

# OCEAN FRONTIERS

LEADERS IN OCEAN STEWARDSHIP & THE NEW BLUE ECONOMY



POST-SECONDARY  
DISCUSSION GUIDE

[www.ocean-frontiers.org](http://www.ocean-frontiers.org)



## INTRODUCTION

*Ocean Frontiers III: Leaders in Ocean Stewardship & the New Blue Economy* is an inspiring ocean film that chronicles our efforts to plan for a healthy, safe, and sustainable future. It explores the intersection of national security, maritime commerce, fishing, and recreation, plus expanding industries such as offshore wind energy and aquaculture, coupled with scientific discovery. The film tells the story of how ocean planning helps us manage and balance all the uses of our ocean to keep it thriving for generations to come. Savor rare underwater footage of stunning marine life along the coast from Virginia to Maine and hear from a range of people who are leading the way to a sustainable and thriving ocean.

The stories in *Ocean Frontiers III: Leaders in Ocean Stewardship & the New Blue Economy* help audiences understand key principles of coastal and marine spatial planning (ocean planning). The film showcases collaboration made possible by the National Ocean Policy and the Northeast and Mid-Atlantic regional ocean planning processes. These complex concepts come to life and are easy to grasp through the stories and people featured in *Ocean Frontiers III*.

“Ocean planning is a huge opportunity in this country for us to come together and collaborate, to work together on solutions. Solutions are always better when you have everyone at the table.”

Laura McKay - Virginia Coastal Zone Management Program,  
Virginia Dept. of Environmental Quality

This discussion guide was produced by the National Sea Grant Law Center and Green Fire Productions. It was developed to help educators incorporate *Ocean Frontiers III* into post-secondary classrooms and facilitate discussions on collaborative ocean planning and the future of our oceans.

*Ocean Frontiers III: Leaders in Ocean Stewardship & the New Blue Economy* was produced by Green Fire Productions. The film can be downloaded at no cost at: <https://ocean-frontiers.org/resources>. To learn more about the film series, explore the *Ocean Frontiers* website at <https://ocean-frontiers.org>. The series, including short clips, is also on Green Fire’s YouTube channel: <https://www.youtube.com/user/GreenFireMedia>

Additional post-secondary discussion guides, as well as secondary school lessons, are available for the entire *Ocean Frontiers* film series at: <https://ocean-frontiers.org/educator-resources>



All photos by Green Fire Productions, except where noted.

## “BIG PICTURE” ISSUES

### Ocean Planning

Ocean planning has been identified by scientists, policy makers and stakeholders around the globe as a practical approach to manage both conflicts and compatibilities in the marine environment in the face of both increasing development pressures and increasing interest and understanding of human interdependence on healthy ecosystems. It is a comprehensive, ecosystem-based planning process, built on sound science to analyze and plan for current and anticipated uses of the ocean. Pioneered in Western Europe, ocean planning is underway in more than 60 countries.

In the early 2000s two bi-partisan ocean commissions, the Pew Oceans Commission and the U.S. Commission on Ocean Policy, articulated a vision for comprehensive ocean governance in the United States, seeing a growing need to support stewardship,



Whale Center of New England, Photo taken under NOAA Fisheries Permit #981-1707

multiple use management and science-based decision making. Initial U.S. ocean planning efforts were local and state-based, with Massachusetts, Rhode Island, Oregon, Washington, New York and Connecticut creating state ocean plans for their coastal waters. Ocean planning has been used to reduce ship strikes on endangered whales outside of Boston Harbor by more than 80%, and the Florida Keys National Marine Sanctuary developed ocean plans to reduce conflicts among ocean stakeholders and to protect their coral reefs.

