D. R., M. J. Barkaszi, R. B. Smith, D. M. Oddy, and J. A. Provanca. 1994. Endangered and potentially endangered wildlife on Kennedy Space Center: conservation of faunal integrity as a goal for biological diversity. NASA/TM-109204.
- Schmalzer, P. A., D. R. Breininger, F. Adrian, R. Schaub, and B. W. Duncan. 1994. Development and implementation of a scrub habitat compensation plan for Kennedy Space Center. NASA/TM-109202.
- Breininger, D.R. 1992. Habitat model for the Florida Scrub-Jay on Kennedy Space Center. NASA/TM-107543.
- Breininger, D. R. 1989. Review of wildlife resources of Vandenberg Air Force Base, Santa Barbara County, California. NASA, Biomedical Operations and Research Office, KSC. NASA/TM-102146.

- Breining, D. R. 1988. Survey for Least Bell's Vireo in riparian habitat on Vandenberg Air Force Base, Santa Barbara County, California. NASA/TM-100984.
- Breining, D. R., P. A. Schmalzer, D. A. Rydene, and C. R. Hinkle. 1988. Burrow and habitat relationships of the Gopher Tortoise in coastal scrub and slash pine flatwoods on Merritt Island, Florida. Florida Game and Fresh Water Fish Commission Nongame Wildlife Program Final Report. Tallahassee, Florida.
- Schmalzer, P. A., C. R. Hinkle and D. Breining. 1985. Effects of space shuttle launches STS-1 through STS-9 on terrestrial vegetation of John F. Kennedy Space Center. NASA/TM-83103.

#### **Trade Journals**

- Duncan, B. W., D. Breining, R. Akçakaya, J. Atwood, and C. Collins. 2002. The California least tern spatial database. *Geospatial Solutions* 12 (11): 36.
- Duncan, B. W., R. A. Reddick, R. B. Smith and D. R. Breining. 1994. Protecting the environment in the space age: GIS at the John F. Kennedy Space Center. *Geo Info Systems* 4:38-42.
- Duncan, B. W., R. A. Reddick, R. B. Smith and, D. R. Breining. 1993. Environmental monitoring at John F. Kennedy Space Center. *ARC News* 15:7-16.
- Triandafilis, D., A. Maples, and D. Breining. 1992. Rugged video system for inspecting animal burrows. *NASA Tech Briefs* 16: 92.

#### **Theses**

- Breining, D. R. 2009. Landcover change and population dynamics of Florida Scrub-Jays and Florida Grasshopper Sparrows, Ph.D. Dissertation, University of Central Florida, Orlando, Florida.
- Breining, D. R. 1981. Habitat preferences of the Florida Scrub-Jay (*Aphelocoma c. coerulescens*) at Merritt Island National Wildlife Refuge, Florida. M.S. Thesis. Florida Institute of Technology, Melbourne, Florida.

#### **Examples of >180 Lectures**

2015. Open water diamondback terrapin population estimation. Florida Atlantic Coast Diamondback Terrapin Working Group.
2014. Florida East Coast Diamondback Terrapin –A Species of Conservation Concern, Brevard County Environmentally Endangered Lands Program.
2013. Quantifying how territory quality and sociobiology affect recruitment to inform fire management. Florida Wildlife Society.
2012. Habitat & Population Dynamics of Florida Scrub-Jays. Science Café. Florida Institute of Technology and Brevard Zoo.
2009. Using multistate models to study Florida Scrub-Jay survival and ecosystem dynamics. Florida Institute of Technology, Biological Sciences Seminar.
2008. Quantifying habitat and management needs for landscape management. Beach Mouse Working Group.
2007. Adaptive Resource Management for Florida Scrub-Jays: a new way forward. Brevard Zoo and Brevard Nature Alliance.
2007. Florida Scrub-Jay Demography and Dispersal along central Florida's Atlantic Coast. Annual Banquet Speech, Florida Ornithological Society.
2007. Collaborating to recover Florida Scrub-Jays on conservation lands. Northeast Florida Scrub Working Group.
2006. Building networks in rapidly developing human landscapes: an example from Florida. Connectivity and Reserve Design: Incorporating Landscape and Population Connectivity into Conservation Planning for Changing Land- and Seascapes Symposium. Society of Conservation Biology.

2005. Adaptive Management of Florida Scrub-Jays at Merritt Island NWR, Adaptive Management Conference Series #7, Adaptive Resource Management for Threatened and Endangered Species #2, National Conservation Training Center.
2004. Edge effects and population viability of Eastern Indigo Snakes. International Snake Ecology Conference 4. Applied Ecology Workshop. Southern Illinois University.
2003. Waterbirds as estuarine indicators. Estuarine Indicators Workshop, Sanibel-Captiva Conservation Foundation, Sanibel, Florida.
2002. Florida Scrub-Jay habitat and populations along Florida's Atlantic Coast. Pelican Island National Wildlife Refuge Celebration, Sebastian, Florida.
2001. How does fire history influence Florida Scrub-Jay populations? Space Coast Flyway Festival, Merritt Island Florida. Talk and field tours led each year.
2000. Opportunities for Florida Scrub-Jay recovery along the east central Florida coast. Spring Florida Ornithological Society Meeting, Titusville.
1999. How does fire history influence Florida scrub animals? Florida Scrub Habitat Management workshop, Tampa, Florida.
1995. Influence of habitat, catastrophes, and population size on extinction risk on Florida Scrub-Jay populations. Florida Ornithological Society, Fall Meeting, Cocoa Beach.
1994. Spatial patterns in habitat preference and demographic success of Florida Scrub-Jay populations. Ecology Institute, University of Georgia.
1992. Spatial distribution and habitat needs have endangered species in scrub along the central Florida Atlantic coast. Florida Native Plant Society.
1990. Effects of fire on birds in a Florida oak/palmetto scrub. South Florida Interagency Wildland Fire Council.
1990. Effects of fire and mechanical disturbance on Florida Scrub-Jays, Gopher Tortoises and Indigo Snakes. National Wildfire Coordinating Group.
1989. Effects of fire and mechanical disturbance on plants and animals in coastal scrub and slash pine. Florida Chapter of The Wildlife Society.
1989. Effects of fire on Florida Scrub-Jays, Gopher Tortoises and Indigo Snakes. State Department Office of Foreign Disaster Assistance. Merritt Island National Wildlife Refuge.
1989. Overview of terrestrial and wetland wildlife research at Kennedy Space Center. Center for Wetlands, University of Florida.

**Proposals Funded (>\$3 million)**

- 2012-2008 Adaptive resource management monitoring of Florida Scrub-jays on Merritt Island National Wildlife Refuge, U.S. Fish and Wildlife Service.
- 2011-2007 Florida Scrub-Jay demography in restored landscapes, Brevard Zoo.
- 2009-2007 Quantifying habitat and population dynamics to guide Florida Scrub-Jay recovery, Florida Fish and Wildlife Conservation Commission.
- 2006-2005 Florida Scrub-Jay population and habitat dynamics along central Florida's Atlantic coast, Brevard Nature Alliance.
- 2006-2005 Florida Scrub-Jay population dynamics. Alan Broussard Conservancy.
- 2006-2005 Metapopulation dynamics and recovery potential of Florida Grasshopper Sparrows (*Ammodramus savannarum floridanus*), U.S. Fish and Wildlife Service.
- 2004-2003 Florida Scrub-Jay Habitat and Population Status on St. Sebastian River State Park Preserve, Florida Department of Environmental Protection.
- 2004-2002. Status and distribution of Eastern Indigo Snakes (*Drymarchon corais couperi*) on Avon Park Air Force Range, U.S. Air Force.
- 2002-2001. Metapopulation viability analyses of the California Least Tern, NASA.

- 2001-2000. Population viability of the Eastern Indigo Snake, U.S. Fish and Wildlife Service.
- 2001-1999. Habitat and demographic studies supporting development of a population risk model for the Eastern Indigo Snake, Bailey Wildlife Foundation.
- 1999-1998. Patterns of Fire History, Habitat Fragmentation, Habitat Use and Florida Scrub-Jay Demography, Florida Fire Science Team.
- 2002-1997. Biological Criteria for the Recovery of Florida Scrub-Jay Populations on Public Lands in Brevard County and Indian River County, U. S. Fish and Wildlife Service.
- 1998-1997. Habitat mapping and analyses for the Sebastian Highlands Scrub Habitat Conservation Plan, Indian River County Natural Resources Department.
- 1997-1995. Florida Scrub-Jay demography of an urban metapopulation along Florida's Atlantic Coast, U.S. Fish and Wildlife Service.
- 1997-1994. Wildlife operational hazards and minimization of bird strike risk to aircraft, NASA.
- 1995-1993. Technical support to Brevard County Scrub Habitat Conservation Plan, Brevard County Natural Resources Office.
- 1993-1992. Florida Scrub-Jay demography and dispersal along South Brevard's beaches, Alan Broussard Conservancy.
- 2002-1992. Monitoring scrub restoration on Merritt Island, NASA.
- 1994-1990. Florida Scrub-Jay demography on Cape Canaveral Air Station, U.S. Air Force.
- 1994-1989. Playlinda Beach Study of Florida Scrub-Jays at Canaveral National Seashore, National Park Service.
- 1992-1988. Florida Scrub-Jay response to habitat destruction, U.S. Fish and Wildlife Service.
- 1985-1984. Burrow and habitat study of the Gopher Tortoise. Florida Fish and Wildlife Conservation Commission.

#### ***Peer review***

Ecology, Conservation Biology, Global Ecology and Biogeography, Forest Ecology and Management, Journal of Wildlife Management, Photogrammetric Engineering and Remote Sensing, Auk, Waterbirds, Journal of Herpetology, Herpetological Review, International Journal of Wildland Fire, Southwestern Naturalist, Florida Division of State Lands, Acta Oecologica, Avian Biology, Canadian Journal of Zoology, Ecography, National Science Foundation, Forest Ecology and Management, Natural Areas Journal, Florida Field Naturalist, Florida Nongame Grant Program, Plos One, Herpetologica, Land, Biological Conservation, Remote Sensing.

#### ***Project leadership examples***

- Developing a two-phase approach to diamondback terrapin population estimation.
- Coordinated adaptive management program for Florida scrub-jay habitat and population management decision making
- Developed a research and monitoring program to predict and interpret how land cover and habitat management influenced Florida scrub-jay habitat and population dynamics
- Developed endangered species compensation plan for new spaceport development
- Developed spatially explicit Florida grasshopper sparrow metapopulation model
- Developed spatially explicit Florida scrub-jay population model to investigate land cover change
- Initiated a program to develop occupancy approaches to monitor southeastern beach mouse population viability and responses to management
- Developed modeling approach to predict how land cover and protected area conservation scenarios influenced eastern indigo snake population viability
- Conducted snake trapping studies on Avon Park Bombing Range

- Performed indigo snake telemetry studies on Avon Park Bombing Range and east central Florida
- Conducted analyses of eastern indigo snake home range, habitat use, movement and survival in relation to different land cover types
- Mentored graduate students on field studies and capture-recapture analyses of many wildlife species
- Assembled a scientific team to do a metapopulation analyses of the California least tern using data from Baja to Oregon
- Assembled a scientific team to do populations analyses of the Western snowy plover at Vandenberg Air Force Base
- Assembled a scientific team to summarize how metapopulations models were used to support landscape ecology and conservation planning internationally
- Quantified how upland and wetland bird assemblages varied based on fire and water management, land cover, and habitat structure
- Developed an approach to identify and prioritize wildlife species of special conservation concern for monitoring and research
- Performed impact studies of unauthorized habitat destruction to Florida scrub-jays as potential Endangered Species Act violations to aid law enforcement and prosecutors
- Characterized wildlife species of biodiversity concern on Vandenberg Air Force Station
- Investigated how gopher tortoise gopher tortoise densities were influenced by water table, vegetation composition, time-since-fire, and habitat structure
- Mentored high school student and teachers in NASA Education Programs (e.g. SHARP)
- Developed approaches to measure gopher tortoise burrow occupancy in different habitat types
- Conducted monitoring of wildlife responses to rocket launches on Kennedy Space Center and Cape Canaveral Air Force Station
- Assisted in the development of endangered species recovery plans
- Assisted in the development of habitat conservation plans and guidelines on habitat conservation plans
- Assisted in the development, administration, and publication of the Indian River Lagoon Biodiversity Symposium
- Developed a wildlife habitat relationship model to predict wildlife species composition by land cover type
- Characterized how groundwater regulatory changes could affect Kennedy Space Center operations and develop a compliance approach
- Preparing, reviewing, and editing NEPA documents
- Developing comments to proposed endangered species listings
- Reviewing laws, regulations, agreements, and NEPA documents to summarize Kennedy Space Center environmental monitoring requirements
- Developed an approach to monitor vegetation responses to space shuttle exhaust

### ***Training***

Masters in Business Administration (1/2 course work completed, Florida Institute of Technology)

Mark-recapture, Colorado State University

Habitat Evaluations Procedures, Colorado State University

Ecological Modeling, Colorado State University

Model Selection and Multi-Model Inference, David Anderson

Advanced ARC/INFO, ESRI

Global Positioning Systems, Trimble

ENVI Image Processing, Research Systems, Inc.

Fire Suppression and Standards for Survival, U.S. Fish and Wildlife Service  
 Interagency Prescribed Fire, Florida Department of Agriculture  
 Aircraft Safety, U.S. Fish and Wildlife Service  
 Dozens of Environmental Law, Permitting & Regulatory classes  
 Certified Scuba Diver (>500 open water dives)  
 Hundreds of First Aid, CPR, and Safety classes

**Thesis committees**

2016 Florida scrub-jay genetics. Cory Spern. M.S., Florida Institute of Technology  
 2013 Microspatial population structure, gene flow, and effective population size of southeastern beach mice (*Peromyscus polionotus niveiventris*), Monica Zimmerman, M.S., Florida Institute of Technology  
 2013 Modeling survival of immature loggerheads (*Caretta caretta*) and green turtles (*Chelonia mydas*) from 10 years of mark-recapture data at the Florida Power and Light St. Lucie Plant. Andrew Turner, M.S. University of Central Florida  
 2012 Behavioral analysis of yellow rat snake (*Elaphe obsoleta quadrivittata*), a predator of the threatened Florida scrub-jay (*Aphelocoma coerulescens*) in the Kennedy Space Center's Merritt Island National Wildlife Refuge. Angela Munoz. M. S. Florida Institute of Technology

**Press, Educational and Outreach Programs.**

Participated in newspaper articles, public radio, education and television news casts greater than 20 times. Recent examples include NASA Science Files, British Broadcasting Corporation, and Discovery Channel. Organized workshops on biodiversity, adaptive management, scrub biology, and fire management.

**References.**

**Dr. Jim Nichols**, Senior Scientist and Wildlife Biologist. USGS Patuxent Wildlife Research Center, 12100 Laurel Beech Forest Road, Laurel, Maryland 20708-4017. jnichols@usgs.gov, Phone 301-497-5660.  
**Dr. Reed Noss**, Davis-Shine Professor of Conservation Biology, 4000 Central Florida Boulevard, University of Central Florida, Orlando, Florida 32816-2368. rnoss@mail.ucf.edu, Phone 321-823-0975.  
**Dr. Ross Hinkle**, Vice Provost and Dean, Professor of Biology, , 4000 Central Florida Boulevard, University of Central Florida, Orlando, Florida 32816-2368. rhinkle@mail.ucf.edu, Phone 407- 823-6432.  
**Dr. Carlton Hall**, Manager, Ecological Programs, Kennedy Space Center, Florida 321899. carlton.r.hall@nasa.gov, Phone 321- 321-861-0793.

**Personal**

Married, three children  
 Excellent physical condition  
 Avocations: Surfing, weight-lifting, canoeing, kayaking, fishing, scuba diving, snorkeling, boating, camping, backpacking, skiing, photography, nature observation, marine life, Boy Scouts, coaching.

**Primary Permit Holder:**

U.S. Fish and Wildlife Service TE106005-2 Florida scrub-jay monitoring  
 U.S. Geological Survey Federal Bird Master Marking and Salvage Permit 22379.  
 NASA Institutional Animal Care and Use Committee Protocol GRD-06-043  
 Merritt Island National Wildlife Refuge Special Use Permit SUP 021

**Susan Hann**  
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Malabar, Florida 32950  
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### Summary

Accomplished and experienced leader in all aspects of governmental operations and policy development.

