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ABSTRACT

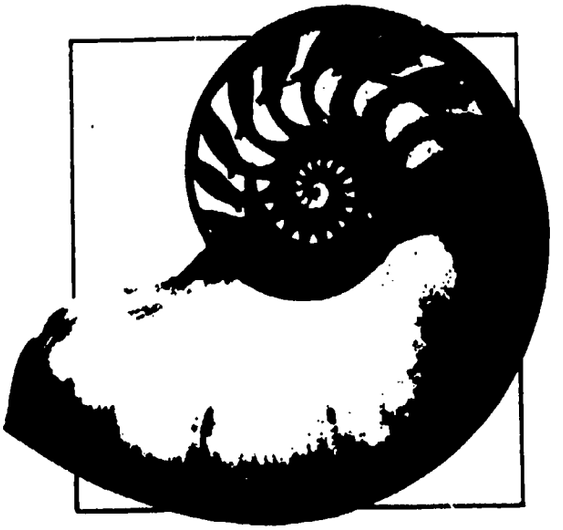
As part of the Professional Development Workshop at Calhoun Community College, the Department of Natural Sciences conducted the third annual Spring Wilderness Pilgrimage in March 1989, a week-long environmental awareness field trip for faculty and staff. Designed as a study of the plants and animals on a barrier island off the coast of Florida, the trip included nature hikes, a shrimp feast, photomicroscopy of marine life, mollusk identification, seashell collecting, and leisure time on the beach. This guidebook, for use by field trip participants, provides information on the flora and fauna studied during the trip, and includes background information, maps, tide charts, and other reference materials. The guide includes the following components: an article describing typical encounters and experiences on Dog Island; a map outlining the travel route of the group; a detail map of the island; an itinerary of activities; a list of group participants; tide tables and geographical coordinates; and lists of visible astronomical phenomenon, birds, mollusks, and plants. The section on mollusks discusses shell identification, classification keys for shell families, shell tips, live clam observation, and mussel (clam) dissection. An extensive section on plants, provides a key to Dog Island plants, a checklist of common plants on the island, and divisions of plants by species, type, distinctive features, flowering season, and habitat. The guide concludes with references and a passage from Oliver Wendell Holmes's poem "The Chambered Nautilus." (JMC)

Barrier Island Ecology

A Professional Development
activity for faculty and staff
of
Calhoun Community College

March 7-12, 1989
on
Dog Island, Florida

Field Trip Reference Booklet



A combined effort by:

Don Collier
Bettye Gregg
Donna Lee
George Williams

FORWARD

As each of you join this spring pilgrimage you are stepping from your everyday world onto the sand of the beach on Dog Island. May you find there rest and a renewed appreciation for the complex balance of our natural surroundings.

Included in the following pages is useful information for references on the local flora and fauna. Maps, time and tide charts are also included for your convenience. Use this information only as a base for new discoveries during this time of professional development.

Man was given responsiblity for dominion over Nature. His place in the hierarchy of creation is referred to again and again in the Old Testament, but nowhere in more expressive terms than by David in the 8th Psalm:

> "Thou madest him to have dominion over the works of thy hands; thou has put all things under his feet: All sheep and oxen, yea, and the beasts of the field; The fowl of the air, and the fish of the sea, and whatsoever passeth through the paths of the seas!

Only by increased knowledge and awareness can we better accept this Divine responsiblity.

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Article Titled

" The Long, Peaceful Days of Dog Island"

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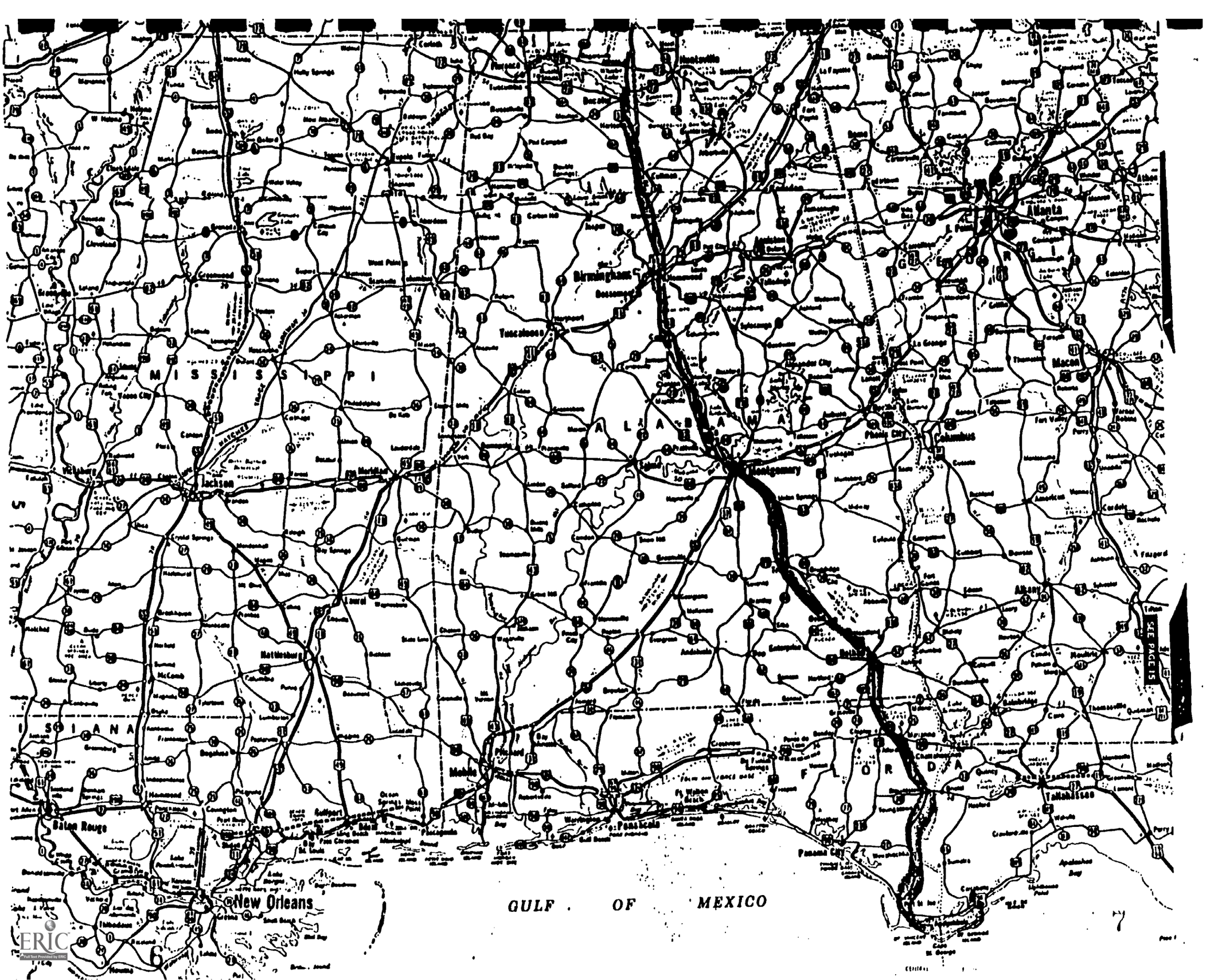
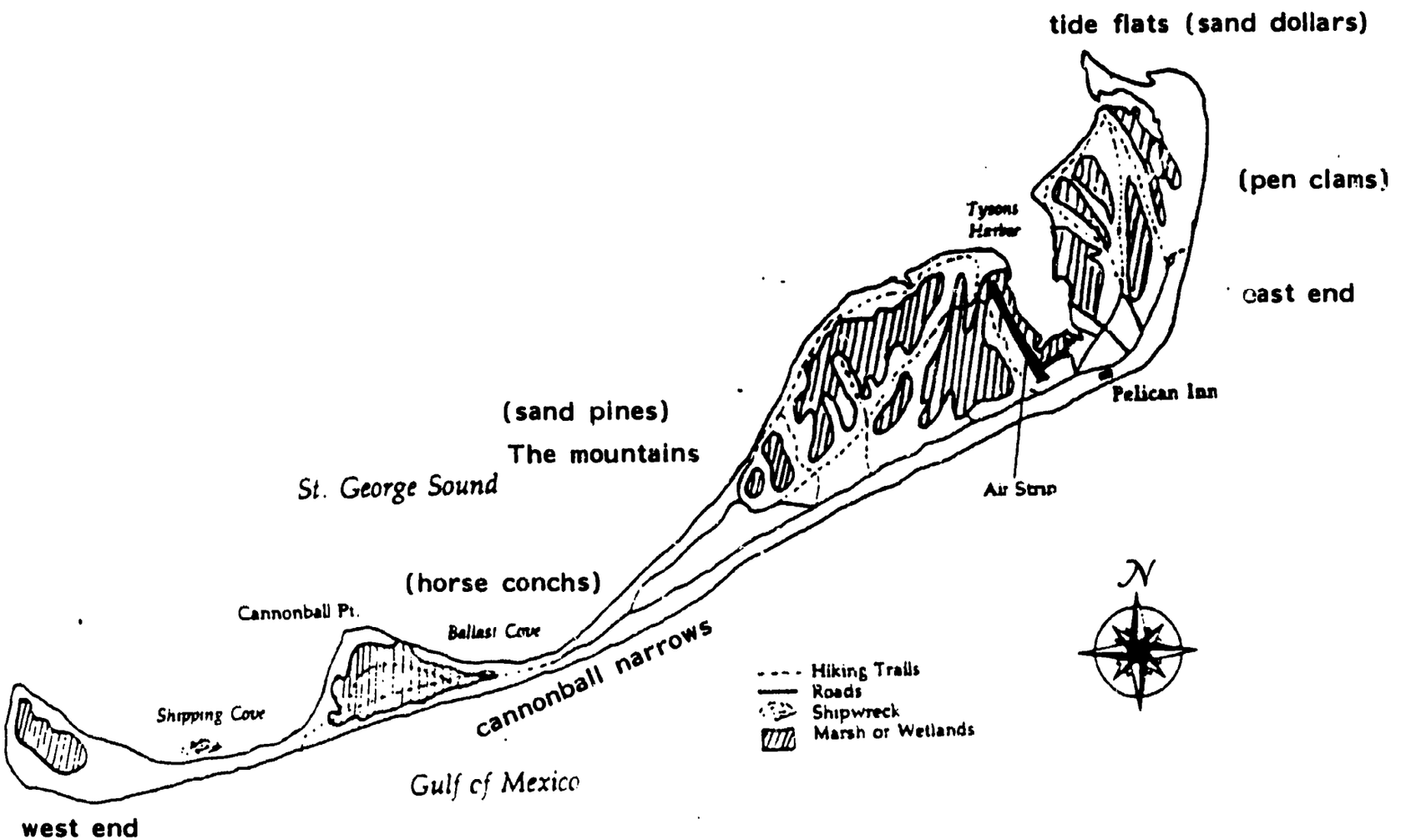

