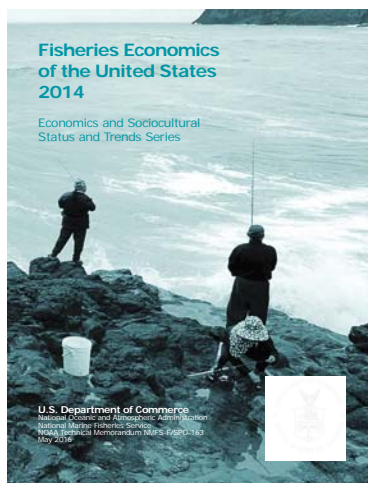
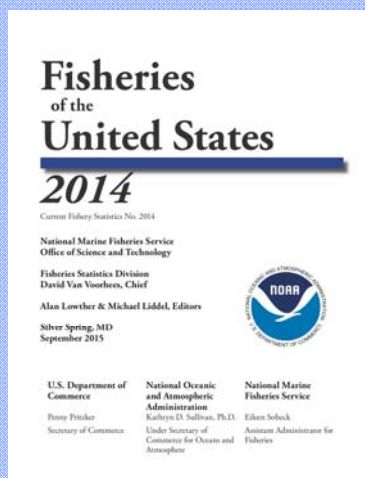


Go to Reference with Economic Statistics for US by Region and State



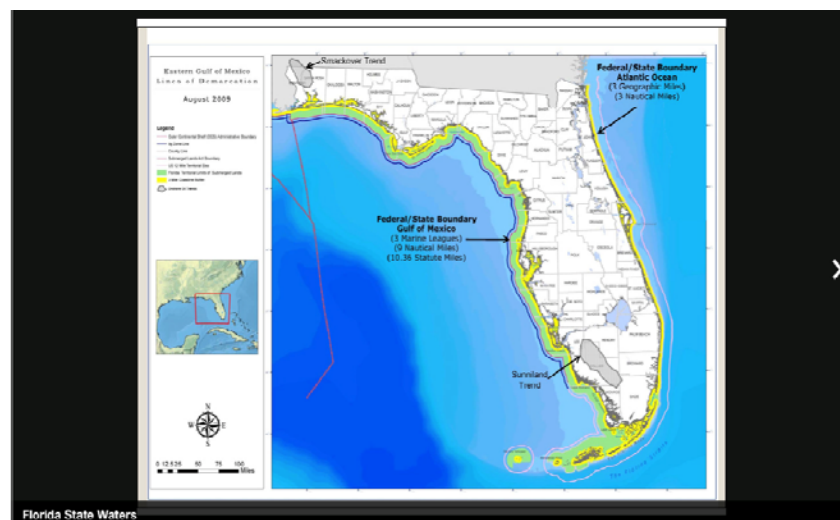
NOAA summary of fisheries of the US by state



Additional information

- Myfwc.com for finer scale information on landings and to determine what living marine resources are where when an event occurs
- Gsmfc.org for interstate fisheries information, e.g. blue crab, menhaden, red drum
- GoMRI: gulfresearchinitiative.org
- Sea grant publication 6/16/16 Oil Spill Impacts on Fisheries.....including dispersants and oil dispersants

State waters



Importance of seafood and commercial industry

- Americans consume almost 5 billion pounds of seafood annually (2014/15 NOAA) second only to China
- GoM provides 1.1 billion pounds annually and ranks no. 2 in US with a dockside value of \$1.03 B
- Florida's west coast contribution includes shrimp, blue crab, groupers, snappers

Shrimp fishery is the most valuable commercial fishery in the US

- Annual value > \$700M in 2014/15
- Wild shrimp from the Gulf of Mexico
- Florida shrimp fishing from the panhandle to Key West
- Created a niche fishery and market demand for wild pink shrimp



Bluefin tuna

- Spawning Gulf of Mexico
- Value: in 2013 one fish sold for \$1.8M at market in Tokyo
- Spawning season peaks in April and May
- DWH disaster: began in April 2010



How important is Florida's commercial fishery?

- 93,000 jobs
- Florida's west coast: Ranks #2 in the US in total total value of \$28B
- Florida's west coast: In 2014 93 M lbs. landed with dockside value of \$205M

How important is recreational fishing to Florida?

- Florida's west coast alone ranks #1 in recreational fishing trips per year: 15 M
- Florida's west coast ranks #1 in total value \$15.5B in 2014/14
- Florida's west coast ranks #1 in jobs: 71,000
- Top species include: drum, sea trout, clams, crabs, grouper/snapper, shrimp, tunas and mackerels



Gross State Product Location Quotient

- Value of all goods and services
- For all of US: 1
- For Florida: GSPLQ=1.04
- Fisheries both commercial and recreational are a greater contribution to Florida's economy as compared to the US as a whole

Fisheries Management

- Federal waters Magnuson Stevens Fishery Management and Conservation Act which created regional councils, e.g.. Gulf of Mexico Fishery Management Council
- Mandates recovery for overfished stocks; those stocks that are below biomass needed to sustain stock
- Mandates science based management using best available information
- Science advice provided through assessments of status (relative to overfished) and condition (health of stock)
- Many strategies used to manage fisheries and are described in plans developed by the council with NOAA and available on their websites
- State waters of Florida via Florida Fish and Wildlife Commission based on best available information
- Open processes that allow for public input and comment because these are resources that are “owned” by everyone in the state and in the US

