



Oyster Restoration and Protection Plan for North Carolina: A Blueprint For Action - Second Edition 2008 – 2012

The Eastern Oyster (*Crassostrea virginica*) is an ecological, economical and educational treasure for North Carolina. However, the oyster population has declined over 50 percent and is now listed as a species of concern for the NC Division of Marine Fisheries (DMF). This decline results from: habitat loss, pollution, diseases and historical harvest pressure. The health of the oyster reflects the health of the coastal ecosystem.

For the past five years, efforts to protect and restore North Carolina's native oyster have increased significantly and annual oyster harvests have risen. A diverse group of stakeholders have worked in concert by linking strategies and developing targeted initiatives to create and implement the Oyster Restoration and Protection Plan for North Carolina: A Blueprint for Action (Blueprint). The Blueprint provided these stakeholders with the cohesive direction and guidance that allowed them to come together as a united force to pursue tangible restoration and protection strategies. The Blueprint enabled government, private agencies and other shellfish stakeholders to coordinate and link their habitat and water quality protection and restoration, and fishery management activities. This resulted in funding increases for oyster related protection and restoration programs that are about ten times higher than they were in 2003.

Now that a significant number of the objectives of the first action plan have been realized and new opportunities and challenges have presented themselves, a second edition of the Blueprint has been developed to establish a joint vision among the stakeholders for the next five years. The Blueprint is a living document that will be updated and amended by the steering committee. The following goals, objectives and action items represent the second five year cycle of the Blueprint.

Blueprint's Overarching Goals:

- To restore and protect North Carolina's native oyster populations and habitat in an effort to restore our estuaries to robust, diverse, & resilient ecosystems.
- To build broad public awareness & support for the value of oyster restoration, estuarine conservation and sustainable fisheries.
- To establish and work with a comprehensive coalition to build and maintain significant, demonstrable and meaningful progress towards oyster restoration in the next five years.

Goals	Objectives	Action Item	Implementation Plan	Priority-Year	Funding Needs
Goal #1: Engage and lead a comprehensive coalition of partners on a state and federal level to achieve oyster and water quality protection and restoration objectives.	Objective #1.1 Establish the Shellfish Futures Council to provide guidance and leadership to help stimulate the fulfillment of the Blueprint.	1. Secure approval and support from DENR Secretary for Council, establish membership and operating guidelines, hold meetings, and report findings.	The Council will work with the Blueprint’s steering committee to provide leadership, agency vision, and public participation that will be needed to achieve the goals and objectives of the Blueprint.		
	Objective #1.2 Enhance and maintain the steering committee and to provide leadership to achieve oyster restoration and protection goals.	2. Evaluate steering committee membership to ensure key stakeholders and abilities are engaged to advance the Plan.	Include federal and state agencies, conservation organizations, researchers, educators, policy makers, oyster harvesters and growers.		
		3. Prioritize and implement key objectives and action items from the Blueprint.	Ensure the Blueprint is integral to the implementation of other ongoing federal and state sponsored of major coastal environmental planning, management, and protection and restoration initiatives.		
		3. Establish mechanisms to translate the Plan and recommendations to key groups including local governments, the public, and commissions.	Utilize forums, commission meetings and conferences to engage stakeholders in the Blueprint.		
		4. Hold meetings of the steering committee as necessary to oversee implementation of the Plan.	Steering committee meets two times annually		
		5. Organize and hold biannual oyster summits to review Plan implementation, adjust priorities and implementation, and coordinate actions as necessary.	Utilize fishery forums and other meetings to update stakeholders on the Blueprint’s progress.		

