STATE OF ALASKA
GROUNDFISH FISHERIES

ASSOCIATED INVESTIGATIONS IN 2014

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A. Agency Overview

1. Description of the State of Alaska commercial groundfish fishery program

The Alaska Department of Fish and Game (ADF&G) has jurisdiction over all commercial groundfish fisheries within the internal waters of the state and to three nautical miles offshore along the outer coast. A provision in the federal Gulf of Alaska (GOA) Groundfish Fishery Management Plan (FMP) gives the State of Alaska limited management authority for demersal shelf rockfish (DSR) in federal waters east of 140^{o} W. longitude. The North Pacific Fisheries Management Council (Council) took action in 1997 to remove black and blue rockfish from the GOA FMP. In 2007 the dark rockfish was removed from both the GOA and the Bering Sea and Aleutian Islands (BSAI) FMP. Thus in these areas the state manages these species in both state and federal waters. The state also manages the lingcod resource in both state and federal waters of Alaska. The state manages some groundfish fisheries occurring in Alaska waters in parallel with NOAA Fisheries, adopting federal seasons and, in some cases, allowable gear types as specified by NOAA Fisheries. The information related in this report is from the state-managed groundfish fisheries only.

The State of Alaska is divided into three maritime regions for marine commercial fisheries management. The Southeast Region extends from the Exclusive Economic Zone (EEZ) equidistant line boundary in Dixon Entrance north and westward to 144^{o} W. longitude and includes all of Yakutat Bay (Appendix II). The Central Region includes the Inside and Outside Districts of Prince William Sound (PWS) and Cook Inlet including the North Gulf District off Kenai Peninsula. The Westward Region includes all territorial waters of the Gulf of Alaska south and west of Cape Douglas and includes North Pacific Ocean waters adjacent to Kodiak, and the Aleutian Islands as well as all U.S. territorial waters of the Bering, Beaufort, and Chukchi Seas.

a. Southeast Region

The **Southeast Region** Commercial Fisheries Groundfish Project is based in Sitka where the groundfish project leader, a fisheries biologist, and one full-time fisheries technician are located. Two full-time biologists are based in Douglas. Seasonal technicians and port samplers are employed in Petersburg, Ketchikan and Sitka. In addition, one seasonal biologist will be hired in Petersburg in the spring of 2015. The project also receives biometric assistance from the regional office in Douglas and from headquarters in Juneau.

The **Southeast Region's** groundfish project has responsibility for research and management of all commercial groundfish resources in the territorial waters of the Eastern Gulf of Alaska as well as in federal waters for demersal shelf rockfish (DSR), black, blue, and dark rockfishes, and lingcod. The project cooperates with the federal government for management of the waters of the adjacent EEZ. The project leader participates as a member of the Council Gulf of Alaska Groundfish Plan Team and produces the annual stock assessment for DSR for consideration by the Council.

Project activities center around fisheries monitoring, resource assessment, and in-season management of the groundfish resources. In-season management decisions are based on data collected from the fisheries and resource assessment surveys. Primary tasks include fish ticket collection, editing, and data entry for both state and federally-managed fisheries; dockside sampling of sablefish, lingcod, Pacific cod, and rockfish landings; and logbook collection and data entry. Two resource assessment surveys were conducted during 2014. An additional assessment survey was planned aboard the ADF&G vessel the R/V *Solstice*; however, was cancelled due to weather. The ADF&G vessel the R/V *Medeia* is home ported in Juneau and is used to conduct a biennial sablefish marking survey that was last conducted in 2013.

b. Central Region

The **Central Region** groundfish staff is headquartered in Homer and consists of a regional groundfish/shellfish management biologist, a regional groundfish/shellfish research project leader, a groundfish port sampling and age reading coordinator, who also serves as an assistant area management biologist, a groundfish fish ticket processing and data analysis position, two groundfish/shellfish research biologists, one GIS analyst, three to four seasonal technicians, and one seasonal commercial groundfish sampler, who also serves as the primary groundfish age reader. An assistant area management biologist and a seasonal commercial groundfish sampler are also located in Cordova and a seasonal groundfish sampler in Seward. Regional support is located in Anchorage. The regional groundfish management biologist serves as a member of the Council's Gulf of Alaska Groundfish Plan Team, and the research project leader serves on the Council Non-Target Species Committee and as a member of the Kasitsna Bay Lab Science Board. The age reading coordinator is the current Chair of the Committee of Age Reading Experts (CARE), a Working Group of the Technical Subcommittee (TSC). The R/V *Pandalus*, home ported in Homer, and the R/V *Solstice*, in Cordova, conduct a variety of groundfish research activities in Central Region waters.

Groundfish staff responsibilities include research and management of groundfish species harvested in state waters of **Central Region,** which includes Cook Inlet (CI) and Prince William Sound (PWS) areas, as well as in federal waters for black, blue, and dark rockfishes, and lingcod. Within Central Region, groundfish species of primary interest include sablefish, Pacific cod, walleye pollock, lingcod, rockfishes, skates, sharks, and flatfishes. Data are collected through commercial groundfish sampling, fishermen interviews, logbooks, onboard observing, and through ADF&G trawl, pot and remotely operated vehicle (ROV) surveys. Commercial harvest information (fish tickets) is processed in Homer for state and federal fisheries landings in Central Region ports. For some fisheries, logbook data are required and these are collected and entered into local databases to provide additional information, including catch composition, catch per unit effort, depth, and location data.

c. Westward Region

The **Westward Region** Groundfish management and research staff is located in Kodiak and Dutch Harbor. Kodiak staff is comprised of a regional groundfish management biologist, an area groundfish management biologist, an assistant area groundfish management biologist, a groundfish research project leader, a groundfish research project assistant biologist, a groundfish dockside sampling coordinator, a trawl survey biologist, two seasonal fish ticket processing technicians, and several seasonal dockside samplers. A full-time area management biologist, an assistant area groundfish management biologist and a seasonal fish ticket processing technician

are located in the Dutch Harbor office. Seasonal dockside sampling also occurs in Chignik, Sand Point, and King Cove. The R/V *Resolution*, R/V *K-Hi-C*, and R/V *Instar* hail from Kodiak and conduct a variety of groundfish related activities in the waters around Kodiak, the south side of the Alaska Peninsula, and in the eastern Aleutian Islands.

Major groundfish activities include: fish ticket editing and entry for approximately 15,000 tickets from both state and federal fisheries; analysis of data collected on an annual multi-species trawl survey encompassing the waters adjacent to the Kodiak archipelago, Alaska Peninsula, and Eastern Aleutians; management of black rockfish, state-waters Pacific cod, lingcod, and Aleutian Island state-waters sablefish fisheries; conducting dockside interviews and biological data collections from commercial groundfish landings; and a number of research projects. In addition, the Westward Region has a member on the Council Bering Sea/Aleutian Island Groundfish Plan Team (Dave Barnard) and the Gulf of Alaska Groundfish Plan Team (Mark Stichert).

d. Headquarters

The 1996 Magnuson-Stevens Act called for developing regional fishery databases coordinated between state and federal agencies. The Alaska Fisheries Information Network (AKFIN), created in 1997, accomplishes this objective. The AKFIN program provides the essential fishery catch data needed to manage Alaska's groundfish and crab resources within the legislative requirements of the Act in Section 303(a) 5. Alaska has diverse data collection needs that are similar to other states. But the extensive geographic area and complexity of fisheries management tools used in Alaska have resulted in AKFIN becoming a cooperative structure that is responsive to the needs to improve data collection. The Pacific States Marine Fisheries Commission (PSMFC) manages the AKFIN grant with the funding shared by the ADF&G statewide AKFIN contract and the PSMFC sponsored AKFIN Support Center (AKFIN-SC) in Portland, Oregon. The ADF&G has primary responsibility for the collection, editing, maintenance, analysis, and dissemination of these data and performs this responsibility in a comprehensive program.

The overall goal of ADF&G's AKFIN program is to provide accurate and timely fishery data that are essential to management, pursuant to the biological conservation, economic and social, and research and management objectives of the fishery management plans for groundfish and crab. The specific objectives related to the groundfish fisheries are:

1) to collect groundfish fishery landing information, including catch and biological data, from Alaskan marine waters extending from Dixon Entrance to the BSAI;
2) to determine ages for groundfish samples using age structures (as otoliths, vertebrae, and spines) arising from statewide commercial catch and resource survey sampling conducted by ADF&G;
3) to provide the support mechanisms needed to collect, store, and report commercial groundfish harvest and production data in Alaska;
4) to integrate existing fishery research data into secure and well maintained databases with consistent structures and definitions;
5) to increase the quality and accuracy of fisheries data analysis and reporting to better meet the needs of ADF&G personnel, AKFIN partner agencies, and the public, and to make more of this information available via web-access while maintaining the department's confidentiality standards;

6) to provide GIS services for AKFIN fishery information mapping to ADF&G Division of Commercial Fisheries personnel and participate in GIS and fishery data analyses and collaboration with other AKFIN partner agencies;
7) to support economic analysis as needed prior to implementation of state and federal fishery regulations; and
8) to provide internal oversight of the AKFIN contract between the ADF&G and the PSMFC.

Groundfish species include walleye pollock, Pacific cod, sablefish, skates, various flatfish, various rockfish, Atka mackerel, lingcod, sharks, and miscellaneous species.

The foundation of the state's AKFIN project is an extensive port sampling system for collection and editing of fish ticket data from virtually all of the major ports of landing from Ketchikan to Adak and the Pribilof Islands, with major emphasis on Sitka, Homer, Kodiak, and Dutch Harbor. The port sampling program includes collection of harvest data, such as catch and effort, and also the collection of biological data on the species landed. Age determination is based on samples of age structures collected from landed catches. A dockside sampling program provides for collection of accurate biological data (e.g., size, weight, sex, maturity, and age) and verifies self-reported harvest information submitted on fish tickets from shoreside deliveries of groundfish throughout coastal Alaska. In addition, the Gulf of Alaska Groundfish FMP and the Bering Sea and Aleutian Islands Groundfish FMP require the collection of groundfish harvest data (fish tickets) in the north Pacific. The AKFIN program is necessary for management and for the analytical and reporting requirements of the FMPs.

The state's AKFIN program is supported by a strong commitment to development and maintenance of a computer database system designed for efficient storage and retrieval of the catch and production data on a wide area network and the internet. It supports the enhancement of the fish ticket information collection effort including regional fishery monitoring and data management; GIS database development and fishery data analysis; catch and production database development and access; the Age Determination Unit laboratory; database management and administration; fisheries data collection and reporting; fisheries economic projects; and fisheries information services.

Local ADF&G personnel maintain close contact with fishers, processors and enforcement to maintain a high quality of accuracy in the submitted fish ticket records. Following processing, the data are electronically transferred to Headquarters. The research analyst working with this project works as part of a team to maintain a master statewide groundfish fish ticket database. Data feeds to Headquarters are merged to this master database. Data are routinely reviewed for accuracy with corrections applied as required. Within the confines of confidentiality agreements, raw data are distributed to the National Marine Fishery Service (NOAA Fisheries, both the Alaska Regional office and the Alaska Fishery Science Center), the Council, the Commercial Fisheries Entry Commission (CFEC), the Pacific States Fisheries Information Network (PACFIN) and the AKFIN Support Center on a regularly scheduled basis. Summary groundfish catch information is also provided back to regional ADF&G offices as well as to the State of Alaska Board of Fisheries (BOF), NOAA Fisheries, Council and the AKFIN Support Center.

The fishery information collected by the AKFIN program is not only essential for managers and scientists who must set harvest levels and conserve the fisheries resources, but it is also valuable

for the fishermen and processors directly involved in the fisheries, as well as the general public. To meet those needs, the department has designed, implemented, and continues to improve database systems to store and retrieve fishery data, and continues to develop improvements to fishery information systems to provide data to other agencies and to the public.

The department also conducts economic analyses of these data for use in the Council arena. The need for an economic analysis component of the AKFIN program arises from jurisdictional obligations, pressing economic needs, and impacts of environmental regulations. The ADF&G is the management agency for state fisheries under its jurisdiction, and also a lead agency in policy- making for federal fisheries of the region through its role in the Council and the Pacific Salmon Commission (PSC). Economic analysis of seafood and fishery management policy is essential for the state to determine how proposed policies will impact the industry, Alaska regions, and coastal localities of the state. The role of state personnel is especially crucial under the rationalization plan currently being refined by the Council, which will directly impact the state managed groundfish fisheries in the Gulf of Alaska.

Groundfish fishery milestones for this ongoing ADF&G AKFIN program are primarily the annual production of catch records and biological samples. In calendar year 2014, ADF&G AKFIN personnel processed 19,069 groundfish fish tickets, collected 17,817 groundfish biological samples and measured 11,821 age structures (see tables below for regional breakdown). These basic measures of ongoing production in support of groundfish marine fisheries management by AKFIN funded ADF&G personnel are representative of the level of annual productivity by the AKFIN program since its inception in 1997 (Contact Lee Hulbert).

Groundfish Fish Tickets Processed - Calendar Year 2014

ADF&G Region	
1 - Southeast	3,167
2 - Central	4,210
4 – Westward (Kodiak, AK Pen.)	10,411
4 – Westward (BSAI)	1,281
Total	19,069

Groundfish Biological Data Collection - Calendar Year 2014

ADF&G Region	AWL Samples Collected	Age Estimates Produced by Regional Personnel	Age Estimates Produced by the Age Determination Unit
1 - Southeast	4,196	none	4,140
2 - Central	10,990	1,460	1,078
4 - Westward	6,827	5,143	N/A
Total	17,817	6,603	5,218

Interagency Electronic Reporting System (Contact Gail Smith).

ADF&G maintains a commercial harvest database, based on landing report receipts – fish tickets. These data are comprehensive for all commercial salmon, herring, shellfish, and

groundfish from 1969 to present. Data are stored in an Oracle relational database and available to Headquarters and regional staff via the State of Alaska wide-area network. Data are transferred annually to the Commercial Fisheries Entry Commission, where additional license and value information is merged with all fish ticket records. Once completed, the data are provided to the Alaska Fisheries Information Network (AKFIN) support center.

