

A Snapshot Update of NOAA Fisheries Data Collection of Commercial and For-Hire Fishery Cost and Earnings 2000–2021

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1.0 Introduction

Evaluating the economic effects of fishery management decisions is required under the Magnuson–Stevens Fishery Conservation and Management Act (MSA) as well as the National Environmental Policy Act, the Regulatory Flexibility Act, and Executive Order 12866 (Regulatory Planning and Review). These statutes and the Executive Order place emphasis on how regulatory programs affect net benefits to society as well as the profitability of fishing firms, which requires information on both benefits and costs. Additionally, Councils and NOAA Fisheries have developed and adopted measures of economic performance to monitor whether fishery management programs are meeting management objectives. These economic performance measures may include costs, earnings, and various measures of returns (Kitts et al., 2022); productivity change and economic efficiency; capacity; economic stability; net benefits to society; distribution of economic net benefits; and market power.

To meet these needs, NOAA Fisheries’ Office of Science and Technology has invested in the collection of cost and earnings data for fishing businesses in the commercial and for-hire sectors by providing dedicated funding to regional Science Centers.¹ Funding for data collection in commercial catch share programs has been enhanced by the NOAA Fisheries Office of Sustainable Fisheries and through cost recovery under the authority provided in 16 U.S.C. 1854(d)(2). These data collection programs have been supplemented by NOAA Fisheries’ Office of Science and Technology funding of periodic, regional surveys of cost and earnings in the for-hire sector.

Each of these commercial and for-hire data collection programs has been tailored to suit regional Council requirements. These data collections may be implemented as stand-alone surveys or through add-ons to take advantage of other region-specific fishery-dependent data collection programs. Thus, there are important differences among regions in how cost data are collected, which were summarized in a 2014 snapshot of commercial cost data collection programs (Thunberg et al., 2015). This report updates the 2014 commercial fishery cost data collection snapshot through 2021 and includes for-hire data collection programs. Additionally, sources of revenue from fishing and non-fishing activities are highlighted. The report focuses on cost and earnings data collections that have either been replicated or are scheduled to be replicated in the future. This includes some data collections that have yet to be replicated but are expected to be replicated pending available funding. One-off data collections that may have included fishing costs but were not intended to be repeated are not included in this report.

¹ In this study, “for-hire” refers to fishing businesses that carry recreational anglers for a fee.

Section 2 of this report provides a historical perspective of the development of NOAA Fisheries cost and earnings data collection over time. Section 2 also provides metadata for cost and earnings data collections up to 2021 and how they have changed since 2014. The rest of this report (Sections 3 to 9) provides a brief narrative for each of the regional data collection programs. This narrative includes background information, defines the survey population, and provides descriptions of data collection methods as well as any pertinent information about the data collected on survey forms that were used for the most recent data collection. The narrative also summarizes sources of revenue information collected on surveys or through ad-hoc estimation procedures.

2.0 Background

NOAA Fisheries and its precursor, the U.S. Bureau of Commercial Fisheries, have a long history of economic studies of costs and returns in the commercial sector of domestic fisheries. Most early cost and earnings studies were conducted to evaluate how the economic performance of one or more fisheries changed due to a resource change or external shock that was expected to have an adverse effect on profitability or competitiveness. For example, Lynch et al. (1961) evaluated the competitiveness of the New England groundfish fleet due to declines in local fish stocks and a price–cost squeeze resulting from a combination of higher input prices and lower seafood prices caused by imports coming from Canada. Cost data used in their study was obtained from 25 trawlers for the years 1953–1957. Using data from Boston-based trawlers for 1957–1966, Noetzel and Norton (1969) evaluated the economic effects on the Boston-based large trawl vessels due to declines in haddock stocks on Georges Bank. Noetzel (1977) examined cost and returns associated with sudden increases in fuel and other petroleum-based inputs for selected fisheries in the Atlantic (New England groundfish), Gulf of Mexico (shrimp), and Pacific (salmon, tuna, and Bering Sea king and tanner crab). In each of these three studies, the primary purpose was to inform industry and government on how to design financial assistance and fishery development programs that may have been appropriate to the need.

Although the sources of data in Lynch et al. (1961) and Noetzel and Norton (1969) are noted, it is unclear whether these data were from a dedicated survey conducted for the study or from some other data collection program. According to Noetzel (1977), the data for his study were obtained from “...vessel operators participating in various programs of the National Marine Fisheries Service,” which suggests a broad-based data collection program or programs not specifically designed for Noetzel’s study. Exactly what these programs may have been is uncertain, although data obtained from vessel owners participating in the Capital Construction Fund (CCF) is one possibility. The only known cross-regional survey of fishing vessel cost and earnings (either before or since) was the Census of Commercial Fisheries conducted by the U.S.

Census Bureau (1970). The Census was conducted for operating costs and revenues incurred in 1967. The survey included payments to crew as well as operating and quasi-fixed costs including fuel, net repair and replacement, vessel maintenance and repair, rental of electronic gear, insurance, depreciation, lease or rental cost of vessels, and all other vessel costs. Costs and returns were reported by region, major U.S. port, vessel size, and gear. The 1967 census was a follow-up to the 1963 Census of Commercial Fisheries, both of which collected data on the number of operating vessels and employment (U.S. Bureau of the Census, 1966). The 1963 Census did not collect operating cost data but did collect data on the purchase price of fishing vessels.

The Census of Commercial Fisheries was not repeated and, as noted by Norton et al. (1985), the cost and earnings studies that had been conducted in the past by the U.S. Bureau of Commercial Fisheries and NOAA Fisheries were curtailed by 1972. With the exceptions of Herrick et al. (1992) and Gautam and Kitts (1996), cost and earnings studies conducted by NOAA Fisheries economists through the 1990s were based on occasional surveys of specific fisheries. Both Herrick et al. (1992) and Gautam and Kitts (1996) used income tax data provided to the NOAA Fisheries Office of Financial Services as a condition of participation in the CCF.² At least in concept, the CCF offers the potential to develop a database on costs from a cross-section of fishing vessels from which cost and returns could be estimated for any specific fishery. However, the income tax forms supplied to the Office of Financial Services are provided as paper records, so data entry is labor-intensive. Income taxes are prepared using a variety of accounting principles, which complicates the construction of a consistent database. Lastly, there is no assurance that data obtained from participating vessel owners will be representative of all fisheries or gear types of potential interest or that they are representative of the population of fishing vessels (Gautam and Kitts, 1996). For these reasons, further development of cost data obtainable through the CCF program was not undertaken.

As previously noted, during the 1990s, cost and earnings data collection was conducted on an ad-hoc basis. Ward et al. (1995) estimated costs and returns for the Gulf of Mexico shrimp fishery. Hamilton et al. (1996) conducted a cost and earnings survey of the Hawaii longline fleet, and Hamilton and Huffman (1997) estimated costs and earnings for the Hawaii small boat fishery. In the Northeast, a series of data collection studies were conducted to estimate costs in the hook fishery (Georgianna et al., 1998), the small trawler fleet (Lallemand et al., 1998), the scallop fishery (Georgianna et al., 1999), the large trawler fleet (Lallemand et

² The CCF was created with the Merchant Marine Act of 1936 to fund the purchase or major reconstruction of vessels using deferred taxes on income. For more information, see <https://www.fisheries.noaa.gov/national/funding-and-financial-services/capital-construction-fund-program>.

al., 1999), and the squid fishery (Georgianna et al., 2001). Waters et al. (2001) conducted a survey of boat owners participating in the reef fish fishery in the Florida Keys during 1994. A pilot study to test the feasibility of using port agents stationed along the Atlantic coast to collect economic data was undertaken by the NMFS Northeast Regional Office, Fisheries Statistics Office on behalf of the Atlantic Coastal Cooperative Statistics Program from 1999 to 2000.³ While each of these surveys provided useful economic data at the time, they were conducted without dedicated funding and thus could not be replicated. This inhibited the ability to conduct economic assessments of management and other changes over time.

A series of budget initiatives undertaken during the 2000s made it possible, for the first time, for NOAA Fisheries' regional economics programs to take a programmatic approach to collecting cost and earnings data in the commercial sector. These efforts led to a gradual expansion of data collection programs across regions, which are chronicled in Table 1. By 2002, continuous data collection was in place in the Northeast, South Atlantic, and Highly Migratory Species (HMS) fisheries, including the South Atlantic coastal logbook reporting form, the National Marine Fisheries Service's (NMFS') first mandatory cost data collection program. Similar data collection programs were implemented in the Hawaii longline fishery in 2004, and in 2005, continuous annual data collection programs were implemented in fisheries of the Gulf of Mexico and the Bering Sea/Aleutian Islands (BSAI) crab fishery. Systematic rotation of cost surveys for key fisheries in the Northwest was established by 2006. Nation-wide, with the exception of 2012, at least one new commercial fishery data collection program was added each year through 2013. Since then, these programs have been maintained and have been supplemented by periodic cost and earnings surveys in the Pacific Islands pelagic longline fisheries in American Samoa and the Hawaiian Islands as well as for small boat fisheries of American Samoa, Hawaii, and Mariana Islands. Additionally, after a lapse in data collection the West Coast Coastal Pelagic cost and earnings survey was fielded during 2021.

With the exception of the Southeast, at least one for-hire cost and earnings survey has been completed in every other region beginning with the Washington/Oregon charter sector survey in 2007, which was replicated in 2012 and 2018. For-hire surveys were implemented in both the Northeast and Alaska during 2011 and were implemented during 2012 in the Pacific Islands and in the Southwest. Among these regions, for-hire cost and earnings surveys have not been replicated in the Northeast, Pacific Islands, or the Southwest, while for-hire cost and earnings surveys were replicated in the Alaskan charter fishery in 2012, 2013, 2014, 2016, and, most recently, in 2018. However, the planned interval for for-hire cost and earnings surveys is 5 to 10 years and planning for a complete round of for-hire cost and earnings surveys is underway. Notably, only in the Southeast region has for-hire economic data collection been

³ Final Report – 2001 ACCSP Commercial and Recreational Party/Charter Sociocultural and Economic Pilot Study, NMFS Northeast Regional Office, Fisheries Statistics Office p3 (unpublished)

initiated through an add-on to a logbook form. However, the scope of the data collection program is limited to for-hire operators with South Atlantic permits, and the required information is limited to the trip fee, number of passengers, number of crew, and the price and quantity of fuel used on a trip.⁴ For this reason, the South Atlantic for-hire data collection is not included in this report.

As of 2021, there were 27 data collection programs implemented and managed by economists in each of NOAA Fisheries' six Science Centers (see Table 2). Two of these programs (Northwest Groundfish Trawl Rationalization Economic Data Collection and Alaska Economic Data Reports) include multiple participant types, fleets, or fisheries but share common data collection methods and protocols. For this reason, these two programs are treated as a single data collection program. Ten data collection programs are mandatory, and the same number of programs are a census of the population of interest. For programs collecting annual costs, most of the requested costs incurred over one specified year. In the West Coast fixed gear and open access (OA) surveys, data are collected for the previous 2 years, whereas the remaining programs collect cost data for the year prior to the year the survey is fielded.

Eight programs collect costs on a trip basis. In both the Northeast and Pacific Islands, trip costs are collected as an add-on to observer programs, whereas in both HMS and the Southeast, trip costs are collected from pre-selected vessels, which report costs through logbooks for all trips taken during the selection year. Data collection programs use a variety of survey vehicles including mail, telephone, personal interview, logbook, observers, and web-based surveys. Fifteen data collection programs use a single survey vehicle, while the remaining 12 programs use two or more survey vehicles. In most cases, the multiple survey vehicles complement one another. The primary survey vehicle in both the Northwest Groundfish Trawl Rationalization Economic Data Collection Program and the Alaska Economic Data Reports is web-based, although a mail/fax-in option is available. The primary survey vehicle for most of the for-hire cost and earnings surveys were personal interviews, although mail, telephone, or web-based options were frequently offered to enhance response rates. Each of the trip cost surveys involve continuous ongoing data collection. For data collection programs where costs incurred over a year are the unit of observation, five collect annual cost data every year, two are on a 3-year cycle, seven are on a 5-year or 5- to 7-year survey cycle. The remaining programs are on a 7-year or greater cycle. These programs include commercial fishery cost and earnings surveys in the Pacific Islands for the Hawaii and American Samoa pelagic longline fisheries as well as the small boat cost and earnings survey. The planned survey cycle for for-hire surveys is 7 or more years contingent on available funding. This is also the case for several

⁴ A similar data collection program has been suspended for for-hire operators in the Gulf of Mexico due to a Court of Appeals decision on the Gulf of Mexico Southeast For-Hire Integrated Electronic Reporting Program lawsuit.

commercial data collections that have been replicated infrequently due to a lack of available funding.

Earnings or revenues are either collected for at least one revenue category for 13 programs, of which five are for-hire cost and earnings surveys. Ex-vessel revenue data are most commonly obtained from landings receipts from first receivers reported through fish ticket systems outside of the cost and earnings data collection programs. The remaining commercial fishing programs collect data on quantities landed, then derive revenues from some other program, most often from prices received from first receivers such as a wholesaler, processor, or seafood dealer. The most common revenue category, not from sale of fish, includes earnings from the sale of quota or other access privilege. In nearly all cases, for-hire earnings are collected by surveys and may include revenues from commercial fishing, for-hire trips, as well as non-fishing activities.

Table 1. Summary of NOAA Fisheries Cost Data Collection Programs 2000 to 2021 (cells shaded in green indicate data collection events)

Data Collection Program	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
AK BSAI Crab ¹																							
AK Amendment 80 ¹																							
AK Amendment 91 Chinook Salmon ¹																							
AK Recreational Charter Guide and Owner																							
NW West Coast Groundfish Trawl Catch Share Program Economic Data Collection Program ²																							
NW Commercial Catcher Vessel Voluntary Cost Earnings Survey for Limited Entry Fixed Gear Groundfish																							
NW Open Access Groundfish, Salmon, Crab and Shrimp Fisheries																							
NW Washington/Oregon Charter Survey																							
PI Hawaii Longline Trip Cost Data Collection																							
PI American Samoa Longline Trip Cost Data Collection																							
PI American Samoa, Guam, and Saipan Small Boat Trip Cost Data Add-Ons Survey																							
PI Hawaii Pelagic Longline Fishery Cost-Earnings Survey																							
PI American Samoa Pelagic Longline Fishery Cost-Earnings Survey (Periodical Surveys)																							
PI Hawaii, American Samoa, and Mariana Small Boat Fishery Cost-Earnings Survey (Periodical Surveys)																							
PI Cost/Earnings Study of Hawaii For-Hire (Charter) Fleet																							
SW West Coast Albacore Troll and Pole-and-Line Fishery																							
SW West Coast Commercial Swordfish Fishery																							
SW Commercial Coastal Pelagic Finfish and Market Squid Fishery Vessel Cost-Earnings Survey																							
SW California Commercial Passenger Fishing Vessel Cost/Earnings Survey																							

Table 1. Summary of NOAA Fisheries Cost Data Collection Programs 2000 to 2021 contd. (cells shaded in green indicate data collection events)

Data Collection Program	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		
SE Trip-Level Economic Survey of South Atlantic Coastal Fisheries																								
SE Annual Economic Survey of South Atlantic Coastal Fisheries																								
SE Trip-Level Economic Survey of Gulf of Mexico Coastal Fisheries																								
SE Annual Economic Survey of Gulf of Mexico Coastal Fisheries																								
SE Economic Survey of Federal Gulf of Mexico Shrimp																								
SE Economic Survey of Federal South Atlantic Shrimp																								
SE Economic Survey of Federal South Atlantic Golden Crab																								
SE Economic Survey of Wreckfish ITQ Holders																								
SE USVI and Puerto Rico Small-Scale Fisheries ³																								
NE Northeast Trip Costs Information																								
NE Northeast Commercial Fishing Business Cost Survey																								
NE For-Hire Cost and Earnings Survey																								
Atlantic HMS Trip Cost Survey ⁴																								
Atlantic HMS Annual Cost Survey ⁴																								
Atlantic HMS General Category C-E Logbook																								

¹Part of Alaska Economic Data Report program including BSAI Crab, Amendment 80, and Amendment 91 Chinook Salmon.