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<p>Goal #2: Protect and restore healthy oyster populations and habitat as a means to improve water quality, provide essential habitat, and support a sustainable fishery.</p>	<p>Objective # 2.1 Implement the regional recommendations for the identified high priority shellfish growing areas (SGAs) and their watersheds.</p>	<p>1. Work with the regional workgroups to implement the recommended projects and actions for priority oyster growing areas and their watersheds</p>	<p>Regional workgroups meet annually or as needed to review ongoing and planned projects, coordinate and partner on project and initiatives implementation and planning.</p>		
	<p>Objective # 2.2 Identify and designate oyster habitat and Strategic Habitat Areas, and establish a stock status for oysters in NC.</p>	<p>1. Complete NCDMF substrate mapping and ground truthing to identify existing shell bottom resources and incorporate data into existing data bases and DWQ basinwide plans for use by agencies and the public.</p>	<p>Focus efforts on areas which have not been mapped previously, remapping/updating substrate maps in designated high priority areas, and disseminate maps to oyster and coastal habitat restoration/protection stakeholders.</p>		
		<p>2. Identify and designate Strategic Habitat Areas using ecologically based criteria.</p>	<p>Conduct SHA evaluation and designation process for Albemarle-Pamlico Sound area, and White Oak and Cape Fear river basins.</p>		
		<p>3. Conduct a stock status assessment for oysters in NC utilizing substrate mapping</p>	<p>Create mechanism to develop a stock status</p>		
	<p>Objective # 2.3 Protect oyster habitat by ensuring the adoption of state laws, policies and regulations that support the restoration and conservation of oyster habitat and native oyster populations.</p>	<p>1. Reduce impacts to oyster habitat from land-use practices and fishing gear effects through improved enforcement, establishment of protective buffers around habitats, and further restriction of mechanical shellfish harvesting. (CHPPs)</p>	<p>Support CHHPs implementation plan and recommendations for regulatory permit review staff and designation of strategic habitat areas.</p>		
		<p>2. Develop and implement a comprehensive coastal marina and</p>	<p>Move DCM/SeaGrant shallow water marina and community boating facility</p>		

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		dock management plan and policy to prevent closures of shellfish harvest waters and minimize cumulative impacts on oyster habitat. (CHPPs)	study forward into the development/updating of regulations. Proposed DCM rules prohibiting pier and docking facilities in PNAs with less than 2 ft of water at normal water level or nwl at low tide; existing shellfish beds and SAVs		
		3. Reduce and restrict new and maintenance navigation channel dredging projects in SA waters and PNAs to avoid impacts to oyster and other estuarine habitats.	Ensure resource agencies have staff and support to review and comment on permits and strengthen regulations.		
		4. Enhance DMF agency habitat alteration permit review capability.	One position in each regional office		
		5. Ensure protection of shellfish leases from encroachment from land based activities, docks and sills.	Review current leases and statutes and determine if user conflicts are occurring and develop recommendations.		
	Objective #2.4 Promote and expand the use of natural alternatives to preserve and/or restore estuarine shorelines to protect and restore oyster habitat.	1. Implement estuarine and public trust shoreline stabilization rules and state and federal permit implementation for use of alternatives, including oyster shell, to vertical shoreline stabilization measures.	Work with regulators to develop support for living shorelines and estuarine shoreline stakeholders' recommendations, and complete the permit development.		
		2. Develop and promote incentives, contractor and agency training and public information for use of alternatives (as ranked by the Estuarine Shoreline Stabilization Subcommittee) to vertical shoreline stabilization.			
		3. Develop and implement protocols and projects utilizing oyster shell as an alternative to rock or wooden stabilization structures to create	Evaluate existing projects and seek opportunities to implement new projects using standardized protocols.		

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		“living shorelines” that are effective in stabilizing the shoreline.			
	Objective # 2.5 Develop a shellfish research program to guide restoration efforts; quantify key ecological attributes of the native oyster population; the stresses and sources of stress that threaten the native oyster and cause habitat loss; and develop strategies and guidelines to eliminate/mitigate those stresses.	1. Establish a consortium of researchers to identify and prioritize research needs utilizing appropriate identified research CHPP & Oyster FMP priorities; share data and project results; and coordinate with restoration efforts for regionally based oyster habitat protection and restoration.	Work with NC SeaGrant to identify shellfish researchers to establish the consortium and develop priorities.		
		2. Establish and fully develop the shellfish research hatchery program to: implement prioritized research needs; develop and provide a reliable source of native oyster seed; and determine the level of shellfish hatchery production necessary for shellfish restoration and fishery enhancement efforts.	Create hatchery advisory committee to provide recommendations for shellfish research hatchery implementation at UNCW; establish priorities and operating guidelines and work with sponsoring entities to seek operating funds		
		3. Increase funding to the Shellfish Research Program through N.C Sea Grant Program to support identified research priorities.			
		4. Conduct research on regionally specific and appropriate reef design and siting for optimal water quality and habitat functions.	Adopt standardized monitoring protocols and ensure restoration stakeholders are utilizing them and sharing results		