Beginning in 2001, the agencies tasked with commercial fisheries management in Alaska (ADF&G, NOAA Fisheries, IPHC) began development of consolidated landing, production, and IFQ reporting from a sole source – the Interagency Electronic Reporting System (IERS). The goal is to move all fisheries dependent data to electronic reporting systems. The web-based reporting component of this system is ***eLandings.*** The desktop application for the at-sea catcher processor fleet is ***seaLandings***. Vessels using the seaLandings application email landing and production reports to the centralized database as an email attachment. ***tLandings*** was developed to address electronic reporting on-board groundfish and salmon tender vessels. The application and the landings reports are stored on a portable thumb drive and are delivered to the shoreside processor for upload to the eLandings database. Fisheries management agencies use a separate application, the ***IERS Agency Interface***, to view and edit landing reports. The IERS management/development team are implementing an electronic logbook application, ***eLogbook***, currently used by groundfish catcher processors. The ***eLogbook*** has expanded to be used with groundfish longline and crab catcher vessels. The IERS has been in successful operation in Alaska's commercial fisheries since August 2005. To date, more than 500,000 landing reports have been submitted to the eLandings repository database.

Our approach, throughout this project, has been staged implementation which allows a small staff to successfully manage this ambitious project. We expect the IERS will be fully implemented with the tendered salmon fishery fleet by the end of the 2015 season. Statewide shellfish and herring fisheries will be addressed in 2016.

The IERS features include electronic landing and production reports, real time quota monitoring, immediate data validation, and printable (.pdf) fish ticket reports. The IERS provides processors with web-based electronic catch and production data extraction using an XML output. ADF&G personnel, funded by AKFIN, Rationalized Crab Cost Recovery funds and IFQ Halibut/Sablefish Cost Recovery funds, participate in the IERS project on the development, implementation, and maintenance levels. During 2014, the IERS recorded more than 106,250 landing reports in crab, groundfish and salmon fisheries.

The IERS is extensively documented on a public and secure wiki at https://elandings.alaska.gov/confluence/

Local ADF&G personnel in six locations throughout the state of Alaska (Petersburg, Sitka, Juneau, Homer, Kodiak and Dutch Harbor) maintain close contact with groundfish fishers, processors and state/federal enforcement to maintain a high quality of accuracy in the submitted fish ticket records. The Interagency Electronic Reporting System – eLandings , seaLandings, tLandings and eLogbook applications, with immediate data validation and business rules, has improved data quality and allows personnel to function at a higher level. User support on a 24/7 basis is being provided by GCI, an Alaska based telecommunications company. IFQ reporting support is provided by the NOAA Fisheries Data Technicians.

Landing and production data are submitted to a central database, validated and reviewed, and pulled to the individual agency databases. Landing data are available to agency personnel within seconds of submission of the report. Printable documentation of the landing report and the Individual Fishery Quota debit are created within the applications. Signed fish tickets continue to be submitted to local offices of ADF&G for additional review and comparison to other data collection documents. These documents include vessel/fisher logbooks, agency observer datasets, and dockside interviews with vessel operators.

Within the confines of confidentiality agreements, detailed data are distributed to the State of Alaska Commercial Fisheries Entry Commission (CFEC) annually. Detailed groundfish data are available to the NOAA Fisheries-Alaska regional office from the eLandings respository database. The AKFIN Support Center receives groundfish data on a monthly schedule, which is summarized and provided to the Pacific States Fisheries Information Network (PACFIN). The CFEC merges the ADF&G fish ticket data with fisher permit and vessel permit data. This dataset is then provided to the AKFIN Support Center, which distributes the data to the professional staff of the Council and summarized data to PACFIN. Summary groundfish catch information is also posted on the ADF&G Commercial Fisheries website: http://www.cf.adfg.state.ak.us/geninfo/finfish/grndfish/grndhome.php.
Summarized data are provided to the BOF, the Council, and to the State of Alaska legislature as requested.

e. Gene Conservation Laboratory

In the past, the ADF&G Gene Conservation Laboratory collected genetic information on black rockfish, light and dark dusky rockfish, and pollock (a list of *Sebastes* and pollock tissue samples stored at ADF&G's Gene Conservation Laboratory can be found in Appendix III).

f. Age Determination Unit

The ADF&G's statewide groundfish and invertebrate age reading program, the Mark, Tag, and Age Laboratory's Age Determination Unit (ADU), continued to provide age data to regional managers in 2014. The ADU received 8,484 specimens representing 11 groundfish species from statewide commercial and survey sampling efforts. The ADU distributed 5,218 groundfish ages to region managers, which included data from samples received in previous years but processed in 2014. Sablefish and yelloweye rockfish (4,158 and 1,060 ages released, respectively) were the only groundfish processed in 2014 due to the availability of calibrated age readers. Age data quality was assessed through precision testing of approximately 30% of reads along with comparing measured fish lengths and otolith weights at age to estimated ranges for 100% of age data produced. Quality control processes resulted in 3,853 age estimates in 2014. Additionally, 1,732 specimens were processed as part of training and calibration procedures. With training, quality control, and data production, ADU age readers evaluated 10,803 groundfish specimens in total. To increase the rate and complexity of age structure processing, the ADU acquisitioned new sectioning and polishing equipment to develop serial and mounted thin sections.

To collect objective data used in quality control procedures, a minimum of one age structure from each groundfish was measured for length, height, and weight. Measurements were used to identify errors arising from specimen handling, data entry, species misidentifications, or age assignments. The derivation of morphometric-age models and evaluation of measurement data utility was presented at the 2014 Western Groundfish Conference. To further develop the ADU's ability to take precision age structure measurements, four ADU members attended a two day

training on image analysis using Image Pro Premier® software. In total, 7,509 age structures were measured as part of production procedures in 2014.

To evaluate, standardize, and advance age estimation processes for both commercial and sport State fisheries, the ADU hosted a two day meeting with the four State of Alaska groundfish age labs. This meeting initiated several important conversations about standardizing processes, provided a mass review of age criteria and methodology for commercially important species, initiated two lingcod age structure exchanges (from Region 4 to the ADU and Region 2 Sport), and discussed differences between the labs.

The ADU continued to participate in CARE, a Working Group of the TSC, throughout 2014. The ADU exchanged data and specimens regarding radiometric bomb carbon validation studies and the identification of signature years with other CARE agencies, and was involved in additional age structure exchanges including shortraker rockfish. The ADU was also involved in planning the 2015 CARE meeting and processing workshop.

Approximately 30% of funding for this project was provided by AKFIN, and the majority of funding (70%) was provided by the State of Alaska. The ADU employed five people throughout 2014 for approximately 47 work months to age groundfish and invertebrates, process samples, enter data, maintain sample archives, measure samples, and complete other support tasks.

2. Description of the State of Alaska recreational groundfish fishery program (Sport Fish Division)

ADF&G manages all recreational groundfish fisheries within the internal waters of the state, in coastal waters out to three miles offshore, and throughout the EEZ. The Alaska BOF extended existing state regulations governing the sport fishery for all marine species into the waters of the EEZ off Alaska in 1998. This was done under provisions of the Magnuson-Stevens Fishery Conservation and Management Act that stipulate that states may regulate fisheries that are not regulated under a federal fishery management plan or other applicable federal regulations. No recreational fisheries are included in the Gulf of Alaska Fishery Management Plan.

Most management and research efforts are directed at halibut, rockfish, and lingcod, the primary groundfish species targeted by the recreational fishery. Statewide data collection programs include an annual mail survey to estimate overall harvest (in number of fish) of halibut, rockfishes (all species combined), lingcod, Pacific cod, sablefish, and sharks (all species combined), and a mandatory logbook to assess harvest of selected species in the charter boat fishery. The statewide bottomfish coordinator (Scott Meyer) coordinates or responds to federal data requests and develops scientifically-based advice for assessment and management of halibut and groundfish.

Regional programs with varying objectives address estimation of recreational fishery statistics including harvest and release magnitude and biological characteristics such as species, age, size, and sex composition. Research was funded through state general funds and the Federal Aid in Sport Fish Restoration Act. There are essentially two maritime regions for marine sport fishery management in Alaska. The Southeast Region extends from the EEZ boundary in Dixon Entrance north and westward to Cape Suckling, at approximately 144º W. longitude. The Southcentral Region includes state and federal waters from Cape Suckling to Cape Newenham,

including Prince William Sound (PWS), Cook Inlet, Kodiak, the Alaska Peninsula, the Aleutian Islands, and Bristol Bay.

a. Southeast Region Sport Fish

Regional staff in Douglas coordinates a data collection program for halibut and groundfish in conjunction with a regionwide Chinook salmon harvest studies project. The project leader, the project biometrician, and the project research analyst are based in Juneau. Beginning in 2014, the Area Management Biologists in Yakutat, Juneau, Sitka, Petersburg, Ketchikan, and Craig were responsible for the onsite daily supervision of the field technicians. A total of 25 technicians worked at the major ports in the Southeast region, where they interviewed anglers and charter operators and collected data from sport harvests of halibut and groundfish while also collecting data on sport harvests of salmon. Data collected on groundfish were limited to rockfish lengths and species composition; halibut length; lingcod length and sex; and sablefish length. No otoliths or other age structures were collected. Data summaries were provided to the Alaska BOF, other ADF&G staff, the public, and a variety of other agencies such as the Council, IPHC and NOAA Fisheries.

The Regional Management Coordinator and Area Management Biologists in Yakutat, Haines, Sitka, Juneau, Petersburg, Craig, and Ketchikan are responsible for groundfish management in those local areas. The demersal shelf rockfish and lingcod sport fisheries are managed under the direction of the Demersal Shelf Rockfish Delegation of Authority and Provisions for Management (5 AAC 47.065) and the Lingcod Delegation of Authority and Provisions for Management (5 AAC 47.060) for allocations set by the Alaska Board of Fish.

b. Southcentral Region Sport Fish

The **Southcentral Region** groundfish staff consisted of two Regional Management Biologists as well as Area Management Biologists and assistants for the following areas: (1) PWS and the North Gulf areas, (2) Lower Cook Inlet, and (3) Kodiak, Alaska Peninsula, and the Aleutian Islands. In addition, a region-wide harvest assessment project was based in the Homer office, consisting of a project leader, project assistant, and six technicians. The research project biometrician was located in Anchorage. Ongoing assessment of sport harvest and fishery characteristics at major ports throughout the region is the primary activity. Data were collected from harvested halibut, rockfishes, lingcod, sharks, sablefish, and Pacific cod, and anglers and charter boat operators were interviewed for fishery performance information. All age reading was done in Homer, and the staff members are active participants in CARE. Seasonal technicians collected data from the sport harvest at seven major ports in the region, and two of them read all rockfish and lingcod age structures. Halibut otoliths were collected from the harvest and were forwarded to the IPHC for age reading.

Southcentral Region staff is responsible for management of groundfish fisheries in state and federal waters. The lack of stock assessment information for state-managed species has prevented development of abundance-based fishery objectives. As a result, management is based on building a conservative regulatory framework specifying bag and possession limits, seasons, and methods and means. Stock status is evaluated by examining times series data on age, size, and sex composition. The lack of stock assessments, coupled with increasing effort and harvest in several groundfish sport fisheries, accentuate the need for developing comprehensive management plans and harvest strategies.

Typical duties included providing sport halibut harvest statistics to IPHC and Council, assisting in development and analysis of the statewide charter logbook program and statewide harvest survey, providing information to the Alaska BOF, advisory committees, and local fishing groups, drafting and reviewing proposals for recreational groundfish regulations, and dissemination of information to the public.

B. By Species

1. Pacific cod

Catch rate and biological information is gathered from fish ticket records, port sampling programs, a tagging program, and during stock assessment surveys for other species. A mandatory logbook program was initiated in 1997 for the state waters of Southeast Alaska. Commercial landings in Southeast, Central Region and the Westward Region are sampled for length, weight, age, sex, and stage of maturity.

a. Research

The **Westward Region** discontinued the cod-tagging program in 2011 that was initiated in 1997 in the Central, Western, and Eastern Gulf of Alaska. A total of 18,670 tags have been released. Tagged cod continue to be captured from earlier years, with five recovered in 2014. Fish spent from 100 to 500 days at liberty; a few over 1,000 days. Recovery rates averaged 5.6% per year. While the vast majority of Pacific cod are recovered within 10–20 km of their tagging location, much longer recapture distances have occurred. Several fish were recaptured more than 500 km from their tagging location. The relatively small number of long distance recaptures show movement of cod is occurring from the Shumagin Islands and Unalaska into the Bering Sea, the Alaska Peninsula to Kodiak waters, and several fish tagged in Kodiak waters were recovered in Cook Inlet and Southeast Alaska.

b. Stock Assessment

No stock assessment programs were active for Pacific cod during 2014.

c. Management

Regulations adopted by the Alaska BOF during November 1993 established a guideline harvest range (GHR) of 340 to 567 mt for Pacific cod in the internal waters of **Southeast Alaska**. The internal waters of Southeast Alaska are comprised of two areas, the Northern Southeast Inside (NSEI) Subdistrict and the Southern Southeast Inside (SSEI) Subdistrict. The GHR was based on average historic harvest levels rather than on a biomass-based acceptable biological catch (ABC) estimate. This fishery has the most participation in the winter months, and in-season management actions such as small area closures are implemented to spread out the fleet and reduce the risk of localized depletions. Pacific cod in state waters along the outer coast are managed in conjunction with the Total Allowable Catch (TAC) levels set by the federal government for the adjacent EEZ.