### Education, Licensure and Credentials

- Bachelor of Science in Civil Engineering - University of Maryland - Cum Laude - 1980.
- Registered Professional Engineer (Florida) - 1984.
- Masters of Business Administration - Florida Institute of Technology - 1986.
- Certified Planner (American Institute of Certified Planners) - 1996.
- Credentialed Manager (International City County Management Association) - 2005.
- Harvard Kennedy School of Government Program for Senior Executives in State and Local Government – 2005.
- American Public Works Association – Public Works Leadership Fellow – 2012.
- LEED Green Associate - 2013.

### Professional Experience

Brevard County Public Schools

- **Director of Planning and Project Management**, January 2015 to present

City of Palm Bay, Florida

- **City Manager**, June 2011 to January 2015
- **Deputy City Manager**, January 2003 to June 2011
- **Acting City Manager**, June 2002 to October 2002
- **Public Works Director**, November 1997 to January 2003

Brevard County, Florida

- **Growth Management Department Director**, October 1995 to November 1997
- **Engineering Department Director**, February 1992 to September 1995
- **Traffic Engineering Division Director**, April 1989 to January 1992
- **Staff Director, Brevard Metropolitan Planning Organization (now Space Coast TPO)**, April 1989 to November 1997 (concurrently throughout Brevard County employment)

Florida Institute of Technology

- **Adjunct Faculty Transportation Engineering** 1995 to 2000

Other

- **Branch Manager and Principal Traffic Engineer** Motorist Design Data Movement (MDDM) Inc., Merritt Island, Fl. - 1985 to 1989.
- **Staff Engineer** J. P. Terpening Corporation, Ft. Pierce, Fl. 1983 to 1985.
- **Assistant City Engineer** City of Melbourne, Florida 1980 to 1983.

### Detailed Experience

- Responsible for implementation of the School District's ½ cent sales surtax program – approximately \$198 million over 6 years. Oversee short and long range school capacity planning.

- Responsible for oversight of full service municipality – including public works, growth management, economic development, parks & recreation, utilities (water & sewer), finance, human resources, communications and information technology, police, fire and redevelopment agency. Population 105,000, 100 square miles, over 750 employees, \$56 million general fund budget, \$133 million total budget. Successfully addressed budget crisis through collaboration.
- Led technical, managerial and administrative personnel, as well as consultants, to achieve project and program implementation throughout the City. Project examples include the City Hall annex design-build project, Lagoon House, City Hall complex building management system, Basin 9 drainage and Clearmont Street realignment projects with Harris Corp., Palm Bay Parkway NW, Turkey Creek dredging, US 1 landscaping, sidewalk and lighting, several parks and South Parkway Interchange development.
- Acquired significant grant funds for numerous City projects through many different grant agencies and legislative appropriations. Optimized use of grant funds through creative project development, such as combining a stormwater management project with a park project. Responsible for implementation of the City's Department of Energy grant (Energy Efficiency and Conservation Block Grant) which included development and implementation of a Sustainability Master Plan.
- Worked cooperatively with other City departments to facilitate project and program development. Examples include assisting community policing efforts to enhance a disadvantaged neighborhood, incorporating Crime Prevention through Environmental Design (CPTED) techniques in project design, implementing Community Development Block Grant (CDBG) road and drainage projects, assisting in planning utility expansion projects, writing emergency equipment grants, developing a new emergency operations center, facilitating procurement for Regional Law Enforcement Training Center and assisting in park planning and construction.
- Worked with financial advisors, bond counsel and others to facilitate bond financing of capital projects. Refinanced bond issues to achieve savings.
- Handled contractor default and engagement of surety to facilitate completion of Turkey Creek dredging project under severe time constraints.
- Managed \$90 million, 5-year capital transportation budget (Brevard County). Established computerized cost accounting system and managerial controls for transportation plan. Presented long range forecasts of project revenues and expenditure. Developed and presented potential funding scenarios.
- Developed, implemented and monitored improved customer service program that defined service parameters and increased communication with citizens. Developed overall and project-specific public participation programs for the Brevard Metropolitan Planning Organization.
- Experienced in growth management, planning, zoning, land use and intergovernmental coordination.
- Experienced in emergency management, disaster preparedness and recovery including extensive coordination with FEMA and state emergency management (Hurricanes Jeanne, Frances and Tropical Storm Fay).
- Routinely prepared technical reports and presented complex issues in public forums to local, state and federal elected officials.
- Experienced in media relations, including both proactive and responsive interaction with newspaper, television and radio media.
- Experienced in litigation and mediation. Have testified as an expert witness.

### **Professional Affiliations**

- Institute for Sustainable Infrastructure - Member of the Board of Directors and Executive Committee (2013 – present). Chairman of the Board CY 2016.
- United Way of Brevard Board Member (2011-present); Executive Committee Member (2012-present). Community Impact Chair.
- Environmental Protection Agency – Appointed by the EPA Administrator to the Local Government Advisory Committee (2010-present) Appointed Dec 2012 as Chair of Protecting America's Waters Work Group. Completed report to the EPA Administrator commenting on the proposed rule regarding Waters of the United States. Completed report to the Administrator regarding National Drinking Water Action Plan.
- American Public Works Association – Member of the Board of Directors – Transportation-at-Large – Board Liaison to Transportation Committee (2008 – 2014), Responsible for Emerging Leaders Academy Program (2007-2016); Chaired group of authors to produce a new "Green Book" - Public Works Administration published in 2008, member Government Affairs Committee (2008/2009), Chair Finance Committee (2010/2011), member Comprehensive Professional Development Group (2010/2011), represented APWA in working with American Society of Civil Engineers and American Consulting Engineers Council on creating a joint Institute for Sustainable Infrastructure which developed a comprehensive Sustainable Infrastructure Rating System (Envision™) (2010/2011); Board Liaison to the APWA Sustainability Center (2010-2012).
- Brevard County Executive Leadership Institute – taught ethics through 2015.
- Member – Brevard County Environmentally Endangered Lands Program Selection and Management Committee (2009-present).
- Member – Florida Department of Transportation Bicycle Pedestrian Partnership Council representing the Florida League of Cities (2010-2014).
- Chair – Space Coast Transportation Planning Organization Technical Advisory Committee (2006-2014).
- Facilitated Palm Bay Area Chamber of Commerce – Annual Strategic Planning Session 2008, 2009, 2010 and 2013. Received 2013 Greater Palm Bay Chamber of Commerce Distinguished Service Award.
- Member – Florida Metropolitan Planning Organization Advisory Council Revenue Study Advisory Committee (2010/2011).
- Past President Florida Section American Society of Civil Engineers (ASCE) (1993 – 1994).
- Member – International City County Management Association and Florida City County Management Association. FCCMA Administrative & Fiscal Responsibility Committee (2011-2012) and chaired FCCMA Mentoring Subcommittee (2007-2008).
- Graduate of Leadership Brevard and Leadership St. Lucie. Served on Leadership Brevard Board of Directors and as Program Committee Chairman.

### **Personal**

Bicycle, pedestrian and trails advocate and avid mountain biker.

## CURRICULUM VITAE

CHARLES ROSS HINKLE

Professor  
Director of Ecosystems Processes and Services Laboratory  
Department of Biology  
University of Central Florida  
P.O. Box 162368  
Orlando, FL 32816-0112  
Voice: (407) 823-5102  
Cell: (321) 652-0981  
E-mail: [rhinkle@ucf.edu](mailto:rhinkle@ucf.edu)  
Website: <http://biology.cos.ucf.edu/>

### EDUCATION:

- Ph.D. 1978, University of Tennessee, Knoxville, Ecology: "The Relationship of Forest Communities and Selected Species to Edaphic and Topographic Factors on the Cumberland Plateau of Tennessee."
- M.S. 1975, University of Tennessee, Knoxville, Ecology: "A Preliminary Study of the Flora and Vegetation of Cumberland Gap National Historical Park, Middlesboro, Kentucky."
- B.A. 1970, Warren Wilson College, Swannanoa, NC, Biology.

### SUMMARY OF WORK AND PROFESSIONAL EXPERIENCE:

#### July 2015 – Present:

Organization: University of Central Florida  
Job Title: Professor of Biology, College of Sciences, Department of Biology

Dr. Hinkle's primary research interests are in plant ecology, landscape ecology, and applied conservation biology. For more than ten years, he and his Postdoctoral Research Associates have been members of a multidisciplinary team of scientists who have experimentally evaluated ecosystem responses to double ambient atmospheric CO<sub>2</sub> including ecosystem carbon dynamics, above and below ground biomass production, ecosystem water dynamics, ecosystem response to fire, nutrient cycling, and ecosystem structural components. He is also interested in applied research related to the conservation of native ecosystems via implementation of local community-based land acquisition and ecosystem management programs. He chairs a committee of scientists in Brevard County, Central Florida, in the design and implementation of conservation reserves. The objectives of the Brevard county program are directed toward optimizing the long term sustainability of biological diversity in a rapidly urbanizing landscape. Research interest areas include fire ecology and landscape management, invasive species management, restoration ecology of degraded habitat, and the establishment of long term ecological monitoring and research of conservation areas. He continues to be an active member of a national team of scientists who are designing and implementing the National Ecological Observatory Network with the National Science Foundation to address national priorities for ecological monitoring and research. Dr. Hinkle is a strong proponent of bringing together multidisciplinary teams of scientists to solve complex ecological problems.

#### January 2012 – July 2015:

Organization: University of Central Florida  
Job Title: Vice Provost and Dean, College of Graduate Studies

After serving for 1.5 years as interim he was appointed as Vice Provost and Dean and reported directly to the Provost and Executive Vice President. The Vice Provost and Dean is responsible for administering the College of Graduate Studies. The College is responsible for providing leadership and vision for graduate education at UCF. This includes coordination of recruitment and admissions, financial aid distribution, new graduate program development, development and implementation of policies and procedures, and working with the various programs to maintain the quality of graduate education at UCF. During his tenure as Vice Provost and Dean there were over 8500 graduate students in 85 masters programs and 30 doctoral programs.

**July 2007 – December 31, 2012:**

Organization: University of Central Florida

Job Title: Professor and Chair, Department of Biology

The Chair of the Department of Biology reports to the Dean, College of Sciences. The Chair is responsible for administering the Department of Biology which includes 16 tenured and tenure-track faculty and six instructors with diverse teaching and research interests. The Department has approximately 2000 undergraduate majors, 72 M.S. students, and 26 Ph.D. candidates. The Department supports a strong research and MS/PhD program in Conservation Biology and an interdepartmental Ph.D. in Biomolecular Sciences. The faculty actively partners with faculty across other UCF Departments and Colleges, other national and international universities, regional and national research institutes, businesses, and nongovernmental organizations with a commitment for research and teaching in the biological sciences.

**January 2002 – July 2007:**

Organization: Dynamac Corporation, Kennedy Space Center.

Job Title: Vice President and Chief Scientist

Project Director Life Science Services Contract, Kennedy Space Center

Valued at \$120M

I managed the Life Science Services Contract (LSSC) at Kennedy Space Center which was awarded to Dynamac Corp. in 2002 and continued through 2009. It was valued at \$120M over the period of the contract. The LSSC included a staff of approximately 120 scientists, engineers, and support personnel, and provided technical support for sixteen Mission Plan Elements at KSC. Those Mission Plan Elements included: 1) program and project management focused on contract performance management, safety reliability and maintainability, and budgeting; 2) facility and lab utilization focused upon staffing and operating support laboratories including, chemistry, engineering flight hardware development, payload processing animal handling labs, microbiological and molecular biology labs, plant growth chambers, plant physiology, bioreactors, and ecological field labs; 3) laboratory support to biological sciences, included support to other resident organizations and visiting scientists for lab space, equipment setup, and processing of experiments and studies by visiting investigators; 4) medical education focused upon training medical interns in aerospace medicine; 5) fundamental biology outreach that included education workshops for teachers, primary and secondary education materials development and distribution, and coordination and training of graduate and undergraduate interns, high school interns, and post-doctoral candidates; 6) environmental monitoring that included air and water quality, meteorological conditions, vegetation and wildlife monitoring, threatened and endangered species populations, launch exhaust cloud tracking and modeling, both long term and short term event monitoring for environmental impact analyses, pollution prevention and affirmative procurement for agency wide initiatives; 7) ecological research, included fire ecology, population viability assessments of protected species, global climate change and wetland functional dynamics under different management regimes; 8) fundamental biology research program flight experiment development that included support to flight hardware design, development and testing, compatibility testing with experimental protocol and managing life sciences data from experiments; 9) advanced human support technology flight experiment development, including flight experiment development and support; 10) ground research studies that include advanced human life support research on food production, water and waste recycling in closed systems; 11) spaceflight medical support, crew, workforce and planetary protection, including medical support to astronaut crew and manning emergency response medical teams, operation and maintenance of clinical and hematology laboratories, staffing, operation and collection and analyses of clinical and environmental microbiology samples; 12) physical fitness and musculoskeletal rehabilitation, which included operation of two fitness centers and operation of personnel rehabilitation facilities for musculoskeletal injuries; 13) an agency occupational health program that included occupational health, industrial hygiene, radiation/laser protection and medical consulting

for agency wide occupational health issues; 14) space life sciences lab facility services which included all operation and maintenance activities of a 100,000 ft<sup>2</sup> laboratory facility; and 15) KSC research, which included a range of research and technology development projects funded by KSC Center Director Discretionary funds.

**January 1995 to January 2002:**

Organization: Dynamac Corporation, Kennedy Space Center, Florida.  
Job Title: Chief Scientist/Deputy Project Manager.

I directed the activities of a staff of 70 people and subcontractors in two programs including the Advanced Life Support (ALS) Program, the Kennedy Space Center (KSC) and the Ecological Research Program. We were responsible for research and technical direction, budget (planning and tracking), personnel (identifying requirements, hiring, and evaluating), project schedules, and reports. The project was valued at \$75M over the period of the contract. ALS activities included the development and operation of a bioregenerative life support system at KSC. Specific activities were hydroponics system development, biomass production, waste management, and food processing oriented toward establishing a bioregenerative life support system for long duration space missions (i.e. such as lunar base). The ALS Program also included studies of the effects of altered gravity conditions upon plant photosynthesis and respiration. Researchers were exploring both whole plant physiology as well as genetic mechanisms associated with synthesis, storage, and metabolism of carbohydrates, use of light emitting diodes (LED) lighting systems for plant experiments and science verification of flight hardware designed for microgravity experiments. Ecological Research Program activities included landscape ecology studies, fire ecology (especially on vegetation structure, composition, and nutrient cycling), threatened and endangered species habitat requirements, and evaluation of long-term environmental effects of KSC operations. Studies were conducted on threatened and endangered species habitat restoration and creation to mitigate habitat lose and studies on wetland restoration are two major projects. I also served as a co-principal investigator in a cooperative study with the Smithsonian Environmental Research Center to evaluate ecosystem effects of double ambient levels of atmospheric carbon dioxide on scrub oak-palmetto plant communities, and as co- principal investigator on a multi-agency project to evaluate wetlands management techniques on ecological systems in the Indian River Lagoon estuary.

**August 1982 to January 1995:**

Organization: The Bionetics Corporation, Kennedy Space Center, Florida.  
Job Title: Manager, Biological Programs (1987-1994) Director, Field Operations (1983-1987) Staff Ecologist (1982-1983)

I served as a key scientist in the development of Life Sciences Research at Kennedy Space Center (KSC). Provided key input into the development of launch monitoring activities at KSC and Vandenberg Air Force Base. Established the Long-Term Environmental Monitoring/Research Program with research and monitoring efforts in plant ecology, wildlife ecology, air quality, water quality and geographic information system/remote sensing analyses which has become the central activity for KSC environmental studies and analyses. Personally conducted research in the areas of fire ecology, plant community dynamics, landscape ecology/resource management, wildlife habitat suitability, application of remote sensing and geographic information system (GIS) technology to environmental management and in situ studies of plant community responses to elevated carbon dioxide with implications for global change. Served as a key scientist in the development and implementation of the Controlled Ecological Life Support System (CELSS) Program and the Plant Space Biology Research Program.

**September 1978 to July 1982: [Selected Activities]**

Project Title/Description: Development of a Florida Statewide Environmental Impact Assessment Related to the Conversion of Oil-Fired Power Plants to Coal.

Specific Duties: Terrestrial Ecologist. Coordinated and contributed to the description of biotic resources and the analysis of impacts to natural resources. Contributed to the analysis of acid deposition effects on natural systems.

