2010 PACIFIC HALIBUT FISHERY REGULATIONS

Each September meeting, the Council considers proposed changes to the halibut regulations. The purpose of this consideration is for adjustments in the annual regulations (primarily in the recreational fishery) or the Catch Sharing Plan (CSP) for Area 2A (Agenda Item H.1.a, Attachment 1), and can include changes in catch allocation among areas or gear groups.

The National Marine Fisheries Service has prepared an inseason update on 2009 halibut catch in Area 2A with the assistance of state and tribal managers to provide perspective on the performance of the current CSP (Agenda Item H.1.b, Supplemental NMFS Report). The Washington Department of Fish and Wildlife (WDFW) held a public meeting on August 20, and the Oregon Department of Fish and Wildlife (ODFW) held meetings on August 17 and 19 to solicit proposed changes to the CSP and to present staff proposals for public comment. Recommendations resulting from these meetings will be presented for review at the September Council meeting (Agenda Item H.1.b, Supplemental WDFW Report; Agenda Item H.1.b, ODFW Report).

The Council will take final action on proposed changes for 2010 at the November 2009 Council meeting.

Council Action:

1. **Adopt, for public review, any proposed changes to season structure and the Catch Sharing Plan for 2010.**

Reference Materials:

1. Agenda Item H.1.a, Attachment 1: 2009 Pacific Halibut Catch Sharing Plan for Area 2A.
2. Agenda Item H.1.b, WDFW Report: Washington Department of Fish and Wildlife Report on Proposed Changes to Catch Sharing Plan and 2010 Annual Regulations.
3. Agenda Item H.1.b, Supplemental ODFW Report: Oregon Department of Fish and Wildlife Report on Proposed Changes to the Pacific Halibut Catch Sharing Plan for the 2010 Fishery.
4. Agenda Item H.1.b, Supplemental NMFS Report.

Agenda Order:

a. Agenda Item Overview — Chuck Tracy
b. Reports and Comments of Management Entities and Advisory Bodies
c. Public Comment
d. **Council Action**: Adopt For Public Review Proposed Changes to the 2010 Pacific Halibut Catch Sharing Plan and Annual Fishery Regulations

PFMC
08/27/09

2009 PACIFIC HALIBUT CATCH SHARING PLAN FOR AREA 2A

(a) FRAMEWORK

This Plan constitutes a framework that shall be applied to the annual Area 2A total allowable catch (TAC) approved by the International Pacific Halibut Commission (IPHC) each January. The framework shall be implemented in both IPHC regulations and domestic regulations (implemented by NMFS) as published in the *Federal Register*.

(b) ALLOCATIONS

This Plan allocates 35 percent of the Area 2A TAC to U.S. treaty Indian tribes in the State of Washington in subarea 2A-1, and 65 percent to non-Indian fisheries in Area 2A. The allocation to non-Indian fisheries is divided into three shares, with the Washington sport fishery (north of the Columbia River) receiving 36.6 percent, the Oregon/California sport fishery receiving 31.7 percent, and the commercial fishery receiving 31.7 percent. Allocations within the non-Indian commercial and sport fisheries are described in sections (e) and (f) of this Plan. These allocations may be changed if new information becomes available that indicates a change is necessary and/or the Pacific Fishery Management Council takes action to reconsider its allocation recommendations. Such changes will be made after appropriate rulemaking is completed and published in the *Federal Register*.

(c) SUBQUOTAS

The allocations in this Plan are distributed as subquotas to ensure that any overage or underage by any one group will not affect achievement of an allocation set aside for another group. The specific allocative measures in the treaty Indian, non-Indian commercial, and non-Indian sport fisheries in Area 2A are described in paragraphs (d) through (f) of this Plan.

(d) TREATY INDIAN FISHERIES

Thirty-five percent of the Area 2A TAC is allocated to 13 treaty Indian tribes in subarea 2A-1, which includes that portion of Area 2A north of Point Chehalis, WA (46°53.30' N. lat.) and east of 125°44.00' W. long. The treaty Indian allocation is to provide for a tribal commercial fishery and a ceremonial and subsistence fishery. These two fisheries are managed separately; any overages in the commercial fishery do not affect the ceremonial and subsistence fishery. The commercial fishery is managed to achieve an established subquota, while the ceremonial and subsistence fishery is managed for a year-round season. The tribes will estimate the ceremonial and subsistence harvest expectations in January of each year, and the remainder of the allocation will be for the tribal commercial fishery.

(1) The tribal ceremonial and subsistence fishery begins on January 1 and continues through December 31. No size or bag limits will apply to the ceremonial and

subsistence fishery, except that when the tribal commercial fishery is closed, treaty Indians may take and retain not more than two halibut per day per person for subsistence purposes. Ceremonial fisheries shall be managed by tribal regulations promulgated inseason to meet the needs of specific ceremonial events. Halibut taken for ceremonial and subsistence purposes may not be offered for sale or sold.

(2) The tribal commercial fishery season dates will be set within the season dates determined by the IPHC and implemented in IPHC regulations. The tribal commercial fishery will close when the subquota is taken. Any halibut sold by treaty Indians during the commercial fishing season must comply with IPHC regulations on size limits for the non-Indian fishery.

(e) NON-INDIAN COMMERCIAL FISHERIES

The non-Indian commercial fishery is allocated 31.7 percent of the non-Indian share of the Area 2A TAC for a directed halibut fishery and an incidental catch fishery during the salmon troll fishery. The non-Indian commercial allocation is approximately 20.6 percent of the Area 2A TAC. Incidental catch of halibut in the primary directed sablefish fishery north of Point Chehalis, WA will be authorized if the Washington sport allocation exceeds 224,110 lb (101.7 mt) as described in section (e)(3) of this Plan. The structuring and management of these three fisheries is as follows.

(1) Incidental halibut catch in the salmon troll fishery.

Fifteen percent of the non-Indian commercial fishery allocation is allocated to the salmon troll fishery in Area 2A as an incidental catch during salmon fisheries. The quota for this incidental catch fishery is approximately 3.1 percent of the Area 2A TAC. The primary management objective for this fishery is to harvest the troll quota as an incidental catch during the May/June salmon troll fishery. The secondary management objective is to harvest the remaining troll quota as an incidental catch during the remainder of the salmon troll fishery.

(i) The Council will recommend landing restrictions at its spring public meeting each year to control the amount of halibut caught incidentally in the troll fishery. The landing restrictions will be based on the number of incidental harvest license applications submitted to the IPHC, halibut catch rates, the amount of allocation, and other pertinent factors, and may include catch or landing ratios, landing limits, or other means to control the rate of halibut harvest. NMFS will publish the landing restrictions annually in the *Federal Register*, along with the salmon management measures.

(ii) Inseason adjustments to the incidental halibut catch fishery.

(A) NMFS may make inseason adjustments to the landing restrictions, if requested by the Council Chairman, as necessary to assure that the incidental harvest rate is appropriate for salmon and halibut availability, does not encourage target fishing on halibut, and does not increase the likelihood of exceeding the quota for this fishery. In determining whether to make such inseason adjustments, NMFS will consult with the applicable state representative(s), a representative of the Council's Salmon Advisory Sub-Panel, and Council staff.

(B) Notice and effectiveness of inseason adjustments will be made by NMFS in accordance with paragraph (f)(5) of this Plan.

(iii) If the overall quota for the non-Indian, incidental commercial troll fishery has not been harvested by salmon trollers during the May/June fishery, additional landings of halibut caught incidentally during salmon troll fisheries will be allowed in July and will continue until the amount of halibut that was initially available as quota for the troll fishery is taken or until the end of the season date for commercial halibut fishing determined by the IPHC and implemented in IPHC regulation. Landing restrictions implemented for the May/June salmon troll fishery will apply for as long as this fishery is open. Notice of the July opening of this fishery will be announced on the NMFS hotline (206) 526-6667 or (800) 662-9825. Halibut retention in the salmon troll fishery will be allowed after June only if the opening has been announced on the NMFS hotline.

(iv) A salmon troller may participate in this fishery or in the directed commercial fishery targeting halibut, but not in both.

(v) Under the Pacific Coast groundfish regulations at 50 CFR 660.383, fishing with salmon troll gear is prohibited within the Salmon Troll Yelloweye Rockfish Conservation Area (YRCA). The Salmon Troll YRCA is an area off the northern Washington coast and is defined by straight lines connecting latitude and longitude coordinates. Coordinates for the Salmon Troll YRCA are specified in groundfish regulations at 50 CFR 660.390 and in salmon regulations at 50 CFR 660.405.

(2) Directed fishery targeting halibut.

Eighty-five percent of the non-Indian commercial fishery allocation is allocated to the directed fishery targeting halibut (e.g., longline fishery) in southern Washington, Oregon, and California. The allocation for this directed catch fishery is approximately 17.5 percent of the Area 2A TAC. This fishery is confined to the area south of Subarea 2A-1 (south of Point Chehalis, WA; 46°53.30' N. lat.). This fishery may also be managed with closed areas designed to protect overfished groundfish species. Any such closed areas will be described annually in federal halibut regulations published in the *Federal Register* and

specifically defined at 50 CFR 300.63(e). The commercial fishery opening date(s), duration, and vessel trip limits, as necessary to ensure that the quota for the non-Indian commercial fisheries is not exceeded, will be determined by the IPHC and implemented in IPHC regulations. If the IPHC determines that poundage remaining in the quota for the non-Indian commercial fisheries is insufficient to allow an additional day of directed halibut fishing, the remaining halibut will be made available for incidental catch of halibut in the fall salmon troll fisheries (independent of the incidental harvest allocation).

(3) Incidental catch in the sablefish fishery north of Point Chehalis.

If the Area 2A TAC is greater than 900,000 lb (408.2 mt), the primary directed sablefish fishery north of Point Chehalis will be allocated the Washington sport allocation that is in excess of 214,110 lb (97.1 mt), provided a minimum of 10,000 lb (4.5 mt) is available (i.e., the Washington sport allocation is 224,110 lb (101.7 mt) or greater). If the amount above 214,110 lb (97.1 mt) is less than 10,000 lb (4.5 mt), then the excess will be allocated to the Washington sport subareas according to section (f) of this Plan. The amount of halibut allocated to the sablefish fishery will be shared as follows: up to 70,000 lb of halibut to the primary sablefish fishery north of Pt. Chehalis. Any remaining allocation will be distributed to the Washington sport fishery among the four subareas according to the sharing described in the Plan, Section (f)(1).

The Council will recommend landing restrictions at its spring public meeting each year to control the amount of halibut caught incidentally in this fishery. The landing restrictions will be based on the amount of the allocation and other pertinent factors, and may include catch or landing ratios, landing limits, or other means to control the rate of halibut landings. NMFS will publish the landing restrictions annually in the Federal Register.

Under Pacific Coast groundfish regulations at 50 CFR 660.382, fishing with limited entry fixed gear is prohibited within the North Coast Commercial Yelloweye Rockfish Conservation Area (YRCA) and the Non-Trawl Rockfish Conservation Area (RCA). The North Coast Commercial Yelloweye Rockfish Conservation Area YRCA is an area off the northern Washington coast, overlapping the northern part of North Coast Recreational YRCA. The Non-Trawl RCA is an area off the Washington coast. These closed areas are defined by straight lines connecting latitude and longitude coordinates. Coordinates for the North Coast Commercial YRCA are specified in groundfish regulations at 50 CFR 660.390. Coordinates for the Non-Trawl RCA are specified in groundfish regulations at 50 CFR 660.393.

(4) Commercial license restrictions/declarations.

Commercial fishers must choose either (1) to operate in the directed commercial fishery in Area 2A and/or retain halibut caught incidentally in the primary

directed sablefish fishery north of Point Chehalis, WA or (2) to retain halibut caught incidentally during the salmon troll fishery. Commercial fishers operating in the directed halibut fishery and/or retaining halibut incidentally caught in the primary directed sablefish fishery must send their license application to the IPHC postmarked no later than April 30, or the first weekday in May, if April 30 falls on a weekend, in order to obtain a license to fish for halibut in Area 2A. Commercial fishers operating in the salmon troll fishery who seek to retain incidentally caught halibut must send their application for a license to the IPHC for the incidental catch of halibut in Area 2A postmarked no later than March 31, or the first weekday in April, if March 31 falls on a weekend. Fishing vessels licensed by IPHC to fish commercially in Area 2A are prohibited from operating in the sport fisheries in Area 2A.

(f) SPORT FISHERIES

The non-Indian sport fisheries are allocated 68.3 percent of the non-Indian share, which is approximately 44.4 percent of the Area 2A TAC. The allocation is further divided as subquotas among six geographic subareas.

(1) Subarea management. The sport fishery is divided into six sport fishery subareas, each having separate allocations and management measures as follows.

(i) Washington inside waters (Puget Sound) subarea.

This sport fishery subarea is allocated 23.5 percent of the first 130,845 lb (59.4 mt) allocated to the Washington sport fishery, and 32 percent of the Washington sport allocation between 130,845 lb (59.4 mt) and 224,110 lb (101.7 mt) (except as provided in section (e)(3) of this Plan). This subarea is defined as all U.S. waters east of the mouth of the Sekiu River, as defined by a line extending from 48°17.30' N. lat., 124°23.70' W. long. north to 48°24.10' N. lat., 124°23.70' W. long., including Puget Sound. The structuring objective for this subarea is to provide a stable sport fishing opportunity and maximize the season length. To that end, the Puget Sound subarea may be divided into two regions with separate seasons to achieve a fair harvest opportunity within the subarea. Due to inability to monitor the catch in this area inseason, fixed seasons, which may vary and apply to different regions within the subarea, will be established preseason based on projected catch per day and number of days to achievement of the quota. Inseason adjustments may be made, and estimates of actual catch will be made postseason. The fishery will open in April or May and continue until a dates established preseason (and published in the sport fishery regulations) when the quota is predicted to be taken, or until September 30, whichever is earlier. The Washington Department of Fish and Wildlife will develop recommendations to NMFS on the opening date and weekly structure of the fishery each year. The daily bag limit is one fish per person, with no size limit.

(ii) Washington north coast subarea.

This sport fishery subarea is allocated 62.2 percent of the first 130,845 lb (59.4 mt) allocated to the Washington sport fishery, and 32 percent of the Washington sport allocation between 130,845 lb (59.4 mt) and 224,110 lb (101.7 mt) (except as provided in section (e)(3) of this Plan). This subarea is defined as all U.S. waters west of the mouth of the Sekiu River, as defined above in paragraph (f)(1)(i), and north of the Queets River (47°31.70' N. lat.). The management objective for this subarea is to provide a quality recreational fishing opportunity during May and June. The fishery will open on the first Thursday between May 9 and 15, and continue 2 days per week (Thursday and Saturday) in May as scheduled pre-season, unless there is a quota management closure. If there is no quota management closure in May, the fishery will reopen on the first Thursday in June as an all depth fishery on Thursdays and Saturdays as long as sufficient quota remains. This schedule allows adequate public notice of any inseason action before each Thursday opening. If there is not sufficient quota for an all-depth day, the fishery would reopen in the nearshore areas described below:

A. WDFW Marine Catch Area 4B, which is all waters west of the Sekiu River mouth, as defined by a line extending from 48°17.30' N. lat., 124°23.70' W. long. north to 48°24.10' N. lat., 124°23.70' W. long., to the Bonilla-Tatoosh line, as defined by a line connecting the light on Tatoosh Island, WA, with the light on Bonilla Point on Vancouver Island, British Columbia (at 48°35.73' N. lat., 124°43.00' W. long.) south of the International Boundary between the U.S. and Canada (at 48°29.62' N. lat., 124°43.55' W. long.), and north of the point where that line intersects with the boundary of the U.S. territorial sea.

B. Shoreward of the recreational halibut 30-fm boundary line, a modified line approximating the 30 fm depth contour from the Bonilla-Tatoosh line south to the Queets River. Coordinates for the closed area will be specifically defined annually in federal halibut regulations published in the *Federal Register*.

No sport fishing for halibut is allowed after September 30. If the fishery is closed prior to September 30, and there is insufficient quota remaining to reopen the nearshore areas for another fishing day, then any remaining quota may be transferred inseason to another Washington coastal subarea by NMFS via an update to the recreational halibut hotline. The daily bag limit in all fisheries is one halibut per person with no size limit.

