



Fisheries Home Page

Fisheries Regulations

Fishing Licenses

Join Our Mailing List

Fishing in MD

Public Notices

Fishing Events

More Resources ▾

Recent ▾

Master Angler

Trout1

Trout2

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FACTS

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2012 Activity Report

M. Tarnowski and D. White
Maryland Department of Natural Resources Shellfish Division - 6 February 2013



- [FIELD SURVEYS](#)
- [COLLABORATIVE EFFORTS](#)
- [COMMUNICATIONS and PERSONNEL](#)
- [DEAL ISLAND](#)

STAFF:
Mitchell Tarnowski, *Natural Resources Biologist/Program Manager*,
Dr. Mark Homer, *Statistician*,
Robert Bussell, *Natural Resources Biologist*,
Deal Island Facility:
David White, *Vessel Captain/Facility Manager*,
Thomas Wilson, *Vessel Mate (started June)*,
Daniel Taylor, *Seasonal Contractual (started July)*,
Robert Lawrence, *Vessel Mate (resigned April)*

ACKNOWLEDGMENTS: The staff of the Shellfish Monitoring and Assessment Program would like to thank all of the individuals who participated in the many surveys conducted over the past year for their valued assistance: Carol McCullough, Chris Judy, Steve Schneider, Maude Livings, Eric Weissberger, Frank Marengi, Eric Campbell, Erik Zlokovitz, Alexei Sharov, Paul Parzynski, Eric Sakowski, James Dunhart, Ellen Cosby, Becky Thur, Matt Felperin, Andrew Keppel, Mindy Forsythe, Stephanie Meredith, Angel Willey, Lynn Fegley

Photographs Courtesy of: Chris Judy, Dave White and Robert Bussell

Monitoring and Assessment

- [Monitoring and Assessment Home](#)

- [Shellfish Home](#)
- [Annual Fall Survey](#)
- [Fall Survey: Methods](#)
- [Fall Survey: Reports](#)
- [Sample Procedures](#)
- [Scallop Restoration](#)
- [Commercial Clams](#)
- [Glossary](#)
- [2012 Activity Report](#)
- [Oyster Stock Assessment](#)
- [5 Year Oyster Review Report](#)

2012 Activity Report Links

- [FIELD SURVEYS](#)
- [COLLABORATIVE EFFORTS](#)
- [COMMUNICATIONS and PERSONNEL](#)
- [DEAL ISLAND](#)



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- Vehicle Services
- Food Assistance / SNAP
- Unemployment Services
- Taxes
- Register to Vote
- Resident Resources
- Visit Maryland
- More Online Services

Government

- Governor Wes Moore
- Maryland Cabinet Agencies
- All State Agencies
- For State Employees

Policies

- Accessibility
- Privacy & Security

Connect

- State Employee Directory
- Maryland News
- Customer Service Survey

Alerts

- Emergency Alerts
- Travel Alerts
- Report Cybersecurity Incident
- Report Human Trafficking
- Key Bridge



Fisheries Home Page	
Fisheries Regulations	
Fishing Licenses	
Join Our Mailing List	
Fishing in MD	
Public Notices	
Fishing Events	
More Resources	▼
Recent	▼
Master Angler	
Trout1	
Trout2	
Staff	
FACTS	
shad_restoration	
Joint Comm SBass Members	

2012 Activity Report Collaborative Efforts

Potomac River Fisheries Commission

Self-Sustaining Oyster Fishery

Staff served on a Blue Ribbon panel charged with developing a plan for a self-sustaining oyster fishery in the Potomac River. Conducted surveys to delineate a seed planting location and for the post-planting evaluation.



Potomac River Oyster Survey

Surveyed 19 oyster bars in the Potomac River as part of the annual Fall Oyster Survey accompanied by PRFC staff. Provided results to the PRFC to support management efforts.

NCBO Oyster Stock Assessment

This project is a collaborative effort involving VIMS, VMRC, UMd, and MDNR to develop a joint oyster stock assessment in Chesapeake Bay. As a co-investigator, participated in a meeting to consider extension of the current effort to develop a formal benchmark assessment for the entire bay. Drafted and submitted relevant sections for the interim and year-end reports.