Project Title/Description: Development of Handbooks on Best Current Practices to Enhance Fish and Wildlife on Surface Mined Lands.

**Specific Duties:** Senior Scientist. Developed handbooks to promote wildlife in the surface mine reclamation process. Involved reviewing and developing the best current practices for reclamation including revegetation, fish and wildlife habitat enhancement (aquatic and terrestrial), and wildlife protection during the mining process. Co-author of two handbooks (South and Central U.S. and Central/Southern Appalachian Coal regions) and technical reviewer of handbooks for three western coal basins (Powder River, Hams Fork, Uinta Basin). Project funded at \$125K for U.S. Bureau of Mines and U.S. Fish and Wildlife Service.

**Project Title/Description:** Development of Methods for Determining Fish and Wildlife Management Practices and Monitoring Procedures on Surface Mined Lands.

**Specific Duties:** Principal Investigator. Coordinated the development of procedures for evaluating pre- mine sites, determination of reclamation strategies to enhance fish and wildlife habitat, and monitoring the success of the reclamation. Project funded at \$196K by the Office of Surface Mining through the U.S. Fish and Wildlife Service, Eastern Energy Land Use Team in the Office of Biological Services. Five regions of the U.S. were assessed separately to regionalize procedures to account for ecological differences in the major coal basins. Senior author of five handbooks that were developed.

**Project Title/Description:** Baseline Analysis and Modeling of the Impacts of Brine on the Marine Ecosystem at Selected Sites in the Gulf of Mexico.

**Specific Duties:** Senior Scientist. Provided analysis of patterns and relationships within and between biota and physical/chemical factors at five sites in the Gulf of Mexico where brine was to be dumped as a part of the development of a Strategic Petroleum Reserve Program. Techniques used involved simple statistics as well as multivariate techniques of cluster, ordination, canonical, discriminant, and factor analyses. The analyses were directed toward the development of a marine ecosystem model to provide a mechanism for evaluating brine impact. Project funded by NOAA.

**Project Title/Description:** Baseline Analysis of Marine Biological and Physical/Chemical Data at the Bryan Mound Brine Diffuser Site at Bryan Mound, Texas.

**Specific Duties:** Senior Research Staff. Provided analysis and interpretation of patterns and relationships within and between biotic and abiotic parameters at this potential brine diffuser site in the Gulf of Mexico. Techniques used were similar to those above. Project funded by NOAA.

**Project Title/Description:** Environmental Impact Analysis of the Development of Salt Domes for the Storage of Oil Reserves.

**Specific Duties:** Staff Scientist. Wrote and provided technical input into sections dealing with impacts to species and ecosystems related to the development of three salt domes as oil storage sites. This involved baseline description of the project area, evaluation of the impact of construction, operation of oil storage facilities, oil distribution terminal and pipelines, and brine disposal systems. Project funded by the Department of Energy.

**Project Title/Description:** Environmental Analysis of the Impact of the Development of a Low Head Hydroelectric Dam at Fries, Virginia.

**Specific Duties:** Staff Scientist. Wrote sections dealing with project impact on plant communities and soils.

**Project Title/Description:** Characterization of Baseline Conditions at the Texoma Group Offshore Brine Disposal Sites: Texoma Group Strategic Petroleum Reserve Program.

**Specific Duties:** Staff Scientist. Provided analysis and interpretation of marine biological and physical/chemical data from the Gulf of Mexico using multivariate techniques. Assessed the impacts of brine disposal resulting from the development of coastal salt domes in the Strategic Petroleum Reserve Program.

**1973 to 1978:**

Organization: The University of Tennessee, Knoxville Graduate Ecology Program  
 Job Title: Graduate Research Assistant

Specific Duties: Spent four years as a Graduate Research Assistant in the areas of remote sensing, ecological field studies, and computer modeling.

**1970 to 1971:**

Organization: Gibbons Hall School for Boys, Asheville, North Carolina  
 Job Title: Science and Math Teacher

Specific Duties: Taught math and science in grades 5-7 and co-directed physical education programs of grades 4-8.

**1966 to 1970:**

Warren Wilson College, Swannanoa, North Carolina  
 Job Title: Student Work Assistant

Specific Duties: Four years as a student laboratory assistant and teaching assistant, served as instructor of plant taxonomy during summer courses in biology.

**OTHER PROFESSIONAL ACTIVITIES:**

**1978 to 1980:**

Invited lecturer on ecological data analysis (patterns and gradients) using multivariate techniques for Dr. H.R. DeSelm, Botany 5350, The University of Tennessee, Knoxville.

**1980 to 1981:**

Invited lecturer on environmental assessment for Dr. J. Frank McCormick, Principles in Ecology course, The University of Tennessee, Knoxville.

**1980:**

Invited seminar speaker in the Graduate Ecology Seminar Series at The University of Tennessee.  
 "Ecological Considerations in the Surface Mine Control and Reclamation Act and Federal Permanent Regulations."

**1981:**

Invited speaker in the Symposium on Ecosystems of the Southeast at the 1981 meeting of the Association of Southeastern Biologists. "Vegetation of the Mixed Mesophytic Forest Region and Its Relationship to Selected Environmental Factors."

**1982:**

Technical reviewer of research proposals and progress reports submitted to DOE's Short-Rotation Woody Crops Program for funding at Oak Ridge National Laboratory (also participated in 1979 and 1980).

**1983:**

Adjunct Professor at the University of Central Florida, Department of Biology.

Center for Wetlands at the University of Florida, invited seminar, "The Use of Multivariate Pattern Analysis in Vegetation Studies: An Example from the Cumberland Plateau in Tennessee."

**1984 to 1985:**

Adjunct Professor at the University of Florida, Gainesville, Center for Wetlands, College of Engineering.  
 Co-chairman of graduate M.S. student project on the use of barrier island wetlands for advanced sewage treatment (nutrient and heavy metal uptake).

**1985 to 1987:**

Member of Brevard Community College (BCC) Parent Education Lab School Advisory Committee to Dr.

Maxwell C. King, President, BCC.

**1986 to 1988:**

Staff Assistant on NASA Advisory Council's Life Sciences Strategic Planning Study Committee.  
Coauthored a chapter on Controlled Ecological Life Support Systems in the final report "Exploring the Living Universe, A Strategy for Space Life Sciences," June 1988.

**1987:**

Center for Wetlands invited seminar, "Ecological Programs at John F. Kennedy Space Center" at the University of Florida, Gainesville.

Adjunct Professor at the University of Central Florida: Taught semester course in Ecology (PCB 3043). Coordinated and hosted annual fall field trip for Southeastern Chapter of the Ecological Society of America at Merritt Island, Florida, September.

**1988:**

Coordinated and chaired two symposia on Biotic Communities of the Southeast at Association of Southeastern Biologists Meeting, Biloxi, MS, April.

NASA Ames Research Center invited seminar, "Ecological Research at John F. Kennedy Space Center," August.

**1989:**

Adjunct Professor, University of Florida, Department of Environmental Engineering Sciences, Master's Student Thesis Committee.

Coordinated and chaired symposia on Biotic Communities of the Southeast at the Association of Southeastern Biologist's Meeting, Charlotte, NC, April.

Adjunct Professor at the University of Central Florida: Teaching semester course in Ecology (PCB 3043). Invited seminar on vegetation of the Cumberland Plateau in Tennessee at Austin Peay State University Symposium on Tennessee vegetation.

**1990:**

Chaired symposium on wetlands at the Association of Southeastern Biologist's meeting. Baltimore, MD, April.

Member of Brevard County Commission committee to select environmentally endangered lands for protection by purchase with funds from a \$50M bond issue. (Two year term).

**1991:**

Member of American Institute of Aeronautics and Astronautics Life Sciences and Systems Technical Committee charged with planning future programs.

Adjunct Professor at the University of Central Florida: Teaching semester course in Ecology (PCB 3043).

**1992:**

Reappointed as member of Brevard County Commission committee (see 1990). Coauthored proposals for \$25M state matching funds for purchase of endangered lands. All proposals were funded.

**1993:**

Coauthored proposal for \$1.5M grant to purchase lands to expand Merritt Island National Wildlife Refuge. Funded by North American Wetlands Council.

Invited luncheon speaker at the Tennessee Section of the American Water Resources Association Annual Meeting. Subject "Local programs for protecting public lands."

**1994:**

Elected Chair of Brevard County Commission, Environmentally Endangered Lands Selection Committee.

**1995-2007:**

Co-principal investigator in a cooperative study with the Smithsonian Environmental Research Center to evaluate ecosystem effects of double ambient levels of atmospheric carbon dioxide on scrub oak-palmetto plant communities. Funded by the Department of Energy for @\$1M.

**1996:**

Invited lecturer at North Carolina State University, NASA Specialized Center of Research Training in Gravitational Biology. Subject: "Remote sensing of the environment."

**1997:**

Invited participant in the U.S. Climate Forum to discuss the consequences of Global Climate Change for the Nation sponsored by the United States Global Change Research Program and the Office of Science and Technology Policy in collaboration with the National Research Council.

Appointed to the Brevard Community College Advisory Board for the Titusville Campus Brevard County, Florida.

**1998:**

Re-appointed and elected Chair of Brevard County Commission, Environmentally Endangered Lands Selection and Management Committee.

Appointed to the Board of Directors for the Brevard Nature Alliance.

Invited keynote speaker at the Keep Brevard Beautiful Annual Awards Banquet. Nominated for President Elect of the Southern Appalachian Botanical Society.

Elected to the Board of Professional Certification of the Ecological Society of America.

**1999:**

Invited lecturer at the International Workshop (in Marsa Matrouh, Egypt) on Strategies and Technologies for Conservation and Sustainable Use of Biodiversity in Large West Asian and North African Landscapes.

**1998-1999:**

Appointed member of Titusville Environmental Commission by the City Council, Titusville, Florida

**2000 -2003:**

Invited keynote speaker at the Annual Meeting of the Florida Ornithological Society

Invited lecturer Honored Alumni Lecture Series at the University of Tennessee Center for Ecology and Biotechnology. Subject: "Ecological Research at Kennedy Space Center"-.

Invited lecturer at North Carolina State University, NASA Specialized Center of Research Training in Gravitational Biology. Subject: "Remote sensing of the environment."

Elected and served as Chair of the Board of Professional Certification, Ecological Society of America.

Reappointed and elected Chair of Brevard County Environmentally Endangered Lands Selection and Management Committee by the Board of County Commissioners.

**2004:**

Co-organizer of Second Workshop for the Southeastern Ecological Observatory Network to evaluate sensor and information management needs for a regional National Ecological Observatory Network for the southeastern U.S. February 2004.

Invited participant in the National Science Foundation planning session for the National Ecological Observatory Network (NEON) October 18-20, 2004 at Bonneville Springs, Oregon.

**2005:**

Invited participant in the National Science Foundation planning session for the National Ecological

Observatory Network (NEON) at Kellogg Biological Station, Michigan.

**2006:**

Regional representative for the southeast in the planning and development for the NSF's NEON program.

**2007:**

Reappointed as Chair Brevard County Environmentally Endangered Lands Selection and Management Committee by the Board of County Commission, Brevard County.

**2008 - 2012:**

Appointed Orange County Green PLACES Advisory Board by the Mayor of Orange County, Florida.  
Board of Editors Southeastern Naturalist (Completed term in 2012)

**2012 - 2013**

Chair of the Search Committee for the Dean College of Engineering at UCF.

**2013**

Invited Department of Biology Lecture Series, Old Dominion University, Norfolk, VA. "Carbon dynamics in selected subtropical ecosystems in Central Florida"

Invited Seminar Series Speaker Series, Kennedy Space Center, Florida: "Carbon dynamics in selected subtropical ecosystems in Central Florida – It all started at KSC!"

Appointed by Provost to serve as representative for UCF on the Statewide Advisory Committee for the establishment and implementation of the University of South Florida Center for Cybersecurity.

**2014**

Reappointed to Brevard County Environmentally Endangered Lands Selection and Management Committee by the Board of County Commission, Brevard County.

Member of Inter-Institutional Team for Reclassification Documentation, Community Engagement Classification by the Carnegie foundation for the Advancement of Teaching, appointed by UCF President John C. Hitt

UCF Coordinator and Representative for the Southeastern Ecological Observatory Network, Domain 3, of the National Ecological Observatory Network, National Science Foundation. Chair of UCF Strategic.

**2015**

Reappointed to the Brevard County Environmentally Endangered Lands Selection and Management Committee.

Invited presenter to graduate PhD students on non-academic career opportunities at Florida International University, Miami, Florida, September 2015.

Interviewee for Pegasus Magazine article on Florida Conservation, November 2015.

**2016**

Reappointed to the Brevard County Environmentally Endangered Lands Selection and Management Committee.

Interviewee for documentary on Dr. E. Lucy Braun a documentary on Women in Ecology by Voyageur Media Group, Inc., a nonprofit dedicated to the creation of media about science, history and culture.

**NASA Interns and Planetary Biology Students Mentored (at KSC):**

- Chris Kilburn, Purdue Univ., GIS Modeling (1995)
- Marcos Sastre – 1999, Summer Intern, University of Puerto Rico, Department of Marine Sciences
- Felix Fontan– 1999, Summer Intern, University of Puerto Rico, Department of Biology
- Vicki O'Donnell – 2000, Planetary Biology Intern from National University of Ireland Department of Geography

- Javier Osorio – 2000, Summer intern through the University of Puerto Rico and the Puerto Rican Space Grant Program

#### **NRC Postdoctoral Candidates Mentored (at KSC):**

- Dr. David Vieglas - 1992-1994, Effects of Elevated Atmospheric Carbon Dioxide on Ecological Processes of the Florida Oak-Palmetto Scrub Community.
- Dr. Sabina Dore – 1999-2002, Eddy covariance measurements of carbon flux in Florida scrub oak- palmetto ecosystems.
- Dr. Rosvel Bracho – 2002-2006, Eddy covariance flux measurements of carbon dynamics in Florida scrub oak palmetto ecosystems.
- Dr. Cassandra Thomas – 2003 – 2006, Network modeling of marsh water quality under three marsh water management regimes.

#### **Graduate Students and Post-doctoral Candidates (at KSC):**

- Krista Jones - 1986, M.S. thesis, Florida Institute of Technology, Melbourne, "Quantitative assessment of stormwater runoff from the vehicle assembly building area of the John F. Kennedy Space Center, Florida." (Hinkle provided mentorship but did not serve on the committee)
- Patrice Owens - 1986, M.S. thesis, University of Florida, Gainesville, "Low-energy wastewater recycling through an oligohaline coastal marsh ecosystem." (Hinkle served as Graduate Committee Member)
- Bill Sargent - 1987, Nonthesis project for M.S. degree, University of Florida, Gainesville, study on effects of wastewater treatment on wildlife in marsh ecosystems (Hinkle served as an advisor for non-thesis project).
- Drew Bennett - 1989, M.S. thesis, University of Florida, Gainesville, "Water resources analysis of a multiobjective drainage network in the Indian River Lagoon Basin." (Hinkle provided mentorship but did not serve on the committee)
- Dave Rydene - 1988, M.S. thesis, Florida Institute of Technology, Melbourne, "Concentrations of Al, Cd, Pb, V, and Zn in fishes inhabiting ponds exposed to space shuttle launch exhaust." (Hinkle provided mentorship but did not serve on the committee)
- Laine Giovanetto - 1988, M.S. thesis, Florida Institute of Technology, Melbourne, "Habitat use by the gopher tortoise (*Gopherus polyphemus*) in scrub and slash pine flatwoods on the John F. Kennedy Space Center (KSC)." (Hinkle provided mentorship but did not serve on the committee)

#### **Graduate Students and Post-doctoral Candidates (Since coming to UCF in 2007):**

##### **Post Docs at UCF:**

2008-2011: Jiahong Li – Post Doctoral Research Associate in the Ecosystem processes and Services Laboratory working on several projects but especially focused on the development and operation of the Urban Flux Tower and the Blue Cypress Sawgrass Marsh Flux Tower.

2013-2015: Scott Graham – Post Doctoral Research Associate on Carbon Dynamics of the Greater Everglades Watershed and Implications of Climate Change (DOE Project ID: 1053155)

2014-2015: Lurdineis Borges – Post Doctoral Research Associate on Carbon Dynamics of the Greater Everglades Watershed and Implications of Climate Change (DOE Project ID: 1053155)

##### **Students at UCF:**

###### **PhD**

Dissertation Committee Chair – Edem Ekpe; Livelihoods programs for conservation and tropical forest biodiversity: an evaluative investigation of biocomplexity in southeastern Ghana; Edem has made two field trips to do field work in Ghana. Graduated Spring 2012.