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		5. Conduct larval transport, spatfall timing and hydrodynamic studies to determine benchmarks for larval supply; establishing sanctuaries; and reef siting and seeding efforts.	Northern - Highest priority for larval transport, hydrodynamic and spatfall studies. Southern & Central - Conduct basin level larval transport and spatfall studies		
		6. Evaluate and develop protocols and estimates for numbers of seed oysters needed for seeding of restoration sites and sanctuaries with remote set spat on shell.	Adopt standardized monitoring protocols and ensure restoration stakeholders are utilizing them and sharing results		
		7. Develop and implement scientifically rigorous standardized monitoring metrics and methodologies to be utilized by all restoration practitioners to evaluate intertidal and subtidal restoration projects.	Hold a monitoring workshop for all oyster restoration practitioners in NC to support standardization of protocols and data sharing.		
		8. Utilize the shellfish research hatchery to conduct research on shellfish genetics, genetic selection of disease-resistant native oysters, and develop protocols for the use of regional brood stock and hatchery reared oyster stock.			
		9. Evaluate the status and level of ecosystem services provided by oysters located in closed waters, to determine if these areas serve as sanctuaries.			
		10. Rigorously test the potential of using marine limestone in combination with shell and without shell to restore oyster reefs in all			

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		appropriate areas.			
		10. Review the results of the USACE EIS on the proposed introduction of non-native oysters in the Chesapeake Bay; consult with sister states concerning the use of non-native oysters; establish oversight committee and safety for any proposed non-native research in NC.			
	<p>Objective #2.6 Restore a healthy population of native oysters by: focusing, coordinating and expanding restoration activities; developing a state operated oyster hatchery program; establishing new oyster sanctuaries as research indicates; and working with shellfish growers and harvesters.</p>	1. Expand oyster habitat restoration efforts through the coordination of federal, state, university and conservation organization oyster restoration projects; increased communication and partnerships	Hold annual planning meetings for restoration stakeholders to review ongoing and planned projects; coordinate and partner on project and initiatives implementation and planning.		
		2. Utilize the shellfish research hatchery to develop a reliable source of native oyster seed for oyster restoration and fishery enhancement efforts.	Establish and operate research and restoration hatchery(s).		
		3. Develop and implement remote setting and seed oyster transport infrastructure necessary to support the hatchery program, DMF and restoration practitioners operations.	Establish remote setting operations at DMF stockpile sites.		
		4. Support DMF reef construction in			

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		existing sanctuaries and the creation of new oyster sanctuaries utilizing a regionally appropriate approach.			
		5. Increase capabilities for DMF so that 500,000 bushels of cultch material can be planted annually coastwide for restoration and fishery enhancement.	Northern: Plant 300,000 bu of cultch material annually; acquire necessary vessels & staff Central: Plant 100,000 bu of cultch material annually South: Plant 100,000 bu of cultch material annually		
		6. Establish a consistent and reliable supply of shell and reef material, including a shell retention strategy to ensure adequate source of cultch for restoration needs.			
		7. Expand implementation of DMF led shell-recycling initiative statewide; increase public and private participation.	Northern: Recycle 15,000 bu annually Central: Recycle 5,000 bu annually Southern: Recycle 10,000 bu annually		
		8. Secure strategic sites for stockpiling oysters and deploying large-scale oyster restoration activities.	Priorities: Brunswick, New Hanover, Pender Counties		
		9. Evaluate the potential of conservation leasing to expand oyster restoration efforts.			
Goal #3: Protect and restore water quality throughout coastal waters and especially near areas designated as oyster habitat.	Objective #3.1 Protect water quality in areas suitable for oyster habitat through the reduction of non-point and point source pollution and the implementation of	1. Implement the regional habitat and water quality recommendations for the identified high priority shellfish growing areas (SGAs) and their watersheds.	Southern Region: Shallotte and Lockwood Folly Rivers, Lower Cape Fear River, Masonboro Sound and Creeks, Topsail Sound area, Stump Sound and the New River. Central Region: Queen’s Creek and White Oak River, Newport River, North River Area.		

