

UNITED STATES DEPARTMENT OF THE INTERIOR
Bureau of Ocean Energy Management
Office of Renewable Energy Programs

June 2019

**Guidelines for Providing Information on Fisheries for Renewable
Energy Development on the Atlantic Outer Continental Shelf**
Pursuant to 30 CFR Part 585

I. Guidance Document Statement

The Bureau of Ocean Energy Management (BOEM) issues guidance documents to clarify, supplement, and provide more detail about certain BOEM regulatory requirements and to outline the information required of the lessee to support their various submittals. This guidance document sets forth a policy and an interpretation of a regulatory requirement to provide a clear and consistent approach to complying with that requirement. A lessee may use an alternate approach for compliance; however, early and frequent coordination with BOEM will be especially critical to ensure the work conducted meets BOEM's regulatory requirements.

II. Introduction to Guidelines

Before the U.S. Department of the Interior, BOEM will approve the siting of a facility proposed for a renewable energy project on the Atlantic Outer Continental Shelf (OCS), a lessee must submit the results of its site characterization surveys to BOEM with its Site Assessment Plan (SAP), Construction and Operations Plan (COP), or General Activities Plan (GAP). The purpose of this guidance document is to provide recommendations for complying with the information requirements in 30 CFR Part 585 Subpart F.

BOEM requires the results of site characterization studies to evaluate the impact of proposed activities on physical, biological, and socioeconomic resources as well as the seafloor and sub-seafloor conditions which could be affected by the construction, installation, and operation of meteorological towers, buoys, cables, wind turbines, and supporting structures. The information will be used by BOEM, other Federal agencies, and potentially affected states in the preparation of National Environmental Policy Act (NEPA) documents; interagency consultations, such as Section 7 of the Endangered Species Act (ESA); and to meet other statutory and regulatory requirements. Early communication with BOEM and adherence to these guidelines should ensure that BOEM's information needs are met. Survey results obtained through procedures consistent with these guidelines should be sufficient for BOEM's decision-making process. BOEM may stipulate through lease and grant terms that lessees and grantees submit a SAP, COP, or GAP survey plan, and schedule a pre-survey meeting with BOEM to discuss the plan prior to conducting survey activities in the leased or granted area.

Site characterization activities in this document refer only to fishery surveys. BOEM provides recommendations for conducting and reporting the results of other baseline collection studies in

separate guidelines: <https://www.boem.gov/Survey-Guidelines/>. These guidelines may be updated periodically, as new information or methodologies become available. This version supersedes previous versions.

The overall purpose of the required information is to describe the key species and habitat within the survey area possibly affected by the proposed operations. The fisheries survey plan should aim to:

- Identify and confirm which dominant benthic, demersal, and pelagic species are using the project site, and when these species may be present where development is proposed;
- Establish a pre-construction baseline which may be used to assess whether detectable changes associated with proposed operations occurred in post-construction abundance and distribution of fisheries;
- Collect additional information aimed at reducing uncertainty associated with baseline estimates and/or to inform the interpretation of research results; and
- Develop an approach to quantify any substantial changes in the distribution and abundance of fisheries associated with proposed operations.

For all projects, lessees should also describe the measures to be taken to minimize or eliminate potential impacts to fishery resources in their SAP, COP, or GAP. In addition, for projects involving the installation of wind energy turbines on the Atlantic OCS, the lessee should prepare a fishery survey plan that describes its methods for collecting sufficient information on the biology of the project area to allow BOEM and other agencies with jurisdiction to make well-founded decisions in context with the regional biology.

III. Authority and Regulations

BOEM has statutory obligations under the Outer Continental Shelf Lands Act (43 USC 1337(p)) to protect the environment and conserve natural resources of the OCS. Additionally, BOEM has statutory obligations under NEPA, ESA, and the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA). Under BOEM's regulations, a plan (SAP, COP, or GAP) must describe biological, social, and economic resources that could be affected by the activities proposed in the SAP, COP, or GAP (see SAP – 30 CFR 585.610(b)(5), 585.611(a),(b)(3), (5) and (7); COP – 30 CFR 585.626(a)(3), 585.627(a)(3), (5), and (7); and GAP – 30 CFR 585.645(a)(5), 585.646(c), (e) and (g)).