MISSISSIPPI
ALABAMA
FLORIDA
Jackson
Birmingham
Montgomery
Atlanta
Macon
Columbus
Albany
Tallahassee
Tuscaloosa
Meridian
Hattiesburg
Laurel
Mobile
Pensacola
Baton Rouge
New Orleans
GULF OF MEXICO
SEE PAGE 15

Shell Collecting Tips

1. Have a large porus bag available for easy transport of lots of shells.
2. Carry a day pack with drinking water, camera, insect repellents, and reference book for long strolls.
3. DO NOT COLLECT LIVE SHELLS.
4. Nesting smaller shells in a large cockle protects the delicate treasures.
5. Later, place shells in zip lock bags for storage to avoid odor before further cleaning.
6. To preserve shells:
   - wash and boil univalves to remove microorganisms
   - remove barnicles after a short vinegar soak
     (muratic acid may also be used but use caution)
   - spray with polyurethane, if desired



ITINERARY, 1989

Professional Development Workshop

BARRIER ISLAND ECOLOGY

Tues.,March 7	9:00 p.m.	leave Calhoun
Wed.,March 8	6:15 a.m.	breakfast in Panacea
	7:30 a.m.	buy groceries
	8:15 a.m.	tour Gulf Specimen facilities
	10:00 a.m.	board ferry for island
	Afternoon	free time
	8:00 p.m.	orientation
Thurs.,March 9	8:00 a.m.	shell identification and mollusk dissection
	Afternoon	individual projects
	6:00 p.m.	bring your steak and plate
Fri., March 10	Morning and Afternoon	activities to be announced
	6:00 p.m.	shrimp feast photo developing
Sat., March 11	Morning	free time
	12:00 noon	gear in rooms 3 and 4
	3:00 p.m.	leave for ferry ride
	8:30 p.m.	dinner in Marianna
Sun., March 12	2:00 a.m.	arrive at Calhoun Community College

List of Participants 1989

Lauri Burgreen
Charles Gober
Elaine Lauderdale
Phillip Parker
Renee Wales

Sandra Caudle
Chris Hamilton
Mary Luna
Melvie Taylor
Patsy Bruce
Billie May

Staff:

Don Collier
Bettye Gregg
Donna Lee
Phillip Parker
George Williams

Emergency Phone Numbers;

(a) Preferred
Pelican Inn Office (daytime)
1-800-451-5294

(b) Alternate
Franklin County Sheriff
(904) 697-2113
(Specify Pelican Inn, Dog Island)

Staff checklist:

Walkie-talkie
Dissection Equipment
Photographic Equipment
Microscope
Telescope
Plant Press
Newspaper
Metric ruler
glass rod
small pipette
small aquarium
carousel projector
reference books
charcoal and lighter
seafood feast

The Pelican Inn co-ordinates are:

29 degrees, 48 min. N. - Latitude
84 degrees, 34 min. W. - Longitude

DOG ISLAND

HI add 7 min. 0.4 ft.
LO add 6 min. 0.2 ft.

Tide Tables

HIGH AND LOW WATER

PLACE	POSITION Lat.	POSITION Long.	DIFFERENCES Time: High Water	DIFFERENCES Time: Lo Water	DIFFERENCES Height: High Water	DIFFERENCES Height: Lo water
	° ' M	° ' W	h. m.	h. m.	ft	ft
St. George Sound						
Dog Island, West end	29 47	84 40	+0 07	+0 06	+0.4	+0.2
Carrabelle, Carrabelle River	29 51	84 40	+0 35	+0 31	+0.5	+0.3
St. George Island, East End	29 41	84 47	-0 15	+0 06	-0.2	0.0
St. George Island, Rattlesnake Cove	29 42	84 48	+0 47	+1 19	+0.1	+0.1
St. George I., 12th St. W (Bayside)	29 39	84 54	- - --	- - -	+0.96	+0.96
St. George Island, Sikes Cut	29 37	84 58	+0 49	+1 32	+0.70	+0.70
Apalachicola Bay						
Cat Point	29 43	84 53	+1 20	+1 27	+0.1	+0.2
Apalachicola	29 43	84 59	+2 00	+2 44	+0.74	+0.74
Lower Anchorage	29 36	85 03	+1 43	+2 09	+0.65	+0.65
West Pass	29 38	85 06	+1 33	+2 17	+0.61	+0.61

March 7 - 11, 1989

Basic Optical Astronomy for Dog Island Field Trip

I. Identification of Constellations with selected Stars:

1. Ursa major
2. Ursa minor, Polaris
3. Cassiopeia
4. Pegasus
5. Pisces
6. Andromeda
7. Taurus, Aldebaran
8. Auriga
9. Gemini, Castor and Pollux
10. Cancer
11. Orion, Betelgeuse, Bellatrix, Rigel, Saiph
12. Lepus
13. Canis Major, Sirius
14. Leo
15. Virgo, Spica
16. Bootes, Arcturus

II. Observation of Selected Messier Objects:

1. M31 Andromeda Galaxy
2. M42 Great Nebula in Orion
3. M44 Praesepe ("Beehive") Star Cluster in Cancer
4. M45 Pleiades Star Cluster

III. Observation of Planets:

1. Jupiter, Io, Europa, Ganymede, Callisto
2. Mars, Conjunction with Jupiter
3. Saturn
4. Uranus
5. Neptune
6. Venus

IV. Lunar Topography:

A. Lunar Maria

1. Grimaldi
2. Mare Nubium
3. Mare Imbrium
4. Mare Frigoris
5. Mare Serenitatis
6. Mare Tranquillitatis
7. Mare Nectaris
8. Mare Foecunditatis
9. Mare Crisium

B. Mountain ranges:

1. Carpathian Mts.
2. Apennines
3. Alps
4. Caucasus
5. Haemus Mts.
6. Altai Mts.

C. Selected Lunar Craters:

1. Tycho
2. Schickard
3. Ptolemy
4. Kepler
5. Copernicus
6. Aristarchus
7. Archimedes
8. Aristillus
9. Aristoteles
10. Petavius