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	sustainable growth practices.		Northern Region: Lower Neuse River Area, Swan Quarter, Wysocking Bay, Jones Bay, and Middle Bay		
		2. Achieve effective Phase II NPDES stormwater programs in communities subject to the Phase II rules, and ensure stormwater permits protect water quality in the remaining 17 coastal counties not subject to Phase II.	Promote strong and effective stormwater programs as models; and identify and cultivate local governments willing to volunteer to obtain Phase II permits		
		3. Ensure effective implementation and enforcement of new coastal stormwater rules	Prevent further degradation of shellfish waters through effective implementation and full enforcement of stormwater regulations		
		4. Implement NCDOT Field Outfall Inventory Prioritization to identify pollution sources; share info with agencies and prioritize for remediation.			
		5. Utilize enhanced NCDEH Shellfish Sanitation Shoreline Survey Methodology to complete updated surveys for all 55 SGAs; map and identify pollution sources; and share data with land-use and water-quality agencies.			
		6. Continue to phase-out existing outfalls by implementing alternative stormwater management strategies. (CHPPs)			
		7. Reduce point source pollution by identifying all point sources discharges in estuarine waters; increasing inspections of sewage			

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		treatment facilities, collection infrastructure, and land disposal sites; providing incentives for upgrading all types of wastewater treatment systems; and encourage land application. (CHPPs).			
		8. Develop CAMA Land Use Plan template through DCM and CRC for protecting priority shellfish waters and watersheds in urban and non-urban areas; obtain endorsement of LID and WQ standards and amendments to LUPs by DCM; ensure effective CAMA land use plan design, implementation and enforcement.			
		9. Develop coastal Low Impact Development manual and ordinances for implementation in the 20 coastal counties; and achieve regulatory parity between conventional development and LID techniques.	Support New Hanover and Brunswick counties efforts to develop LID manual and ordinances; work with Onslow and Pender Counties. Utilize SE region's LID efforts to work with central and northeast regions. State LID Manual in development		
		10. Work with municipalities and sewer and water authorities and funding agencies to plan proactively to guide use waste water expansion and sewer line extensions to prevent sprawl and increases in non-point source pollution.	Work with municipalities and ONSWA. Work WBSWA, NHC/Wilm. and Pender Co utilities.		
	Objective #3.2 Reverse the degradation of habitat and water quality in targeted watersheds,	1. Utilize EPA/DWQ Costal NPS program 319 Program to identify pollution sources resulting in shellfish closures in impaired and priority waters; implement TMDLs	Identify and prioritize impaired waters in priority areas for potential 319/TMDL projects: Complete Lockwood Folly River, White Oak River 319 projects and TMDL; implement		

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	including shellfish waters.	and restoration plans; and develop a shellfish waters TMDL.	recommendations. Target Stump Sound impaired waters for 319 project.		
		2. Utilize the Soil and Water Conservation District Community Conservation Assistance Program to implement restoration and retrofit projects.	Secure support for the Community Conservation Assistance Program and other stormwater discharge identification, removal and retrofit programs so that a significant percentage of stormwater discharges are removed from shellfish waters.		
		3. Implement a prioritized and coordinated plan of land acquisition and conservation easements to preserve and restore identified high priority and pristine and threatened watersheds adjacent to productive shellfish growing areas; utilize and link to NC DENR Strategic Conservation Plan, CWMTF, EEP and regional planning efforts.	<u>Northern:</u> Utilize the Albemarle Peninsula Planning project <u>Central:</u> Utilize the Onslow Bight Conservation Forum as a tool to coordinate watershed protection efforts. <u>Southern:</u> Utilize the Onslow Bight Conservation Forum and the Cape Fear Arch initiatives as tools to coordinate watershed protection efforts		
		4. Ensure state land acquisition and conservation programs are adequately funded, and that these programs recognize and prioritize shellfish waters protection and restoration.			
		5. Utilize land retirement: programs like CRP, CREP, and working lands conservation: EQIP, WHIP, WRP			
		6. Work with the Ecosystem Enhancement Program to prioritize mitigation in priority shellfish waters' watersheds affected by road building projects, and develop the appropriate mitigation credit.			

