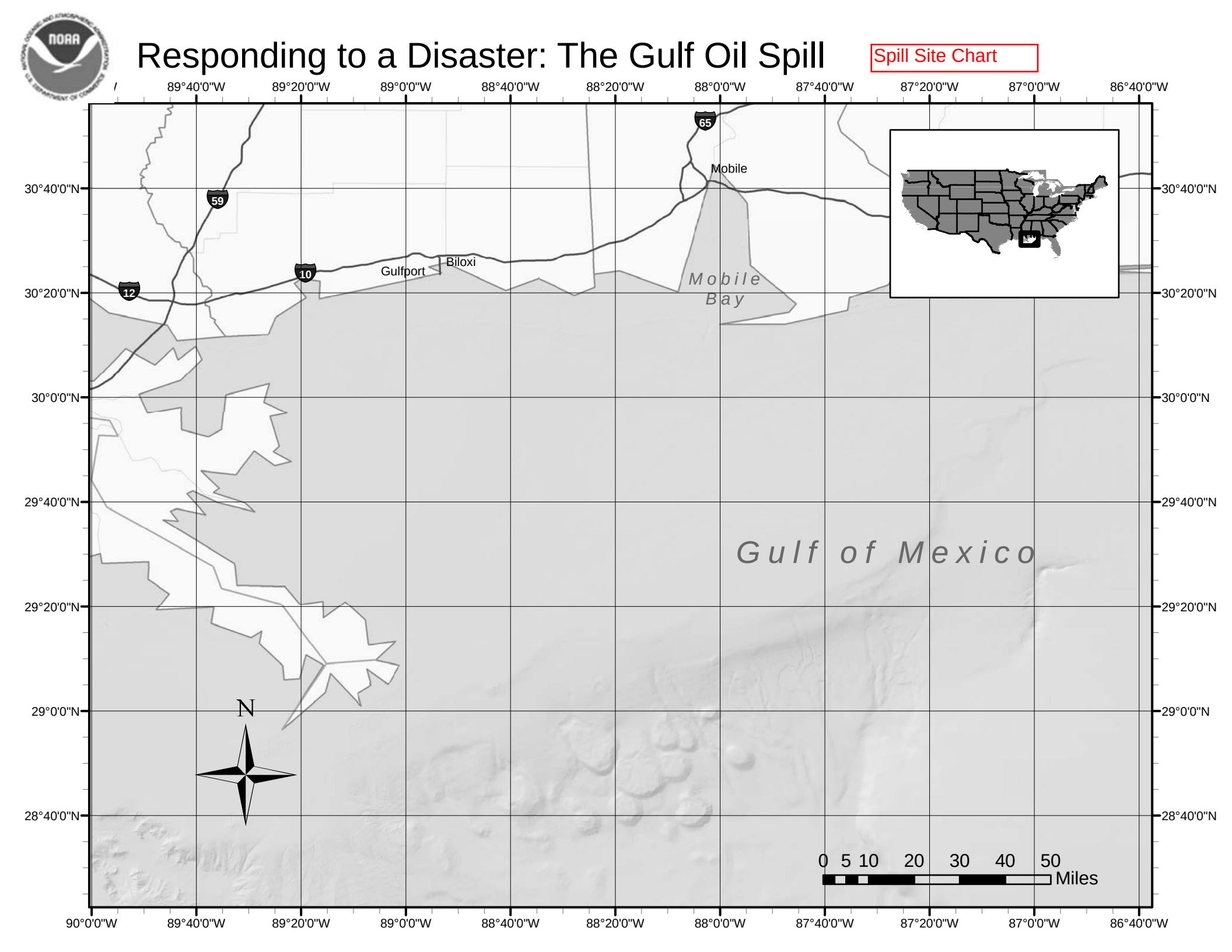
Responding to a Disaster: The Gulf Oil Spill
Activity Station Support Materials:

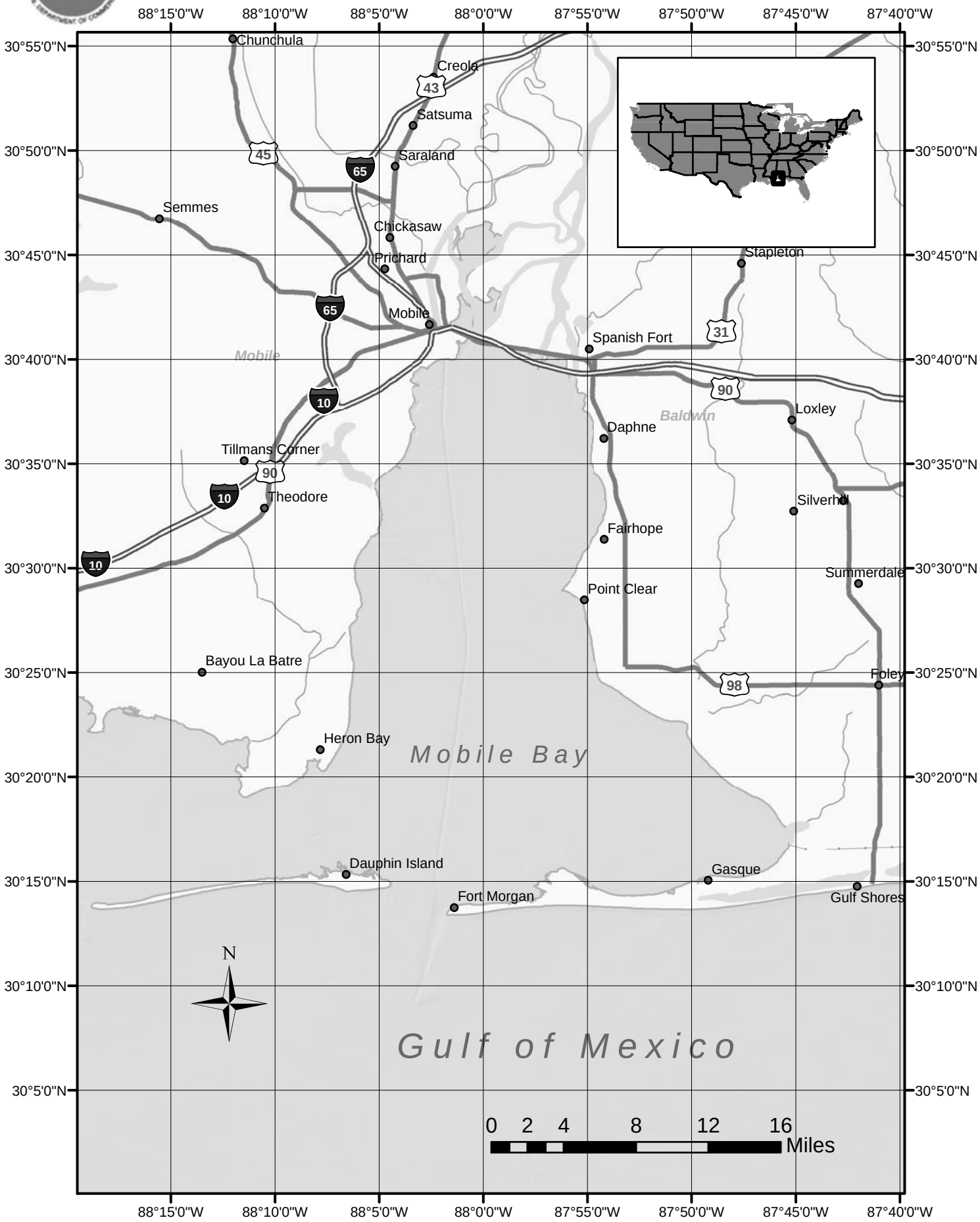
Station 2: Where will it go?
Charting Station Materials

