

Sharks of the Chesapeake Bay Region and Shark Monitoring at VIMS

Evan McOmber and Kevin Spanik,
Multispecies Research Group
Principle Investigators Robert Latour, PhD
and Christopher F. Bonzek



Ecological and Economic Importance

- World-wide dispersal
- Top predator
- Support commercial and recreational fisheries

Physiology

- Ancient lineage (Ancestry of 400 million years)
- Skeletal structure made of cartilage
- Special electroreception cells called ampullae of Lorenzini
- Sensors in the lateral line : sensitive to movement in the water
- Sensitive smell receptors
- Large livers for buoyancy
- Teeth are continually replaced
- Grow slowly, mature and reproduce late

Shark Reproduction

- Fertilization is internal
- Some produce egg sacs
- Most give live birth
- Offspring completely developed
- Long gestation periods
- Many only reproduce about every other year

Shark Reproduction



Species Diversity

Currently ~400 described species of sharks

Spiny Dogfish Shark

- Small
- Very abundant in our area
- Support a large commercial fishery
- Staple seafood item in UK
- Males and females school separately



Atlantic Sharpnose Shark

- Smaller bodied – max length about 4’
- Less common in Chesapeake bay, but very abundant in Virginia coastal waters



Sandbar Shark

- Very common species in our area
- Females use Chesapeake Bay as a pupping ground (late spring–early summer)
- Juveniles use Chesapeake Bay as a nursery
- Support an active fishery



Atlantic Angel Shark

- Body depressed (flattened)
- Burrow in the sediment and ambush prey
- Common along the East Coast



Scalloped Hammerhead Shark

- Head flattened, eyes set apart
- Wide range of sight
- Use head to scan along bottom for buried prey like stingrays and crabs



Sand Tiger Shark

- Large species (reach about 10' in length)
- Common in lower chesapeake bay and along the coast
- Feed on juvenile sandbar sharks
- Common aquarium feature



Atlantic Thresher Shark

- Tail can grow to be length of the body
- Uses tail to stun prey items



Tiger Shark

- One of the largest in our area – can exceed 18'
- Has very large litters (35–55 pups)



Bull Shark

- Live in warm shallow waters
- Able to regulate the salt concentrations in their body and swim into fresh water



Great White Shark

- Largest Predatory fish in the sea
- Can live over 25 years
- Can swim at speeds of up to 15 mph



Multispecies Research Surveys

- ChesMMAP (Trawl Survey)
- NEAMAP (Trawl Survey)
- VIMS Shark Survey (Longline Survey)

What is ChesMMAP?

Chesapeake Bay Multispecies Monitoring and Assessment Program

VESSEL

R/V Bay Eagle, 65 ft,
Gloucester Point, VA

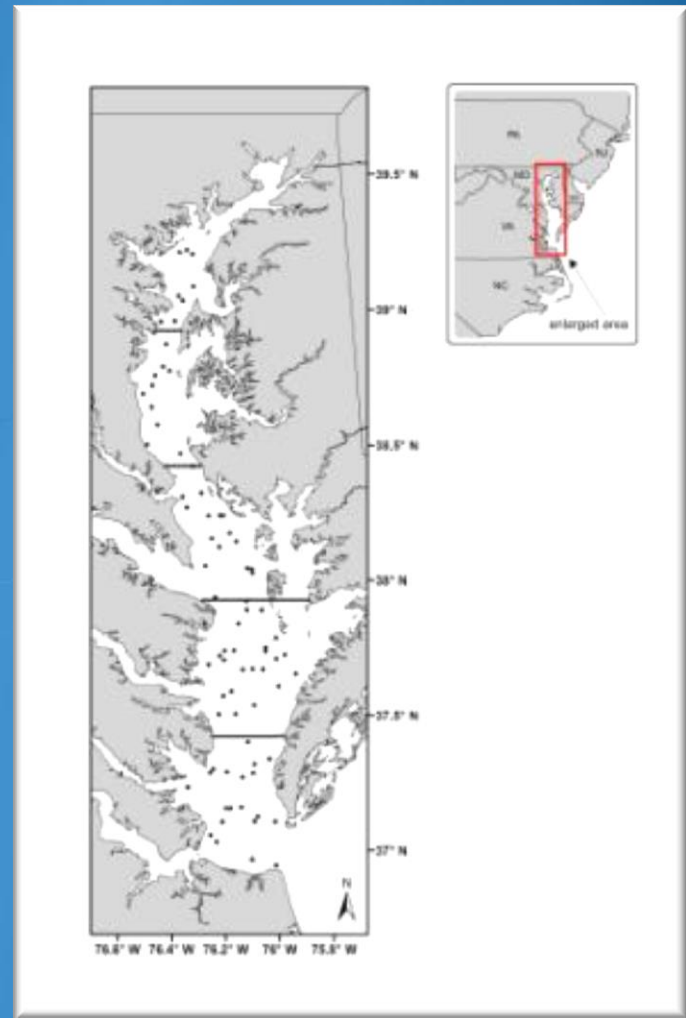
Captain: L. Durand Ward,
First Mate: John Olney Jr.