Protected Species

- Managed under the Endangered Species Act: sea turtles, manatees, corals
- Managed and protected under the Marine Mammal Protection Act: manatees, bottlenose dolphins
- ESA mandates recovery and establishes recovery criteria
- MMPA provides protection for all marine mammals; e.g.. Take, harassment

Value of Protected Species

- Intrinsic value as members of ecosystem that are critical in sustaining function and structure
- Turtle walks estimated to generate \$49M in ecotourism, study focused on Bald Head Is. SC
- Florida's coastline much larger and many sites host turtle walks in the summer
- Manatee ecotourism brings \$8-\$9 M to Citrus county alone

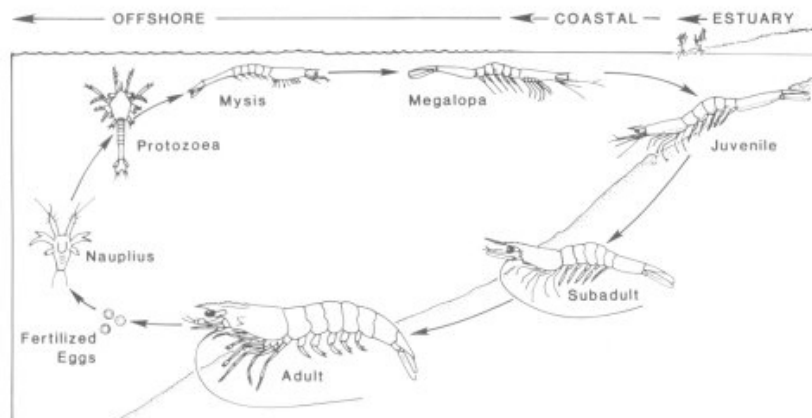
Impacts of oil spill

- Oil itself is a hydrocarbon, natural seeps
- Dispersants are not organic
- Combination of oil and dispersants of concern
- At the surface? DWH was in deep water and distributed vertically and horizontally
- Public concerns articulated by stakeholders (anglers, coastal communities and their economic drivers)
- Immediate concerns and long term concerns

Life history and timing of event

- Many species are seasonal migrants to inshore/offshore (blue crabs), estuary to coastal ocean (shrimp), hard bottom and structure (groupers/snappers), beach to open ocean to coastal waters (sea turtles), freshwater springs to coastal marine waters (Manatees)
- Many species have specific habitats where they spawn (BFT in NE GoM), beaches (sea turtles), deep reefs (groupers/snappers)
- Need to consider the timing of event relative to where a species is likely to be and what it may be engaged in that can effect productivity (e.g.. Spawning, nesting, mating)

Life history of shrimp

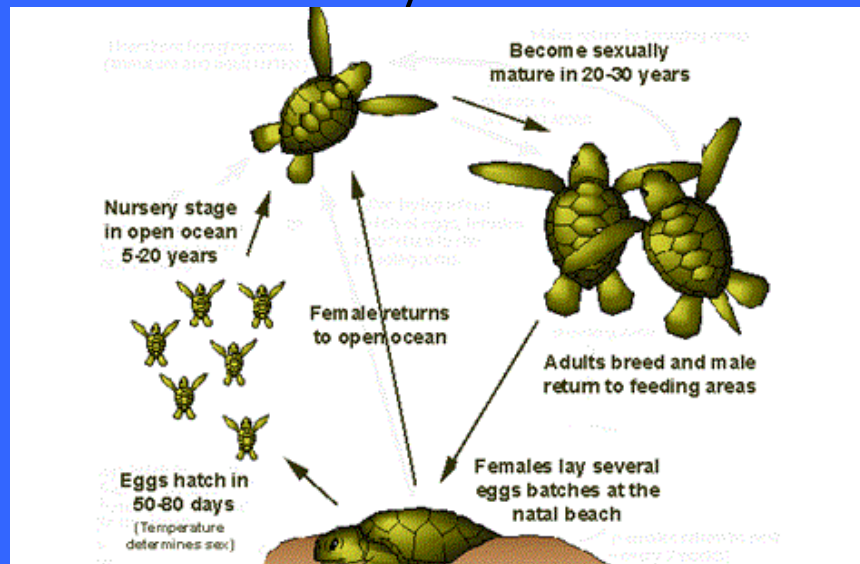


Bailey-Brock & Moss, 1992

Life history of grouper



Life history of sea turtle



Questions from DWH

- Can I fish? When will I be able to fish? Is this going to impact my ability to fish/distribute seafood/on the menu/in the store short term or long term? Will there be some way to alternatively earn of living during this event? NOAA, FWC
- Is the seafood safe? Is safety a short term or long term issue? States, NOAA, FDA
- What long term impact will this have on recovery of protected species? On fishing stocks? NOAA, FWC
- Will management of these species be impacted long term? NOAA, FWC
- What is the impact on tourism? Coastal community integrity and economy? States
- What type of plans have been developed to describe what the response will be by the community, state, federal government
- What can I do to help?
- What is being done to make sure this doesn't happen again?

Information needed to address questions

- Considerable research and resulting publications on impacts on fish, mechanical impacts (gills), external condition, physiological effects including on growth and reproduction
- Publications on invertebrates: shrimp, crabs, oysters
- Publications on protected species: manatees, sea turtles, dolphins