V. Astrophotography:

1. Lunar photo
2. Jupiter with Gallilean Satelites
3. Saturn

DOG ISLAND BIRDS: A CHECKLIST

WR=Winter RESIDENT
SR=SUMMER RESIDENT
YR=YEAR-ROUND RESIDENT
MIG=MIGRANT
TR=TRANSIENT
I=INCOMPLETE DATA

1.	Common Loon	WR
2.	Pied-Billed Grebe	WR
3.	Horned Grebe	WR
4.	Double-Crested Cormorant	WR
5.	White Pelican	MIG
6.	Brown Pelican	YR
7.	Mag. Frigate Bird	TR
8.	Great Blue Heron	YR
9.	Little Blue Heron	SR (YR?)
10.	Louisiana Heron	YR
11.	Cattle Egret	YR
12.	Reddish Egret	WR (SR?)
13.	Great Egret	YR
14.	Snowy Egret	YR
15.	Black-Crowned Night Heron	WR
16.	Yellow-Crowned Night Heron	WR
17.	Green Heron	SR (Spring)
18.	Least Bittern	SR (Spring)
19.	Amrican Bittern	MIG/WR
20.	White Ibis	TR
21.	Mallard	MIG
22.	Black Duck	MIG
23.	Pintail	R/MIG
24.	American Widgeon	WR
25.	Northern Shoveler	MIG
26.	Blue-Winged Teal	MIG/WR
27.	Green-Winged Teal	MIG
28.	Gadwall	MIG
29.	Wood Duck	MIG/TR
30.	Redhead	WR
31.	Greater Scaup	WR
32.	Lesser Scaup	WR
33.	Bufledhead	WR
34.	Hooded Merganser	WR
35.	Red-Breasted Merganser	WR
36.	Turkey Vulture	TR/YR
37.	Swallow-Tailed Kite	TR
38.	Sharp-Skinned Hawk	MIG/WR
39.	Cooper's Hawk	MIG/TR
40.	Marsh Hawk	MIG/WR
41.	Red-Tailed Hawk	WR
42.	Rough-Legged Hawk	MIG
43.	Red-Shouldered Hawk	WR
44.	Broad-Winged Hawk	MIG/ (WR?)
45.	Short-Tailed Hawk	MIG
46.	Bald Eagle	TR
47.	Osprey	YR
48.	Kestrel	WR
49.	Morlin	WR/MIG
50.	Peregrine Falcon	MIG/WR
51.	Caracara	TR
52.	Virginia Rail	WR
53.	Clapper Rail	YR
54.	Sora	WR
55.	Black Rail	TR (?)
56.	American Coot	WR (YR?)
57.	Common Gallinula	MIG
58.	American Oystercatcher	YR (?)
59.	Sn Plover	YR (?)
60.	Pippin Plover	WR
61.	Semipalmated Plover	YR
62.	Wilson's Plover	SR
63.	Killdeer	WR
64.	Black-Bellied Plover	YR
65.	Ruddy Turnstone	YR
66.	Red Knot	WR/MIG
67.	Sanderling	YR
68.	Dunlin	WR
69.	Western Sandpiper	MIG/TR
70.	Least Sandpiper	WR
71.	Semipalmated Sandpiper	MIG (YR?)
72.	Greater Yellowlegs	WR
73.	Lesser Yellowlegs	WR
74.	Spotted Sandpiper	MIG/ (WR?)
75.	Common Snipe	MIG/WR
76.	Short-Billed Doeitcher	
77.	Marbled Godeit	YR (?)
78.	Whimbrel	SR
79.	Willet	YR
80.	Parasitic Jeager	TR
81.	Herring Gull	YR
82.	Ring-Billed Gull	YR
83.	Laughing Gull	YR
84.	Bonaparte's Gull	WR
85.	Royal Tern	YR/MIG
86.	Sandwich Tern	SR
87.	Caspian Tern	YR (?)
88.	Black Tern	MIG
89.	Least Tern	SR
90.	Common Tern	MIG
91.	Forster's Tern	YR
92.	Black Skimmer	YR (?)
93.	Mourning Dove	SR
94.	White-Winged Dove	MIG
95.	Ground Dove	YR

96. Yellow-Billed Cuckoo MIG
97. Chuck-Will's-Widow SR
98. Whip-Poor-Will WR
99. Common Nighthawk SR
100. Chimney Swift MIG
101. Ruby-Throated Hummingbird MIG
102. Belted Kingfisher WR
103. Common Flicker WR
104. Red-Bellied Woodpecker TR
105. Red-Headed Woodpecker TR
106. Yellow-Bellied Sapsucker WR
107. Ladder-Backed Woodpecker TR
108. Scissor-Tailed Flycatcher TR/MIG
109. Eastern Kingbird SR
110. Western Kingbird TR
111. Gray Kingbird SR
112. Great Crested Flycatcher SR
113. Eastern Phoebe WR
114. Eastern Wood Pewee MIG
115. Purple Martin MIG
116. Cliff Swallow MIG
117. Barn Swallow MIG
118. Tree Swallow MIG
119. Rough-Winged Swallow MIG
120. Common Crow SR/TR
121. Fish Crow SR
122. BLue Jay TR
123. Brown-Headed Nuthatch TR
124. House Wren WR
125. Winter Wren WR
126. Carolina Wren YR
127. Sedge Wren WR
128. Marsh Wren WR
129. Mockingbird YR
130. Brown Thrasher WR
131. Grey Catbird WR
132. American Robin MIG/WR
133. Gray-Cheeked Thrush MIG
134. Swainson's Thrush MIG
135. Hermit Thrush MR/MIG
136. Veery MIG
137. Eastern Bluebird WR
138. Ruby-Crowned Kinglet WR
139. Blue-Gray Gnatcatcher YR (?)
140. Golden-Crowned Kinglet WR
141. Water Pipit TR
142. Loggerhead Shrike TR
143. Wood Thrush MIG
144. Cedar Waxwing MIG
145. Philadelphia Vireo MIG
146. Yellow-Throated Vireo MIG
147. Red-Eyed Vireo MIG
148. White-Eyed Vireo SR (YR?)
149. Solitary Vireo WR
150. Black-and-White Marbler TR/MIG
151. Prothonotary Warbler MIG
152. Northern Parula Warbler MIG
153. Yellow Warbler MIG
154. Golden-Winged Warbler MIG
155. Palm Warbler WR
156. Pine Warbler YR
157. Magnolia Warbler MIG
158. Yellow-Rump Warbler WR
159. Cape May Warbler MIG
160. Bay-Breasted Warbler MIG
161. Yellow-Throated Warbler MIG
162. Prairie Warbler MIG
163. American Redstart MIG
164. Orange-Crowned Warbler WR
165. Hooded Warbler MIG
166. Common Yellowthroat YR (?)
167. Louisiana Waterthrush MIG
168. Northern Waterthrush MIG
169. Red-Winged Blackbird YR
170. Brown-Headed Cowbird SR
171. Brewer's Blackbird TR
172. Boat-Tailed Grackle YR
173. Common Crackled TR (SR?)
174. Bobolink MIG
175. Eastern Meadowlark WR
176. Orchard Oriole MIG
177. Northern Oriole MIG
178. Summer Tanager SR
179. Western Tanager TR/MIG
180. Scarlet Tanager MIG
181. Northern Cardinal WR (YR?)
182. American Goldfinch MIG
183. Blue Grosbeak MIG
184. Indigo Bunting MIG
185. Painted Bunting MIG
186. Rose-Breasted Grosbeak MIG
187. Rufous-Sided Towhee YR
188. Northern Junco TR
189. White-Throated Sparrow WR
190. Chipping Sparrow MIG
191. Field Sparrow WR
192. Swamp Sparrow WR
193. Song Sparrow WR
194. Savannah Sparrow WR
195. Sharptailed Sparrow WR
196. Seaside Sparrow WR

Fifty most likely Wetland and Shore Birds on Dog Island

1. Common loon (1)
2. Pied-Billed Grebe (2)
3. Double-Crested Cormorant (4)
4. Brown Pelican (6)
5. Gt. Blue Heron (8)
6. Little Blue Heron (9)
7. Louisiana Heron (10)
8. Cattle Egret (11)
9. Reddish Egret (12)
10. Great Egret (13)
11. Snowy Egret (14)
12. Black-Crowned Night Heron (15)
13. Yellow-Crowned Night Heron (16)
14. Green Heron (17)
15. American Bittern (19)
16. American Widgeon (24)
17. Greater Scaup (31)
18. Hooded Merganser (34)
19. Red-breasted Merganser (35)
20. Turkey Vulture (36)
21. Marsh Hawk (40)
22. Red-tailed Hawk (41)
23. Bald Eagle (46)
24. Osprey (47)
25. Clapper Rail (53)
26. Sora Rail (54)
27. American Coot (56)
28. American Oystercatcher (58)
29. Semipalmated Plover (61)
30. Killdeer (63)
31. Black-Bellied Plover (64)
32. Ruddy Turnstone (65)
33. Sanderling (67)
34. Dunlin (68)
35. Least Sandpiper (70)
36. Semipalmated Sandpiper (71)
37. Greater Yellowlegs (72)
38. Lesser Yellowlegs (73)
39. Spotted Sandpiper (74)
40. Common Snipe (75)
41. Short-Billed Dowitcher (76)
42. Willet (79)
43. Herring Gull (81)
44. Ring-Billed Gull (82)
45. Laughing Gull (83)
46. Royal Tern (85)
47. Caspian Tern (87)
48. Least Tern (89)
49. Forster's Tern (91)
50. Black Skimmer (92)

TWENTY-FIVE MOST LIKELY DOG ISLAND SHELL FAMILIES

BIVALVES (PELECYPODS)

ARK shells: Family ARCIDAE
- TURKEY WING: *Arca zebra*
- PONDEROUS ARK: *Noetia ponderosa*
- RED-BROWN ARK: *Barbatia cancellaria*
- INCONGRUOUS ARK: *Anadara brasiliana*
- CUT-RIBBED ARK: *A. floridana*
- TRANSVERSE ARK: *A. transversa*