UMd Vibrio Study



Staff provided field support for a four-year UMd research project on Vibrio spp. in oysters in the Chesapeake Bay, which concluded in August. Although lab work and data analyses are still ongoing, a meeting was held to update the participants of the project.

Coastal Bays Scientific and Technical Advisory Committee

Participated as a member in the Coastal Bays STAC to provide expertise on issues concerning these bays. Presented findings of the Coastal Bays Shellfish Survey to the committee.

MDNR Resource Assessment Service

RAS staff assisted with the Coastal Bays Shellfish Survey, baseline Oyster Sanctuary Surveys, the Fall Oyster Survey, and Patuxent River razer clam mortality survey.

MDNR Aquaculture Division

- An intensive patent-tong survey of the proposed lease sites within the St. Mary's River oyster sanctuary was conducted to determine densities and distributions of existing oyster populations on these sites. The findings were provided to the MDNR Aquaculture Division.
- At the request of the Aquaculture Division, staff traveled to Virginia to inspect the suitability of shucking house shell for planting in Maryland waters.
- Aquaculture Division staff assisted with the Oyster Sanctuary Surveys and Fall Oyster Survey.

Maryland Grows Oysters Project

Provided a vessel, occasionally a vehicle, and some staff support for MGO seasonal field work.

University of Delaware

Provided ship time and samples to a University of Delaware graduate student conducting oyster disease research in Maryland.

VIMS Submerged Aquatic Vegetation Survey

Provided submerged aquatic vegetation data collected as part of the Coastal Bays Shellfish Survey to VIMS for ground-truthing their aerial SAV survey.

[Back to Report Home](#)

Monitoring and Assessment

- [Monitoring and Assessment Home](#)
- [Shellfish Home](#)
- [Annual Fall Survey](#)
- [Fall Survey: Methods](#)
- [Fall Survey: Reports](#)
- [Sample Procedures](#)
- [Scallop Restoration](#)
- [Commercial Clams](#)
- [Glossary](#)
- [2012 Activity Report](#)
- [Oyster Stock Assessment](#)
- [5 Year Oyster Review Report](#)

2012 Activity Report Links

- [FIELD SURVEYS](#)
- [COLLABORATIVE EFFORTS](#)
- [COMMUNICATIONS and PERSONNEL](#)
- [DEAL ISLAND](#)



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Fisheries Home Page	
Fisheries Regulations	
Fishing Licenses	
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Fishing in MD	
Public Notices	
Fishing Events	
More Resources	▾
Recent	▾
Master Angler	
Trout1	
Trout2	
Staff	
FACTS	
shad_restoration	
Joint Comm SBass Members	

2012 Activity Report Communications and Personnel

Reports/Publications/Press Releases

- Tarnowski, M. 2012. Maryland Oyster Population Status Report - [2011 Fall Survey](#)
- Kimmel, D.G., M. Tarnowski, R.I.E. Newell. 2012. Long-term (1939 to 2008) spatial patterns in juvenile eastern oyster (*Crassostrea virginica*, Gmelin 1791) abundance in the Maryland portion of Chesapeake Bay. *J. Shellfish Research*, 31: 1023-1031.
- Submitted three reports describing the biology, autecology, and fisheries of three commercially valuable Chesapeake Bay clam species (softshell clam, razor clam, and northern quahog). The reports will be incorporated into the new Chesapeake Clam Fisheries Management Plan.
- Co-authored NCBO Oyster Stock Assessment Project interim and year-end reports.
- Two press releases drafted regarding the Upper Bay oyster mortalities of 2011 and the general results of the 2011 Fall Oyster Survey.
- Article on the preliminary results of the 2011 Fall Oyster Survey submitted to the *Watermen's Gazette*.

Log Letters

Two log letters written addressing citizens concerns regarding commercial clamming in the Bay.