ChesMMAP

CRUISES AND STATIONS

- 5 cruises (March, May, July, September, November)
- 80 stations (Chesapeake Bay Bridge Tunnel to Poole's Island, MD)
- 20 minute tows at 3.0 to 3.3 knots
- 8 working days to complete
- 7 crew members



What is NEAMAP?

Northeast Area Monitoring and Assessment Program

VESSEL

F/V Darana R, 90 ft,
Wanchese, NC

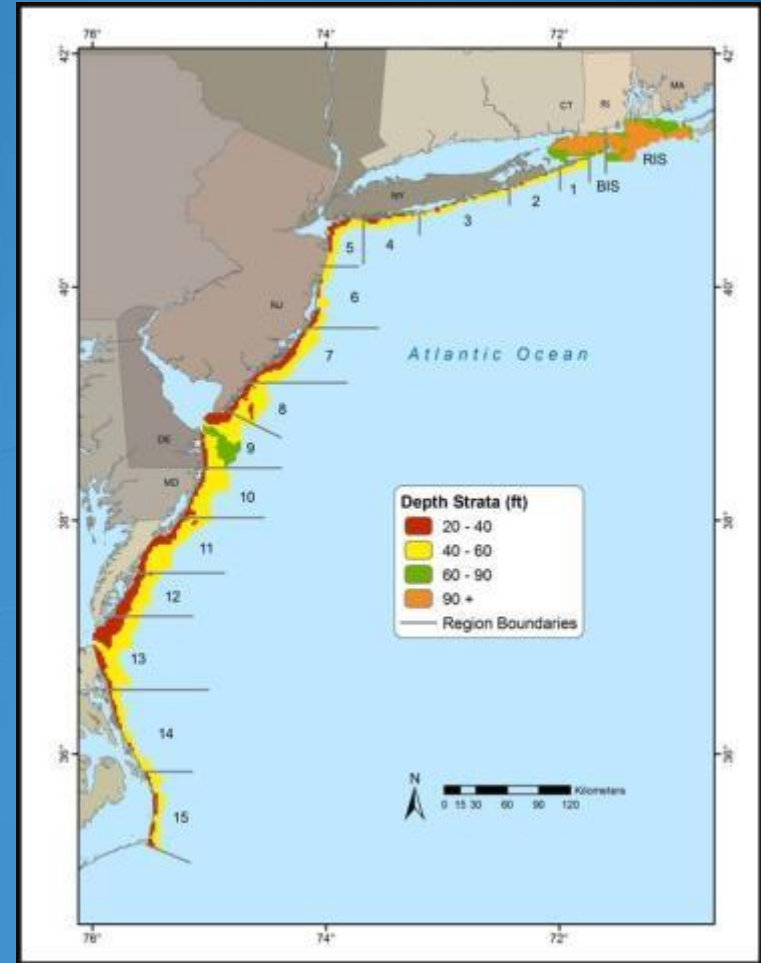
Captain James Ruhle,
First Mate Robert Ruhle