CARDITA shells: Family CARDITIDAE
- BROAD-RIBBED CARDITA: *Carditamera floridana*

COCKLE shells: Family CARDIIDAE
- GIANT ATLANTIC COCKLE: *Dinocardium robustum*
- ATLANTIC STRAWBERRY COCKLE: *Americardia media*
- COMMON EGG COCKLE: *Laevicardium laevigatum*
- PRICKLY COCKLE: *Trachycardium egmontianum*

COQUINA shells: Family DONACIDAE
- FLORIDA COQUINA: *Donax variabilis*

JINGLE shells: Family ANOMIIDAE
- ATLANTIC JINGLE: *Anomia simplex*

KITTEN'S PAW shells: Family PLICATULIDAE
- KITTEN'S PAW: *Plicatula gibbosa*

LUCINE shells: Family LUCINIDAE
- PENNSYLVANIA LUCINE: *Lucina pensylvanica (Linga, Phacoides)*
- THICK LUCINE: *Phacoides pectinata (Linga, Lucina)*
- TIGER LUCINE: *Codakia orbicularis*
- DENTATE LUCINE: *Divaricella dentata*

MUSSEL shells: Family MYTILIDAE
- TULIP MUSSEL: *Modiolus americanus*
- YELLOW MUSSEL: *Brachiodontes citrinus*
- SCORCHED MUSSEL: *B. exustus*

OYSTER shells: Family OSTREIDAE
- EASTERN OYSTER: *Crassostrea virginica*
- HORSE OYSTER: *Ostrea equestris*

PEN shells: Family PINNIDAE
- RIGID PEN SHELL: *Atrina rigida*
- AMBER PEN SHELL: *Pinna carnea*

SCALLOP shells: Family PECTINIDAE
- CALICO SCALLOP: *Aequipecten gibbus (Argopecten)*
- ATLANTIC BAY SCALLOP: *A. irradians*

SURF CLAM shells: Family MACTRIDAE
- ATLANTIC SURF CLAM: *Spisula solidissima*

TELLIN shells: Family TELLINIDAE
- SPECKLED TELLIN: *Tellina listeri*
- ALTERNATE TELLIN: *T. alternata*

VENUS CLAM shells: Family VENERIDAE
- SUNRAY VENUS: *Macrocallista nimbosa*
- SOUTHERN QUAHOG: *Mercenaria campechiensis*
- LISTER'S VENUS: *Periglypta listeri*
- KING VENUS: *Chione paphia*
- CROSS-BARRED VENUS: *C. cancellata*
- LIGHTNING VENUS: *Pitar fulminata*
- DISK DOSINIA: *Dosinia discus*

UNIVALVES (GASTROPODS)

AUGER shells: Family TEREBRIDAE
- ATLANTIC AUGER: *Terebra dislocata*

CONCH shells: Family STROMBIDAE (see also WHELK and TULIP)
- FLORIDA FIGHTING CONCH: *Strombus alatus*
- QUEEN CONCH: *S. gigas*

KEYHOLE LIMPET shells: Family FISSURELLIDAE
- LISTER'S KEYHOLE LIMPET: *Diodora listeri*
- CAYENNE KEYHOLE LIMPET: *D. cayenensis*
- KNOBBY KEYHOLE LIMPET: *Fissurella nodosa*
- BARBADOS KEYHOLE LIMPET: *F. barbadensis*
- SOWERBY'S KEYHOLE LIMPET: *Lucapina sowerbii*

MOON SNAIL shells: Family NATICIDAE
- ATLANTIC MOON SNAIL or SHARK EYE: *Polinices duplicatus*
- COMMON BABY'S EAR: *Sinum perspectivum*

MUREX shells: Family MURICIDAE
- GIANT ATLANTIC MUREX: *Murex fluvescens*
- APPLE MUREX: *M. Pomum*
- PITTED MUREX: *Favartia cellulosa*
- ATLANTIC OYSTER DRILL: *Urosalpinx cinerea*
- FLORIDA DOGWINKLE or ROCK SNAIL: *Thais floridana*

NERITE shells: Family NERITIDAE
- TESSELLATE NERITE: *Nerita tessellata*

OLIVE shells: Family OLIVIDAE
- LETTERED OLIVE: *Oliva sayana*

PERIWINKLE shells: Family LITTORINIDAE
- COMMON PERIWINKLE: *Nodilittorina tuberculata*

SLIPPER shells: Family CALYPTRAEIDAE
- EASTERN WHITE SLIPPER: *Crepidula plana*
- COMMON ATLANTIC SLIPPER: *C. fornicata*
- WEST INDIAN CUP-AND-SAUCER: *Crucibulum auricula*

TULIP and HORSE CONCH shells: Family FASCIOLARIIDAE
- FLORIDA HORSE CONCH: *Pleuroploca gigantea*
- TRUE TULIP: *Fasciolaria tulipa*
- BANDED TULIP: *F. hunteria*

WHELK shells: Family MELONGENIDAE
- LIGHTNING WHELK: *Busycon contrarium*
- CHANNELED WHELK: *B. canaliculatum*
- PEAR WHELK: *B. spiratum*
- FLORIDA CROWN CONCH: *Melongena corona*

ALPHABETIC LISTING OF FAMILIES

Anomiidae (JINGLE)
Arcidae (ARK)
Calyptraeidae (SLIPPER)
Cardiidae (COCKLE)
Carditidae (CARDITA)
Donacidae (COQUINA)
Fasciolariidae (HORSE CONCH and TULIP)
Fissurellidae (KEYHOLE LIMPET)
Littorinidae (PERIWINKLE)
Lucinidae (LUCINE)
Mactridae (SURF CLAM)
Melongenidae (WHELK and CROWN CONCH)
Muricidae (MUREX)
Mytilidae (MUSSEL)
Naticidae (MOON SNAIL)
Neritidae (NERITE)
Olividae (OLIVE)
Ostreidae (OYSTER)
Pectinidae (SCALLOP)
Pinnidae (PEN)
Plicatulidae (KITTEN'S PAW)
Strombidae (CONCH)
Tellinidae (TELLIN)
Terebridae (AUGER)
Veneridae (VENUS CLAM/QUAHOG/DISK)

General Notes on Shell Identification

MOLLUSK means "soft bodied." Most have bony a exoskeleton called a "valve(s)." Some, such as octupi and nudibranchs do not. The soft parts of many mollusks (e.g. conchs, scallops, oysters, etc.) are edible. There are seven major groups of mollusks.

1. GASTROPODA. ("stomach-footed") 80% of all living mollusks are found in this group. They are univalves (having only one shell). The prettiest of these live in marine environments, but some of their cousins live in your backyard as snails or garden slugs.
2. PELECYPODS. ("hatchet-footed") This is the second largest group of mollusks. They are bivalves (having two parts to their shell). Some of the cousins to the marine bivalves live in your local rivers and ponds as mussels and freshwater clams.
3. POLYPLACOPHORA. ("many-plated") These mollusks have eight bony plates. E.g. chitons.
4. CEPHALOPODA. ("head-foot") E.g. octopi, squid.
5. SCAPHOPODA. ("boat-foot") E.g. tusk shells.
6. APLACAPHORA. ("no-plate bearers") E.g. deep sea worms.
7. MONOPLACOPHORA. ("one plate bearer") E.g. deep sea "living fossil" limpets.

Valves are formed by secretions from the mantle, so they often show concentric growth rings and/or ribs; but these are not necessarily annual. Note that some species have a very different juvenile form from the adult (e.g. the juvenile Queen Conch has no stromboid notch.) The adductor muscles leave scars inside the shell. The mantle leaves a pallial line where it was attached to the inside of the valve (sometimes with a depression or sinus.) The siphon may leave a canal where it extended from the valve(s). There may be evidence of the ligament that was used to open the valves. There may be teeth in the bivalve hinge. There may be remnants of the periostricum the byssus. Note should be made of coloration. Shapes may vary (e.g. oblong, globose, orbicular, bubble-shaped, screw-shaped, fan-shaped.) There may be important structures such as an umbilicus, internal accessory plate, parietal shield, lanule, escutcheon, or beaks. Shells may be flattened or inflated. Lines may be concentric, radiating, vertical to axis, or cancellate. The shell may have spines, knobs, shoulders, beads, pits, or specs. Most of these descriptive terms have logical applications, and all may be significant in the discrimination of one species from another. It is not, however, necessary to memorize them. Most good shell references will have illustrated examples that can be easily referred to as you shell. Happy collecting!