Web Site

The Shellfish Monitoring and Stock Assessment Program web site was launched in September. Initial pages provide a general overview of the program and an illustrated description of the Fall Oyster Survey, along with links to past reports.

Reviews

Served as a reviewer of a document produced by the Blue Ocean Institute assessing the environmental footprint of the wild-caught Eastern Oyster fishery, encompassing the entire fishery from New England to the Gulf states. These reports are intended to educate consumers on the environmental impacts of various fisheries using scientifically sound methodology in examining them.

Personnel

- The R/V Miss Kay vessel mate resigned in April. This left only one person to staff the Deal Island facility.
- A replacement vessel mate was hired in June though Maryland Environmental Services.
- The two Shellfish Monitoring and Assessment Program MES personnel were converted to Maryland Department of Natural Resources employees in July.
- A seasonal contractual was hired in July to assist at the Deal Island Facility.

[Back to Report Home](#)

Monitoring and Assessment

- [Monitoring and Assessment Home](#)
- [Shellfish Home](#)
- [Annual Fall Survey](#)
- [Fall Survey: Methods](#)
- [Fall Survey: Reports](#)
- [Sample Procedures](#)
- [Scallop Restoration](#)
- [Commercial Clams](#)
- [Glossary](#)
- [2012 Activity Report](#)
- [Oyster Stock Assessment](#)
- [5 Year Oyster Review Report](#)

2012 Activity Report Links

- [FIELD SURVEYS](#)
- [COLLABORATIVE EFFORTS](#)
- [COMMUNICATIONS and PERSONNEL](#)
- [DEAL ISLAND](#)



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- More Online Services

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- All State Agencies
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- Report State Government Fraud

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- Accessibility
- Privacy & Security

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- State Employee Directory
- Maryland News
- Customer Service Survey

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- Emergency Alerts
- Travel Alerts
- Report Cybersecurity Incident
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- Key Bridge

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Fisheries Regulations	
Fishing Licenses	
Join Our Mailing List	
Fishing in MD	
Public Notices	
Fishing Events	
More Resources	▼
Recent	▼
Master Angler	
Trout1	
Trout2	
Staff	
FACTS	
shad_restoration	
Joint Comm SBass Members	

Monitoring and Assessment

- [Monitoring and Assessment Home](#)
- [Shellfish Home](#)
- [Annual Fall Survey](#)
- [Fall Survey: Methods](#)
- [Fall Survey: Reports](#)
- [Sample Procedures](#)
- [Scallop Restoration](#)
- [Commercial Clams](#)
- [Glossary](#)
- [2012 Activity Report](#)
- [Oyster Stock Assessment](#)
- [5 Year Oyster Review Report](#)

2012 Activity Report Deal Island Facility



The Deal Island Facility, located on the shore of Tangier Sound in Somerset County, is the home port of the R/V Miss Kay, MDNR's 48' oyster survey vessel. In addition, the facility is the base of operations for the State's oyster shell supply project, which provides shell to oyster hatcheries and lesser facilities for oyster restoration and aquaculture efforts. Offices have been provided to the Natural Resources Police for their regional field patrol staff. More recently, remote oyster setting tanks have been installed and are maintained by the Deal Island staff to support the nascent aquaculture industry and various research projects, and an NRP vessel monitoring tower is to be constructed on the property. The facility is managed by Dave White, who is also captain of the R/V Miss Kay and is responsible for running the shell project.

During calendar year 2012 the staff at this facility completed or participated in the following projects:

STATE OYSTER SUPPLY PROJECT

Oyster Shell Transport

- Deal Island (D.I.) staff transported 71,375 bushels (~180 truckloads) from Crisfield Stockpile to Horn Point Hatchery, Cambridge for the ORP/Univ. of Md. oyster propagation project.
- D.I. staff transported 3,700 bushels of shell to Piney Point Hatchery (23,525 bushels were transported by Chuck Stence crew using Deal Island Facility vehicles and equipment); a total of 27,225 bushels (~70 truckloads) were transported from Grasonville Stockpile to Piney Point Hatchery.
- D.I. staff transported 1,250 bushels of shell to Shady Side Discovery Center for the Chesapeake Bay Foundation.