Responding to a Disaster: The Gulf Oil Spill

Spill Site Chart

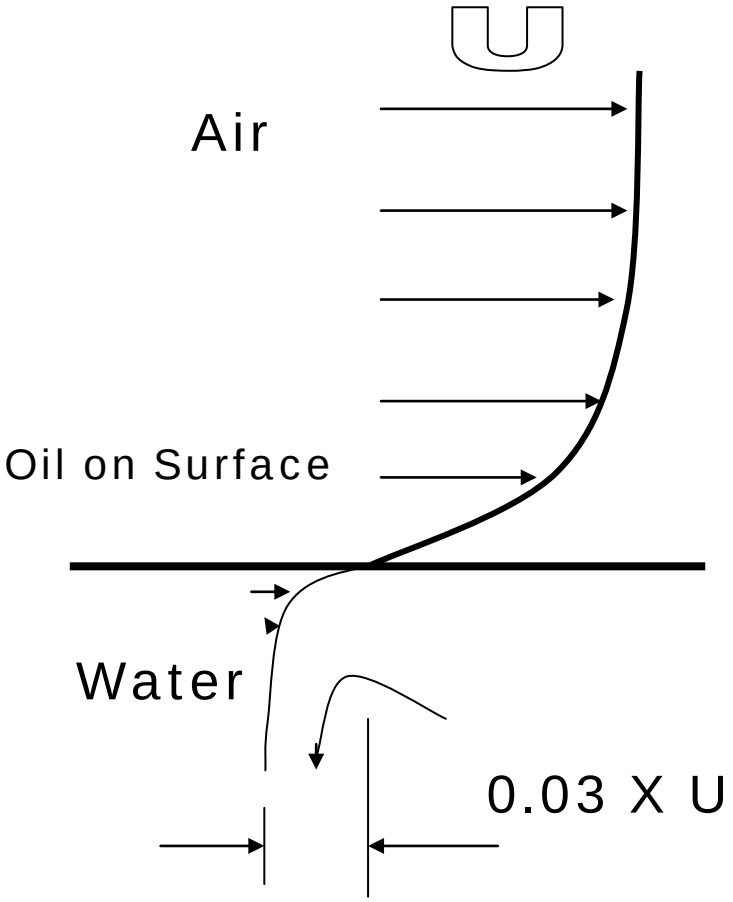


Responding to a Disaster: The Gulf Oil Spill



Mobile Bay Chart

Oil Movement by Wind: the "3% rule"



Oil on the water surface moves at about 3% of the wind speed:

$$OilSpeed = Windspeed \times 0.03$$

How long to get to somewhere a known distance away?

$$OilSpeed \times \text{Time} = \text{Distance}$$

$$\text{Time} = \frac{\text{Distance}}{OilSpeed} \qquad \text{Time} = \frac{\text{Distance}}{WindSpeed \times 0.03}$$

Responding to a Disaster: The Gulf Oil Spill
Activity Station Support Materials:

Station 3: Who will it hurt? Environmental Sensitivity Index (ESI) Assessment

(Due to size and detail the ESI map is best used on a computer screen so users can zoom in as needed – the point of land in center of ESI map (Great Point Clear) can also be found on the Mobile Bay chart (page 3) at 30^0 30' N, $87^0$55' W

Guidelines for Interpreting ESI Maps

To help users interpret the ESI maps and tabular data, we offer the following guidelines for use in addition to the map legend:

• Shoreline Habitats. The "shoreline," representing the boundary between land and water, is color-coded with the ESI classification. Most shoreline habitats are shown as a line, with no areal dimension. Where there is more than one shoreline type (e.g., a beach in front of a seawall), the colors for each habitat are shown, with the color for the landward habitat on the land side of the shoreline and the color for the seaward habitat on the water side. In areas where the intertidal zone is wide (e.g., wide tidal flats, wave-cut rocky platforms), the habitat from high to low water is filled with the ESI classification color. When data are available, the entire extent of wetlands are filled with colored patterns. The seaward edge of the wetland is color-coded with the ESI classification; the landward extent of the wetland is indicated by a dashed, colored line.