CLASSIFICATION KEY TO BIVALVE (PELECYPOD) FAMILIES

1. Shell has hinge teeth that are numerous (taxodont) or absent (cryptodont)
    2. Hinge teeth numerous, fine (ARK/ARCIDAE)
    2. Hinge teeth absent
        3. Shell somewhat translucent, irridescent
            4. Shell long and pointed like Japanese fan (PEN/PINNIDAE)
            4. Shell not long and pointed
                5. Shell eliptical, elongate
                    6. Beak on end of oval (MUSSEL/MYTILIDAE)
                    6. Beak slightly off-center of oval (COQUINA/DONICIDAE)
                5. Shell globose
                    6. Shell fragile, transparent (JINGLE/ANOMIADAE)
                    6. Shell not fragile, transparent (DISK/VENERIDAE)
        3. Shell not translucent
            4. Shell shaped like Shell Oil sign (globose, strongly ribbed) (SCALLOP/PECTINIDAE)
            4. Shell not shaped like Shell Oil sign (OYSTER/OSTREIDAE)
1. Shell with hinge teeth numbering 2-3 and clearly differentiated (heterodont)
    2. Shell 1½" or smaller
        3. Shell shaped like a kitten's paw (KITTEN'S PAW/PLICATULIDAE)
        3. Shell not shaped like a kitten's paw
            4. Shell cancellate (ribs and concentric lines equally strong) (VENUS/VENERIDAE)
            4. Shell not cancellate
                5. Shell ribbed
                    6. Shell strongly ribbed (CARDITA/CARDITIDAE)
                    6. Shell weakly ribbed (THIN LUCINE/LUCINIDAE)
                5. Shell with concentric lines (PENNSYLVANIA LUCINE/LUCINIDAE)
    2. Shell 1½" or larger
        3. Shell fragile with two tiny cardinal teeth (TELLIN/TELLINIDAE)
        3. Shell not fragile
            4. Shell strongly ribbed (COCKLE/C DIIDAE)
            4. Shell not strongly ribbed
                5. Shell with spoon-shaped depression in hinge (chondrophore) (SURF CLAM/MACTRIDAE)
                5. Shell without chondrophore
                    6. Shell with deep posterior furrow on outside (THICK LUCINE/LUCINIDAE)
                    6. Shell without deep posterior furrow
                        7. Shell elongate (SUNRAY VENUS/VENERIDAE)
                        7. Shell globose (QUAHOG/VENERIDAE)

CLASSIFICATION KEY TO UNIVALVE (GASTROPOD) FAMILIES

1. Shell with top and bottom end both pointed
   2. Shell 1" or less (top to bottom)
      3. Shell long, slender, screw-shaped (AUGER/TEREBRIDAE)
      3. Shell rounded
         4. Mouth rounded, untoothed (PERIWINKLE/LITTORINIDAE)
         4. Mouth oblong, toothed (OYSTER DRILL/MURICIDAE)
   2. Shell 1" or more (top to bottom)
      3. Shell pickle-shaped (OLIVE/OLIVIDAE)
      3. Shell NOT pickle-shaped
         4. Shell with spines or 5-7 ribs
            5. Stromboid notch **absent in juvenile** (CONCH/STROMBIDAE)
            5. No stromboid notch
               6. Spines or ribs scattered from top to bottom of shell (MUREX/MURICIDAE)
               6. Spines just on shoulders (CROWN CONCH/MELONGENIDAE)
         4. Shell with no long spines or prominent ribs
            5. Mouth pink or pinkish brown
               6. Shell grayish (DOGWINKLE/MURICIDAE)
               6. Shell reddish brown (HORSE CONCH/FASCIOLARIIDAE)
            5. Mouth tan, brown, or gray
               6. Shell without squared shoulders (TULIP/FASCIOLARIIDAE)
               6. Shell with squared shoulders (WHELK/MELONGENIDAE)

1. Shell with only top or neither end pointed
   2. Shell coiled like a garden snail
      3. Umbilicus present (MOON SNAIL/NATICIDAE)
      3. Umbilicus NOT present (NERITE/NERITIDAE)
   2. Shell NOT coiled like a garden snail
      3. Internal shelly structures absent-shell coolie-hat shaped (KEYHOLE LIMPET/FISSURELLIDAE)
      3. Internal shelly structure present (SLIPPER/CALYPTRAEIDAE)

SHELL TIPS

1. Ponderus Ark
   - black periostracum
   - straight line of teeth

2. Small Venus Clam
   - flat side of valve (escutcheon)
   - scoop (lanule)

3. Tellin
   - Double teeth

4. Sun Ray Venus
   - show sun's rays

5. Surf Clam
   - depression (chondrophore)

6. Thick lucine
   - one groove

7. Cardita
   - small valves with pronounced ribs

8. Quahog
   - heavy bivalve
   - Indian money
   - Used for clam chowder

9. Oyster Drill
   - drills holes in oyster shell with teeth

10. Cockle
    - algae eater

11. Whelks
    - carniverous
    - will feed on cockles

12. Bonnet
    - goose pimpled (stipuled) parietal shield

13. Tun
    - parietal shield not stipuled

14. True Conch
    - stromboid notch (may not be developed in juveniles.)

Location

Clams are located in both fresh and salt water. They routinely exist partially or completely buried in the sand or mud. Freshwater clams have been found in rivers, lakes and streams in the Mississippi River valley, but pollution and acid rain are severely decreasing population counts. Marine species are also sensitive to chemical changes in their environment.

Ethology (Benavior)

Some mussels lie half buried in sand. Their reactions are slow and sluggish and therefore are available for ready observation. As the mollusk poses half buried at rest, the valves of the hard exoskeleton are slightly agape ventrally. One can observe the fringed edges of the mantle which line the valve. The posterior edges of the mantle form two openings, the incurrent and excurrent siphon, which allow for water movement into and out of the soft internal body parts as the organisms filter feeds. (See Fig. 1)

Observation Technique

Pipette a small amount of carmine dye near the siphons of a living clam. Note the movement of the dye into and out of the siphons. Gently touch the mantle of the mollusk with a glass rod. Note the organim's sensitivity not only to chemical stimulus but also to touch.

Some marine species have siphons drawn into a long tubular sturcture. When the organism is burrowed into the sand the siphon extends to the surface to bring water into the mantle cavity.

The foot is another observable structure of the mollusk. It is a soft, flexible and very sensitive organ covered with mucus glands for protection. If possible lift a clam from the sand to watch the quick withdrawal of the foot. Upon returning the clam on its side to the sand observe its efforts to right itself with the muscular foot.

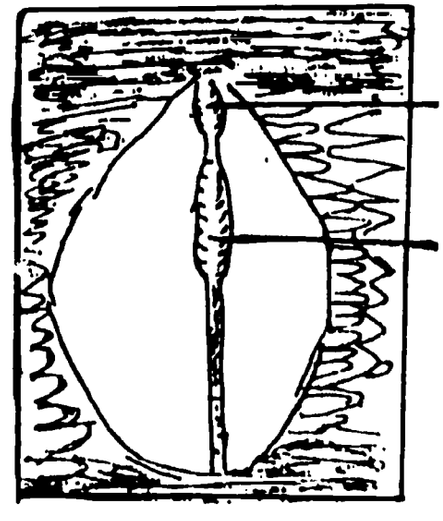


Fig. 1

A half-buried bivalve with exposed filtering siphons

Mussel (Clam) Dissection

The molluskan body is characterized by a ventral, muscular foot and a visceral mass enclosed in a thin tissue layer called the mantle, which usually secretes a calcareous shell. Modification of this basic organization has produced extreme variability among the mollusks. This phylum includes the chitons, tooth shells, snails, slugs, clams, mussels, octopi, and squids.

Exercise 2 Shell Features

A. External Figure 2

1. Examine the mussel in the dissecting pan and note the bivalve or 2-part shell.

2. Note the umbo or elevation toward the anterior end.

3. Determine the posterior and anterior ends. The more pointed end of the valves is the posterior or back end.

4. Determine the dorsal and ventral regions of your clam. The hinge ligament fastens the 2 shells together along the dorsal surface.

5. Feel the concentric growth rings radiating from the umbo.

B. Internal Shell Features Figure 3

1. Note the smooth pearly lining, the nacre.

2. Observe the mantle line. This is the point of attachment of the mantle to the valve.

3. The valves are held together by strong muscles. Note the large anterior adductor scar and posterior adductor scar.

4. Some mollusks are identified by characteristic "teeth" on the shell. Note the large cardinal teeth and smaller lateral teeth along the hinge.

The following vocabulary will prove useful in further mollusk identification.

a. heterodont = teeth varied in appearance

b. taxadont = numerous small teeth on the hinge E.g., Ark shells

c. cryptodont = "hidden teeth", teeth very small or nonexistent

Which term best describes the mussel? _____

Exercise 3 Internal Anatomy Figure 4

1. Keeping the scapel blade as close to the shell as possible, separate the valves carefully by cutting the anterior and posterior adductor muscles.

2. Identify the mantle as the thin tissue covering the visceral mass and the foot.

3. Bring 2 halves of the mantle together. Note the larger, ventral incurrent siphon and the smaller, dorsal excurrent siphon. These animals breathe and are nourished by filtering water in and out the siphons, trapping food particles.

