Instructor: Gale A. Bishop, Ph.D
Office: Northeast Iowa Professional Building
201 East Clark Street, Suite 102
P. O. Box 247, Fayette, IA 52142
e-Mail: <gabishop@geotrec.org>

R. Kelly Vance, Ph.D.
Herty Building 1102a
Dept. Geology & Geography
Georgia Southern University
e-mail <rkvance@georgiasouthern.edu

Catalog Description:
GEOL 5740/5740G
Sea Turtle Natural History: 3-3-4

Designed primarily for in-service teachers, will allow students to earn 4 hours credit for research monitoring sea turtle nesting on St. Catherine's Island, Ga. Students will attend two distance learning training sessions, reside on the island for seven days to observe sea turtle nesting evidence, participate in sea turtle conservation activities, study barrier island natural history with lectures by leading scientists, and collect natural history specimens for their classrooms, and attend a follow-up meeting. Graduate students will complete a resource notebook or term project.

Course Description: GEOL 5740 will introduce conservation education to 14 sea turtle interns through the study of Georgia’s sea turtles. Students will use content and processing skills in science and pedagogy, make observations on St. Catherines Island, study content from a series of one or more textbooks and web-based learning materials, actuating the integration of content learning with pedagogical skills and electronic technologies to enhance conservation education in their classroom teaching. The course will meet by synchronous and asynchronous delivery over the Internet for two training sessions, an eight-day residency on St. Catherines Island, and an optional one- or two-day weekend follow-up on St. Catherines in September. The course will be equivalent to three hours of lecture per week and four hours of laboratory per week. Permission of instructor required. Graduate students will do additional work consisting of a resource notebook on sea turtles or a term project. This course requires enrolling in GEOL 5741 during Spring 2009 to develop an endangered species teaching unit or lesson plans, forming a significant part of the teacher's curriculum.

Grading will be done from a BYU Field Experience rubric for PROFESSIONAL AND INTERPERSONAL BEHAVIOR RATING. Each student and faculty member will evaluate each student's performance in the class (perhaps on Survey Monkey). 4 = A, 3 = B, 2 = C, and 1 = Failure. Faculty input will be more heavily weighted, but all input will be considered. The BYU rubric is attached.

Lecture: As Scheduled below; from The Fayette Library, Statesboro, or SCI
Saturday May 17 GSU Statesboro Training on Island Protocols & Pedagogy
Saturday June 7 GSU Statesboro Conservation of Sea Turtle Nests
Monday, July 14 - Tuesday, July 22  
St. Catherines Residency  
Saturday and/or Sunday, September 6-7  
Follow-Up on SCI  

Textbooks and Materials Provided by ITQ Grant:  


Gulko and Eckert's book is a cutting-edge, popular work on sea turtles of the world. Its presentation is a highly illustrated assemblage of photographs, drawings, and text to transmit maximum information about sea turtles.  


Gulko and Eckert's teacher's guide is designed to accompany their Ecological Guide. A series of 14 K-12 grade-appropriate critical thinking activities are presented in a colorful, interesting format.  

K. Clark, A. Hosticka, M. Schriver, J. Bedell, 2001, Cumberland Island National Seashore: A Virtual Field Trip (CD) GMSA, $10.00  

"This exciting and attractive CD is a must for middle school science and social studies classrooms. It offers an up-close trip through the mysteries and beauty of Cumberland Island National Seashore and is an excellent resource for middle school teachers. The CD is divided into five sections: overview; day walk; island ecology; historical sites; and activities. Each section provides extensive information in a user-friendly format that students and teachers alike will enjoy. This exciting CD can stand alone or be used as a companion piece to Tapping the Richness of the Land (GMSA, 2001)."  

The CD's are $10.00 and can be ordered on-line from the following website.  
http://www.gmsa.net/BOOKSTORE/default.asp  


This copiously illustrated, 42-page publication summarizes the status of the Hawksbill Sea Turtle (Eretmochelys imbricata) around the world. Photographs, maps, and first-hand descriptions by conservationists and researchers document the ecology, distribution, and plight of the Hawksbill Sea Turtle.  

Rite-in-the-Rain™ Field Notebook, All Weather Transit, No. 303.  

This notebook allows students to keep field notes and sketches in the form of a daily journal that returns to the classroom with them at the end of the residency. Daily journaling, the underpinning of field observation, is mentored and reinforced while on St. Catherines Island.  