Ocean planning on a regional scale began as a result of the National Ocean Policy, established in 2010 by President Obama. This policy was the result of more than 10 years of work by scientists, policy makers and stakeholders, including ocean industries, coastal residents and conservationists. To implement ocean planning, nine ocean planning areas were designated in the U.S., mostly along large marine ecosystems. In 2016 the Northeast and Mid-Atlantic completed regional ocean plans and began implementing them in 2017. Other regions now have ocean plans in development.

In 2018 the White House revoked the National Ocean Policy, replacing it with one that emphasizes security and commerce over conservation and stewardship. The new policy shifts leadership of regional ocean planning to the states and allows for federal participation and data sharing to continue. With state leadership, ocean planning continues to move the U.S. away from an overly-simplistic issue-by-issue management approach toward comprehensive, informed and strategic ocean management.

## “BIG PICTURE” ISSUES

### Ecosystem-Based Management

Traditionally, management of ocean and coastal resources focused on a particular resource (e.g., fisheries) or issue (e.g., wetlands loss). With this type of management, the interconnections between species, habitat and other systems can be lost. Managers focusing on increasing the numbers of a target species might not notice the habitat degradation caused by the increase in population. Efforts taken to save one endangered species may increase predation on another, as seen with Steller sea lions and salmon in the Pacific Northwest.

Ecosystem-based management (EBM) is an integrated approach to management that considers the entire ecosystem, including humans. EBM shifts the focus away from managing the resource (sea lions or salmon) in isolation to managing the human uses (fishing or energy production) of the ecosystem in an integrated way, recognizing the complex and interconnected environmental, economic and social impacts of management decisions. In addition, by broadening the scope of decision-making beyond a

single resource or issue, EBM facilitates the consideration of the cumulative impacts of multiple human uses of the environment.



### Discussion Questions

1. What are the different human activities that affect our coastal resources? Who are the stakeholders?
2. How are humans part of the ocean ecosystem? How might changes in the ocean ecosystem affect the economy or society and vice versa?
3. What types of information do managers need to effectively engage in ocean planning and ecosystem-based management? Is this information readily available? How might managers obtain it?
4. How might regional ocean planning help reduce conflicts over ocean uses? How might it help encourage compatible uses?
5. National policy for coastal management was set forth by Congress in the Coastal Zone Management Act of 1972. In 2010, President Obama laid out a national policy for our oceans through an executive order. Discuss the advantages and disadvantages of establishing national policy through the Executive Branch (as opposed to the Legislative Branch).
6. Discuss how stakeholder and local communities' voices are included in regional ocean planning processes. How successful might the plans be without stakeholder input?
7. Discuss the likelihood of success of collaborative ocean planning. Research the current status of U.S ocean planning efforts to discover recent changes in ocean policy.

## “BIG PICTURE” ISSUES

### Resources

- [Pew Oceans Commissions Report, America’s Living Ocean](#)
- [U.S. Commission on Ocean Policy Report, An Ocean Blueprint for the 21st Century](#)
- [National Ocean Policy / National Ocean Council \(Obama archives\)](#)
- [National Ocean Policy, Executive Order 13,547 \(July 19, 2010\)](#)
- [Executive Order 13840 \(June 21, 2018\)](#)
- [NOAA - Coastal and Marine Spatial Planning](#)
- [Ecosystem-Based Management Tools Network](#)
- [Keep the Ocean Working](#)

### Regional Ocean Planning

- [Northeast Ocean Planning | Northeast Ocean Plan](#)
- [Mid-Atlantic Ocean Planning | Mid-Atlantic Ocean Plan](#)
- [Mid-Atlantic Regional Ocean Assessment](#)
- [West Coast Regional Ocean Planning](#)
- [Pacific Islands Regional Ocean Planning](#)
- [Caribbean Regional Ocean Partnership](#)