4. Identify gills by folding away the mantle. If the gills appear puffy they may contain larvae—young mussels.

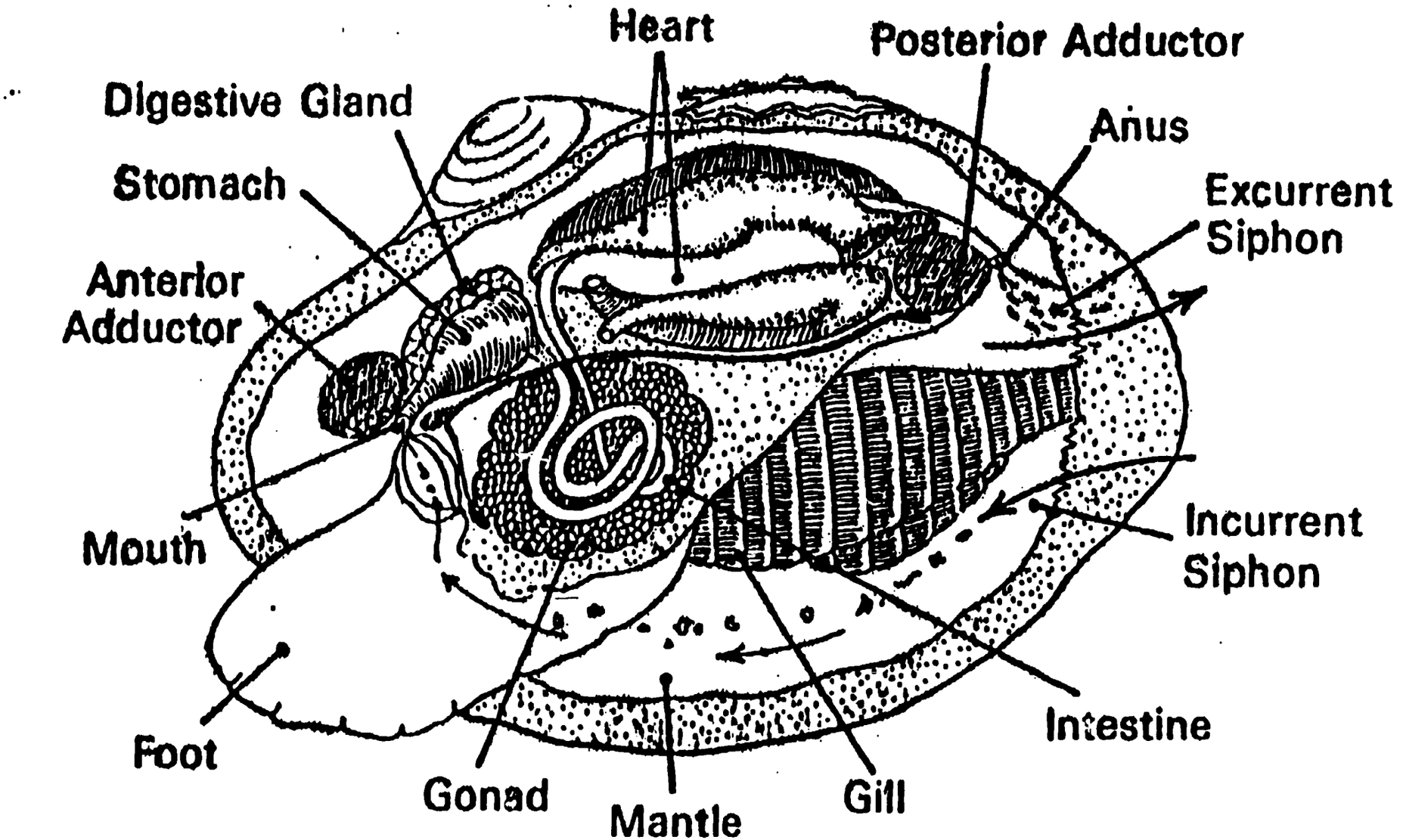
5. Note the large, tough, muscular foot used for locomotion.

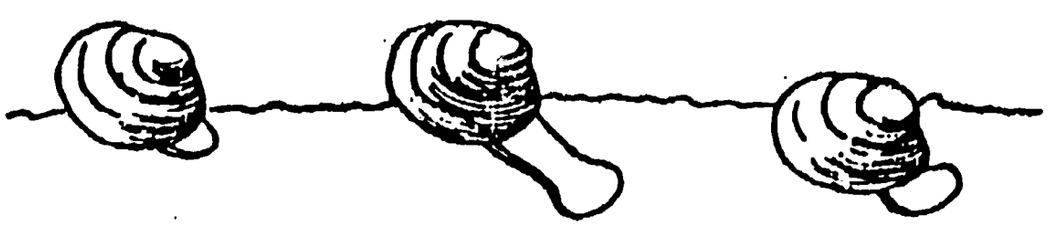
6. Identify the labial palps as the limp flaps of tissue that channel food toward the mouth.

7. The main fleshy body is called the visceral mass. This contains the following internal organs:

mouth	anus
stomach	intestine
digestive gland	heart and pericardium
gonads	kidney

CLAM


Heart
Posterior Adductor
Digestive Gland
Anus
Stomach
Excurrent Siphon
Anterior Adductor
Mouth
Incurrent Siphon
Intestine
Foot
Gonad
Mantle
Gill



Simplified Key to Dog Island Plants

1. Beach Vegetation

    2. Grasses

        3. Upright, over 2'

            4. blade width under ½"----------Sea Oats

            4. blade width over ½"----------Beach Grass

        3. Trailing, under 2'----------Sand Spur

    2. Broadleaved Plants

        5. Leaves not fleshy----------Seaside Primrose

        5. Leaves fleshy and.....

            6. rounded---------- Seaside Pennywort

            6. lobed---------- Beach Morning Glory

            6. narrow---------- Sea Purslane

            6. toothed---------- Sea Rocket

Seaside Pennywort

Beach Morning Glory

Sea Purslane

Sea Rocket

1. Dune-Swale Vegetation

7. Pine trees

8. Needles over 5" long---------- Slash Pine

8. Needles under 5" long----------Sand Pine

7. Other shrubs or trees

9. Leaves needle-like

10. Green leaves---------- Florida Rosemary

10. Gray leaves---------- Convadina

9. Leaves broad

11. Leaves 1" or less

12. twigs gray---------- Youpon Holly

12. twigs green---------- Inkberry

11. Leaves more than 1"

13. oblong---------- live oak

13. elliptic---------- myrtle oak

live oak

myrtle oak

CHECKLIST OF COMMON PLANTS OF DOG ISLAND

LICHENS

Raindeer Moss — *Cladonia sp.*

FLOWERING PLANTS

Pinacea

Sand Pine	*Pinus clausa*	(*P. glabra*?)
Slash Pine	*P. elliotti*	

Typhaceae

Cattail	*Typha latifolia*

Alismataceae

Arrowhead	*Sagittaria graminea*

Poaceae

Sea Oats	*Uniola paniculata*
Cordgrass	*Spartina patens*
Sandspur	*Cenchrus echinatus*

Cyperaceae

Sawgrass	*Cladium jamaciense*

Arecacea

Saw Palmetto	*Sevenoa repens*

Juncaceae

Black Rush	*Juncus roemerianus*

Liliaceae

Yucca	*Yucca aloifolia*
Yucca	*Yucca filamentosa*

Amaryllidaceae

Rain Lilly	*Zephranthes simpsonii*

Iridacea

Blue-eyed Grass	*Sisyrinchium*

DOG ISLAND FLOWERING PLANTS Continued

Caryophyllaceae	
Square Flower	Paronychia erecta
Orchidaceae	
Rose Pogonia	Pogonia ophioglossoides
Saururaceae	
Lizards tail	Saurnrus cernuus
Fagaceae	
Live Oak	Quercus germinata
Polygonaceae	
Sheep Sorrel	Rumex hastatulus
Jointweed	Polygonella gracillis
Aizoaceae	
Sea Purslane	Sesuvium portulascastrum
Brassicaceae	
Sea rocket	Cakile constricta
Droseraceae	
Sundew	Drosera brevifolia
Rosaceae	
Dewberry	Rubus trivialis
Fabaceae (Bean)	
Bladder pod	Sesbania vesicaria
Fabaceae (Pea)	
Beach Pea	Galactia
Aguifoliaceae	
Yaupon Holley	Ilex vomitoria
Malvaceae	
Salt Marsh Mallow	Kostelezkya virginica
Hypericaceae	
Saint John's Wort	Hypericum reductum

DOG ISLAND FLOWERING PLANTS Continued

Cistaceae

Rockrose	Helianthemum arenicoli

Cactaceae

Opuntia humifusa	O. pusilla

Melastomataceae

Meadow Beauty	Rhexia mariana

Onagraceae

Evening primrose	Oenothera humifusa

Apiaceae

Seaside Pennywort	Hydrocotyle bonariensis

Empetraceae

Florida Rosemary	Ceratiola ericoides

Loganiaceae

Rustweed	Polypremum procumbens

Gentianaceae

Sea Pink	Sabatia

Asclepiadaceae

Sandhill Milkweed	Asclepias humistrata

Conuvolvulaceae

Beach Morning Glory	Ipomoea stolonifera
Arrowleaf Morning Glory	Ipomoea sagittata

Polemoniaceae

Standing Cypress	Impomopsis rubra

Verbenaceae

Lantana	Lantana camara

Lentibulariaceae

Bladderwort	Utricularia subulata

Asteraceae

Beach Elder	Iva imbricata
Groundsel Tree	Baccharis halimifolia
Coreopsis	Coreopsis sp.
Bauldwins	Bauldwina agustifolia
Woody Goldenrod	Chrysoma pauciflosculosa
Spanish Needles	Bidens sp.