Recreational fishing for groundfish and halibut is prohibited within the North Coast Recreational Yelloweye Rockfish Conservation Area (YRCA). The North Coast Recreational YRCA is a C-shaped area off the northern Washington coast and is defined by straight lines connecting latitude and longitude coordinates. Coordinates for the North Coast Recreational YRCA are specified in groundfish

regulations at 50 CFR 660.390 and will be specifically defined annually in federal halibut regulations published in the *Federal Register*.

(iii) Washington south coast subarea.

This sport fishery is allocated 12.3 percent of the first 130,845 lb (59.4 mt) allocated to the Washington sport fishery, and 32 percent of the Washington sport allocation between 130,845 lb (59.4 mt) and 224,110 lb (101.7 mt) (except as provided in section (e)(3) of this Plan. This subarea is defined as waters south of the Queets River (47°31.70' N. lat.) and north of Leadbetter Point (46°38.17' N. lat.). The structuring objective for this subarea is to maximize the season length, while maintaining a quality fishing experience. The south coast subarea quota will be allocated as follows: 10% or 2,000 pounds, whichever is less, will be set aside for the nearshore fishery with the remaining amount allocated to the primary fishery. The fishery will open on the first Sunday in May. The primary fishery will be open two days per week, Sunday and Tuesday, in all areas, except where prohibited. Starting the third week in May, the primary fishery will be open on Sundays only, until the quota for the primary fishery season is reached or September 30, whichever is earlier. If there is insufficient quota remaining to reopen the primary fishery for another fishing day, the remaining primary fishery quota will be added to the nearshore quota. The nearshore fishery takes place, in the area from 47°25.00' N. lat. south to 46°58.00' N. lat. and east of 124°30.00' W. long. During the primary season the nearshore fishery will be open three days per week, Thursday, Friday and Saturday, in addition to any days on which the primary fishery is open. Subsequent to the closure of the primary fishery, the nearshore fishery will continue on Thursdays, Friday, Saturdays and Sundays until the remaining quota is projected to be taken. If the fishery is closed prior to September 30, and there is insufficient quota remaining to reopen the nearshore areas for another fishing day, then any remaining quota may be transferred inseason to another Washington coastal subarea by NMFS via an update to the recreational halibut hotline. The daily bag limit is one halibut per person, with no size limit.

Recreational fishing for groundfish and halibut is prohibited within two YRCA's off Washington's southern coast. The South Coast Recreational YRCA and the Westport Offshore YRCA are defined by straight lines connecting latitude and longitude coordinates. Coordinates for these Recreational YRCAs are specified in groundfish regulations at 50 CFR 660.390 and will be specifically defined annually in federal halibut regulations published in the *Federal Register*.

(iv) Columbia River subarea.

This sport fishery subarea is allocated 2.0 percent of the first 130,845 lb (59.4 mt) allocated to the Washington sport fishery, and 4.0 percent of the Washington sport allocation between 130,845 lb (59.4 mt) and 224,110 lb (101.7 mt) (except as

provided in section (e)(3) of this Plan). This subarea is also allocated 5.0 percent of the Oregon/California sport allocation or an amount equal to the contribution from the Washington sport allocation, whichever is greater. This subarea is defined as waters south of Leadbetter Point, WA (46°38.17' N. lat.) and north of Cape Falcon, OR (45°46.00' N. lat.). The fishery will open on the first Thursday in May or May 1 if it is a Friday or Saturday, 3 days per week, Thursday through Saturday until 70 percent of the subarea allocation is taken or until the third Sunday in July, whichever is earlier. The fishery will reopen on the first Friday in August and continue 3 days per week, Friday-Sunday until the remainder of the subarea quota has been taken, or until September 30, whichever is earlier. Subsequent to this closure, if there is insufficient quota remaining in the Columbia River subarea for another fishing day, then any remaining quota may be transferred inseason to another Washington and/or Oregon subarea by NMFS via an update to the recreational halibut hotline. Any remaining quota would be transferred to each state in proportion to its contribution. The daily bag limit is one halibut per person, with no size limit. No groundfish may be taken and retained, possessed or landed, except sablefish and Pacific cod when allowed by groundfish regulations, if halibut are on board the vessel.

(v) Oregon central coast subarea.

This subarea extends from Cape Falcon (45°46.00' N. lat.) to Humbug Mountain, Oregon (42°40.50' N. lat.) and is allocated 92.0 percent of the Oregon/California sport allocation minus any amount of pounds needed to contribute to the Oregon portion of the Columbia River subarea quota. The structuring objectives for this subarea are to provide two periods of fishing opportunity in Spring and in Summer in productive deeper water areas along the coast, principally for charterboat and larger private boat anglers, and provide a period of fishing opportunity in the summer for nearshore waters for small boat anglers. Any poundage remaining unharvested in the Spring all-depth subquota will be added to the Summer all-depth sub-quota. Any poundage that is not needed to extend the inside 40-fathom (73 m) fishery through October 31 will be added to the Summer all-depth season if it can be used, and any poundage remaining unharvested from the Summer all-depth fishery will be added to the inside 40-fathom (73 m) fishery subquota, if it can be used. If inseason it is determined via joint consultation between IPHC, NMFS and ODFW, that the combined all-depth and inside 40-fathom (73 m) fisheries will not harvest the entire quota to the subarea, quota may be transferred inseason to another subarea south of Leadbetter Point, WA by NMFS via an update to the recreational halibut hotline. The daily bag limit is one halibut per person, unless otherwise specified, with no size limit. During days open to all-depth halibut fishing, no groundfish may be taken and retained, possessed or landed, except sablefish and Pacific cod when allowed by groundfish regulations, if halibut are on board the vessel.

Recreational fishing for groundfish and halibut is prohibited within the Stonewall Bank YRCA. The Stonewall Bank YRCA is an area off central Oregon, near

Stonewall Bank, and is defined by straight lines connecting latitude and longitude coordinates. Coordinates for the Stonewall Bank YRCA are specified in groundfish regulations at 50 CFR 660.390 and will be specifically defined annually in federal halibut regulations published in the *Federal Register*.

ODFW will sponsor a public workshop shortly after the IPHC annual meeting to develop recommendations to NMFS on the open dates for each season each year. The three seasons for this subarea are as follows.

A. The first season opens on May 1, only in waters inside the 40-fathom (73 m) curve, and continues daily until the subquota (8 percent of the subarea quota) is taken, or until October 31, whichever is earlier. Any overage in the all-depth fisheries would not affect achievement of allocation set aside for the inside 40-fathom (73 m) curve fishery.

B. The second season is an all-depth fishery with two potential openings and is allocated 69 percent of the subarea quota. Fixed season dates will be established preseason for the first Spring opening and will not be modified inseason except if the combined Oregon all-depth Spring and Summer season total quotas are estimated to be achieved. Recent year catch rates will be used as a guideline for estimating the catch rate for the Spring fishery each year. The number of fixed season days established will be based on the projected catch per day with the intent of not exceeding the subarea subquota for this season. The first opening will be structured for 2 days per week (Friday and Saturday) if the season is for 4 or fewer fishing days. The fishery will be structured for 3 days per week (Thursday through Saturday) if the season is for 5 or more fishing days. The fixed season dates will occur in consecutive weeks starting the second Thursday in May (if the season is 5 or more fishing days) or second Friday in May (if the season is 4 or fewer fishing days), with possible exceptions to avoid adverse tidal conditions. If, following the "fixed" dates, quota for this season remains unharvested, a second opening will be held. If it is determined appropriate through joint consultation between IPHC, NMFS and ODFW, fishing may be allowed on one or more additional days. Notice of the opening(s) will be announced by NMFS via an update to the recreational halibut hotline. The fishery will be open every other week on Thursday through Saturday except that week(s) may be skipped to avoid adverse tidal conditions. The potential open Thursdays through Saturdays will be identified preseason. The fishery will continue until there is insufficient quota for an additional day of fishing or July 31, whichever is earlier.

C. The last season is an all-depth fishery that begins on the first Friday in August and is allocated 23 percent of the subarea quota. The fishery will be structured to be open every other week on Friday through Sunday except that week(s) may be skipped to avoid adverse tidal conditions. The

fishery will continue until there is insufficient quota remaining to reopen for another fishing day or October 31, whichever is earlier. The potential open Fridays through Sundays will be identified preseason. If after the first scheduled open period, the remaining Cape Falcon to Humbug Mountain entire season quota (combined all-depth and inside 40-fathom (73 m) quotas) is 60,000 lb (27.2 mt) or more, the fishery will re-open on every Friday through Sunday (versus every other Friday through Sunday), if determined to be appropriate through joint consultation between IPHC, NMFS, and ODFW. The inseason action will be announced by NMFS via an update to the recreational halibut hotline. If after the Labor Day weekend, the remaining Cape Falcon to Humbug Mountain entire season quota (combined all-depth and inside 40-fathom (73 m) quotas) is 30,000 lb (13.6 mt) or more and the fishery is not already open every Friday through Sunday, the fishery will re-open on every Friday through Sunday (versus every other Friday through Sunday), if determined to be appropriate through joint consultation between IPHC, NMFS, and ODFW. After the Labor Day weekend, the IPHC, NMFS, and ODFW will consult to determine whether increasing the Oregon Central Coast bag limit to two fish is warranted with the intent that the quota for the subarea is taken by September 30. If the quota is not taken by September 30, the season will remain open, maintaining the bag limit in effect at that time, through October 31 or quota attainment, whichever is earlier. The inseason action will be announced by NMFS via an update to the recreational halibut hotline.

(vi) South of Humbug Mountain subarea.

This sport fishery subarea is allocated 3.0 percent of the Oregon/California subquota, which is approximately 0.62 percent of the Area 2A TAC. This area is defined as the area south of Humbug Mountain, OR (42°40.50' N. lat.), including California waters. The structuring objective for this subarea is to provide anglers the opportunity to fish in a continuous, fixed season that is open from May 1 through October 31. The daily bag limit is one halibut per person, with no size limit. Due to inability to monitor the catch in this area inseason, a fixed season will be established preseason by NMFS based on projected catch per day and number of days to achievement of the subquota; no inseason adjustments will be made, and estimates of actual catch will be made post season.

(2) Port of landing management. All sport fishing in Area 2A will be managed on a "port of landing" basis, whereby any halibut landed into a port will count toward the quota for the subarea in which that port is located, and the regulations governing the subarea of landing apply, regardless of the specific area of catch.

(3) Possession limits. The sport possession limit on land in Washington is two daily bag limits, regardless of condition, but only one daily bag limit may be possessed on the vessel. The sport possession limit on land in Oregon is three daily bag

limits, regardless of condition, but only one daily bag limit may be possessed on the vessel. The sport possession limit on land in California and on the vessel is one daily bag limit, regardless of condition.

(4) Ban on sport vessels in the commercial fishery. Vessels operating in the sport fishery for halibut in Area 2A are prohibited from operating in the commercial halibut fishery in Area 2A. Sport fishers and charterboat operators must determine, prior to May 1 of each year, whether they will operate in the commercial halibut fisheries in Area 2A which requires a commercial fishing license from the IPHC. Sport fishing for halibut in Area 2A is prohibited from a vessel licensed to fish commercially for halibut in Area 2A.

(5) Flexible inseason management provisions.

(i) The Regional Administrator, NMFS Northwest Region, after consultation with the Chairman of the Pacific Fishery Management Council, the IPHC Executive Director, and the Fisheries Director(s) of the affected state(s), or their designees, is authorized to modify regulations during the season after making the following determinations.

(A) The action is necessary to allow allocation objectives to be met.

(B) The action will not result in exceeding the catch limit for the area.

(C) If any of the sport fishery subareas north of Cape Falcon, OR are not projected to utilize their respective quotas by September 30, NMFS may take inseason action to transfer any projected unused quota to another Washington sport subarea.

(D) If any of the sport fishery subareas south of Leadbetter Point, WA are not projected to utilize their respective quotas by their season ending dates, NMFS may take inseason action to transfer any projected unused quota to another Oregon sport subarea.

(ii) Flexible inseason management provisions include, but are not limited to, the following:

(A) Modification of sport fishing periods;

(B) Modification of sport fishing bag limits;

(C) Modification of sport fishing size limits;

(D) Modification of sport fishing days per calendar week; and

(E) Modification of subarea quotas.

(iii) Notice procedures.

(A) Inseason actions taken by NMFS will be published in the *Federal Register.*

(B) Actual notice of inseason management actions will be provided by a telephone hotline administered by the Northwest Region, NMFS, at 206-526-6667 or 800-662-9825 (May through October) and by U.S. Coast Guard broadcasts. These broadcasts are announced on Channel 16 VHF-FM and 2182 kHz at frequent intervals. The announcements designate the channel or frequency over which the notice to mariners will be immediately broadcast. Since provisions of these regulations may be altered by inseason actions, sport fishermen should monitor either the telephone hotline or U.S. Coast Guard broadcasts for current information for the area in which they are fishing.

(iv) Effective dates.

(A) Inseason actions will be effective on the date specified in the Federal Register notice or at the time that the action is filed for public inspection with the Office of the Federal Register, whichever is later.

(B) If time allows, NMFS will invite public comment prior to the effective date of any inseason action filed with the *Federal Register.* If the Regional Administrator determines, for good cause, that an inseason action must be filed without affording a prior opportunity for public comment, public comments will be received for a period of 15 days after of the action in the *Federal Register.*

(C) Inseason actions will remain in effect until the stated expiration date or until rescinded, modified, or superseded. However, no inseason action has any effect beyond the end of the calendar year in which it is issued.

(v) Availability of data. The Regional Administrator will compile, in aggregate form, all data and other information relevant to the action being taken and will make them available for public review during normal office hours at the Northwest Regional Office, NMFS, Sustainable Fisheries Division, 7600 Sand Point Way NE, Seattle, WA.

(6) Sport fishery closure provisions.

The IPHC shall determine and announce closing dates to the public for any subarea in which a subquota is estimated to have been taken. When the IPHC has determined that a subquota has been taken, and has announced a date on which the season will close, no person shall sport fish for halibut in that area after that date for the rest of the year, unless a reopening of that area for sport halibut fishing is scheduled by NMFS as an inseason action, or announced by the IPHC.

(g) PROCEDURES FOR IMPLEMENTATION

Each year, NMFS will publish a proposed rule with any regulatory modifications necessary to implement the Plan for the following year, with a request for public comments. The comment period will extend until after the IPHC annual meeting, so that the public will have the opportunity to consider the final Area 2A TAC before submitting comments. After the Area 2A TAC is known, and after NMFS reviews public comments, NMFS will implement final rules governing the sport fisheries. The final ratio of halibut to chinook to be allowed as incidental catch in the salmon troll fishery will be published with the annual salmon management measures.

Sources

73 FR 12280 (March 7, 2008)
72 FR 11792 (March 14, 2007)
71 FR 10850 (March 3, 2006)
70 FR 20304 (April 19, 2005)
69 FR 24524 (May 4, 2004)
68 FR 10989 (March 7, 2003)
67 FR 12885 (March 20, 2002)
66 FR 15801 (March 21, 2001)
65 FR 14909 (March 20, 2000)
64 FR 13519 (March 19, 1999)
63 FR 13000 (March 17, 1998)
62 FR 12759 (March 18, 1997)
61 FR 11337 (March 20, 1996)
60 FR 14651 (March 20, 1995)
59 FR 22522 (May 2, 1994)
58 FR 17791 (April 6, 1993)

OREGON DEPARTMENT OF FISH AND WILDLIFE REPORT ON PROPOSED CHANGES TO THE PACIFIC HALIBUT CATCH SHARING PLAN FOR THE 2010 FISHERY

The Oregon Department of Fish and Wildlife (ODFW) held two public meetings to discuss proposed changes to the Pacific Halibut Catch Sharing Plan (CSP) for fisheries off Oregon in 2010. The first meeting occurred on August 17, 2009 in Astoria and the second on August 19, 2009 in Newport. Based on the meeting comments, and other public input, ODFW recommends the Pacific Fishery Management Council (Council) approve the following proposals for additional public review.