²The Economic Data Collection (EDC) Program includes data collection for catcher vessel, catcher-processor, mothership, and first-receiver sectors of the West Coast Groundfish Trawl Catch Share Program. The collections run in 2005 and 2009 predated the mandatory EDC and collected, on a voluntary basis, cost and earnings data only from Limited Entry Trawl groundfish vessels that delivered shoreside.

³Includes Puerto Rico and U.S. Virgin Islands (St. Thomas, St. Croix, and St. John).

⁴Voluntary reporting of Atlantic HMS cost data collection was initiated in 1996 and became mandatory in 2003.

Table 2. Meta-Data Summary of NOAA Fisheries Economics Program Current Cost Data Collection Programs

Program Name	M = mandatory, V = voluntary	S = sample, C = census	T = trip, A = annual	M = mail, W = web, T = telephone, EL = electronic logbook, L = hardcopy logbook, PI = personal interview, OB = observer	Y = yearly, O = ongoing, 3Y = every 3 years, 5Y = every 5 years, 5-7Y = 5 to 7 years, AFA = as funds available	Revenue type: E = ex-vessel, FW = first wholesale, FHC = for-hire/charter, NFA = Non- fishing activities, Q = quota or other access privilege, O = other program
AK Economic Data Report ¹	M	C	A	M, W	Y	S, E, FW, Q, O
AK Recreational Charter Guide and Owner Data Collection	V	C	A	M, W		FHC, Q
NW West Coast Groundfish Trawl Catch Share Program Economic Data Collection Program ²	M	C	A	M, W	Y	S, E, Q, FHC, O, FW
NW West Coast Commercial Catcher Vessel Voluntary Cost Earnings Survey for Limited Entry Fixed Gear Groundfish, Open Access Groundfish, Salmon, Crab and Shrimp Fisheries	V	C	A	T, PI	3Y	S, E, Q, FHC, O
NW Washington/Oregon Charter Survey	V	S	A	M, PI, T	5Y	S, FHC, NFA
PI Hawaii Longline Trip Cost Data Collection	V	S	T	OB	O	O
PI Hawaii Pelagic Longline Fishery Cost-Earnings Survey	V	S	A	PI	7Y or more	O
PI American Samoa Longline Trip Cost Data Collection	V	S	T	PI, OB	O	O
PI American Samoa Pelagic Longline Fishery Cost-Earnings Survey	V	S	A	PI	7Y or more	O
PI Economic Survey for American Samoa, Guam, and Saipan Trip Cost Data Add-Ons	V	S	T	PI	O	O
PI Hawaii, American Samoa, and Mariana Archipelago Small Boat Fishery Cost-Earnings Survey	V	S	T	PI	7Y or more	O
PI Cost/Earnings Study of Hawaii For-Hire (Charter) Fleet	V	S	A	PI/mail	5-7Y	S, FHC

Table 2. Meta-Data Summary of NOAA Fisheries Economics Program Current Cost Data Collection Programs (contd.)

Program Name	M = mandatory, V = voluntary	S = sample, C = census	T = trip, A = annual	M = mail, W = web, T = telephone, EL = electronic logbook, L = hardcopy logbook, PI = personal interview, OB = observer	Y = yearly, O = ongoing, 3Y = every 3 years, 5Y = every 5 years, 5-7Y = 5 to 7 years, AFA = as funds available	Revenue type: E = ex-vessel, FW = first wholesale, FHC = for-hire/charter, Q= quota or other access privilege, O = other program
SW West Coast Albacore Fishery Annual Cost and Earnings Survey	V	S	A	M, PI	5Y	
SW West Coast Swordfish Fishery Annual Cost and Earnings Survey	V	S	A	M	5Y	
SW West Coast Commercial Coastal Pelagic Finfish and Market Squid Fishery Vessel Cost-Earnings Survey	V	C	A	M, PI, T	7Y or more, AFA	E, O
SW California Commercial Passenger Fishing Vessel Cost/Earnings Survey	V	C	A	M, PI	7Y or more, AFA	S, FHC
SE Trip-Level Economic Survey of Southeast Coastal Fisheries	M	S	T	L	O	E, O
SE Annual Economic Survey of Southeast Coastal Fisheries	M	S	A	M	Y	S
SE Economic Survey of Federal Gulf and Atlantic Shrimp	M	S	A	M	Y	S
SE Economic Survey of Federal South Atlantic Golden Crab Permit Holders	V	C	A	M	5Y	O

Table 2. Meta-Data Summary of NOAA Fisheries Economics Program Current Cost Data Collection Programs (contd.)

Program Name	M = mandatory, V = voluntary	S = sample, C = census	T = trip, A = annual	M = mail, W = web, T = telephone, EL = electronic logbook, L = hardcopy logbook, PI = personal interview, OB = observer	Y = yearly, O = ongoing, 3Y = every 3 years, 5Y = every 5 years, 5-7Y = 5 to 7 years, AFA = as funds available	Revenue type: S = from survey, E = ex-vessel, FW = first wholesale, FHC = for- hire/charter, Q = quota or other access privilege, O = other program
SE USVI and Puerto Rico Small-Scale Fisheries	V	S	T or A	PI, T, M	5-7Y	S, O
NE Northeast Trip Costs Information	M ³	S	T	OB	O	O
NE Northeast Commercial Fishing Business Cost Survey	V	S ⁴	A	M, W, PI	3Y ⁵	Q, O
NE For-Hire Cost and Earnings Survey	V	S,C ⁶	A	PI	AFA	S, E, FHC, NFA
Atlantic HMS Trip Cost Logbook	M	S	T	L	O	S, E
Atlantic HMS Annual Cost Survey	M	S	A	M	Y	
Atlantic HMS General Category C-E Logbook	M	C	T, A	EL	5Y	E

¹Alaska EDR program covers data collection programs for BSAI Crab (catcher vessels, catcher-processors, shoreside processors, and registered crab receivers (buyers)), Amendment 80 catcher-processors and QS holders, and AFA catcher vessels, catcher-processors, and Chinook salmon PSC holders; the breadth of data elements collected varies between EDR programs/forms.

²Includes data collection for catcher vessel, catcher-processor, mothership, and first-receiver sectors of the West Coast Groundfish Trawl Catch Share Program.

³Trip cost data are primarily collected through the Northeast Observer Program (NEFOP), At-Sea Monitoring program (ASM), and the Industry-Funded Scallop (IFS) program. Participation in these programs is required for biological data needs as well as management requirements; however, the collection of trip cost information on these trips is not explicitly mandatory.

⁴The definitions of “population” and “sample” have changed over time for this data collection. In the future, a census of commercial fishing vessel owners will be queried, but only one vessel per owner will be included in the sampling frame.

⁵Low response rates in 2016 required additional instrument revisions and pretesting prior to reimplementation; however, the survey is intended to be implemented every 3 years.

⁶Sample frame was a census of head boat vessels and simple random sample for charter.

3.0 Alaska Cost Data Collection Programs

3.1 Alaska Fisheries Economic Data Report (EDR) Program

3.1.1 Background

Since 2005, the Alaska Fisheries Science Center (AFSC) has implemented four mandatory economic data collections associated with North Pacific fishery catch share programs, under the guidance of the North Pacific Fishery Management Council (NPFMC). As part of Fishery Management Plan (FMP) amendments implementing the BSAI Crab Rationalization (CR; effective 2005) and Amendment 80 Non-AFA Trawl (A80; effective 2008) programs, the NPFMC incorporated mandatory annual reporting of cost, earnings, production, and employment data by the respective catch share program participants. Following implementation of Chinook salmon bycatch management measures in the AFA⁵ pollock fishery under Amendment 91 to the Bering Sea groundfish FMP (effective 2013), NPFMC designed the Amendment 91 Chinook Salmon Economic Data Report (EDR) program to collect a narrow range of variables from AFA participants, specifically intended to inform analyses of the cost and effectiveness of Chinook salmon bycatch avoidance measures.

A fourth EDR program collecting limited cost and employment data from vessels and processors active in the Gulf of Alaska (GOA) groundfish trawl fishery operated from 2015 to 2022. The intent of the Council in creating the GOA Trawl EDR was to capture baseline economic data prior to implementation of a catch shares program for GOA groundfish trawl fisheries, the development of which was discontinued by the Council in 2016. Following a comprehensive review of the EDR program undertaken during 2019–2021 (for more details, see Garber-Yonts et al., 2019), the NPFMC elected to discontinue the GOA Trawl EDR data collection while maintaining the Crab, Amendment 80, and Amendment 91 EDR data collections.

The Council also recommended modifying the administrative process for EDRs to eliminate third-party audit verification requirements for EDR data submissions and to standardize data confidentiality requirements for EDR data consistent with those applying to all other confidential fisheries data (publication of regulatory amendments is expected by January 2023). A principal critique identified in the EDR program review was the fragmentary nature of data collected in the various EDR forms due to the wide variation across EDRs in the scope and definitions of variables reported. The fragmentary information collected in the EDRs, compounded by the lack of comparable data from the majority of Alaska Region fishery

⁵ AFA refers to the American Fisheries Act, which authorized the formation of cooperatives in the Alaskan pollock fishery.

participants not covered by EDR requirements, substantially limits the utility of information that can be produced from EDR data. Following action on the EDR program in June 2022, the NPFMC began developing alternatives for streamlined, consistent, and minimally burdensome socioeconomic data collection systems, potentially spanning all federal fishery permit holders managed under Alaska Region FMPs.

3.1.2 Data Collection Methods

The following describes the general framework under which all of AFSC's EDR programs have been developed and administered. Distinct target populations, data elements, and methods of the respective EDR programs are outlined in subsequent sections.

Each of the three current EDR programs is a mandatory census of the associated populations, with annual submission of data forms reporting for the previous calendar year of operations (i.e., forms reporting information pertaining to CY 2021 were submitted in 2022). Reporting requirements are detailed in the Council's preferred alternative as described in the final regulatory impact review documents published for each respective FMP amendment. Reporting requirements and administrative procedures are codified under federal fisheries regulations, including the definition of entities subject to EDR reporting, submission due dates, and penalties for non-compliance. Since 2005, Pacific States Marine Fisheries Commission (PSMFC) has been the data collection agent, under a grant from NOAA Fisheries, for all of AFSC's EDR collections, with PSMFC's Alaska Fisheries Information Network providing EDR database administration, data verification, and data access support for authorized data users.

All EDR collections are administered primarily through a secure online data collection portal hosted by PSMFC, with customized web applications for each EDR form and submitter type. The web application incorporates paste-in and other functionality to minimize error and reporting burden associated with tabular data entry. Logic checks to identify potential reporting errors are included in the web application. Entities in each of the respective census frames are identified annually from in-season catch accounting records and/or permit registries. Subject entities and individuals are notified by PSMFC via certified mail 90 days prior to the respective submission deadline, with secure login credentials for the online portal and instructions for obtaining user support or paper reporting forms as an alternative to online submission. Upon logging in with the provided credentials, the submitter is routed through the process of completing and electronically signing the required forms for submission. In practice, the submitting respondent may be the named sole proprietor but is more commonly a staff accountant or bookkeeper, or a more senior financial officer for large firms or a contract accountant for smaller firms. As the initial step of each form, a certification section identifies the active participation conditions that require an entity to complete and submit the data

report portion of the form and allows the submitter to submit the certification section only if such conditions do not apply.

3.1.3 BSAI Crab EDR

3.1.3.1 Population

The BSAI Crab EDR census population includes a) harvest sector operators (owners and/or leaseholders) of catcher vessels and catcher-processors with landings of BSAI program crab (including CDQ allocation crab) and b) processing sector Registered Crab Receivers, including both entities that operate shore-based processing plants that purchase and process landings of BSAI crab for the first wholesale market, as well as non-processing crab buyers that purchase crab landings and contract for custom processing services. For entities in both sectors, the annual submission requirement is conditional on active participation in harvest, purchase, and/or processing of BSAI crab.

3.1.3.1 Data Collection Methods

There are separate EDR forms for catcher vessels, catcher-processors, and shoreside processors/registered crab receivers. Each survey form is tailored to the circumstances appropriate to each of these categories, with the catcher-processor form composed of a combination of all data elements collected in the catcher vessel and shoreside processor forms. Prior to 2012, crab EDR forms for both vessels and processors included comprehensive reporting of itemized variable and fixed costs (i.e., annual expenses and capital expenditures), with additional stratification by crab fishery and/or location of purchase. The NPFMC took action in 2011 to revise crab EDR requirements to reduce reporting burden and address data quality limitations, substantially reducing the scope and detail of the information reported, including eliminating reporting of capital expenditures by all sectors, and limiting annual expense items to crab landings volume and cost, quota lease costs, and labor costs for crab processors, and to quota lease costs, fuel, bait, provisions, and labor costs for crab vessels. Location of residence for processing employees is reported by crab processors, and crew license numbers for each crew member participating in crab fisheries are reported by vessels (enabling integration of crew license registry data to identify demographic information for crab crew populations).

3.1.3.2 Earnings

All three of the BSAI Crab EDR forms collect crab product sales information but exclude any reporting of revenue from other sources (e.g., tendering and other fisheries). The Crab

Catcher Vessel and Catcher-Processor EDR forms collect volume of landings of crab, stratified by the BSAI Crab Rationalization (CR) program fishery (nine distinct fisheries) and by individual fishing quota (IFQ) class (seven distinct classes). Ex-vessel revenue received for ex-vessel landings is also collected along the same BSAI CR stratifications and IFQ classes for catcher vessels, noting that crab catcher-processors don't typically participate in ex-vessel markets. The Catcher-Processor and Shoreside Processor EDRs collect first wholesale sales volume and revenue stratified by crab species (five distinct species, noting that several BSAI CR program fisheries represent distinct stocks of the same crab species), product type (seven types, e.g., whole crab and crab sections), and process type (four distinct processes, as well as an "other – describe"), and by two categories of sales unit size (15 pounds and under or greater than 15 pounds). The BSAI Crab EDR collection of ex-vessel and first wholesale volume and value improves substantially on the detail and quality of corresponding sales market data available from other sources, principally the State of Alaska's Commercial Operators Annual Report (COAR), which is a mandatory annual census of all permitted entities participating in Alaska fish processing and seafood first wholesale distribution (under both state and federal fisheries regulations). COAR reporting spans all fish species managed by NMFS and/or Alaska Department of Fish and Game and includes both ex-vessel purchasing and finished product sales components. In addition to providing more detailed ex-vessel crab sales data corresponding to the management structure of CR program fisheries and quota pools, the crab vessel EDRs also provide more accurate revenue values due to the later (by four months) submission deadline for crab EDRs compared to that for COAR. This allows the finalization of sales contracts, which is characteristically protracted in Alaska crab fisheries. The crab processor EDRs provide improved data quality in first wholesale production and sales information for CR program fisheries relative to that provided by COAR data. This is achieved by 1) collecting annual aggregated volume and revenue received from actual sales (rather than estimated value of annual production), 2) getting more accurate final sales values due to the later submission deadline, 3) excluding sales of crab from state-managed non-CR program fisheries, and 4) by distinguishing small and large sales units (not included in COAR reporting), which allows segmenting sales data into retail market-oriented production and bulk sales largely directed toward export for reprocessing. Although crab vessel and processor entities that are subject to EDR submission requirements represent a large portion of the ownership of respective CR program harvest and processing quota share (QS/PQS) pools and because crab EDRs collect information on leasing costs for annual QS/PQS pounds, quota royalty revenue is not reported in crab EDRs, and no EDR requirement applies to quota entities separate from crab vessel and processor EDR reporting.