MOST COMMON PLANTS OF DOG ISLAND

Arrowhead
Sagittaria lancifolia

Arrowleaf Morning Glory
Ipomoea sagittata

Beach Morning Glory
Ipomoea stolonifera

Bedstraw
Galium hispidulum

Black Rush
Juncus roemerianus

Bladderwort
Utricularia biflora

Blazing Star
Liatris chapmanii

Blueberry
Vaccinium darrowii

Blue-eyed Grass
Sisyrinchium atlanticum

Boneset
Eupatorium anomalum

Button Bush
Cephalanthus occidentalis

Chickweed
Stellaria media

Cattail
Typha latifolia

Conradina
Conradina canesens

Cordgrass
Spartina patens

Cranesbill Geranium
Geranium carolinianum

Dewberry
Rubus trivialis

Dog Fennel
Eupatorium capillifolium

Elderberry
Sambucus canadensis

Evening Primrose
Oenothera humifusa

Florida Rosemary
Ceratiola ericoides

Frog Fruit
Phyla nodiflora

Glasswort
Salicornia virginica

Greenbrier
Smilax auriculata

Groundsel Tree
Baccharis glomeruliflora

Hat Pins
Ericaulon compressum

Henbit
Lamium aplexicaule

Hop Clover
Trifolium dubium

Jointweed
Polygonella polygama

Lily-turf
Liriope muscari

Lizard's Tail
Saururus cernuus

Marsh Elder
Iva frutescens

Meadow Beauty
Rhexia cubensis

Muscadine
Vitis rotundifolia

Narrowleaf Ground Cherry
Physalis angustifolia

Peppergrass
Lepidium virginicum

Pigweed
Amaranthus viridis

Poison Ivy
Toxicodendron radicans

Pokeweed
Phytolacca americana

Pony-foot
Dichondra carolinesis

Prickly Pear Cactus
Opuntia humifusa

Rain Lily
Zephranthes simpsonii

Rockrose
Helianthum arenicola

Rustweed
Ploypremum procumbens

Saint John's Wort
Hypericum reductum

Salt Marsh Mallow
Kosteletzkya virginica

Sand Live Oak
Quercus geminata

Sandhill Milkweed
Asclepias pedicillata

Sand Pine
Pinus clausa

Sandspur
Cenchrus echinatus

Sand Vetch
Vicia acutifolia

Sandvine Milkweed
Cynanchum angustifolium

Saw Grass
Cladium jamicense

Saw Palmetto
Serenoa repens

Sea Oats
Uniola paniculata

Sea Ox-eye or Sea Daisy
Borrichia frutescens

Seaside Pennywort
Hydrocotyle bonariensis

Sea Pink
Sabatia grandiflora

Sea Purslane
Susuvium portulacastrum

Sea Rocket
Cakile constricta

Sheep Sorrel
Rumex hastatulus

Slash Pine
Pinus elliotti

Smartweed
Polygonum punctatum

Sourgrass
Oxalis dillenii

Spiderwort
Tradescantia ohiensis

Spiny Sow Thistle
Sonchus asper

Spurge Nettle or Tread Softly
Cnidoscolus stimulosus

Spanish Bayonet
Yucca aloifolia

Spanish Needles
Bidens bipinatta

Square Flower
Paronychia erecta

Sundew
Drosera capillaris

Sweetbroom
Scoparia dulcis

Toadflax
Linaria canadensis

Venus Looking-glass
Triodanis perfoliata

Vervain
Verbena bonariensis

Water Primrose
Ludwigia repens

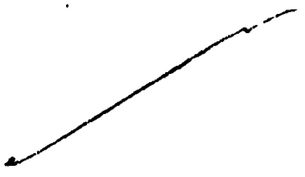
White-top Sedge
Dichromena colorata

Winged Sumac
Rhus copallina

Woody Goldenrod
Chrysoma pauciflosculosa

Yaupon Holly
Ilex vomitoria

Yucca
Yucca filamintosa



BEACH-DUNE HABITAT

Species	Type	Distinctive Features	Flowering Season
Beach Morning Glory	Perennial Vine	Glabrous, trailing and rooted at nodes Leaves alternate, leathery, notched at tip Corolla white	Summer
Sea Rocket	Annual herb	Upright growth Leaves alternate, very thick Pedals notched at tip, pedicels thick	Spring, Summer
Beach Elder	Small Shrub	Glabrous, decumbent, and branched at base Leaves alternate, oblanceolate	Fall
Seaside (1) Pennywart	perennial "creeper"	Glabrous, rooting from nodes Leaves basal, rounded and scalloped Flowers whorled on branches, small	Spring Summer Fall
Beach Pea	perennial vine	Leaves 3-foliate (usually), entire Flowers one or two at a node	Summer
Sea Purslane	perennial herb	Fleshy, creeping + rooted at nodes Leaves opposite Flowers solitary, pink within and green externally	Spring Summer Fall

1 Found in several other habitats

BEACH-DUNE, Continued

Species	Type	Distinctive Features	Flowering Season
Sea Oats (1)	perennial grass	Rhizomatous Leaves basal or stemmed, and glabrous Grain, dark red	Summer Fall

(1) Also found in Dune-Swale Habitat.

DUNE-SWALE HABITAT

Florida Rosemary	medium shrub	Much-branched, bark on older wood shreddy + gray, young twings tomentose Leaves alternate or whorled, linear, revolute and sessle Flowers small, plants dioecious	Summ Fall
Square Flower	herb	Leaves opposite, entire Seed red or dark red	Sprin Summ
Groundsel tree (1)	shrub	Glabrous stems Leaves grayish, alternate, fleshy, serrate toward apex Flowers yellowish, discoid, plants dioecious	Summ Fall
Jointweed (1)	perennial woody at base	Branches internodally Leaves linear, glabrous	Fall

(1) Also found in forest habitat.

DUNE-SWALE HABITAT, Continued

Species	Type	Distinctive Features	Flowering Season
Bauldwina (1)	perennial herb	Erect, Stems ribbed, pubescent and usually not branching Leaves alternate, entire with tapering base Petals toothed at apex	Fall
Woody (1) Goldenrod	shrub .5-1.5m	Glabrous, viscid on young growth; trunk short, stocky and freely branched Leaves stemmed	Fall
Rockrose (1)	perennial	Leaves stellate - pubescent Flowers of two types, showy yellow with long pedicels, and those with shorter pedicels and no petals	Spring Summer
Saint John's Wort	shrub l-5 d m	Glabrous, stems angled, matted and decumbent Leaves opposite, entire with dots	Spring Summer
Evening Primrose	perennial	Prostrate, hoary Leaves tipped with a spur Petals yellowish	Spring Summer Fall
Prickly (1) Pears	cactus	Woody succulents, spines apically, barbed	Spring Summer

(1) Also found in forest habitat

DUNE - SWALE HABITAT, Continued

Species	Type	Distinctive Features	Flowerir Season
Bladderwort (1)	Herba-cious	Stems underground in moist sand Leaves dissected with small bladders or linear without bladders	Summe
Rustweed (1)	perennial herb	Glabrous, branches from central crown Leaves opposite, linear, rusty colored Flowers white	Spring Summe Fall
Sheep Sorrel	Winter annual	Stems errect Leaves hastate	Spring
Rose Pogonia	perennial herb	Plant glabrous Leaf solitary, half way up stem Flowers (1-3) terminate the stem, fragrant	Spring
Sandhill Milkweed	perennial herb	Stem stout, glabros Leaves opposite, sessile with pink to lavender veins	Summe
Sundew	Herb	No Stem, rosette form Leaves with tentacle-like bristles and a sticky secretion	Sprin

(1) Also occurs in forest habitat.

DUNE-SWALE HABITAT, Continued

Species	Type	Distinctive Features	Flowering Season
Arrowleaf (1) Morning Glory	perennial vine	Stem glabrous Leaves narrowly sagittate	Summer
Meadow Beauty	perennial herb	Stem with course bristles, often colonial from horizontal roots Leaves opposite Flowers purplish to white, 1 - 2" wide	Spring Summer
Sea Pink (1)	herb	Stem glabrous Leaves opposite, entire and sessile Flowers white or pink with a yellow eye	Summer Fall
Blue-eyed Grass (1)	herb	No Stem, leaves arising from roots Leaves linear, erect + spreading	Spring

(1) Also occurs in forest habitat.

FOREST HABITAT

Raindeer (2) Moss	lichen	No true leaves, roots or flowers Low growing, light green color, interbranched Spore bearing tips pigmented brightly	———

(2) Also found in Dune-Swale Habitat.