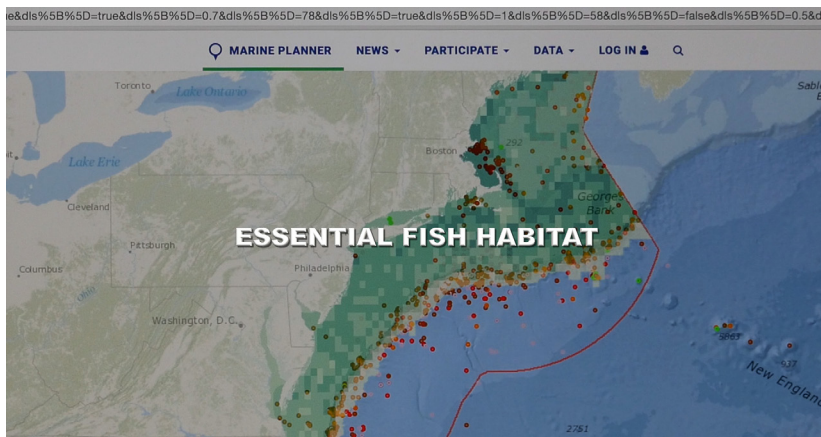
U.S. Army Corps of Engineers

## “BIG PICTURE” ISSUES

### Ocean Data Portals

Ocean planning has spurred the creation of centralized sources of ocean data for each region – the ocean data portals. Where in the past data had been siloed in various agencies, universities and industry groups, key data has now been gathered in one place so that planners, stakeholders and the public can see the ‘big picture’ of what’s happening in our oceans. With everyone able to access a common set of data – including ecosystem, marine life and human use layers – it becomes much easier for important decisions about our ocean to be made in a transparent and science-driven process.

There are several regional ocean data portals in the U.S., with additional portals being developed. The portals are centralized, peer-reviewed sources of data and interactive maps of the ocean ecosystem and ocean-related human activities, showing the richness and diversity of the ecosystem and illustrating the many ways that humans and environmental resources interact.



### Discussion Questions

1. How do the data portals help bridge the gap between natural resource managers, commercial interests, national security interests, commercial and recreational fishermen, and conservation groups?
2. How can data portals be used to determine the suitability of new uses of the offshore area, such as renewable energy-generating wind farms or aquaculture farms?
3. How can data portals be used to understand and protect migrating wildlife like whales and their habitats?

### Resources

- [Northeast Ocean Data Portal](#)
- [Mid-Atlantic Ocean Data Portal](#)
- [Governors' South Atlantic Alliance Coast & Ocean Portal](#)
- [Caribbean Regional Ocean Partnership Marine Planner](#)
- [Great Lakes Observing System](#)
- [Gulf of Mexico Data Atlas](#)
- [West Coast Ocean Data Portal](#)
- [Alaska Ocean Observing System Data Explorer](#)
- [NOAA/BOEM Marine Cadastre](#)

## “BIG PICTURE” ISSUES

### The “Blue Economy”

In recent years, the notion of a “green economy” has grown in popularity—seeking to reduce environmental risks and ecological degradation while promoting sustainable development. The “blue economy,” defined as the sustainable use of ocean resources for economic growth, improved livelihoods and jobs, and ocean ecosystem health, is similar. It places competing ocean uses within a sustainability framework, utilizing mechanisms such as regulation and cross-sector cooperation to manage access to marine resources.

Proponents of the concept assert it benefits food security, human health, developing economies and the environment by encouraging sustainable use of the world’s oceans. Growing a blue economy necessarily requires collaboration among existing and potential

future users, with stakeholders receiving equitable opportunities to make use of ocean resources while ensuring ecological integrity is maintained or enhanced.

### Discussion Questions

1. What does the term blue economy mean? What jobs might be included in that?
2. How should a blue economy ideally balance economic growth with ocean ecosystem health? At what point could one become a priority over the other, if ever?
3. Should existing interests be given greater weight than emerging interests when managing access to marine resources in a blue economy? Should any specific interests (i.e., national security) be given greater priority over others? Explain your reasoning.