3.1.4 Amendment 80 EDR

3.1.4.1 Population

All Amendment 80 Quota Share (QS) permit holders are required to submit the Amendment 80 Non-AFA Trawl Gear Catcher-Processor EDR form; permit holders who actively operated an A80 vessel are required to complete the entire form, while permit holders who did not operate a vessel are required to complete portions of the form pertaining to QS permit sale and/or lease costs and revenues. Unlike the BSAI Crab Program that includes catcher vessels, catcher-processors, and shore-based processors, the A80 fleet is entirely composed of catcher-processors with associated QS permits.

3.1.4.2 Data Collection Methods

The annual Amendment 80 Non-AFA Trawl Gear Catcher-Processor EDR form collects quantitative data on vessel production capacity and other characteristics, vessel activity and production throughput, revenues, capital expenditures and operating expenses, employment and compensation of on-board fishing, processing, and other crew, and crew license numbers for each crew member employed during the year. The Amendment 80 EDR is substantially more comprehensive in reporting both costs and revenues than other EDRs, including 19 itemized operating expenses and five capital expenditure categories.

3.1.4.3 Earnings

The Amendment 80 EDR form includes reporting of annual revenue totals, by source: total annual fishery product sales volume (metric tons) and revenue, revenue from other vessel operations (e.g., tendering, charters, cargo transport, etc.), LLP license sales and revenue, and quantity and royalty revenue for harvest QS pounds leased to other entities, stratified by nine Amendment 80 program QS pools. Detailed finished production volume and value by species and product type for the Amendment 80 sector is available from COAR reporting.

3.1.5 Amendment 91 Chinook Salmon EDR

3.1.5.1 Population

The Amendment 91 Chinook Salmon population includes a) owners and leaseholders of AFA-permitted catcher vessels, catcher-processors, and motherships active in the Bering Sea pollock fishery, b) vessel masters of these vessels, and c) entities eligible to hold AFA pollock quota and associated Chinook salmon prohibited species catch (PSC) allocation that participate in "compensated" lease transfers of Chinook PSC. (Apart from AFA vessel owners, this includes

AFA In-shore Sector harvest cooperative representatives, sector-based Incentive Plan Agreement representatives, and Community Development Quota Program group representatives.)

3.1.5.2 Data Collection Methods

The annual Amendment 91 EDR is composed of three separate forms: the Vessel Fuel Survey, the Vessel Master Survey, and the Compensated Transfer Report. All vessel owners/leaseholders are required to submit the Vessel Fuel Survey as well as Vessel Master Survey forms completed by each individual who acted as captain of the vessel during the year. The fuel survey collects quantitative data on fuel consumption rates and annual fuel purchase quantity and cost, while the Vessel Master Survey collects qualitative responses to a series of questions regarding captains' observations of operating conditions during the pollock season, including Chinook salmon bycatch conditions and incentives and other measures employed to reduce salmon bycatch by the vessel. As designed by the Council, data from the Vessel Fuel Survey was intended to be integrated with vessel logbook entries identifying instances of vessels relocating to alternate fishing grounds for the purpose of Chinook salmon bycatch avoidance, ostensibly providing transit time and distance to support estimation of fuel costs attributable to bycatch avoidance. However, logbook reporting has not been an effective tool for monitoring the additional cost (greater fuel cost, etc.) associated with bycatch avoidance, and so, Amendment 91 EDR data has not successfully been used as intended by the Council. Despite these and other survey design and data quality concerns regarding this EDR, which were identified in the NPFMC EDR program review, the Council elected to continue the data collection as currently designed.

3.1.5.3 Earnings

As noted above, Amendment 91 EDR was designed with the narrow purpose of estimating the cost of Chinook salmon bycatch avoidance by vessels operating in the AFA pollock fishery. No fishery ex-vessel or first wholesale revenue information is collected in the EDR. If needed, it can be sourced from COAR data. The Compensated Transfer Report portion of the EDR is intended to collect transaction-level data on all bipartite transfers of Chinook prohibited species quota allocation units during the pollock season in which monetary payment is included in the transaction (i.e., "in-kind only" transactions are exempted). It was the NPFMC's intention that the Compensated Transfer Report would capture "spot-market" PSC transfers while avoiding revelation of pollock quota value and exempting pre-season or other transfers in which salmon PSC and pollock quota are coupled. The form is to be completed by all entities participating as lessor or lessee in one or more "compensated transfers" of Chinook PSC (and thus collects both revenue and cost information related to this specific market).

However, no such transactions have been reported to date largely as a result of private contractual agreements within AFA sectors and harvest cooperatives that effectively prohibit such transactions.

3.1.5 Gulf of Alaska (GOA) Groundfish Trawl Fishery

Since this program was discontinued by the NPFMC Program in 2022, a detailed description is not provided. For a description of the program, see Thunberg et al., 2015.

3.2 Alaska Recreational Charter Guide and Owner Data Collection

3.2.1 Background

Most charter operations offer a menu of alternative fishing trips, with different attributes and targeting individual species or "combos." Different salmon species (e.g., Chinook and sockeye), halibut, and rockfish are common trip targets, and halibut/salmon is the most common combo trip. In recent years, Alaska's sport fisheries have undergone substantial changes, particularly in the management of the Pacific halibut charter fishery. For the Pacific halibut charter fishery, changes include capping participation through a limited entry program and limits on charter angler harvest (size restrictions and bag limits), as well as restrictions in recent years on which days of the week guided halibut fishing trips can occur. Additionally, a halibut catch sharing plan formalizing the process of allocating catch between the commercial and charter sectors was implemented in 2014. Most recently, a recreational quota entity that would be allowed to buy (and sell) commercial fishing quota shares as an additional means for cross-sectoral allocation was implemented.

In spite of regulatory changes in Alaska's sport fisheries over the last decade, information about how changes in fisheries management tools affect sport fishery anglers and charter businesses have generally been somewhat limited (Lew and Larson, 2012, 2015, 2017; Lew et al., 2016). While some information on the Alaska charter boat sector was collected through the State of Alaska's Statewide Harvest Survey and Saltwater Charter Logbook program, data collection has generally been limited to information about angler participation and harvest. Information on vessel and crew characteristics, services offered to clients, and information detailing cost and earnings have generally not been available for study or use in policy analyses.

To address this gap in information, the AFSC developed and implemented the Alaska Saltwater Sport Fishing Charter Business Survey to collect baseline economic information about the charter fisheries sector for use in understanding the economics of the charter sector and

evaluating the effects of regulatory changes on the sector. Surveys were administered by the PSMFC in 2012, 2013, 2014, 2016, and 2018. These surveys collected information on the respective preceding year's charter fishing seasons. The 2012–2014 surveys, administration, and data collected are described and summarized in Lew et al. (2015b). Details on the 2016 survey's implementation and data analysis are presented in Lew and Lee (2018). A synopsis of the most recent Alaska Saltwater Sport Fishing Charter Business Survey administered during 2018 is provided below. For detailed information about the 2018 survey, see Lew and Lee (2019).

3.2.2 Population

Implementation of the 2018 Alaska Saltwater Sport Fishing Charter Business Survey followed the 2016 survey implementation. As in all previous survey years, the target population—all licensed charter businesses that had conducted Alaska charter fishing in the previous year according to ADF&G Saltwater Charter Logbook records—remained the same. As for the 2016 survey, the 2018 survey was administered to a stratified random sample of eligible charter businesses rather than to all eligible charter businesses as was done in the 2012–2014 survey years.

The sample strata were defined based on ADF&G management areas and the number of guide licenses and vessels registered to a business according to license data. From each stratum, a simple random sample representing 75% of the stratum's total membership was drawn.

3.2.3 Data Collection Methods

The survey was implemented primarily by mail with an online web version constructed to closely match the print version of the questionnaire. A modified Dillman design was implemented consisting of several mailings and telephone contacts to prompt respondents to complete the mail survey or complete the survey online.

The survey questionnaire was divided into six sections where the first section was designed to link the respondent's business operation with supplemental data from the ADF&G's Saltwater Charter Logbook program. The remaining sections included data collected on the number and remuneration of employees; types of trips and services offered; trip operating costs and overheads; client information; and business structure, importance of charter business to household income, and offseason activities.

3.2.4 Earnings

The Alaska Sport Fishing Charter Business Survey collected data on sources of revenues from charter fishing activities, as well as from non-fishing activities such as wildlife viewing or other water transportation services. Earnings from charter fishing included receipts from recreational fishing clients as well as services provided for fish cleaning and equipment rentals

and sales of food, beverages, and souvenirs. In addition to receipts from on-board activities, data were collected on on-shore sources of income from lodging, packing and shipping services, and from leases of federal charter halibut permits.

4.0 Northwest Cost Data Collection Programs

4.1 Economic Data Collection (EDC) Program

4.1.1 Background

The U.S. West Coast groundfish trawl fishery takes place off the coasts of Washington, Oregon, and California, and comprises more than 90 species of fish, harvested both commercially and recreationally. The limited entry with a trawl endorsement commercial fishery transitioned to the West Coast Groundfish Trawl Catch Share Program (WCGTCSP) in 2011. The catch share program consists of cooperatives for the at-sea mothership (including catcher vessels and motherships) and catcher-processor fleets, an IFQ program for the shore-based fleet, and shore-based processors.

The economic benefits of the fishery and the distribution of these benefits were expected to change under the WCGTCSP. To monitor these changes, the Pacific Fishery Management Council proposed the implementation of the mandatory collection of economic data. The data collection was incorporated into the regulations that implemented the new catch share program, and in 2011, the Northwest Fisheries Science Center (NWFSC) created the Economic Data Collection (EDC) Program. The first EDC survey was implemented in 2011 and requested information for 2009 and 2010 to provide a baseline for analysis. The EDC Program replaced the Voluntary Catcher Vessel Cost Earnings Survey for Limited Entry Trawl Groundfish Vessels that had previously collected data for 2003, 2004, 2007, and 2008.

Data collected from industry participants are used for analyzing Council actions related to the fishery and to help meet the MSA requirement to determine whether a catch share program is meeting its goals and objectives, and whether any modifications of the program are necessary to meet those goals. Data for vessels include operating costs, fixed costs, revenue not available from state fish tickets, and operational information (average fuel use and crew share system). Participants are asked to report variable costs for Pacific Coast fishing only, but fixed costs are requested for participation in all activities, including those in Alaska. Data for processors, including motherships, catcher-processors, and shore-based processors, also include production information as well as weight, value, and product form (e.g., fresh and frozen) by species or species group.

The purpose of the data collection is threefold. First, the data are used to calculate performance metrics to evaluate the program (Steiner et al., 2021). The metrics are calculated annually and reported in an interactive data exploration tool, Fisheye.⁶ Second, the data are used for analysis of Council actions, including the biennial harvest specifications analysis. Third,

⁶ Available at <https://www.fisheries.noaa.gov/west-coast/science-data/economic-data-collection-reporting>.

the data are used to parameterize the NWFSC's IO-PAC (Pacific Coast Input-Output) model used to estimate regional economic impacts. See Leonard and Watson (2011) for a description of the IO-PAC model.

The EDC Program has enhanced the quantity and quality of economic information available for analysis and management of the West Coast groundfish trawl fishery. Prior to the EDC Program, voluntary cost and earnings surveys were available for 64 percent of the shore-based catcher vessels with limited entry groundfish permits with trawl endorsements (trawl fleet) for the 2003–2004 collection and 57 percent of the fleet for the 2007–2008 collection. Moreover, no cost and earnings data were available for catcher vessels that delivered to motherships, nor any processing entities including motherships, catcher-processors, and shore-based processors.

4.1.2 Population

The EDC Program is a mandatory component of the WCGTCSP, collecting information annually from all catch share participants: catcher-processors, catcher vessels, motherships, first receivers, and shore-based processors. Catcher vessels and catcher-processors are required to fill out the survey if there was a limited entry trawl permit on their vessel at any time during the calendar year. Motherships with a mothership permit on their vessel at any time during the calendar year must fill out the survey, as must any first receiver or shore-based processor that held a first-receiver license at any point during the preceding year.

4.1.3 Data Collection Methods

Participation in the EDC program is mandatory, providing a census of the population of catcher vessels, catcher-processors, motherships, and first-receivers/shore-based processors in the catch share program. Survey forms are mailed each year to collect annual data covering information for the prior year. For example, survey forms for 2021 collect data for the 2020 fiscal year (as defined by the respondent). Participants in the EDC Program may also complete their forms via an online web-form. The participation requirement is for the vessel or processor owner to submit the form, but often, several people are involved with completing each form, including the vessel operator and/or bookkeeper. For the shore-based forms, it is common for one person to report on facility costs (excluding fish purchases), another to report the fish purchases, and a third to report the fish sales information. It is the responsibility of the owner to organize their staff to complete all elements of the form.

The EDC Program has implemented several processes to ensure high-quality data. These processes include double-key entry of all data, QA/QC checks to ensure consistency of data within a form, and QA/QC checks to ensure that data provided on forms are consistent with

external data.⁷ For detailed reports on 2004 and 2008 data collections for the limited entry groundfish trawl fishery, see Lian (2010; 2012a). Participants are contacted by phone, email, and mail about any issues discovered during the QA/QC process, and any changes to data are tracked.

4.1.4 Earnings

Most ex-vessel revenue for fishing off the coasts of Washington, Oregon, and California is obtained from state-collected fish tickets via Pacific States Marine Fisheries Commission's Pacific Fisheries Information Network database. Ex-vessel information is not available for delivery to motherships (at-sea ex-vessel revenue), and so, it is requested on the EDC forms. Revenue information for catcher vessels not related to selling fish on the Pacific Coast is reported on the EDC forms, including revenue from fishing in Alaska, chartering, tendering, research, bareboat leasing, and quota/permit leasing and sales.

All processors, including motherships, catcher-processors, and shore-based processors report product-species production information on their EDC forms. The processing vessels do not report revenue earned from processing in Alaska, but they do report the total weight of fish caught while in Alaska. They also report any revenue from custom processing as well as quota/permit leasing or sales.

In 2020, a new mandatory survey, the Quota Share Owner Survey, was implemented to collect information about quota lease earnings and how quota owners participate in the fishery (Connelly et al., 2022). This allows for holistic reporting of benefits of the catch share program by including earnings received by quota owners that otherwise would not be sampled by the original EDC Program.

4.2 Limited Entry Groundfish Fixed Gear Cost and Earnings Survey

4.2.1 Background

The Limited Entry Groundfish Fixed Gear (LEFG) Cost and Earnings Survey provides the NWFSC with economic data on catcher vessels participating in the federally managed limited entry groundfish fixed gear fishery, which includes both the primary sablefish catch share program (tier-endorsed limited entry permits), the non-endorsed limited entry fishery, and the daily-trip-limit fishery, mostly targeting sablefish. The survey provides data for constructing economic performance measures as well as data used in the NWFSC's regional economic model

⁷ For detailed reports on EDC data collection and results, see http://www.nwfsc.noaa.gov/research/divisions/fram/economic/economic_data_reports.cfm.

(IO-PAC). This survey was first fielded in 2006, with data for 2003 and 2004 being collected. Since then, surveys were run in 2009, 2011, 2013, 2016, and 2018. The most recent survey was fielded in 2018 to collect data from catcher vessels operating in 2016 and 2017.