• Biological Resources. The distribution of biological resources is shown using many different conventions. The major convention is an icon associated with a point, line, or polygon that shows the species' areal distribution. The icon's reference number corresponds to a data table with details on species and life history. Biological resource data are organized into six major groups, each with a reference color: birds (green), mammals (brown), fish (blue), shellfish (orange), reptiles (red), and rare/endangered plants and special habitats (purple). These colors are used to fill hatched polygons and the icons. Each major group has subgroups with unique icons to visually indicate the type of organism or feature present. The icon or group of icons is usually located inside the polygon it represents; however, sometimes a line is connected between the icon and the polygon or point to make it easier to relate the two. Note that icons are used to indicate the types of resources present, but the actual data are the points and polygons. A red box around an icon indicates the presence of a species on the state or Federal list of threatened or endangered species.

The number listed below each icon refers to the first column of a data table for each map. The data tables, organized by group (birds, fish, etc.), include the following information: species name, status as threatened or endangered on state and Federal lists, concentration (specifically for each point or polygon), presence by month, and special life-history time periods. When a polygon contains multiple groups, the one number under the group of icons is listed under each group heading in the data tables. Where possible, the same number is used on multiple maps. For example, all bald eagle nests with the same seasonality could have the same number throughout the atlas, or the same assemblage of fish would have the same number wherever it occurred.

A data table has a separate listing for every unique combination of species, concentration, seasonality, life-history stage, and source. By looking at the monthly seasonality data in the table for each map, the species present at the time of concern can be easily identified. An 'X' or number is placed under each month in which any life stage of the species is present in the area represented by the point or polygon. Numbers are used typically for fish and shellfish where data on relative abundance are available. The final columns in the data tables include the months when reproductive activities occur or early life stages are present. Users should pay close attention to the data tables because they contain much of the information needed to identify the most sensitive resources at different times of the year.

Points, lines, and polygons on a map represent the distribution of the resources. Green points show bird nesting sites, including bald eagle nests and dense colonial nesters (e.g., heron rookeries and seabird nesting colonies). Animals and habitats are also represented as: 1) hatched polygons in the color for the animal group (e.g., green for birds); 2) black hatched polygons which contain multiple groups of resources (birds and fish in the same tidal channels); 3) solid lines (usually used for fish in small streams); or 4) in "common in ..." boxes. When showing the biological resource polygons would make the maps too difficult to read (usually when multiple polygons cover a large area), the polygons are not plotted and the presence of the resource is indicated by placing the icon in a box labeled "common in ..." The box contains an appropriate geographic reference. Different boxes can be used on the same map when, for example: "common in Winyah Bay" or "common in tidal creeks." The data for these resources are still fully present in the database but are not shown to make the maps more readable.

• Human-use Resources. Most of the human-use resources are point features indicated by a black-and-white icon. Managed lands, such as refuges and sanctuaries, have their boundaries shown as a dot-dash line with an icon and name placed inside. Where the feature is a known point location (e.g., a drinking water intake, boat ramp, marina), the exact location is shown as a small black dot and a line is drawn from it to the icon. Activities such as commercial and recreational fishing and areas such as recreational beaches are also indicated by an icon placed in the general area without any lines to points or polygons since the boundaries are not readily defined.

Some features, like historic and archaeological sites, are location-sensitive: the agency managing the resource believes the exact location should not be shown in order to protect the site. In these cases, the icon is placed in the general area of the resource, but the exact location is not shown.

ENVIRONMENTAL SENSITIVITY INDEX MAP

88°00'00" 87°52'30"
30°30'00" 30°30'00"

Great Point Clear

47 53 47 161 112 112 112 112 18 10 14 3

MOBILE BAY

Present in offshore waters
141

Present in nearshore waters
146

Present in marshes
52 107 52 107 52 107

127

Present in Mobile and Bon Secour Bays
48 105 105 26 105 113
1 1

BON SECOUR BAY

30°22'30" 30°22'30"
88°00'00" 87°52'30"

SHORELINE HABITATS (ESI)