Resources Provided by East-Central Georgia (PRISM):  


Pleistocene sea level dropped and rose in response to glacial and interglacial intervals, causing patterns of coastal erosion and deposition that we are only beginning to understand. Along the Georgia coast these sea level fluctuations resulted in deposition and erosion of a seaward dipping veneer of Pleistocene sediment arranged in a series of barrier island sequences that are younger to the east. The deposition of coastal terraces or barrier island ridges (Wicomico, ~29-30 m; Penholloway,
~23 m; Talbot, ~12-14 m; Pamlico, ~8 m; Princess Anne, ~4.5m; Silver Bluff, ~1.5 m; and Holocene) in Georgia form a continuous veneer of Pleistocene sediment of varying thickness and lithology. Understanding Georgia sea level changes demands accommodation of known data that constrain models and resultant sedimentologic effects on shoreline position and elevation. The height of maximum seal level rise in Georgia is equivalent to the elevation of the highest coastal deposits of the Wicomico Shoreline, or terrace. Although the array of preserved Pleistocene shoreline deposits or terraces provides evidence of progressive lowering of sequential sea level highstands, it says little about the levels of sea level low stands during glacial stages. Vertebrate fossils and archaeological artifacts from the continental shelf allow partial reconstruction of low stands. Differential elevations of ancient barrier island or shoreline complexes and structural evidence suggest that tectonic as well as eustatic controls have been in effect. Superimposed upon these eustatic and tectonic effects are sedimentologic pulses produced by Pleistocene climate changes and evolving physical conditions influenced by possible coastal plain stream capture and "jumping" inlets and sounds along the Georgia coast. Correlation and comparison of disparate data on St. Catherines Island permits the testing of sea level models by integration of ground truthing with field data. This process, although it might occasionally assault our individual hypotheses, can be expected to lead to a better understanding of the history of Pleistocene and Holocene sea levels in Georgia. A Georgia sea level curve is constructed as a model for discussion in this Theme Session.

Textbooks to be purchased for Participants by their System's Staff Development Funds and/or by the Students (ask your Superintendent to support this material):


This xx-page book summarizes the history of St. Catherines Island through its early history including the pre-Contact, Spanish La Florida, early English, and antebellum eras.


A 28 minute, VHS presentation that graphically depicts the early history of St. Catherines Island.


First released in 2000, Keeping a Nature Journal, has been revised, updated, and enhanced. "It is inspiring and easy to use." Leslie and co-author Chuck E. Roth document simple techniques to lead first-time journalers outside, observing, sketching, and writing about the natural world, as they see it. They motivate all journal-keepers to hone their powers of observation as they immerse themselves in the mysteries of the natural world. Leslie and Roth stress that the importance of the journal as a personal record of daily experience and the world around us. Nature can be studied everywhere, in the city, suburbs, or country.

Publications provided by SCIF, Inc. and the American Museum of Natural History:


3
The latest anthropological and ecological work on St. Catherines Island published as an 1136 page, three volume monograph edited by Dave Hurst Thomas. Individual chapters are downloadable as PDF documents from the AMNH website at <http://digitallibrary.amnh.org/dspace/handle/2246/5901>. Although all chapters are pertinent to your study of St. Catherines, Chapters 3 and 5 are especially pertinent to the Geology of SCI.

A Learning Resource Notebook will be constructed and built through this course and the subsequent course (GEOL 5741), using a three ring binder and punched dividers, by each student and organized with dividers to contain the following (minimum) content:

<table>
<thead>
<tr>
<th>Resource Notebook</th>
<th>Organizational Sections</th>
<th>Probable Contents</th>
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<tbody>
<tr>
<td></td>
<td>Course Syllabus</td>
<td>Syllabus for GEOL 5740 (this Syllabus)</td>
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<td></td>
<td>Work Log for Course</td>
<td>Work log of time spent on course</td>
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<td></td>
<td>Completed Field Exercises</td>
<td>Copy of Master Sea Turtle Permit</td>
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<td>Copy of GaDNR Packet</td>
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<td>Tide Chart for SCI Residency</td>
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<td>Effort Spreadsheet</td>
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<td>Nesting Spreadsheet</td>
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<td>Monitoring List</td>
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<td>Graph of Nesting by Date</td>
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<td></td>
<td></td>
<td>Study Review of VHS St. Catherines: An Island in Time</td>
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<td></td>
<td>Completed Lab Exercises</td>
<td>1. Content Web Site</td>
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<td></td>
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<td>2. St. Cath. Web Site</td>
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<td>3. Internet Resources</td>
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<td>4. Forming YOUR Unit</td>
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<td>5. Components of TU</td>
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<td>6. Endangered species &amp; habitats</td>
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<td></td>
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<td>7. Conservation of Sea Turtles</td>
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<td>8. Life Cycles of Sea Turtles</td>
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<td></td>
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<td>9. Nesting Ecology of Sea Turtles</td>
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<tr>
<td></td>
<td>Teaching Unit Plan</td>
<td>10. Tracking Turtles</td>
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<tr>
<td></td>
<td>Hardcopy of Sea Turtle Resources</td>
<td>1. Sea Turtle Classification</td>
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<td></td>
<td></td>
<td>2. Ga. Sea Turtles</td>
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<tr>
<td></td>
<td></td>
<td>3. Ethogram of Nesting</td>
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<td>4. Crawlway Morphology</td>
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<td></td>
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<td>5. Nest Morphology</td>
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<td></td>
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<td>6. St. Catherines Map</td>
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<td></td>
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<td>7. St. Catherines Data &quot;06</td>
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<tr>
<td></td>
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<td>8. Ga. Historical Nesting</td>
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</tbody>
</table>
10. Curriculum Correlation - J. of L. |
|-------------------------|----------------------------------|
| Other Sections as Needed | 1. Madeline Hunter Site  
2. John Lawrence Bencze  
3. Five E’s of Teaching Site  
4. Ms. Randhare's 2d Grade  
6. Templates  
7. Turtle Hurdles  
Sea Turtle Survival  
EuroTurtle: Explode Skeleton +  
Florida's Sea Turtles.pdf |