Dissertation Committee Chair – Leesa Souto; Socio-ecological drivers of nitrogen in the residential landscape; Leesa has been conducting preliminary fieldwork, completed her course work took her qualifying exams in April 2010. Graduated December 2012.

Dissertation Committee Chair – K. Elizabeth Becker; Topic is comparison of urban carbon fluxes and natural areas carbon fluxes. Liz passed her prelims in June 2012 and is currently developing conducting her dissertation research.

Dissertation Committee Member – Claudia Listopad; “Applications of Airborne and Portable LiDAR in the Structural Determination, Management, and Conservation of Southeastern Pine Forest.” Graduated Spring 2011.

Dissertation Committee Member – Pamela Pannozzo – Graduated Dr. Reed Noss was Chair of her committee.

Dissertation Committee Member – Marianne Korosy – Graduated Dr. Reed Noss was Chair of her committee.

Dissertation Committee Member – Ann Spellman – Graduated Graham Worthy was Chair of her committee.

Dissertation Committee Member – Nicole Browning – Graduated Dr. Graham Worthy was Chair of her committee.

Dissertation Committee member – Michael Gilbrook – Graduated Dr. John Weishampel was Chair of his committee.

Dissertation Committee member – Jenn Fewster – Passed her prelims and proposal defense. Dr. Graham Worthy is Chair of her committee.

### **Masters**

Masters Committee Chair – K. Elizabeth Becker; Evaluating increased carbon storage capacity of landscape restored from pastureland to native pine flatwoods in Central Florida; Graduated Spring 2012 and started immediately on her plans to seek a PhD at UCF.

Masters Committee Chair – Karlie Carman; she has successfully finished her course work, completed a summer internship at Archbold Biological Station (2012), passed her thesis proposal defense, and is currently conducting field work for her thesis, Graduated Spring 2014.

Masters Student Chair - Tiffani Manteuffel; Currently finishing her Master’s thesis, “Habitat distribution, occupancy and abundance of crayfishes in two Florida rivers”, expected graduation Summer 2016.

Masters Committee Co-Chair (with Jack Stout) – Chris Catano; Completed his field work on evaluating the effects of Gopher Tortoise on biodiversity. Graduated Summer 2012.

Masters Committee Member – Allison Hayes – Allison defended her thesis in the Spring of 2011; She has moved to Washington DC to work.

Masters Committee Member – James Angelo; Detecting and classifying fire disturbance legacies in a Florida oak scrub landscape with LiDar remote sensing; James completed his thesis and joined PhD program in Math.

Masters Thesis Committee – Matthew Gordon; Estimating diet and food selectivity of the Lower Keys marsh rabbit using stable isotope analysis; Graduated in 2010.

Masters Thesis Committee Member – Rachel Odom; The Next “Killer” Algae? Assessing the Potential for Invasion Success of Aquarium *Chaetomorpha* and Evaluating Proactive Conservation Strategies; Graduated.

Masters Thesis Committee Member – Troy Seiler; An allocation model for evolution of carbon stocks under changing climatic conditions; Graduated Spring 2011.

Masters Thesis Committee Member – Josh Horn, University of Florida Graduate Student; Temporal Carbon Dynamics And Vegetation Maintenance Of The Urban Forest In East Orlando, Florida, USA; Graduated Spring 2012.

**Courses Taught (2008-Current)**

- BSC3905 – Independent Study
- BSC4422L – Biology lab Techniques
- BSC4903 – Honors in Thesis
- BSC4904 – Honors in Thesis
- BSC4906 – Independent Study
- BSC4970 – Honors Undergraduate Thesis
- BSC6908 – Independent Study
- BSC6909 – Research Report
- BSC6918 – Directed Research
- BSC6946 - Internship
- BSC6971 – Thesis
- BSC7919 – Research Doctoral
- BSC7980 – Dissertation
- PCB7980 – Dissertation
- PCB6053 – Restoration Ecology

**Research and External Grants Activities (from UCF PARIS):**

Title: Year 2: Population dynamics and ecosystem services of native crayfish in Florida freshwater springs managed for Hydrilla

Role: PI Project Dates: Jul 29, 2015 — Jun 3, 2016

Status: Funded Type: Organized Research: Applied Research

Amount:

\$33,899.00 {24037045 - C&G\_External}

Proposal #: Agency: Florida Fish and Wildlife Conservation Commission

Description: Crayfish are a “keystone consumer” and feed on detritus, algae, other invertebrates and aquatic plants (Nowicki et al. 2008). Concurrent with the population estimate study, we propose to quantify the effects of removing crayfish from the Wakulla Spring system (or a simulated system in the lab) on decomposition of detritus and effect on nutrient levels (such as nitrogen, phosphorus and dissolved oxygen concentrations). It is important to understand the impact that the reduction of the crayfish population has on the spring and river ecosystem, and to understand the effect, if any, the herbicide has on crayfish populations. This information is necessary for Florida Department of Environmental Protection’s and Florida Fish and Wildlife Conservation Commission’s long term management of invasive vegetation in the Wakulla Spring/river ecosystem and will contribute to the management planning for Hydrilla control. The methods and study objectives presented in this proposal could also be applied to conducting population estimates of crayfish and ecosystem impact assessments in other river systems in Florida where the FWC has identified similar problems such as the Silver River area where Hydrilla control is expected to be implemented at some future date as the Hydrilla growth becomes excessive (personal correspondence with Matt Phillips). Our main objectives are to: 1. Develop a useful tagging method for *P. paeninsulanus*. 2. Conduct population estimates of *P. paeninsulanus* before and after Aquathol treatment in the Wakulla Spring/River ecosystem using capture-mark-recapture (CMR) methodology. 3. Assess the cause of crayfish mortality. 4. Evaluate habitat characteristics (for example, water quality, dissolved oxygen, and other selected ecosystem parameters) where crayfish are captured. 5. Evaluate the role of crayfish on decomposition of detritus and water column nutrient levels.

ID: 1056179

Title: Evaluation of the Role of Transpiration by Carolina Willow (*Salix caroliniana*) in the Water Budget of Upper St. Johns River Marshes

Role: CoPI Project Dates: Dec 13, 2013 — Sep 30, 2016

Status: Funded Type: Organized Research: Basic Research

Amount:

\$250,000.00 { 24037034 - C&G\_External}

Proposal #: Agency: St. Johns River Water Management District (SJRWMD)

Description: A project whose purpose is to "determine the impact of Carolina willow (*Salix caroliniana*) transpiration on the hydrology of marshes in the Upper St. Johns River Basin."

ID: 1053155

Title: Carbon Dynamics of the Greater Everglades Watershed and Implications of Climate Change

Role: PI Project Dates: Jul 1, 2012 — Jun 30, 2016  
 Status: Funded Type: Organized Research: Basic Research  
 Amount:  
 \$1,012,678.00 {24036083 - C&G\_External}  
 \$17,001.00 {24039933 - C&G\_Internal Cost Share Voluntarily Committed}

Proposal #: Agency: US Department of Energy

Description: The DOE OBER/Terrestrial Sciences Division has set forth clear goals and critical areas for research related to their desired outcome to “understand and quantify regionally specific effects of ongoing and future climate change on structure and function of terrestrial ecosystems including feedback between ecosystems and climate change”(DOE/SC-0133). Our research group (which includes the University of Central Florida, Florida Atlantic University and the United States Geological Survey) has recently conducted a workshop (partially funded by DOE-TES) to discuss the Long Term Goal and potential to develop a landscape scale model of carbon storage and flux within the Greater Everglades Watershed (“Collaborative Workshop: Developing a Carbon Budget for the Greater Everglades Ecosystem in a Changing Climate”, Florida Atlantic University, Davie, FL, June 11-12, 2011). During that workshop it became clear that there is a suite of infrastructure of flux towers associated within or adjacent to the watershed boundaries. There are ongoing AmeriFlux studies linking ecosystem dynamics with carbon flux within the Everglades National Park and Coastal Everglades LTER (Oberbauer, personal communication) as well as other ongoing flux studies either related to agricultural fluxes at biofuel production sites (Carl Bernacchi, USDA personal communication) or wetland restoration of pastureland (Archbold Biological Station). However, there is little investigation of carbon dynamics in the headwaters region of the Greater Everglades watershed or attempts at integrating carbon dynamics across the major watershed landscape components. Our team has three existing flux towers in or within the same latitude as the Northern extreme of the Greater Everglades Watershed, one urban system, one sawgrass peatland and one longleaf pine flatwoods. As requested in this proposal, we are proposing to enhance the sawgrass peatland with a methane sensor and establish a new wet prairie site. This will provide the infrastructure to explore ecosystem drivers related to landscape carbon flux identified by the towers through the proposed experimental manipulations. The existing tower infrastructure and the landscape gradient infrastructure that we plan to enhance at our study sites will directly support the Mid-Term (4-7 years) goals of OBER/Terrestrial Sciences to support and provide “results from near-term studies used to test model projections, enhance the AmeriFlux network and model informed data and analysis infrastructure to improve synthesis, evaluation and knowledge transfer to Earth Systems Models.”(DOE/SC – 0133). Because our site is associated with a planned National Ecological Observatory Network (NEON) relocatable site at Disney Wilderness Preserve (DWP), this will afford DOE an opportunity to establish a strong coordination with this NSF-funded program to continue to research ecosystem carbon dynamics within the context of our team’s long term goal to evaluate the Greater Everglades Watershed as a significant landscape for carbon storage.

ID: 1056327

Title: Population dynamics and ecosystem services of native crayfish in Florida freshwater springs managed for Hydrilla

Role: PI Project Dates: Sep 3, 2014 — Jun 4, 2015  
 Status: Prepare for Closeout Type: Organized Research: Applied Research  
 Amount:  
 \$43,715.00 { 24037042 - C&G\_External}  
 \$152.00 { 24039945 - C&G\_Internal Cost Share Voluntarily Committed}

Proposal #: Agency: Florida Fish and Wildlife Conservation Commission

Description: Crayfish are a “keystone consumer” and feed on detritus, algae, other invertebrates and aquatic plants (Nowicki et al. 2008). Concurrent with the population estimate study, we propose to quantify the effects of removing crayfish from the Wakulla Spring system (or a simulated system in the lab) on decomposition of detritus and effect on nutrient levels (such as nitrogen, phosphorus and dissolved oxygen concentrations). It is important to understand the impact that the reduction of the crayfish population has on the spring and river ecosystem, and to understand the effect, if any, the herbicide has on crayfish populations. This information is necessary for Florida Department of Environmental Protection’s and Florida Fish and Wildlife Conservation Commission’s long term management of invasive vegetation in the Wakulla Spring/river ecosystem and will contribute to the management planning for Hydrilla control. The methods and study objectives presented in this proposal could also be applied to conducting population estimates of crayfish and ecosystem impact assessments in other river systems in Florida where the FWC has identified similar problems such as the Silver River area where Hydrilla control is expected to be implemented at some future date as the Hydrilla growth becomes excessive (personal correspondence with Matt Phillips). Our main objectives are to: 1. Develop a useful tagging method for *P. paeninsulanus*. 2. Conduct population estimates of *P. paeninsulanus* before and after Aquathol treatment in the Wakulla Spring/River ecosystem using capture-mark-recapture (CMR) methodology. 3. Assess the cause of crayfish mortality. 4. Evaluate habitat characteristics (for example, water quality, dissolved oxygen, and other selected ecosystem parameters) where crayfish are captured. 5. Evaluate the role of crayfish on decomposition of detritus and water column nutrient levels.

ID: 1055199

Title: UCF and The Nature Conservancy Work Study Sponsor Agreement  
 Role: PI Project Dates: Dec 18, 2012 — Dec 31, 2013  
 Status: Closed Type: Instruction: Training

Amount:  
\$8,960.00 { 24038261 - C&G\_External}

Proposal #: Agency: The Nature Conservancy  
Description: This is an agreement for UCF to coordinate and hire interns for supporting conservation activities at Disney Wilderness Preserve. The interns will work on site at DWP as part of The Nature Conservancy Land Management Program.

ID: 1053651

Title: Completion and Attrition in AGEP and non-AGEP Institutions  
Role: PI Project Dates: Apr 1, 2012 — Oct 31, 2013  
Status: Closed Type: Organized Research: Applied Research  
Amount:  
\$29,992.00 { 19108003 - C&G\_External}  
\$40,294.00 { 19104101 - E&G\_Internal Match Voluntarily Committed}

Proposal #: Agency: Council of Graduate Schools  
Description: This is a grant proposal to the Council of Graduate Schools (CGS) to participate in their study of academic and social strategies that promote retention and graduation of under-represented minority (URM) students in STEM doctoral programs. The study compares the effectiveness of retention strategies used at institutions that have received AGEP grants to those that are non-AGEP institutions. It is proposed that UCF be included as a non-AGEP institution. The study requires extensive reporting of past enrollment and graduation numbers in 16 STEM doctoral programs at UCF. Furthermore the study will require an on-line survey of the current URM students enrolled in the programs as well as the possibility of student focus groups to be conducted at select participating institutions during a site visit from CGS. CGS will provide the survey templates to UCF and we will conduct both the surveys and focus groups. NO indentifying information will be released to CGS and all survey instruments and protocols will be approved by the UCF IRB prior to use.

ID: 1051709

Title: PhD support for the Disney Wilderness Preserve Carbon Project  
Role: PI Project Dates: Jan 1, 2011 — Dec 30, 2013  
Status: Closed Type: Organized Research: Applied Research  
Amount:  
\$60,000.00 { 24038248 - C&G\_External}

Proposal #: Agency: The Nature Conservancy  
Description: This project is a rescoping of an original proposal to fund a Postdoc at DWP. It will support a PhD student over a period of two years. The primary objective of this project is to assess carbon sequestration, storage, and flux at the landscape scale. It will involve research on a 4856 ha research reserve (Disney Wilderness Preserve) which is a mitigation site with active landscape restoration activities of native pine flatwoods and wetlands. The work will include maintenance and operation of a tower system to make eddy flux measurements of net ecosystem exchange and determination of carbon sequestration and storage in restored ecosystems. The intent is to extend the work conducted by an MS thesis project (see attached) to include carbon flux data at the landscape scale and to incorporate flux responses to control burns within the footprint of the flux tower. The PhD student will also be a liaison between UCF main Campus and the DWP field research site, helping to coordinate research by UCF faculty and students at the site.

ID: 1051084

Title: LYKES grant funded DWP soil carbon project  
Role: PI Project Dates: Jul 1, 2010 — Dec 31, 2010  
Status: Closed Type: Organized Research: Applied Research  
Amount:  
\$10,026.00 { 24038233 - C&G\_External}

Proposal #: Agency: The Nature Conservancy  
Description: Project will perform the collection and analyses of soil samples pre and post fire in order to assess the potential for long term storage of carbon in soils of native Florida ecosystems.

ID: 1050713

Title: Dog Walking Study  
Role: PI Project Dates: Jul 15, 2010 — Jan 31, 2012  
Status: Closed Type: Organized Research: Applied Research  
Amount:

\$24,000.00 { 24038235 - C&G\_External}

Proposal #: Agency: City of Edgewater

Description: The purpose of the research is to help the City of Edgewater develop strategies to engage dog walkers in responsible pet waste management techniques, including picking up and properly disposing of pet waste. We recommend using social research methods to better understand the complex attitudes and barriers to pet waste disposal among the targeted dog walkers. The research will help identify targeted audiences based on their location and potential use of assisting services, quantify pet waste left behind, and evaluate behavior change. Two series of surveys will be conducted, one series prior to educational campaign implementation and one series after the campaign. The goal is to collect important target audience information prior to the campaign and to evaluate the effectiveness of messaging after the campaign.