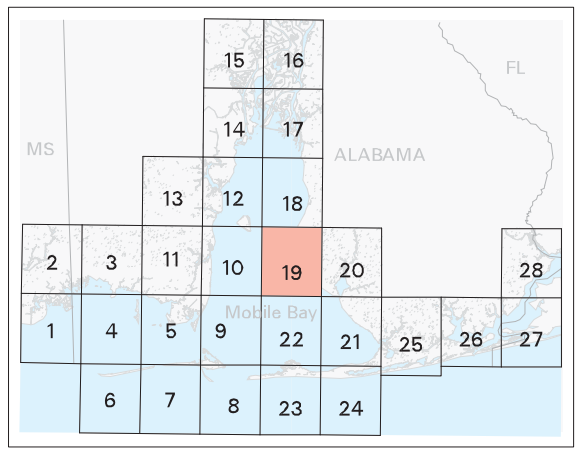
- 1B EXPOSED, SOLID MAN–MADE STRUCTURES
- 2A EXPOSED WAVE–CUT PLATFORMS IN MUD OR CLAY
  2B EXPOSED SCARPS AND STEEP SLOPES IN CLAY
- 3A FINE–TO MEDIUM–GRAINED SAND BEACHES
  3B SCARPS AND STEEP SLOPES IN SAND
- 4 COARSE–GRAINED SAND BEACHES
- 5 MIXED SAND AND GRAVEL BEACHES
- 6B RIPRAP
- 7 EXPOSED TIDAL FLATS
- 8A SHELTERED SCARPS IN MUD OR CLAY
- 8B SHELTERED, SOLID MAN–MADE STRUCTURES
- 8C SHELTERED RIPRAP
- 9A SHELTERED TIDAL FLATS
  9B SHELTERED, VEGETATED LOW BANKS
- 10A SALT–AND BRACKISH–WATER MARSHES
- 10B FRESHWATER MARSHES
- 10C SWAMPS
- 10D SCRUB–SHRUB WETLANDS

N W E S

SCALE 1:50000

1 .5 0 1 KILOMETER

1 .5 0 1 MILE



Not For Navigation
Published: August 2007

Published at Seattle, Washington
National Oceanic and Atmospheric Administration
National Ocean Service
Office of Response and Restoration
Emergency Response Division

POINT CLEAR, ALA. (1985) **ESI-19**

ALABAMA

SHORELINE HABITAT RANKINGS

1B) EXPOSED, SOLID MAN-MADE STRUCTURES

2A) EXPOSED WAVE-CUT PLATFORMS IN MUD OR CLAY
2B) EXPOSED SCARPS AND STEEP SLOPES IN CLAY

3A) FINE- TO MEDIUM-GRAINED SAND BEACHES
3B) SCARPS AND STEEP SLOPES IN SAND

4) COARSE-GRAINED SAND BEACHES

5) MIXED SAND AND GRAVEL BEACHES

6B) RIPRAP

7) EXPOSED TIDAL FLATS

8A) SHELTERED SCARPS IN MUD OR CLAY

8B) SHELTERED, SOLID MAN-MADE STRUCTURES

8C) SHELTERED RIPRAP

9A) SHELTERED TIDAL FLATS
9B) SHELTERED, VEGETATED LOW BANKS

10A) SALT- AND BRACKISH-WATER MARSHES

10B) FRESHWATER MARSHES

10C) SWAMPS

10D) SCRUB-SHRUB WETLANDS

HUMAN-USE FEATURES

AIRPORT

ARCHAEOLOGICAL SITE

BOAT RAMP

CH CRITICAL HABITAT

HISTORICAL SITE

MANAGEMENT AREA

MARINA

PARK

RECREATIONAL BEACH

WILDLIFE REFUGE

123 HUMAN-USE NUMBER

BRIDGE

MANAGEMENT AREA BOUNDARY

STATE BOUNDARY

SENSITIVE BIOLOGICAL RESOURCES

BIRD

DIVING BIRD

GULL / TERN

PASSERINE BIRD

PELAGIC BIRD

RAPTOR

SHOREBIRD

WADING BIRD

WATERFOWL

NESTING SITE

FISH

FISH

MARINE MAMMAL

DOLPHIN

MANATEE

TERRESTRIAL MAMMAL

SMALL MAMMAL

REPTILE

TURTLE

OTHER REPTILE

INVERTEBRATE

BIVALVE

CEPHALOPOD

CRAB

INVERTEBRATE (cont)

