



Valdosta State University, Department of Biology  
 BIOL 4020: Special Topics in Conservation: Coastal and Marine Biodiversity  
 Syllabus- 4 credit hours

Instructor: Dr. Joshua S. Reece  
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 Email: [jreece@valdosta.edu](mailto:jreece@valdosta.edu) (preferred contact method) Office hours: MWF 11:00am-12:00pm  
 Class will meet in BSC 1202 from 8-10:50am and in BSC 2073 from 12-2:50pm MTWRF

You will be notified of any and all changes\*\*\*

### Course Overview

BIOL 4020. This course will expose you to the coastal biodiversity of the southeastern United States. This is primarily a field course that complements lecture material. You will be exposed to the diverse habitats of the southeastern coast, their biogeography, ecology, evolutionary history, and conservation. A major theme of this course will be scientific inquiry so that you learn not only the *what* of coastal biodiversity, but the *why*, which can be understood through ecological and scientific inquiry. You will get dirty, muddy, and wet in this course, but you will see some of the most beautiful areas in the southeast, including clear natural springs, verdant seagrass beds, coastal hardwood hammocks, estuaries, vibrant coral reefs, and the open ocean.

### Objectives, Educational Outcomes, and Linked Assignments

The objectives of this course are to introduce you to the ecosystems, habitats, flora and fauna of the southeastern coastal plain, and the processes, especially climate change and sea-level rise, that have and are shaping these systems. First, I will go over three major topics that apply to each system: biodiversity, invasive species, climate change/sea-level rise, and ecosystem functioning and services. Second, you will be introduced to the major ecosystem types characteristic of Georgia and Florida coasts. Within each habitat type, you will learn about each of these three major topics described above, and you will visit examples of each community. This course addresses Department of Biology educational outcomes 1, 2, and 5 ([http://ww2.valdosta.edu/catalog/1314/ugrad/documents/UG\\_131-146.pdf](http://ww2.valdosta.edu/catalog/1314/ugrad/documents/UG_131-146.pdf)) and VSU General Education Outcomes 4, 5, and 7. Below are the main course objectives and activities designed to accomplish those objectives.

| Objectives  | Linked Assignments  |
|---|---|
| Learn characteristic coastal natural communities of the southeastern US                                 | Lecture material, 3 extended field trips sampling natural communities                           |
| Learn to identify and understand the ecological and evolutionary role of characteristic flora and fauna | Lecture material, examination of preserved specimens, and sampling of live animals in the field |
| Understand ecological patterns and processes important to coastal ecosystems                            | Lecture material, small group projects on each characteristic natural community                 |
| Develop an appreciation for the natural world and about science!  | Field trips to coastal and marine habitat   |









## **Release and Waiver of Liability**

Please read and sign the following:

I acknowledge that participation in field excursions involves some risks of injury, illness, and/or loss of personal property, despite the best intentions and responsible actions of participants and leaders. I agree to release and forever discharge Valdosta State University and the Board of Regents of the University System of Georgia, its members individually, and its officers, agents and employees from any and all



will leave around 1230pm and drive 30 minutes to St. Marks National Wildlife Refuge. We will observe shorebirds and observe saltwater and freshwater marshes. We will spend approximately 1.5 hrs here and will plan on leaving around 230pm. We will then drive to Bald Point State Park (40 minute drive). We will observe coastal marshes, Gulf Coast beaches, and coastal pine flatwoods. We will spend approximately 1 hour here and will leave by 430pm. We will head back to VSU, arriving around 7pm.

Checklist:

- Snacks
- Small hiking pack
- Water bottle
- Binoculars
- Field guides you might want
- Bug spray and sun screen
- Field notebook and something to write with
- You do NOT need to bring bed linens
- Sunglasses



Cash for lunch and dinner

**Travel Guide to Sea Horse Key and the Florida Keys:**

Thursday, May 29<sup>th</sup>: We will meet at the loading bay of Bailey Science Center at 8am. We will drive 2 hours and 45 minutes to get to a Ferry that will take us over to the Seahorse Island. Information on the island can be found here: <http://skml.clas.ufl.edu/>. Along the way down we will stop for groceries. There is a full kitchen and refrigerators on the island, but we will have to bring our own food. We will have lunch and

12:00 PM Lunch

1PM: We will leave this time relatively open for the rest of the day, depending on what the group wants to do. We will be on our own for dinner as well.

Tuesday, June 3<sup>rd</sup>

9am: We will depart and meet for breakfast somewhere. We will drive approximately 4 hours to the Barrier Island Sanctuary Management and Education Center at the Archie Carr National Wildlife Refuge in Melbourne Beach, Florida. We will briefly hike around the premises, which is where the Reece et al. (2013) paper you read was based. We will leave by 6pm and drive the remaining ~5 hours to VSU, returning around 8 or 9pm, groggy and tired, and ready to be home.