To evaluate impacts to biological, social, and economic resources, BOEM, and its Federal consulting partners, Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS), under the aforementioned statutes require sufficient baseline information on the potentially affected area. These guidelines are meant to clarify and provide a general understanding of the information which BOEM, in consultation with USFWS and NMFS, requires to adequately address impacts of offshore renewable energy projects on biological, social, and economic resources. BOEM will review the submitted SAP, COP, or GAP and associated information to determine if it contains necessary information to conduct BOEM's technical and environmental reviews. Upon completion of BOEM's technical and environmental reviews, BOEM may approve, approve with modifications, or disapprove.

Elements of these guidelines may be required under the terms and conditions of a specific lease or grant. A lease or grant may also have different requirements from those discussed in these guidelines. Lessees or grantees should be aware that if these guidelines conflict with conditions in a lease or grant, the lessee or grantee must comply with the terms of their lease or grant.

IV. Early Coordination with BOEM

BOEM recommends meeting early in the process to discuss BOEM's potential information needs. Early coordination allows for BOEM and the lessee to discuss common goals and expectations prior to mobilization of a fisheries survey. BOEM firmly believes maintaining an early and open dialogue with the lessee is critical to the timely, comprehensive execution of a fisheries survey. BOEM recommends that the applicant work closely with BOEM staff to arrive at a strategy that meets overall requirements and tailors the fisheries survey to site-specific needs of the area (e.g., determination of species of interest within the lease area). Engaging in discussions with other agencies (e.g., USFWS and NMFS) and concerned parties as early as possible will also help resolve any issues that may arise.

In the case of fishery survey plan development, BOEM strongly encourages outreach to potentially affected fishing groups. Individual state fishery management agencies and regional fishery management organizations may assist in facilitating this coordination. In the event the applicant and an agency disagree with respect to the survey plan, it is the applicant's obligation to resolve any items and issues that may arise. The lessee is advised to resolve any technical issues that may be in dispute with other agencies prior to submitting their final plans to BOEM. BOEM may determine it is prudent for a developer to resurvey some or all of the lease area in the event survey results are insufficient.

BOEM strongly recommends a pre-survey meeting. This meeting may include, but is not limited to, discussions regarding:

- applicability of existing data;
- survey logistics (proposed survey area, dates, times, survey period length, weather limitations, etc.);
- field techniques and equipment to be utilized/specification of data acquisition systems;
- data to be acquired;
- data processing and analysis; and
- data and information to be submitted.

V. Survey Methodology

A fishery survey plan that satisfies all parties' needs is an important first step towards a successful biological survey. In developing a fishery survey plan, a review of previous investigations, such as fishery independent and fishery dependent data collections, can be helpful to a lessee in selecting equipment, and in choosing the sampling and analytical approaches.

The applicant should employ the appropriate equipment and analytical techniques for all surveys. BOEM encourages the applicant to review the "Developing Environmental Protocols and

Modeling Tools to Support Renewable Energy and Stewardship” (McCann, 2012) to assist in determining the most appropriate protocols for the proposed project:

<http://www.data.boem.gov/PI/PDFImages/ESPIS/5/5208.pdf> (see Appendix A for other sources of information on the Atlantic OCS). Applicants are encouraged to collaborate with other developers, research institutions, and state and Federal natural resource agencies to accomplish their site characterization objectives for SAP, COP, or GAP submittal to BOEM.