Metompkin Fresh Shell Acquisitions

Removed fresh oyster shells every Friday during oyster season from CW Howeth/Metompkin Seafood Companies to Crisfield Stockpile for aging. Quantities vary from 2,000 to 5,000 bushels per week depending on quantity of oysters shucked each week. A total of 36,500 bushels (~90 truckloads) of shell were purchased and transported from C.W. Howeth/Metompkin Seafood, Crisfield, Md. to the Crisfield stockpile for aging.

Indian Repatriation Sites

Provided oyster shells from Crisfield and Grasonville stockpiles for Indian burial rites repatriation program per Gina Hunt request.

R/V MISS KAY



Annual Fall Baywide Oyster Survey

D.I. staff et al. conducted annual fall oyster bar survey in Chesapeake Bay and Tributaries.

Baseline Patent Tong Oyster Sanctuary Surveys

Conducted patent tong surveys in St. Mary's River, Severn River, Patuxent River, Chester River, Cox Creek, Tred Avon River and Manokin River.

Vibrio Research

D.I. staff participated in Univ. of Md. research project by obtaining oyster samples and conducting water quality analyses in Tangier Sound. This project involved obtaining said samples once per month during the winter months and twice per month during the summer period. This research concluded a four-year study August of 2012. Each sampling trip involved a three- to four-hour oyster and data gathering cruise aboard the R/V Miss Kay.

Potomac River Sustainable Oyster Fishery Project

Conducted patent tong oyster survey with Potomac River Fisheries Commission representative on board R/V Miss Kay at Ragged Point oyster bar, Potomac River.

Shell Reclamation Project

Conducted oyster study utilizing patent tongs on Mountain Point and Six-Foot Knoll shell borrow sites in the Upper Bay and Back Cove shell planting locations in Tangier Sound.

Blue Crab Project

Transported MDNR Blue Crab Project personnel to Smith Island for day-long meeting with island program participants.

R/V Miss Kay Annual "Railway" Haul-Out



Drydocked R/V Miss Kay for scheduled maintenance and repairs. Modified vessel skag for reduction of propeller cavitation, waxed vessel hull, cleaned bottom and painted same with anti-fouling paint, installed new safety bow railing pulpit, recoated all sub-surface metal works with "Prop-Speed" anti-fouling epoxy application, installed new fuel tank thru-hull vents, propeller reconditioned, pitch reset and new propeller drive shaft installed.

DEAL ISLAND FACILTY MANAGEMENT

Hatchery Building Repairs

Completed total exterior painting of hatchery building and complete replacement of gable ends of said building. Said repairs involved the removal of deteriorated wood and structural support beams and installation of new beams and surface covering with sheets of T-111 exterior grade siding. All new surfaces were primed and painted for weather protection.

Hurricane Sandy Facility Repairs

Facility perimeter fence sections had to be replaced with new reinforced post positions and sand berm and bulkhead area refilled to secure fence posts properly. Tidal surge washed away much of adjacent shoreline material. Shoreline breakwater replaced utilizing front-end loader to reposition stone and cinderblock bulkhead/berm. Rebuild finger piers and loading wharf that were severely damaged by tidal surge. New galvanized lag bolts and washers utilized in reconstruction. Removed office trailer skirting damaged by tidal surge and solicited bids for replacement of skirting.

Electrical Repairs/Office

Retained electrical contractor to repair underground electric line break to restore power to office trailer facility.

Remote Setting Tanks, Pedestals

Repaired remote setting tank base pedestal platforms that were damaged after hurricane Sandy. Tanks were removed from bases as a result of tidal surge and wooden bases demolished. Repairs completed to existing bases salvaging most of original construction material. New fasteners utilized along with new metal corner braces for support. Tanks were again placed on pedestal bases, secured with new fasteners and leveled with oyster shell materials utilized as ground base under pedestal framework.

Remote Setting Tanks, Electric

Oversaw installation of new electrical underground service to remote setting tanks at Deal Island Facility.