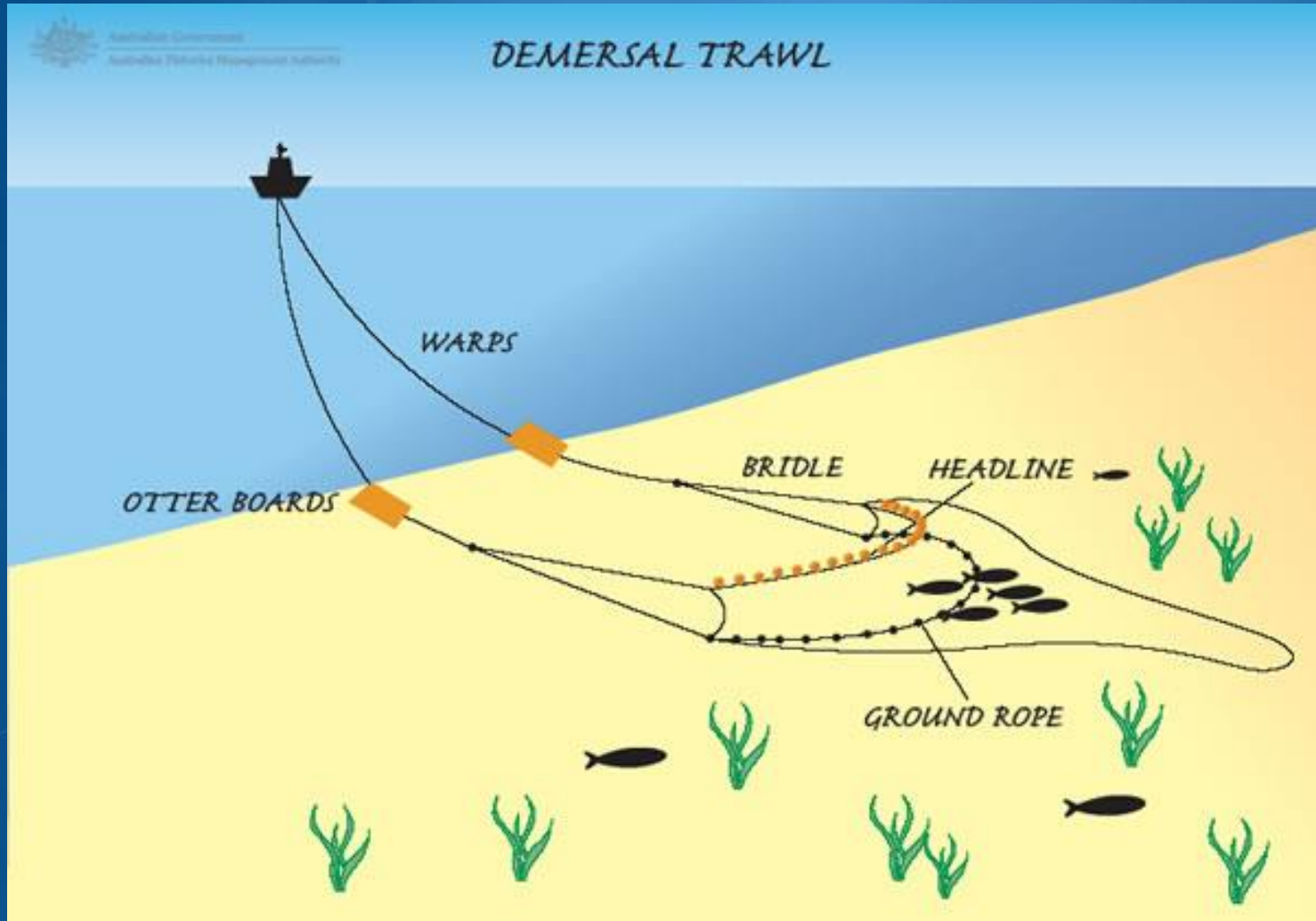
NEAMAP

CRUISES AND STATIONS

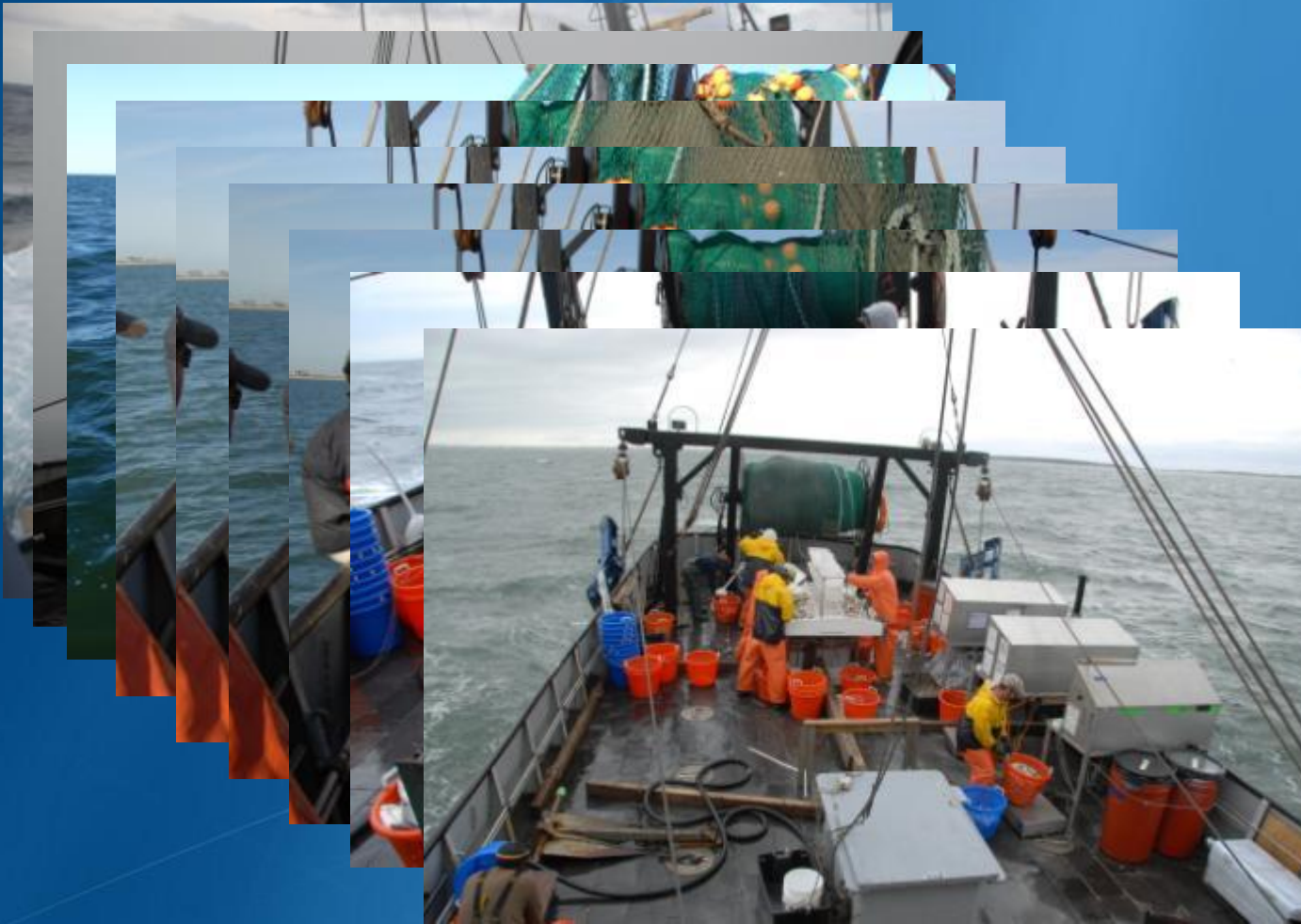
- 2 cruises (Spring and Fall)
- 150 stations (Nearshore, from Cape Hatteras, NC to Cape Cod, MA)
- 20 minute tows at 2.9 to 3.3 knots
- 28 to 30 working days to complete
- 8 crew members



ChesMMAP & NEAMAP



Field Work



Data Collection

- Aggregate weight per species
- Individual lengths per species
- Subsample 3 or 5 individuals per species per size class (priority species only)
- Atmospheric
- Water quality profiles at 2 m intervals