In 1996, the BOF adopted Pacific cod Management Plans for fisheries in five groundfish areas, **Prince William Sound**, **Cook Inlet**, **Kodiak**, **Chignik** and **South Alaska Peninsula**. The plans did not restrict participation to vessels qualified under the federal moratorium program. Included within the plans were season, gear and harvest specifications. State-waters fishing seasons were

set to begin seven days after the close of the initial federal season in all areas except Cook Inlet, which begins 24 hours after the closure, and Chignik, which has a regulatory opening date of March 1. However, in 2011 the BOF adjusted state-waters seasons in Prince William Sound (PWS) for pot gear and jig gear to open 24 hours following the closure of the initial federal season and for longline gear in PWS to open seven days following the initial federal season closure or concurrent with the individual fishing quota (IFQ) halibut season opening date, whichever occurs later. The BOF restricted the state-waters fisheries to pot or jig gear in an effort to minimize halibut bycatch and avoid the need to require onboard observers in the fishery. However, in 2009 a new BOF regulation became effective permitting use of longline gear in PWS. This change was largely in response to the very low levels of effort and harvest and the high level of interest from the longline gear group. Guideline harvest levels (GHL) are allocated by gear type; however, the one exception was longline gear in PWS until 2014. In 2011 the BOF adopted thresholds for PWS whereas longline gear will close when 85% of the GHL is reached and pot gear will close when 90% of the GHL is reached, and in 2014 the BOF adopted regulations to allocate pot and jig to a combined 15% of the GHL with a step up and step down provision.

The Council established sector allocations for the federal Central Gulf of Alaska (CGOA) Pacific cod fisheries implemented in 2012. The Council's action established unique Pacific cod harvest allocations for pot, jig, trawl, and longline gear vessels. Beginning in 2012, the federal/parallel Pacific cod season for each federal gear sector was prosecuted independently of other Pacific cod federal gear sectors, resulting in staggered federal season closure dates. Prior to federal sector allocations, all gear types competed for federal/parallel Pacific cod during a single derby-style fishery. In order to coordinate state-waters Pacific cod fisheries a BOF meeting was held in October 2011 to adopt or amend regulations anticipating these federal changes. In most cases, starting in 2012, state-waters fisheries opened independently for each gear type.

In October 2011, the BOF held a special meeting to coordinate state-managed Pacific cod fisheries with changes occurring in the federal fisheries due to the implementation of gear sector splits (differential allocations of the TAC by gear type), and adjust Pacific Cod Management Plans and related regulations accordingly. The BOF adopted regulatory changes to align the parallel seasons with the federal seasons for each legal gear type. In PWS, the parallel longline season was aligned with the federal catcher vessel less than 50 feet overall length (OAL) hook-and-line gear sector. Different parallel season closures by gear type resulted in different seasons for each gear type in the state-waters seasons, and ADF&G considered these changes manageable. The annual GHLs are based on the estimate of acceptable biological catch (ABC) of Pacific cod as established by the Council. Current GHLs are set at 25% of the Central Gulf ABC, apportioned between the Kodiak, Chignik, and Cook Inlet Areas and 25% of the Eastern Gulf ABC for the Prince William Sound Area. Historically 25% of the Western Gulf ABC was reserved for the South Alaska Peninsula Area. In October 2013, the BOF increased the South Alaska Peninsula Area ABC apportionment from 25% to 30% of the Western Gulf Pacific cod ABC.

Action by the BOF in 2004 reduced the GHL in Prince William Sound to 10% of the Eastern Gulf ABC with a provision to increase subsequent GHLs to15% and then 25% if the GHL is achieved in a year; in 2011 the Prince William Sound GHL was set at the maximum level of 25% after achieving the GHL the two previous years, and in 2011 the BOF removed the step-up provision, as there was no mechanism to lower the GHL to previous levels.

Additional regulations include a 58 foot OAL vessel size limit in the Chignik and South Alaska Peninsula Areas. The BOF also adopted a harvest cap for vessels >58 feet that limited harvest to a maximum of 25% of the GHL in the Cook Inlet Area and 50% of the GHL in the Kodiak Area. The fishery management plans also provided for removal of restrictions after October 31 on exclusive area registrations, vessel size, and gear limits to increase late season harvest to promote achievement of the GHL. In addition, observers are occasionally used on day-trips to document catches and at-sea discards in the nearshore pot fisheries.

In February of 2006, the Alaska BOF adopted a Pacific cod Management Plan for a nonexclusive Aleutian Islands District, west of 170° W longitude, state-waters fishery. Included within the plan were season, gear and harvest specifications. The fishery GHL was set by regulation at three percent of the acceptable biological catch (ABC) of Pacific cod as established by the Council for the Bering Sea Aleutian Islands area with a maximum of 70% of the GHL available before June 10. By regulation the fishery opened on or after March 15, at the conclusion of the initial parallel catcher-vessel trawl fishery for Pacific cod in the federal BSAI Area. Non-pelagic trawl, longline, jig and pot gear were all permissible in the 2006 fishery.

In October of 2006 the Alaska BOF amended the Pacific cod Management Plan for the **Aleutian Islands**. Beginning in 2007 a new regulation set the opening date of the fishery at four days after the initial closure of the federal Bering Sea Aleutian Islands catcher vessel trawl season. Additional regulations introduced new vessel size limits of 125 feet or less OAL for pot vessels, 100 feet or less OAL for trawl vessels and 58 feet or less OAL for longline and jig vessels. In 2009, vessels participating in the B season were restricted to under 60 feet OAL for all legal gear types. In 2010, this regulation was once again changed to allow pot vessels 125 feet or less OAL to participate in the B season beginning August 1. Prior to August 1, during the B season, all vessels must still be less than 60 feet OAL.

As of 2012, the state-waters A season opens January 1 in waters between 175° W long and 178° W long to vessels 60 feet OAL or less using trawl, pot, and jig gear, and vessels 58 feet OAL or less using longline gear. Harvests between 175° W long and 178° W long accrue toward the GHL, while harvest in state waters east of 175° W long and west of 178° W long are initially managed under parallel fishery regulations with harvest accruing toward federal TAC. If the state-waters A season GHL has not been taken by April 1, when the federal catcher-vessel trawl B season opens, the state-waters A season in waters east of 175° W long and west of 178° W long will close and a parallel fishery will immediately open in those waters.

Within state waters from 175° W long to 178° W long, the state-waters A season remains open to vessels 60 feet OAL or less using trawl, pot, and jig gear, and vessels 58 feet OAL or less using longline gear. If state-waters A season GHL remains when the federal catcher-vessel trawl B season closes, the state-waters A season reopens in all waters west of 170° W long until the state-waters A season GHL is reached, or through June 9. During this time trawl vessels may not be greater than 100 feet OAL, pot vessels may not be greater than 125 feet OAL, and vessels using mechanical jig or longline gear not greater than 58 feet OAL.

In October 2013, the BOF created a state-waters Pacific cod fishery management plan in waters of the Bering Sea near Dutch Harbor. The Dutch Harbor Subdistrict Pacific cod season is open to vessels 58 feet or less OAL using pot gear, with a limit of 60 pots. The season opens seven days

after the federal Bering Sea–Aleutian Islands pot/longline sector's season closure, and may close and re-open as needed to coordinate with federal fishery openings. The fishery was not opened to jig gear because the federal jig season typically occurs year-round

There is no bag, possession, or size limit for Pacific cod in the recreational fisheries in Alaska, and the season is open year-round. Recreational harvest of Pacific cod is estimated through the Statewide Harvest Survey (SWHS). The Southcentral Region creel sampling program also collects data on cod catch by stat area (on a vessel-trip basis), and lengths of sport-caught Pacific cod. No information is collected in the Southeast Region creel survey program on the Pacific cod sport fishery.

d. Fisheries

Most of the Pacific cod harvested in **Southeast Alaska** are taken by longline gear in the NSEI Subdistrict during the winter months. Pots have been the dominant gear in **Cook Inlet (CI)** and longline gear the dominant gear in recent **Prince William Sound (PWS)** fisheries. Pot gear is still the dominant gear during the state-waters season in CI, longline is not a legal gear type for this fishery, and longline gear is dominant during the parallel fishery. The total harvest during the parallel fishery since 2000 peaked during the 2012 fishery and decreased in 2013 and then again in 2014. In the most recent 5 parallel seasons, longline took the largest percentage in 2013, 74% of the harvest. In PWS longline gear has taken over 99% of the total harvest during the past five seasons. In 2014 in the **Westward Region** parallel Pacific cod fisheries, pot gear vessels take over 70% of the total harvest, with the remainder divided between trawl, jig, and longline gear. Pot and jig gear are the only legal gear types during state-waters fisheries in the Kodiak, Chignik, and South Alaska Peninsula Areas. Pot gear vessels take approximately 75% of the total Pacific cod catch annually. In the Aleutian Islands trawl gear took 24% of the harvest and pot gear took 76%. Trawl and pot gear were used only during the A season. There was no harvest in the B season.

Prior to 1993 much of the cod taken in **Southeast Alaska** commercial fisheries was utilized as bait in fisheries for other species. In recent years in Southeast Alaska the Pacific cod harvest has been largely sold for human consumption. In 2014, 12% of the Pacific cod catch was recorded as being used for bait. In other areas of the state, Pacific cod are harvested in both state and federal waters and utilized primarily as food fish. A total of 345 mt of Pacific cod were harvested in Southeast state-managed (internal waters) fisheries during 2014 with 317 mt harvested from the directed fishery.

The 2014 GHLs for the state-waters Pacific cod seasons in the Cook Inlet and Prince William Sound Areas of the **Central** Region were 1,991 mt and 664 mt, respectively. 2014 harvest from the Cook Inlet Area state-waters Pacific cod fishery totaled 369 mt and the Prince William Sound Area harvest totaled 628 mt. In Cook Inlet in 2014, GHLs were not achieved and there was no harvest by jig gear due to the parallel season remaining open for the entire year. In the PWS state-waters season, the harvest was exclusively by longline, 628 mt. In 2014, Cook Inlet received 3.75% of the CGOA ABC, and the PWS allocation was 25.0% of the EGOA ABC.

In the **Westward** Region, the Kodiak Area state-waters Pacific cod GHL is based on 12.5% of the annual CGOA Pacific cod ABC while the Chignik Area GHL is based on 8.75% of the annual CGOA ABC. The 2014 South Alaska Peninsula Area state-waters Pacific cod GHL was based on 30% of the WGOA Pacific cod ABC. Legal gear is limited to pot and jig gear during

state-waters Pacific cod fisheries in these three areas. The 2014 Pacific cod GHLs were 6,638 mt in the Kodiak Area, 4,646 mt in the Chignik Area and 9,524 mt in the South Alaska Peninsula Area. Total state-waters Pacific cod catch in the Kodiak, Chignik and South Alaska Peninsula was 5,548 mt, 4,352 mt and 9,947 mt respectively. In the Aleutian Islands District state-waters Pacific cod GHL is based on 3% of the annual BSAI Pacific cod ABC. Legal gear is limited to non-pelagic trawl, pot, longline and jig gear during state-waters the Pacific cod fishery in this area. The 2014 total state-waters Pacific cod catch in the Aleutian Islands District was 4,496 mt. The Dutch Harbor Subdistrict state-waters Pacific cod GHL is based on 3% of the annual BSAI Pacific cod ABC and is open to pot gear only. In 2014, the total state-waters catch for the Dutch Harbor Subdistrict was 8,013 mt.

Estimates of the 2014 recreational harvest of Pacific cod are not yet available from the statewide harvest survey, but the 2014 estimates were 10,631 fish in **Southeast** and 27,161 fish in **Southcentral Alaska**. The average estimated annual harvests for the prior five-year period (2008–2012) were 10,722 fish in **Southeast** Alaska and 26,764 fish in **Southcentral** Alaska.

2. Rockfishes

Commercial rockfish fisheries are managed under three assemblages: demersal shelf (DSR), pelagic shelf (PSR), and slope rockfish. DSR include the following species: yelloweye, quillback, china, copper, rosethorn, canary, and tiger. PSR include black, blue, dusky, dark, yellowtail, and widow. Slope rockfish contain all other *Sebastes* species. Thornyhead, *Sebastolobus* species are defined separately.

a. Research

In the **Southeast Region** biological samples of rockfish are collected from the directed DSR fishery; sampling effort was expanded in 2008 to include the sampling of DSR caught as bycatch in the IFQ halibut fishery. The sampling of the halibut fishery was started in part to obtain more samples in years that the directed fishery was not opened. Fishery data is also collected from the logbook program, which is mandatory for all groundfish fisheries. The logbook program is designed to obtain detailed information regarding specific harvest location. In 2014, the directed fishery for DSR opened in the East Yakutat (EYKT) area of the Southeast Outside District (SEO). Length, weight and age structures were collected from 1,238 yelloweye rockfish caught in the directed and halibut commercial longline fisheries. The Central Southeast Outside (CSEO), Southern Southeast Outside (SSEO), and Northern Southeast Outside (NSEO) sections did not open to directed fishing because the portion of the TAC allocated to that area was not large enough to support an orderly fishery. Directed fishing for DSR was also opened in internal waters. No biological samples of yelloweye rockfish were collected from the internal waters fishery.

Rockfish habitat mapping projects continue in the **Southeast Region.** Seafloor mapping is performed to identify rockfish habitat in this important fishing ground. To date, ADF&G has mapped approximately 3,058 km^2 of seafloor within SEO. More importantly, over 1,264 km^2 of rocky habitat has been mapped. The last mapping survey was conducted in 2010, and an upcoming project is scheduled for the summer of 2015, which will be jointly conducted with the U.S. Geological Survey. An age-structured assessment model for yelloweye rockfish has been submitted to the Gulf of Alaska Groundfish Plan Team for review (Contact Kristen Green).