Oyster Setting Experiment

Assisted Shellfish Division and MARI staff with comparison (oyster shell/clam shell) oyster spatset research experiment conducted in the remote setting tanks. Removed final sampling material from multiple cages and planted on beds in Manokin River.

Radar/Camera Tower

Meet with Tim Bowman, Maryland Natural Resources Police, four times throughout year to prepare and finalize location for tower installation at Deal Island Facility. Tower to be utilized for radar and camera installation for observation of surrounding waterway activity.

Ghost Pot Project

D.I. staff assisted ORP with Saturday delivery of dump service receptacles for disposal of derelict pots retrieved from the Bay waters and also provided our equipment front-end loader for loading and crushing debris removed from the Bay by the various boats involved in the project.

St. Mary's County Boat Ramps Project

Assisted MDNR Construction Engineering Division with sand and debris removal from public boat ramps near Rt. 301 bridge utilizing our dump service vehicles and front-end loader. Numerous loads of debris and sand were transported away from the public ramp and relocated at a pre-determined disposal site.

Employee Hiring

Conducted two new employee/candidate hiring procedures for the Deal Island Facility during 2012. This included position advertising for a full-time position to fill a vacancy after the resignation of the vessel mate in April and one seasonal contractual position, interviewing potential candidates, and the proper processing and training of "new hire" employees.

CPR / First Aid Training

Dave White and co-instructor Josh Henesy conducted two training programs during 2012: one in New Germany during the Fisheries Service Summit and one in Oxford certifying 51 staff personnel in National Safety Council CPR / First Aid course training.

Employee CDL Operators Permit

Assisted employee with obtaining proper class drivers license to operate dump service vehicles and pulling trailer with loader and equipment simultaneously. Accompany employee, as instructor, while operating Maryland State Highway Administration tractor trailer vehicle with learners permit. Accompanied employee on December 28, 2012 while operating said vehicle to the Maryland Motor-vehicle Administration for Class "A" drivers test. Employee successfully completed all tests and obtained proper class license for duty assignment within MDNR (Shell Transport Project).

[Back to Report Home](#)

Monitoring and Assessment

- [Monitoring and Assessment Home](#)
- [Shellfish Home](#)
- [Annual Fall Survey](#)
- [Fall Survey: Methods](#)
- [Fall Survey: Reports](#)
- [Sample Procedures](#)
- [Scallop Restoration](#)
- [Commercial Clams](#)
- [Glossary](#)
- [2012 Activity Report](#)
- [Oyster Stock Assessment](#)
- [5 Year Oyster Review Report](#)

2012 Activity Report Links

- [FIELD SURVEYS](#)
- [COLLABORATIVE EFFORTS](#)
- [COMMUNICATIONS and PERSONNEL](#)
- [DEAL ISLAND](#)



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Fisheries Home Page	
Fisheries Regulations	
Fishing Licenses	
Join Our Mailing List	
Fishing in MD	
Public Notices	
Fishing Events	
More Resources	▾
Recent	▾
Master Angler	
Trout1	
Trout2	
Staff	
FACTS	
shad_restoration	
Joint Comm SBass Members	

2012 Activity Report Field Surveys

Oyster Sanctuaries *April-May*

Initiated a monitoring program for the recently established tributary-scale oyster sanctuaries in Maryland. A patent-tong based survey framework was developed and implemented in seven sanctuaries throughout the state in collaboration with the MDNR Shellfish Restoration Program. The surveys provided baseline data to evaluate the efficacy of the sanctuary initiative.

Approximately 1200 samples were taken, each with data collected on oyster abundance, size frequency, observed mortality, recent recruitment, and habitat information including substrate type and estimates of shell volume per unit area.