### Resources

- [U.N. Conference on Trade and Development, Oceans Economy and Fisheries](#)
- [European Commission - Maritime Affairs, Blue Growth](#)
- [The Center for the Blue Economy](#)
- [NOAA Report: U.S. Ocean Economic Sectors Growing Twice as Fast as Overall Economy](#)



## COLLABORATION TOWARD EQUITABLE OCEAN USE: EXISTING INTERESTS

### National Security

The main national security entities responsible for our oceans are the U.S. Navy and U.S. Coast Guard, both of which are involved in collaborative ocean planning. Naval forces carry out operations on and below the ocean surface, on land and in the air in order to maintain their readiness. The Coast Guard is tasked with law enforcement, border control and ensuring the safety of our domestic waterways and their users. The activities of both agencies contribute directly to our nation's economic, social, environmental and military security.

Through their participation on the Regional Planning Bodies, the Navy and Coast Guard have helped shape the Northeast and Mid-Atlantic regional ocean plans, and they now use those plans and the ocean data portals to guide and inform their programs, initiatives, and planning. Since national security interests often intersect with other marine uses, ocean planning provides a



U.S. Fleet Forces Command, Dept. of the Navy

mechanism for necessary collaborations to take place, such as the Coast Guard working with offshore wind energy developers to ensure the safe navigation of military and commercial ships transiting near wind energy areas.



### Maritime Commerce

Maritime commerce is one of the most historic and prominent uses of our ocean and coastal waters. Our busy ports are key links in the nation's marine transportation system and are powerful drivers of regional economic growth. The U.S. Coast Guard is the lead agency responsible for the safe and efficient operation of the marine transportation system, and they work with other federal agencies, state and local governments, marine industries and maritime associations to optimize its balanced use and development. The ocean data portals provide decision makers with accurate maps and data, including navigation and commercial traffic information.



## COLLABORATION TOWARD EQUITABLE OCEAN USE: EXISTING INTERESTS

### Maritime Commerce (cont'd)

Due to the immense scope of the marine transportation system, maritime commerce is inherently linked to other ocean uses. As other existing ocean uses—and emerging ones like wind energy, aquaculture and sand mining—seek to use increasingly more ocean space, regional ocean planning can help optimize the efficiency of addressing competing ocean uses while maintaining ecosystem health.

### Discussion Questions

1. How is ocean planning connected to national security in the United States?
2. What are some national security-related issues and uses that may impact compatibility among ocean uses?
3. With four of the busiest ports in the nation located along the Mid-Atlantic coast, how is ocean planning connected to maritime commerce? What are some of the challenges ocean planning can address?

“Competing interests are what drive us to ocean planning. We need to make sure that there is compatibility in uses at the same time that we are preserving and protecting our ocean environment.”

*Jose F. H. Atangan – U.S. Fleet Forces Command*

### Resources

- [Northeast Ocean Plan: Regulatory and Management Actions - National Security \(pg 80-87\)](#)
- [Mid-Atlantic Ocean Plan: Actions to Foster Sustainable Ocean Uses - National Security \(pg 46-49\)](#)
- [Northeast Ocean Plan: Regulatory and Management Actions - Marine Transportation \(pg 70-79\)](#)
- [Mid-Atlantic Ocean Plan: Actions to Foster Sustainable Ocean Uses - Maritime Commerce and Navigation \(pg 60-63\)](#)
- [Coast Guard Commandant Instruction 16003.2A: Marine Planning to Operate and Maintain the Marine Transportation System \(MTS\) and Implement National Policy](#)
- [Department of the Navy - Energy, Environment, and Climate Change](#)



## COLLABORATION TOWARD EQUITABLE OCEAN USE: EXISTING INTERESTS

### Conservation & Recreation

The ocean is critical to a sustainable planet, and maintaining healthy ocean and coastal ecosystems is a key goal in both the Northeast and Mid-Atlantic regional ocean plans. Incorporating conservation into decision-making allows for marine life and ocean ecosystem health to be represented in the planning process. Smart and effective ocean stewardship provides future generations with the potential to enjoy the oceans' many gifts.