\*Sequence and content of field trips subject to change due to weather and group size considerations.

Checklist:

Sunblock (SPF 30 or higher)

Insect repellent

Toiletries (shampoo, soap, toothpaste, etc)

Motion sickness medicine

Any medications

Change for snacks and soda machines

Water bottle

Camera

Sleeping bag or twin bed linens and a pillow

2 towels (one for shower and one for boat)-  
quickly enough

e beach towels, they will not dry

Personal clothing and swimwear

Hat

Old t-shirts or rash guards for snorkeling (REQUIRED)

Windbreaker or rain coat

Plastic bag to carry wet items home

Sweatshirts if you get chilly easily

You do NOT need snorkeling gear, it is included in your program. If you have nice gear, bring it, but if you have a cheap set, just use their rental gear- it will be better

You can bring a wetsuit if you want but they are also available for rent

Money for meals (bring some cash for smaller establishments- no more than \$100 in cash)

Do NOT bring:

a lot of food

dive gloves or dive knives, fishing equipment

weight belt

speargun

**Rubrics: All rubrics are subject to modification until the assignment is presented to you in class, at which time the rubric will be final.**

**Rubric For Field Notebook**

Worth 10 points.

Your field notebook is your way of keeping notes in this class. In it, you should record your observations of each specific field site and of the natural communities pres

Quality and accuracy of information presented  
Completeness (addressed all four topics)  
Total

5 points  
1 point  
**10 points**

### **Rubric for Literature Review**

Your literature review will be based off of the information you gathered for your lecture, which should lean heavily on the use of peer-reviewed literature. Keep in mind that this is not a term paper on four points (Your group will present on one or a small suite of related natural communities and summarize the impacts/role of 1) climate change, 2) sea-level rise, 3) highly interactive species, and 4) ecosystem services). Instead, you need to tell me a story. The story will hit all of these four points by drawing on examples from the literature. Here is one way to think about it:

only group able to work on Coral Reefs, and so on until every group has a different natural community. paraphrase. I mean look into the primary scientific literature and synthesize previously published work. We will talk about this more in class. You

which means that you will each have input from two of your classmates on your paper. The quality of your peer review will be factored into your grade (see point totals below).

Your scientific paper will have the same structure as most of the papers we have read in class. It will be a review or synthesis paper, because you are probably not collecting original data on which to publish. So, look at the review and synthesis papers we have read. The first half of your paper should essentially be your literature review, and the second half will be your research proposal. Make them flow, and do not simply cut and paste them together. The idea here is for you to learn how reading the literature feeds into experimental design. The best ideas in science come from what has a

Definitive List of Coastal Natural Communities for the purposes of this course. Communities on the same row are synonymous between Georgia and Florida classifications. Potential trips where we will see each habitat type are listed but we may see some types at additional locations.

| <b>Georgia (see 16<sup>th</sup> page of Edwards et al. 2012 pdf)</b> | <b>Florida</b>                             | <b>Available for group projects?</b> | <b>Where will we see it?</b>           | <b>Group members to sign up</b> | <b>Date of Presentation</b> |
|--|--|--------------------------------------|--|---------------------------------|-----------------------------|
| Coastal Estuarine and Near-shore Marine Waters                       | Coral Reefs;<br>Seagrass Bed;<br>Algal Bed | Yes                                  | Key Largo trip                         |                                 | May 20 in the field         |
| 1) Intertidal Beaches, Sand Bars                                     | Coastal berm                               | Yes                                  | St. Augustine trip,<br>Gulf Coast trip | Grad Students                   | May 17-19 in the field      |
| 1) Mud Flats   | Mud Flats                                  | Yes                                  | Gulf Coast trip                        |                                 | May 21 in the field         |
| 2) Maritime Dunes  | Beach Dune;<br>Coastal Grassland           | Yes                                  | St. Augustine trip,<br>Gulf Coast trip |                                 | May 22 in the field         |
| 3) Maritime Forests  | Maritime Hammock                           | Yes                                  | St. Augustine and Sapelo Island trips  | Dr. Reece                       | May 17-19 in the field      |
| 4) Interdunal Wetlands   | Coastal Interdunal Swale                   | No                                   | St. Augustine and Sapelo Island trips  |                                 | May 22 in the field         |

5) Salt and B

|  |                        |     |                          |  |  |
|--|------------------------|-----|--------------------------|--|--|
|  | Mangrove Swamp         | Yes | Everglades and Key Largo |  |  |
|  | Keys Tidal Rock Barren | Yes | Key Largo                |  |  |
|  | Pine Rockland          | Yes | Everglades and Key Largo |  |  |
|  | Rockland Hammock       | Yes | Key Largo                |  |  |