The amount of new information collected should match the scale and/or complexity of the proposed project. For example, a commercial-scale wind energy project may need additional site-specific survey work prior to the submittal of a construction plan. In contrast, a project to install a meteorological tower or meteorological buoy would most likely not need additional survey work as the impact to fishery resources may be negligible. Developers are encouraged to use existing data where applicable to their proposed activities and associated area of potential adverse effect to characterize the natural resources present. Potential adverse effects are generally defined as impacts from all phases of the proposed action that may reduce the quality and/or quantity of the fisheries resource, and the area of potential adverse effect is the geographic area or areas within which such activity may cause adverse changes in the character or use of any natural resources present. Throughout this document the term ‘project area’ is generally used to describe the project footprint and surrounding areas that may be impacted. In practice, the developer should identify the reasonably foreseeable effects associated with their proposed activity and ensure that the biological resources that could be affected by those activities are included in their surveys.

McCann (2012) identified several potential impacts to fish and fishing from offshore wind development that were categorized by potential level of effect. A potentially major impact to fishing during construction and operation of a commercial-scale wind facility could be the loss of access to fishing grounds by vessels using mobile fishing gear (e.g., trawl gear). Moderate effects to fish and fishing that were identified included: contaminant spills/re-suspension; survey, construction, and operation noise; electromagnetic fields from transmission cables; habitat/community composition alteration; decreased catchability during construction and operation; loss of access to grounds during construction and operation (fixed gear and recreational); changes in species distribution; and damaged/lost gear (McCann, 2012, Table 4, page 439). The survey protocols in this document (Tables 1-4) are designed to address these potential impacts. BOEM also recognizes that some site assessment activities, such as the installation of a moored floating light detection and ranging (FLiDAR) buoy, may have negligible impact, perhaps even no impact, to fishery resources. In such cases site-specific fishery survey results would not be necessary. The choice of which protocols to use will be defined by the characteristics of the project area and the protocols may need to be modified to accommodate a particular site. Each site and the potential effects from the types of activity anticipated in a SAP, COP, or GAP need to be considered in selecting the appropriate protocols.

The information collected and/or provided to BOEM should match the scale and/or complexity of the proposed activity. For example, due to the small footprint of a standard FLiDAR buoy, information would only be needed to broadly characterize fishery resources in the area and project-specific fisheries surveys would not be necessary. BOEM will consult with supporting agencies to evaluate existing data and determine if any data gaps exist. Furthermore, applicants are encouraged to collaborate with other developers, research institutions, and state and Federal

natural resource agencies to accomplish their site characterization objectives for SAPs, COPs, and GAPs.

Fish surveys may be conducted simultaneously with other survey requirements. However, it should be noted that this may not always be appropriate and survey design should fit specific objectives. The layout of the survey will likely depend on the site to be assessed. It is highly recommended that the lessee or grantee work with BOEM to coordinate their survey design with the appropriate natural resource agencies. Permits may be required by the NMFS and/or USFWS for activity that results in catching fish (e.g., MSFCMA Letter of Acknowledgement for Scientific Research Activity) or for general aerial and shipboard surveys (e.g., Marine Mammal Protection Act (MMPA) Incidental Harassment Authorization). It is the applicant's responsibility to obtain the necessary permits.

BOEM recommends applicants submit a fish survey plan with a SAP, COP, or GAP survey plan. BOEM will coordinate with appropriate natural resource agencies to ensure that data and analyses adequately meet regulatory requirements. However, BOEM is not responsible for designing the survey. The survey specifications should state the issues to be investigated, hypotheses, assumptions, data collection techniques, standards, analytical and statistical techniques, and quality control.

Tables 1 - 4 outline the protocols for the type of recommended fishery surveys described in this document: trawl, gillnet/trammel net and beam trawl, ventless trap, and benthic community composition.