ECHINODERM

GASTROPOD

SHRIMP

HABITAT

FLOATING AQUATIC VEGETATION

PLANT

SUBMERGED AQUATIC VEGETATION

MULTI-GROUP

123 RAR NUMBER

THREATENED / ENDANGERED / SPECIES OF SPECIAL CONCERN

Alabama: ESIMAP 19

BIOLOGICAL RESOURCES:

BIRD:

RAR#	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Migrating	Molting
47	Bufflehead				X	X	X								X	X	-	-	-
	Gadwall				X	X									X	X	-	-	-
	Greater scaup				X	X	X								X	X	-	-	-
	Hooded merganser				X	X	X	X						X	X	X	-	-	-
	Lesser scaup				X	X	X								X	X	-	-	-
	Red-breasted merganser				X	X	X							X	X	X	-	-	-
	Ruddy duck				X	X	X								X	X	-	-	-
52	American bittern				X	X	X									X	-	-	-
	Canada goose				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUN	-	-
	Caspian tern				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-
	Common moorhen				X	X	X	X	X	X	X	X	X	X	X	X	MAY-JUL	-	-
	Green heron				X	X	X	X	X	X	X	X	X	X	X	X	MAY-JUL	-	-
	King rail				X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-
	Least bittern						X	X	X	X	X	X	X	X	X		-	-	-
	Mallard				X	X	X	X	X	X	X	X	X	X	X	X	APR-JUL	-	-
	Mottled duck				X	X	X	X	X	X	X	X	X	X	X	X	APR-JUL	-	-
	White ibis				X	X	X	X	X	X	X	X	X	X	X	X	APR-JUN	-	-
107	Black-crowned night-heron						X	X	X	X	X	X	X	X	X		APR-JUN	-	-
	Blue-winged teal					X	X					X					-	-	-
	Cattle egret						X	X	X	X	X	X	X	X			MAY-JUN	-	-
	Clapper rail				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG	-	-
	Great blue heron				X	X	X	X	X	X	X	X	X	X	X	X	FEB-JUL	-	-
	Great egret				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUN	-	-
	Green-winged teal				X	X	X						X	X	X		-	-	-
	Killdeer				X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-
	Little blue heron				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL	-	-
	Purple gallinule						X	X	X	X	X	X					MAY-JUL	-	-
	Snowy egret				X	X	X	X	X	X	X	X	X	X	X	X	APR-JUN	-	-
	Tricolored heron				X	X	X	X	X	X	X	X	X	X	X	X	MAY-JUN	-	-
	Willet				X	X	X	X	X	X	X	X	X	X	X	X	MAY-AUG	-	-
	Yellow-crowned night-heron				X	X	X	X	X	X	X	X	X	X	X	X	APR-JUL	-	-
127	American white pelican	P			X	X	X	X					X	X	X		-	-	-
	Bonaparte's gull				X	X	X	X	X						X	X	-	-	-
	Brown pelican				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-
	Bufflehead				X	X	X								X	X	-	-	-
	Canvasback				X	X	X								X	X	-	-	-
	Common goldeneye				X	X	X								X	X	-	-	-
	Common loon				X	X	X	X	X				X	X	X	X	-	-	-
	Double-crested cormorant				X	X	X						X	X	X	X	-	-	-
	Forster's tern				X	X	X	X							X	X	-	-	-
	Greater scaup				X	X	X								X	X	-	-	-
	Herring gull				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-
	Hooded merganser				X	X	X	X						X	X	X	-	-	-
	Horned grebe				X	X	X	X	X				X	X	X	X	-	-	-
	Laughing gull				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-
	Lesser scaup				X	X	X								X	X	-	-	-
	Osprey	P			X	X	X	X	X	X	X	X	X	X	X	X	-	-	-
	Red-breasted merganser				X	X	X							X	X	X	-	-	-
	Redhead				X	X	X								X	X	-	-	-
	Ring-billed gull				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-
	Royal tern				X	X	X	X	X	X	X	X	X	X	X	X	-	-	-
	Ruddy duck				X	X	X								X	X	-	-	-