These data are used to develop a variety of economic models examining topics such as fleet efficiency, participation, and community economic impacts. These data are also necessary to run the input-output model for Pacific Coast fisheries (IO-PAC), which is used to measure total economic impacts and inform management decisions. Periodic incorporation of the most recent cost earnings surveys is required to keep the underlying data up to date. Output from the model is commonly requested by the Pacific Fisheries Management Council, such as in program reviews mandated periodically by the MSA and harvest specifications.

The LEFG Survey collects annual data about operating costs and fixed costs, in the same manner as the EDC catcher vessel forms, with a few exceptions. First, participants are asked to report total costs from participation in all fisheries, including Alaska, regardless of whether the costs are variable or fixed. The second major difference between the forms is that the LEFG Survey collects 2 years of data at once. For example, a participant would report fuel costs for both 2016 and 2017. For vessel characteristics that might vary within a year (average fuel use by fishery, crew size, and marine survey valuation), only one value is requested, and respondents are asked to give a representative answer to the best of their ability.

Similar to the EDC Program, the primary uses of these data are to inform fisheries management by reporting performance metrics (Section 4.1.1), evaluate the economic performance of the primary sablefish catch share program, analyze economic impacts of biennial harvest specifications on the participants, and inform the cost functions for estimating regional economic impacts in IO-PAC.

4.2.2 Population

The population for the most recent LEFG Survey included all vessels that a) had at least \$1,000 of West Coast landings during 2017, b) made at least one landing during 2017 using a limited entry groundfish permit with a fixed gear endorsement, and c) did not have a limited entry permit with a fixed gear endorsement in 2017 (in which case they were required to submit the mandatory EDC form required of all catcher vessels participating in the groundfish trawl fishery). This population contained 164 vessels for the 2018 fielding.

4.2.3 Data Collection Methods

Participation in the LEFG Survey is voluntary, and data collection is accomplished primarily through in-person and telephone interviews. Due to the relatively small number of vessels in the LEFG fleet and the high level of landings per vessel, an attempt is made to collect cost and earnings data from each member of the survey population. Therefore, the survey uses a census approach. Information on the owner's name, address, and telephone number for each vessel is obtained from limited entry groundfish permits, and vessel owners are contacted via phone and mail. A unique characteristic of the fishery is that there is an owner-on-board requirement in the primary sablefish fishery, and so, the vessel owners must always be on board the vessel. This results in a different ownership structure compared to that of the WCGTCSP, which has a relatively high share of companies that own multiple vessels.

Survey participants may choose their preferred method of survey response—in-person interview, telephone interview, online questionnaire, or mail questionnaire. Survey respondents are encouraged to respond via an in-person interview or a telephone interview since having survey respondents talk with a trained interviewer helps provide more consistent survey responses across respondents. Over 90 percent of survey responses are collected through in-person interviews or telephone interviews. Completing the survey requires knowledge of financial and physical operating characteristics of the vessel. The vessel owner may, in some cases, direct questions to his or her accountant or a hired captain, although the vast majority of interviews were conducted with the vessel owner.

Fielding of the most recent LEFG Survey finished in 2018, with data for 2016 and 2017 collected. Each member of the fishery received a package by mail containing an introductory letter describing the survey, a one-page description of reasons for conducting the survey, and a copy of the questionnaire. About one week after the mailing, an expert recruiter called survey recipients to arrange an interview time and location. Survey fielding was divided into two stages: the first stage covered vessel owners located in Washington and Oregon, and the second stage covered vessel owners located in California. Interviewers recorded responses on an expanded version of the questionnaire that has space for comments from the survey respondent. Each question in the expanded version of the questionnaire also had information on how NWFSC economists will use the data in case respondents had questions about the context or purpose of the question. Survey responses were recorded by hand on this expanded questionnaire (denoted the interviewer questionnaire) and then also entered into an electronic database. The desired frequency of this survey is every 2 or 3 years.

4.2.4 Earnings

Earnings were collected in the same manner as that for the EDC Program. All Pacific Coast based fishing revenue is obtained from state fish tickets in Pacific States Marine Fisheries Commission's Pacific Fisheries Information Network database, whereas Alaska revenue and revenue from other activities are reported on the LEFG form.

4.3 West Coast Open Access Groundfish, Salmon, Crab, and Shrimp Cost and Earnings Survey

4.3.1 Background

The Open Access Cost and Earnings Survey provides the NWFSC with economic data on catcher vessels participating in the federally managed OA groundfish and non-tribal salmon fisheries, as well as the closely related state-regulated crab and shrimp fisheries (many vessels that participate in the OA groundfish and non-tribal salmon fisheries also participate in the crab and/or shrimp fisheries).

This survey was first fielded in 2007, with data for 2005 and 2006 being collected. Since then, surveys were run in 2007, 2010, 2013, 2016, and 2021. The most recent survey was fielded in 2021 with data from catcher vessels operating in 2019 and 2020. Participation in the survey is voluntary, and data collection is accomplished primarily through in-person and telephone interviews.

Similar to other Northwest Cost Data Collection Programs, annual operating and fixed costs as well as vessel characteristics are collected on the OA survey. Information is requested for all activities the vessel participates in, regardless of whether it is a state or federal fishery. The data gathered and performance measures constructed are then used to address the economic conditions of the related fisheries, regional economics, and net benefits to the nation, as well as how the distribution of those measures may have changed. This includes computing total (or average) revenues, costs, variable costs net revenues, and total costs net revenues.

4.3.2 Population

The survey population has grown over time. The first survey (fielded in 2007) targeted vessels in the OA groundfish and salmon troll fisheries and included all West Coast vessels that met three criteria: 1) landed at least \$2,500 of salmon and groundfish combined at West Coast ports during 2005 and 2006; 2) had at least one trip where combined groundfish and salmon

accounted for the majority of trip revenue; and 3) did not hold a limited entry groundfish permit. Because the 2006 salmon disaster caused many vessels previously targeting salmon to shift their activity to the crab fishery, it was decided before the second fielding of the survey (which was fielded in 2010–2011) that it should also target vessels participating in the crab and shrimp fishery. The second survey fielding also collected economic data from salmon netters operating in state waters as well as salmon trollers operating in federal waters.

Therefore, the survey population for subsequent fielded surveys, including the most recent 2021 fielding, incorporated all catcher vessels that 1) had at least \$1,000 of West Coast landings (of any species) during the most recent year for which data was being collected; 2) had at least one trip where a majority of revenue came from groundfish, salmon, crab, or shrimp; and 3) did not have a limited entry groundfish trawl permit. The minimum activity level for inclusion in the survey population was lowered in an attempt to get survey respondents to provide a more representative sample from the survey population (survey respondents tend to have higher average levels of landings than the survey population). In-person interviews were not conducted in 2021 due to COVID-19 precautions. Instead, surveys were conducted by telephone. A total of 1,006 vessels were contacted with 431 surveys completed for a response rate of 43 percent. The total population contained 1,935 vessels for the 2021 fielding, and the vessels contacted were selected via a stratified random sample based on state, species, gear, and vessel size.

4.3.3 Data Collection Methods

Since the OA fleet is defined by vessels that did not participate in any federally permitted fishery, vessel registration data was obtained from Washington, Oregon, and California to contact the vessel owners by mail and phone. Phone numbers were used to make initial contact with survey respondents. However, for the 2021 fielding, registration data were not available for the state of Washington. Therefore, telephone numbers for Washington vessels were obtained from a public records search using the vessel owners' names and addresses. Telephone numbers for about 71 percent of the OA vessel owners in the state of Washington survey population were obtained. The resulting survey population was then composed of vessel owners for whom a telephone number was available. Finally, the survey sample was obtained using the stratified random sampling process described above.

Comparisons of vessel physical characteristics, landings revenue, and landings weight for vessels with and without an available owner telephone number have consistently failed to find a statistically significant difference between the two groups of vessels. This tests for potential bias in survey estimates, which would result if, for example, certain vessel owners were more or less likely to respond via telephone. Survey response is voluntary, and survey

respondents are historically allowed to choose their preferred method of survey response (in-person interview, telephone interview, online questionnaire, or mail questionnaire). Survey respondents were encouraged to respond via an in-person interview or a telephone interview, as having survey respondents talk with a trained interviewer helps provide more consistent survey responses across respondents. Historically, over 90 percent of survey responses were collected through in-person interviews or telephone interviews. Completing the survey requires knowledge of financial and physical operating characteristics of the vessel. The vessel owner may, in some cases, direct questions to his or her accountant or a hired captain, although the vast majority of interviews were conducted with the vessel owner.

The most recent fielding of the OA survey was completed in 2021. Each member of the survey sample received a package by mail containing an introductory letter describing the survey, a one-page description of reasons for conducting the survey, and a copy of the questionnaire. About one week after the mailing, an expert recruiter began calling survey recipients to arrange an interview time. Interviewers recorded responses on an expanded version of the questionnaire. Any additional comments from the survey respondent were also recorded, and the interviewer provided information on how NWFSC economists will use the data from each question. Survey responses were recorded by hand on this expanded questionnaire (denoted the interviewer questionnaire) and also entered into an electronic database. For a detailed report of the 2005 and 2006 survey findings, see Lian (2012b).

4.3.4 Earnings

Earnings were collected in the same manner as that for the EDC Program. All Pacific Coast based fishing revenue is obtained from state fish tickets, and Alaska revenue and revenue from other activities are reported on the OA survey form.

4.4. Washington/Oregon Charter Survey

4.4.1 Background

The charter fishing industry has a long history in Washington and Oregon, as residents and tourists have a variety of fishing opportunities, from salmon fishing in the Puget Sound and the Columbia River area to rockfish and tuna fishing opportunities throughout marine areas (e.g., large rivers, Puget Sound, and open ocean) in both states. The NWFSC has administered the Washington and Oregon Charter Vessel Survey three times, in 2007, 2014, and 2018. The 2014 and 2018 surveys were similar to the survey conducted during 2007 with modifications based on suggestions from industry associations. The objective of the surveys was to collect the

data needed to construct key economic performance measures related to the profitability, productivity, and regional economic impacts of the fishery. Since the 2018 survey was conducted more recently, the sampling strategy and data collection methods are described below. For a more detailed treatment of the 2014 survey, see Leonard (2016).

A relatively high proportion of active marine charter fishing owners participated in the survey in which 210 charter vessel owners out of an estimated 352 active charter companies responded to the survey, yielding a response rate of 60 percent. This is an improvement over the 43 percent response rate from the 2007 survey and the 55 percent from the 2014 survey. The improvement is likely due in part to the emphasis on fielding the survey in-person and included a strong outreach effort to industry representatives to encourage participation.

4.4.2 Population

The sample frame for the survey was all charter license holders who had actively engaged in marine charter fishing during 2017. This population was based on contact information obtained from lists of charter vessel license holders from the Washington Department of Fish and Wildlife and the Oregon Department of Fish and Wildlife. All license holders were mailed a letter highlighting the intent of the survey and inviting them to participate. License holders were then contacted by phone for a pre-survey screener to determine if they had actively engaged in marine charter fishing in 2017. License holders who indicated that their vessels had carried fishing passengers in salt water during 2017 were defined as being in the sample. A census of these license holders was mailed a questionnaire and scheduled for an in-person interview. Anyone who was unable to participate in an in-person survey was offered the option to respond via phone or mail.

4.4.3 Data Collection Methods

Interviews were scheduled based on geographic area to reduce travel costs and reduce barriers to participation. The location of the interview was selected by the respondent, which most often was in a public location such as a café, coffee shop, or restaurant. However, some interviews were conducted at the respondent's residence or the location of their vessel. Interviewers guided respondents through the questionnaire and asked follow-up questions where appropriate. For example, interviewers were prompted to ask questions about the nature of repair and maintenance expenses when survey respondents reported particularly large expenditures. All in-person interviews were conducted in 2018 and 2019.

Data collected during the interviews included information on business structure, business expenses, and sources of revenue (see Section 4.4.4). Business structure included information on the number of years in business, the number of vessels owned, experience in the industry, percent of household income from charter fishing, and the percent of returning

customers. Business expenses included payroll for crew and paid skippers, trip costs (e.g., fuel, ice, bait, food, and beverages), vessel maintenance (e.g., onboard equipment and haulout), principal and interest payments, and expenses for insurance, utilities, advertising, booking fees, taxes, etc.

4.4.4 Earnings

Data were collected on sources of revenue from any commercial fishing and charter fishing activities from passenger or related fees as well as from non-fishing related activities. In addition to passenger fees from charter fishing, data were collected on sales of food and beverages, souvenirs, and equipment rental. Non-fishing related revenues included nature or scenic tours, scuba diving, burials at sea, or other purposes.

5.0 Pacific Islands Cost Data Collection

5.1 Real-Time Trip-Level Cost Data Collection Program of the Hawaii Longline Fishery

5.1.1 Background

The Trip-Level Cost Data Collection Program of the Hawaii longline fishery is the first “real-time” economic data collection program established in the Pacific Islands Region. The trip-level data collection program was funded by a NOAA Fisheries strategic initiative to improve the collection of commercial fisheries economic data. Beginning in August 2004, the trip data collection program was implemented in the Hawaii longline fishery through cross-agency collaboration with the Pacific Islands Fishery Science Center (PIFSC) and the observer program managed by the Pacific Islands Regional Office (PIRO).

The Trip-Level Cost Data Collection Program of the Hawaii longline fishery collects trip-level non-labor fishing trip expenses on a continual basis. Among other things, primary trip expenses include fuel, bait, food, gear, and lightsticks. For a complete list of cost and other information collected as well as a more detailed description of this data collection program, see Pan (2018).

The intent of the program is to track changes in economic performance for the Hawaii longline fishery on a continual basis. Data on trip costs coupled with available secondary data on revenues allows for the calculation of trip net revenue estimates for individual trips, a vital index for tracking economic performance of the Hawaii longline fishery. The trip cost and net revenue trends are reported in annual Stock Assessment and Fishery Evaluation (SAFE) Reports of the Western Pacific Fisheries Management Council (WPRFMC) and are updated each year (WPRFMC: <https://www.wpcouncil.org/annual-reports/>). The summary data were also published as NOAA Technical Memorandums and brochures distributed to managers and fishermen (Pan, 2018; Pan, 2019).

5.1.2 Population

The Hawaii longline fishery is managed under a limited entry program with 164 permits. In 2021, the total active number of vessels landing fish was 143, and each vessel averaged approximately 12 trips annually. In 2021, the fleet generated \$111 million in revenue (a historic high), with 28 million pounds of landings. It is the largest commercial fishery managed under the Western Pacific Fisheries Management Council in the Pacific Islands Region. The economic data collection program for the Hawaii-based longline fishery addresses both the deep-set

(targeting bigeye tuna) and shallow-set (targeting swordfish) components of the fishery. The fishing grounds of the Hawaii longline fishery extend well beyond the US Exclusive Economic Zone (EEZ), and the fishery is subject to bigeye tuna catch limits imposed by two Regional Fisheries Management Organizations: the Western and Central Pacific Fisheries Commission and the Inter-American Tropical Tuna Commission. Bigeye tuna landings from within the US EEZ also count toward these catch limits.

5.1.3 Data Collection Methods

This data collection program has been ongoing since it began in August 2004. It has generated a consistent time-series of economic data that are important to fishery management. Participation of fishermen in the economic data survey is voluntary. The sample for the economic trip data collection is driven by the sampling priorities for other non-economic purposes of the PIRO Observer Program. The statistical sample design of observer samples is chosen randomly through a sample design developed by the Pacific Islands Fisheries Science Center. Observer coverage for the Hawaii-based shallow-set longline trips (targeting swordfish) is 100 percent while observers are on board for approximately 20 percent for the deep-set trips (targeting bigeye tuna) (Pan 2018).