Table 1. Otter Trawl Survey Protocols

<p>Focus</p>	<p>Establish pre-construction baseline data on the mesoscale distribution and abundance of fish species in the area of potential effect resulting from activities in a SAP, COP, or GAP.</p>
<p>Methodology</p>	<p>Otter Trawl Survey</p> <ul style="list-style-type: none"> • Use Before/After Control Impact (BACI) design principles to establish multiple control locations outside of the project area. • Control sites should be selected from areas with similar bathymetry and bottom type to the area of potential effect. • Trawl locations from random station grid. • Select baseline trawl locations and paths so that you can follow the same route after construction. • Conduct random stratified surveys selected from the following stratification: 10 sites within 0.5 km of renewable energy site; 10 sites between 0.5-2.5 km of renewable energy site; 10 control sites (at greater than 2.5 km from site), habitat type, and depth. • Sample all fish species, with particular attention paid to commercially, recreationally, and ecologically important species • Obtain a sampling of weight and length of species. • Use a one inch knotless cod end liner. • Ensure a trawl speed of 2.9 – 3.3 knots. • Ensure trawl duration of no more than 20 minutes (depending on the size of the net). • May include stomach content analysis of sampled commercially important fish. • Conduct a minimum of 30 trawls per survey period.
<p>Methodology for Analyzing data</p>	<ul style="list-style-type: none"> • Analysis of variance (ANOVA) on numbers of individuals, size and weight distribution; multivariate analysis of catch/community composition, multidimensional scaling, cluster analysis. • Prey items from stomach content identified to lowest taxonomic level, counted, and weighed.
<p>Timing</p>	<p>Conduct 2 years of surveys a minimum of four times per year (one each in spring, summer, fall, and winter).</p>

<p>Other Considerations (e.g., Advantages or Disadvantages)</p>	<ul style="list-style-type: none"> • Not all survey types and gear types will be appropriate to each location. The gear and survey types should be selected based on the issues of greatest concern. • Trawl survey will sample mostly demersal species rather than pelagic species. This survey will be limited to those species most prone to be caught in the net, and will under-sample some species, e.g., lobsters and crabs. • The commercial fishing industry should be consulted on the type of gear used. • The commercial fishing industry should be involved in data collection and survey design when feasible, including the selection of trawl stations. • Accounts for seasonal and annual variability.
<p>Data Elements</p>	<ul style="list-style-type: none"> • Total individuals per area; • Total biomass per area; • Number of individuals per species and area; • Biomass per species and area; • Diversity; • Length frequency distribution of dominant species; and • Time series. • Catch per unit effort for total catch and on a species level; community dynamics.
<p>Data Output</p>	<p>Spatial data should be submitted in accordance with the Spatial Data Submission Guidelines found on BOEM’s Offshore Renewable Energy Program website:</p> <p><i>https://www.boem.gov/Survey-Guidelines/</i></p>

Table 2. Gillnet/Trammel Net and Beam Trawl Survey Protocol

<p>Focus</p>	<p>Establish pre-construction baseline data on the micro-scale distribution, abundance, and composition of fish species in the area of potential effect resulting from activities in a SAP, COP, or GAP.</p>
<p>Methodology</p>	<p>Gillnet or trammel net surveys</p> <ul style="list-style-type: none"> • Install at a minimum of three locations within footprint of renewable energy facility, and three reference locations in similar habitat, no less than 1 kilometer (km) from footprint sites. <p>Beam trawl surveys</p> <ul style="list-style-type: none"> • Make minimum of three locations within the footprint of the installation (between wind turbine foundations - if possible). • Use a recommended 9 foot (ft) beam trawl with 1 inch (in) knotless liner and tows at a minimum of three locations within footprint of renewable energy facility, and three reference locations in similar habitat, no less than 1 km from footprint sites. • Survey area can be expanded to include cable route, particularly when electro/magneto-sensitive species (e.g., elasmobranchs) are of concern. <p>May include stomach content analysis of sampled commercially important fish.</p> <p>Initial stratification should be based upon habitat type and depth.</p>
<p>Methodology for Analyzing data</p>	<ul style="list-style-type: none"> • ANOVA on number of species, number of fish, multivariate analysis of fish community characteristics (Primer-E), multidimensional scaling, and cluster analysis. • Prey items from stomach content identified to lowest taxonomic level, counted, and weighed.
<p>Timing</p>	<p>Conduct 2 years of area of potential effect (APE)-based gillnet or trammel net surveys a minimum of six days per year, three deployments each spring and fall for 1-2 days each.</p> <p>Conduct 2 years of seasonal beam trawl tows (spring, summer, fall, winter).</p>
<p>Other Considerations (e.g., Advantages or Disadvantages)</p>	<ul style="list-style-type: none"> • Gear type(s) used for the survey should depend on the fish species under consideration (commercially/recreationally important species, species of conservation importance), and the gear type that will be most effective in assessing changes to the abundance and distribution of these species on a fine scale.