Columbia River Subarea

Allocate up to 1,000 pounds from the existing Columbia River subarea allocation for a nearshore fishery inside the 40-fathom line for the area from Leadbetter Pt., Washington to Cape Falcon, Oregon.

Rationale: For 2009 the Council adopted a proposal for review that would have allowed take of halibut in the nearshore fishery between Cape Falcon and the Columbia River under the current fishery structure in place for the inside 40-fathom fishery south of Cape Falcon. Under the proposal the fishery would have been open from Humbug Mt. to the Columbia River and catch would have counted toward the Oregon central coast subarea allocation. The intent of the proposal was primarily to allow the retention of halibut caught incidentally in the nearshore groundfish fishery north of Cape Falcon. Due to unresolved enforcement and landing issues this proposal was not recommended for 2009. Anglers remain interested in that opportunity and the proposal is revised based on utilizing existing allocation to the Columbia River subarea.

Central Coast Subarea

Adjust the number of open days per week in the summer all-depth fishery from three to two days.

Rationale: In 2009 the harvest during the August 7-9 three day all-depth opening exceeded the remaining sub-area quota, requiring closure of both the all-depth fishery and the inside 40-fathom fishery. Reducing the summer all-depth fishery from three to two day openers is intended to extend the duration of the all-depth fishery and help prevent the same situation from occurring in 2010.

Other Suggestions Received

There were several other suggestions received that ODFW is not proposing for further public comment at this time. Below is a summary of these recommendations:

1. Combine the Oregon portion of Columbia River subarea with the central coast subarea.
2. Reinstate the Florence north jetty boundary so as to split the central coast into north-central and south-central sub-areas as occurred several years ago.
3. Increase allocation to the Columbia River subarea.
4. Adjust the allocation of halibut between the spring all-depth, summer all-depth and inside 40-fathom nearshore fishery so as to shift catch to later in the season. One example was a 50/50 split between the spring and summer all-depth quota.
5. Adopt a lottery based tag system.
6. Allow retention of lingcod.
7. Allow retention of rockfish.

Agenda Item H.1.b
Supplemental GAP Report
September 2009

GROUNDFISH ADVISORY SUBPANEL REPORT ON 2010
PACIFIC HALIBUT FISHERY REGULATIONS

The Groundfish Advisory Subpanel (GAP) considered proposed changes submitted by Washington Department of Fish and Wildlife (WDFW) and Oregon Department of Fish and Wildlife (ODFW) to the Pacific halibut catch sharing plan and the present regulations of the halibut fishery in IPHC area 2A. A presentation was given to GAP members by representatives from WDFW and ODFW.

GAP Recommendations:

The GAP supports all of the requested changes in the WDFW Report and ODFW Report contained within agenda item H.1.b.

If the 40 fathom proposal by ODFW is shortened to Oregon waters only, the GAP feels that this is a viable option. It is the understanding of some GAP members that the majority of landings inside 40 fathoms in Oregon would be made in Oregon ports located within management areas where an inside 40 fathom fishery is in place. There is only one Washington port (Ilwaco) where a conflict could occur and may in fact be minimal. This would not be a conflict during all-depth seasons.

PFMC
09/15/09

REPORT ON THE 2009 PACIFIC HALIBUT FISHERIES IN AREA 2A

(8/31/09)

The 2009 Area 2A total allowable catch (TAC) of 950,000 lb set by the International Pacific Halibut Commission (IPHC) was allocated as sub-TACs as follows:

Treaty Tribes	332,500 lb (35%)
Non-Tribal Total	617,500 lb (65%)
Non-Tribal Commercial	195,478 lb (includes incidental sablefish)
Washington Sport	214,110 lb
Oregon/California Sport	195,748 lb

All weights in this report are net weight (gutted, head-off, and without ice and slime.) The structure of each fishery and the resulting harvests are described below.

NON-TRIBAL COMMERCIAL FISHERIES

A sub-TAC of 195,478 lb (31.7% of the non-tribal share + 11,895 lb for the incidental sablefish fishery) was allocated to two fishery components: 1) a directed longline fishery targeting on halibut south of Point Chehalis, WA; and 2) an incidental catch fishery during the salmon troll fisheries off Washington, Oregon, and California. An additional 11,895 lb was allocated to an incidental catch fishery for limited entry, sablefish-endorsed vessels operating with longline gear north of Pt. Chehalis, WA. This allowance for the tiered sablefish fishery is only available in years when the overall Area 2A TAC exceeds 900,000 lb and the Washington sport allocation exceeds 224,110. This year the Washington sport allocation did not exceed 224,100 so the allocation for the incidental catch fishery for limited entry sablefish was significantly lower than in past years.

Incidental halibut catch in the salmon troll fishery

A quota of 29,362 lb of Pacific halibut (15% of the non-Indian commercial fishery allocation) was allocated to the non-Indian commercial salmon troll fishery in Area 2A as incidental catch during salmon fisheries. According to the Catch Sharing Plan, the primary management objective for this fishery is to harvest the troll quota as an incidental catch during the May/June salmon troll fishery. If any of the allocation for this fishery remains after June 30, the fishery may continue to retain incidentally caught halibut in the salmon troll fisheries until the quota is taken. The final catch ratio established preseason by the Council at the April meeting was one halibut (minimum 32") per two Chinook landed by a salmon troller, except that one halibut could be landed without meeting the ratio requirement, and no more than 35 halibut could be landed per open period. Fishing with salmon troll gear is prohibited within the Salmon Troll Yelloweye Rockfish Conservation Area (YRCA) off the northern Washington Coast. Additionally, the "C-shaped" North Coast Recreational YRCA off Washington is designated as an area to be avoided (a voluntary closure) by salmon trollers.

- Halibut retention was permitted in the salmon troll fisheries beginning May 1. Of the halibut taken in the salmon troll fisheries through August 10, 10,986 lb were landed.

Directed fishery targeting on halibut

A quota of 166,385 lb (85% of the non-tribal commercial fishery allocation) was allocated to the directed longline fishery targeting on halibut in southern Washington, Oregon, and California. The fishery was confined to the area south of Subarea 2A-1 (south of Point Chehalis, WA; 46E53.30' N. lat.). In addition, between 46E53.30' N. lat. and 46E16' N. lat., the fishery was confined to an area seaward of a boundary line approximating the 100-fm depth contour and, between 46E16' N. lat. and 40E10' N. lat., to an area shoreward of a boundary line approximating the 30-fm depth contour and seaward of a boundary line approximating the 100-fm depth contour. One-day fishing periods of 10 hours in duration were scheduled by the IPHC for June 24 and July 8, 2009. A 32" minimum size limit with the head on was in effect for all openings. Vessel landing limits per fishing period based on vessel length were imposed by IPHC during all openings as shown in the following table. Vessels choosing to operate in this fishery could not land halibut in the incidental catch salmon troll fishery, nor operate in the recreational fishery.

Fishing period limits (dressed weight, head-off without ice and slime in pounds) by vessel size.

Vessel Class/Size	6/24 Openings	7/8 Opening
A 0 - 25 ft.	755 lb	590 lb
B 26 - 30 ft.	945 lb	735 lb
C 31 - 35 ft.	1,510 lb	1,175 lb
D 36 - 40 ft.	4,165 lb	3,240 lb
E 41 - 45 ft.	4,480 lb	3,485 lb
F 46 - 50 ft.	5,365 lb	4,170 lb
G 51 - 55 ft.	5,985 lb	4,655 lb
H 56+ ft.	9,000 lb	7,000 lb

- The June 24 directed commercial fishery resulted in a catch of about 81,000 lb, leaving 85,400 lb for later openings.
- The July 8 directed commercial fishery resulted in a catch of 85,385 lb, closing the fishery.

Incidental halibut catch in the primary sablefish longline fishery north of Point Chehalis

A quota of 11,895 lb was allocated to the limited entry primary sablefish fishery in Area 2A as an incidental catch during longline sablefish operations north of Point Chehalis, WA. The primary sablefish season is open from April 1 to October 31, although incidental halibut retention was not permitted until May 1. Properly licensed vessels were permitted to retain up to 100 lb of dressed weight (headed-and gutted) halibut per fishing trip of dressed weight sablefish.

The fishery is confined to an area seaward of a boundary line approximating the 100-fm depth contour. Fishing is also prohibited in the North Coast Commercial YRCA, an area off the northern Washington coast. In addition, the "C-shaped" North Coast Recreational YRCA off Washington is designated as an area to be avoided (a voluntary closure) by commercial longline sablefish fishermen.

- Through August 20, 2009, this fishery is estimated to have taken 3,290 lb.

SPORT FISHERIES (Non-tribal).
A sub-TAC of 409,858 lb (68.3% of non-tribal share – 11,895 lb for the incidental sablefish fishery) was allocated between sport fisheries in the Washington area (36.6%) and Oregon/California (31.7%). The allocations were further subdivided as quotas among seven geographic subareas as described below.

Washington Inside Waters Subarea(Puget Sound and Straits of Juan de Fuca).
This area was allocated 57,393 lb (23.5% of the first 130,845 lb allocated to the Washington sport fishery, and 32% of the Washington sport allocation between 130,845 and 224,110 lb). Due to inability to monitor the catch in this area inseason, a fixed season was established preseason based on projected catch per day and number of days to achieve the sub-quota. The Eastern Region (East of Low Point) opened on April 23 and continued through June 5, 5 days per week (Thursday-Monday). The Western Region opened on May 21 and continued through July 3, 5 days per week (Thursday-Monday). The daily bag limit was one halibut of any size per person.

- Landings data from this fishery are not yet available.

Northern Washington Coastal Waters Subarea (landings in Neah Bay and La Push).
The coastal area off Cape Flattery to Queets River was allocated 108,030 lb (62.2% of the first 130,845 lb allocated to the Washington sport fishery, and 32% of the Washington sport allocation between 130,945 lb and 224,110 lb). The fishery opened May 14 and continued 2 days per week (Thursday, and Saturday) through May 23, then reopened for two days per week June 4 and 6, 2009. The "C-shaped" North Coast Recreational YRCA, southwest of Cape Flattery, was closed to sport halibut fishing. The daily bag limit was one halibut of any size per person.

- This two-day per week fishery opened May 14 through 23 and again June 4 and 6 with an estimated catch of 102,782 pounds.

Washington South Coast Subarea (landings in Westport).
The area from the Queets River to Leadbetter Point was allocated 42,739 lb (12.3 % of the first 130,845 lb allocated to the Washington sport fishery and 32% of the Washington sport allocation between 130,845 and 224,110). The fishery opened on May 3 and continued 2 days per week (Sunday and Thursday) in all waters (primary fishery) until May 17, at which time the primary fishery was then open on Sundays only. The fishery was also open 3 days per week (Thursday, Friday and Saturday) in addition to any days the primary season was open in waters between the Queets River and 47°25.00' N. lat. south to 46°58.00' N. lat., and east of 124°30.00' W. long. (northern nearshore fishery). The south coast subarea quota was allocated as follows: 2,000 lb to the nearshore fishery and the remaining pounds (40,739 lb) to the primary fishery. The primary fishery closed on June 28, 2009. Following this closure, the nearshore fishery remains open 3 days per week (Thursday –Saturday) until the entire subarea quota is taken or until September 27, whichever is earlier. The daily bag limit was one halibut of any size per person.

- The primary season opened May 3, two days per week (Sunday and Tuesday) through May 12, then Sundays only through June 28, 2009 with an estimated catch of 38,188 pounds.
- The northern nearshore area remains open 3 days per week (Thursday-Saturday).

Columbia River Subarea (Leadbetter Point to Cape Falcon).
This sport fishery subarea was allocated 15,735 lb, consisting of 2.0 percent of the first 130,845 lb allocated to the Washington sport fishery, 4.0 percent of the Washington sport allocation between 130,845 lb and 224,110 lb (minus the pounds needed for the incidental sablefish fishery), and 5.0 percent of the Oregon/California sport allocation or an amount equal to the contribution from the Washington sport allocation, whichever is greater. The fishery opened May 1 and continued 3 days per week until May 29, 2009. The fishery was reopened on August 7 and continues to be open 3 days per week (Friday through Sunday) until the entire subarea quota has been taken or September 27, whichever is earlier. The daily bag limit was one halibut of any size per person.

- This 3 day per week fishery began on May 1 and closed on May 29 with an estimated catch of 11,267 lb.
- Catch during the early season resulted in overage of 253 lb, which reduced the late season quota to 4,468 lb. The late season fishery is currently open.

Oregon Central Coast Subarea (Cape Falcon to Humbug Mountain).
This sport fishery subarea was allocated 180,088 lb (92% of the Oregon/California sport allocation less any amount needed to contribute to the Oregon portion of the Columbia River subarea quota).

Three seasons were set for this subarea: 1) a restricted depth (inside 40-fm) fishery commenced on May 1 and continued 7 days a week until August 9; 2) a fixed Spring season in all depths that was open on May 14, 15, 16, 21, 22, 23, 28, 29 ,30, June 4, 5, 6, 18, 19, 20 and July 2, 3,4, with a catch allocation of 124,261 lb (the Spring season was to reopen for additional days if quota remains), and; 3) a Summer season in all depths that was open on August 7, 8, 9. The daily bag limit was one halibut of any size per person, unless otherwise specified.

- The inside 40-fathom fishery opened May 1 and is estimated to have taken 8,227 lb through August 9, when the fishery was closed.
- The fixed Spring all-depth season was open May-July, and is estimated to have taken 122,403 lb. The remaining Spring quota of 1,858 lb was added to the pounds available to the Summer all-depth fishery.
- The initial Summer all-depth season quota of 41,420 lb was revised by the 1,858 lb remaining from the Spring fishery. As a result, 43,278 lb was initially available to the Summer all-depth fishery. The Summer all-depth fishery opened on August 7-9 (Friday-Sunday) and resulted in an estimated catch of 52,330 lb. The fishery was closed on August 9.

South of Humbug Mountain, Oregon and off the California Coast Subarea

This sport fishery was allocated 5,872 lb (3.0% of the Oregon/California quota). This area had a pre-set season of 7 days per week from May 1 to October 31 and a daily bag limit of one halibut of any size per person.

- This season is scheduled to remain open through October 31. No catch estimates are available for this fishery, but it is unlikely that this subarea quota will be taken.

TRIBAL FISHERIES

A sub-TAC of 332,500 lb (35% of the Area 2A TAC) was allocated to tribal fisheries. The, tribes estimated that 29,000 lb would be used for ceremonial and subsistence (C&S) fisheries and the remaining 303,500 lb were allocated to the commercial fishery. The 2009 management plan was essentially identical to the management plan that the tribes have had in place since 2004. This plan divides the fisheries into "separately managed" fisheries and "joint restricted" fisheries.

For the separately managed fisheries, a tribe or group of tribes was allocated a certain percentage of the TAC that could be harvested any time between noon on March 21 and noon on July 30. Collectively, the separately managed fisheries were allocated 75% of the Tribal Commercial TAC. The fishery closed on July 15, as the separately managed fishery expected catch was attained. The separately managed fisheries landed 224,455 lbs in 331 landings (out of 227,625 lbs expected).

The remaining 25% of the TAC was open to all parties in the "joint restricted" fishery. The joint restricted fishery opened at noon March 21 with a 500-lb/vessel/day limit and to last for 40 days. The last landing in this fishery was on May 9, thus comprising of an overage in catch. The restricted fishery was closed by all parties on May 9. The joint restricted fishery had a total catch of 78,932 lbs in 317 landings (out of 75,875 lbs expected).

Fishery	Dates Held	Pounds Landed	# of Landings
Separately Managed	March 8 - June 3	224,455 lb	331 landings
Restricted, 200-500 lb/vessel/day	March 17 – April 15	78,932 lb	317 landings
Total		303,386 lb	648 landings

The C&S fishery will continue through December 31 and tribal estimates of catch will be reported by the tribes in January 2009.

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE REPORT ON PROPOSED CHANGES TO CATCH SHARING PLAN AND 2010 ANNUAL REGULATIONS

The Washington Department of Fish and Wildlife (WDFW) held a recreational halibut meeting to develop and consider proposed changes to the Pacific Fishery Management Council's Catch Sharing Plan for 2010, in Montesano, on August 20, 2009.