FISH:

RAR#	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
48	Atlantic bumper										2	2	3	3	1		-	-	-	-	JUL-NOV
	Bighead searobin				1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	JAN-NOV
105	Atlantic croaker				4	4	4	4	4	4	4	4	4	4	3	3	-	-	AUG-APR	JAN-DEC	MAY-DEC
	Bay anchovy				4	4	4	4	4	4	4	4	4	4	4	4	FEB-SEP	FEB-NOV	FEB-DEC	JAN-DEC	JAN-DEC
	Bay whiff				2	2	2	3	3	3	3	3	3	3	3	2	-	-	DEC-APR	JAN-DEC	-
	Blue catfish				1	2	2	2	2	1	1			1	1		-	-	-	-	NOV-JUL
	Crevalle jack				2	2	2	2	2	2	2	2	2	2	2	2	JAN-DEC	MAY-SEP	MAY-SEP	JAN-DEC	MAY-SEP
	Darter goby				2	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	JAN-DEC
	Gafftopsail catfish							1	1	2	2	1	2	1	1		-	-	-	-	MAY-DEC
	Gray snapper							2	2	2	2	2	2	2	2		-	-	-	MAY-DEC	MAY-DEC
	Gulf killifish				3	3	3	3	3	3	3	3	3	3	3	3	MAR-SEP	MAR-SEP	MAR-OCT	JAN-DEC	JAN-DEC
	Gulf menhaden				2	4	4	4	4	3	3	3	3	4	3	4	-	SEP-FEB	OCT-MAY	FEB-DEC	FEB-OCT
	Gulf sturgeon	P	T		X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	JAN-DEC
	Hardhead catfish				2	2	2	3	3	3	3	3	3	3	3	2	APR-AUG	APR-AUG	APR-SEP	JAN-DEC	JAN-DEC
	Red drum				2	2	2	2	2	2	2	2	2	2	2	2	-	SEP-DEC	SEP-DEC	JAN-DEC	JUN-OCT
	Sand seatrout				2	2	4	4	4	4	4	3	3	3	2	2	FEB-SEP	FEB-SEP	FEB-SEP	JAN-DEC	JAN-DEC
	Silver perch				2	2	2	2	2	2	2	2	2	2	2	2	APR-AUG	APR-AUG	APR-AUG	JAN-DEC	JAN-DEC
	Southern flounder				2	2	2	2	2	2	2	2	2	2	2	2	-	-	NOV-MAR	JAN-DEC	JAN-DEC
	Southern hake				1	1	2	2	2				1		1		-	-	-	-	OCT-OCT DEC-MAY
	Spot				4	4	4	4	4	4	4	3	3	3	3	3	-	-	NOV-APR	JAN-DEC	JAN-DEC
	Spotted seatrout				3	3	3	3	3	3	3	3	3	3	3	3	APR-AUG	APR-AUG	APR-OCT	JAN-DEC	JAN-DEC
	Striped anchovy				2	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	JAN-DEC
	Striped mullet				3	3	3	3	3	3	3	3	3	3	3	3	-	-	DEC-APR	JAN-DEC	MAY-DEC
	Threadfin shad				2	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	JAN-DEC
	White mullet				1			1	2	2	2	2	2	2	1		-	-	-	-	MAY-JAN
113	Least puffer				2	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	JAN-DEC
	Pinfish				3	3	3	3	3	3	3	3	3	3	3	3	-	-	DEC-APR	JAN-DEC	MAR-OCT
	Skipjack herring				1	1	1	1	1	1		1			1		-	-	-	-	AUG-AUG DEC-JUN
	Southern kingfish				2	2	2	2	3	3	3	2	2	2	2	2	-	-	-	-	JAN-DEC
	Star drum				2	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	JAN-DEC
141	Atlantic spadefish				2	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	JAN-DEC
	Gulf butterfish				2	2	2	3	3	2	2	2	2	2	2	2	-	-	-	-	JAN-DEC
	Harvestfish				1	1	1	2	2	2	2	2	2	2	2	2	-	-	-	JAN-DEC	-
	Ladyfish					1	1	2	2	1	1	1	1	1			-	-	-	-	MAR-NOV
	Scaled sardine						2	2	2	2	2	2	2	2			-	-	-	-	APR-NOV
	Sheepshead				2	2	3	3	3	2	3	3	2	2	2	2	FEB-MAR	FEB-APR	MAR-AUG	JAN-DEC	JAN-DEC
	Silver seatrout				1	1			1	1	1	1	2	2	2	1	-	-	-	-	MAY-FEB
	Spanish mackerel							2	2	2	2	2	2	2			-	-	-	APR-OCT	AUG-OCT
146	Inland silverside				3	3	3	3	3	3	3	3	3	3	3	3	MAR-AUG	MAR-AUG	MAR-SEP	JAN-DEC	JAN-DEC
	Longnose killifish				1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-
	Rough silverside				1	1		2	2	2	2	2	2	1	1	1	-	-	-	-	APR-FEB