Observers conduct in-person interviews with the captains on board while returning to port, or captains fill out the hard-copy forms distributed by the observers on-board. Captains can be either owner-operators or hired. Data are recorded on paper and later entered into a database.

5.1.4 Earnings

Ex-vessel revenue from fish sales is the primary income source of the Hawaii longline vessels. The ex-vessel revenue for individual trips and vessels are collected by the Hawaii Division of Aquatic Resources (DAR) dealer reports, and the revenue data are available for the Pacific Islands Fisheries Science Center to use through cooperative agreements.

5.2 Hawaii Longline Fishery Cost-Earnings Survey

5.2.1 Background

Cost-earnings studies of the Hawaii Longline Fishery have been conducted periodically since 1993. The objective of these episodic cost-earnings studies is to examine the economic performance of individual vessels of the Hawaii-based longline fleet. A total of four cost-earnings studies have been conducted covering the operational years of 1993 (Hamilton et al., 1996), 2000 (O'Malley and Pooley, 2003), and a combined analysis of 2005 and 2012 (Kalberg and Pan, 2016). A recent cost-earnings study was to be implemented in 2020 to update the economic performance status of the Hawaii longline fleet but has been postponed due to the ongoing effects of the COVID-19 pandemic.

The key metric generated from the cost-earnings studies is the net cash flow (profit) of individual vessels. All previous cost-earnings studies followed a similar survey form, implementation design, and analytical framework to generate information such as total annual costs, total earnings, and net cash flow (profit) at the individual vessel level. In the most recent cost-earnings study, covering the 2012 operational year, multiple data sources were utilized to provide vessel-level indicators of economic performance, while the cost data are mainly collected through in-person surveys (Kalberg and Pan, 2016). Cost information is composed of three parts: 1) fixed costs including dry dock, engine work, gear additions/replacement, and maintenance and repair; 2) variable costs, which can also be referred to as trip-based costs, are those incurred every trip (variable costs included fuel, bait, engine oil, provisions, ice, fishing gear replacement, communication, and lightsticks for swordfish trips); and 3) labor costs, which include payments to the crew and captain. Annual revenues (secondary data) combined with available cost data allow us to generate estimates of net cash flow (profit) for individual Hawaii longline vessels.

Summary data and key findings from the cost-earnings studies are presented in Western Pacific Fishery Management Council forums and published in NOAA Technical Memorandums or administrative reports. The data collected also support research activities related to fishery management strategy evaluations and regulatory impact analysis (Pan and Li, 2015).

5.2.2 Population

The Hawaii longline fishery is managed under a limited entry program with 164 permits. In 2021, the total number of active vessels was 143, and each vessel averaged approximately 12 trips annually. The number of active vessels in the fishery has been stable over the past decade.

The fleet generated \$111 million in revenue (a historical high) with 28 million pounds of commercial landings in 2021. The Hawaii-based longline fishery is made up of both deep-set trips targeting bigeye tuna and shallow-set trips targeting swordfish. The cost-earnings studies cover both segments.

The Hawaii longline fishery is the largest commercial fishery managed under the Western Pacific Fisheries Management Council in the Pacific Islands Region. The fishing grounds of the Hawaii longline fishery extend beyond the US EEZ, and the fishery is subject to bigeye tuna catch limits imposed by two Regional Fisheries Management Organizations: the Western and Central Pacific Fisheries Commission and the Inter-American Tropical Tuna Commission. Catches from within the US EEZ count toward these catch limits.

5.2.3 Data Collection Methods

Annual fixed cost and labor cost data were collected through in-person interviews with owners and/or captains. In all the previous cost-earnings surveys, a census was used to collect annual fixed costs and labor costs. In the 2012 survey, captains or owners of 115 of the 126 vessels active (91 percent) at the time of the study voluntarily participated in face-to-face surveys. Annual variable cost data are collected on a sample of trips under the Hawaii Longline Trip Expenditure Data Collection Program (Pan, 2018 and Section 5.1 in this document).

5.2.4 Earnings

Ex-vessel revenues from fish sales are the primary income source for the Hawaii longline fishery. The annual ex-vessel revenues for individual vessels are compiled from dealer reports collected by the Hawaii Division of Aquatic Resources (HDAR). The revenue data are available for use by the Pacific Islands Fisheries Science Center through cooperative data sharing agreements with HDAR. Vessel-level data are integrated using vessel permit numbers, vessel names, landing dates, return dates, or sales dates.

5.3 Trip-Level Cost Data Collection Program of the American Samoa Longline Fishery

5.3.1 Background

Similar to the Hawaii longline fishery, the Trip-Level Cost Data Collection Program for the American Samoa Longline Fishery Program was implemented through cross-agency collaboration between the PIFSC and the observer program managed by the PIRO. The data collection program has been active in the American Samoa longline fishery since 2006 when the PIRO observer program implemented observer coverage in the American Samoa longline fishery.

The Trip-Level Cost Data Collection Program of the American Samoa Longline Fishery collects trip-level non-labor fishing trip expenses on a continual basis. Among other things, primary trip expenses include fuel, bait, food, gear, and lightsticks. For a complete list of cost and other information collected as well as a more detailed description of this data collection program, see Pan (2018).

The intent of the program is to track changes in economic performance for the American Samoa longline fishery on a continuous basis. Data on trip costs coupled with available secondary data on revenues allows for the calculation of trip net revenue estimates for individual trips, a vital index for tracking economic performance of the American Samoa longline fishery. The trip cost and net revenue trends are reported in annual SAFE Reports of the WPRFMC and are updated each year (WPRFMC: <https://www.wpcouncil.org/annual-reports/>). The summary data were also published as NOAA Technical Memorandums and brochures distributed to managers and fishermen (Pan, 2018; Pan, 2019).

5.3.2 Population

A permit is required for any longline fishing in American Samoa. The limited entry program was enacted in May 2005, and a maximum of 60 permits were established for the American Samoa longline fishery. Permits cover a variety of vessel sizes. However, since PIRO observers only cover large vessels (>50 ft), the trip cost data collection program is limited to these large size vessels. Thus, the survey population includes any large vessel holding a limited access American Samoa longline permit that actively participated in longline fishing. The number of active large longline vessels has seen declining trends over time, from 25 vessels in 2006 to only 11 vessels in 2021. The large longline vessels take approximately three to four trips a year on average, and the average trip length was 53 days in 2021.

The American Samoa longline fishery primarily targets albacore, which accounts for over 80 percent of revenues in this fishery. Albacore and other tuna species caught are frozen at sea and usually landed and sold directly to canneries located in Pago Pago, the capital of American Samoa. The species sold to the local canneries include four tuna species (albacore, yellowfin, bigeye, and skipjack) and one non-tuna species (wahoo). In 2021, the total fleet revenue (estimated landed value sold to canneries) was \$2.5 million from 2.1 million pounds of landings. The American Samoa longline fishery is the second largest commercial fishery managed under the Western Pacific Fisheries Management Council in the Pacific Islands Region.

5.3.3 Data Collection Methods

This data collection program has been ongoing since it began in August 2006. Similar to the Trip-Level Cost Data Collection Program of the Hawaii longline fishery, participation of fishermen in the economic data survey is voluntary. The project is designed to collect non-labor

trip cost data from all observed trips. Observers accompanied fewer than 10 percent of the American Samoa-based longline fishing trips during the period 2006–2009; subsequently, observer coverage increased to 25 percent in 2010 and 33 percent in 2011, then fell significantly down to 20 percent in 2012. From 2012 to the present, observer coverage rates target 20 percent of the trips. Similar to that of the Hawaii longline fishery, the statistical sample design of observer coverage for the American Samoa longline fishery is randomly chosen through a sample design developed by the Pacific Islands Fisheries Science Center.

In the early years of the trip cost data collection program, the sample for the economic trip data collection was the same as that of the PIRO Observer Program. Cost data were collected from captains on board. However, the response rate for the trip cost data collection of the American Samoa longline fishery was low, as the fishing vessels of the fishery were operated by hired captains who usually did not handle trip expenditures. In addition, the average trip length was long, and the observers often did not stay for an entire trip. Thus, the cost information collected by observers on board might only cover a portion of total trip costs. As a result, the number of trips with complete cost data for an entire trip was very limited in the American Samoa longline fishery when trip cost data collections were only relying on the observed trips. Therefore, beginning in 2012 PIFSC economists instituted a new approach to increase the number of cost data observations. Specifically, PIFSC economists traveled to American Samoa to collect trip expenditure information from owners or agents through in-person interviews. The two methods combined have ensured an adequate sample size for the cost data. When trip cost data are collected from owners or agents through in-person interviews, the latest completed trip for each vessel is selected as the survey sample. For more information on the trip expenditure data collection program of the American Samoa longline fishery, see Pan (2018).

5.3.4 Earnings

Ex-vessel revenue from fish sales to the local canneries is the primary income source of the American Samoa longline fishery. Ex-vessel revenue (trip-level or vessel-level) of the fishery is not collected during observed trips but is available through estimation based on the reported cannery fish prices received by fishermen and the pounds kept recorded in the logbooks. Fish prices to local canneries were collected during in-person surveys with owners or agents. During the period of the COVID-19 pandemic (2020 to the present), as no in-person surveys were conducted and travel restrictions to American Samoa have been in place, the fish price data have been collected/reported by the PIRO observer program located in American Samoa.

5.4 American Samoa Pelagic Longline Cost-Earnings Survey

5.4.1 Background

Cost-earnings surveys of the American Samoa longline fishery have been conducted periodically since 2001. The objective of these episodic cost-earnings studies is to examine the economic performance of individual vessels of the American Samoa longline fishery. A total of three cost-earning studies have been conducted covering the operational years of 2001 (O'Malley and Pooley, 2002), 2009 (Pan et al., 2017), and 2016 (Pan, 2019a).

The key metric generated from the cost-earnings studies is the net cash flow (profit) of individual vessels. All the previous cost-earnings studies followed a similar survey form, implementation design, and analytical framework to generate information such as annual total costs, total earnings, and net cash flow (profit) at the individual vessel level. Cost information was composed of three parts: (1) fixed costs including dry dock, engine work, gear additions/replacement, and maintenance and repairs; (2) variable costs, which can also be referred to as trip-based costs, are those incurred every trip (variable costs included fuel, bait, engine oil, provisions, ice, fishing gear replacement, and communication costs); and (3) labor costs, which include compensation paid to the crew and captain. Annual revenue per vessel is estimated by fish price (also collected during the cost-earnings surveys) and the pounds kept, as recorded in federal logbooks. The data are integrated at the vessel-level for the operational year. The most recent cost-earnings study (Pan, 2019a) also looked into trends in trip-level net revenue, effort, and permit (dual permits) information for the American Samoa longline fishery.

Summary data and key findings from the cost-earnings studies are presented in Western Pacific Fishery Management Council forums and published in NOAA Technical Memorandums or administrative reports. The data collected also support research activities related to fishery management strategy evaluations and regulatory impact analysis (Pan, 2019b).

5.4.2 Population

A permit is required for any longline fishing in American Samoa, with a maximum of 60 available permits (enacted in May 2005). Permits are required for both smaller longline vessels (<50 ft) and larger longline vessels (≥50 ft). Past cost-earnings surveys have focused on larger vessels in the fleet, as smaller vessels have different operational characteristics. The number of active vessels of the American Samoa longline fishery steadily declined over the past decade. In the most recent survey (2016), there were 13 large vessels considered full-time active in the

fishery. The surveys included all the active vessels, and participation in the survey was voluntary. Ten of the 13 vessels responded to the survey (a response rate of 77 percent).

The American Samoa longline fishery primarily targets albacore, which accounts for over 80 percent of revenue for this fishery. Albacore and other tuna species (yellowfin, bigeye, and skipjack) caught are frozen at sea and usually landed and sold directly to the cannery located in Pago Pago, the capital of American Samoa. In 2021, the total fleet revenue was estimated at \$2.5 million, from 2.1 million pounds of landings.

5.4.3 Data Collection Methods

In the most recent cost-earnings study (Pan, 2019), variable costs, fixed costs, and labor cost data for individual vessels were collected through in-person surveys with owners and/or agents. Participation in the survey was voluntary, and 10 out of the 13 vessels (77%) completed the survey. The annual variable cost data are estimated based on sampled trip cost data collected through the American Samoa Longline Trip Expenditure Data Collection Program (Pan, 2018 and Section 5.2 in this document).

5.4.4 Earnings

Ex-vessel revenues (earnings) from fish sales to the local cannery are the primary income source for the American Samoa longline fishery. Estimated ex-vessel revenues are generated using fish price and pounds kept, as recorded in federal logbooks (Pan, 2019). Fish prices are collected through in-person surveys with fishermen.

5.5 Trip-Level Cost Data Collection Program in Three Territorial Areas: 1) Small Boat Fishery in Guam, 2) Commonwealth of the Northern Mariana Islands (CNMI), and 3) American Samoa

5.5.1 Background

In 2009, the PIFSC initiated an effort to collect trip-level economic data on the small boat fleets operating in American Samoa, the Commonwealth of the Northern Mariana Islands (CNMI), and Guam. This project is a cooperative endeavor of the PIFSC, local fisheries agencies, and the Western Pacific Fisheries Information Network (WPacFIN). The trip cost data collection programs started in American Samoa in August 2009, in Saipan in April 2009, and in Guam in September 2011. The economic data collection intends to gather fishing expenditure data for boat-based reef fish, bottomfish, and pelagic fishing trips on an ongoing basis. The trip-level cost data collection program was partially funded by a NOAA Fisheries strategic initiative to improve the collection of commercial fisheries economic data. For more information on the American Samoa trip expenditure data collection program, see the NOAA Technical Memorandum by Chan and Pan (2019).

The trip cost survey is an addition to the existing boat-based creel surveys that have existed since 1981. Thus, the trip cost survey sample aligns with the boat-based creel survey sample design. The boat-based creel surveys were designed to collect fisheries-dependent data such as catch and effort in the three island areas through a voluntary and in-person intercept interview methodology. Sampling methodologies for the programs in the three areas were documented in Oram et al. (2011a, 2011b, 2011c). The trip-level data collection programs in the three territories only describe the main items of non-labor fishing trip expenses, including gallons of fuel used and fuel price, cost of ice used, cost of bait and chum used, and cost of fishing gear lost. Detailed background information on the Trip-Level Cost Data Collection Program in the three territorial areas are presented in Chan and Pan (2019).

The intent of the trip-level data collection programs in the three territories is to track changes in trip-level fishery economic performance for regional small boat fisheries on a continual basis. The average trip costs and trends, for both trolling and bottomfish gears, are reported in the Annual SAFE Reports of the WPRFMC and are updated each year (WPRFMC: <https://www.wpcouncil.org/annual-reports/>). The summary data also were published in a NOAA Technical Memorandum (Chan and Pan, 2019).

5.5.2 Populations

The small boat fisheries in these three areas are usually a mix of commercial and non-commercial fishing. They are important to the local communities because they provide a source of fresh food (protein in particular) and are an integral part of the islands' traditional and modern cultures. For example, the fishery annually lands approximately 13 pounds of fresh fish per capita in the CNMI and 4 pounds of fresh fish per capita in Guam and American Samoa. About half (or less) of the fish landed in these areas are commercial landings, while the rest are non-commercial (for home consumption or for sharing with family and friends). The estimated number of active small fishing boats was approximately 675 in the three areas (372 in Guam, 283 in the CNMI, and 20 for American Samoa) (WPRFMC: <https://www.wpcouncil.org/annual-reports/>).