As noted last year, one concern that continues to be expressed is with regard to ensuring that the public receives adequate notice in advance of halibut season openers and closures. In response, for the 2009 season, WDFW worked with constituents to identify specific time periods preseason that would be closed to halibut fishing in both the North Coast and South Coast subareas. These closures are intended to provide staff time to tally the catch and provide notice for additional openings if sufficient quota remains. We are proposing to extend the same approach to the Columbia River area and to work with the Oregon Department of Fish and Wildlife to identify those time periods preseason.

Based on the public input we received, we would support the following changes to the 2010 Pacific Halibut Catch Sharing Plan for Area 2A, section (f) SPORT FISHERIES, to be approved for public review, in addition to the status quo alternative.

Washington South Coast Sub-area

For this area, implement the following changes:

a) Continue the Sunday, Tuesday primary season structure through the third week in May. For the fourth week in May, the primary fishery will be open on Sunday only. Beginning the following week, the fishery would resume the Sunday, Tuesday structure until the primary season quota is attained.

b) Specify that the season will be open in the nearshore area seven days per week.

c) Revise the nearshore area to align the northern and western boundaries with the line approximating the 30-fm depth restriction.

d) On days that the primary halibut season is open, allow the retention of lingcod seaward of the 30-fm line.

Rationale:

a) Revising the days open per week balances the harvest opportunity between those who like to fish on weekends and those who like to fish weekdays. Having the fourth week open only on Sunday allows us to tally the catch and provide sufficient notice of a reopener the following week, if quota is available.

b) Increasing the number of days that the nearshore fishery is open during the primary season and after the offshore quota is reached will allow better access to the set aside quota and reduce the amount of incidentally caught halibut that would otherwise be discarded.

c) Currently, the nearshore boundary and the 30-fm line overlap (see Figure 1). Aligning the nearshore boundary with the 30-fm line (Figure 2) would promote ease of compliance and enforcement. In talking with charter operators who fish in the nearshore area targeting bottomfish, there are no "targetable" areas for halibut within the revised area, so this would remain an incidental retention opportunity.

d) The 30-fm restriction is in place primarily for the protection of yelloweye rockfish; however, during days that the primary halibut season is open, anglers have been forced to discard lingcod caught while targeting halibut offshore without encountering yelloweye rockfish. Those same anglers then moved shoreward of 30 fms only to catch smaller lingcod or no lingcod at all. WDFW accounts for incidental yelloweye catches associated with the halibut fishery under current management and this change is not expected to increase yelloweye harvest above current estimates. In any event, WDFW will monitor Washington's yelloweye harvest, and will take inseason action as appropriate to ensure our harvest target is not exceeded.

Figure 1. Current configuration.

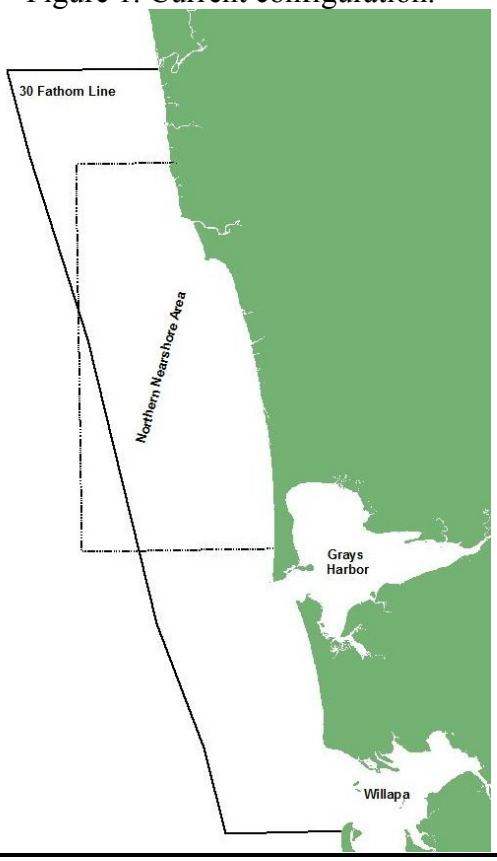
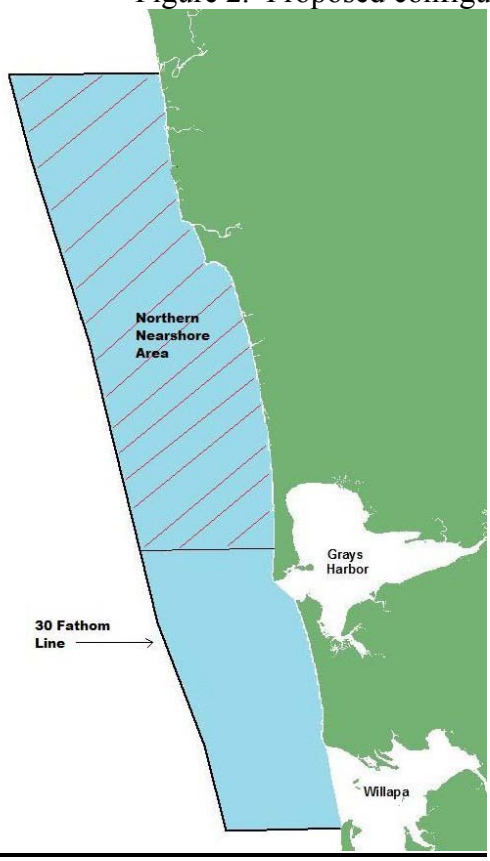


Figure 2. Proposed configuration.



Suggested revisions to the Catch Sharing Plan language to incorporate the above proposed changes are as follows:

(f) SPORT FISHERIES

(1) (iii) Washington south coast subarea.

This sport fishery is allocated 12.3 percent of the first 130,845 lb (59.4 mt) allocated to the Washington sport fishery, and 32 percent of the Washington sport allocation between 130,845 lb (59.4 mt) and 224,110 lb (101.7 mt) (except as provided in section (e)(3) of this Plan. This subarea is defined as waters south of the Queets River (47°31.70' N. lat.) and north of Leadbetter Point (46°38.17' N. lat.). The structuring objective for this subarea is to maximize the season length, while maintaining a quality fishing experience. The south coast subarea quota will be allocated as follows: 10% or 2,000 pounds, whichever is less, will be set aside for the nearshore fishery with the remaining amount allocated to the primary fishery. The fishery will open on the first Sunday in May. The primary fishery will be open two days per week, Sunday and Tuesday, in all areas, except where prohibited. ~~Starting~~ **During** the ~~third~~ **fourth** week in May, the primary fishery will be open on Sunday~~s~~ only**. Beginning the following week, the fishery would continue two days per week, Sunday and Tuesday,** until the quota for the primary fishery season is reached or September 30, whichever is earlier. If there is insufficient quota remaining to reopen the primary fishery for another fishing day, the remaining primary fishery quota will be added to the nearshore quota. The nearshore fishery takes place, in the area from ~~47°25.00'~~ **47°31.70'** N. lat. south to 46°58.00' N. lat. and **east of a line approximating 30 fathoms as described by the following coordinates:**

47°31.70' N. lat, 124°37.03' W. long
47°25.67' N. lat, 124°34.79' W. long
47°12.82' N. lat, 124°29.12' W. long
46°58.00' N. lat, 124°24.24' W. long

~~124°30.00' W. long~~. During the primary season the nearshore fishery will be open ~~three~~ **seven** days per week~~, Thursday, Friday and Saturday, in addition to any days on which the primary fishery is open~~. Subsequent to the closure of the primary fishery, the nearshore fishery will continue ~~on Thursdays, Friday, Saturdays and Sundays~~ **seven days per week** until the remaining quota is projected to be taken. If the fishery is closed prior to September 30, and there is insufficient quota remaining to reopen the nearshore areas for another fishing day, then any remaining quota may be transferred inseason to another Washington coastal subarea by NMFS via an update to the recreational halibut hotline. The daily bag limit is one halibut per person, with no size limit.

Recreational fishing for groundfish and halibut is prohibited within two YRCA's off Washington's southern coast. The South Coast Recreational YRCA and the Westport Offshore YRCA are defined by straight lines connecting latitude and longitude coordinates. Coordinates for these Recreational YRCAs are specified in groundfish regulations at 50 CFR 660.390 and will be specifically defined annually in federal halibut regulations published in the *Federal Register*.

PROPOSED PROCEDURES FOR ESTIMATING PACIFIC HALIBUT BYCATCH IN THE GROUNDFISH FISHERIES

Dr. Jim Hastie, National Marine Fisheries Service (NMFS), will brief the Council on the status of bycatch estimates for Pacific halibut in the Council-area groundfish trawl and setline fisheries.

The halibut bycatch estimates for the 2008 groundfish trawl fishery in International Pacific Halibut Commission (IPHC) Area 2A waters include information from the groundfish observer program and effects of the groundfish area closures in 2008, while the most recent groundfish setline bycatch estimates are based on 2007 fishery information. A supplemental report was provided to the Scientific and Statistical Committee (SSC) for review with the intent of providing estimates to the IPHC to use in establishing the 2009 halibut fisheries (Agenda Item H.2.b, Supplemental NMFS Report).

Council Action:

Utilizing input from the SSC, provide any needed Council guidance to the completion of the bycatch assessment and its transmittal by NMFS to the IPHC.

Reference Materials:

1. Agenda Item H.2.d, Public Comment.
2. Agenda Item H.2.b, Supplemental NMFS Report: Pacific Halibut Bycatch in IPHC Area 2A in 2007 and 2008.

Agenda Order:

a. Agenda Item Overview — Chuck Tracy
b. Northwest Fisheries Science Center Report — Jim Hastie
c. Reports and Comments of Management Entities and Advisory Bodies
d. Public Comment
e. **Council Action:** Review and Provide Guidance on Appropriate Bycatch Estimation Procedures

PFMC
08/27/09

Pacific Halibut Bycatch in IPHC Area 2A in the 2008 Groundfish Bottom Trawl Fishery

John Wallace
Jim Hastie

NOAA Fisheries
Northwest Fisheries Science Center
Seattle, WA

September 2009

ABSTRACT

This report updates the estimates of Pacific halibut bycatch and mortality in the portion of the limited-entry groundfish bottom trawl fishery that operates between 48˚.667 and 40˚.667 degrees through the calendar year 2008. The estimates of halibut bycatch and mortality in the bottom trawl fishery are based upon the method developed in the report for 1999 (Wallace, 2000). The current report uses halibut bycatch rates observed during the 2008 calendar year by the West Coast Groundfish Observer Program (WCGOP). These rates are stratified by season, depth, latitude, and amount of arrowtooth flounder catch, and then multiplied by the amount of 2008 trawl effort (hours towed) in each stratum determined from Oregon and Washington trawl logbooks. Estimated halibut bycatch and mortality from other gear types targeting groundfish has not been updated for 2008 at this time. As was done for the first time last year, this analysis continues to use the WCGOP observations of the viability of discarded halibut for determining the mortality rates used in calculating the amounts of mortality. In 2008, the amount of bottom trawl effort increased by 23% relative to 2007, and effort continued to shift to depths seaward of the RCA. The total amount of halibut bycatch (437,689 lb) represents a 35% increase over 2007, although the estimated *halibut mortality* (280,515 lb) increased by only 9%. Although this mortality estimate is lower than those for 2005 and 2006, the estimated amount of legal-sized halibut mortality (182,857) was the highest of all years back through 2004. As in past reports, forecast of bycatch for the current year (2009) or future years is not attempted.

GROUNDFISH FISHERY BACKGROUND

Pacific halibut is a "prohibited species" for trawl gear on the West Coast; therefore all halibut caught must be discarded. Even though there is no economic incentive to catch halibut, changes in the groundfish fishery and its management affect not only the amount of groundfish fishing effort, but also its geographic and temporal distribution. Since halibut bycatch rates vary among time and area strata, changes in the amount and distribution of effort will alter the amount of halibut bycatch that is estimated for the trawl fleet.

In 2008, the RCA boundaries North of 48˚10′N and between 43˚20′.83N and 42˚40′.50N closed off all fishing opportunities shoreward of 150 fathoms for the entire year. This included winter (Nov-Feb) closures in areas open in 2007. RCA boundaries in 2008 closed off more area between the shore and 75 fathoms during more periods than RCA boundaries in 2007. These closures had a major impact on trawl effort, shifting more effort to waters deeper than 150 to 200 fathoms.

Trawl Rockfish Conservation Area North of 40˚10′ in 2008

	Jan - Feb	Mar - Apr	May - June	July - Aug	Sept	Oct	Nov-Dec
North of 48˚10.00'N	shore - modified 200 fm[7]	shore - 200 fm	shore - 150 fm	shore - 150 fm	shore - 150 fm		shore - modified 200 fm[7]
48˚10.00'N. - 46˚38.17'N.	75 - modified 200 fm[7]	60 - 150 fm	60 - 150 fm	60 - 150 fm	60 - 150 fm		75 - modified 200 fm[7]
46˚38.17N. - 46˚16.00N.	75 - modified 200 fm[7]	60 - 150 fm	60 fm - 200 fm	60 fm - 150 fm	60 - 150 fm	75 - 150 fm	75 - modified 200 fm[7]
46˚16.00N. - 45˚46.00N.	75 - modified 200 fm[7]	75 - 200 fm	75 - 200 fm	75 - 200 fm	75 - 200 fm		75 - modified 200 fm[7]
45˚46.00N - 43˚20.83N	75 - modified 200 fm[7]	75 - 200 fm	75 - 200 fm	75 - 200 fm	75 - 200 fm		75 - modified 200 fm[7]
43˚20.83N. - 42˚40.50N.	75 - modified 200 fm[7]	shore - 200 fm	shore - 200 fm	shore - 200 fm	shore - 200 fm		75 - modified 200 fm[7]
42˚40.50N. - 40˚10.00'N.	75 - modified 200 fm[7]	75 - 200 fm	60 fm - 200 fm	60 - 150 fm	60 - 200 fm	75 - 200 fm	75 - modified 200 fm[7]

[7]The "modified 200fm" line is modified to exclude certain petrale sole areas from the RCA.

2008 BYCATCH ESTIMATES

Analysis of 2008 bycatch data from the West Coast Groundfish Observer Program

The WCGOP provided data for the complete calendar year of 2008 for this analysis. There were 2,346 bottom trawl tows between 48.667 and 40.667 degrees N. latitude included in this study (Figure 1). An estimated net total weight of 93,778 lb of halibut was caught in those tows. Sixty-one percent of these weights are estimated by using the Pacific halibut length-weight relationship (IPHC, personal communication), 30% reflect weighed fish, and 9% are from various types of visual estimates. The length frequencies of the halibut measured in the 2008 observer data are given in Table 1.

Methods similar to those in Pikitch (1998) were used to analyze the observer data and identify appropriate strata for bycatch estimation. The strata determined as important are season (Jan-Aug and Sept-Dec), depth (0-150, 150+ -250, 250+ -700 fm), area (three latitudinal ranges: 40.667-46.667 ^{o}, 46.667+ -47.667 ^{o}, 47.667+ -48.667 ^{o} N. latitude) and catch of arrowtooth flounder (0-20 lb/hour and >20 lb/hour). Note that depth and area now comprise only three strata, not four each as in previous years. This change reduced the number of strata lacking, or with few, observations. As a result of management efforts to shift trawling to areas seaward of the RCA in recent years, it has become increasingly common for there to be small numbers of bycatch observations in one or both of the '0-75 fm' and '75-150 fm' depth ranges, given the area, season, and arrowtooth dimensions of the stratification. So these strata, where bycatch of smaller halibut is more common, were combined. The combining of strata also provided a level of stratification that was more suitably matched to the stratification possible with the more limited viability data. In particular, because of the more sparse bycatch and viability observations between 40.667^{o} and 42.667^{o} N. latitude, that area was combined with the adjacent area, extending northward to 46.667^{o} N. latitude. The numbers of observed tows and trawl logbook tow hours, halibut catch rates, and the proportions of legal-sized halibut (>81 cm) are summarized for each of these strata in Table 2. Note that Table 2 does not report strata with fewer than three observed vessels and/or ten observed tows.