**Course Objectives:** In this course you will learn about the scientific process, the conservation of loggerhead sea turtle nests, and the ecology and history of St. Catherines Island. You will examine these major concepts in the context of how these constructs apply to the conservation of endangered species and especially sea turtles.

**Course Goals:** To 1) consider how these major concepts relate to our lives and the coastal Georgia, and 2) to develop a solid understanding of the topics sufficient for you to critically think and problem solve real life issues that relate to these topics.

**Learning Outcomes:** Upon completion of this course you will have a good understanding of loggerhead nesting, the conservation of loggerhead sea turtles, and you will be able to solve problems inherent in daily monitoring situations situations. You will also be able to understand the concepts of the course and how they apply to you and your classroom.

**Attendance:** Attendance in all lectures is expected, unless distance is too great. You are responsible to learn for everything covered, mentioned, discussed and displayed in class. If you miss a class, get a copy of a learning-colleague's notes. You cannot excel in this course if you do not become fully immersed in this course. A portion of your grade will be based on exercises and assignments that you can only complete in the residency. If you need to leave the Island for a valid reason, there are daily boats on at 7:30 a.m. and off at 4:00 p.m.

**Student Expectations:** You can expect us to be interested, excited and enthusiastic about the course, the learning process, the technology, and your participation. We will convince you that the content, pedagogy, and teachnology we are discussing is worth knowing and show you how the concepts apply to real life situations, especially in your classroom. We will challenge you to think about the material and why it is relevant to you and your students. We will take new and innovative approaches to teaching in this course, involve you in the material through total immersion and networking, and mentor you in academic risk-taking.

Professors Expectations: We expect you to read your text book, web materials, and other resources before coming to St. Catherines Island, to have initiated your resource notebook, and be prepared to learn. Get plenty of sleep and rest, drink half a gallon of water each day, and be
safety conscious at all times. You should show respect for your classmates and. Take chronological and insightful daily notes Complete any class assignments on time. Accept responsibility for your learning. Our role is to facilitate your development as an independent and collaborative learner. You are responsible for your learning and the grade you earn via your effort. Be active in your learning, ask questions and come to me early if you need help. Take responsibility for your personal objectives. It is your responsibility to work towards your success in this class.

Academic Honesty: "All incidents of academic dishonesty, including plagiarism, and any other infraction of the student conduct code will be handled according to the published Student Conduct Code document. Additionally, violations of academic honesty will be reported to the administration, thus may be documented on one's permanent academic record. It is a violation of academic honesty to have others complete in-class assignments or quizzes for you if you are not present."

Respect For Classmates: Showing respect for your fellow classmates includes: (1.) being quiet while lecture is in progress, (2.) paying attention and taking notes, and (3.) asking questions / responding to my questions. Disruptive behavior is not tolerated. Academic honesty includes conducting yourself in a non-disruptive manner (ie: cell phones off, no talking out of turn or reading newspapers; arrive early and don't leave until the class ends). Be ready to start class at 5:30 a.m. If someone is bothering you in class, please let us know and we will take care of the problem.
2008 Sea Turtle Program Tentative Agenda
[Tidal Graphs from HarborMaster 5.5 courtesy of Zihua Software.]