Coastal Bays Shellfish Assessment *June*



Completed the 18th annual Coastal Bays Shellfish Survey. The survey has been tracking how hard clam populations have responded to the ban on mechanical harvesting in 2008 and consequent decrease in fishing pressure. A total of 260 samples were taken at random, stratified by bay or bay quadrant using the commercial clam dredger Sea Whore equipped with a hydraulic escalator dredge. Currently, hard clam populations are either stable or have increased throughout the bays. Isle of Wight Bay had the highest densities, with an overall mean approaching historic levels. However, recruitment appeared to be low. The most encouraging news was the second year of improved densities in Chincoteague Bay after a long period of decline to alarmingly low levels. Although spotty, recruitment appeared to be the best among the bays, resulting in a doubling in density over the past two years. Nevertheless, the average density for Chincoteague Bay remains much lower than the historic baseline.



Although hard clams are the primary focus of this survey, other commercially and ecologically valuable molluscan species are accounted for as well. Of particular interest is the status of the bay scallop population, which was re-introduced to the Coastal Bays by the MDNR Shellfish Program during the late 1990's. Unfortunately, this population is struggling - only one bay scallop was found (in Isle of Wight Bay); none were observed last year. Also surveyed was the only known subtidal oyster population in Chincoteague Bay, where oysters approached 6 inches in length and there continued to be spat set, albeit light. A sample of oysters was taken to the Cooperative Oxford Lab for disease analyses.

August



Initiated an experiment to test oyster disease virulence or tolerance of oysters from Chincoteague Bay. Disease results from the June survey were negative for the subtidal oyster population in Chincoteague Bay. To test whether these oysters are resistant to disease or if disease is absent, a sample was collected and transferred to Deal Island where disease is known to be enzootic. Disease levels in these oysters will be compared with a local population of Tangier Sound oysters after a year of exposure. The Oxford Lab has agreed to analyze the oysters for diseases.

Razor Clam Mortalities

July



Acting on reports from commercial clambers of abnormally high razor clam mortalities, five locations in the Patuxent River were sampled using a hydraulic escalator dredge. In addition to population assessments, specimens were sent to the Cooperative Oxford Lab for disease analysis and water samples were collected for evidence of harmful algal blooms. The latter was part of a collaborative effort with the MDNR Resource Assessment Service. Razor clam observed mortalities ranged from 26% up to 82%. Although there was no clear-cut "smoking gun", disseminated neoplasia, a blood disease fatal to soft clams and believed responsible for large-scale mortalities in razor clams, was found in 43% and 47% of the razor clams from two samples. Also noteworthy was that no softshell clams were observed, although several areas were surveyed where that species had been collected in past years.

Potomac River Fisheries Commission Oyster Reserve

June/October

The PRFC established a pilot program for a self-sustaining oyster fishery which could serve as a prototype for future oyster management in the Bay. In support of the program, MDNR surveyed and delineated a seed planting area on Ragged Point bar. Afterwards, the area was planted with triploid oysters from the Piney Point hatchery. The planting was examined in October and appeared to be doing extremely well. The four-month old oysters averaged an impressive 51 mm in shell height. Overall mortality from the time of planting to the survey date was about 35%.



St. Mary's River Aquaculture Leases

September

Due to the controversy of shellfish aquaculture leasing within the St. Mary's River Oyster Sanctuary, an intensive patent-tong survey of the proposed lease sites was conducted to determine densities and distributions of existing oyster populations on these sites. Eleven proposed leases varying in size from 0.6 acres to 33.6 acres were



examined and the findings were provided to the MDNR Aquaculture Division for a management determination. A total of 131 samples were taken, each with data collected on oyster abundance, size frequency, observed mortality, recent recruitment, and habitat information including substrate type and estimates of shell volume per unit area.

Annual Fall Oyster Survey

October-December

The 2012 Fall Oyster Survey, a two-month endeavor which encompassed 262 oyster bars and 316 samples throughout the bay and its tributaries, concluded on 3 December. Preliminary results indicate that oyster populations continue to thrive in most parts of Maryland's Chesapeake Bay, thanks



to persistently high survivorship of the strong 2010 year class. Hurricane Sandy appears to have had little effect on the oyster populations, as opposed to 2011 when high freshwater flows from heavy rains in the spring and two tropical storms in late summer impacted oysters in the Upper Bay. As a result, the 2012 Oyster Biomass Index, a measure of oyster abundance and weight, increased for the second consecutive year and is at its highest point since 1999. Spatset also improved dramatically over 2011, marking the second year of above average recruitment in the past three years. Overall total observed mortality was at an all-time low within the 28-year Mortality Index set. Although oyster diseases remained below the long-term average, dermo disease prevalence and mean intensity rose substantially over the record-low 2011 values.