Although the distribution of observed tows between arrowtooth catch categories remained similar from 2008 to 2007, a reduction in the percentage of tows with arrowtooth and Pacific halibut catch occurred in both arrowtooth catch categories during the January – August season. In tows with up to 20 pounds per hour of arrowtooth catch, the percentage of observed tows with Pacific halibut decreased from 33% to 24% between 2007 and 2008. In tows with greater than 20 pounds per hour of Arrowtooth catch, the percentage of observed tows with Pacific halibut decreased from 63% to 54% between 2007 and 2008. The opposite trend was seen during the September – December season, with the number of observed tows which contained Pacific halibut increasing from 24% to 27% in tows with up to 20 pounds per hour of arrowtooth catch and from 38% to 57% in tows with greater than 20 pounds per hour of arrowtooth catch.

Bottom Trawl Effort from Logbooks

Trawl logbook data for 2008 were obtained from PacFIN. Since ODFW does not collect logbook data for 100 percent of the trawl deliveries during a typical year, Oregon logbook effort (hours towed) was expanded using fish tickets on a port and month basis. This approach was used in order to avoid any potential bias created by unequal collection of logbooks in the three major ports (Astoria, Newport, and Coos Bay). Oregon logbook trawl effort (hours) was expanded to that entire fleet using the ratio of total groundfish catch reported on fish tickets divided by logbook groundfish catch, for each port and month. These expansion ratios were applied to the trawl effort (tow hours) to arrive at the expanded effort for Oregon's trawl fleet. WDFW's "extrapolated and expanded" trawl effort was used for Washington trips, which is calculated to account for logbooks that were not submitted to the agency. For more information on this method and WDFW logbook processing, see Sampson and Crone (1997).

The stratification scheme identified through analysis of observer data was then applied to the expanded logbook effort observations. Total fleet effort for each stratum in 2008 is reported in Table 2. A comparison of trawl effort in 2007 and 2008 is presented in Table 3, with depth strata compressed into two categories for tows conducted shallower and deeper than 150 fm, In all of the shallow strata (with the exception of that including tows with catch of more than 20 lb of arrowtooth per hour conducted between 47.667 and 48.667^{o} N. latitude), effort fell sharply (by 38% to 54%) between 2007 and 2008. Conversely, trawl effort increased (by 30% to 94%) in all strata between 150 and 700 fathoms.

Viability Analyses

Since 2004, WCGOP observers have collected viability data on discarded Pacific halibut, using the same condition key developed by the IPHC for use by observers in North Pacific fisheries. Observations of several external fish characteristics are used to assign each fish that is evaluated to one of three categories: Dead, Poor, or Excellent (Williams and Chen 2004). Last year, (Wallace and Hastie, 2008) we presented an analysis of discard survival based on observer viability data. The analysis was accepted by the Pacific Fishery Management Council on advice from the Statistical and Science Committee (SSC) and is used again in this report.

Pacific halibut pose unique challenges for observer sampling. When a trawl net is dumped on deck, most vessels will scan the catch for Pacific halibut and immediately return them to sea, which is termed "presorting". Vessels presort halibut to increase the likelihood of survival of the discarded fish. In addition to the need for quickly returning halibut to the sea in order to enhance survival, halibut are often too heavy and/or awkward to weigh in observer baskets. Therefore, in most circumstances observers visually estimate the length of the halibut in ten-centimeter units (40cm, 50cm, 60cm, etc), which are later converted to weight using the IPHC length/weight conversion table. Observers also have the option of directly measuring a halibut and then converting to weight using the IPHC length/weight conversion table or actually weighing the individual fish, but these rarely occur. Regardless of the sampling methodology used, the total weight of discarded Pacific halibut is estimated for all tows sampled by observers.

There are two types of biological data collected on halibut: length and viability. Viability is determined using IPHC dichotomous keys, which use physical characteristics to indicate whether the individual is 'Excellent', 'Poor', or 'Dead'. Table 4 summarizes the distribution of observed halibut among viability and unassessed categories, by year and depth zone since 2004. In most years, fish amounting to at least 20,000 lb of halibut have been evaluated for viability. From 2004 through 2008, roughly 20% of the observed estimated weight of halibut has been evaluated for viability. Table 5 summarizes the distribution of the assessed weight among the three condition categories, for several alternative stratifications of each year's data. The percentages of assessed weight categorized as 'Dead', by year and depth category, are depicted in Figure 2.

Values in the top row of Table 5 indicate the mortality rates assigned to each of the condition categories by the IPHC (Williams and Chen 2004). [Note that only 90% of the fish assigned to the 'Dead' category are assumed to die following release.] The percentage of halibut weight assigned to the 'Dead' category usually increases with depth, as the percentage assigned to the

'Excellent' category diminishes. The weighted average mortality rate for each depth interval is reported in the last three columns of Table 5, and was calculated as a weighted mean of the halibut condition mortality rates, with the weights being the poundage within each condition category. From 2004 through 2006, the average mortality rate in the 0-150 fm depth zone ranged from 0.48 to 0.58. However, in 2007, the value rose to 0.68, and again in 2008 to 0.75. Average mortality rates in the two deeper zones the last two years have been more consistent with prior values. At this time, it is not known why mortality rates in waters shoreward of the RCA have increased so dramatically in the last two years. Table 6 summarizes the observed amounts and distribution of viability observations in a similar manner for combined data from 2007 and 2008. These mortality rates for the combined years are used to examine the effects of alternative stratification of viability data on the overall estimates of halibut mortality.

Method of Estimating Pacific Halibut Bycatch

Amounts of halibut bycatch in each stratum are estimated by the following equations:

Tow Hours in stratum x *Stratum bycatch rate* = *Stratum weight of P. Halibut*

Stratum weight of P. Halibut x *Stratum mortality rate* = *Stratum P. Halibut mortality*

Estimates of bycatch and discard mortality for the entire bottom trawl fleet are then obtained by summing values across strata.

If there is logbook effort but no observed tows, the 2008 coast-wide average bycatch rate (11.42 kg per hour) is used. This value is calculated as the un-weighted average of the stratum means. Preliminary work done in 2001 using a sophisticated approach of imputing missing data showed little difference in the calculated total bycatch, when using the un-weighted average of the stratum means and the imputed values.

Results

The proportion of legal-sized halibut (> 81cm) is estimated from the length frequencies of halibut measured in the observer data (Table 1). All measurements of fish lengths are converted to fish weight based on a length-weight relationship for Pacific halibut, and the proportion of discard that is of legal size (by weight) is computed for each stratum (Table 2). The average legal-sized proportion (calculated as the un-weighted average of the stratum means) is used when no other estimate was available. The proportion of legal-sized total halibut mortality, shown in Table 7, is the highest since 2003. Table 7 summarizes the average length of observed halibut, by year and depth interval. Prior mortality results, based on the assumed mortality rate of 50% are presented in Table 8 for historical perspective, but are not updated for 2008.

The estimated total amount of *discarded halibut* increased by 24% between 2007 and 2008 (Table 9), but decreased 22% from the average discarded amount from 2004-07 (336,006 lb). Two key factors in the change from 2007 to 2008 was the 23% increase in overall trawl hours

and an increase in the percent legal-sized P. halibut. The estimate of total halibut mortality, calculated using only 2008 viability data, did not rise as much as total bycatch between 2007 and 2008, due to the reduction in the average rate of mortality per trawl hour. The estimated mortality ratio of 5.5 pounds of halibut per tow hour is also the lowest of all years presented. Conversely, the amount of legal-sized halibut mortality increased by 43% from 2007, due to the large increase in the overall percentage of legal-sized Pacific halibut encountered, along with the shift of fishing effort seaward of the RCA (>150 fm) (Table 3). In 2008, roughly 65% of the total estimated mortality weight was from legal-sized fish, whereas the proportion had not exceeded 50% the preceding three years. Confidence limits in Table 7 should be viewed as minimum estimates, since trawl effort is assumed known without error.

In Table 10, the results for 2007 and 2008, based on year-specific viability data (from Table 9), are presented along with three different estimates for each year, developed using combined viability data from both years. Three depth zones are used in each of the alternatives. In the second, 3 latitude zones are added. In the third alternative, latitude zones are replaced by the two seasonal periods previously described. The largest differences are associated with the pooling of observer data across years. Across the three alternatives with pooled observer data, differences in the estimates are negligible.

Summary of Results

- Trawl effort decreased shoreward of the RCA and increased seaward of the RCA in 2008
- Pacific halibut viability decreases with increased depth of capture and in higher latitudes.
- The Pacific halibut mortality estimate for the 2008 limited entry bottom trawl fishery, based solely on 2008 fish viability observations is 280,515 lb. The estimated amount was roughly 315,000 lb when viability data were pooled across 2007 and 2008.
- Annual estimates developed using the pooled 2007-2008 data were very insensitive to the alternative stratification schemes examined.
- Estimated Pacific halibut mortality per trawl hour in 2008 was 5.5 lb per trawl hour which is a slight decrease from the 2007 estimate of 6.1 lbs per trawl hour.
- The proportion of legal-sized Pacific halibut mortality has increased since 2005 and is estimated to be 0.6513 in 2008.

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Table 1. Pacific halibut length frequencies collected by the West Coast Groundfish Observer Program during 2008. The upper limits on the length intervals are inclusive, the lower limits are not.

Length Interval (cm)	Length Freq.	Percent Length Freq.
25-30	0	0.00
30-35	1	0.03
35-40	0	0.00
40-45	0	0.00
45-50	0	0.00
50-55	5	0.17
55-60	33	1.12
60-65	185	6.26
65-70	369	12.49
70-75	569	19.26
75-80	516	17.47
80-85	376	12.73
85-90	278	9.41
90-95	216	7.31
95-100	166	5.62
100-105	102	3.45
105-110	67	2.27
110-115	36	1.22
115-120	16	0.54
120-125	9	0.30
125-130	3	0.10
130-135	3	0.10
135-140	2	0.07
140-145	1	0.03
145-150	1	0.03
150-155	0	0.00
155-160	0	0.00
160-165	0	0.00
165-170	0	0.00
170-175	0	0.00
175-180	0	0.00
180-185	0	0.00
Total	2,954	100

Table 2. Numbers of observed tows and Pacific halibut catch rates by strata, observed in the 2008 LE groundfish bottom trawl fishery by the West Coast Groundfish Observer Program, with overall fleet trawl effort from Oregon and Washington logbook data. The upper limits are inclusive for all intervals; the lower limits are not.

SEASON: JANUARY – AUGUST

Arrowtooth Catch (lb/h)	Latitude	Depth (Fathoms)	Number of Observed Tows	Number of Tows with ≥ 1 Halibut	Wgt. (kg., rnd) Halibut per Hour	Trawl Effort (hours) from OR & WA	Proportion Legal by Weight
≤ 20	40.667 - 46.667	0 - 150	123	39	1.78	2,182.99	0.33
		150 - 250	201	59	1.17	4,895.31	0.79
		250 - 700	367	14	0.08	10,631.17	0.83
	46.667 - 47.667	0 - 150	88	66	5.71	1,190.00	0.13
		150 - 250	25	15	3.62	507.16	0.79
		250 - 700	93	12	0.34	2,145.02	0.86
	47.667 - 48.667	0 - 150	0	0	11.42[1]	246.05	0.63
		150 - 250	28	22	29.91	535.35	0.80
		250 - 700	92	16	0.92	2,567.30	0.82
> 20	40.667 - 46.667	0 - 150	3	2	*	360.63	0.84
		150 - 250	257	134	4.92	4,469.03	0.55
		250 - 700	110	21	1.22	2,775.95	0.78
	46.667 - 47.667	0 - 150	7	7	*	150.50	0.73
		150 - 250	55	44	9.95	804.89	0.61
		250 - 700	23	9	3.75	383.76	0.91
	47.667 - 48.667	0 - 150	5	5	*	51.60	0.63
		150 - 250	52	46	84.04	1,081.73	0.72
		250 - 700	35	27	37.08	678.19	0.65

* Bycatch rates for strata with fewer than 10 tows are not reported.

[1] Coast-wide average rate, applied in the absence of observer data in a stratum.

Table 2. Continued.

SEASON: SEPTEMBER - DECEMBER

Arrowtooth Catch (lb/h)	Latitude	Depth (Fathoms)	Number of Observed Tows	Number of Tows with ≥ 1 Halibut	Wgt. (kg., rnd) Halibut per Hour	Trawl Effort (hours) from OR & WA	Proportion Legal by Weight
≤ 20	40.667 - 46.667	0 - 150	139	39	2.01	753.11	0.19
		150 - 250	68	25	8.06	2,068.97	0.51
		250 - 700	164	18	0.22	4,978.60	0.86
	46.667 - 47.667	0 - 150	52	22	2.71	486.78	0.27
		150 - 250	5	2	*	97.31	0.63
		250 - 700	12	0	0.00	410.75	0.63
	47.667 - 48.667	0 - 150	20	18	10.23	126.10	0.15
		150 - 250	9	2	*	168.77	0.63
		250 - 700	22	6	1.03	718.97	0.63
> 20	40.667 - 46.667	0 - 150	12	2	1.64	301.19	0.00
		150 - 250	158	93	7.06	3,072.58	0.56
		250 - 700	47	18	1.55	1,527.63	0.59
	46.667 - 47.667	0 - 150	10	7	13.13	78.33	0.63
		150 - 250	12	4	1.90	203.29	0.73
		250 - 700	0	0	11.42[1]	56.57	0.63
	47.667 - 48.667	0 - 150	5	4	*	19.76	0.93
		150 - 250	27	23	6.40	483.54	0.92
		250 - 700	20	14	39.37	225.40	0.77

* Bycatch rates for strata with fewer than 10 tows are not reported.

[1] Coast-wide average rate, applied in the absence of observer data in a stratum.

Table 3. Trawl effort (hours) in the 2007 and 2008 limited entry groundfish bottom trawl fisheries off Oregon and Washington.

Arrowtooth Catch (lb/h)	Latitude	Depth (fathoms)	Trawl effort (hours)		% change from 2007 to 2008
			2007	2008	
≤ 20	40.667 - 46.667	0 - 150	5,724	2,936	-49%
		150 - 700	15,651	22,574	44%
	46.667 - 47.667	0 - 150	2,710	1,677	-38%
		150 - 700	1,660	3,160	90%
	47.667 - 48.667	0 - 150	812	372	-54%
		150 - 700	2,054	3,990	94%
	Total	0 - 150	9,247	4,985	-46%
		150 - 700	19,365	29,724	53%
		All depths	28,612	34,709	21%
> 20	40.667 - 46.667	0 - 150	1,101	662	-40%
		150 - 700	9,096	11,845	30%
	46.667 - 47.667	0 - 150	428	229	-46%
		150 - 700	1,047	1,448	38%
	47.667 - 48.667	0 - 150	61	71	16%
		150 - 700	1,531	2,469	61%
	Total	0 - 150	1,589	962	-39%
		150 - 700	11,673	15,762	35%
		All depths	13,262	16,724	26%
Total	Total	0 - 150	10,836	5,947	-45%
		150 - 700	31,038	45,486	47%
		All depths	41,874	51,434	23%

Table 4. Weight of WCGOP observed halibut within viability categories for 2004-2008.