Monday July 14 Agenda (9:00 AM Boat)
Welcome
Island Introductions
Housing Assignments
Gator Driving Lesson
Hazards Refresher
Beach Rounds as a Group
Demonstration Nest (McCurdy and Bishop)
7:00 Dinner at Cabin 4
8:00 PM Meeting: Notebook Readings
SCISTP Learning Model (Bishop)

Tuesday July 15 Agenda
Beach Rounds as a Group (McCurdy, GAB & RKV)
Afternoon Geography Exercise (Prize)
4:00 Georgia Sea Turtle Center
8:00 PM Meeting: Notebook Readings;
Loggerhead Life Cycle (Bishop)

Wednesday July 16 Agenda
Beach Rounds in small Groups (McCurdy, GAB, RKV)
   Leatherbacks - North Beach
   Loggerheads - North South Beach
   Terrapins - SW and So. South Beach
Afternoon Shell Collecting (20 species) Prize!
8:00 PM Meeting: Educational Applications (Schriver)
Notebook Readings; Turtle Walk (South Beach)

Thursday July 17 Agenda
Beach Rounds as small Groups (McCurdy, GAB, RKV)
   Leatherbacks - north South Beach
   Loggerheads - SW and So. So. Beach
   Terrapins - North Beach
   Lecture: Flag Pond (Rich, Vance, and Bishop)
Afternoon Sand and Shell Collecting
8:00 PM Meeting: Notebook Readings;
Plans for Using Outcomes in Classes (Students)

Friday July 18 Agenda
Beach Rounds as small Groups (McCurdy, GAB, RKV)
   Leatherbacks - SW and So. So. Beach
   Loggerheads - North Beach
   Terrapins - north South Beach
1:00 Mark Dodd: Georgia's Sea Turtles
Afternoon Exploration and Photographs
4:00 Meeting: Notebook Readings;
Loggerhead Nesting Ecology (Bishop and McCurdy)

Saturday July 19 Agenda
Beach Rounds as small Groups (McCurdy, GAB, RKV)
- Leatherbacks - North Beach
- Loggerheads - north South Beach
- Terrapins - SW and So. South Beach
2:00 Meeting: The Georgia Teacher Quality Program
(Ed and Doris Davis)
3:00 Meeting: History of St. Catherines Island Tour
(Gale Bishop, tour this evening at 7:30)
6:30 Dinner

Sunday July 20 Agenda
Beach Rounds as small Groups (McCurdy, GAB, RKV)
- Leatherbacks - north South Beach
- Loggerheads - SW and So. South Beach
- Terrapins - North Beach
Afternoon Exploration and Photographs
4:00 GPR Demonstration (Vance)
8:00 Meeting: Fieldnote Discussion

Monday July 21 Agenda
Beach Rounds as small Groups (McCurdy, GAB, RKV)
- Leatherbacks - Southwest and So. South Beach
- Loggerheads - North Beach
- Terrapins - north South Beach
Optional Exit from St. Catherines at ~ 4:00 PM
Awards Ceremony and Presentations (Mentors)

Tuesday July 22 Agenda
Beach Rounds as small Groups (McCurdy, GAB, RKV)
- Leatherbacks - north South Beach
- Loggerheads - Southwest and So. South Beach
- Terrapins - North Beach
Afternoon Exit from St. Catherines at ~ 1:00 PM
Expected Outcomes and Outputs:

Students will have a significant and meaningful conservation experience.
Students will use and enhance scientific methodologies and process skills.
Students will develop or enhance a conservation-learning network.
Students will return to their school with pertinent teaching materials.
Students will develop an appreciation of the significance of instructional technology.
Bishop and McCurdy will keep track of emergences, DNR data, and assign nest numbers.

Proposal Goals are to:
1) better understand nesting ecology of loggerhead sea turtles on the Georgia coast;
2) enhance production of hatchlings and determine parameters for management of sea turtle nesting on urbanized sea islands;
3) involve school teachers and pre-service education majors in active conservation and management activities in order to teach alternative principles of scientific inquiry, scientific methodology, scientific documentation and process, to provide a suite of classroom teaching resources, teach pedagogical skills, and build a regional citizen advocacy group for conservation of sea turtles and other endangered species; and,
4) transfer these data into the geological record to identify turtle nests in ancient sedimentary rocks.

Educational Objectives linked to Ga. Standards & Learning Framework
13. Provide a holistic, interdisciplinary, hands-on, networked field experience in which pre-service and in-service teachers can actively participate to enhance their scientific literacy while serving a real societal need and building a learning community.
14. Model a scientific method of inquiry and replicate the processes of contingency in science through note taking, critical thinking, scientific writing using real-world applications of threatened and endangered species.
15. Model the Learning Cycle and networking within a Learning Community.
16. Provide content and supporting materials enabling teachers to transmit information and motivate school children in science, mathematics, and other cognate areas.
17. Develop a strategy for delivery of content-rich, field-based science education via emerging electronic technologies.
18. Evaluate the facilitation of scientific, mathematical, and cognate content in classroom curricula.
19. Integrate experiential learning, book learning, and content provided by scientists, educators, and veterinarians into a comprehensive knowledge base for teaching.