5.5.3 Data Collection Methods

Participation in the trip-level economic data survey in the three territories is voluntary. The economic data collection program is a survey add-on to the boat-based creel surveys fielded by the local fisheries agencies in American Samoa, CNMI, and Guam. The boat-based creel survey mainly collects information on fishing effort, catch, and species composition of the trip through interviews as operators return to the boat ramp or port areas. It utilizes a systematic random sampling protocol around the islands and at their major boat ramp/port areas (Oram et al., 2011a, 2011b, 2011c). The survey respondents are usually the vessel

operators but could be owners or hired captains for the trips surveyed. The creel survey programs in the three areas have been established since the early 1980s (<https://www.pifsc.noaa.gov/wpacfin/>). Local fisheries agency staff conduct in-person boat-based surveys several times a month, based on random sampling by type of day (weekday/weekend/holiday) throughout the year on an ongoing basis. The participating agencies include the American Samoa Department of Marine and Wildlife Resources, the CNMI Department of Lands and Natural Resources' Division of Fish and Wildlife, and the Guam Department of Agriculture's Division of Aquatic and Wildlife Resources. From 2009 to 2021, the economic survey collected data from the three areas, approximately 403 trips from 160 boats annually on average.

5.5.4 Earnings

Revenue data at the trip-level are not collected in the trip-level cost data collection programs in the three territories, nor by other data collection programs in the local areas. However, the total commercial revenue of fish sales of the small boat fisheries in the three areas are collected and estimated from the dealer reports by the local fisheries agencies.

5.6 Hawaii, American Samoa, and Marianas Archipelago Small Boat Fishery Cost-Earnings Surveys

5.6.1 Background

These surveys are intended to be conducted at least every 7 years to provide an update on the economic and social characteristics of the fisheries in these island economies. The first cost-earnings survey for the Hawaii small boat fishery was conducted in 1996 (Hamilton and Huffman, 1997), and the first cost-earnings survey for American Samoa, Guam, and the CNMI was conducted in 1987 (Kasaoka, 1989). The cost-earnings data collected include average fishing trip costs, annual fishing fixed costs, and annual value of fish sold in the last year. Other data collected include fishing experiences and market participation in the last year, vessel characteristics, basic demographics, and sociocultural characteristics of fishing.

The information in these surveys provide an important update on the economic and sociocultural characteristics of the fishery and will allow fishery managers to make timely and better-informed decisions by having the best scientific information available (Chan and Pan, 2017; Hospital and Beavers, 2014, 2012). Fishery management decisions are based, in part, on minimizing adverse economic and social impacts on fishing communities, so this research is vital to the assessment of future ocean management plans and actions.

5.6.2 Populations

The small boat fisheries in Hawaii, American Samoa, the Marianas Archipelago (Guam and the CNMI) use small boats (generally less than 30 ft in length) that target a variety of pelagic, bottomfish, and near-shore species. The small boat fisheries in these island areas are usually a mix of commercial and non-commercial fishing. They are important to the local communities in terms of a source of fresh local protein and have deep roots in the island's culture. Fishermen who had fished from a small boat in the past 12 months were considered as the population.

Hawaii

Fishermen who catch fish for commercial purposes are required to hold a Commercial Marine License (CML) from the State of Hawaii. The list of CML holders provides a population of commercial fishermen in the State of Hawaii. The population for the most recent iteration of this survey in 2021 included 889 fishermen who held a State of Hawaii CML and met the following criteria: fishermen with a valid mailing address who reported any landings using small vessels during 2020 excluding for-hire/charter, longline, aquarium, and precious coral fishing (Chan, 2023).

American Samoa

The potential respondent universe is defined in terms of the estimated number of active small boat fishers in American Samoa based on estimates from the territory creel survey program implemented in coordination with the PIFSC WPacFIN Program. The potential universe in the American Samoa small boat fishery was estimated to be about 60 fishermen in 2020. This is based on the average number of small boats (20 boats) from the boat-based creel survey in 2001–2018 and the average number of fishermen per boat (3 fishermen).

Marianas Archipelago

The potential respondent universe is defined in terms of the estimated number of active small fishing boats fishing in Guam and the CNMI based on estimates from territory creel survey programs implemented in coordination with the PIFSC WPacFIN Program. During the most recent survey conducted in 2018–2019, the estimated number of active small fishing boats was approximately 372 in Guam and 283 in the CNMI (WPRFMC).

5.6.3 Data Collection Methods

Hawaii

Fisher participation in cost-earnings surveys is voluntary. The survey was developed with two modes of administration options, online and mail survey. During 2021, a personalized letter with the survey website address and a unique personalized password for survey login were sent to all fishermen (n=889) in the population. A month later, a three-stage mailing strategy was implemented including (a) a first mailing of the survey booklet with personalized cover letter and pre-addressed stamped return envelope to those who hadn't responded to the online survey, (b) mailing of a reminder postcard of the mail survey a week after the first survey mailing, and (c) a second mailing of the survey booklet with cover letter to non-respondents four weeks after the reminder postcard. The survey website and unique password were also printed on the cover letter in the first and third mailings of the survey booklet to encourage survey completion online. The most recent data were collected in 2021.

American Samoa

Fisher participation in cost-earnings surveys is voluntary. In-person surveys were administered in 2021 with small boat fishermen who were considered to be a part of the active small boat fishing population in American Samoa. Participation was facilitated by knowledgeable members of the island fishing communities. Anyone who fished in the past 12 months was eligible to participate in the survey, and survey implementation relied on network sampling as there is no viable sampling frame to draw from.

Marianas Archipelago

Fisher participation in cost-earnings surveys is voluntary. In-person surveys were administered in 2018–2019 with small boat fishermen who were considered to be a part of the active small boat fishing population in Guam and Saipan. Participation was facilitated by knowledgeable members of the island fishing communities. Anyone who fished in the past 12 months was eligible to participate in the survey, and survey implementation relied on network sampling as there is no viable sampling frame to draw from.

5.6.4 Earnings

The surveys contain multiple questions to shed light on fishery earnings, including the value of fish sold (revenues) as well as the share of revenues from select species groups, commercial target species, and share of personal income derived from fishing. Supplemental fishery revenue data through commercial dealer reports are available for Hawaii, but revenue data for American Samoa and the Marianas are sparse.

5.7 Cost-Earnings Study of Pacific Islands Regional For-Hire (Charter) Fleets

5.7.1 Background

These surveys are intended to be conducted at least every 7 years to provide an update on the economic and social characteristics of the fisheries in these island economies. To date, these data collections have only been implemented in Hawaii, although future plans will apply this survey to for-hire (charter) operations in Guam, the CNMI, and American Samoa.

The first cost-earnings survey for the Hawaii charter fishing fleet was conducted in 1998 (Hamilton, 1998). The most recent update to the economic profile of the Hawaii for-hire (charter) fishing fleet was conducted in 2012 (Rollins and Lovell, 2019). These studies inform fishery managers and the charter industry of the importance of charter fishing's contributions to Hawaii's economy and provide baselines for operational characteristics and economic performance. The cost-earnings data collected include total annual costs such as annual fixed costs, annual labor costs, average trip costs, and total annual revenue and revenue by various categories. Other data collected include vessel characteristics, trip characteristics, and basic demographics.

5.7.2 Populations

State of Hawaii for-hire (charter) operations are required to hold a CML from the State of Hawaii. The list of CML holders that report charter trips provides a population of for-hire (charter) fishermen in the State of Hawaii. People who participated in charter operations in 2011 were considered as the population for the 2012 survey. Initially, 242 introduction letters were mailed to anyone believed to participate in charter operations in 2011. Eight letters came back as non-deliverable. Postcards were sent out to further filter charter operations, asking respondents if they participated in charter fishing during 2011. Additional field efforts were made to identify and include active charter operations that did not possess a valid CML. The final survey population size was 207.

5.7.3 Data Collection Methods

Fisher participation in cost-earnings surveys is voluntary. Data was collected via a mixed-methods implementation of mail surveys coupled with phone and in-person interviews. Mail surveys were administered in 2012 with charter operation owners, captains, and crew who were considered in the population (n=207). Supplemental phone calls and in-person interviews were conducted as needed.

5.7.4 Earnings

The survey collected several types of revenues from Hawaii charter operations in 2011. The survey asked for the total revenue, before taxes, in 2011, including charter and other fishing income. The vast majority of charter fishing revenue came from charter fees, although in Hawaii many for-hire (charter) operations retain the fish landed on a trip and sell it for supplemental income. This information was collected via the survey. Fishery revenue data through commercial dealer reports is available for Hawaii to complement survey responses for fish sale revenues. Additional revenue categories include tips and fish cleaning, tournament winnings, mount sales/commissions, merchandise, food and beverage, and other.

6.0 Southwest Cost Data Collection

6.1 West Coast Albacore Troll and Pole-and-Line Fishery

6.1.1 Background

These surveys provide economic data on albacore troll and pole-and-line vessels participating in the federally managed West Coast HMS fishery. These surveys provide data for regulatory analysis, bioeconomic models, economic analysis of vessel response to climate information, and economic performance measures. The survey was first fielded in 2000 by the non-profit American Fishermen’s Research Foundation (AFRF) in conjunction with Pacific States Marine Fisheries Commission and the commercial vessel Western Fish Boat Owners Association (WFOA) in collaboration with Southwest Fisheries Science Center (SWFSC) economists to support the introduction of the Highly Migratory Species Fisheries Management Plan. A new version of the survey has gone through the Paperwork Reduction Act clearance process and is ready to be fielded in 2023, conditional on funding. Participation in the survey will be voluntary, and data collection is planned to be accomplished primarily through in-person and telephone interviews.

6.1.2 Population

The albacore surface hook-and-line vessels are home-ported in Washington, Oregon, and California. These vessels fish offshore in both the North and South Pacific, inshore, within the EEZ off the three Pacific states, and—by the Canada-U.S. reciprocal albacore treaty—within the Canadian EEZ off British Columbia. The survey population was determined by vessel registration data.

6.1.3 Data Collection Methods

At the time of the first survey, almost all vessels were members of WFOA, and the WFOA had contact information. AFRF-WFOA administered the surveys through a combination of mail and in-person methods, with telephone follow-up. The survey was voluntary. Four years of panel data were collected for the 1996–1999 period, including data on landed weights by species and by catch area for albacore (North Pacific or South Pacific); vessel data including year purchased, purchase price, vessel length, beam and draft, replacement value, cost of additions, and fuel capacity and consumption; fisherman information including years of experience with different methods, insurance costs, vessel owner status, and dry dock frequency; effort in days, broken out by North and South Pacific, and fishing and non-fishing days; and variable financial costs of fuel, oil, food, and labor.

A similar approach is planned for conducting the current version of the survey, including outreach to industry at the AFRF annual meeting.

6.1.4 Earnings

Earnings data collected on the same survey instrument included vessel-level albacore revenues broken out by catch area (North Pacific or South Pacific) and other revenues broken out by species (crab, groundfish, halibut, salmon, swordfish, and other).

6.2 West Coast Commercial Swordfish Fishery Cost-and-Earnings Survey

6.2.1 Background

This voluntary survey provides economic data on vessels participating in the West Coast swordfish fishery under the Pacific Fishery Management Council's Fishery Management Plan for Highly Migratory Species, such as the California drift gillnet and harpoon fisheries. This survey provides data that can be used to construct economic performance measures such as measures of economic profitability and also provides the cost data needed to parameterize models for regional economic analysis. The survey was first fielded in 2000 and covered the seasons 1998–1999. The next version was fielded in 2004 and included the 2003 fishing season. The latest data was collected for the 2008–2009 and 2009–2010 fishing seasons.

6.2.2 Population

The survey population for the most recently completed data collection in 2008–2010 was defined as all participants who used drift gillnet or harpoon to land HMS during the 2008–2009 or 2009–2010 seasons, identified through landings records.

6.2.3 Data Collection Methods

Each member of the survey population was mailed a notice in advance of the survey instrument. Follow-up reminders were sent to increase the participation rate. Survey participation was voluntary. Because the survey required knowledge of financial and physical operating characteristics of the vessel, the vessel owner, in some cases, may have directed questions to his or her accountant or a hired captain. Fielding of the most recent survey began after the end of the 2010–2011 fishing season and was completed by March 2011. Cost items collected included information about the vessel, including captain, crew, and vessel capital, and annual operating costs; effort information in terms of numbers of days and trips fished in each year; and total catch weight by species group.

6.2.4 Earnings

Earnings collected were quantified as revenues by species group (e.g., swordfish, sharks, and other) in each season.

6.3 West Coast Commercial Coastal Pelagic Finfish and Market Squid Fishery Cost-Earnings Survey

6.3.1 Background

These surveys provide the SWFSC and West Coast Regional Office (WCRO) with economic data on vessels participating in the federally managed coastal pelagic species (CPS) fishery. These surveys provide data for regulatory analysis and economic performance measures. Recent surveys were fielded between 2007 and 2009 for data for the period between 2006 and 2008, and in 2021 for both the 2014 and 2019 calendar years. The last two iterations of the survey were administered by Hanan & Associates, Inc. in coordination with the California Wetfish Association and in collaboration with SWFSC economists.

Throughout 2021 and 2022, the survey instrument was revised to be more compatible with a series of surveys covering limited entry and OA groundfish fisheries. This undertaking should reduce future obstacles to conducting cross-FMP analyses. The updated survey was approved on April 27, 2022 and will be valid through April 2025.

Participation in the CPS survey is voluntary, and data collection is accomplished primarily through in-person and telephone interviews.

6.3.2 Population

A vital fish complex of West Coast commercial fisheries is CPS, including Pacific sardine, northern anchovy, Pacific mackerel, jack mackerel, and market squid. The CPS vessels are home-ported in California, Oregon, and Washington. For the 2021 survey effort, eligibility criteria were defined by the following metrics for each fishing vessel:

- (i) operated with a federal West Coast Coastal Pelagic Species limited entry permit,
- (ii) participated in a West Coast live-bait fishery, or
- (iii) both,
- (iii. a) landed at least \$1,000 of Coastal Pelagic Species fish on the West Coast (California, Oregon, and Washington), and
- (iii. b) did not operate with a limited entry permit for the West Coast groundfish or HMS fisheries.

On the basis of the above criteria, as of June 2022, the survey population was determined to be 190 vessels.

6.3.3 Data Collection Methods

Prospective participants were initially contacted via an advance letter, which was sent via postal mail on June 5, 2021. The letter informed fishing vessel owners and operators of the approaching study and its purpose, and requested information. The letter informed the vessel owner that they would be receiving a survey in the mail and that they would be contacted by phone. Potential participants were invited to contact the survey team by phone or email. Following the advance letter, potential participants were contacted by phone, and survey packets were mailed. Up to 2 additional survey packets were sent, and multiple phone attempts were made to reach non-respondents. The survey period closed September 30, 2021. Respondents returned 31 survey instruments, with 29 being filled out in varying degrees of completion. They answered questions and, in general, filled them out in great detail. This return rate (15 percent) was much less than expected. Major data categories included vessel characteristics; vessel use and annual days at sea; expenses; earnings (apart from earnings on commercial landings of CPS); labor compensation; and COVID-19 impacts.

6.3.4 Costs

The survey elicited responses on average costs by survey year for several cost categories. These categories included captain (pay, bonuses, benefits, payroll taxes, and insurances); crew (pay, bonuses, benefits, payroll taxes, and insurances); crew or captain travel; light boat (providing auxiliary support during market squid fishing operations); fishing association and commission costs; state and federal permit fees; fuel and lubrication; food; ice; bait; offloading (dock, port, hoist, etc.); supplies freight; communications; trucking; on-board equipment purchases, repair, or maintenance not to harvest fish (electronics, safety, not fishing or processing gear); fishing gear, upgrades, repair, maintenance (nets, doors, traps, cables, and fishing machinery); processing equipment, upgrades, repair, and maintenance; insurance premiums (hull and machinery, protection and indemnity, and pollution); moorage; lease or bare boat charter; purchase of permits; leasing of permits and vessel quota; other supplies (cleaning, clothing, safety); and total depreciation taken (vessel, on-board equipment).