		Weight of observed halibut (lb)						
		Viability assessed					Unknown condition	Total
		Dead	Poor	Exc.	All	% of total		
2004	0 - 150 fm	3,019	2,728	5,299	11,045	12%	80,749	91,794
	150-250 fm	8,533	2,965	1,940	13,438	25%	39,780	53,218
	> 250 fm	2,091	221	646	2,958	15%	16,538	19,496
	Total	**13,642**	**5,914**	**7,885**	**27,441**	**17%**	**137,067**	**164,508**
2005	0 - 150 fm	13,932	9,328	11,254	34,514	20%	140,663	175,177
	150-250 fm	9,194	2,639	2,865	14,698	41%	21,432	36,130
	> 250 fm	1,955	893	611	3,459	34%	6,843	10,302
	Total	**25,081**	**12,860**	**14,731**	**52,671**	**24%**	**168,938**	**221,609**
2006	0 - 150 fm	4,726	2,396	6,363	13,485	11%	112,868	126,353
	150-250 fm	3,415	696	1,220	5,331	24%	16,736	22,067
	> 250 fm	2,560	233	303	3,096	68%	1,425	4,521
	Total	**10,702**	**3,325**	**7,885**	**21,912**	**14%**	**131,029**	**152,941**
2007	0 - 150 fm	4,026	548	1,712	6,285	19%	26,088	32,373
	150-250 fm	8,790	930	1,384	11,103	29%	26,703	37,806
	> 250 fm	1,396	233	151	1,780	11%	14,129	15,909
	Total	**14,212**	**1,711**	**3,246**	**19,169**	**22%**	**66,919**	**86,088**
2008	0 - 150 fm	2,431	628	454	3,513	26%	9,763	13,276
	150-250 fm	10,246	2,664	3,659	16,570	19%	68,579	85,149
	> 250 fm	4,434	793	1,204	6,431	24%	20,181	26,612
	Total	**17,111**	**4,086**	**5,317**	**26,514**	**21%**	**98,523**	**125,037**

Table 5. Weighted average mortality rate by area and season strata for 2004-08. The mortality rate average is weighted by the percent of halibut weight within categories.

		0 to 150 fm			150 to 250 fm			Greater than 250 fm			Average mortality rate		
		Viability assessed			Viability assessed			Viability assessed			0 -	150 -	
		Dead	Poor	Exc.	Dead	Poor	Exc.	Dead	Poor	Exc.	150 fm	250 fm	> 250 fm
Category mortality rate		0.9	0.55	0.2	0.9	0.55	0.2	0.9	0.55	0.2			
2004	40.67° - 46.66°	28%	27%	45%	67%	18%	15%	82%	7%	11%	0.491	0.734	0.796
	46.67° - 47.66°	22%	24%	53%	47%	32%	21%	64%	3%	32%	0.442	0.640	0.663
	North of 47.66°	31%	22%	47%	63%	37%		39%	10%	51%	0.493	0.771	0.508
	January - August	25%	25%	49%	70%	18%	12%	70%	9%	22%	0.468	0.753	0.719
	Sept. - Dec.	61%	11%	28%	51%	30%	19%	72%	6%	22%	0.663	0.662	0.723
	Total	**27%**	**25%**	**48%**	**63%**	**22%**	**14%**	**71%**	**7%**	**22%**	**0.478**	**0.722**	**0.721**
2005	40.67° - 46.66°	43%	29%	29%	62%	17%	21%	51%	27%	22%	0.599	0.696	0.652
	46.67° - 47.66°	40%	25%	36%	66%	16%	18%	57%	32%	12%	0.564	0.720	0.706
	North of 47.66°	38%	26%	36%	54%	34%	12%	71%	8%	21%	0.558	0.696	0.726
	January - August	36%	29%	35%	62%	18%	20%	52%	30%	17%	0.551	0.696	0.673
	Sept. - Dec.	83%	9%	8%	73%	18%	9%	80%	0%	20%	0.814	0.772	0.761
	Total	**40%**	**27%**	**33%**	**63%**	**18%**	**19%**	**57%**	**26%**	**18%**	**0.577**	**0.701**	**0.686**
2006	40.67° - 46.66°	40%	24%	37%	62%	15%	23%	80%	7%	13%	0.559	0.686	0.784
	46.67° - 47.66°	29%	9%	62%	49%	16%	34%	77%	23%		0.434	0.602	0.820
	North of 47.66°	9%	21%	70%	86%	2%	12%	86%	7%	7%	0.335	0.808	0.824
	January - August	35%	18%	47%	66%	12%	21%	81%	8%	10%	0.505	0.709	0.797
	Sept. - Dec.	48%	11%	41%	61%	14%	25%	96%	0%	4%	0.572	0.674	0.872
	Total	**35%**	**18%**	**47%**	**64%**	**13%**	**23%**	**83%**	**8%**	**10%**	**0.508**	**0.694**	**0.805**
2007	40.67° - 46.66°	69%	9%	21%	78%	10%	12%	85%	10%	5%	0.718	0.778	0.830
	46.67° - 47.66°	56%	4%	40%	88%	4%	8%	100%			0.607	0.829	0.900
	North of 47.66°	24%	38%	38%	54%	15%	31%	10%	49%	41%	0.502	0.629	0.442
	January - August	65%	8%	27%	84%	5%	10%	84%	12%	4%	0.683	0.809	0.831
	Sept. - Dec.	43%	25%	32%	45%	29%	26%	51%	18%	31%	0.585	0.619	0.618
	Total	**64%**	**9%**	**27%**	**79%**	**8%**	**12%**	**78%**	**13%**	**8%**	**0.679**	**0.783**	**0.795**
2008	40.67° - 46.66°	61%	10%	30%	65%	13%	23%	71%	8%	21%	0.659	0.697	0.725
	46.67° - 47.66°	90%	8%	2%	44%	16%	40%	87%	5%	8%	0.855	0.562	0.826
	North of 47.66°	63%	28%	9%	68%	22%	9%	63%	17%	21%	0.740	0.757	0.698
	January - August	75%	7%	18%	59%	17%	24%	67%	14%	19%	0.750	0.672	0.717
	Sept. - Dec.	65%	26%	9%	67%	15%	19%	77%	7%	16%	0.744	0.719	0.764
	Total	**69%**	**18%**	**13%**	**62%**	**16%**	**22%**	**69%**	**12%**	**19%**	**0.747**	**0.689**	**0.726**

Table 6. Weight (lb), percentages, and weighted average mortality rates for 2007-08 aggregate amounts for three depth strata by area and season.

		0 to 150 fathoms				150 to 250 fathoms				Greater than 250 fathoms			
		Viability assessed				Viability assessed				Viability assessed			
		Dead	Poor	Exc.	Total	Dead	Poor	Exc.	Total	Dead	Poor	Exc.	Total
2007-08	40.67° - 46.66°	3,547	492	1,193	5,231	10,854	1,813	2,853	15,519	2,547	282	443	3,272
combined	46.67° - 47.66°	1,807	135	742	2,684	4,618	634	1,494	6,745	955	54	83	1,091
	North of 47.66°	1,103	549	231	1,884	3,565	1,147	696	5,408	2,329	691	829	3,849
	January - August	5,020	584	1,881	7,485	14,303	2,279	3,526	20,108	4,725	889	1,061	6,674
	Sept. - Dec.	1,437	592	285	2,314	4,734	1,315	1,516	7,565	1,106	138	294	1,537
	Total	6,456	1,176	2,166	9,799	19,037	3,594	5,043	27,673	5,831	1,026	1,355	8,212
		category distribution of weight assessed for fish viability			average mortality rate	category distribution of weight assessed for fish viability			average mortality rate	category distribution of weight assessed for fish viability			average mortality rate
Category mortality rate		0.9	0.55	0.2		0.9	0.55	0.2		0.9	0.55	0.2	
2007-08	40.67° - 46.66°	68%	9%	23%	0.707	70%	12%	18%	0.730	78%	9%	14%	0.775
combined	46.67° - 47.66°	67%	5%	28%	0.689	68%	9%	22%	0.712	87%	5%	8%	0.830
	North of 47.66°	59%	29%	12%	0.712	66%	21%	13%	0.736	61%	18%	22%	0.686
	January - August	67%	8%	25%	0.697	71%	11%	18%	0.738	71%	13%	16%	0.742
	Sept. - Dec.	62%	26%	12%	0.724	63%	17%	20%	0.699	72%	9%	19%	0.735
	Total	66%	12%	22%	0.703	69%	13%	18%	0.727	71%	12%	16%	0.741

Table 7. Average length (cm) of Pacific halibut observed in the west coast bottom trawl fishery by year and depth interval from 2004-2008.

Year	Depth interval (fm)					Proportion of Legal-Sized Total Halibut Mortality from Table 7
	0+ thru 75	75+ thru 150	150+ thru 250	250+ thru 700	All Depths	
2004	75.60	82.13	84.72	87.71	80.59	0.5902
2005	73.34	76.58	81.64	88.48	76.36	0.4265
2006	72.25	77.34	79.78	88.48	74.38	0.4587
2007	70.03	78.50	82.06	81.79	77.42	0.4961
2008	72.16		82.38	83.29	80.97	0.6513

Table 8. Halibut bycatch and mortality in the Oregon and Washington limited entry bottom trawl fisheries for groundfish off the U.S. West Coast, **using a 50% rate of mortality for discards**. Estimates from 2002-2007 are based on observations by the West Coast Groundfish Observer Program. All estimates in this table (except the seventh and last column) are derived from a sum over strata cells; see the text for details. The 95% confidence limits, based on the variability in discard of halibut per trawl hour, are given in parentheses. Note that the trawl effort is assumed known without error; hence these confidence limits are a minimum estimate.

Year	Trawl Effort (hours)	Estimated Halibut Bycatch (numbers)	Estimated Halibut Bycatch (kg, round)	Estimated Halibut Bycatch (lb, net)	Estimated Total Halibut Mortality (lb, net)	Est. Mortality (lb) per Trawl Hour	Estimated Legal-Sized Halibut Mortality (lb, net)	Proportion of Legal-Sized Total Halibut Mortality
1998	92,294	164,961	1,259,374	2,082,690	1,041,345	11.3	691,755	0.6643
1999	81,420	147,995	1,144,236	1,892,280	946,140	11.6	638,091	0.6744
2000	70,363	122,234	944,120	1,561,338	780,669	11.1	523,097	0.6701
2001	67,199	124,969	962,348	1,591,482	795,741	11.8	532,912	0.6697
2002	52,168	NA	618,913	1,023,527	511,764	9.8	286,221	0.5593
2003	58,339	NA	558,544	923,693	461,847	7.9	366,745	0.7941
2004	37,495	NA	296,225 (192k-464k)	489,882 (317k-768k)	244,941 (158k-384k)	6.5	136,691 (87k-220k)	0.5581
2005	39,377	NA	432,806 (255k-655k)	715,752 (421k-1,084k)	357,876 (210k-542k)	9.1	152,264 (87k-236k)	0.4254
2006	42,602	NA	403,194 (163k-688k)	666,782 (269k-1,137k)	333,391 (134k-569k)	7.8	134,394 (57k-251k)	0.4031
2007	41,874	NA	211,801 (95k- 349k)	350,266 (157k-577k)	175,133 (78k-288k)	4.2	84,036 (31k-146k)	0.4798

Notes: Halibut bycatch by the California bottom trawl fishery is not included. Proportion of legal-sized mortality (>81 cm) is estimated from length frequencies of fish measured by the West Coast Groundfish Observer Program. 1 kg, round = 1.65375 pounds, net weight.

Table 9. Halibut bycatch and mortality in the Oregon and Washington LE bottom trawl fisheries for groundfish off the west coast. **The rates of discard mortality, derived from observer assessment of fish viability, are used and the results derived using the 2007 methodology with its larger number of strata.** All estimates in this table, except the "Halibut Bycatch Mortality divided by Halibut Bycatch" and "Legal-sized divided by Total Halibut Mortality" columns, are derived from a sum over strata cells; see the text for details. The 95% confidence limits, based on the variability in discard of halibut per trawl hour, are given in parentheses. Note that the trawl effort is assumed known without error; hence these confidence limits are a minimum estimate.

Year	Trawl Effort (hours)	Estimated Halibut Bycatch (kg, round)	Estimated Halibut Bycatch (lb, net)	Estimated Total Halibut Mortality (lb, net)	Mortality (lb) per Trawl Hour	Halibut Bycatch Mortality divided by Halibut Bycatch	Est. Legal-sized Halibut Mortality (lb, net)	Legal-sized divided by Total Halibut Mortality
2004	37,495	296,225 (192k-464k)	489,882 (317k-768k)	260,590 (169k-423k)	6.9	0.5319	153,804 (98k-254k)	0.5902
2005	39,377	432,806 (255k-655k)	715,752 (421k-1,084k)	417,863 (246k-635k)	10.6	0.5838	178,218 (102k-278k)	0.4265
2006	42,602	403,194 (163k-688k)	666,782 (269k-1,137k)	345,648 (139k-593k)	8.1	0.5184	158,570 (59k-281k)	0.4587
2007	41,874	211,801 (95k- 349k)	350,266 (157k-577k)	257,338 (1115k-425k)	6.1	0.7347	127,677 (48k-222k)	0.4961
2008	51,434	264,665 (128k- 433k)	437,689 (211k-716k)	280,515 (135k-463k)	5.5	0.6409	182,857 (87k-303k)	0.6519

Notes: Halibut bycatch by the California bottom trawl fishery is not included. Proportion of legal-sized mortality (>81 cm) is estimated from length frequencies of fish measured by the West Coast Groundfish Observer Program. 1 kg, round = 1.65375 pounds, net weight.

Table 10. Halibut bycatch and mortality in the Oregon and Washington LE bottom trawl fisheries for groundfish off the west coast, **using combined 2007-2008 rates of discard mortality derived from observer assessment of fish viability, under alternative data stratifications**. The 95% confidence limits, based on the variability in discard of halibut per trawl hour, are given in parentheses. Note that the trawl effort is assumed known without error; hence these confidence limits are a minimum estimate.

Year	Based on halibut viability data collected in:	Stratification of halibut mortality rates	Estimated Halibut Bycatch (lb, net)	Estimated Total Halibut Mortality (lb, net)	Mortality (lb) per Trawl Hour	Halibut Bycatch Mortality divided by Halibut Bycatch	Est. Legal-sized Halibut Mortality (lb, net)	Legal-sized divided by Total Halibut Mortality
2007	2007	4 depth zones	350,266 (157k-577k)	257,338 (1115k-425k)	6.1	0.7347	127,677 (48k-222k)	0.4961
	2007-08	3 depth zones	367,892 (163k-602k)	263,555 (116k-432k)	6.3	0.7164	125,489 (47k-215k)	0.4761
	2007-08	3 depth zones; 3 latitude zones	367,892 (163k-602k)	266,184 (118k-436k)	6.4	0.7235	127,094 (48k-218k)	0.4775
	2007-08	3 depth zones 2 seasons	367,892 (163k-602k)	262,418 (116k-429k)	6.3	0.7133	125,091 (47k-214k)	0.4767
2008	2008	4 depth zones	437,689 (211k-716k)	280,515 (135k-463k)	5.5	0.6409	182,857 (87k-303k)	0.6519
	2007-08	3 depth zones	434,027 (193k-703k)	315,270 (140k-510k)	6.1	0.7264	205,985 (90k-335k)	0.6534
	2007-08	3 depth zones; 3 latitude zones	434,027 (193k-703k)	316,028 (141k-511k)	6.1	0.7281	206,752 (90k-336k)	0.6542
	2007-08	3 depth zones 2 seasons	434,027 (193k-703k)	318,628 (142k-518k)	6.2	0.7341	208,317 (91k-340k)	0.6538

Notes: Halibut bycatch by the California bottom trawl fishery is not included. Proportion of legal-sized mortality (>81 cm) is estimated from length frequencies of fish measured by the West Coast Groundfish Observer Program. 1 kg, round = 1.65375 pounds, net weight.