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		7. Identify wetland, stream, tidal creek and other coastal habitat restoration projects to implement resulting in the restoration of water quality in shellfish waters.			
		8. Improve land-based strategies to reduce non-point pollution and minimize cumulative losses to wetlands and streams through voluntary actions, Best Management Practices (BMPs), and incentives, including: improved methods to reduce sediment pollution; increased on-site infiltration of stormwater, documentation; low-impact development. (CHPPs)			
		9. Seek changes to the state revolving fund criteria that (a) allow stormwater retrofits and (b) do not require the lowest cost method for wastewater projects to allow flexibility for alternative strategies.			
	Objective #3.3 Enhance enforcement of, and compliance with, Coastal Resources Commission (CRC), Environmental Management Commission (EMC), Sedimentation Control Commission, Health Services Commission (HSC) and Marine	1. Strengthen DENR enforcement mechanisms, and coordinate rulemaking and enforcement among regulatory commissions and agencies.			

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	Fisheries Commission (MFC) rules and permit conditions.				
		2. Strengthen enforcement and compliance and increase penalties for NPDES permits for chronic violations of water quality standards.			
		3. DENR agencies will develop data sharing processes to enhance proactive planning and permit reviews. Specifically address data types and standards, data sharing standards, definitions, web services, scaling, integration mechanisms, administration, QA/QC, and other issues.			
Goal #4: Develop a sustainable native oyster fishery.	Objective #4.1 Develop the resources to ensure a sustainable wild and mariculture based oyster fishery	1. Determine a sustainable level of oyster harvest incorporating a stock status assessment; limits of wild harvest; and the potential and limits of oyster mariculture.			
		2. Create incentives for oyster mariculture and support the transition of wild harvesters into mariculture.			
		3. Utilize the NCOHP to provide support for oyster mariculture through training and the development of private hatcheries to support oyster mariculture.			
		4. Support the NC Sea Grant and shellfish research hatchery programs in the development of mariculture BMPs and a training/continuing			

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		education program.			
		5. Utilize Community Colleges and H.S. with aquaculture programs and the NC Aquaculture Development Conference & Trade Show to support and increase awareness and involvement in oyster mariculture.			
		6. Support the use of NC Sea Grant FRGs and SRGs and the establishment of shellfish industry research program for mariculture purposes.			
		7. Evaluate the need for and implement the restructuring of components of lease system to support mariculture.			
		8. Involve oyster growers and harvesters in oyster restoration and protection efforts, including establishing no-take sanctuaries, to increase support for a sustainable fishery of native, wild oysters.			
	Objective #4.2 Ensure a viable market for NC oysters.	1. Evaluate the current and potential market for NC oysters.			
		2. Identify niche markets for sustainable harvest wild oysters and for mariculture oysters.			
		3. Increase public awareness and support for oyster mariculture.			
		4. Utilize marketing to support sustainable harvest methods and the conservation and restoration of NC's oysters.			

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		5. Utilize NC DA&CS seafood marketing program, NC Sea Grant FRG's/SRG's, and NC Restaurants Association to support marketing efforts.			
<p>Goal #5: Increase public awareness of the ecological and economic roles, values and importance of a healthy oyster population, and expand citizen and stakeholder support and participation in the protection and restoration of water quality and oyster habitat efforts.</p>	<p>Objective #5.1 Create and disseminate educational resources to engage the public, policy makers and stakeholders in efforts to protect and restore oysters and shellfish waters in North Carolina.</p>	<p>1. Enhance educational and outreach efforts; integrate with universities, community colleges, non-profits and others to create a comprehensive & collaborative network of resources, materials and opportunities for students, teachers, and the public.</p>	<p>Create and maintain a comprehensive network of shellfish education and training resources, materials and opportunities available to students, teachers, and the public.</p>		
		2. Establish teacher training resources, curriculum and workshops; disseminate educational resources for oyster education through partnerships, websites (www.ncoysters.com); and the DENR Office of Env. Educ.			
		3. Develop educational resources to convey the cultural, historical and socio-economic importance of the oyster.			
		4. Develop and convey a consistent message to the public, policy makers and stakeholders focused on the importance of oysters, their restoration and the link to a healthy			