ID: 1050295

Title: Collection and Analysis of UFORE plot data for the city of Orlando – An assessment of the benefits of urban forests

Role: PI Project Dates: Apr 1, 2010 — Jun 30, 2011

Status: Closed Type: Organized Research: Applied Research

Amount:

\$37,654.00 { 24038225 - C&G\_External}

Proposal #: Agency: City of Orlando

Description: Background: In the summer of 2009, UCF/USGS collaborated with the University of Florida and the US Forest Service (UF/USFS) in measuring random field sites around the UCF CO<sub>2</sub> flux tower footprint to quantify urban ecosystem structure and function. Data from permanent UF/USFS biometric plots in Orlando were analyzed using the UFORE model that is rapidly being accepted as a good planning foundation for urban area planning needs. Preliminary results from ¼ of those plots show that there is a 25% tree cover and there are approximately 560,000 trees in the UCF tower footprint (approximately 200 sq km area in eastern Orange County. Urban and natural trees were initially estimated to annually sequester 430tC/ha and 1,500tC/ha, respectively. Forested areas and low density residential land covers sequestered the most Carbon. However, trees located in residential, medium density areas were more effective in reducing building energy use. Forested areas and medium density residential area removed the most air pollution (Hinkle et al. 2009). These data were shared with the City of Orlando that has an increasing need for similar data on carbon urban tree densities, carbon dynamics, and related parameters within the City limits of Orlando. This statement of work proposes to collect and analyze data on 150 plots within the city limits. The project will provide a summary analysis and report with recommendations regarding carbon sequestration for the common land management units used by the City forester and others for planning future forest activities in the City. The data and results should those who are planning development activities so that ecosystem services provided by urban trees can be included. Objective: To assess the environmental benefits of Orlando's urban forests as ecosystem services such as carbon storage, carbon sequestration, stormwater retention, and cooling.

ID: 1050102

Title: Measurement of urban evapotranspiration in a central Florida urban setting

Role: PI Project Dates: Oct 1, 2009 — Mar 31, 2013

Status: Closed Type: Organized Research: Applied Research

Amount:

\$53,000.00 { 24037021 - C&G\_External}

Proposal #: Agency: Southwest Florida Water Management District (SWFWMD)

Description: Problem: Little data exists on evapotranspiration (ET) from urban landscapes in Florida and yet this land cover represents a large and expanding area within the State. In particular, water management decisions often rely on estimates of anticipated hydrologic change resulting from conversion of agricultural or wildland lands to urban coverage. Uncertainty in urban ET hampers an accurate assessment of this change. The USGS, SJRWMD, SWFWMD, and UCF have engaged in a collaborative study to collect urban ET energy, carbon, and water flux data in a rural to urban gradient in Eastern Orlando. Objective: Measure ET from a representative rural to urban landscape in central Florida at daily or better resolution for a multiple year period and evaluate the use of the flux data model developed in a 200 sq km area in Eastern Orlando to other Florida urban areas..

Proposal ID: 48381

Principal Investigator: Charles Hinkle

User ID: 49197

Title: Carbon Dynamics across an Urban to Wildland interface in Subtropical, Central Florida

Description: User agreement for use of research facilities at the Pacific Northwest National Laboratory.

Amount: Computing: Data File Storage (Aurora), Awarded: 1 hrs

- Computing: Cascade (Atipa 1440 Intel Xeon-Phi Node FDR-Infiniband Linux Cluster), Awarded: 250000 hrs

- Mass Spectrometer: Aerosol, time-of-flight, high resolution, Awarded: 672 hrs

## Highlights of Student Successes and Post Docs Grants and Awards:

### Post-Doctoral:

#### Scott Graham (Postdoc (Jan 2012- Dec 2014))

Principal research associate (2012-2015) on a Department of Energy funded grant, Carbon Dynamics of the Greater Everglades Watershed and Implications of Climate Change (ID: 1053155)

#### Jiahong Li (Postdoc (former)):

Development of EdiRe training manual and classroom exercises for the USGS (4-1-2010 through 9-30-2010, \$4500.00 fixed price contract)

### Graduate Students:

#### Edem Ekpe (Graduated Spring 2012 PhD Student):

##### PROFESSIONAL TRAINING AND CERTIFICATIONS

Summer Soil Institute, Colorado State University, Fort Collins, Colorado, USA, July 2012  
 Project Management Professional, (Project Management Institute) July 2011  
 Certified Ecologist (Ecological Society of America), June 2011  
 Graduate Teaching Associate Certificate, Summer 2008. University of Central Florida

##### OTHER CERTIFICATIONS

Diversity Series Certificate. August 2008. University of Central Florida.  
 Certificate in Mediation. August, 2008. University of Central Florida.

##### COMMUNITY SERVICE

Student Mediator, 2008 to 2012. University of Central Florida, Orlando FL, USA

##### AWARDS AND FUNDED RESEARCH/PROJECTS

Rufford Small Grant (Booster Award). Conserving the Straw-Coloured Fruit Bat, *Eidolon helvum* (Megachiroptera: Pteropodidae) and its Habitats through Networking of Conservation Volunteers in Ghana. January 2012. £12,000

##### Graduate Travel Award and Student Government Association Conference and Travel Award

University of Central Florida. October 2011. \$700  
 West African Research Association Travel Award. Spring 2010. \$3000  
 International Foundation for Science Research Fellowship: Research on the effects of livelihoods support programs on tropical forest cover: investigating biocomplexity in southeastern Ghana. March 2010. \$10,290  
 International Tropical Timber Organization (ITTO) Fellowship: Research on "Livelihoods Support Activities in Forest-Fringe Communities and Their Effects on Attitudes towards Tropical Timber Conservation in Southeastern Ghana". November 2009. \$9,500  
 2nd Rufford Small Grant Award: Demonstrating local strategies to reduce crop-raiding by wildlife in the Afadjato-Agumatsa Area, Ghana. August 2009. £5,980  
 Graduate Travel Award and Student Government Association Conference and Travel Award  
 University of Central Florida. October 2008. \$600

##### PUBLICATIONS

Ayivor, J. S. and E.K. Ekpe. 2012. Community-Based Integrated Natural Resource Management in Okyeman Traditional Area of the Eastern Region, Ghana: Socio-Economic Profile of the Okyeman Traditional Area. *West African Journal of Applied Ecology* 20: 35 - 45. Available at [http://www.ug.edu.gh/iess/wajae/WAJAEWEBDESIGN/papers/paper\\_vol20\(3\)%20Special%20Edition/03%20Socio-Economic%20Profile.pdf](http://www.ug.edu.gh/iess/wajae/WAJAEWEBDESIGN/papers/paper_vol20(3)%20Special%20Edition/03%20Socio-Economic%20Profile.pdf)

Ekpe, E.K. 2012. A review of economic instruments employed for biodiversity conservation. *Consilience: The Journal of Sustainable Development* 9:16-32. Available at <http://www.consiliencejournal.org/index.php/consilience/article/viewFile/291/135>

Ekpe E.K., E. Becker, J. Lab, R. Hinkle, and F. Escobedo. 2012. Orlando, Florida's urban and community forests and their ecosystem services. University of Florida/IFAS Extension Paper FOR290/FR358. Available at

<http://edis.ifas.ufl.edu/fr358>

Owusu, E.H. and E.K. Ekpe. 2011. An evaluation of forest conservation perceptions after a decade of community conservation in Afadjato-Agumatsa, Ghana. *International Journal of Environmental Sciences*. Vol. 2 Issue 2: 429-439. Available at <http://www.ipublishing.co.in/jesvol1no12010/volumetwo/EIJES3043.pdf>

#### **TECHNICAL REPORTS**

Ekpe E.K., K. E. Becker, J. Lab, C. R. Hinkle and F. Escobedo. 2010. An Assessment of the Structure and Environmental Benefits of Urban Forests in Orlando, Florida. A technical report submitted to Orlando Parks Division, Families, Parks and Recreation Department, City of Orlando, Florida.

#### **ORAL AND POSTER PRESENTATIONS**

Ekpe E.K., C. Ross Hinkle, K. Elizabeth Becker, and Francisco Escobedo. 2012. Carbon Storage and Sequestration by Urban Wetland Forests in Orlando, Florida, USA. A poster presented at the International Conference on Wetlands, Orlando, Florida. June 2012.

Ekpe E.K and C. R. Hinkle. 2011. Livelihoods support activities in forest-fringe communities and their effects on attitudes towards tropical forest conservation in southeastern Ghana. An oral presentation at the International Symposium on Society and Resource Management. University of Wisconsin, Madison, Wisconsin. June 2011.

Ekpe E.K. 2011. Local strategies for reducing crop-raiding by wildlife in the Afadjato-Agumatsa Conservation area, Ghana: some lessons for conservation management. A poster presented at the International Symposium on Society and Resource Management. University of Wisconsin, Madison, Wisconsin. June 2011.

Ekpe E.K. E.H. Owusu and R. Ottou. 2008. Crop-raiding by wildlife in Ghana: the important role of some non-charismatic wildlife species. A poster presented at the Working Forests in the Tropics Conference: Partnering Research with Practice for Conservation and Development. University of Florida, Gainesville, Florida. October 2008.

#### **Leesa Souto (Graduated Fall 2012 PhD Student):**

*City of Edgewater Dog Walking Survey.*

City of Edgewater Environmental Coordinator, Tyna Hilton. V: 386-424-2494. July 2010 – Feb 2012. Evaluated effectiveness of dog waste cleanup education campaign. Created intercept survey to interview dog-walkers along 3.1 mile long river-walk stretch to determine pre- and post- campaign awareness and behavior change.

*Stormwater Education toolkit - [www.WatershedEd.com](http://www.WatershedEd.com)*

Florida Department of Environmental Protection. Created *web*-based, dynamic hub for nonpoint source educators to share materials, research results, and ideas. Stormwater Education Toolkit, located at [www.WatershedEd.com](http://www.WatershedEd.com).

*Other Activities*

Florida Stormwater Education Task Force Leader

Brevard County Environmentally Endangered Lands Program Procedures Committee Appointee

Florida Exotic Pest Plant Council Education Committee Chair

US EPA Nonpoint Source Pollution Education Social Marketing Committee Member

Brevard Nature Alliance, Co-Chair

Currently Director of the Marine Resources Council, Brevard and Indian River Counties Florida

#### **K. Elizabeth Becker (MS (Graduated Spring 2011) and PhD Student (Current))**

2011, 2012 UCF College of Graduate Studies Travel Fellowship

2011 Elsie Quarterman-Catherine Keever Award for Best Ecological Poster, Ecological Society of America, Southeastern Chapter

2011 Honorable Mention for Oral Paper, Florida Academy of Sciences, Urban and Regional Planning Section

2010 National Garden Club Scholarship, Using stable isotopes as indicators of land use history during the restoration of Florida flatwoods communities

#### **Karlie Carman (MS Student (Graduated 2014))**

*Effects of mechanical habitat disturbance on the diversity and network structure of plant-bee interaction networks in Central Florida*

2013 North American pollinator protection campaign grant \$2,191

2013 UCF Travel Grant \$300

#### **Tiffani Manteuffel (MS Student (Current with Summer 2016 expected graduation))**

Thesis in progress - Population dynamics and ecosystem services of native crayfish in Florida freshwater springs managed for Hydrilla.

Tiffani has been recognized with two awards this past year. She received the 2nd place graduate student poster at the Southeastern Ecology and Evolution Conference, Tallahassee, FL, for her poster entitled *Abundance and habitat distribution of crayfishes in two Florida spring-fed rivers*, and she received the UCF Women's History Month recognition as student leader (<http://lsa.sdes.ucf.edu/inspire/history>).

### **Hinkle Awards, Honors, and Professional Organizations:**

#### **Awards/Honors:**

- 1) Recipient - Pfaff Cup - Highest Honor to a Graduating Senior, 1970.
- 2) Recipient - H.W. Jensen Botany Award and Biology Department Honor Student - Junior and Senior Years, 1969 and 1970.
- 3) Who's Who in American Colleges and Universities, 1970.
- 4) Freshman and Sophomore Class President, Warren Wilson College, 1966-1968.
- 5) Student Senate - Three Years, 1966-1969.
- 6) Resolution of Appreciation awarded by the Brevard County Commission for outstanding contributions to conservation efforts of the Brevard County Environmentally Endangered Lands Program - 1998.
- 7) Certificate of Recognition for role in development of 'Software for Managing the use of Land' from NASA Technology Programs Office - 1998.
- 8) NASA Public Service Medal (Highest award by NASA Administrator to a contractor employee) - 1999

#### **Professional Certification:**

Senior Ecologist, Ecological Society of America (1984-2012 – discontinued at my discretion)

#### **Professional Organizations:**

American Geophysical Union  
 American Association for the Advancement of Science  
 Association of Southeastern Biologists  
 Ecological Society of America Florida Academy  
 of Sciences Society of Wetland Scientists  
 South Atlantic Chapter, Society of Wetland Scientists Southeastern Section  
 of the Ecological Society of America Southern Appalachian Botanical  
 Society  
 The Nature Conservancy  
 The Tennessee Academy of Sciences

#### **Professional Organization Offices Held:**

1987-1989	Vice-Chairman, Southeastern Section Ecological Society of America
1988-1991	Secretary, Association of Southeastern Biologists
1989-1990	Vice Chair, South Atlantic Chapter, Society of Wetland Scientists
1990-1991	Chair, South Atlantic Chapter, Society of Wetland Scientists
1991-1992	Past-Chair, South Atlantic Chapter, Society of Wetland Scientists
1991-1992	President-Elect, Association of Southeastern Biologists
1992-1993	President, Association of Southeastern Biologists
1993-1994	Past-President, Association of Southeastern Biologists
1994-1996	Chair, Southeastern Chapter, Ecological Society of America
1997-2000	Co-Chair of Local Arrangements Committee for joint meeting of the Ecological Society of America and the British Ecological Society in the year 2000 in Orlando, Florida
1999-2002	Board of Professional Certification, Ecological Society of America, Chair

**MILITARY EXPERIENCE:****1971 to 1976:**

Active service in U.S. Naval Reserve (1971-1973)  
 Visual Communications Specialist (E-6)  
 Vietnam Veteran (1972-1973)

**PERSONAL DATA:**

Married: Two children  
 Hobbies: Kayaking, Isshinryu Karate Instructor (6<sup>th</sup> Degree Black Belt)

**Organized Symposia:**

“Carbon storage and release in low latitude peatlands” American Geophysical Union Fall Meeting, San Francisco, CA, December 15-19, 2014 (Co-Conveners: Benschoter, Xavier Comas, C. Ross Hinkle, and Barclay Shoemaker)

**REFEREED JOURNAL PAPERS:**

- Graham, Scott L. , David M. Sumner, W. Barclay Shoemaker, Don DeAngelis, Brian Benschoter, Jiahong Li, C. **Ross Hinkle**. 2015, Fire and water level regulate long-term carbon sequestration in a subtropical peat marsh. Manuscript currently in preparation to be submitted to Journal of Geophysical Research-Biogeosciences.
- McClellan\*, M., Comas, X., Benschoter, B., **Hinkle, R.** Carbon stock estimation in the Disney Wilderness Preserve (Orlando, FL) using hydrogeophysical methods. Manuscript currently in preparation to be submitted to Journal of Geophysical Research-Biogeosciences.
- Horn, Josh, Escobedo, Francisco, **Hinkle R.**, Hostetler, Mark, Timilsina, Nilesh. 2015. The role of composition, invasives, and maintenance emissions on urban forest carbon stocks. Environmental Management, Vol 55 (2) pages 431-442.
- Pannozzo, Pamela L.; Quintana-Ascencio, Pedro F.; Hinkle, C. Ross; Noss, Reed. 2015, Are state growth management programs viable tools for biodiversity conservation? A case study examining Florida local governments Landscape and urban planning, Volume: 139 Pages: 94-103
- Hungate, Bruce A., Frank P. Day, Paul Dijkstra, Ben A. Duvall, C. **Ross Hinkle**, J. Adam Langley, J. Patrick Mcgonigal, Peter Stiling, Dale W. Johnson, and Bert Drake. 2013, Fire, hurricane, and net primary production of a subtropical woodland under chronic carbon dioxide exposure, New Phytologist, Vol:200 Issue 3 pages 767-777
- Yang, XF, Liu, CX, Fang, YL, Hinkle, R, Li HY, Bailey, V. Bond-Lamberty, B. 2015. Simulations of ecosystem hydrological processes using a unified multi-scale model. Ecological Modelling, Vol 296, pages 93-101.
- Day, Frank P., Rachael E. Schroeder, Daniel B. Stover, Alisha P. Brown, John R. Butnor, John Dilustro, Bruce A. Hungate, Paul Dijkstra, Benjamin D. Duval, Troy J. Seiler, Bert G. Drake, and C. **Ross Hinkle**. 2013, The effects of 11 yrs. of CO<sub>2</sub> enrichment on roots in a Florida scrub-oak ecosystem, New Phytologist, DOI: 10.1111/nph/12246.
- Ekpe, E.K., C. **Ross Hinkle**, Martin Quigley, and Erasmus Owusu. 2014. Natural resource and biodiversity conservation in Ghana: the use of livelihoods support activities to achieve conservation objectives. . International Journal of Biodiversity Science, Ecosystem Services and Management ISSN: 2151-3732 (Print) 2151-3740 <http://www.tandfonline.com/loi/tbsm21>
- Ekpe, E.K., K.E. Becker, J. Lab, C.**R. Hinkle**, and F. Escobedo. 2012. Orlando, Florida’s Urban and Community Forests and Their Ecosystem Services. University of Florida- IFAS, EDIS FR290.
- Day, Frank P., Rachel E. Schroeder, , Daniel B. Stover<sup>2</sup>, Alisha L. P. Brown, John R. Butnor, Bruce A. Hungate, Paul Dijkstra, Benjamin D. Duval, Troy J. Seiler, Bert G. Drake, and C. **Ross Hinkle**. The effects of 11 yrs. of CO<sub>2</sub> enrichment on roots in a Florida scrub-oak ecosystem, NEW PHYTOLOGIST Volume: 200 Issue: 3 Pages: 778-787
- Jiahong Li1, C. **Ross Hinkle**, Bruce Hungate, David P. Johnson, John E. Erickson, Gary Peresta, and Bert G. Drake. Evapotranspiration Responses of a Florida Scrub Oak Ecosystem and a Chesapeake Bay Tidal Marsh Wetland to Elevated CO<sub>2</sub> (In prep for submission)
- Jiahong Li1, Graham J. Hymus, Elizabeth A. Ainsworth, Paul Dijkstra, C. **Ross Hinkle**, Stephen P. Long, and Bert G. Drake. Photosynthetic Responses of a Florida Scrub Oak Ecosystem and a Chesapeake Bay Tidal Marsh to Elevated CO<sub>2</sub> (In prep for submission)
- Stover Daniel B, Frank P Day, Bert G Drake. C. **Ross Hinkle**, 2010. The long-term effects of CO<sub>2</sub>