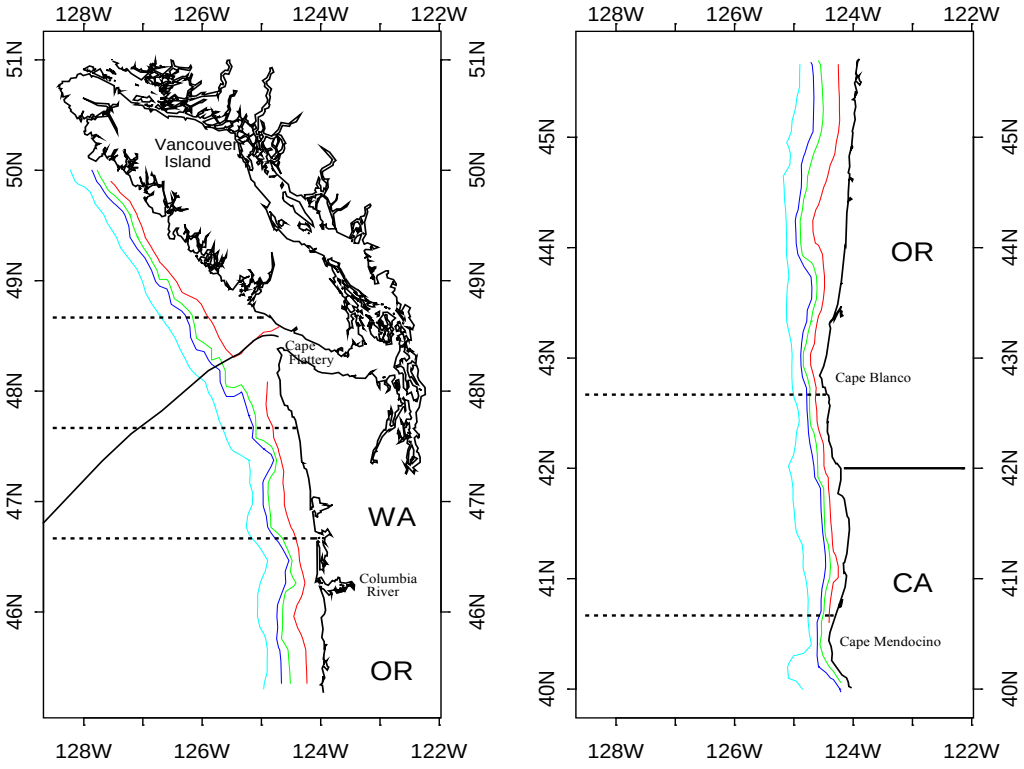

Figure 1. A map of IPHC area 2A with the latitudinal strata demarcated by dotted lines. In the most northerly strata only the area east of the EEZ line is covered by this report. Depth contours are plotted for 75, 150, 250, and 700 fathoms.

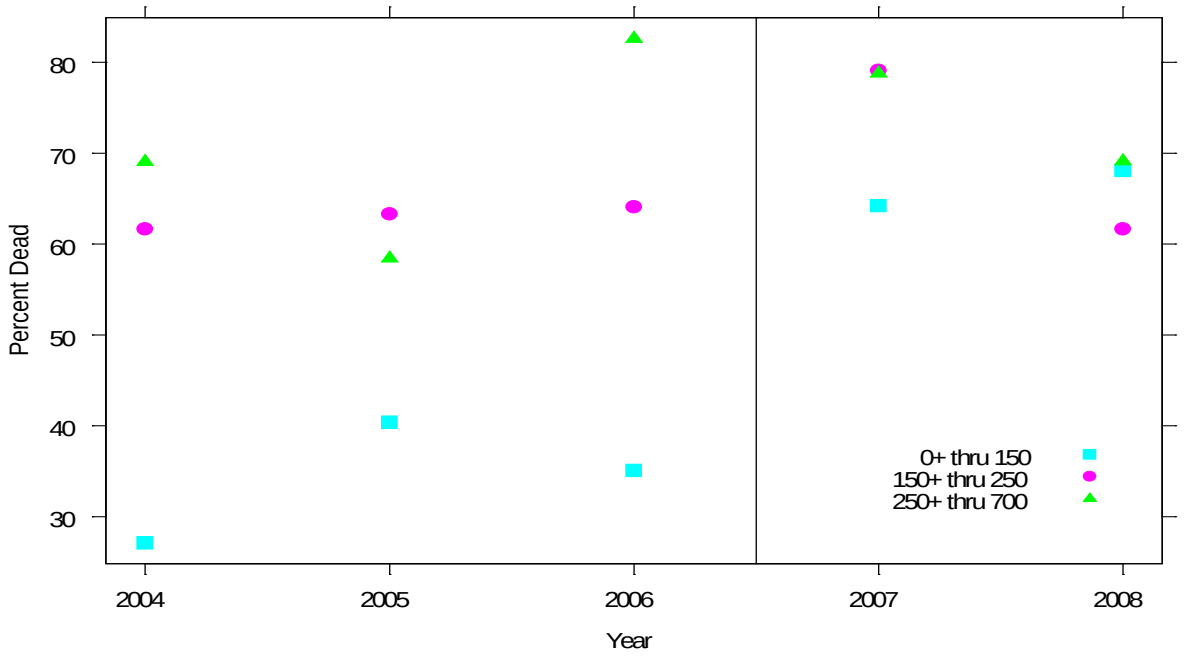

Figure 2. Percent 'Dead' viability by year and depth category.

Science, Service, Stewardship

Pacific Halibut Bycatch in the 2008 Groundfish Fisheries

H.2.b: Supplemental NMFS Reports 1 and 2

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NOAA FISHERIES SERVICE

Pacific halibut bycatch in 2008 groundfish fisheries

- Analysis of fishery and observer data from the 2008 bottom-trawl fishery
  - Application of last year's method
  - Sensitivity of results to alternative approaches to stratifying the fish viability data (as suggested by the SSC last year)
- Analysis of fishery and observer data from the 2008 non-nearshore, fixed-gear fisheries
  - Application of general method described in June 2009, for 2002-2007 data
  - Additional stratification of the primary sablefish fishery, North and South of Pt. Chehalis

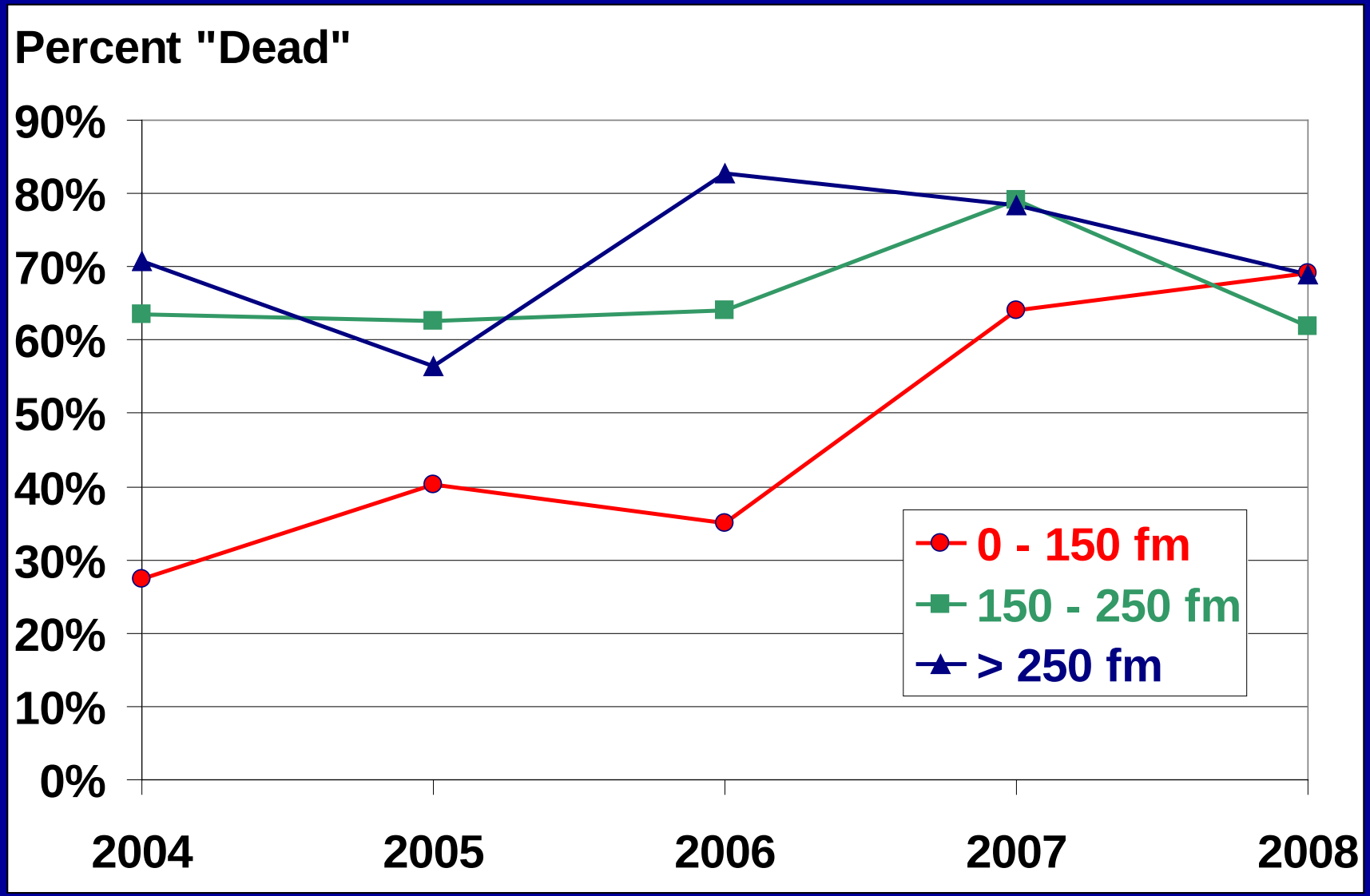
Changes in trawl effort

Latitude range ° N. lat.	Depth range (fm)	% change from 2006 to 2008	% change from 2007 to 2008
40.667 - 46.667	0 - 150	-71%	-47%
	150 - 700	92%	39%
46.667 - 47.667	0 - 150	-51%	-39%
	150 - 700	182%	70%
47.667 - 48.667	0 - 150	-88%	-49%
	150 - 700	99%	80%
Total	0 - 150	-70%	-45%
	150 - 700	100%	47%
	All depths	21%	23%

Changes in observed halibut condition over time

	% of viabilities = "Dead"			Average mortality rate		
	0 - 150 fm	150 - 250 fm	> 250 fm	0 - 150 fm	150 - 250 fm	> 250 fm
2004	27%	63%	71%	48%	72%	72%
2005	40%	63%	57%	58%	70%	69%
2006	35%	64%	83%	51%	69%	81%
2007	64%	79%	78%	68%	78%	79%
2008	69%	62%	69%	75%	69%	73%

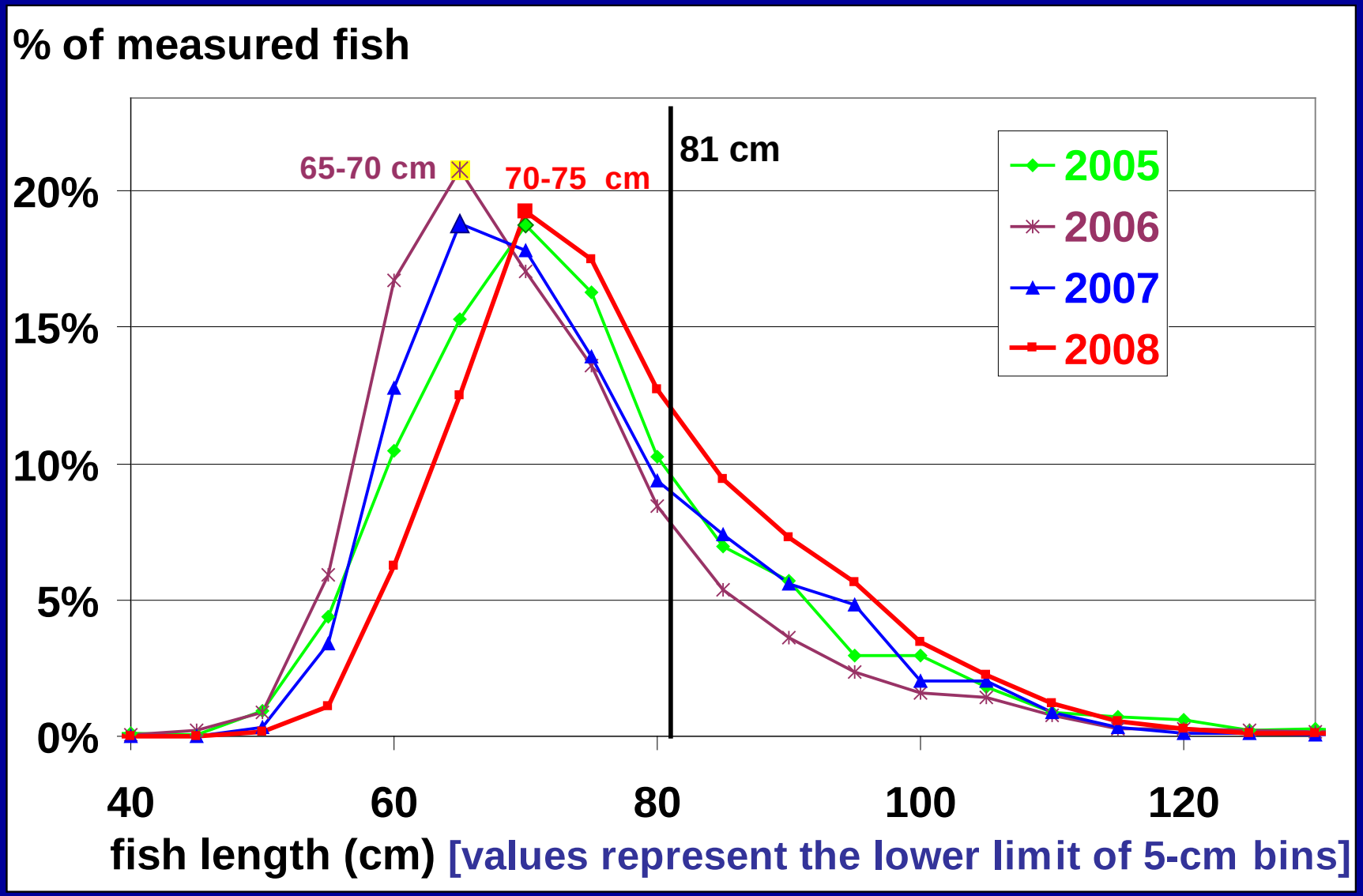
Percentages of fish evaluated for viability that were categorized as "Dead"



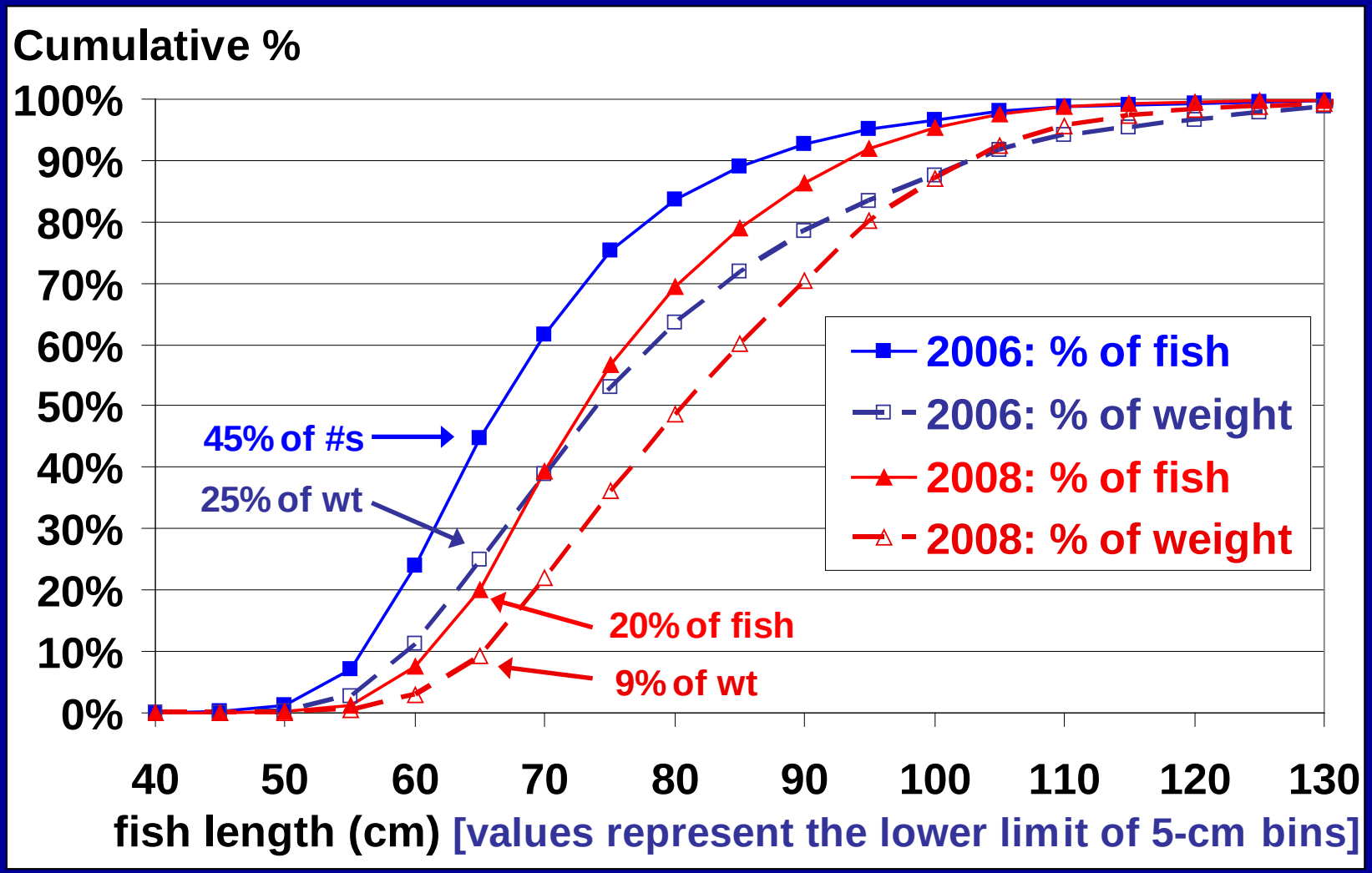
Estimates of bottom-trawl bycatch of Pacific Halibut