Skipper interviews and port sampling of commercial rockfish deliveries in **Central Region** during 2014 occurred in Homer, Seward, Whittier, Kodiak, and Cordova. Efforts throughout the year were directed at the sampling of rockfish delivered as bycatch to other groundfish and halibut fisheries, primarily slope and demersal shelf species. The directed jig fishery in the Cook Inlet Area that targets pelagic rockfish begins July 1 and historically had been the focus of rockfish sampling during the last half of the year. Limited fishing effort drastically reduced sampling opportunities from 2006 to 2009 until an increase in effort resulted in additional sampling opportunity. However, with only 20 landings in 2013, sampling opportunity was limited and sampling goals were not achieved. Although there were only 23 landings during the 2014 fishery, a more targeted sampling effort resulted in achieving sampling goals (n=550) for the directed CI jig rockfish fishery. Additional rockfish samples were collected from bycatch fisheries in CI and PWS with the sampling goal achieved or nearly achieved for PWS quillback, yelloweye, and shortraker rockfish. Sample data collected included date and location of harvest, species, length, weight, sex, gonad condition, and otoliths. Homer staff determined ages of pelagic and demersal shelf rockfish otoliths, and otoliths from slope and thornyhead rockfish species were sent to the Age Determination Unit. Additional sampling occurred during the CI and PWS research trawl surveys (Contact Elisa Russ).

Seafloor mapping efforts continued in Central Region. We expanded the area mapped at the southwestern PWS lingcod / DSR index site by mapping much of Cape Cleare Bank to the south of the existing NOAA multibeam coverage. Cape Claire Bank together with Elrington / Latouche Bank and the southwestern PWS island passages to the north are important harvest areas for lingcod, DSR, and other groundfish. By mapping Cape Claire bank, a more comprehensive map of detailed seafloor features was obtained and will be used for delineating habitat type for conducting lingcod and DSR surveys. A collaborative seafloor mapping project with the United States Geological Survey USGS was conducted in May 2014. USGS provided all of the MBES survey equipment, all hydrographic personal during data collection, processed and cleaned the data, and produced the final products. ADF&G provided the R/V *Solstice* as the survey platform, which resulted in a very cost effective survey.

USGS was motivated to learn about the detailed structure of the Patton Bay fault system which runs east and west though Cape Cleare Bank. They're purpose of collecting the multibeam and seismic data was to better image and understand megathrust splay faults. Ultimately information derived from this survey will be used to improve seismic hazard maps for Alaska, which are used for developing safer buildings and structures.

The Patton Bay fault system extends west of Cape Cleare Bank through Junken Trough and up onto Junken Bank. Junken Trough and the seafloor directly surrounding the Patton Bay fault was of interest to USGS. While we had less interest in Junken Trough we had high interest in all of the seafloor on Cape Cleare Bank including that associated with the fault. A compromise was struck with USGS to satisfy both agencies' needs. USGS would collect full bottom coverage multibeam bathymetry on Cape Cleare Bank to address ADF&G interests while the deeper waters of Junken Trough would be mapped to address USGS interests. There were 638 km^2 of seafloor mapped during this survey. Of this, 207 km^2 were completed with the proposed Cape Cleare Bank mapping area while another 365 km^2 were completed in the Junken Trough area. An additional 66 km^2 were mapped in the inside waters of PWS south of Chenega Island.

Resolution of the historical NOAA single beam/smoothsheet bathymetry was exceptionally low for Cape Cleare Bank. Additionally, there were large vertical shifts in the seafloor following the 1964 Good Friday earthquake. The detail in seafloor texture from the multibeam bathymetry collected during this survey is a marked improvement over the historical data (Contact Mike Byerly or Dr. Kenneth Goldman).

The **Westward Region** continued port sampling of several commercial rockfish species and Pacific cod in 2014. Rockfish sampling concentrated on black and dark rockfish with opportunistic sampling of other miscellaneous *Sebastes* species. Skippers were interviewed for information on effort, location, and bycatch. Length, weight, gonadal maturity, and otolith samples were collected (Contact Sonya El Mejjati). Staff from the Kodiak office has completed aging black rockfish otoliths through the 2014 season. Pacific cod otolith aging is ongoing.

The **Westward Region** also continued to conduct hydroacoustic surveys of black and dark rockfish in the Northeast, Eastside, and Southeast districts of the Kodiak Management Area in 2014 in an effort to generate biomass estimates for both black and dark rockfish. Surveys of the Afognak and Northeast districts in the Kodiak Management Area will continue in 2015 (Contact Carrie Worton).

The **Division of Sport Fish—Southeast Region** continued to collect catch and harvest data from rockfish as part of a marine harvest onsite survey program with rockfish harvests tabulated back to 1978 in some selected ports. Rockfish objectives included estimation of 1) species composition, 2) length composition and average weight, and 3) biomass of total sport removals (harvest and release mortality).Primary species harvested in Southeast Alaska included yelloweye, black, copper, and quillback rockfish. Approximately 9,792 rockfish were sampled from the sport harvests at Ketchikan, Craig, Klawock, Wrangell, Petersburg, Juneau, Sitka, Gustavus, Elfin Cove, and Yakutat in 2014 (Contact Mike Jaenicke).

The **Division of Sport Fish—Southcentral Region** continued collection of harvest and fishery information on rockfish as part of the harvest assessment program. Rockfish objectives included estimation of 1) species composition, 2) age, sex, and length composition, and 3) the geographic distribution of harvest by port. The 2014 total sample size from the sport harvests at Seward, Valdez, Whittier, Kodiak, and Homer was 5,013 rockfish (Contact Barbi Failor).

The Division of Sport Fish continued research in Prince William Sound on survival of rockfish following recompression. In 2014, northern, dusky, copper, quillback, and silvergray rockfish were caught using sport fishing gear over a range of depths, and held for two days at capture depths of at least 35 m to evaluate survival. Eighty-seven percent of held fish survived, which is consistent with results from other studies indicating high survival for yelloweye and quillback rockfish in Prince William Sound and for other species in the Pacific Northwest. This study will be continued through 2017 to achieve sample sizes that are adequate to estimate post-recompression survival for as many demersal rockfish species as possible in Prince William Sound (Contact Mike Thalhauser).

b. Stock Assessment

The **Southeast Region** performs multi-year stock assessments for DSR in the Southeast District. Biomass is estimated by management area as the product of yelloweye rockfish density determined from line transect surveys, the area of rocky habitat within the 100 fm contour, and

the yelloweye rockfish average weight. Yelloweye rockfish density for the stock assessment is based on the most recent estimate by management area. Yelloweye rockfish densities for each area are multiplied by the current year's average commercial fishery weight of yelloweye rockfish specific to that management area. Allowable biological catch for the SEO is set by multiplying the lower bound of the 90% confidence interval of total biomass for yelloweye rockfish by the natural mortality rate (0.02) and increasing the biomass estimate by 2–4.0% (depending on the current year's weight ratio of other species landed in the DSR assemblage). There is no stock assessment information available for DSR in NSEI and SSEI management areas, and no surveys for non-DSR species (e.g. black rockfish) have been conducted since 2002.

Prior to 2012, line transect surveys were conducted using a submersible; after that time, visual surveys have been conducted using an ROV. The last submersible surveys were conducted in 2009 in EYKT, 2005 in SSEO, 2007 in CSEO, and 2001 in NSEO; density estimates were derived from each of these surveys with the exception of the NSEO management area where data were too limited to obtain a valid density estimate. Consequently, the most recent valid density estimate for NSEO is from 1994. Density estimates by area for the most recent submersible surveys ranged from 765 to 1,930 yelloweye rockfish per km^2 with CV estimates of 12–33%. ROV surveys were performed in collaboration with Central Region staff in 2012 in CSEO and 2013 in SSEO. An ROV survey was planned for EYKT in 2014; however, was canceled due to inclement weather. We plan to complete a survey in this area in 2015. Yelloweye rockfish density was 752 yelloweye per km^2 (CV=14%) for CSEO in 2012 and 986 yelloweye per km^2 (CV=22%) in SSEO in 2013. In addition from ROV video data, we are able to measure fish lengths for yelloweye rockfish, lingcod, and halibut using stereo camera imaging software (SeaGIS, Ltd).

Central Region conducts ROV surveys along the north Gulf of Alaska coast from the Kenai Peninsula to Prince William Sound to monitor the local abundance of lingcod and DSR in selected index sites. These sites are on the order of 100's of sq km and tend to be relatively isolated rocky banks bordered by land masses, deep fjords, and/or expanses of deeper soft substrates. An ROV survey at Nuka Bank and Pye Reef in the Central Region NGD was planned and attempted in July, 2014. This was the first survey attempted using the R/V *Solstice*. Problems with the vessels location of the pole mounted tracking system forced an early termination of the survey. The R/V *Solstice* crew relocated the pole mount to the port side of the vessel to correct the issue. There were 24 of the planned 150 transects completed during this survey. All the video and tracking data have been reviewed an completed but no population estimate could be produced due to the small sample size (Contact Mike Byerly or Dr. Kenneth Goldman).

In the **Westward Region** rockfish surveys using hydroacoustic equipment were deployed in an effort to assess black and dark rockfish stocks in the Kodiak Management Area. Surveyed areas included the Northeast, Eastside, and Southeast districts of the Kodiak Management Area (Contact Carrie Worton).

c. Management

Management of DSR in the **Southeast Region** is based upon a combination of GHRs, seasons, gear restrictions, and trip limits. Directed commercial harvest of DSR is restricted to hook-and-line gear. Directed fishing quotas are set for the four outside water management areas (NSEO, CSEO, SSEO, and EYKT) based on the stock assessment. Directed fishery quotas for the two

internal water management areas (NSEI and SSEI) are set at 25 mt annually. Regulations adopted in 1994 include trip limits (within any five-day period) of 6,000 pounds per vessel in all areas except for EYKT where the trip limit is 12,000 pounds and added a requirement that logbook pages must be submitted with fish tickets for each fishing trip. At the BOF meeting in early 2006 the season for the directed DSR fishery in SEO was changed to occur only in the winter from January 5th until the day before the start of the commercial halibut IFQ season, or until the annual harvest limit is reached whichever occurs first. At this meeting the total allowable catch (TAC) for DSR was allocated 84% to the commercial sector and 16% to the sport sector. At the 2009 BOF meeting it was decided that the anticipated harvest of DSR in the subsistence fisheries would be deducted from the ABC before the split in allocation is made between commercial and sport fisheries. The 2014 ABC for DSR was 274 mt, which resulted in a TAC of 224 mt to commercial fisheries and 43 mt to sport fisheries, and the 2015 ABC is set at 225 mt, resulting in a TAC of 182 mt for commercial and 35 mt for sport fisheries. The TACs are set after deducting the subsistence catch, 7 mt for 2014 and 8 mt for 2015 . A significant portion of the total commercial harvest is taken as bycatch during the halibut fishery; each year this is estimated and decremented from the commercial TAC. Prior to the 2012 fishery, we had used IPHC survey data to estimate bycatch rate by depth and apply this to the commercial catch to estimate DSR bycatch. Since 2012, commercial landing data has been used to calculate the commercial bycatch rate of DSR in the halibut fishery and this bycatch rate was applied to the current year's quota to estimate bycatch of DSR. This change in methodology was made, because six years of DSR full retention landings were available for analysis and this was more accurate than using the IPHC survey bycatch rate to estimate mortality. Full retention of DSR has been in regulation in state waters since 2002 and in federal waters since 2005.

Management of the commercial black rockfish fishery in the **Southeast Region** is based upon a combination of GHLs and gear restrictions. Directed fishery GHLs are set by management area and range from 11 mt in EYKT and IBS to 57 mt in SSEOC with a total GHL of 147 mt for all of SEO. A series of open and closed areas was also created in order for managers to better understand the effects of directed fishing on black rockfish stocks. Halibut and groundfish fishermen are required to retain and report all black rockfish caught. Shortspine thornyhead, shortraker rockfish, rougheye rockfish and redbanded rockfish may be taken as bycatch only (no directed fishing). (Contact Kristen Green).

Rockfish in **Central Region's** Cook Inlet and PWS Areas are managed under their respective regulatory Rockfish Management Plans. Plan elements include a fishery GHL of 68 mt for each area and 5-day trip limits of approximately 0.5 mt in the Cook Inlet District, 1.8 mt in the North Gulf District, and 1.4 mt in PWS. Rockfish regulations underwent significant change beginning in 1996 when the BOF formalized the GHL into a harvest cap for all rockfish species in Cook Inlet and PWS and adopted a 5% rockfish bycatch limit for jig gear during the state-waters Pacific cod season. In 1998, the BOF adopted a directed rockfish season opening of July 1 for the Cook Inlet Area and restricted legal gear to jigs to target pelagic shelf rockfish species. At the spring 2000 BOF meeting, the BOF closed directed rockfish fishing in the PWS area and established a bycatch-only fishery with mandatory full retention of all incidentally harvested rockfish. In November 2004, the BOF also adopted a full retention requirement for rockfish in the Cook Inlet Area and restricted the directed harvest to pelagic shelf rockfish. Rockfish bycatch levels were also set at 20% during the sablefish fishery, 5% during the state-waters Pacific cod season and 10% during other directed fisheries. In 2010 the BOF adjusted rockfish bycatch levels for Cook Inlet to 10% during halibut and directed groundfish, other than rockfish,

and 20% nonpelagic rockfish during the directed pelagic shelf rockfish fishery. In 2014, the BOF adopted regulations to adjust rockfish bycatch levels during the parallel Pacific cod season in PWS to 5%, for consistency with the state-waters season. Proceeds from rockfish landed in excess of allowable bycatch levels and over the GHL are surrendered to the State of Alaska (Contact Jan Rumble).

The **Westward Region** has conservatively managed black rockfish since 1997, when management control was relinquished to the State of Alaska. Area GHLs were set at 75% of the average production from 1978-1995 and sections were created to further distribute effort and thereby lessen the potential for localized depletion. Since 1997, section GHLs have been reduced in some areas that have received large amounts of effort.

In the Kodiak Area, vessels may not possess or land more than 2.3 mt of black rockfish in a 5-day period. Additionally, vessel operators are required to register for a single groundfish fishery at a time. A registration requirement also exists for the Chignik Area; that area was also designated as super-exclusive for the black rockfish fishery beginning in 2003.