	<ul style="list-style-type: none"> • Gillnet surveys will under-sample demersal species but can sample pelagic species, which are difficult to sample by other means. • Gillnets are fairly size-selective and will not provide a good estimate of overall biomass of the area. • Combining gillnet and beam trawl surveys can account for a larger spectrum of fish species. • Trammel nets can capture more fish than gillnets and will provide a greater picture of size distribution. • Trammel nets can be highly destructive and need to be checked or removed frequently. • Passive nets can be deployed much closer to the devices than active trawling. • Beam trawls can supplement otter trawls by trawling within an offshore renewable energy installation or between devices to sample within the footprint of a project, where otter trawling may not be feasible. • Beam trawls can also sample harder bottom habitats and are more effective at assessing benthic invertebrates (e.g., scallops, lobsters, clams, crabs). • Can account for seasonal and inter-annual variability.
<p style="text-align: center;">Data Elements</p>	<p>Gillnet/trammel net</p> <ul style="list-style-type: none"> • Catch per unit effort; • Number of individuals per species and area; • Diversity; and • Length frequency distribution of dominant and/or vulnerable species. <p>Beam trawl</p> <ul style="list-style-type: none"> • Total individuals and biomass per area; • Number of individuals and biomass per species and area; • Diversity; and • Length frequency distribution of dominant and/or vulnerable species.
<p style="text-align: center;">Data Output</p>	<ul style="list-style-type: none"> • Time series values for number of individuals, biomass, fish community composition, and species-specific length frequency. • Presence/absence of non-native species. • Tabular and geospatial datasets. • Spatial data should be submitted in accordance with the Spatial Data Submission Guidelines found on BOEM’s Offshore Renewable Energy Program website: <i>https://www.boem.gov/Survey-Guidelines/</i>

Table 3. Ventless Trap Survey Protocol

<p>Focus</p>	<p>Establish pre-construction baseline distribution and abundance of lobster/crab species or some fish species in the APE resulting from activities in a SAP, COP, or GAP.</p>
<p>Methodology</p>	<p>Fixed gear survey with ventless traps</p> <ul style="list-style-type: none"> • Use BACI design principles to establish multiple control locations. • Select control locations to have similar bottom types and benthic habitat as project area trawl locations (if conducted). • Traps set within proposed footprint of renewable energy installation, and at random stratified sites at varying distances from the renewable energy site within and outside of the APE (e.g., 1 km, 10 km, and 25 km). • Initial stratification should be based upon habitat type and depth. • Sample weight and length of species.
<p>Methodology for Analyzing data</p>	<p>ANOVA on numbers of individuals, size and weight distribution; multivariate analysis of catch/community composition.</p>
<p>Timing</p>	<p>Conduct 2 years of seasonal surveys (spring, summer, fall, winter).</p>
<p>Other Considerations (e.g. Advantages or Disadvantages)</p>	<ul style="list-style-type: none"> • Not all survey types and gear types will be appropriate for each location. The gear and survey types should be selected based on the issues of greatest concern. • The gear and techniques used by the commercial fishing industry should be mirrored in the survey design when sampling commercially-important fish species. • The commercial fishing industry should be involved in data collection and survey design when feasible. • While ventless trap surveys are often used for crustaceans, they may be useful for species such as black sea bass, rock fish, or other species that are attracted to structures and can be caught by traps or pots. • Accounts for seasonal and annual variability.
<p>Data Elements</p>	<ul style="list-style-type: none"> • Total individuals and biomass per area; • Number of individuals per species and area; • Biomass per species and area; • Length frequency distribution of dominant species; and • Catch per Unit Effort at species level.
<p>Data Output</p>	<p>Spatial data should be submitted in accordance with the Spatial Data Submission Guidelines found on BOEM’s Offshore Renewable Energy Program website: <i>https://www.boem.gov/Survey-Guidelines/</i></p>