- enrichment on fine root productivity, mortality, and survivorship in a scrub-oak ecosystem at Kennedy Space Center, Florida, USA, *Environmental and Experimental Botany* 69 (2010) 214-222..
- Seiler Troy J., Daniel P. Rasse, Jiahong Li, Paul Dijkstra, Hans P. Anderson, David P. Johnson, Thomas L. Powell, Bruce A. Hungate, **C. Ross Hinkle**, and Bert G. Drake. 2009. Disturbance, rainfall and contrasting species responses mediated aboveground biomass response to 11 years CO<sub>2</sub> enrichment in a Florida scrub-oak ecosystem. *Global Change Biology* (2009) 15, 356-367.
- Li, Jiahong, Thomas L. Powell, Troy J. Seiler, David P. Johnson, Hans P. Anderson, Rosvel Bracho, Bruce A. Hungate, **Charles R. Hinkle**, and Bert G. Drake. 2007. Impacts of Hurricane Frances on Florida scrub-oak ecosystem processes: defoliation, net CO<sub>2</sub> exchange and interactions with elevated CO<sub>2</sub>. *Global Change Biology*, Volume 13, Issue 6: 1101-1113.
- Brown, Alisha Lea Pagel, Frank P. Day, Bruce A. Hungate, Bert G. Drake and **C. Ross Hinkle**. 2007. Root biomass and nutrient dynamics in a scrub-oak ecosystem under the influence of elevated atmospheric CO<sub>2</sub>. *Plant and Soil*. Volume 292, Numbers 1-2 / March, 2007: 219-232
- Powell, T.L, Bracho, R. Li, J, Dore, S., **Hinkle, CR**, and Drake, BG. 2006. Environmental controls over net ecosystem carbon exchange of scrub oak in central Florida. *Agricultural and Forest Meteorology* 141 (2006) 19-34.
- Day, Frank P., Daniel B. Stover, Alisha L. Pagel, Bruce A. Hungate, John J. Dilustro, Brandon T. Herbert, Bert G. Drake and **Charles R. Hinkle**. 2006. Rapid root closure after fire limits fine root responses to elevated atmospheric CO<sub>2</sub> in a scrub oak ecosystem in central Florida, USA. *Global Change Biology* Vol 12: 1047-1053.
- Hungate, Bruce A., Dale W. Johnson, Paul Dijkstra, Graham Hymus, Peter Stiling, J. Patrick Megonigal, Alisha L. Pagel, Jaina L. Moan, Frank day, Jiahong Li, C. Ross **Hinkle**, and Bert Drake. 2006. Nitrogen cycling during seven years of atmospheric CO<sub>2</sub> enrichment in a scrub oak woodland. *Ecology* 87(1): pp. 26-40.
- Hungate, Bruce A., Peter D. Stiling, Paul Dijkstra, Dale W. Johnson, Michael E. Ketterer, Graham J. Hymus, C. Ross **Hinkle**, Bert G. Drake. 2004. CO<sub>2</sub> elicits long-term decline in nitrogen fixation. *Science* Vol 304 p.1291.
- Hymus, Graham, J., David P. Johnson, Sabina Dore, Hans P. Anderson, C. Ross **Hinkle**, and Bert G. Drake. 2003. Effects of elevated atmospheric CO<sub>2</sub> on net ecosystem CO<sub>2</sub> exchange of a scrub-oak ecosystem. *Global Change Biology* Vol. 9 (12):1802-1812.
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- Li J-H, Dugas WA, Hymus GJ, Johnson, DP, **Hinkle, CR**, Drake, BG, and BA Hungate. 2003. Direct and indirect effects of elevated CO<sub>2</sub> on transpiration from *Quercus myrtifolia* in a scrub oak ecosystem. *Global Change Biology* 9:96-105
- Dore, S., Hymus, Graham J. Johnson, David P. **Hinkle**, C. R. Valentini, Riccardo and Drake, Bert G. 2003. Cross validation of open-top chamber and eddy covariance measurements of ecosystem CO<sub>2</sub> exchange in a Florida scrub-oak ecosystem. *Global Change Biology* 9(1): 84-95.
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- Hungate, B. A, M Reichstein, P Dijkstra, D Johnson, G Hymus, J. D Tenhunen, C.R **Hinkle**, B. G Drake. 2002. Evapotranspiration and soil water content in a scrub-oak woodland under carbon dioxide enrichment. *Global Change Biology* 8(3): 289-298.
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- Dilustro JJ, Day FP, Drake BG and **Hinkle CR** 2002. Abundance and distribution of fine roots under elevated CO<sub>2</sub> conditions in an oak-scrub ecosystem. *Environmental and Experimental Botany*. 48:149-159.
- Li, J.-H, P. Dijkstra, G. J. Hymus, R.M. Wheeler, W.C. Piastuch, C.R. **Hinkle** and B.G. Drake. 2000. Leaf senescence of *Quercus myrtifolia* as affected by long-term CO<sub>2</sub> enrichment in its native environment. *Global Change Biology* 6 (7), 727-733.
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- CO<sub>2</sub> concentration in the Florida scrub-oak species *Quercus geminata* and *Quercus myrtifolia* growing in their native environment. *Tree Physiology* 19: 229-234.
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- Day, F.P., E.P. Weber, C.R. **Hinkle**, & B.G. Drake. 1996. Effects of elevated CO<sub>2</sub> on fine root length and distribution in an oak-palmetto scrub ecosystem in central Florida. *Global Change Biology* 2: 101-106.
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- Schmalzer, Paul A. and C. Ross **Hinkle**. 1992. Soil dynamics following fire in *Juncus* and *Spartina* marshes. *Wetlands* 12(1):8-21.
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#### ABSTRACTS OF PRESENTED PAPERS

Hinkle, C. Ross, K. Elizabeth becker, Brian Benscoter, Xavier Comas, Matt McClellan, Michelle Bundy, Diane Harshbarger, and Scott Graham. Carbon dynamics of the Greater Everglades Watershed and implications of

- climate change. PI poster presented at the annual Department of Energy, PI Meeting, Potomac Maryland, May, 2016.
- McClellan, M., Xavier Comas, Brian Benschoter, Diane Harshbarger, and Ross Hinkle. Carbon dynamics of the Greater Everglades Watershed and implications of climate change. Student poster presented at the annual Department of Energy, PI Meeting, Potomac Maryland, May, 2016.
- Manteuffel T, **Hinkle CR**, Stolen E and Stout IJ. Abundance, occupancy and habitat distribution of crayfishes in two Florida spring-fed rivers assessed with n-mixture models. Poster presentation. Graduate Research Forum, University of Central Florida. April 2016.
- Manteuffel T, **Hinkle CR**, Stolen E and Stout IJ. Abundance and habitat distribution of crayfishes in two Florida spring-fed rivers assessed with n-mixture models. Poster presentation. Southeastern Ecology and Evolution Conference, Tallahassee, FL. March 2016.
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- Hinkle**, C.R., M.J. Provancha, C.R. Hall, W.M. Knott, and A.M. Koller. 1987. Evaluation of environmental resources at John F. Kennedy Space Center using geographic information data management and remote sensing. Space Life Sciences Symposium, Washington, D.C., April. (Abstract.)
- Hinkle**, C.R. and H.R. DeSelm. 1977. Preliminary analyses of the vegetation of Cumberland Gap National Historical Park. Third Annual Scientific Research Meeting of National Park Service, Southeast Region. (Abstract.)
- Dreschel, T.W., R.P. Prince, C.R. **Hinkle**, and W.M. Knott. 1987. Porous membrane utilization in plant nutrient delivery. Paper presentation at the American Society of Agricultural Engineers Summer meeting, Baltimore, MD, June 28-July 1. Paper no. 87-4025.
- Dreschel, T.W., C.R. **Hinkle**, W.M. Knott, R.P. Prince, and J.C. Sager. 1987. Development of a membrane nutrient system. Oral presentation, Space Life Sciences Symposium, June 22-26, Washington, DC.; published in CELSS Technology: June 25, pp 304-305.
- Dreschel, T.W., B.C. Madsen, C.R. **Hinkle**, and W.M. Knott. 1987. An evaluation of rain chemistry data collected at the John F. Kennedy Space Center and the University of Central Florida. Paper presented at the National Atmospheric Deposition Program NADP Technical Committee Meeting, Ft. Collins, CO.
- Schmalzer, P.A., M.J. Provancha, and C.R. **Hinkle**. 1986. Plant community studies and vegetation mapping on Merritt Island, John F. Kennedy Space Center, Florida. Abstract of poster paper in: Program of the IV

International Congress of Ecology, Syracuse, NY. pp. 300-301.

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Mion, P.O., G.R. Best, and C.R. **Hinkle**. 1986. Low-energy wastewater recycling through wetland ecosystems: study of copper and zinc in wetland microcosms. Poster session presented at Savannah River Ecology Laboratory Symposium, March 24-27.

**Hinkle**, C.R., T.L. Hughes, and P.A. Schmalzer. 1986. Evaluation of the effects of acidification on coastal soils. Abstract of poster paper in: Program of the IV International Congress Ecology, Syracuse, NY. p. 179.

Dreschel, T.W., R.P. Prince, C.R. **Hinkle**, and W.M. Knott. 1986. Tubular membrane plant growth unit for hydroponics in microgravity. Proceedings of American Society for Gravitational and Space Biology, Charlottesville, VA, October.

Dreschel, T.W., R.P. Prince, C.R. **Hinkle**, and W.M. Knott, III. 1986. Porous membrane utilization in plant nutrient delivery systems. Paper presented at the 1986 American Society of Agricultural Engineers Winter Meeting, Chicago, IL, December.

Dreschel, T.W., B.C. Madsen, C.R. **Hinkle**, and W.M. Knott, III. 1986. An evaluation of rain chemistry data collected at the John F. Kennedy Space Center and the University of Central Florida. Poster presented at the National Atmospheric Deposition Program Meeting, Atlanta, GA, October 27-31.

Breining, D., R. **Hinkle**, and P. Schmalzer. 1986. Gopher tortoise burrow and habitat study in scrub and slash pine. Presentation at annual meeting of the Gopher Tortoise Council, Wekiva Springs State Park, November 7-9.

Schmalzer, P.A. and C.R. **Hinkle**. 1985. Effects of fire on composition, biomass and nutrients in mixed oak scrub on John F. Kennedy Space Center, Florida. Abstract of presented paper in *Bull. Ecol. Soc. Amer.* 66:265.

Mion, P.O., G.R. Best, and C.R. **Hinkle**. 1985. Low-energy wastewater recycling through wetland ecosystems: experimental use of a marsh ecosystem at Kennedy Space Center. *Bull. Ecol. Soc. Amer.* 66(2):233. (Abstract.)

**Hinkle**, C.R., T. Hughes, and P.A. Schmalzer. 1985. Effects of fire on soils in coastal strand vegetation of John F. Kennedy Space Center. Poster session presented at *Ecol. Soc. Amer.* Minneapolis, MN.

**Hinkle**, C.R. and W.M. Knott, III. 1985. A summary of environmental effects of space shuttle launches at John F. Kennedy Space Center, Florida after the first 24 launches. Poster session #229 presented at the 152nd Annual Meeting American Association for the Advancement of Science, Philadelphia, PA, May 25-30.

Hall, C.R., M.J. Provancha, J.A. Provancha, and C.R. **Hinkle**. 1985. Long-term aquatic ecosystems monitoring program at the John F. Kennedy Space Center. Paper presented at the ERF Conference, July 28-August 2, Durham, NH.

Dreschel, T.W., C.R. Hall, and C.R. **Hinkle**. 1985. Acid deposition research at the John F. Kennedy Space Center. Poster presented at the NADP Technical Committee Meeting, Fort Collins, CO, October 8-11.

**Hinkle**, C.R., P.A. Schmalzer, D. Breining, and W.M. Knott, III. 1984. The effects of space shuttle launches from John F. Kennedy Space Center, Florida on barrier island plant communities. *Bull. of Ecol. Soc. Amer.* 65:260. (Abstract.)

**Hinkle**, C.R. and W.M. Knott. 1984. Long-term environmental monitoring research at John F. Kennedy Space Center, Florida. Invited presentation at Center for Wetlands, University of Florida, Gainesville, Florida.

Schmalzer, P.A. and C.R. **Hinkle**. 1983. Preliminary observations on scrub vegetation at Kennedy Space Center, Merritt Island, Florida. Abstract of presented paper in Proceedings of the First Florida Scrub Conference cosponsored by The Nature Conservancy and Archbold Biological Station, April 15-17, 1983.

**Hinkle**, C.R., P.A. Schmalzer, and M.J. Provancha. 1983. Profiles of Merritt Island and Cape Canaveral vegetation. Abstract of presented paper in: *Florida Scientist* 46 (supplement 1):15.

**Hinkle**, C.R. 1983. A comparison of species importance values and environmental parameters as discriminating variables in vegetation analysis. *Bull. Ecol. Soc. Amer.* 64:55. (Abstract.)

**Hinkle**, C.R. 1982. Vegetation of the Mixed Mesophytic Forest Region and its relationship to selected environmental factors. Invited paper presented in the Symposium on Ecosystems of the Southeast at the 1981 Meeting of the Association of Southeastern Biologists, Univ. of Tenn., Knoxville, April 8-10. (Abstract.)

Schmalzer, P.A., C.R. **Hinkle**, and H.R. DeSelm. 1980. Plant communities of the Obed National Wild and Scenic River, Cumberland and Morgan Counties, Tennessee. *ASB Bulletin* 27:50. (Abstract.)

**Hinkle**, C.R. and H.R. DeSelm. 1979. The character of the forest vegetation on the Cumberland Plateau in

- Tennessee. ASB Bull. 26(2):74. (Abstract.)
- Schmalzer, P.A., C.R. **Hinkle**, and H.R. DeSelm. 1979. The vegetation of a section of the Obed River gorge, Cumberland County, Tennessee. ASB Bull. 26(2):57. (Abstract.)
- Schmalzer, P.A., C.R. **Hinkle**, and H.R. DeSelm. 1979. Structure and dynamics of the plant communities in a section of the Obed River Gorge, Cumberland County, Tennessee. Fourth Annual Scientific Research meeting of National Park Service, Southeast Region, Great Smoky Mountains National Park, Gatlinburg, TN. p. 24. (Abstract.)
- Hinkle**, C.R., P.A. Schmalzer, and H.R. DeSelm. 1978. The vegetation of Dick Cove, Sewanee, Tennessee. ASB Bull. 25(2):51. (Abstract.)
- Hinkle**, C.R., P.A. Schmalzer, and H.R. DeSelm. 1978. An ecological survey of Dick Cove, Sewanee, Tennessee. Jour. Tenn. Acad. Sci. 53(2):62. (Abstract.)
- Hinkle**, C.R. 1978. An ecological analysis of the vegetation on the Cumberland Plateau in Tennessee. Symposium on Research in Ecology at Univ. of Tenn., Knoxville. Presented paper.
- Hinkle**, C.R. and H.R. DeSelm. 1977. The vegetation of Cumberland Gap National Historical Park. ASB Bulletin. 24(2):58. (Abstract.)
- Hinkle**, R. and H.R. DeSelm. 1976. The occurrence of *Castanea dentata* in plant communities in Cumberland Gap National Historical Park, Tennessee, Kentucky, and Virginia. Jour. Tenn. Acad. Sci. 51(2):52. (Abstract.)