In 2014, 49 mt of black rockfish were harvested from five sections in the Kodiak Area. GHLs were attained in three sections. Harvest in the Chignik and South Alaska Peninsula Management areas remain confidential. In 2014, no vessels made directed black rockfish landings in the Aleutian Islands Area. Fishers are allowed to retain up to 5% of black rockfish by weight incidentally during other fisheries. The incidental harvest in the Aleutian Islands Area is confidential due to limited participation in 2014. A voluntary logbook program was initiated in 2000 in the hope of obtaining CPUE estimates as well as more detailed harvest locations; the logbook program was made mandatory in 2005 (Contact Mark Stichert).

Statewide, the majority of sport caught rockfish is taken incidental to recreational fisheries for halibut or while trolling for salmon. Size limits have never been set for rockfish harvested in the sport fishery, although there has been a progression of bag and possession limit changes over the last 20 years.

For the 2014 season, the entire **Southeast Alaska** region's sport bag and possession limit for pelagic rockfish was five fish per day, 10 in possession. The non-pelagic rockfish regulations were set as follows:

Southeast Alaska Outside Waters: 1) all non-pelagic rockfish caught must be retained until the bag limit is reached; 2) resident bag limit was two fish, only one of which could be a yelloweye; four fish in possession, of which no more than two could be yelloweye; 3) nonresident bag limit was two fish, only one of which could be a yelloweye, four fish in possession, of which no more than one could be yelloweye; and an annual limit of one yelloweye rockfish.

Southeast Alaska Inside Waters: 1) all non-pelagic rockfish caught must be retained until the bag limit is reached; 2) resident bag limit was three fish, only one of which could be a yelloweye; six fish in possession, of which no more than two could be yelloweye; 3) nonresident bag limit was two fish, only one of which could be a yelloweye, four fish in possession, of which no more than two could be yelloweye; and an annual limit of two yelloweye rockfish.

For the entire Southeast Alaska region, charter operators and crewmembers could not retain non-pelagic rockfish while clients were on board the vessel. In addition, anglers fishing from charter vessels were required to release non-pelagic rockfish to the depth of capture or at least 100 feet, whichever is shallower, using a deepwater release device. Charter vessels were required to have

at least one functional deep water release device on board and available for inspection (Contact Bob Chadwick).

Rockfish regulations in **Southcentral Alaska** have been designed to discourage targeting of rockfish yet allow and mandate retention of incidental harvest. As in Southeast Alaska, bag limits are more restrictive for non-pelagic species to account for their lower natural mortality rates. The open season for rockfish was year-round in all areas. The bag limit in Cook Inlet was five rockfish daily, only one of which could be a non-pelagic species (DSR or slope species). The bag limit in Prince William Sound during the period May 1-September 15 was four rockfish, no more than two of which could be a non-pelagic species. During the period September 16-April 30, the bag limit was eight rockfish, of which no more than two could be non-pelagic species. During both periods, the first two non-pelagic rockfish caught in Prince William Sound were required to be retained. The bag limit in the North Gulf Coast area was four rockfish daily, including no more than one non-pelagic rockfish. The bag limit in the Kodiak and Alaska Peninsula areas was five rockfish, no more than two of which could be non-pelagic species, and no more than one of the non-pelagic species could be a yelloweye.

d. Fisheries

Directed fisheries for DSR and black rockfish occurred in **Southeast** in 2014. Effort in the directed black rockfish fishery was low with two vessels participating; consequently, directed harvest is confidential. A total of 4.1 mt of black rockfish were harvested in all groundfish, halibut, and salmon troll fisheries in SEO. The 2014 directed DSR fishery in outside waters was opened in EYKT for a total harvest of 33.0 mt. There was also a directed DSR fishery in internal waters in 2014 (SSEI and NSEI); the total harvest in SSEI and NSEI combined was 26.9 mt. An additional 63.1 mt of DSR was taken as bycatch in SEO and 15 mt in internal waters with 90% in SEO and 91% in internal waters from the IFQ halibut fishery. Slope, PSR, and thornyhead rockfish were also taken as bycatch in internal waters with 67.8 mt harvested in 2014.

In the **Central Region**, total rockfish harvest in 2014 was just under 99 mt. The 2014 Cook Inlet Area directed rockfish fishery opened July 1 and closed December 31 with a harvest of 17.8 mt of pelagic shelf rockfish. Total rockfish harvest in the Cook Inlet Area including bycatch to longline, pot and jig fisheries was 27.6 mt. Total rockfish harvest for the PWS Area bycatch-only fishery was 71.4 mt from pot, trawl, and longline fisheries, which exceeded the guideline harvest level and profits from rockfish delivered after this GHL was achieved were forfeited to the State of Alaska. This included 31.2 mt incidental catch of rockfish from the walleye pollock trawl fishery and a 40.2 mt incidental harvest of demersal and slope rockfish primarily from the sablefish, Pacific cod, and halibut longline fisheries.

Overall **sport harvest** (guided and unguided) is estimated primarily through the Statewide Harvest Survey (SWHS). Charter vessel logbooks provide reported harvest for the guided sector only. Harvest reporting areas for these programs are different than commercial reporting areas making direct comparisons difficult. Additionally, species-specific data are available only from creel surveys.

The SWHS estimates are for the general category of "rockfish" (all species combined), and the charter vessel logbooks require reporting of rockfish harvest in three categories - pelagic,

yelloweye, and other non-pelagics. Recreational rockfish harvest is typically estimated in numbers of fish. Estimates of the 2014 harvest are not yet available from the SWHS, but the 2014 estimates for all species combined were 139,909 fish in Southeast and 116,176 fish in Southcentral Alaska. The average estimated annual harvest for the prior five-year period (2008–2012) was 111,178 rockfish in Southeast Alaska and 108,929 fish in Southcentral Alaska.

3. Sablefish

    a. Research

In 2014, sablefish longline surveys were conducted for both the NSEI and SSEI areas. These surveys are designed to measure trends in relative abundance and biological characteristics of the sablefish population. Biological data collected in these surveys include length, weight, sex and maturity stage. Otoliths are collected and sent to the ADF&G age determination unit in Juneau for age reading. The cost of these surveys is offset by the sale of the fish landed, but in 2014 three commercial fishermen that participated in the surveys were allowed to sell their Personal Quota Share (PQS) from the total testfish harvested in the survey, thus reducing the total testfish harvest impact on the quota by approximately 30%. The department plans to allow permit holders to harvest their PQS aboard the 2015 survey as well.

The survey CPUE for NSEI increased in 2014 to1.46 lb/hook from 1.40 lb/hook in 2013. In the SSEI stock assessment, analyses revealed a decline in the overall longline survey CPUE index (round lb/hook) from 2013 (0.67) to 2014 (0.61). There is a high proportion of immature fish in the SSEI longline and pot fisheries (>60% from 2012–2014) and in the SSEI survey (>73% from 2012–2014). In 2013, the SSEI survey was redesigned to expand survey station coverage in Dixon Entrance as well as increase the minimum spacing between survey stations. The Dixon Entrance area is an important area to the SSEI commercial fishery (40 to 60% of the annual commercial harvest), yet this area had been underrepresented in the department survey. The new survey design was used for the 2013 and 2014 SSEI longline surveys.

Since 2012, ADF&G has conducted our mark/recapture study in NSEI on the ADF&G *R/V Medeia.* In May and June 2013, 7,961 fish were marked and released in NSEI over the course of the pot tagging survey. Over the 23 day survey, 34 longline pot sets were made. Sablefish were targeted by area and depth in proportion to the commercial catch using logbook data from the three previous years. The mark-recapture results serve as the basis of our NSEI stock assessment. No pot tagging survey occurred in 2014 due to budget reductions; however, a survey is scheduled for May 2015 (Contact Kristen Green).

Central Region, ADF&G conducted longline surveys for sablefish from 1996 through 2006 in Prince William Sound. Longline survey effort was extended into the North Gulf District in 1999, 2000 and 2002. All longline surveys were discontinued due to lack of funding, and with the goal of transitioning to a pot longline survey, particularly in PWS. Between 1999 and 2005, sablefish were opportunistically tagged in PWS on ADF&G trawl surveys. Sablefish tagging surveys were conducted in PWS in 2011 and 2013 using pot longline gear. There were 1,203 and 318 fish tagged in 2011 and 2013, respectively. CPUE was very low in 2013 with an average of 0.60 fish per pot. To date, 241 fish have been recaptured from the 2011 survey and 22 were captured from the 2013 survey. From the 2011 tagged releases, 79% were recaptured within PWS and 19% outside in the GOA with the remainder of unknown location. A PWS sablefish tagging survey is planned for March, 2015.

Short-terms goals are to determine whether the portion of the GOA sablefish stock that resides in and used PWS is well- or poorly-mixed with the larger GOA population. If well-mixed, there would be no need for a PWS sablefish stock assessment as the Federal assessment could be used to apportion catch for the PWS sablefish fishery. If poorly-mixed, there would be a need to conduct more tagging work in PWS to provide an assessment of the abundance within those waters from which to set harvest limits and manage the fishery. The department will continue to conduct more sablefish tagging as funding allows, and work towards addressing the mixing question via tag-recapture analysis. If data results indicate that a PWS assessment needs to be conducted, the department would continue its tagging study potentially in combination with an age-structured model to accomplish the goal of providing information with which to best manage the fishery (Contact Mike Byerly or Dr. Kenneth Goldman).

Skipper interviews and port sampling occurred in Cordova, Whittier, and Seward for the PWS Area commercial fishery and in Seward and Homer for the Cook Inlet Area fishery. Data obtained included date and location of harvest, length, weight, sex, and gonad condition. Otoliths were removed and sent to the Age Determination Unit. Logbooks are required for both fisheries and provide catch and effort data by date and location (Contact Elisa Russ).

b. Stock Assessment

In **Southeast**, the department is using mark-recapture methods with external tags and fin clips to estimate abundance and exploitation rates for sablefish in the NSEI Subdistrict. Sablefish are captured with pot gear in May or June, marked with a tag and a fin clip then released. Tags are recovered from the fishery and fish are counted at the processing plants and observed for fin-clips. The 2014 recommended ABC of 356 mt was calculated by applying the 2013 fishery mortality at age (based on a harvest rate of 6.9% using the $F_{50\%}$ biological reference point (BRP)) to the 2014 forecast of total biomass at age and summing across all ages. The 2014 ABC was a 26% reduction from the 2013 ABC (547 mt), which was also based on the $F_{50\%}$ BRP (the harvest rate was 7.8% for 2013). Since 2009 BRPs have become more conservative, i.e. $F_{45\%}$ in 2009 and $F_{50\%}$ since 2010.

In addition to the mark-recapture work, an annual longline survey is conducted in NSEI to provide biological data as well as relative abundance information. In SSEI only an annual longline survey is conducted to provide biological data as well as relative abundance information. Unlike NSEI, the department does not currently estimate the absolute abundance of SSEI sablefish. There appears to be substantial movement of sablefish in and out of the SSEI area, which violates the assumption of a closed population; consequently, Peterson mark-recapture estimates of abundance or exploitation rates are not possible for this fishery. Instead, the SSEI sablefish population is managed based on relative abundance trends from survey and fishery CPUE data, as well as with survey and fishery biological data that are used to describe the age and size structure of the population and detect recruitment events (Contact Kristen Green).

c. Management

There are three separate internal water areas in Alaska which have state-managed limited-entry commercial sablefish fisheries. The NSEI and SSEI (**Southeast Region**) and the Prince William Sound Inside District (**Central Region**) each have separate seasons and GHLs. In the Cook Inlet Area there is a state-managed open access sablefish fishery with a separate GHL.

In the **Southeast Region** both the SSEI and NSEI sablefish fisheries have been managed under a license limitation program since 1984. In 1994 the BOF adopted regulations implementing an equal share quota system where the annual GHL was divided equally between permit holders and the season was extended to allow for a more orderly fishery. In 1997 the BOF adopted this equal share system as a permanent management measure for both the NSEI and SSEI sablefish fisheries. There were 78 permit holders eligible to fish in 2014 in NSEI and 23 permit holders eligible to fish in SSEI.

During the February 2009 BOF meeting, the BOF made no changes affecting the regulation of commercial sablefish fisheries. The BOF did however establish bag and possession limits for sablefish in the sport fishery. At the 2012 BOF meeting, a regulation was passed to require personal use and subsistence use sablefish permits, and at the 2015 BOF meeting, limits were defined for personal use sablefish fisheries for the number of fish, number of permits per vessel, and number of hooks. No changes were made to sablefish subsistence fisheries in 2015.

There is no open-access sablefish fishery in the Southeast Outside District as there are limited areas that are deep enough to support sablefish populations inside state waters. In some areas of the Gulf, the state opens the fishery concurrent with the EEZ opening. These fisheries, which occur in Cook Inlet Area's North Gulf District and the Aleutian Island District, are open access in state waters, as the state cannot legally implement IFQ management at this time. The fishery GHLs are based on historic catch averages and closed once these have been reached.

Within the **Central Region** the Cook Inlet North Gulf District sablefish GHL is set using an historic baseline harvest level adjusted annually by the relative change to the ABC in the federal CGOA. The 2014 fishery GHL was 25.4 mt. In 2004, the BOF adopted sablefish fishery-specific registration, a logbook requirement, and a 48-hour trip limit of 1.36 mt in Cook Inlet. For PWS, a limited-entry program that included gear restrictions and established vessel size classes was adopted in 1996. The PWS fishery GHL was set at 110 mt, which is the midpoint of the harvest range set by a habitat-based estimate, and has not changed since 1996. PWS fishery management continued to develop through access limitation and in 2003 into a shared quota system wherein permit holders are allocated shares of the harvest guideline. Shares are equal within each of four vessel size classes, but differ between size classes. In 2009, the BOF adopted regulations which included a registration deadline, logbooks, and catch reporting requirements. In 2009, new season dates were also adopted by the BOF for PWS sablefish, April 15 – August 31. The new season opening date, one month later than in previous years, was adopted to reduce the opportunity for orca depredation on hooked sablefish which predominately occurred prior to May 1.