Recreational use of the ocean is both a fundamental part of our culture and a huge economic driver for coastal communities, providing essential jobs and contributing billions of dollars a year to the economy. Conservation and recreation go hand-in-hand, as keeping the ocean and beaches clean and healthy is necessary for the wide variety of recreation sectors to thrive. Ocean planning gives recreational users a voice and provides opportunities for them to share information on where and how people use the coast for recreation.



NOAA, Ocean Exploration and Research

### Discussion Questions

1. How might ocean planning help conservation organizations and federal, state and tribal agencies meet their conservation goals?
2. What are potential benefits for recreational ocean users to engage in the public process for ocean planning?
3. If there was a conflict between different ocean/coastal uses at your favorite coastline, how would you go about creating a lasting solution?

### Resources

- [Healthy Oceans Coalition](#)
- [Ocean Conservancy](#)
- [Surfrider, Coastal Recreation Studies](#)
- [Conservation Law Foundation](#)

## COLLABORATION TOWARD EQUITABLE OCEAN USE: EXISTING INTERESTS

### Commercial Fishing

Commercial fishing is an important component of our coastal economies and culture. It is a way of life for many who pursue it – not just a way of making a living – and shapes the identity and economies of numerous coastal communities. Information about where fish are harvested, where they go seasonally and where they spawn is important not only for understanding, managing and sustaining fish stocks, but also to plan for other ocean uses, such as offshore wind turbines, aquaculture and sand mining.

Extensive commercial and recreational fishing data can be found on the ocean data portals. The Fishery Management Councils have been active participants in regional ocean planning and offer a unique perspective from the fishing industry, connecting commercial and recreational fishermen to the ocean planning process.



“As other agencies and decision-makers are thinking about managing different parts of the ocean, they’ll have the critical data that show where the habitats are, which are vital to fish production, so that we can do our jobs as fishery managers.”

*Michael Luisi - Mid-Atlantic Fishery Management Council*

### Discussion Questions

1. What are the major impacts of climate change on East Coast fisheries? What are the major challenges managers face with a changing environment?
2. Maine’s lobster fishery drives the economy of coastal towns. Despite this, there is a gap in the data portal for the lobster fishery. Why? Why is it important to fill that gap?
3. How can ocean planning foster a more collaborative environment among fishermen, government officials and other stakeholders?

### Resources

- [U. S. Fishery Management Councils](#)
- [NOAA Fisheries, Greater Atlantic Region](#)
- [NOAA Fisheries, Climate](#)
- [Northeast Ocean Data Portal Commercial Fishing Theme Map](#)

## COLLABORATION TOWARD EQUITABLE OCEAN USE: EXISTING INTERESTS

### Native American Tribes

Tribes have relied on the ocean for thousands of years, and marine resources are integral to their survival and their culture. Because of their long-term presence on the coasts, tribes possess traditional ecological knowledge that complements modern scientific understanding of environmental status and trends.

Federally recognized Native American Tribes have played an important leadership role in regional ocean planning. Tribes, federal and state governments co-led the Regional Planning Bodies, ensuring their cultural and environmental issues of concern were addressed in the regional ocean plan.

In *Ocean Frontiers III*, Chuckie Green, Director, Mashpee



Wampanoag Tribe Natural Resources Department, speaks to the Mashpee Wampanoag's connection to Popponeset Bay, the changes they have seen over time to the bay, and their work to restore the bay.

### Discussion Questions

1. How does the Mashpee Wampanoag Tribe's sense of place and commitment to proactive environmental stewardship affect decisions they make regarding tribally owned or managed natural resources?
2. Why was the Mashpee Wampanoag Tribe interested in having a seat on the Northeast Regional Planning Body?
3. Discuss how tribal leadership and participation on the Regional Planning Bodies might influence regional ocean planning.