**PAUL A. SCHMALZER**

**EDUCATION**

Western Maryland College, B.A. Biology 1976  
The University of Tennessee, M.S. Ecology 1978  
The University of Tennessee, Ph.D. Ecology 1982

**EXPERIENCE**

Thirty-three years of experience in the design and implementation of ecological research, environmental impact analysis, and biological surveys. Expertise in terrestrial plant ecology, fire ecology, restoration ecology, vascular flora, vegetation sampling, and vegetation data analysis.

**INTEGRATED MISSION SUPPORT SERVICES**

*Senior Plant Ecologist, Kennedy Space Center, Florida. November 2015-Present*  
Conduct studies of Kennedy Space Center vegetation, fire ecology, and restoration of scrub and wetlands vegetation. Conduct studies of rare plant distributions and ecology. Provide technical guidance to the Vegetation Studies Group. Maintain KSC Herbarium.

**INNOVATIVE HEALTH APPLICATIONS/INOMEDIC HEALTH APPLICATIONS**

*Technical Lead, Plant Ecologist, Kennedy Space Center, Florida. October 2009-October 2015*  
Conduct studies of Kennedy Space Center vegetation, fire ecology, and restoration of scrub and wetlands vegetation. Conduct studies of rare plant distributions and ecology. Provide technical guidance to the Vegetation Studies Group. Maintain KSC Herbarium.

**DYNAMAC CORPORATION**

*Technical Lead, Plant Ecologist, Kennedy Space Center, Florida. January 1995 - September 2009*  
Conduct studies of Kennedy Space Center vegetation, fire ecology, and restoration of scrub and wetlands vegetation. Conduct studies of rare plant distributions and ecology. Provide technical guidance to the Vegetation Studies Group. Maintain KSC Herbarium. Monitor scrub restoration efforts on Cape Canaveral Air Force Station. Directed studies of effects of rocket launches on Cape Canaveral Air Station. Directed study of threatened and endangered species on Patrick Air Force Base. Directed study of historical vegetation of the Indian River Lagoon Basin. Conducted studies of the flora and rare plants of Canaveral National Seashore. Conducted studies of the occurrence and distribution of rare scrub plants in Brevard County.

**THE BIONETICS CORPORATION**

*Technical Lead, Plant Ecologist, Kennedy Space Center, Florida. 1993-1994.*  
Conducted studies of Kennedy Space Center vegetation, fire ecology, and restoration of scrub and wetlands vegetation. Provided technical guidance to the Vegetation Studies Group.

*Plant Ecologist, Kennedy Space Center, Florida. 1982-1993.*

Conducted studies of the vegetation of Kennedy Space Center in relation to environmental variables, successional patterns, fire effects, and space center operations. Contributed to studies of animal habitat use. Conducted studies of vegetation, exotic plants, and potential environmental impacts and coordinated studies of fire history and soil erosion on Vandenberg Air Force Base, California.

**FLORIDA INSTITUTE OF TECHNOLOGY**

*Research Scientist, Plant Ecologist (part time). Melbourne, Florida. 1993-1995.*

Brevard County Scrub Habitat Conservation Plan. Helped develop proposal to conduct study of scrub habitat in Brevard County in relation to Florida Scrub-Jay habitat requirements and other rare or declining scrub species. Specific duties include plant sampling protocol, scrub plant identification, report preparation, and graduate student training.

#### BREVARD COUNTY

*Member, Environmentally Endangered Lands Selection and Management Committee (volunteer), 1990-Present.*

Helped develop criteria for determination of environmentally endangered lands and priorities for acquisition. Examined numerous sites, prepared reports, and made recommendations regarding acquisition. Helped prepare proposals to State of Florida Conservation and Recreational Lands (CARL) Program, Florida Forever Program, and the Florida Community Trust. Helped develop management criteria and reviewed management plans.

#### THE UNIVERSITY OF TENNESSEE

*Graduate Research Assistant, Ecology Program, Knoxville, Tennessee, 1979-1982.*

National Park Service Obed River Vegetation Project. Conducted vegetation survey, prepared vegetation map, conducted survey for endangered and threatened plants and critical plant habitats, prepared floristic list, and prepared report.

National Park Service contract to H.R. DeSelm: Classification of the Vegetation of the Interior Low Plateau. Helped to gather and synthesize literature on vegetation of the Interior Low Plateau and to prepare report.

National Park Service contract to H.R. DeSelm: Evaluation of Five Potential National Natural Landmarks in Tennessee. Helped to gather field data and available information on topography, geology, soils, and vegetation of five proposed National Natural Landmarks in Tennessee.

*Hilton Smith Fellowship, 1978-1979.*

*Graduate Teaching Assistant, 1977-1978.*

Taught general biology, prepared lectures and conducted labs.

*Non-Service Fellowship, 1976-1977.*

#### **PROJECT HISTORY:**

*National Aeronautics and Space Administration, Kennedy Space Center, 1982-Present.* Principal investigator. Designed and implemented vegetation monitoring program for Kennedy Space Center, Florida including long-term studies of changes after fire. Conduct studies of effects of Space Shuttle launches on terrestrial vegetation and soils and help maintain long-term databases of launch deposition patterns.

*National Aeronautics and Space Administration, Kennedy Space Center, 1992-Present.* Principal investigator. Collaborate on the design and implementation of a scrub restoration program for Kennedy Space Center. Monitor vegetation changes after combinations of cutting and burning to restore long-unburned scrub habitat. Monitor survival and growth of scrub species planted in former agricultural sites.

*National Aeronautics and Space Administration, Kennedy Space Center, and U.S. Fish and Wildlife Service, Merritt Island National Wildlife Refuge. 2010-2011.* Principal investigator. Design and implement program monitoring vegetation response to restoration of hardwood swales in scrub and flatwoods landscapes on Kennedy Space Center/Merritt Island National Wildlife Refuge.

*U.S. Air Force, 45<sup>th</sup> Space Wing, 2010-2011.* Co-investigator. Compile floristic inventory of selected wetlands areas on Cape Canaveral Air Force Station as part of a comprehensive survey of flora and fauna.

*National Park Service, Canaveral National Seashore, 2002-2004.* Principal investigator. Compile floristic inventory and survey for threatened and endangered plants on Canaveral National Seashore, Florida.

*Brevard County Natural Resources Management Office, 2004-2005.* Principal investigator. Conduct surveys for threatened and endangered scrub plants in Brevard County, Florida.

*Brevard County Natural Resources Management Office, 2003-2004.* Principal investigator. Conduct surveys for selected threatened and endangered plants in Brevard County, Florida.

*U.S. Air Force, 45<sup>th</sup> Space Wing, 1998-2003.* Principal investigator. Designed and coordinated the implementation of a scrub restoration program for Cape Canaveral Air Force Station, Florida. Monitored vegetation changes after combinations of cutting and burning to restore long-unburned scrub habitat.

*National Aeronautics and Space Administration, Kennedy Space Center, Remediation Program, 1998-2000.* Co-principal investigator. Helped to design and implement baseline chemical characterization study for Kennedy Space Center, Florida. Responsible for technical direction of soil and groundwater sections of the study.

*U.S. Air Force, 45<sup>th</sup> Space Wing, 1995-1998.* Principal investigator. Coordinated and helped to design program to monitor effects of Delta, Atlas, and Titan rocket launches on the environment of Cape Canaveral Air Force Station, Florida.

*U.S. Air Force, 45<sup>th</sup> Space Wing, 1995-1997.* Principal investigator. Coordinated and helped to design threatened and endangered species survey for Patrick Air Force Base, Florida.

*St. Johns River Water Management District, 1995-1997.* Co-principal investigator. Coordinated and helped to design project to map historical vegetation of the Indian River Lagoon Basin, Florida

#### **GRADUATE STUDENT COMMITTEES:**

Shannon Boyle, Florida Institute of Technology, M. S. Biology, December 1996  
Theresa K. Burcsu, University of North Carolina Chapel Hill, M. A. Geography, July 1998  
Lisa Earnest, University of South Florida, M.S. Marine Science, University of South Florida, December 1998

#### **PROFESSIONAL SERVICE**

Florida Native Plant Society: Chair, Science Advisory Committee, 2006-Present  
Southern Appalachian Botanical Society: Editor, *Castanea*, 2001-2003  
Southeastern Chapter, Ecological Society of America: Vice-Chair, 1993-1995; Secretary-Treasurer, 2000-2002; Chair, 2002-2004

#### **PROFESSIONAL ACTIVITIES**

American Association for the Advancement of Science  
American Institute of Biological Sciences  
Association of Southeastern Biologists  
Brevard County Environmentally Endangered Lands Selection and Management Committee.  
Ecological Society of America

Florida Academy of Science  
Florida Native Plant Society  
International Association for Vegetation Science  
International Association for Wildland Fire  
Natural Areas Association  
Society of Wetland Scientists  
Southern Appalachian Botanical Society  
Tennessee Academy of Science  
Torrey Botanical Society

### **CERTIFICATIONS**

Certified Senior Ecologist, Ecological Society of America, 1994-Present

### **HONORS**

Florida Native Plant Society, Silver Palmetto Award, 2009  
Florida Native Plant Society, Green Palmetto Award, 2005  
The Nature Conservancy, Florida Chapter Conservation Colleague Award, 1995  
NASA Manned Flight Awareness Award of Merit, 1989  
Phi Kappa Phi, The University of Tennessee, 1982  
H.P. Sturdivant Biology Award, Western Maryland College, 1976

### **PUBLICATIONS/TECHNICAL REPORTS/PRESENTATIONS**

#### **Published Papers:**

- Schmalzer, P.A., C.R. Hinkle, and H.R. DeSelm. 1978. Discriminant analysis of cove forests of the Cumberland Plateau in Tennessee. p. 62-86. In: P.E. Pope (ed.). Proceedings Central Hardwoods Forest Conference II. Purdue University, West Lafayette, Indiana.
- Schmalzer, P.A., C.R. Hinkle, and H.R. DeSelm. 1980. Vegetation patterns in a section of the Obed Wild and Scenic River, Cumberland County, Tennessee. p. 256-272. In: H.E. Garrett and G.E. Cox (eds.). Proceedings Central Hardwood Conference III. University of Missouri, Columbia.
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**Education**    **B.A., Biology, Antioch College, Yellow Springs, Ohio.**  
**Ph.D., Marine Biology, Florida Institute of Technology, Melbourne, FL.**

**Personal**    **Married, two daughters, 5'10" 168 lbs., excellent health.**

**Work**

**Experience** **2002-2014: Land Manager. Brevard County Environmentally Endangered Lands Program, Melbourne, FL. Acquisition/management/restoration and research on environmentally sensitive properties in a land acquisition program. Establish management plans for both wetland and upland habitats to assure priority conservation goals. Determine restoration needs and establish active research/monitoring programs. Obtain funding for restoration/research needs. Media/public education support to promote program goals. Build partnerships with citizen groups. Serve on liaison committees at governmental and private levels. Supervise technical and field personnel. Coordinate archaeological and paleontological site surveys. Planning and supervision of historic building restoration and wetland restoration projects. Financial planning/budget control.**

**Environmental Resources Specialist, Brevard County Mosquito Control District, Valkaria, FL. Initiate and plan ecological studies and determine possible environmental impacts of mosquito control activities in saltmarshes and mangroves bordering the Indian River Lagoon. Write management plans for wetland areas. Conduct research in saltmarsh environments to develop more effective and environmentally sound control methods. Responsible for permitting, planning and restoration of >15,000 acres of impounded saltmarsh and for planning and budgeting of \$800,000 in grant monies obtained for restoration programs. Coordinate with county, state and federal agencies. Conduct outreach programs with school, civic and public groups for educational purposes. Supervise technical and field personnel. 1988-2002.**

**Biologist: Indian River Mosquito Control District, Vero Beach, FL. Research and evaluation of insect growth regulators, population assessment and identification of larval and adult mosquitoes, testing strategies for more effective mosquito control through saltmarsh management, location and mapping of larval mosquito habitats. Perform public relations/educational programs for civic groups and schools. Supervise field crew. 1986-88.**

**Biologist: Florida Medical Entomology Laboratory, Vero Beach, FL. Field and laboratory studies of saltmarsh and estuarine ecology. Sampling, identification and data analysis of vegetation, fish and invertebrate populations. Water chemistry. Preparation of technical reports. 1985-86.**

**Aquarium Director and Curator: Coral World Virgin Islands, Inc., St. Thomas, Virgin Is. Five-acre marine park and underwater observatory. Planning of exhibits, collection of specimens. Husbandry and disease diagnosis in 22 tanks from 30 to 50,000 gals. Design and maintenance of seawater systems. Maintain a 50' dia. underwater observatory and the surrounding coral reef. Present educational and scientific programs to the public. Supervision of staff and financial planning. 1977-80.**

**Teaching and  
Related  
Experience**

**2004-2010: Adjunct Professor, Brevard Community College, Virtual Campus. Cocoa, FL.**

**2009. Adjunct Professor, Keiser University, E College.**

**2007: Visiting Scientist: Explorer of the Seas, Royal Caribbean Cruise Line.**

**2001-2002: Visiting Assistant Professor, Florida Institute of Technology, Dept. of Biological Sciences. Melbourne, FL. Teach senior-level undergraduate classes in Marine Biology and supervise senior research projects.**

**Current: Freelance editor for NAI, Inc.: online scientific editing service.**

**Fire training: S-130, S-190 and Standards for Survival, Inter-agency Basic Prescribed Fire Course.**

**Natural Areas Academy (The Nature Conservancy): Certificate in Natural Areas Management.**

**Certified in; CPR, First Aid, Natural Areas Weed Management, SCUBA and ex-SCUBA (NAUI) Instructor.**

**Experienced in Ph. I and Ph. II archeological excavations.**

**Interests  
And Skills**

**Active in local conservation and environmental interest groups. Extensive public presentations to civic and community groups on local environmental matters. Experienced in all phases of building construction and renovation,**

extensive knowledge of gardening, horticulture and landscaping. Hobbies include nature study, fishing, running, diving and boating, accomplished musician. Traveled widely: Europe, the Mediterranean countries, Morocco, overland from Turkey to India and Nepal, the Bahamas and Caribbean, Venezuela, Cuba, Israel, Belize, Honduras.

**Publications** Rey, J. R., R. A. Crossman, T. Kain and D. S. Taylor. 1987. An overview of impounded mangrove forests along a sub-tropical lagoon in east central FL, U.S.A. *The Mangroves: Proc. Nat. Symp. Biol. Util. Cons. Mangroves*, 341-350.

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**Earley, R. L., A. F. Hanninen, A. Fuller, M. J. Garcia, S. Stanley, E. A. Lee and D. S. Taylor. 2011. Plasticity, Integration and Selection: Prospects for Exploring the Evolution of Complex Phenotypes in a Powerful Fish Model. Soc. Integ. Comp. Biol., Charleston, SC.**

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**Grants  
Received**

The Presence, Ecology and Distribution of Rivulus marmoratus on Twin Cays, Belize C. A. Smithsonian Institution, Caribbean Coral Reef Ecosystems Program. Co-PI with W. P. Davis. \$750.00/yr plus 2 wks. expenses on site. 1988, 1989, 1991, 1992, 2000.

Remote Sensing of Vegetation Types in Mosquito Control Impoundments. Garden Club by the Sea, Indialantic, FL. \$702.00. 1992.

Evaluation of Mosquito Population on Utila, Bay Islands, Honduras. Suntree United Methodist Church, Melbourne, FL and Tabatha Ministries, Spring Hill, FL. \$3,300.00 1996 and 1997.

Survey for Rivulus marmoratus and indigenous mosquitoes in habitats adjacent to Lee Stocking Island, Exuma, Bahamas. \$800.00. Caribbean Marine Research Center. 1997.