The sole **Westward Region** sablefish fishery occurs in the Aleutian Islands. The GHL for the Aleutian Islands is set at 5% of the combined Bering Sea Aleutian Islands TAC. The state GHL can be adjusted according to recent state-waters harvest history when necessary. From 1995 to 2000 the fishery opened concurrently with the EEZ IFQ sablefish fishery. In 2001 the BOF changed the opening date of the state-waters fishery to May 15 to provide small vessel operators an opportunity to take advantage of potentially better weather conditions. From 1995 to 2000 all legal groundfish gear types were permissible during the fishery. Effective in 2001, longline, pot, jig and hand troll became the only legal gear types. Vessels participating in the fishery are

required to fill out logbooks. In 2013, the BOF changed the season opening and closing dates to revert back to coinciding with the federal IFQ season.

The Southeast Alaska **sport fishery** for sablefish was regulated for the first time in 2009. Sport limits in 2014 were four fish of any size per day, four in possession, with an annual limit of eight fish applied to nonresidents only in lower Lynn Canal and Chatham Strait. In 2014 a total of 180 sablefish were sampled during creel surveys in Southeast Alaska, suggesting that recreational sablefish harvest at sampled ports was small relative to other species. The sablefish sport fishery in Southcentral Alaska was unregulated in 2014, with no bag, possession, or size limits. Port samplers in Southcentral Alaska measured six sablefish from the sport harvest, again suggesting relatively small harvests.

d. Fisheries

In the **Southeast Region** the 2014 NSEI sablefish fishery opened August 15 and closed November 15. The 78 permit holders landed a total of 350.3 mt of sablefish. The fishery is managed by equal quota share; each permit holder was allowed 4.3 mt. In the NSEI fishery, the overall CPUE (adjusted for hook spacing expressed in round lb/hook) increased slightly with 0.84 lb/hook in 2014 and 0.81 in 2013. The 2014 SSEI sablefish fishery opened June 1 and closed November 15. Twenty-two permit holders landed a total of 224.5 mt of sablefish, each with an equal quota share of 10.6 mt. In SSEI, 20 permits were designated to be fished with longline gear and the remaining three fished with pot gear. One of the longline permits did not fish in 2014. Longline fishery CPUE declined slightly in 2014 from 2013 (0.33 lb/hook in 2013to 0.30 lb/hook in 2014) (Contact Kristen Green).

In the **Central Region** the 2014 open access sablefish fishery in the Cook Inlet North Gulf District opened at noon July 15 and was open through the remainder of the calendar year. Five vessels participated and harvested 23.0 mt, the second year that the GHL (25.4 mt) was not achieved. The 2014 PWS harvest totaled 43.9 mt and was the lowest harvest on record, less than half of the historical average and a decrease of 26.6 mt from 2013 (Contact Jan Rumble).

Within the **Westward Region**, only the Aleutian Islands have sufficient habitat to support mature sablefish populations of enough magnitude to permit commercial fishing. All other sections within the region are closed by regulation to avoid the potential for localized depletion from the small amounts of habitat within the jurisdiction of the state. Bycatch from the areas closed to directed fishing is limited to 1% for trawl gear only, no bycatch is allowed for all other gear types. The 2014 Aleutian Island fishery opened on May 8 with only pot, longline, jig and hand troll gear allowed. Additional requirements for the fishery include registration and logbook requirements. The GHL was set at 157 mt for the state-waters fishery. The harvest from the 2014 Aleutian Islands sablefish fishery was 74 mt. The season remained open until the November 7 closure date (Contact Heather Fitch).

The most recent sablefish recreational harvest estimates from the SWHS are for 2013. The estimated harvest was 12,395 fish in Southeast Alaska and 5,593 fish in Southcentral Alaska. SWHS estimates are suspected to be biased high due to misidentification and misreporting. Sablefish are not commonly taken by anglers, and relatively high catches were reported from some areas where sablefish are rarely or never observed by creel survey crews. Charter logbooks indicated guided-only harvests of 7,423 sablefish in Southeast Alaska and 154 sablefish in Southcentral Alaska in 2013 (Contact Bob Chadwick, Dan Bosch).

4. Flatfish

    a. Research

There was no research on flatfish during 2014.

    b. Stock Assessment

There are no stock assessments for flatfish.

    c. Management

Trawl fisheries for flatfish are allowed in four small areas in the internal waters of **Southeast Alaska** under a special permit issued by the department. The permits are generally issued for no more than a month at a time and specify the area fished and other requirements. Trawl gear is limited to beam trawls, and mandatory logbooks are required, observers can be required, and there is a 20,000 pound weekly trip limit.

Within **Central Region** flatfish may be harvested in a targeted fishery only under the authority of an ADF&G Commissioner's permit. The permit may stipulate fishing depth, seasons, areas, allowable sizes of harvested fish, gear, logbooks, and "other conditions" deemed necessary for conservation or management purposes.

There are no bag, possession, or size limits for flatfish (excluding Pacific halibut) in the recreational fisheries in Alaska. Harvest of flatfish besides Pacific halibut are not explicitly estimated by the SWHS and no information is collected in the creel surveys and port sampling of the recreational fisheries in Southcentral or Southeast Alaska. Flatfish are occasionally taken incidentally to other species and in small shore fisheries, but the recreational harvest is believed to be very small.

    d. Fisheries

Very little effort has occurred in the **Southeast** fishery in recent years. Only one vessel since the 1998–1999 season has applied for a Commissioner's permit to participate in this fishery; this vessel made a single flatfish landing in 2013. Due to limited participation, harvest information is confidential for this landing. The Southeast flatfish trawl areas are also the sites of a shrimp beam trawl fishery. In the past, most of the Southeast harvest was starry flounder. In state waters of the **Westward Region**, the State of Alaska adopts most NOAA Fisheries regulations and the flatfish fishery is managed under a parallel management structure. No Commissioner's permits to harvest flatfish were issued in **Central Region** during 2014.

5. Pollock

    a. Research

Pollock continue to be a dominant species in the **Central Region** ecosystem. Skipper interviews and biological sampling of PWS commercial pollock deliveries during 2013 occurred in Seward and Kodiak. Sample data collected included date and location of harvest, species, length, weight, sex, and gonad condition. Otoliths were collected from approximately half of sampled fish. Homer staff determined ages of 1,150 pollock otoliths (Contact Elisa Russ).

Beginning in 1998, spatial patterns of genetic variation were investigated in six populations of walleye pollock from three regions: North America – Gulf of Alaska; North America – Bering Sea; Asia – East Kamchatka. The annual stability of the genetic signal was measured in replicate samples from three of the North American populations. Allozyme and mtDNA markers provided concordant estimates of spatial and temporal genetic variation. These data show significant genetic variation between North American and Asian pollock as well as evidence that spawning aggregations in the Gulf of Alaska, such as Prince William Sound, are genetically distinct and may merit consideration as distinct stocks. These data also provide evidence of inter-annual genetic variation in two of three North American populations. Gene diversity values show this inter-annual variation is of similar magnitude to the spatial variation among North American populations, suggesting the rate and direction of gene flow among some spawning aggregations is highly variable. This study was published in 2002 in the Fishery Bulletin (Olsen et al. 2002)
(Contact Bill Templin).

b. Stock Assessment

No stock assessment work was conducted on pollock in 2014 (Contact Dr. Kenneth Goldman).

c. Management

Prince William Sound pollock pelagic trawl fishery regulations were amended by BOF in 2009 and included a January 13 registration deadline, logbooks, catch reporting, check-in and check-out provisions, and accommodation of a department observer upon request. Prior to 2009 these requirements were stipulated under the terms of a Commissioner's permit. The Prince William Sound Inside District is divided into three sections for pollock management: Port Bainbridge, Knight Island, and Hinchinbrook, with the harvest from any section limited to a maximum of 60% of the GHL. Additionally, the fishery is managed under a 5% maximum bycatch allowance that is further divided into five species or species groups. In 2013, new management measures were implemented to set the PWS pollock GHL at 2.5% of the federal Gulf of Alaska ABC. For **Cook Inlet,** directed fishing for pollock is managed under a "Miscellaneous Groundfish" Commissioner's permit. In Central Region, pollock is also retained as bycatch to other directed groundfish fisheries, primarily Pacific cod (Contact Jan Rumble).

d. Fisheries

The 2014 Prince William Sound fishery opened on January 20 with a GHL of 3,891 mt. Total pollock harvest was 2,368 mt, and the fishery was closed early because of bycatch limits being exceeded. Total bycatch during the PWS pollock fishery was 120 mt, 65% of the bycatch total was dominated by squid at 78 mt. The rockfish bycatch exceeded the department's 0.5% limit, 30.6 mt was harvested. In the Cook Inlet Area in 2014, a seine pollock fishery under the terms of a commissioner's permit was opened on December 1st. For this fishery, 99.8 mt of pollock was available and 5.2 mt was harvested. There were 5 permits issued for the fishery but only 2 of them participated. In addition, pollock was harvested as bycatch to the Pacific cod longline and jig fisheries, 0.7 mt (Contact Jan Rumble).

6. Sharks

a. Research

In 2009, **Central Region** Commercial Fisheries Division began tagging all sharks with spaghetti-type external tags, but discontinued that work after the 2012 field season. A recent collaboration between ADF&G and NOAA Fisheries staff resulted in the publication of a paper strongly indicating that salmon sharks have a biennial reproductive cycle and a gestation period of no longer than 10 months (Conrath et al. 2014). Another research project on the reproductive biology of salmon sharks via blood hormone concentrations, which was initiated in the summer of 2010, continues with the goal of providing more precise information on the timing and frequency of reproductive activity. Another research project examining the energetics of salmon sharks was initiated in the summer of 2012, which includes the concurrent application of temperature/depth transmitters and accelerometers. The department hopes to continue that work in 2016. A collaborative effort led by the National Institute of Polar Research in Japan with collaborators at ADF&G, the University of California at Santa Barbara, the Institute for Ocean Conservation Science at Stony Brook University and the Scottish Oceans Institute's School of Biology at the University of St Andrews, has resulted in a forthcoming publication on the ecological significance of endothermy in fishes (Contact Dr. Kenneth Goldman).

The **Division of Sport Fish—Southcentral Region** collected harvest and fishery information on sharks through the groundfish harvest assessment program although no specific research objectives were identified. Three salmon sharks were reported harvested by interviewed anglers in 2014, and one fish was measured. Twenty-one spiny dogfish were reported harvested by interviewed anglers in over 13,800 angler-days of effort. Eight length measurements were obtained from spiny dogfish in 2014. Interviews also provided estimates of the numbers of salmon sharks and spiny dogfish kept and released by ADF&G statistical area (Contact Barbi Failor).

b. Stock Assessment

There is no stock assessment work being conducted on sharks in Central Region (Contact Dr. Kenneth Goldman).

c. Management

The Alaska BOF prohibited all directed commercial fisheries for sharks in 1998. In 2000 the BOF increased the commercial bycatch allowance in **Southeast Region** for dogfish taken while longlining for other species to 35% round weight of the target species and also allowed full retention of dogfish bycatch in the salmon set net fishery in Yakutat. This action was an effort to minimize waste of dogfish in these fisheries and to encourage sale of bycatch. In **Central Region**, bycatch had been set by the maximum allowable retention amount in regulation at 20% of the round weight of the directed species on board a vessel; however, beginning in 2014, allowable bycatch levels were set at 15% by emergency order. Additionally, in 2004 the BOF amended Cook Inlet Area regulations to provide for a directed fishery for spiny dogfish in the Cook Inlet area under terms of a Commissioner's permit. Directed fishing for dogfish is also allowed in Southeast Alaska under the terms of a Commissioner's permit.

Also in 2000 the BOF prohibited the practice of "finning", requiring that all sharks retained must be sold or utilized and have fins, head and tail attached at the time of landing. "Utilize" means

use of the flesh of the shark for human consumption, for reduction to meal for production of food for animals or fish, for bait or for scientific, display, or educational purposes.

Recreational fishing for sharks is allowed under the statewide Sport Shark Fishery Management Plan adopted by the BOF in 1998. The plan recognizes the lack of stock assessment information, the potential for rapid growth of the fishery, and the potential for over harvest, and sets a statewide daily bag limit of one shark and a season limit of two sharks of any species except spiny dogfish which have a daily bag limit of five. Recreational demand for sharks continued to be low in 2014.

d. Fisheries

Sharks (which include spiny dogfish) can be harvested as bycatch with limits to target species in Cook Inlet and PWS. Commissioner's permits can also be issued but no applications were received in 2014 in the **Central** or **Southeast Region**. In Cook Inlet, there was no harvest of spiny dogfish in 2014 and in PWS 0.2 mt was harvested.

Recreational shark harvest in 2014 was estimated at 152 sharks of all species in Southeast Alaska and 559 sharks in Southcentral Alaska. The precision of these estimates is low; the Southeast estimate has a CV of 48% and the Southcentral estimate has a CV of 39%. The statewide charter logbook program also required reporting of the number of salmon sharks kept and released in the charter fishery. Charter anglers are believed to account for the majority of the recreational salmon shark harvest. The 2013 reported charter harvest from logbooks was three salmon sharks in Southeast Alaska and four salmon sharks in Southcentral Alaska.

7. Lingcod

a. Research

Since 1996, 9,189 lingcod have been tagged and 497 fish recovered in the Southeast Region. Length, sex and tagging location are recorded for all tagged fish. Dockside sampling of lingcod caught in the commercial fishery continued in 2014 in Sitka, Juneau, and Yakutat with 916 fish sampled for biological data. Otoliths were sent to the ADU in Juneau for age determination (Contact Kristen Green).

In the **Central Region**, skipper interviews and port sampling were conducted in Cordova, Seward, and Homer. Data obtained included date and location of harvest, length, weight, sex and age. There were 365 lingcod samples collected and 77% were from the Prince William Sound Area, as there was little effort in the directed fishery in the Cook Inlet Area. Otoliths were sent to the ADU in Juneau for age determination. Gonad condition was generally not determined as nearly all fish were delivered gutted (Contact Elisa Russ).

In the **Westward Region**, no directed lingcod effort occurred during 2014. All lingcod were harvested incidental to other federal and state managed groundfish fisheries. The 2014 harvest totaled 66 mt in the Kodiak Area and 4 mt in the Chignik Area.