6.3.4 Earnings

West Coast shore side landings and revenue data for finfish and market squid were not solicited as these data are collected through the state Fish Ticket Programs, maintained at the Pacific States Marine Fisheries Commission, and available to NMFS economists as well as staff and affiliated researchers from NMFS and its partner state and tribal agencies. This section elicited information on revenues that were additional to finfish and market squid revenues. Revenue categories included sale of permits; leasing of permits and quota; leasing of fishing vessel; West Coast chartering, research, or tendering including direct reimbursements; Alaska shore-side landings and at-sea deliveries of fish harvested; and Alaska chartering, research, or tendering including direct reimbursements.

6.4 California Recreational Sector’s Commercial Passenger Fishing Vessel Cost-Earnings Survey

6.4.1 Background

These surveys provide the SWFSC and WCRO with economic data on the California recreational sector’s Commercial Passenger Fishing Vessel (CPFV) fishery. The CPFV fleet operates primarily in the U.S. EEZ, Mexican waters off Baja California. These vessels carry anglers to provide recreational access to fishing grounds that are primarily near and offshore within the U.S. EEZ or Mexican waters. The surveys provide data for regulatory analysis, bioeconomic models, economic analysis of vessel response to climate information, and economic performance measures.

The survey and pilot survey were administered in 2013 and 2012, respectively, by Hanan & Associates, Inc. in collaboration with the Sportfishing Association of California and SWFSC. Participation in the survey is voluntary, and data collection is accomplished primarily through in-person and telephone interviews. A revised survey updated throughout 2021–2022 has been submitted to the PRA process.

6.4.2 Population

The California CPFV fleet operates throughout California. These vessels carry anglers to provide recreational access to fishing grounds that are primarily near and offshore within the U.S. EEZ or Mexican waters. The 2012–2013 survey population was determined by vessel registration and logbook records. A list of 324 vessels was generated; 303 vessels from this list had contact information available. Of these, 200 vessels were reached, resulting in 97 completed surveys.

6.4.3 Data Collection Methods

At the time of the 2012 and 2013 surveys, almost all vessels were members of regional sport fishing associations. The potential respondent universe consisted of owners of the approximately 300 CPFV vessels registered in the State of California.

The survey was distributed in two phases to all owners of the approximate 300 CPFV registered in California to ensure the highest response rate. Phase 1 will select 150 vessels from the 2012 vessel census universe following a stratified random sampling framework. In order to improve the quality of information collected, in-person survey administration will be the primary mode for the study and the only mode offered to Phase 1 respondents.

Phase 2 sampled the approximately 150 remaining vessels. Respondents in Phase 2 were offered in-person, telephone, or mail-in mode interviews.

Prior to data collection, field staff undertook outreach by contacting CPFV professional associations and other angling groups. This included formal written requests for cooperation,

personal visits to association meetings, and publication of information materials, such as factsheets, about the data collection and expected use of the collected information.

A total of 150 vessels agreed to participate during the initial contact phone calls; however, only 123 of those actually participated, and 103 completed the survey.

On the basis of the pilot study, the 2012 survey questionnaire was organized into sections on industry participation, annual business-based expenditures, vessel characteristics, annual vessel-based expenditures, annual vessel-based fishing operations revenue, annual vessel-based non-fishing operations revenue, individual trip type expenses and revenues, owner opinion, and business structure and outlook.

6.4.4 Costs

As individual businesses may operate multiple vessels, costs were split into two groupings: vessel expenditures and business expenditures. Vessel cost estimates were primarily collected at the vessel level, while business expenditures could be split between multiple vessels. In cases where business expenses were split between multiple vessels, an even share of the expenses was attributed to each vessel. Vessel cost categories include payroll for skipper and crew; vessel fuel costs, bait costs, booking fees, equipment purchases, repair and maintenance, food and drink costs, mortgage, foreign taxes, government fees, and fishing licenses; annual principal payment on vessels; U.S. taxes, government fees, vessel permits, haul out costs, annual interest payment on vessels, and industry association fees/memberships; and ice costs (purchased dockside). Business cost categories include payroll of non-vessel personnel; insurance; rent paid on office space used for the business; advertising services or charges; professional services (legal, accounting, etc.); telephone and other communications; and lease or loan payments for business motor vehicles.

6.4.5 Earnings

The survey elicited information on revenue streams for both recreational fishing-based revenues and nonrecreational fishing-based revenues. Recreational fishing-based revenue categories include ticket sales and related fees; food and beverage sales; filet charges to vessel; souvenirs; and California Division of Fish and Wildlife angler license commissions. Nonrecreational fishing-based revenue categories include nonfishing recreation (e.g., wildlife viewing); commercial fishing; nonrecreational charter; lodging; and equipment rental.

7.0 Southeast Cost Data Collection

7.1 Trip-Level and Annual Economic Surveys of Federally Permitted Vessels in Southeast Coastal Fisheries

7.1.1 Background

These surveys collect data about the operating expenses of owning and maintaining vessels fishing under a variety of federal permits in the southeastern United States. This information is used to assess trends in the financial and economic state of the fisheries, and to determine the economic and social effects of regulations and other factors affecting commercial southeast fisheries. A collection of economic information from fishermen affected by the management of federal commercial fisheries is needed to ensure that national goals, objectives, and requirements of the MSA and other laws are met. This economic survey is part of the Southeast logbook program, as the collection of trip costs is integrated into the existing logbook data collection program.⁸ The fisheries in the South Atlantic have been surveyed since 2002, whereas surveying of permitted vessels participating in Gulf of Mexico fisheries commenced in 2005. In 2021, wreckfish was added to this data collection. The wreckfish fishery has always been part of the U.S. South Atlantic Snapper-Grouper fishery but has been treated separately as it has been an individual transferable quota (ITQ) fishery since 1992.

7.1.2 Population

The population consists of all vessels with federal permits that commercially harvest U.S. South Atlantic snapper and grouper (including wreckfish), Gulf of Mexico reef fish, or Atlantic dolphin/wahoo, king mackerel, Spanish mackerel, or sharks in either region. Each December, a stratified random sample of about 20 percent of the population is selected for the coming year. In recent years, the stratification has been by vessel activity over the previous 2 years (proxied by days at sea). Data collection is a mandatory requirement for permit renewal. In 2021, all 10 wreckfish-permitted vessels were sampled (“census-ed”), and the plan is to repeat this wreckfish-strata data collection every 5 years.

7.1.3 Data Collection Methods

Selected vessels are required to report economic information for all trips during the calendar year. The trip-level survey is included as a section on each coastal logbook trip report form, focusing on variable costs (e.g., for fuel, ice, bait, and crew). The trip-level survey is designed to calculate net cash flow per trip (i.e., short-run profitability). Each February/March, a one-page annual, vessel-level economic survey is sent to vessels that were selected to report

⁸ Completing effort and catch logbooks is required of all individuals in the population (i.e., a census).

trip costs the previous year. The annual, vessel-level economic survey is designed to calculate net revenues at the vessel level by collecting information on relevant fixed costs, consolidated variable costs at the annual, vessel-level, and other activities and revenue of the vessel (e.g., other fisheries and for-hire activity), as well as vessel value. The annual, vessel-level surveys are sent to the permit holders for each sampled vessel. Since Southeast permits are vessel permits, the permit holder is usually, but not always, the vessel owner.

Data collected by the trip-level and annual, vessel-level surveys are validated using standardized protocols to ensure high quality. Trip-level data is scanned by a contractor as part of the logbook program. The validation tool identifies outliers and internal and external inconsistencies by comparing them to the logbook trip reports and other databases. Follow-up phone calls are used to resolve any discrepancies. Annual data are entered into the Oracle database manually. Questionable responses are identified, and respondents are called to verify the accuracy of the reported data.

7.1.4 Earnings

The trip-level and annual, vessel-level surveys are effectively two independent data streams (that, in theory and with many known discrepancies, should measure the same economics). At the trip-level, reported variable costs are combined with either the reported revenue (if reported, not a mandatory field) or an estimate of the trip's revenue. Trip revenue is estimated by multiplying the logbook reported pounds landed by species with the best available price at the dealer and month level (from the Accumulated Landings System database).

The annual, vessel-level survey elicits revenue from seafood sales and for-hire fishing. The annual revenue often exceeds the sum of the trip logbook reported revenue for a vessel, as the vessel harvests seafood beyond those reported on the federal coastal logbook, e.g., lobster, crab, inshore/State-level fin fish, or HMS-species (tuna, swordfish, etc.).

7.2 Annual Economic Survey of Federal Gulf and Atlantic Shrimp Permit Holders

7.2.1 Background

The Annual Economic Survey of Federal Gulf of Mexico and U.S. South Atlantic Shrimp Permit Holders collects data on the operating expenses of owning and maintaining shrimp vessels. This information is used to assess trends in the financial and economic state of the fisheries, and to determine the economic and social effects of regulations and other factors affecting the Southeast shrimp fisheries. A collection of economic information from fishermen affected by the management of federal commercial fisheries is needed to ensure that national goals, objectives, and requirements of the MSA and other laws are met. The Gulf of Mexico shrimp fishery has been surveyed since 2006, which coincided with the introduction of a permit moratorium; the U.S. South Atlantic shrimp fishery has been surveyed since 2009.

7.2.2 Population

The population consists of all vessels with federal permits for the harvest of Gulf of Mexico penaeid shrimp or South Atlantic penaeid or rock shrimp.

7.2.3 Data Collection Methods and Survey Forms

Each February/March, a two-page survey is sent by mail to a stratified random sample of about a third of the population. The stratification is by state, and the sampling is done without replacement (such that all permit holders are surveyed once every 3 years). The data collection is a requirement for permit renewal. Since Southeast permits are vessel permits, the permit holder is usually, but not always, the vessel owner. Questions on the survey pertain to financial flows for the previous calendar year. The survey asks for broad categories of costs including labor, other variable costs (fuel and supplies), and fixed costs (e.g., vessel repair and overhead), as well as insurance status, vessel value and loans, and other activities.

7.2.4 Earnings

A different form, required of all federal Gulf of Mexico shrimp permit holders—the Landings Form collected in Galveston, TX—provides annual landings and revenue by shrimp species. To assess holistic vessel-level income, the economic survey further collects revenue for non-shrimp seafood harvest, non-fishing activities, and government payments. As part of the validation and data cleaning, all self-reported seafood revenue is cross-referenced at the vessel level with dealer reported landings.

7.3 Economic Survey of Federal South Atlantic Golden Crab Permit Holders

7.3.1 Background

The U.S. South Atlantic Fishery Management Council considered (but ultimately rejected) instituting a golden crab ITQ program in 2013. In preparation for that proposal, 2010 cost data were collected in fiscal year 2011. Always being a very small fishery, in more recent years, it has contracted to just one or two boats. As a result, no economic data has been collected, as such data would be confidential (and hence not useful to the management process).

7.3.2 Population

The population includes all holders of a limited access golden crab permit. The last survey involved seven individuals owning 11 permits.

7.3.3 Data Collection Methods and Survey Forms

Participation in data collection is voluntary. Because the population is so small, a census is necessary. Survey forms were mailed with return postage paid. Questions to elicit per-trip and fixed cost estimates were included. Since the survey is conducted infrequently, other socio-economic questions are asked as well including those about gear, attitudes, and attitudes toward management.

7.3.4 Earnings

The golden crab survey does not collect revenue. Vessel revenue is retrieved from dealer reports and trip tickets.

7.4. U.S. Caribbean Small-Scale Fisheries

7.4.1 Background

To assist the Caribbean Fishery Management Council in managing living marine resources in the Commonwealth of Puerto Rico and the U.S. Virgin Islands (USVI), the Southeast Fisheries Science Center has implemented four economic data collections since 2003. The first data collection focused on the fish trap fishery that took place in 2002. The second data collection focused on a variety of fishing gear, including hook-and-line, nets, traps, and scuba. The Puerto Rico data collection occurred during 2009, and the St. Croix data collection took place in 2008 and 2009. St. Thomas was not surveyed on this occasion. The third data collection

of multiple fishing gear, including hook-and-line, nets, traps, and scuba, started during 2014 in both Puerto Rico and USVI. The USVI fishermen were again surveyed in 2022.

7.4.2 Population

The population includes fishermen who report landings statistics and/or are licensed by local governments. Presently, there are no federal licenses.

7.4.3 Data Collection Methods

Participation in the data collection is voluntary. The majority of the surveys are conducted in-person, the remaining are conducted over the telephone. The surveys collect data on the costs related to a typical trip and some annual expenditures. Since the surveys are conducted infrequently, other socio-economic questions are asked as well, including those regarding demographics, vessels and gear, attitudes toward management and fisheries in general, etc.

7.4.4 Earnings

Both USVI and Puerto Rico require logbooks for their fisheries, though these do not collect prices/revenue. Systematic price surveys have been hampered by the small (volume) markets on these islands (especially at the species level). Instead, “current” prices are usually acquired through ad hoc surveys or more informal market canvasses or phone inquiries. The economic surveys have sometimes collected revenue (at either trip- or annual level) and at other times relied on the estimated revenue from logbooks combined with ad hoc prices.

8.0 Northeast Cost Data Collection

8.1 Northeast Trip Costs Survey

8.1.1 Background

Trip cost data have been collected by on-board observers while at sea since 1995. Observer deployment is primarily stratified according to biological and monitoring data needs, rather than economic. Cost data are collected by observers from the At-Sea Monitoring program (ASM) initiated with Amendment 16 to the Groundfish Fishery Management Plan; the Northeast Observer Program (NEFOP), in accordance with Standardized Bycatch and Reporting Methodology; and the Industry Funded Scallop (IFS) program. Only costs associated with the trip including fuel, oil, ice, food, supplies, water, bait, and damages are collected.⁹ In the early 2000s, annual fixed/quasi-fixed cost information regarding insurance, repairs, and maintenance was collected. This effort was discontinued because the captain was often not the owner and did not have access to the information or, in cases where the captain was the owner, the records were not kept on the vessel.

8.1.2 Population

The population is all vessels in the Northeast Region that take trips that fit the criteria for carrying observers. Because of the collection methods used (see below), some federally managed fisheries have little observer coverage and therefore sparse trip cost data.

8.1.3 Data Collection Methods

It is mandatory to carry an observer on board when a vessel is selected for observation and fishing crew are required to cooperate with observers. Answering the trip cost questions (personal interviews between the observer and the captain) requires action by the captain and assumes the captain can answer cost-related questions. Sometimes, the captain does not know the answer to trip cost questions, particularly if the captain is not the vessel owner. At other times, the captain refuses to answer. The current protocol for observers is to not force the issue on refusals unless it is part of a systemic obstruction issue. Given that the primary goal of the data collection effort is focused on biological data rather than economic, the collection of trip cost information does not specifically qualify as mandatory or voluntary. Overall, refusals are not problematic given the familiarity of captains with the observer protocols and because observers are well trained on how to ask cost-related questions.

⁹ The total cost of fuel and ice is not asked directly. Rather, the quantity used and price are recorded for both commodities.

Data collection is an ongoing sample that is dependent on other data collection needs such as fish, turtle, and marine mammal bycatch and quota monitoring. A stratified random sample is selected, which, for the most part, is based on obtaining a 30 percent coefficient of variation (CV30) or less on bycatch species. The strata are defined by gear, region, and, where appropriate, mesh size and permit type. The time unit of observation is the trip. For a more detailed treatment of data collection methods and survey results, see Das (2013). Initially, the ASM program supplemented the NEFOP program to achieve the CV30 threshold. Since 2021, ASM observer coverage has greatly increased in response to analysis, showing that fishing behavior on observed groundfish trips is not representative (NEFMC, 2019).¹⁰

8.1.4 Earnings

Ex-vessel revenue data in the Northeast region is obtained from the Northeast seafood dealer reporting system. To minimize the burden to vessel owners, as well as to avoid duplication of information collected, revenue is not collected by at-sea observers.