Power Dredge Evaluation

November-December

Completed the second year of a five-year evaluation of the effects of power dredging on oyster populations and habitat. A total of 620 patent tong samples were taken from four specially designated power dredge areas located in three salinity regimes, along with

three proximate control sites where power dredging was prohibited. Data were collected on oyster abundance, size frequency, observed mortality, recent recruitment, and habitat information including substrate type and estimates of shell volume per unit area.



Oyster Shell Reclamation Evaluations

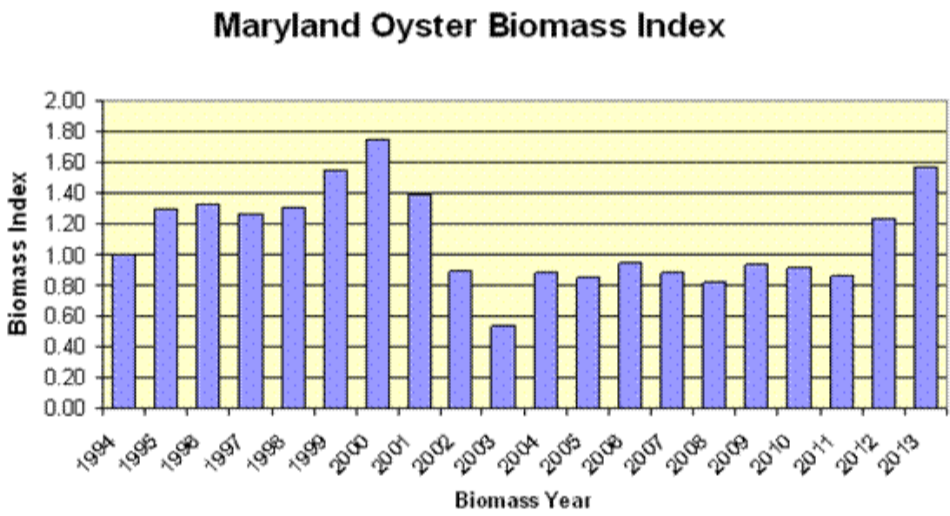
December

Conducted a shell reclamation evaluation utilizing patent tongs on Mountain Point and Six Foot Knoll shell borrow sites in the Upper Bay and a dredge on three Back Cove shell planting locations in Tangier Sound. Unfortunately, the borrow site on Mountain Point was on the Fall Oyster Survey Key Bar spatfall



monitoring station, which consequently had to be moved to a less suitable location. Of the three Back Cove planting sites, two had little if any shell and the third had undesirable numbers of small and market oysters mixed in. Also, the spat count was relatively low for a seed production planting, with the best site averaging about 250 spat/bu.

Oyster Biomass Index



As part of the governor's "Managing for Results" initiative, calculated the 2011 oyster Biomass Index based on the 2011 Fall Oyster Survey results, and reviewed/updated/ edited the associated document. Implemented shipboard quality assurance procedures for data recording.

[Back to Report Home](#)

Monitoring and Assessment

- [Monitoring and Assessment Home](#)
- [Shellfish Home](#)
- [Annual Fall Survey](#)
- [Fall Survey: Methods](#)
- [Fall Survey: Reports](#)
- [Sample Procedures](#)
- [Scallop Restoration](#)
- [Commercial Clams](#)
- [Glossary](#)
- [2012 Activity Report](#)
- [Oyster Stock Assessment](#)
- [5 Year Oyster Review Report](#)

- [FIELD SURVEYS](#)
- [COLLABORATIVE EFFORTS](#)
- [COMMUNICATIONS and PERSONNEL](#)
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- Maryland News

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