The Division of Sport Fish—Southeast Region continued to collect catch, harvest, and biological data from lingcod as part of a marine harvest survey program with lingcod harvests tabulated back to 1987 in some selected ports. Data collected in the program include statistics on effort, catch, and harvest of lingcod taken by Southeast Alaska sport anglers. Ports sampled in

2014 included Juneau, Sitka, Craig/Klawock, Wrangell, Petersburg, Gustavus, Elfin Cove, Yakutat, and Ketchikan. Length and sex data were collected from 1,500 lingcod in 2014, primarily from the ports of Sitka, Ketchikan, Craig, Gustavus, Elfin Cove, and Yakutat (Contact Mike Jaenicke).

The **Division of Sport Fish—Southcentral Region** continued collection of harvest and fishery information on lingcod through the groundfish harvest assessment program. Lingcod objectives include estimation of 1) the age, sex, and length composition of lingcod harvests by ports and 2) the geographic distribution of harvest by each fleet. A total of 802 lingcod were sampled from sport harvest at Seward, Valdez, Whittier, Kodiak, Deep Creek, and Homer in 2014. These ports accounted for the majority of recreational lingcod harvest in Southcentral Alaska (Contact Barbi Failor).

b. Stock Assessment

The **Southeast Region** is not currently able to reliably estimate lingcod biomass or abundance. Lacking abundance estimates, and given the complex life history and behavior of lingcod, impacts to lingcod populations from fishing are difficult to assess. Analysis of catch per unit effort data (CPUE) from fishery logbooks, in terms of fish per hook-hour for 1988–1998, showed that CPUE had declined between 21 to 62% in areas where a directed fishery and increased recreational catch had developed. Consequently the quota for lingcod was reduced in all areas in 2000. After reductions in GHRs, CPUE increased in CSEO until around 2007; since then CPUE has decreased. CPUE in NSEO has been generally stable since reductions in GHRs. In SSEOC, CPUE was highly variable from 1994 to 2003; since then, limited participation in this fishery is too erratic to characterize CPUE. In EYKT, after the GHR was reduced, CPUE was fairly stable; however, in last three years CPUE has been the lowest since 2000. Yet, CPUE in EYKT remains high relative to other management areas, likely because fishing is concentrated in smaller areas with typically higher abundances of lingcod. The CPUE in IBS was stable between 2004 and 2009 and increased from 2010 to 2014, possibly due to increases in stocks or changes in fishery dynamics–vessel participation has decreased with experienced fishermen remaining in this area.

Central Region conducts ROV surveys along the north Gulf of Alaska coast from the Kenai Peninsula to Prince William Sound to monitor the local abundance of lingcod and DSR in selected index sites. These sites are on the order of 100's of sq km and tend to be relatively isolated rocky banks bordered by land masses, deep fjords, and/or expanses of deeper soft substrates. An ROV survey at Nuka Bank and Pye Reef in the Central Region NGD was planned and attempted in July 2014. This was the first survey attempted using the R/V *Solstice*. Problems with the vessels location of the pole mounted tracking system forced an early termination of the survey. The R/V Solstice crew relocated the pole mount to the port side of the vessel to correct the issue. There were 24 of the planned 150 transects completed during this survey. All the video and tracking data have been reviewed and completed but no population estimate could be produced due to the small sample size (Contact Mike Byerly or Dr. Kenneth Goldman).

c. Management

Management of lingcod in **Southeast Alaska** is based upon a combination of GHRs, season and gear restrictions. Regulations include a winter closure for all users, except longliners, between December 1 and May 15 to protect nest-guarding males. GHLs were greatly reduced in 2000 in all areas and allocations made between directed commercial fishery, sport fishery, longline fisheries, and salmon troll fisheries. This was the first year sport catch was included in a quota

allocation. The 27" minimum commercial size limit remains in effect and fishermen are requested to keep a portion of their lingcod with the head on, and proof of gender to facilitate biological sampling of the commercial catch. Vessel registration is required and trip limits are utilized by ADF&G staff, when needed, for the fleet to stay within its allocations. The directed fishery is limited to jig or dinglebar troll gear. In 2003 the Board of Fish (BOF) established a super-exclusive directed fishery registration for lingcod permit holders fishing in the IBS Subdistrict.

The **Central Region** has directed commercial fisheries for lingcod in Cook Inlet and PWS. Regulations for the commercial lingcod fishery include open season dates of July 1 to December 31 and a minimum size limit of 35 inches (89 cm) overall or 28 inches (71 cm) from the front of the dorsal fin to the tip of the tail and a jig only gear requirement for the directed lingcod fishery in the Cook Inlet Area. Guideline harvest levels are 24 mt for Cook Inlet and 3.3 mt in the Inside District of PWS and 11.5 mt for the PWS Outside District. Resurrection Bay, near Seward, is closed to commercial harvest of lingcod. In 2009, a new BOF regulation permitted retention of lingcod at a 20% bycatch level in PWS waters following closure of the directed season.

In **Southeast Alaska**, sport harvests of lingcod are incorporated into a regionwide lingcod management plan. This plan reduced GHLs for all fisheries (combined) in seven management areas, and allocated a portion of the GHL for each area to the sport fishery. Since 2000, harvest limits reductions, size limits, and mid-season closures have been implemented by emergency order in various management areas to ensure sport harvests do not exceed allocations.

The sport fishery lingcod season for 2014 was May 16-November 30. Charter vessel operators and crew members were prohibited from retaining lingcod while guiding clients. For resident anglers, the limits regionwide were one fish per day and two in possession, and there was no size limit. Additional restrictions were put into place for nonresidents to keep harvest from exceeding allocations specified by the Alaska Board of Fisheries. Nonresidents were allowed one fish daily and one in possession. In the Yakutat and Southern Southeast districts, nonresidents were allowed to harvest fish 30-45 inches in length, or fish 55 inches and greater in length. In the Northern Southeast District, nonresidents were only allowed to harvest fish that were 30-35 inches in total length, or fish 55 inches and greater in length. In all areas, nonresidents were limited to two lingcod annually, only one of which could be 55 inches or greater in length. In addition, the Pinnacles area near Sitka has been closed to sport fishing year-round for all groundfish since 1997 (Contact Robert Chadwick).

A suite of regulations was established in 1993 for recreational lingcod fisheries in **Southcentral Alaska** in light of the lack of quantitative stock assessment information. Resurrection Bay remained closed to lingcod fishing year-round to rebuild the population, although there is no formal rebuilding plan. The season was closed region-wide from January 1 through June 30 to protect spawning and nest guarding lingcod. Daily bag limits in 2014 were two fish in all areas except the North Gulf, where the daily bag limit was one fish. All areas except Kodiak had a minimum size limit of 35 inches to protect spawning females (Contact Dan Bosch or Matt Miller).

d. Fisheries

Lingcod are the target of a "dinglebar" troll fishery in **Southeast Alaska**. Dinglebar troll gear is power troll gear modified to fish for groundfish. Additionally lingcod are landed as significant bycatch in the DSR and halibut longline and salmon troll fisheries. At the 2009 BOF meeting a regulation was adopted that allowed Southeast management staff to adjust the lingcod bycatch levels in the halibut fishery to maximize the harvest of the lingcod longline allocations. The directed fishery landed 94.7 mt of lingcod in 2014. An additional 51.0 mt was landed as bycatch in halibut and other groundfish fisheries and 6.4 mt in the salmon troll fishery.

Central Region commercial lingcod harvests have primarily occurred in the North Gulf District of Cook Inlet and PWS. Lingcod harvests in 2014 totaled 4.6 mt in Cook Inlet and 7.2 mt in PWS. Approximately 74% of the lingcod harvest in Cook Inlet resulted from directed jig effort. In PWS, approximately 94% of lingcod harvest was from directed longline effort. In both areas, the remaining harvest resulted from bycatch to other directed (primarily halibut) longline fisheries. Cook Inlet and PWS fisheries remained open through December 31 (Contact Jan Rumble).

No directed effort occurred for lingcod in the **Westward Region** during 2014. Most lingcod are taken as bycatch to federally managed bottom trawl fisheries. Incidental take by trawl vessels peaked in 2008 when 250 mt of lingcod were harvested in 2008. In response, ADF&G reduced bycatch limits in 2009 from 20% to 5%. Incidental take of lingcod had ranged between 30 to 106 mt per year since 2009. Most lingcod are harvested in federal waters northeast of the Port of Kodiak.

Recreational lingcod harvest estimates from the statewide mail survey for 2013 (the most recent year available) were 14,333 lingcod in Southeast Alaska and 19,958 lingcod in Southcentral Alaska. The average estimated annual harvest for the prior five-year period (2008–2012) was 10,440 fish in Southeast Alaska and 22,969 fish in Southcentral Alaska.

8. Other species

In 1997 the BOF approved a new policy that would strictly limit the development of fisheries for other groundfish species in Southeast. Fishermen are required to apply for a "permit for miscellaneous groundfish" if they wish to participate in a directed fishery for species that do not already have regulations in place for such. Permits do not have to be issued if there are management and conservation concerns. The state also has a regulation that requires that the bycatch rate of groundfish be set annually for each fishery by emergency order unless otherwise specified in regulation.

A Commissioner's permit is required before a directed fishery may be prosecuted for skates. This permit may restrict depth, dates, area, and gear, establish minimum size limits, and require logbooks and/or observers, or any other condition determined to be necessary for conservation and management purposes. In the past, Commissioner's permits have been submitted for directed fishing of hagfish in Southeast Alaska; however, no applications were made for hagfish in 2014.

Currently in the **Central Region**, skates are harvested as bycatch and had been allowed up to 20% during other directed fisheries for groundfish until that allowable amount was reduced to 15% in 2014 and set by emergency order. A directed fishery in the Prince William Sound Area

for big and longnose skates was prosecuted under the authority of a Commissioner's permit in 2009 and 2010. However, the fishery was deemed unsustainable, and no permits were issued thereafter. The permit stipulated fishing depth, seasons, areas, allowable sizes of harvested fish, gear, and logbooks. In Cook Inlet, big and longnose skate harvest as bycatch was 24.4 mt in 2014, a decrease from 51.4 mt in 2013. In PWS, skate harvest was 54.6 mt in 2014, half of what was harvested in 2013, 107.8 mt. Because bycatch limits are set as a percentage of the targeted species, harvest levels of the target species can affect amount of bycatch that are legally harvested. Retention of big skate incidental catch was closed by emergency order on February 6, 2014 in response to the federal CGOA closure due to the TAC being achieved.

In 2009, Central Region Commercial Fisheries Division began tagging all big, longnose and Aleutian skates greater than 70 cm total length with spaghetti-type tags. Starting in 2010, all skate species of all sizes were tagged on ADF&G surveys (Contact Dr. Kenneth Goldman).

The recreational halibut fishery is the focus of a statewide research and management effort. Data on the recreational fishery and harvest are collected through port sampling in Southeast and Southcentral Alaska. Harvest estimates are provided annually to the IPHC for use in the annual stock assessment, and to the North Pacific Fishery Management Council. The council's Scientific and Statistical Committee has periodically reviewed the state's estimation and projection methods. ADF&G annually provides an analysis that is used to select annual management measures for the charter fishery, and the council incorporates the information in the design and analysis of regulations for the sport charter fishery (Contact Scott Meyer).

C. Other Related Studies

Staff in the **Central Region** currently house all data in an MS Access database format. Queries are complete for calculating CPUE, abundance, and biomass estimates from most surveys. All data are additionally captured in GIS for spatial analysis.

ADF&G manages state groundfish fisheries under regulations set triennially by the BOF.

ADF&G announces the open and closed fishing periods consistent with the established regulations, and has authority to close fisheries at any time for justifiable conservation reasons. The department also cooperates with NOAA Fisheries in regulating fisheries in offshore waters.

1. Dixon Entrance Area

Total removals (including those from test fishing) from the Dixon Entrance area (Alaska groundfish statistical areas 325431, 315431, 325401, and 315401). The table below lists the catch by species group from 1988 through 2014 rounded to the nearest mt. Landings with only halibut catch are excluded.

Year	# Permits	# Landings	DSR	Other Rock	Sablefish	Other Groundfish	Total
1988	20	25	3	3	82	3	91
1989	8	7	1	1	20	0	22
1990	16	17	3	5	182	1	191
1991	24	21	6	12	150	2	170
1992	19	19	3	5	150	1	159
1993	27	26	6	14	232	1	253
1994	27	26	1	20	216	2	239
1995	21	18	0	20	137	0	157
1996	16	14	1	12	83	0	96
1997	37	30	1	18	103	0	122
1998	26	23	1	8	95	0	104
1999	23	24	0	7	71	0	78
2000	27	22	0	14	49	0	63
2001	23	29	1	14	86	0	101
2002	30	46	1	11	106	0	118
2003	29	44	8	12	89	2	111
2004	23	33	5	9	114	2	130
2005	23	26	<1	9	138	<1	148
2006	43	32	1	12	167	1	181
2007	32	31	<1	19	165	1	184
2008	27	32	1	16	101	<1	118
2009	29	34	1	18	132	2	153
2010	34	37	2	17	107	2	128
2011	31	41	<1	16	112	2	130
2012	21	26	<1	18	116	4	139
2013	25	27	<1	14	115	2	132
2014	24	23	5	12	89	5	158

2. Marine Reserves

In September of 1997 the ADF&G submitted proposals to both the BOF and the Council requesting that they implement a small no-take marine reserve in **Southeast**. The purpose of these proposals was to permanently close a 3.2 sq. mile area off Cape Edgecumbe to all bottomfish and halibut fishing (including commercial, sport, charter, bycatch and subsistence) and anchoring to prevent over-fishing and to create a groundfish refuge. Two large volcanic pinnacles that have a diversity and density of fishes not seen in surrounding areas dominate the Edgecumbe Pinnacles Marine Reserve. The pinnacles rise abruptly from the seafloor and sit at the mouth of Sitka Sound where ocean currents and tidal rips create massive water flows over this habitat. These two pinnacles provide a very unique habitat of rock boulders, encrusted with *Metridium*, bryozoans and other fragile invertebrate communities, which attracts and shelters an extremely high density of juvenile rockfishes. The area is used seasonally by lingcod for spawning, nest-guarding, and post-nesting feeding. Yelloweye rockfish and pelagic rockfish

species as well as large numbers of prowfish and Puget Sound rockfish also densely inhabit the pinnacles. This closure protects the fragile nature of this rare habitat and prevents the harvest or bycatch of these species during critical portions of their life history. In February 1998 the BOF approved the reserve and the Council approved the reserve at their June 1998 meeting. The Council recommended to the BOF that they consider closure of the area to salmon trolling which would make the area a complete-no take zone. In February 2000 the BOF rejected closing the area to salmon trolling. The area is an important "turn-around" area for commercial trollers and the BOF did not believe there was sufficient conservation benefit to warrant closing the area to salmon fishing.