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		coastal environment.			
	Objective #5.2 Enhance and expand public support for the restoration and protection of water quality and oyster habitat through increased opportunities for participation.	1. Provide increased opportunities for student, teacher and public participation in protection and restoration activities.			
		2. Hold biannual public forums highlighting regional efforts to restore and protect oysters and shellfish waters; opportunities for the public to become involved; and to keep the public and their elected officials informed and excited about positive progress being made to protect and restore oysters in North Carolina.			
		3.Support NC Sea Grant , and DMF programs to engage the public in backyard shellfish gardening, U-dock programs, and utilize the participants for oyster outreach and restoration efforts			
		4. Greatly increase public outreach, support and participation in the oyster shell-recycling program statewide.	Establish regional volunteer coordinators		
		5. Engage motivated citizens and provide opportunities for involvement in water quality and protection efforts.			

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		6. Identify outreach needs, develop them and conduct an outreach campaign for the public, using all available agencies and organizations, on the ecological and economic values of oysters, the factors affecting them and the opportunities for public involvement in water quality and oyster habitat protection and restoration.			
		7. Develop a media plan for outreach efforts and conduct periodic press tours to highlight successes, progress of restoration and protection efforts, benefits of oysters, and public involvement.			
		8. Ensure communication occurs among agencies and organizations working on the education and volunteer involvement components.			
		9. Facilitate the communication between educators and researchers and other groups so that research efforts are incorporated into public outreach efforts.			
Goal # 6: Link and Coordinate Oyster Restoration and Protection Plan activities to Ongoing Planning Efforts	Objective #6.1 Make implementation of the Oyster Restoration and Protection Plan integral to accomplishing the objectives of other ongoing major federal and state sponsored coastal environmental	1. Link the Blueprint to habitat and water quality protection and restoration, and fishery management activities.	Link to: DMF Oyster Fishery Management Plan, Coastal Habitat Protection Plans, Basinwide Water Quality Plans, CAMA Land Use Plans, Albemarle-Pamlico Estuary Program, Ecosystem Enhancement Program Basinwide Wetlands Restoration Plans, State of North Carolina/ Corps of Engineers Neuse River, Tar River and Pamlico Sound Basins Studies Onslow		

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	planning initiatives.		Bight Conservation Forum and Cape Fear Arch initiatives, One North Carolina Naturally, Land for Tomorrow/Horizon 2100, and Sea Grant Strategic Plan.		
Goal #7: Secure Funding for Full Implementation of the Goals, Objectives and Actions of the Oyster Restoration and Protection Plan for North Carolina	Objective #7.1 Identify and secure funding for the management and operation of the Oyster Restoration and Protection Plan and the fulfillment of its objectives	1. Support efforts to create and introduce state and federal legislative packages to fund identified actions of the Oyster Plan.			
		2. Obtain funds to support the Shellfish Futures Council and Steering Committee, and to hold Oyster Summits.			
		3. Provide funding for expanded oyster habitat restoration programs and a comprehensive oyster research program.			
		4. Leverage private and federal funds, i.e. UASCE watershed planning projects to support research and restoration projects.			
		5. Encourage citizen groups to coordinate with each other and agencies to apply for funding for restoration and protection projects, i.e. 319, NOAA, FWF, FAF, etc...			
	Objective #7.2 Develop strategic	1. Improve enforcement mechanism by expanding DENR funding to			