Table 4. Molluscan Shellfish Surveys (from Benthic Habitat Survey Guidelines – Benthic Community Composition)

Focus	Pre-construction characterization and delineation of the abundance, diversity, percent cover, and multivariate community composition of the seafloor in the area of potential adverse effect.
Methodology	<p>Physical sampling</p> <ul style="list-style-type: none"> • Hamon grab (hard bottom); • Van Veen grab (soft sediment); and/or • Benthic sled <p>Benthic imagery (i.e., underwater video or still imagery (soft and hard bottom) and/or sediment profile imaging (SPI)).</p> <p>BOEM recommends using the methods employed by the Environmental Protection Agency’s (USEPA) National Coastal Condition Assessment (NCCA), such as the use of a 0.04 m² Ted Young-modified Van Veen grab and 0.5 mm sieve, to facilitate data comparison across regions.</p>
Timing	Conduct 2 years of seasonal surveys (spring, summer, fall, winter).
Scope/Scale	Baseline survey should include an appropriate sample size from the entire area of potential adverse effect, generally not less than one sample per 1-2 km along a proposed line of potential adverse effect or one sample per 1-2 km ² within a proposed area of potential adverse effect. Sampling should address seasonal and inter-annual variability of anticipated benthic communities. Control sites for post-construction monitoring should be identified.
Technical Requirements	Special attention should be given to the presence of sensitive benthic habitats. These include areas where information suggests the presence of exposed hard bottoms of high, moderate, or low relief; hard bottoms covered by thin, ephemeral sand layers; seagrass patches; or kelp and other algal beds, as well as the presence of anthozoan species.
Presentation of Results	<ul style="list-style-type: none"> • Tabular and geospatial datasets. • Spatial data should be submitted according to the Spatial Data Submission Guidelines found on BOEM’s Offshore Renewable Energy Program website: https://www.boem.gov/Survey-Guidelines/. • When relying on pre-existing data, provide justification for how those data are appropriate for the project’s area of potential adverse effect.

VI. Survey Results and Supporting Data

To ensure the accuracy and quality of survey results, the following data elements should be provided with the fishery surveys. However, individual benthic survey plan elements should be discussed with BOEM on a case-by-case basis. All data should be processed, validated, and made available as needed.

- Seasonal presence/absence of threatened or endangered fish listed under the ESA as well as those designated as candidate species or species of concern by NFMS or USFWS should be noted (e.g., certain alosines, sturgeons, elasmobranchs, and salmon). The complete list of protected fish species is found at: <http://www.nmfs.noaa.gov/pr/species/fish/>.
- Seasonal presence/absence of commercially and recreationally-important fish and shellfish. Atlantic coast fishery management plans can be located on the New England, Mid-Atlantic, and South Atlantic Fishery Management Council (http://www.nmfs.noaa.gov/sfa/reg_svcs/councils.htm) and the Atlantic States Marine Fisheries Commission (<http://www.asmf.org/>).
- Presence of prey species for threatened, endangered, commercially and recreationally-important fish and shellfish.
- Presence of habitat important to life history of present species (e.g., nursery grounds, spawning grounds, feeding grounds, etc.) See also essential fish habitat in BOEM's benthic habitat survey guidelines at: <https://www.boem.gov/Survey-Guidelines/>.
- Level (e.g., spatial extent, volume, and effort) of commercial and recreational exploitation of fishery resource in the APE.
- Migration corridors for fish and crustaceans.