FOREST HABITAT, Continued

Species	Type	Distinctive Features	Flowering Season
Sand Pine (1)	coniferous tree	Medium tree, dark bark and dropping branches Leaves in 2's, 2-6 inches, deep green, twisted Cones 1-3 inches long, minute prickles	Spring
Slash Pine (1)	coniferous tree	Large tree, bark purplish brown, pealing in thin, paper-like plate Leaves 7-10 inches longs, in 3's and 2's Cones 3-7 inches long, slender prickles	Spring
Sand Live Oak (1)	tree	Branches wide spreading Leaves glabrous above, tawny sellate pubescence below	Spring
Saw Palmetto (1)	armed shrub	Stems horizontal, branched Leaves palmately divided, up to 1 m across	Spring Summer
Yucca	shubby perennial	Trunk very short or absent Leaves 2-6 dm, edges fraying into fibers	Summer
Dewberry (1)	Woody Vine	Stems trailing, slender with gland-tipped bristles Leaves usually 5-foliate, purplish Flowers solitary or in 3 flowered cymes	Spring Summer

(1) Also found in the Dune-Swale Habitat and disturbed areas.

FOREST HABITAT, Continued

Species	Type	Distinctive Features	Flowerir Season
Youpon (1) Holly	Evergreen shrub	Twigs puberulent Leaves elliptic, lustrous above Fruit a red drupe, bb size	Spring

(1) Also found in the Dune-Swale Habitat.

WETLAND HABITAT

Black (1) Rush	Grass-herb	Stems glabrous, tufted, .5-1.5m tall Leaves round, stiff and pugent	Spring Summer Fall
Cord (1)	perennial grass	Stems glabrous, tufted Leaves (blades) to 6 dm long, sandpapery above, glabrous beneath	Summer
Arrow- (2) head	Aquatic herb	Leaves basal Emersed leaves linear to oval submersed leaves phylloidial	Summer Fall
Lizards (2) tail	Aquatic Herb	Stem pubescent Leaves alternate, lanceolate-cordate Flowers opposite leaves, arounded in a narrow plume	Spring

(1) Salt Marsh only.

(2) Fresh Marsh only.

WETLAND HABITAT Continued

Species	Type	Distinctive Features	Flowering Season
Sawgrass (1)	sedge (grass-like perennial)	Flowering stems glabrous, plants tufted to 3m tall Leaf blades to 1 m tall, 8-12 mm wide with rough saw-like margins	Summer
Cattail (1)	grass-like perennial	Leaves erect, sheathing stem base and higher than flowering stem	Spring Summer
Salt Marsh Mallow (1)	perennial herb	Stems stellately pubescent, several arising from root crown Leaves alternate, simple, triangular lanceolate	Summer

(1) Both fresh and Salt Marsh.

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DISTURBED HABITAT

Sandspur (1)	Annual grass	Stems tufted, culms 2-10 dm tall Blades rough above, smooth below Fruit with sharp spines	Spring Summer Fall
Spanish Bayonet	Shrub	Trunk stocky, usually more than 3 dm high Leaves spiney alone margins	Summer

(1) Also found in other habitats.

DISTURBED HABITAT, Continued

Species	Type	Distinctive Features	Flowering Season
Spanish Needles	herb	Stems usually glabrous, solid Leaves opposite, usually serrate Fruit, "beggars tick"	Fall
Coreopsis	herb	Flowers both ray and disk Involucre with 2 series of bracts, the inner wider than the outer or the outer foliaceous	Spring
Bladderpod	Annual herb	Stem glabrous, 1-2 m tall Leaves even pinnate, entire with 20 or more leaflets Fruit a conspicuous, inflated pod	Summer
Standing (1) Cypress	biennial herb	Stem erect, pubescent to 1 m tall Leaves pinnately divided into numerous, thin segments tipped with a spur Flowers red with long tube	Summer
Rain Lilly	bulbous herb	Scape galbrous Leaves linear, sheathing at base Flowers pink, solitary, terminal, subtended by a tubular, membranous bract which splits on 1 side for about ½ its length	Spring Summer Fall
Latana	herb, woody at base	Stems angular, pubescent Leaves aromatic, opposite, crenate Flowers clustered and trumpet shaped	Spring Summer Fall

(1) Also found in other habitats

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Year after year beheld the silent toil
That spread his lustrous coil;
Still, as the spiral grew,
He left the past year's dwelling for
the new,
Stole with soft step its shining
archway through,
Built up its idle door,
Stretched in his last-found home,
and knew the old no more.

Thanks for the heavenly message
brought by thee,
Child of the wandering sea,
Cast from her lap, forlorn!
From thy dead lips a clearer note is
born
Than ever Triton blew from
wreathed horn!
While on mine ear it rings,
Through the deep caves of thought
I hear a voice that sings;

Build thee more stately mansions, O
my soul,
As the swift seasons roll!
Leave thy low-vaulted past!
Let each new temple, nobler than
the last,
Shut thee from heaven with a dome
more vast,
Till thou at length art free,
Leaving thine outgrown shell by
life's unresting sea!

Oliver Wendell Holmes
from
The Chambered Nautilus

Welcome

WELCOME to the third annual Calhoun Spring Wilderness Pilgrimage! As an indication of the physical beauty and spiritual renewal offered by a seashore pilgrimage, we would like to share these lines written in 1858:

Year after year beheld the silent toil
That spread his lustrous coil;
Still, as the spiral grew,
He left the past year's dwelling for the new,
Stole with soft step its shining archway through,
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Stretched in his last-found home, and knew the old no more.

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Till thou at length art free,
Leaving thine outgrown shell by life's unresting sea!

Oliver Wendell Holmes
from
The Chambered Nautilus

Barrier Island Ecology

March 7-12, 1989
on
Dog Island, Florida

A Professional Development activity for faculty and staff of Calhoun Community College

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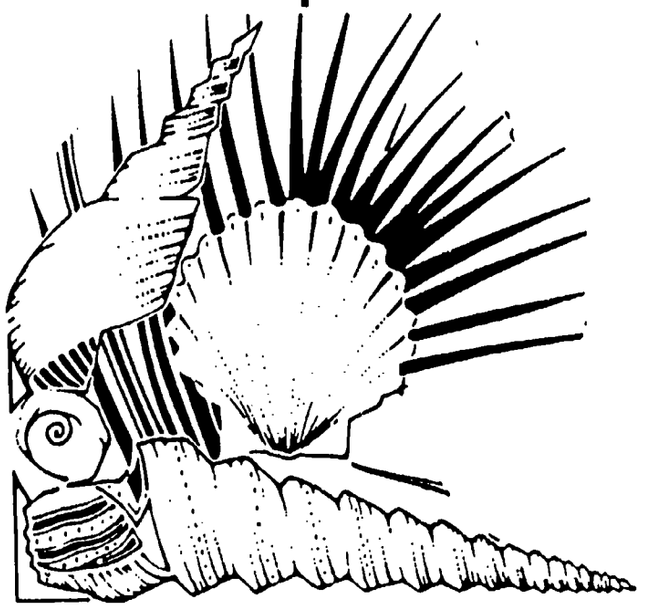
Department of Natural Sciences Field Trip for Professional Development



Information

What: An environmental awareness field study of the plants and animals of a barrier island.

Where: Dog Island, Florida

When: During the Professional Development Workshop, March, 1989

Instructors: Dr. Don Collier, Dr. Bettye Gregg, Ms. Donna Lee, and Mr. George Williams

Fee: $185.00 per person

Fees Include:

- accommodations at the Pelican Inn -- one double bed per individual (room shared with another participant).
- transportation -- vehicles will leave Calhoun Community College Tuesday evening, March 7 and return on Sunday morning, March 12.
- ferry to and from the Island
- shrimp feast

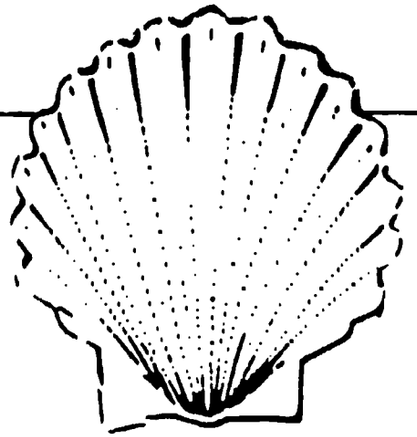
Fees will NOT include the following:

- meals while traveling and 8 meals on the island. Estimated cost, $50.00.
- phone calls, or traveling incidentals

Payment of fees:

- $85.00 deposit for accommodations, due by January 19.
- $100.00 balance due by February 28

Reservations will be made on a first-come, first-served basis, pending payment of deposit. Deposits will be accepted beginning 8:00 a.m., Thursday, January 12 through 12:00 noon, Thursday, January 19. Enrollment will be strictly limited to 14 participants. For information and trip registration forms, contact Patricia Lambert, Natural Sciences secretary, extension 444.



Planned Activities:

- ferry ride to a barrier island in the Gulf of Mexico
- nature hikes to observe coastal vegetation, and marine life on tidal flats....
- shrimp feast on the island....
- photomicroscopy of marine life
- identification of mollusks
- collection of seashells....
- leisure time on the beach....