3. User Pay/Test Fish Programs

The department receives receipt authority from the state legislature that allows us to conduct stock assessment surveys by recovering costs through sale of fish taken during the surveys. Receipt authority varies by region. In **Southeast Alaska** several projects are funded through test fish funds (total receipt authority is approximately 600k), notably the sablefish longline assessments and mark-recapture work, the herring fishery and some salmon assessments.

4. Statistical Area Charts

Digital groundfish and shellfish statistical area charts are available and can be viewed or downloaded at:
http://www.adfg.alaska.gov/index.cfm?adfg=CommercialByFisheryGroundfish.groundfishmaps
(Contact Lee Hulbert)

5. Logbooks

In 1997 logbooks became mandatory for all state-managed commercial fisheries in Southeast Alaska. Logbooks for rockfish and lingcod had been mandatory for a number of years.

Number of commercial fishery logbooks collected by fishery, target species, and year.

SE	Longline				Jig/dinglebar			
Year	DSR	Pacific cod	Slope Rock	Sablefish (includes pot gear)	Lingcod	Black rockfish	DSR	PSR
1986	21	1						
1987	25							
1988	20							
1989	19							
1990	50	1	2					
1991	232	8	1					
1992	259	7						
1993	190	8						
1994	197	9	3		108			
1995	140	13			215			
1996	261	8			252	31	6	
1997	204	98	4	466	177	64	8	1
1998	177	135	15	552	153	70	3	4
1999	165	223	9	405	89	21	1	1
2000	153	97	4	421	153	30		
2001	128	48	2	332	44	2	2	
2002	143	27	5	276	53	31	4	0
2003	115	53	closed	298	54	37	2	closed
2004	139	97	closed	283	40	23	3	closed
2005	17	53	closed	249	52	23	2	closed
2006	8	65	closed	241	97	8	0	closed
2007	2	83	closed	200	115	2	0	closed
2008	27	113	closed	190	91	2	0	closed
2009	37	87	closed	164	152	3	0	closed
2010	30	85	closed	170	104	5	0	closed
2011	25	78	closed	137	113	5	0	closed
2012	67	67	closed	127	117	15	0	closed
2013	66	84	closed	129	87	4	1	closed
2014	28	68	closed	125	55	2	0	closed

Since 1998, marine recreational charter operators have been required to log port of landing, effort and harvest, and ADF&G statistical area for every charter trip made. In 2014, catch and harvest were reported for each individual angler, along with their name and fishing license number (if required). Other data collected for each vessel trip included port of landing, statistical area fished, effort for salmon and bottomfish, and harvest and/or release (in numbers) of Chinook, coho, sockeye, other salmon, halibut, pelagic rockfish, yelloweye rockfish, other rockfish, lingcod, sablefish, and salmon sharks (contact Bob Powers).

WEBSITES

ADF&G Home Page: http://www.adfg.alaska.gov

Commercial Fishing home page:
http://www.adfg.alaska.gov/index.cfm?adfg=fishingCommercial.main

News Releases: http://www.adfg.alaska.gov/index.cfm?adfg=newsreleases.main

Sport Fisheries home page: http://www.adfg.alaska.gov/index.cfm?adfg=fishingSport.main

Rockfish Conservation page:
http://www.adfg.alaska.gov/index.cfm?adfg=fishingSportFishingInfo.rockfishconservation

Age Determination Unit Home Page: http://tagotoweb.adfg.state.ak.us/

Region I, Southeast Region, Groundfish Home Page:
http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareasoutheast.groundfish

Region II, Central Region, Groundfish Pages:
http://www.adfg.alaska.gov/index.cfm?adfg=fishingcommercialbyarea.southcentral

Westward Region, Groundfish Pages:
http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyfisherygroundfish.groundfishareas

ADF&G Groundfish Overview Page:
http://www.adfg.alaska.gov/index.cfm?adfg=CommercialByFisheryGroundfish.main

Commercial Fisheries Entry Commission: http://www.cfec.state.ak.us/

State of Alaska home page: http://www.alaska.gov

Gene Conservation Laboratory Home Page:
http://www.adfg.alaska.gov/index.cfm?adfg=fishinggeneconservationlab.main

Demersal shelf rockfish stock assessment document:
http://www.afsc.noaa.gov/REFM/Docs/2014/GOAdsr.pdf

Adobe PDF versions of groundfish charts can be viewed or downloaded at
http://www.adfg.alaska.gov/index.cfm?adfg=CommercialByFisheryGroundfish.groundfishmaps

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Sigurdsson, D. and B. Powers. 2014. Participation, effort, and harvest in the sport fish business/guide licensing and logbook programs, 2013. Alaska Department of Fish and Game, Fishery Data Series No. 14-23, Anchorage.

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Stahl, J., K. Green, and M. Vaughn. 2014. Examination of lingcod, *Ophiodon elongatus*, movements in Southeast Alaska using traditional tagging methods. Alaska Department of Fish and Game, Fishery Data Series No. 14-28, Anchorage.

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APPENDICES

Appendix I. Alaska Department of Fish and Game Full-time Groundfish Staff During 2014

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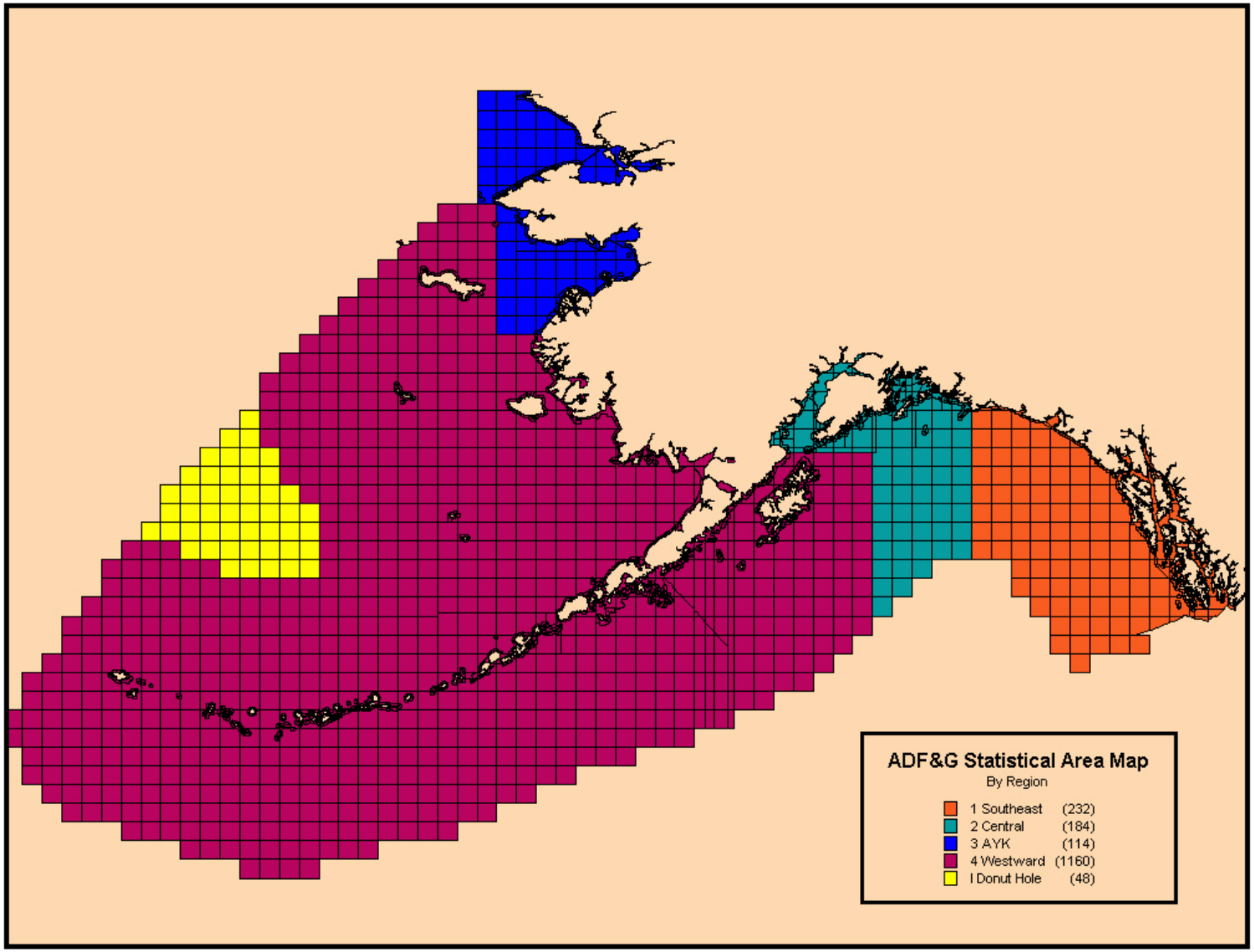
	Biometrician Adam Craig Division of Sport Fish-RTS 333 Raspberry Road Anchorage, AK 99518-1599 (907) 267-2272	

Appendix II. Map Depicting State of Alaska Commercial Fishery Management Regions.



Appendix III. Tissue samples of *Sebastes* species and pollock collected for genetic analyses and stored at Alaska Department Fish and Game, Gene Conservation Laboratory, Anchorage. Species, sampling location, year collected, sample size, and tissue type are given.

Species	Location	Year	Sample size	Tissues
Yelloweye rockfish *Sebastes ruberrimus*				
	Gravina, Danger, Herring	1991	27	muscle, liver, eye
	Knight Is./Naked Islands area	1998	100	fin
	Whittier	2000	97	fin
	Whittier	2000	50	fin
	Kachemak Bay	1999	58	fin
	Kodiak Island	1999	115	fin
	Resurrection Bay	1999	100	fin
	Fairweather Grounds	1999	100	fin
	Flamingo Inlet	1998	46	fin, larvae
	Tasu Sound	1998	50	fin
	Topknot	1998	49	fin
	Triangle Island	1998	63	fin, larvae
	Sitka	1998	49	fin
	SE Stat Areas 355601, 365701 (CSEO)	1999	100	fin
Black rockfish *S. melanops*				
	Carpa Island	1998	40	fin
	Castle Rock near Sand Point	1999	60	fin
	Akutan	1999	100	fin
	Dutch Harbor	2000	6	fin
	Chignik	2000	100	fin
	Ugak Bay, Kodiak Island	1997	100	muscle, liver, heart, eye
	Eastside Kodiak Is.: Ugak and Chiniak Bays	1998	100	fin
	Southwest side Kodiak Island	1998	86	fin
	Westside Kodiak Island	1998	114	fin
	Kodiak Island	1996	2	muscle, liver, heart, eye
	North of Fox Island	1998	24	fin
	Resurrection Bay - South tip Hive Island	1997	82	muscle, liver, heart, eye, fin
	Yakutat Bay	2003	130	fin
	Valdez	2000	13	fin
	Valdez	2001	50	fin
	Whittier	2000	16	fin
	Whittier	2001	93	fin
	Oregon - Pacific Northwest	1999	50	muscle, liver, heart
	Washington - Pacific Northwest	1998	20	fin
	Sitka	1998	50	fin
	SE Stat Areas 355631, 365701 (CSEO)	1999	83	fin
	Sitka Sound Tagging study	1999	200	fin
Dusky rockfish *S. ciliatus*				
	Sitka	2000	23	liver, fin
	Sitka	2000	23	fin
	Sitka Black RF Tagging study	1999	15	muscle, liver, heart, eye
	Harris Bay - Outer Kenai Peninsula	2002	37	muscle

Species	Location	Year	Sample size	Tissues
	North Gulf Coast - Outer Kenai Peninsula	2003	45	fin
	Resurrection Bay	1998	3	fin
	Eastside Kodiak Is.: Ugak, Chiniak, Ocean Bays	1998	100	muscle, liver, heart, eye
	Kodiak Island	1997	50	muscle, liver, heart, eye
Walleye pollock *Gadus chalcogrammus*				
	Exact location unknown; see comments	1997	402	fin
	Bogoslof Island	1997	120	muscle, liver, heart
	Bogoslof Island	1998	100	muscle
	Bogoslof Island	2000	100	muscle, liver, heart
	Eastern Bering Sea	1998	40	muscle, liver, heart
	Middleton Island	1997	100	fin
	Middleton Island	1998	100	muscle, liver, heart
	Middleton Island	2000	100	muscle, liver, heart
	NE Montague/E Stockdale	1997	100	fin
	Orca Bay, PWS	1997	100	fin
	Prince William Sound	2000	100	muscle, liver, heart
	Port Bainbridge	1997	100	fin
	Port Bainbridge	1998	100	muscle, liver, heart
	PWS Montague	1999	300	heart
	Eastern PWS	1999	94	heart
	Resurrection Bay	1998	120	fin
	Kronotsky Bay, E. Coast Kamtchatka	1999	96	muscle, liver, heart, eye, fin
	Avacha Bay	1999	100	unknown
	Shelikof Strait	1997	104	muscle, liver, heart, eye, fin
	Shelikof Strait	1998	100	muscle, liver, heart
	Shelikof Strait	2000	100	muscle, liver, heart