8.2 Northeast Commercial Fishing Business Cost Survey

8.2.1 Background

The Social Sciences Branch of the Northeast Fisheries Science Center has collected cost data intermittently since the early 2000s through a commercial fishing business cost survey. The survey is the sole source of NOAA-collected fixed and quasi-fixed commercial fishing cost information in the Greater Atlantic region. Specifically, the survey collects from commercial fishing business owners cost information related to vessel repair and maintenance, upgrades and improvements, mooring and permit fees, insurance costs, quota/Days at Sea leasing costs as well as overhead costs, and crew and hired captain payments. Business cost surveys were initially implemented in 2006, 2007, and 2008. However, declines in response rates over those years led to changes in sampling strategies that were implemented in 2011, 2012, and 2015. Declining response rates were observed once again over the course of these three efforts, which led to a redesign of the survey instrument. The focus was on a more tailored approach based on primary gear type time with the goal of improving data quality and decreasing survey burden. The next survey implementation is planned for Spring of 2023, collecting costs incurred by vessel owners in calendar year 2022.

¹⁰ For example, the target ASM coverage rate for groundfish sectors in 2022 is 99 percent (<https://www.fisheries.noaa.gov/bulletin/noaa-fisheries-announces-2022-sea-monitoring-coverage-levels-groundfish-sector-fishery>).

8.2.2 Population

The population of the survey has changed slightly over implementation periods. For the 2011 and 2012 surveys, the population consisted of all active federally permitted commercial fishing vessels for the year in which cost data were being collected (e.g., a vessel had to be active in 2011 to be eligible to receive a 2011 cost survey). An active vessel in these survey years was defined as landing at least 1 pound of finfish or shellfish through either the Northeast seafood dealer reporting system or through Vessel Trip Reports. For the 2015 survey, the definition of active was modified to only include vessels that had dealer-reported landings, to exclude Vessel Trip Reports from federally permitted party/charter vessels. In 2023, the population consists of all vessel owners with a federally permitted commercial vessel that was active in at least one of the previous 2 years in the Northeast or Mid-Atlantic region. Though the population is large, response rates have been declining, with a 6 percent response rate in 2016.

8.2.3 Data Collection Methods

Participation in the cost survey is voluntary. The sampling design for the 2023 survey implementation (costs incurred in 2022) will be a census of all owners of a federally permitted commercial fishing vessel that was active in either 2021 or 2022 in at least one of the previous 2 years in the Northeast and Mid-Atlantic. The sampling design is such that a vessel owner will only receive one survey even in cases where multiple commercial vessels are owned. If a vessel owner owns more than one commercial vessel, the vessel which uses the least common gear type (mid-water trawl, seine, or hydraulic dredge) will be selected for sampling. If the owner's vessels all use common gear types other than those listed, then a single vessel is selected at random for sampling. The cost survey primarily focuses on collecting vessel-level cost information from the vessel owner. The survey will be sent to vessel owners for their response about the costs associated with the selected vessel. However, the 2023 instruction sheet asks the owner to pass the survey along to the person best equipped to answer the cost-related questions for the vessel, which can sometimes be an accountant, bookkeeper, or captain, depending on the business. The unit of observation depends on the cost question being asked and on how vessel owners most commonly think about these costs. In some cases, such as trip-related costs, average costs per trip or the total annual amount for the selected vessels is requested. Logbook information can be used to calculate the annual cost for questions asked at the trip level. For other costs, such as insurance or repairs, costs for the year are requested. All questions, whether asked at the trip- or annual-level, pertain to a specific calendar year. For example, the 2023 survey will be asking about costs incurred during calendar year 2022. The survey for 2023 will have three modes or vehicles: an online web survey, a hard-copy mail survey, and/or a personal interview conducted via telephone or video conference. The success of each mode may influence the use of each method in future survey implementations. The data collection effort survey is expected to be implemented around every 3 years after 2023 to minimize survey fatigue and to allow for data analysis and summary.

8.2.4 Earnings

Revenues from the federal commercial dealer database can be used to estimate profits at the vessel-level; however, owner earnings are not queried in the cost survey. The costs and revenues from leasing days-at-sea and quota associated with the specified calendar year are also collected in this survey.

8.3 Northeast For-Hire Cost and Earnings Survey

8.3.1 Background

A voluntary in-person survey (see Steinback and Brinson, 2013 for more details) was designed to collect information on annual costs, returns, business structure, effort, demographics, and attitudinal data from for-hire vessel owners. This survey was conceived and implemented in 2011 to obtain more comprehensive economic data on the Northeast's for-hire industry. The lack of data concerning for-hire operations in the Northeast makes it difficult to determine the importance of the for-hire industry to the Northeast's economy and to adequately address how proposed management actions might affect business operations. Typically, the focus of such assessments is on likely changes in angler behavior, not on how proposed policies will impact for-hire business operations. Although these assessments may contain estimates of how overall gross revenues for the for-hire fleet may be affected, simplifying assumptions are generally required to derive these estimates, including the notion that operating costs remain constant. The data collected in this study were designed to alleviate these problems. The primary goals of the study were to

1. Provide a comprehensive overview of the economic condition of the for-hire industry in the Northeast;
2. Estimate the contribution of the for-hire industry to the overall economy in the Northeast; and
3. Collect the data necessary for the development of economic models used to assess how for-hire business operations are affected by proposed management policies.

8.3.2 Population

The survey population included all for-hire vessels in the For-Hire Telephone Survey (FHTS) vessel directory maintained by NMFS for the Marine Recreational Information Program

during Wave 1 of 2011. The FHTS vessel directory is a comprehensive list of for-hire vessels on the U.S. Atlantic coast from Georgia through Maine. For this survey, the population was restricted to for-hire vessels with a Northeast region primary port (ME to NC). The FHTS is updated on a regular basis and distinguishes vessels by vessel type (charter boat/head boat) and geographic area. The FHTS distinguishes charter boats from headboats by the carrying capacity of passengers. Charter boats are defined as boats that are licensed by the Coast Guard to carry up to six passengers, and headboats are licensed by the U.S. Coast Guard to carry more than six passengers. From this population, the sample frame was further restricted to remove vessels without a valid mailing address, vessels that held an HMS charter or head boat permit but did not engage in taking for-hire passengers, and any vessel that had been previously contacted for a North Carolina economic survey during 2010. From this amended sample frame, a census of all headboats was selected, and a simple random sample of for-hire charter boats was drawn.

8.3.3 Data Collection Methods

The survey was implemented following the Dillman Method under a contract with QuanTech. Notification packages were mailed to owners/representatives of the vessels from the sampling frame. The notification package included a cover letter describing the survey, a list of frequently asked questions with answers about the survey, a copy of the survey questionnaire, and a small token of appreciation (a new \$5 bill) to encourage participation. The packages were mailed in six stages to states from NC to ME beginning on January 12, 2011 and ending on March 23, 2011.

Approximately 7–10 days after the packages were mailed, telephone interviewers called each vessel owner/representative to follow up on the package and to screen for whether they had taken passengers fishing for a fee during 2010 and whether no more than 50 percent of their trips targeted HMS species. Vessel owners that did not meet these criteria were eliminated from the cost and earnings survey. The screening calls were also used to encourage survey participation by the owners and to answer any questions they might have prior to scheduling an in-person interview. When an eligible owner agreed to participate, the screening interviewer provided the vessel owner with the name of the person who would be contacting them to schedule a personal interview. During the screening interview, some respondents expressed a preference to participate via mail, email, or telephone. To maximize the potential pool of respondents, the data collection procedure was modified to accommodate a respondent's preferred method for participating in the survey.

The cost and earnings survey was fielded from January through July, 2011. Data collected on the survey included vessel characteristics (e.g., length, horsepower, and hull construction) owner characteristics (e.g., age, years of experience, and business structure), operating costs, fixed costs, and gross income (see Section 8.3.4). Annual operating costs included costs incurred during a fishing trip (e.g., bait, fuel, ice, and food) as well as costs such as fishing tackle and gear that may be incurred over multiple trips. Annual fixed costs included recurring expenses such as permits, association fees, dock/marina fees, and utilities as well as engine and boat repairs or upgrades including investments in electronics.

8.3.4 Earnings

Data on annual earnings were collected as part of the for-hire survey. Gross income from for-hire fishing activities included passenger fees as well as tips/fish cleaning and sales from food, beverages, and souvenirs. Income from commercial fishing as well as any other non-fishing passenger services such as whale watching, bird watching, sunset cruises, burials at sea, etc. were also included in the survey.

9.0 Atlantic Highly Migratory Species Cost Data Collection

9.1 Commercial Highly Migratory Species Coast Data Collection

9.1.1 Background

A comprehensive logbook program was implemented for the HMS pelagic longline fisheries in the Atlantic, Gulf of Mexico, and Caribbean beginning in 1986. The HMS logbook program collects information on the kept and retained catch of each species caught on each set or during each 24-hour period of fishing for non-longline gear. Collection of cost data was implemented in 1996 in the pelagic longline fishery on a voluntary basis. Provision of trip costs and annual costs became mandatory in the pelagic longline fishery in 2003 if requested to do so. Since then, the logbook program has been broadened such that all commercial permit holders may be subject to logbook reporting. Each year, 20 percent of active Atlantic HMS commercial permit holders are selected to report economic information along with their Atlantic HMS logbook or Coastal Fisheries logbook submissions. Selected permit holders provide trip costs for all HMS trips taken during the selected year as well as annual costs for the year.

9.1.2 Population

Although any vessel owner of an HMS charter/headboat vessel, Atlantic tunas vessel, shark vessel, swordfish vessel, or vessel in the squid trawl fishery must maintain an HMS logbook if notified in writing by NOAA Fisheries, currently the commercial harvesting permit categories that are subject to the logbook requirement include limited access Atlantic tunas (longline and non-longline), limited access shark (directed and incidental), and limited access swordfish (directed and incidental). The sample frame for this population is limited to active vessels, which are defined as vessels that had taken at least one trip in the year prior to the selection year.

9.1.3 Data Collection Methods

A random sample of approximately 20 percent of the active shark and swordfish fleet is drawn prior to the beginning of the selection fishing year. Selection is based on information provided with the permit renewal and reported activity in the previous year's logbooks. Selection is stratified by fishing gear type also using information from the previous year's logbooks. Once selected, reporting of cost and earnings for each trip and providing annual cost data are mandatory.

Selected vessels must report trip costs on either the Atlantic HMS logbook or Coastal Fisheries logbook. Data reports are provided in paper form. The cost-earnings portion of the

logbook form must be postmarked no later than 30 days after completing the offloading for each HMS fishing trip. All trips taken during the calendar year are subject to reporting.

Annual costs are reported for the selection year but are submitted by April 15 of the following calendar year to correspond to the information that would be needed for purposes of end-of-year taxes. The annual cost form is mailed to each selected permit holder, and completed forms are mailed back to NOAA Fisheries.

The cost data elements included in the Atlantic HMS logbook summary trip form cover most major categories of trip-related expenses. The form specifically asks for fuel price per gallon and gallons used, bait price per pound and pounds of bait used, unit price of light sticks and quantity used, ice price per unit and quantity used, presence of an ice maker, grocery expenses, and other trip costs. The form also gathers information on labor expenses. It asks for a breakdown on crew shares and asks for the percent going to owner, captain, and crew. The form also asks whether crew share compensation was used and whether the owner was on board the vessel. Similar expenses are also gathered on the Coastal Fisheries logbook and detailed further in the section of this report corresponding to that logbook program.

9.1.4 Earnings

The Atlantic HMS logbook summary trip form also directly asks for total trip sales. This field does sometimes get omitted if consignment sales take longer than 30 days to complete. The responses from this total trip sales field are also used to validate estimates of trip sales based on landings reported in the Atlantic HMS logbook set form that is then converted to landings weight using average weights by species calculated from weigh out slips (tally records) that are provided with each logbook submission. The estimated landings weights by species are then matched to eDealer records for landings from that trip to provide ex-vessel price per pound for each HMS species, except bluefin tuna, which is obtained from SAFIS federal dealer landings data. Average ex-vessel prices for non-HMS species are obtained from the Southeast Fisheries Science Center Accumulative Landings System. The total dressed weight for each species is then multiplied by the ex-vessel prices for that species to determine earnings by species. The sum of all the species earnings on each trip is used to determine total earnings.

9.2 Atlantic HMS General Category Cost-Earnings Logbook

9.2.1 Background

A one-year snapshot, cost-earnings logbook was implemented for the Atlantic Tunas General category fishery in 2018. The Atlantic Tunas General fishery is primarily a commercial rod-and-reel fishery for bluefin tuna, although the permit authorizes the retention and

commercial sale of all Atlantic tunas. The logbook collected information on the kept and retained catch of each species caught and the costs per trip. An additional annual expenditure form was collected at the end of the year. Selected permit holders provided trip costs for all HMS trips taken during the selected year as well as annual costs for the year. Future cost-earnings data collections are likely, but reporting requirements for this sector are likely to be modified by rulemaking that will be conducted in the near future, which among other things may consider the establishment of regular logbook reporting. As such, additional cost-earnings data collections are being paused until the new reporting structure is established.

9.2.2 Population

The sample frame for this study consisted of Atlantic Tunas General and HMS Charter/Headboat permit holders, as both permits authorize the commercial sale of Atlantic tunas under the General category quota. The sample frame for this population was limited to active vessels, which were defined as vessels that had landed and sold at least one bluefin tuna in each of the previous 2 years.

9.2.3 Data Collection Methods

A census was conducted of all active Atlantic Tunas General commercial vessels, which were defined as those that had landed and sold at least one bluefin tuna in each of the previous 2 years (2016–2017). In any given year, the majority of vessels possessing the two qualifying permits will usually never sell a bluefin tuna, and in some cases, a vessel may sell a bluefin tuna one year and then not sell another for several years if ever. To restrict the study to vessels that were regular participants in the commercial fishery, we chose to sample those vessels that had a history of selling bluefin tuna in consecutive years. Once selected, reporting of cost and earnings for each trip and providing annual cost data were mandatory.

Selected vessels reported trip costs on the Atlantic HMS General Cost-Earnings logbook. Data reports were provided in paper and electronic form, with participants encouraged to use the electronic form. The cost-earnings logbook form was to be completed no later than 30 days after completing the offloading for each HMS fishing trip. All trips taken during the calendar year targeting HMS were subject to reporting.

Annual costs were reported for the year but were submitted by April 15 of the following calendar year to correspond to the information that would be needed for purposes of end-of-year taxes. The annual cost form was mailed to each selected permit holder, but an electronic form was also available.

The cost data elements included in the General Category Logbook Trip Summary Form cover most major categories of trip related expenses. The form specifically asks for fuel price per gallon and gallons used, bait price per pound and pounds of bait used, ice expenses, grocery expenses, and other trip costs. The form also gathers information on labor expenses. It asks for a breakdown of payments to the captain and crew.

9.2.4 Earnings

The Atlantic HMS logbook summary trip form also directly asks for total trip sales. This field does sometimes get omitted if auction sales took longer than 30 days to complete. The estimated landings weights of bluefin tuna were compared to SAFIS federal dealer landings data, while other HMS landings were compared to reports in the HMS eDealer system. The total dressed weight for each species was then multiplied by the ex-vessel prices for that species to determine earnings by species. The sum of all the species earnings on each trip was used to determine total earnings.

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