HABITAT:

RAR#	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D
161	Incised groovebur				X	X	X	X	X	X	X	X	X	X	X	X

INVERTEBRATE:

RAR#	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
26	Brown shrimp				2	4	4	4	4	4	4	4	4	4	4	2	-	-	FEB-NOV	MAR-NOV	JUN-AUG

Biological information shown on the maps represents known concentration areas or occurrences, but does not necessarily represent the full distribution or range of each species. This is particularly important to recognize when considering potential impacts to protected species.

Alabama: ESIMAP 19 (cont.)

BIOLOGICAL RESOURCES: (cont.)

INVERTEBRATE: (cont.)

RAR#	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
26	Pink shrimp				2	2	2	2	2	2	2	2	2	2	2	2	-	-	AUG-OCT	MAY-JAN	JAN-DEC
	White shrimp				2	2	2	2	3	3	4	4	4	4	3	2	-	-	-	JAN-DEC	JAN-MAY
105	Atlantic brief squid				2	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	JAN-DEC
	Blue crab				4	4	4	4	4	4	4	4	4	4	4	4	MAR-NOV	MAR-NOV	JAN-DEC	JAN-DEC	JAN-DEC
112	Eastern oyster				4	4	4	4	4	4	4	4	4	4	4	4	APR-NOV	-	APR-NOV	APR-NOV	JAN-DEC

MARINE MAMMAL:

RAR#	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Mating	Calving	Pupping	Molting
1	Bottlenose dolphin				X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	MAR-SEP	-	-
	West Indian manatee		E	VERY LOW				X	X	X	X	X	X	X	X		-	-	-	-
53	Bottlenose dolphin				X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	MAR-SEP	-	-
	West Indian manatee		E	HIGH				X	X	X	X	X	X				-	-	-	-

REPTILE:

RAR#	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Hatching	Internesting	Juveniles	Adults
18	Alabama red-bellied turtle	P	E		X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-	JAN-DEC	JAN-DEC

HUMAN USE RESOURCES:

AIRPORT:

HUN#	Name	Contact	Phone
3	FAIRHOPE MUNICIPAL AIRPORT		

BOAT RAMP:

HUN#	Name	Contact	Phone
10	BOAT RAMP		
14	MULLET POINT PARK		

MARINA:

HUN#	Name	Contact	Phone
47	GRAND HOTEL		

Biological information shown on the maps represents known concentration areas or occurrences, but does not necessarily represent the full distribution or range of each species. This is particularly important to recognize when considering potential impacts to protected species.