VII. Paperwork Reduction Act Statement

The information collection provisions of this document are intended to provide clarification, description, or interpretation of requirements contained in 30 CFR 585 Subpart F. The Office of Management and Budget (OMB) has approved the information collection requirements for these regulations and assigned OMB Control Number 1010-0176.

VIII. Contact Information

For further information or inquiries regarding these guidelines please contact the Office of Renewable Energy Programs at (703) 787-1300 or renewable_reporting@boem.gov.

IX. References

McCann, J. et al. 2012. "Developing Environmental Protocols and Modeling Tools to Support Ocean Renewable Energy and Stewardship." Created for the National Oceanographic Partnership Program (NOPP), Project # M10PC00097, September 2012. Available at: <http://www.data.boem.gov/PI/PDFImages/ESPIS/5/5208.pdf>.

Appendix A. Resources for Fisheries Information on the Atlantic OCS.

See <http://www.boem.gov/Renewable-Energy-Environmental-Studies/> for the most recent list of ongoing and completed studies related to renewable energy.

Fisheries Resources	Links
<p><i>National Marine Fisheries Service (NMFS) Species Information System</i></p> <p>This system provides information on stock status of fishery resources.</p>	<p>https://www.st.nmfs.noaa.gov/sisPortal/sisPortalMain.jsp</p>
<p><i>NMFS Fishery Independent Survey System</i></p> <p>Currently, underdevelopment will include NMFS survey data when complete.</p>	<p>http://www.st.nmfs.noaa.gov/st4/ifso/index.html</p>
<p><i>NMFS Fisheries Statistics</i></p> <p>NMFS query system for commercial and recreational landings by species, by port, and by fishing gear.</p>	<p>https://www.st.nmfs.noaa.gov/st1/index.html</p>
<p><i>Atlantic Coast Cooperative Statistics Program</i></p> <p>Regional commercial and recreational fishing harvest data portal.</p>	<p>www.accsp.org</p>
<p><i>NMFS Vessel Trip Report Data</i></p> <p>NMFS fishery dependent vessel trip report data (including area-based catch information) is available by request from the NMFS Northeast Regional Office (Maine-Virginia) and the NMFS Southeast Fisheries Science Center (Virginia-Florida).</p>	<p>http://www.sefsc.noaa.gov/fisheriesstatistics.jsp</p> <p>The Northeast contact is: Fisheries Statistics Office (978-281-9133; FSO.Data.Request@noaa.gov)</p>
<p><i>NMFS Fishery Independent Survey Data</i></p>	<p>https://www.st.nmfs.noaa.gov/st4/ifso/index.html</p>
<p><i>NMFS Essential Fish Habitat Mapping</i></p> <p>This tool shows where essential fish habitat is located and the species utilizing the habitat.</p>	<p>https://www.fisheries.noaa.gov/resource/map/essential-fish-habitat-mapper</p>
<p><i>South Atlantic Habitat and Ecosystem Internet Map Server</i></p> <p>This IMS contains several habitat and fishery databases for query in the South Atlantic.</p>	<p>http://www.oceansatlas.org/item-details/en/c/323756/</p>

<p><i>NMFS Highly Migratory Species Research Database</i></p> <p>This is a downloadable database of information related to tunas, sharks, and billfish in the Atlantic</p>	<p>http://www.nmfs.noaa.gov/sfa/hms/</p>
<p><i>MarineCadastre.gov</i></p> <p>This mapping tool provides jurisdictional and regulatory data as well as seafloor habitat/geology, ESA critical habitat areas, and marine mammal density output models.</p>	<p>https://marinecadastre.gov/</p>
<p><i>NMFS Fishery Observer Manual</i></p> <p>This manual for observers aboard commercial fishing vessels is a good source for general fishery observations including data recording sheets</p>	<p><a href="https://www.st.nmfs.noaa.gov/st4/nop/trainin
gmanuals/NEFOPM_.pdf">https://www.st.nmfs.noaa.gov/st4/nop/trainin gmanuals/NEFOPM_.pdf</p>