### Resources

- [Mashpee Wampanoag Tribe](#)
- [Northeast Ocean Plan: Federal-Tribal Coordination](#) (pg 149-152)
- [Mid-Atlantic Regional Ocean Assessment: Tribal Uses](#)

## COLLABORATION TOWARD EQUITABLE OCEAN USE: EMERGING INTERESTS

One issue in building a viable blue economy is how to best provide for the growth of sustainable emerging interests while continuing to foster existing interests. Scientific information is critical in the decision-making process as managers seek to balance human activity in the ocean.

### Wind, Aquaculture and Sand

With increased demand for renewable energy, the offshore wind industry in the U.S. is growing rapidly. The nation's first wind farm now supplies power to the grid, while many other projects are in development. Through ocean planning, and tools like the ocean data portals, developers, government officials and other stakeholders can work together to site projects carefully and minimize conflicts with marine life and other ocean users.

Aquaculture involves farming aquatic organisms for human consumption, helping to satisfy demand for marine food products while giving depleted wild populations time to recover. Though the

vast majority of these operations exist in the nearshore, some sites are being developed in federal waters farther offshore where there are fewer conflicts with other human ocean users.



Deepwater Wind

Offshore sand extraction involves the dredging of sand from the ocean floor to use in beach nourishment and wildlife habitat restoration projects. Interest in this process has grown as demand for coastal protection, restoration and resilience planning increases. Because sand is a finite resource, managers must look at sand projects on a regional scale to facilitate responsible use of the resource and ensure areas are not over-harvested.

### Discussion Questions

1. Why do you think offshore wind energy has been slower to develop in the U.S. as compared to Europe?
2. Why is the aquaculture industry interested in expanding offshore into federal waters?
3. How do you think the U.S. should manage offshore sand resources? What are the benefits of offshore sand mining, and what other uses might be incompatible with it?

### Resources

- [Bureau of Ocean Energy Management: Offshore Wind Energy](#)
- [Block Island Wind Farm](#)
- [Keep the Ocean Working: Aquaculture Case Study](#)
- [Northeastern Massachusetts Aquaculture Center](#)
- [Bureau of Ocean Energy Management: Marine Minerals Program](#)

## COLLABORATION TOWARD EQUITABLE OCEAN USE: EMERGING INTERESTS

### Biodiversity

As time progresses, the true abundance and significance of unexplored marine biodiversity is beginning to emerge. For example, in 2018 a team of scientists from the National Oceanic and Atmospheric Administration (NOAA), the Bureau of Ocean Energy Management (BOEM), the U.S. Geological Survey (USGS) and several academic institutions discovered deep-sea coral habitats in the Atlantic Ocean off the Southeast U.S. coast. Their findings revealed that deep-sea corals are long lived, but vulnerable to disturbances potentially caused by industrial ocean uses. Scientists also continue to study and discover new information on megafauna, such as whales, to determine potential impacts caused by offshore development.



NOAA, Ocean Exploration and Research

While we have a great deal of data, there are many scientific data gaps that exemplify the need to maintain research opportunities in order to best understand the impact of existing and emerging ocean uses. By balancing this need with those of industry, planning efforts can help create a healthy, safe and sustainable future for our oceans.

### Discussion Questions

1. What role do corals play in the deep-sea environment?
2. How is deep-sea exploration connected to ocean planning?
3. How can citizen science help fill in the research gaps of our ocean knowledge?

### Resources

- [NOAA Ocean Exploration and Research](#)
- [NOAA Deep-Sea Canyons](#)
- [NOAA Deep-Sea Corals Report](#)
- [Interagency Southeast Atlantic Canyons DEEP SEARCH Partnership Study](#)
- [Gotham Whale](#)
- [Integrated Ocean Observing System Marine Biodiversity Observation Network](#)