ChesMMAP & NEAMAP



ChesMMAP & NEAMAP



ChesMMAP & NEAMAP



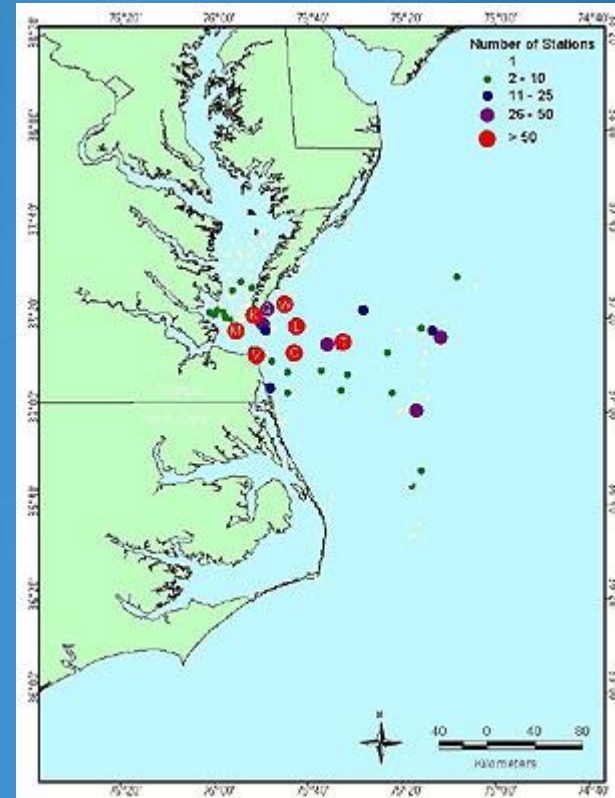
VIMS Shark Longline Survey



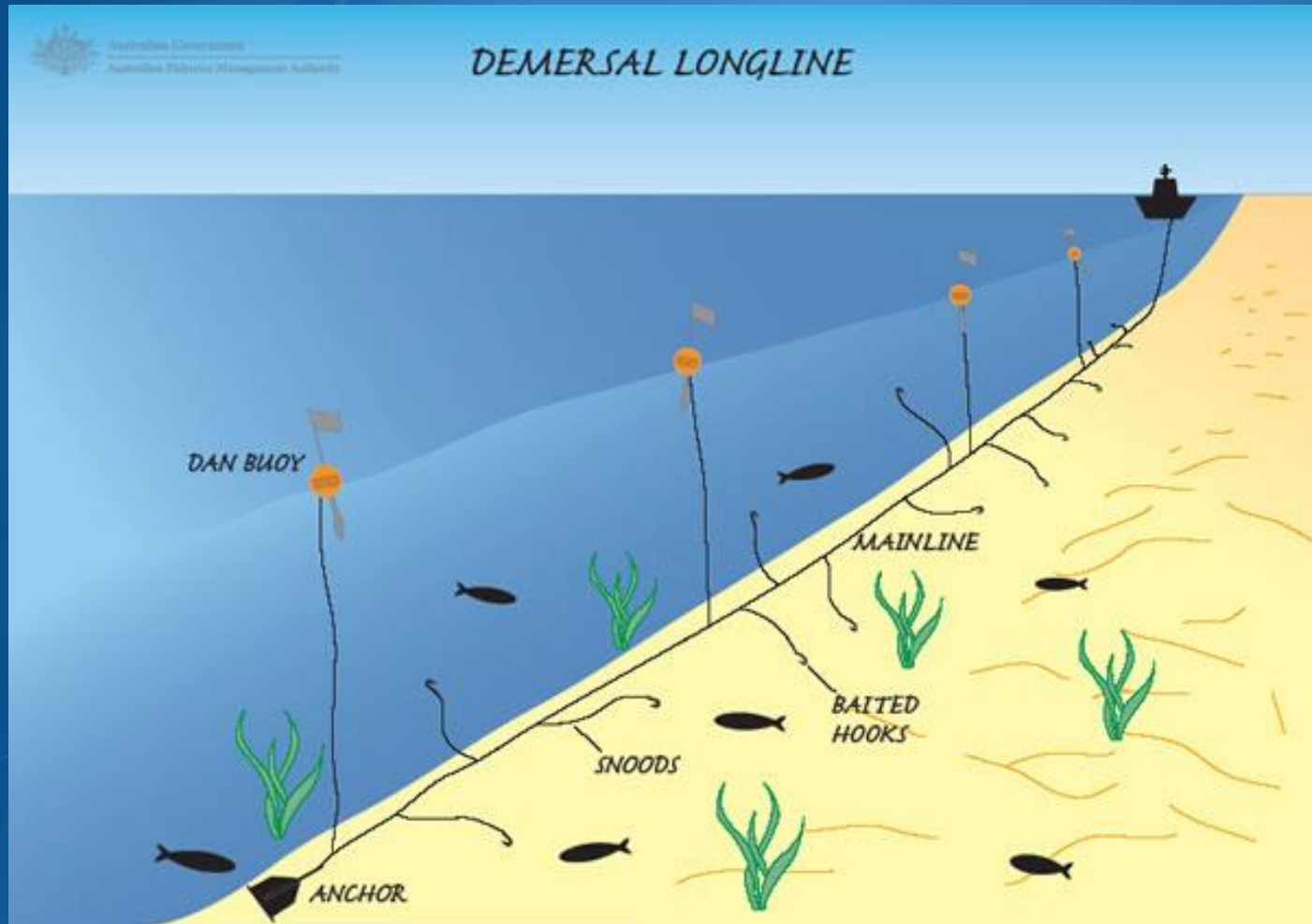
VIMS Shark Longline Survey

CRUISES AND STATIONS

- 4 cruises (June, July, August, September)
- 7 stations (Chesapeake Bay Virginia coastal waters)
- 100 Hooks Baited with Atlantic Menhaden, 20m apart
- 3 working days to complete
- 7 crew members



VIMS Shark Longline Survey



VIMS Shark Longline Survey

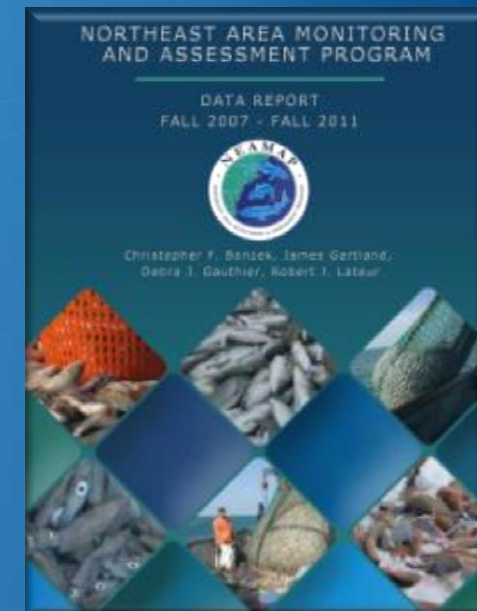
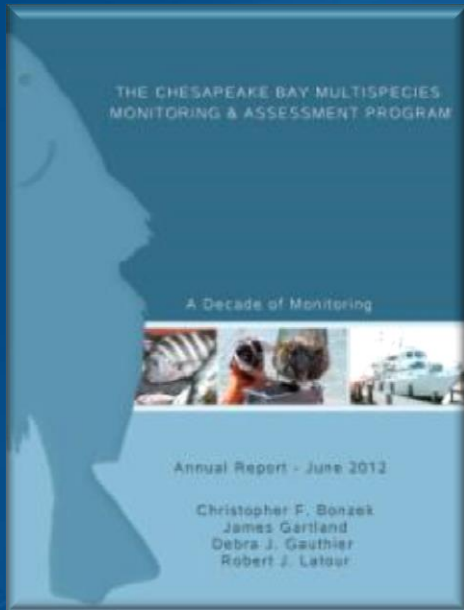


Data Dissemination



REPORTS

- ChesMMAP is currently funded by Wallop-Breaux funds from the Virginia Marine Resources Commission
- NEAMAP is currently funded by the fishing industry under the Research Set-Aside Program and the Commercial Fisheries Research Foundation



Data Dissemination

END USERS

- Stock Assessment Scientists and Analysts
- National Marine Fisheries Service (NMFS)
- Mid-Atlantic Fishery Management Council (MAFMC)
- Atlantic States Marine Fisheries Commission (ASMFC)
- Chesapeake Bay ecosystem model
- Recreational Fishery
- Highly Migratory Species

Acknowledgments

VIMS Multispecies Work Group:

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