Survey for Cyprinodon spp. and Rivulus marmoratus on San Salvador, Bahamas. \$1,300. Department of Biology, Virginia Tech, Blacksburg, VA. 2001.

The Mangrove Forest Fish Communities of the Belize Cays. Smithsonian Institution, Caribbean Coral Reef Ecosystems Program. \$5,800/yr. 2003, 2004, 2005, 2007.

Restoration of the Sams House. Florida State Division of Historical Resources. \$25,000. 2003.

Anthropogenic impact and the population ecology of the great land crab, Cardisoma guanhumi, in the Indian River Lagoon Region. Co-Pi: B. Tunberg and L. Cresswell. Walt Disney Corp. \$10,500. 2003.

**Exotic Plant Control: EEL Central Region Sanctuaries: Bureau of Invasive Plant Management, FL Dept. of Environ. Protection: \$850,000. 2002-2010.**

**NOAA/NOAA Coastal Restoration: Coastal Counties Restoration Initiative. Pine Island Conservation Area: North Borrow Lake Restoration. \$85,000.**

**SJRWMD IRL Program. Pine Island Conservation Area: North Borrow Lake Restoration. \$10,000.**

**USFWS/Coastal Program. Pine Island Conservation Area: North Borrow Lake Restoration. \$21,000.**

**FishAmerica Foundation. Pine Island Conservation Area: North Borrow Lake Restoration. \$75,000.**

**Professional**

**Affiliations Florida Mosquito Control Association  
Florida Academy of Sciences  
Florida Sub-committee on Managed Marshes  
Union of Concerned Scientists  
Sigma Xi**

## **Laurilee Thompson**

Age: 63

Years in Brevard County: 63

Education: AA Oceanographic Technology, Florida Institute of Technology

Employer: Dixie Crossroads Seafood Restaurant

Position: Owner/Manager

### Current Appointments:

Brevard County Tourist Development Council: 2000 - Present; Chair 2003, 2010, 2015

Indian River Lagoon Council Management Board: 2016 - ongoing

### Current Affiliations:

Member: Deepwater Shrimp Advisory Panel for South Atlantic Fishery Management Council

Board Member: Brevard Nature Alliance; Founding Member

Board Member: Merritt Island Wildlife Association

Board Member: US Space Walk of Fame Foundation

Board Member; President 2013: Space Coast Chapter Florida Restaurant and Lodging Association

### Awards and Recognitions:

- Laurilee was selected as the **1998 Titusville Area Chamber of Commerce Woman of the Year** in recognition for her work in the business of eco-tourism.
- First recipient of the annual **Allen David Broussard Conservation Award**, in recognition of efforts to demonstrate the economic value of conservation through the Space Coast Birding and Wildlife Festival. The award was presented at the **1999 National Watchable Wildlife Conference** in Ft. Myers.
- The **Titusville Area Chamber of Commerce 1999 Home-based Business of the Year Award** went to Laurilee's guided kayak tour business, Osprey Outfitters.
- The **Titusville Area Chamber of Commerce 1999 Small Business of the Year Award** went to the family business, Dixie Crossroads Seafood Restaurant.
- Recipient of the **Titusville Area Visitors Council 1999 Hospitality Award**.
- Recipient of the **2001 Florida Outdoor Writers Association, Florida Sportsman Biff Lampton Memorial Conservation Award** for Outstanding Conservation Efforts on behalf of the Florida Outdoors.
- Recipient of the **2002 DAR Citizen of the Year Award**, presented by the Daughters of the American Revolution, Indian River Chapter in recognition for educational efforts concerning Florida Scrub Jays.
- First Recipient of the annual **Brevard County Conservation Leadership Award**, presented by the Board of Directors of the Brevard Nature Alliance (March, 2003).
- Recipient of the **2003 Harry R. Lee Memorial Award**, presented by the City of Titusville in recognition of outstanding community service for founding the Space Coast Birding and Wildlife Festival.
- Recipient of the **2003 Bob Owens Memorial Award**, presented by the St. Johns River Water Management District for outstanding citizen service to the St. Johns River WMD.
- Recipient of the **2005 National Daughters of the American Revolution Conservation Medal** in recognition for outstanding achievement for environmental awareness.
- Recipient of the **2006 East Central Florida Junior Achievement Business Leadership Award** in recognition of the Space Coast Birding Festival and tourism work.
- Recipient of the prestigious **2006 Florida Audubon Guy Harvey Award** recognizing demonstration of a personal, public and consuming commitment to natural resource protection in Florida.
- Recipient of the **2006 Space Coast March of Dimes Woman of Achievement Award** for community service.
- The **Brevard County School Board 2006 Small Business Partner of the Year** award went to Dixie Crossroads.
- The National Restaurant Association's **2007 Florida Restaurant Neighbor Humanitarian of the Year Award** went to Laurilee for her community service and for founding the Space Coast Birding and Wildlife Festival.
- **2008 Canaveral Boy Scout Golden Eagle Dinner Honoree** in recognition for environmental leadership.

- **2010 Space Coast Chapter American Red Cross Honoree** in recognition for environmental leadership.
- **Southeastern Fisheries Association 2010 Paul Herring American Freedom Award** for standing up on behalf of fishermen and fishing communities.
- **Miami Corporation 2012 Friend of Conservation Award** in recognition of extraordinary efforts to protect and conserve habitat corridors in Brevard County.
- **Marine Resources Council 2013 Stan Blum Award** for lifetime service to the Indian River Lagoon.
- First Recipient of the **Brevard Nature Alliance Legacy Award (2013)** in recognition of outstanding leadership advocacy for protection of Brevard County's natural resources.
- **Southeastern Fisheries Association 2013 David Harrington Semper Fi Award** for tirelessly working to provide honest information on fisheries issues to the State and Federal Government.
- 2015 recipient of the **Charlie Corbeil Conservation Award** at the annual event that awards Space Coast individuals for their exemplary contributions to conservation.
- In November, 2016 the family businesses, Dixie Crossroads Seafood Restaurant and Wild Ocean Seafood Market, were each recipients of a **Change Award** to honor Everyday Superheroes of North Brevard County. The category was "Superpower of Corporate Citizenship."

Laurilee's diverse background includes an Associate Degree in Oceanographic Technology from Florida Institute of Technology, design and production of nautical themed furniture, custom boat fabrication, commercial fishing boat captain, and restaurateur. Living and working on and near the sea instilled a lifelong passion for the preservation of these natural areas and the diverse species that are dependent upon their perpetuity.

After leaving the ocean in 1987, first-hand experience in stressed Gulf fisheries led Laurilee to take part in preservation efforts closer to home. When overfishing threatened the habitat and future supply of rock shrimp, she encouraged her entire family to step in and lead the efforts to end trawling in the fragile Oculina Reef and put a management plan in place for the rock shrimp fishery. Laurilee makes yearly trips to Washington D.C. to lobby members of Congress on behalf of the commercial fishing industry.

While transitioning from a seafaring lifestyle, Laurilee developed an intense desire to connect people with nature. This led to many eco-tourism endeavors. The most notable is the **Space Coast Birding and Wildlife Festival**, which Laurilee founded in 1997.

This annual event, Florida's first major birding festival and now the top birding festival in the nation, is heralded as a model for festivals nationwide due to the exceptional lineup of seminar presenters and high quality field trips. Birders of all levels, wildlife enthusiasts, naturalists, biologists, and ornithologists travel from all over North America to support this benchmark tradition. Festival attendees contribute over one million dollars to North Brevard's economy each year during the six days of the event. Area business and governmental leaders continue to laud the festival's positive impact on the community.

Laurilee has attended a wide variety of forums and addressed many organizations to raise awareness of the benefits that Nature and Heritage Tourism can bring to a community. She has escorted numerous media familiarization tours for the Space Coast Office of Tourism, Titusville Area Visitor's Council, Florida Outdoor Writers Association, and VISIT FLORIDA on foot, horseback, in kayaks, airboats, vans and motor coaches. Many journalists experienced their first close encounter with a manatee or took their first good look at a Roseate Spoonbill through a spotting scope under her guidance.

Lately her emphasis during public speaking has shifted to talks about what it was like growing up on the Indian River Lagoon and the critical importance of restoring it back to its former beauty and productivity. She has been an outspoken advocate for the establishment of a network of multi-use trails in Florida and was recently recognized as a "Trail Champion" at the annual meeting of the Florida Trails Foundation.

During early development of the Great Florida Birding Trail, Laurilee was instrumental in securing for Brevard County 21% of the site nominations out of an 18 county area for the first section by personally filling out 45 lengthy nomination forms and escorting Julie Brashears, Birding Trail Coordinator, for site inspections. This resulted in the placement of 32 Brevard County sites on the Great Florida Birding Trail Map. Five additional Brevard County sites were added when the East Section of the Great Florida Birding Trail was updated in 2008. Brevard County has more Great Florida Birding Trail sites than any other county in Florida.

Collateral pieces that she developed for the Space Coast Office of Tourism include the *Space Coast's Best Known Birding and Wildlife Sites*, *Florida Space Coast Nature Guide*, *Outdoor Adventures on Florida's Space Coast*, *A Wild Guide to the Space Coast*, *Florida's Space Coast...It's More Than Just Birding*, and *Florida Space Coast Outdoor Adventure Guide*. The *Outdoor Adventure Guide* has been updated and distributed by the Space Coast Office of Tourism every year since 2006. It is currently out of print while undergoing another update.

Through her business, as well as her personal life, Laurilee is an important advocate for the promotion, protection, and use of our natural resources in a responsible manner.

# Kim A. Zarillo

President of Scientific Environmental Applications, Inc. (S.E.A.)

## Professional Expertise

*Project Management  
Natural Resource Assessment,  
Planning and Monitoring of  
Natural Community  
Restoration*

## Professional Affiliations

*Florida Native Plant Society  
Florida Pest Plant Council*

## Selected Technical Publications

*Zarillo K.A., G.A. Zarillo, D.I.  
McGinnis, T.V. Belanger, D.H.  
Adams, R. Paperno, Irlandi,  
E.A., and A.C. Cox. 2010. An  
Assessment of Coastal Water  
Resources and Watershed  
Conditions in and Adjacent to  
Canaveral National Seashore  
Natural Resource Report NPS.  
2012. National Park Service,  
Fort Collins, CO.*

*Zarillo, K.A., Cox, Anne, and  
Zarillo, G.A. 2008. Indian River  
Lagoon-South Allapattah  
Natural Water Storage and  
Treatment Area Restoration  
Project Ecological  
Performance Hydrologic &  
Hydraulic Modeling and  
Restoration Plan  
Reassessment CN040924-  
WO07 - Deliverable 3.4.3., and  
Restoration Plans (Steele,  
West, and ARA East).*

*Zarillo, G.A., K.A. Zarillo, and  
Cox, A. 2007. A Summary  
Review of Existing  
Information and Data for the  
Indian River Lagoon-South  
Allapattah Natural Water  
Storage and Treatment Area  
Restoration Project,  
Hydrologic & Hydraulic  
Modeling and Restoration  
Plan Reassessment  
CN040924-WO07.  
South Florida Water  
Management District.*

## Education

- ◆ M.S. Management & Policy, State University of New York at Stony Brook, Stony Brook, NY. 1988.
- ◆ B.S. Biology, University of South Carolina, SC. 1981.
- ◆ Horticulture, Midlands Technical College, SC. 1977-78.

## Summary

Ms. Zarillo has overseen several million dollars of environmental and geotechnical projects involving desktop research studies, data collection in the field, and data analysis for government agencies, nonprofits, and private firms. She has supervised projects for the U.S. National Park Service, Bureau of Ocean Energy Management Regulation and Enforcement, St. Johns River Water Management District (SJRWMD), South Florida Water Management District (SFWMD), and some of Florida's major coastal engineering firms (Atkins, Applied Technology & Management, Inc., Olsen Associates, Inc., and Coastal Systems International, Inc.). As a team member of Florida Tech's Department of Marine and Environmental Systems, she authored *An Assessment of Coastal Water Resources and Watershed Conditions In and Adjacent to Canaveral National Seashore*. Ms. Zarillo teamed with faculty members of Central Florida Community College to develop a Web-CT online course, Environmental Landscape. She has instructed and developed numerous environmental "Florida Friendly" courses for SJRWMD and non-profit organizations, while serving as adjunct faculty for Brevard Community College (now Eastern Florida State College).

## Selected Project Experience

**Instructor.** 2015 Florida Native Wildflower Workshop for the Pelican Audubon Society and the Eugenia Chapter of the Florida Native Plant Society (FNPS) Workshop. Instructed participants on how to access and use existing information to identify geology, hydrology, soils, and natural plant communities to design Florida Friendly landscapes for residential and commercial properties.

**Biologist.** Provided natural resource assessment of CANA coastal waters and watershed. Conducted literature research, analyzed data, edited the final report, and prepared specific fauna and flora sections. Descriptions and information about plant communities were supplemented with field observations and documented with digital images. The condition and composition of saltwater and freshwater wetlands within and adjacent to CANA were analyzed using GIS theme data from 1943 and 2004.

**Project Manager.** Drafted reports for and reviewed final report products of the development of a detailed hydrologic model to predict and manage hydrologic dynamics and water quality of the Mosquito Lagoon. Coordinated with subconsultant to provide equipment to collect measurements of nutrients and pollutants in groundwater associated with OSTDS of residential sites.

## Selected Project Experience

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**An Assessment of Coastal Water Resources and Watershed Conditions in and Adjacent to Canaveral National Seashore Natural Resource Report**  
Water Resources Division  
of U.S. National Park Service  
Fort Collins, CO  
2013

**Hydrologic Model of Mosquito Lagoon Canaveral National Seashore- National Park Service - C5180070017**  
Water Resources Division  
of U.S. National Park Service  
Fort Collins, CO  
2008-2011

**SFWMD Wetland Resource Assessments of Central FL**  
SFWMD  
West Palm Beach, Florida  
2008-2009

**IRL-South Allapattah Natural Water Storage & Treatment Area Restoration (ARA) Hydrologic & Hydraulic Modeling and Restoration Plan**  
SFWMD  
West Palm Beach, Florida  
2008-2009

**Biodiversity Study of Ile-a-Vach, South Haiti**  
CHRAD  
Petionville, Haiti  
2014

**Final Biological Characterization and Numerical Wave Model Analysis within Borrow Sites Offshore of Florida's Northeast Coast Report- Volume I: Main Text 286 pp. + Volume II: Appendices A-D 448 pp. Contract No. 1435-01-05-CT-39075-M05PC00005**  
MMS Study 2008-060.  
BOEMRE( formerly Minerals Management Service)  
Florida  
2005-2010

**Project Manager and Biologist.** Wetland Resource Assessment of the Central Florida Coordination Area Project - Purchase Order # 4500027039. Data were collected on the condition of vegetation, protected species and physical characteristics of 23 wetland sites within Central FL. Digital images taken at each site were organized in PowerPoint files. Plant species and data were digitized in Excel™ workbook. (2008-09)

Summarized existing conditions data for flora and fauna for 21,000 acres in Martin County, FL. Used GIS tools to estimate 1940s antecedent natural community areas based on soil and historical data. Revised restoration plans for all three sections of ARA based on simulations of rainfall, interaction of surface and groundwater, flooding/drying of the wetlands, water control structures (culverts and pumps), evapotranspiration, and the influence of vegetative cover on overland flows.

**Project Manager and Biologist.** Conducted literature research and field events to document coastal plant communities of Ile-a-Vach, South Haiti (mangrove, upland, and riverine) and wildlife, analyzed data, GIS maps and photo documentation of geological and biological diversity, prepared final slide presentation and report. Ms. Zarillo presented project findings to Haitian Ministers of Environment, Finance, Tourism and Poverty. (2014)

**Contract/Program Manager** for field studies coordinated marine field studies for listed species observations, sampling benthic, plankton, and fish communities. Provided oversight for data acquisition and analysis coordinated information transfer meetings and/or conferences, prepared progress reports, slide presentations, and technical publications. INM05PC00005 (CT 39075) Biological Characterization/Numerical Wave Model Analysis within Identified Borrow Sites Offshore the Northeast Coast of Florida. (2005-2010)

**Biologist.** Conducted FCT Applications assessments for 16 projects in 7 FL counties. Data collected from sites visits and from literature research were used to identify and map natural communities/major disturbances in ArcView. Prepared final reports of the physical/ biological resources and management recommendations for restoration of the hydrology, natural communities, and for protection of listed species.(1998-2011)