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	planning for securing \$100 million a year in funding for projects that will protect and restore shellfishing waters.	maintain existing staff levels and hire Division of Water Quality (DWQ), Division of Coastal Management (DCM), and Division of Environmental Health (DEH) and Division of Land Resources (DLR) permit and enforcement staff.			
		3. Prioritize and pursue land acquisition and conservation easement grants to preserve pristine and threatened watersheds adjacent to productive shellfish growing areas (CWMTF, DOT mitigation/EEP funds, NOAA, USFWS and other funding sources).			
		4. Pursue grants and loans directed at cleaning up existing sources of point and non-point pollution in priority shellfish waters and watersheds (CWMTF, APNEP, DOT mitigation/EEP, EPA 319, State Revolving Fund, NOAA and other sources).			
		5. Pursue grants and develop private partnerships to restore drained watersheds (CWMTF, Farm Bill, CREP, NOAA and others).			
		6. Secure additional state and federal funding for estuarine restoration/conservation in combination with wetland/upland projects.			
		7. Provide funding and encourage the use of incentives for local governments for protection and			

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		improvement of local oyster habitat; i.e. community stormwater ordinances.			
		8. Encourage the N.C. General Assembly to fully fund conservation and protection programs such as the CWMTF at \$100 million annually, Natural Heritage Trust Fund, and Parks and Recreation Trust Fund.			
	Objective #7.3 Provide funding for an outreach and education program to enhance and expand public support and participation in the restoration and protection of water quality and oyster habitat through action.	1. Fund the development and distribution of identified outreach needs, materials and resources;			
		3. Fund biannual public forums on the status of water quality and oyster habitat efforts.			
	Objective #7.4 Fund the creation of resources to support and market a sustainable oyster fishery	1. Fund incentives, training/continuing education program for mariculture and the implementation of BMPs.			

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Steering Committee 2008

- Troy Alphin, UNC Wilmington
- Bill Crowell, Albemarle-Pamlico National Estuary Program
- Louis Daniel, NC Division of Marine Fisheries
- _____, The Nature Conservancy
- _____, Environmental Defense
- Patricia K. Fowler, NC Division of Environmental Health – Shellfish Sanitation Section
- JoAnne Harcke, NC Aquariums
- Craig Hardy, NC Division of Marine Fisheries
- _____, NC Division of Water Quality
- Jimmy Johnson, NC Department of Environment and Natural Resources – CHPPs Coordinator
- Jim Gregson, NC Division of Coastal Management
- Phillip (Skip) S. Kemp Jr., Carteret Community College
- Sarah King, NC Clean Water Management Trust Fund
- Coleen Sullins, NC Division of Water Quality
- Tancred Miller, NC Division of Coastal Management
- Todd Miller, NC Coastal Federation
- Matt Parker, NCDA & CS Aquaculture Division
- Charles “Pete” Peterson, UNC Chapel Hill Institute of Marine Sciences
- Martin Posey, UNC Wilmington
- Secretary Bill Ross, NC Department of the Environment and Natural Resources
- Bill Kirby-Smith, Duke University Marine Laboratory
- Jim Swartzenberg, J&B AquaFood & NC Shellfish Growers Association
- Damon Tatem, NC Clean Water Management Trust Fund
- Michael P. Voiland, North Carolina Sea Grant Program
- Chuck Wilson, US Army Corps of Engineers, Wilmington District

Invited Guests and Staff:

Aaron McCall, The Nature Conservancy; Richard Anderson, Duke University; Jan DeBlieu, NC Coastal Federation; Michele Duval, NC Division of Marine Fisheries; Andy Haines, NC Division of Environmental Health – Shellfish Sanitation Section; Jess Hawkins, NC Aquarium at Pine Knoll Shores
 Lucy Henry, Albemarle-Pamlico National Estuary Program; Ronald Hodson, North Carolina Sea Grant Program – Emeritus
 Lauren Kolodij, NC Coastal Federation; Andrew McDaniel, NC Division of Highways; Sara Mirabilio, North Carolina Sea Grant Program
 Steve Rebach, North Carolina Sea Grant, NC State University; Jim Stephenson, NC Coastal Federation; Lexia Weaver, NC Coastal Federation; Ted Wilgis, NC Coastal Federation