Year	Trawl Effort (hours)	Estimated Halibut Bycatch (lb, net)	Estimated Total Halibut Mortality (lb, net)	Mortality (lb) per Trawl Hour	Mortality % of Bycatch	Est. Legal-sized Halibut Mortality (lb, net)	% of Mortality that is legal-sized
2004	37,495	489,882	260,590	6.9	53%	153,804	59%
2005	39,377	715,752	417,863	10.6	58%	178,218	43%
2006	42,602	666,782	345,648	8.1	52%	158,570	46%
2007	41,874	350,266	257,338	6.1	73%	127,677	50%
2008	**51,434**	**437,689**	**280,515**	**5.5**	**64%**	**182,857**	**65%**
% chg '07 -> '08	**23%**	**25%**	**9%**	**-10%**	**-13%**	**43%**	**31%**

Length distributions of measured trawl-caught halibut, 2005-2008



Cumulative distributions of the percentages of numbers and weight of measured halibut, by length bin, in 2006 & 2008



Sensitivity testing of alternative stratification of viability data

Bycatch and Fishery data from year:	Halibut viability data from:	Stratification of Halibut Mortality Rates	Halibut Bycatch (lb, net)	Halibut Mortality (lb, net)	Legal-sized Mortality (lb, net)
2007	2007-08	3 depth zones (DZ)	367,892	263,555	125,489
		3 DZs + 3 lat zones	367,892	266,184	127,094
		3 DZs + 2 seasons	367,892	262,418	125,091
2008	2007-08	3 depth zones (DZ)	434,027	315,270	205,985
		3 DZs + 3 lat zones	434,027	316,028	206,752
		3 DZs + 2 seasons	434,027	318,628	208,317

Bottom Trawl Summary

- Trawl hours increased by 23% in 2008, mainly off Oregon, and seaward of the RCA
- Total 2008 halibut mortality (218,515 lb) was just 9% higher than in 2007
- However, mortality of legal-sized halibut rose by 43%, as larger fish are found seaward of RCA
- The observed condition of halibut caught shoreward of the RCA has declined since 2004
- Additional stratification of viability data beyond depth zones has little affect on estimates

Estimates of non-nearshore, fixed-gear bycatch of Pacific Halibut

	No area stratification			Area strat.
	Estimated total (mt)	Discard Mortality		Mortality
		25% mort. rate	16% mort. rate	16% mort. rate
2002	139	35	22	23
2003	225	56	36	33
2004	185	46	30	40
2005	228	57	36	37
2006	679 (796*)	170 (199*)	109	107
2007	170	43	27	24
2008				46

- Area stratification is North and South of Pt. Chehalis

Halibut bycatch in the primary longline sablefish fishery

	2002	2003	2004	2005	2006	2007	2008
North of Pt Chehalis							
Gross discard (mt, rnd. wt.)	129	176	165	213	536	107	143
Discard mortality (mt, rnd. wt.)	21	28	26	34	86	17	23
% of fixed-gear total	89%	87%	67%	93%	80%	71%	49%
South of Pt Chehalis							
Gross discard (mt, rnd. wt.)	12	27	49	14	116	20	96
Discard mortality (mt, rnd. wt.)	2	4	8	2	19	3	15
Coast-wide							
Gross discard (mt, rnd. wt.)	140	203	214	226	651	127	239
Discard mortality (mt, rnd. wt.)	22	32	34	36	104	20	38
% of fixed-gear total	97%	100%	87%	99%	98%	85%	83%

Amounts of discard mortality calculated using a 16% rate of mortality for discarded halibut

Distribution of observed lengths of discarded halibut

	N. of Pt Chehalis		S. of Pt Chehalis	
	Number	% of area	Number	% of area
Visual estimate				
0 - 74 cm	2,064	50.3%	989	25.7%
75 - 84 cm	821	20.0%	985	25.6%
85 - 150 cm	1,219	29.7%	1,875	48.7%
Total	4,104		3,849	

The IPHC defines halibut of at least 81 cm in length as legal-sized

Most halibut are not brought aboard fixed-gear vessels, and so most lengths are from visual estimates, and not measurements; only 84 measured lengths.

Fixed-gear summary

- Discard mortalities for 2002-07 are very similar to reported to the Council in June
  - Additional area stratification at Pt. Chehalis, WA
- High 2006 discard mortality driven by higher encounter rates of Pacific halibut, particularly in primary fishery north of Pt. Chehalis, WA
- The discard mortality in 2008 is roughly twice that in 2007, but less than half that in 2006.
- Precision of legal-sized estimates is affected by the reliance on visual length estimates

Observation of the fixed-gear fishery

	LE Sablefish Primary			Other LE Sablefish	OA Fixed Gear	
	Longline					
	N. of Pt. Chehalis	S. of Pt. Chehalis	Pot	Longline	Hook-and-line Gears	Pot
	Number of observed trips					
2002	23	47	23	11	-	-
2003	25	25	35	130	41	16
2004	13	35	13	62	43	96
2005	31	73	39	35	34	43
2006	31	34	39	121	11	38
2007	36	40	30	158	50	45
2008	17	60	24	122	58	55
	Number of observed vessels					
2002	9	18	6	4	-	-
2003	8	8	6	17	13	7
2004	6	13	3	14	15	17
2005	10	18	7	11	10	14
2006	9	10	7	21	8	15
2007	9	14	4	36	25	20
2008	6	13	6	32	33	20

Fixed-gear halibut bycatch rates

	LE Sablefish Primary			Other LE Sablefish	OA Fixed Gear	
	Longline					
	N. of Pt. Chehalis	S. of Pt. Chehalis	Pot	Longline	Hook-and-line Gears	Pot
	% of observed trips that caught Pacific halibut					
2002	96%	47%	17%	0%	--	--
2003	100%	52%	9%	1%	0%	0%
2004	100%	71%	38%	0%	0%	0%
2005	97%	59%	33%	0%	0%	0%
2006	100%	76%	56%	0%	9%	0%
2007	94%	48%	33%	2%	26%	7%
2008	100%	78%	83%	3%	34%	5%
	Observed Pacific halibut discard ratios					
2002	0.330	0.028	0.011	0.000	*	*
2003	0.353	0.047	0.000	0.000	*	*
2004	0.237	0.075	0.053	0.000	*	*
2005	0.332	0.020	0.004	0.000	*	*
2006	0.783	0.164	0.027	0.000	*	*
2007	0.218	0.033	0.009	0.003	0.084	0.003
2008	0.372	0.145	0.015	0.004	0.126	0.001

Agenda Item H.2.b
Supplemental NMFS Report 2
September 2009

Observed and Estimated Total Discard of Pacific Halibut in the 2002-2008 U.S. West Coast Groundfish Non-Nearshore Fixed Gear Fishery

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INTRODUCTION

The primary objective of this report is to provide estimates of Pacific halibut (*Hippoglossus stenolepis*) discard in the U.S. west coast groundfish non-nearshore fixed gear fishery from 2002-2008. We present discard estimates for all non-nearshore fixed gear sectors observed by the West Coast Groundfish Observer Program (WCGOP). These include vessels that fish in the federal groundfish fishery as:

- Commercial limited entry (LE) sablefish-endorsed primary season, April-October
- Commercial LE non-sablefish-endorsed vessels, year-round
- Commercial open access (OA) fixed gear vessels, year-round

Each of these observed sectors is described in more detail in the report "Data Report and Summary Analyses of the West Coast Non-nearshore Fixed Gear Fishery" (NMFS 2008). Previous estimates of Pacific halibut discard in the non-nearshore fixed gear fisheries were calculated using methodology developed for groundfish total fishing mortality estimation (Hastie and Bellman 2007, Bellman et al. 2008). The current analysis is an attempt to estimate Pacific halibut discard mortality outside of the context of discard estimation for species included in the Pacific Coast Groundfish Fishery Mangement Plan (PFMC 2008).

Data sources

Data sources for this analysis include onboard observer data (from the WCGOP) and landing receipt data (referred to as fish tickets). The WCGOP was established in 2001 by NOAA Fisheries (National Marine Fisheries Service, NMFS) (66 FR 20609). All commercial vessels that land groundfish caught in the United States Exclusive Economic Zone (EEZ) from 3-200 miles offshore are required to carry an observer when notified to do so by NMFS or its designated agent. The WCGOP's goal is to improve total catch estimates by collecting information on the discarded catch (fish returned overboard at-sea) of west coast groundfish species. The WCGOP coverage plan details program goals, vessel selection, observer coverage, and basic data collection (NWFSC 2006). A list of fisheries in order of coverage priority and detailed information on data collection methods employed in each observed fishery can be found in the WCGOP manual (NWFSC 2008).

The sampling protocol employed by the WCGOP is primarily focused on the discarded portion of catch. In order to ensure that the recorded weights for the retained portion of the observed catch are accurate, haul-level retained catch amounts recorded by WCGOP observers are reconciled with trip-level fish ticket records. This process is described in further detail in annual reports produced by the WCGOP (www.nwfsc.noaa.gov/research/divisions/fram/observer/datareport/index.cfm) and was conducted prior to the analyses presented in this report.

Landing receipts, known as fish tickets, are completed by fish-buyers in each port for each delivery of fish by a vessel. Fish tickets are trip-aggregated sales receipts for market

categories that may represent single or multiple species. They are issued to fish-buyers by a state agency and must be returned to the agency for processing. Each state conducts species-composition sampling for numerous market categories that are reported on fish tickets. Fish ticket and species-composition data are submitted by state agencies to the Pacific Fisheries Information Network (PacFIN) regional database. Percentages for the species composition within market categories were applied to the fish ticket data used in our analyses. As such, landed weights from sampled market categories were distributed to individual species to the greatest extent possible.

Annual fish ticket landings data were retrieved from the PacFIN database and subsequently divided into various sectors of the groundfish fishery as indicated in Figure 1. All additional data processing steps that were applied during the discard estimation process are described in the Methods Section below.

When Pacific halibut are encountered on an observed vessel, WCGOP observers select a random sample of specimens and record length and viability. Viabilities are collected according to a protocol laid out by the International Pacific Halibut Commission (IPHC), which is utilized by the North Pacific Observer Program as well. Unfortunately, due to difficulties of collecting viabilities on fixed gear vessels, there is some concern that viability collection is non-random (see next section). Therefore, these data were not used in this analysis. However, fish length values, which are collected for all randomly selected specimens either by visual estimation or physically measured, were incorporated into this analysis to evaluate the proportion of fixed gear discard that was of legal and sublegal size. A fish may be visually estimated for length when a physical measurement is not possible, such as if the fish is very large in size, the crew returns it quickly overboard, etc.

Pacific Halibut Viability Sampling in Hook-and-Line Gear Fisheries

In order for observer viability sampling data to be used in these analyzes, the WCGOP would need to be confident that they are unbiased and representative of normal fleet behavior. To understand the reasons the WCGOP is not currently using observer viability data, it is necessary to understand the complications of halibut sampling on hook-and-line vessels.

When Pacific halibut are caught on trawl vessels, they are always brought on-board the vessel, ensuring the observer can randomly select a subsample for length and viability sampling. On hook-and-line vessels, crew members have the ability to “shake” or use other means (cutting of gangions, straightening of hooks) to discard the halibut without having to bring it onboard. This type of crew behavior normally occurs before or as the Pacific halibut reaches the “roller”, which prevents the fish from hitting the “crucifier” (being torn from the hook) and laying on deck for any period of time. This is generally considered good handling practice that reduces potential mortality. To sample under these conditions, the observer would need to ask that selected Pacific halibut be brought on-board, which in itself changes the normal behavior of the crew. In addition, since the

crew knows beforehand which Pacific halibut will be sampled by the observer, they would most likely choose to be more careful in releasing the fish from the hook. These factors lead to concerns about whether the Pacific halibut viabilities collected are unbiased.

In addition to considering how observer sampling of Pacific halibut could be biased on an individual vessel basis, it is also important to consider whether the observed fleet behavior is representative of the fleet as a whole. The North Pacific hook-and line fisheries, off the Alaskan Coast, have specific Pacific halibut handling techniques defined in regulation (CFR 679.7), which state:

> (13) *Halibut.* With respect to halibut caught with hook-and-line gear deployed from a vessel fishing for groundfish, except for vessels fishing for halibut as prescribed in the annual management measures published in the Federal Register pursuant to §300.62 of chapter III of this title, the following actions are prohibited:
>
> (i) Fail to release the halibut outboard a vessel's rails.
>
> (ii) Release the halibut by any method other than—
>
> (A) Cutting the gangion.
>
> (B) Positioning the gaff on the hook and twisting the hook from the halibut.
>
> (C) Straightening the hook by using the gaff to catch the bend of the hook and bracing the gaff against the vessel or any gear attached to the vessel.
>
> (iii) Puncture the halibut with a gaff or other device.
>
> (iv) Allow the halibut to contact the vessel, if such contact causes, or is capable of causing, the halibut to be stripped from the hook.

These regulations ensure consistent handling practices by the North Pacific hook-and-line fleet and therefore increase the likelihood that observed vessels are operating in a manner similar to the unobserved fleet. No such regulations exist for the Pacific Coast groundfish fisheries. Although adding similar language to the Pacific groundfish regulations would not guarantee observed vessels will behave similar to unobserved vessels, the WCGOP would be more confident in making this assumption. However, even if this regulatory change was made, overcoming the issues of observer bias stated previously would be difficult.

METHODS

A deterministic approach was used to estimate Pacific halibut bycatch for all sectors of the groundfish fixed gear fishery, excluding state-permitted fisheries targeting nearshore rockfish. Through this approach, observed discard rates for Pacific halibut were directly expanded to the fleet-wide level. First, discard ratios were computed from observer data as the discarded weight of Pacific halibut divided by the retained weight of either sablefish or all FMP groundfish (except Pacific hake), depending on the sector. A complete listing of groundfish species included in the Groundfish Fishery Management Plan and used to compute and expand ratios is provided in Appendix A and B. Discard ratio denominators were identified for each sector of the fishery based on the targeting behavior of that sector. Discard ratios were then multiplied by the total fleet-wide landed weight of either sablefish or groundfish (corresponding with the denominator used to compute the observed discard ratio). This provided an expanded gross estimate of fleet-wide Pacific halibut discard. A discard mortality rate of 16% was then applied to compute estimated discard mortality (personal communication, Greg Williams, IPHC). Previously, a 25% rate of mortality was applied to discarded Pacific halibut estimates (Hastie and Bellman 2007, Bellman et al. 2008), but this was revised to 16% after further discussion with Gregg Williams of the IPHC regarding the most appropriate rate for longline discard estimation in 2009. We have also applied this rate to pot gear and to hook-and-line gears in the open access (OA) fixed gear sector. This approach was supported by the Science and Statistical Committee (SSC) of the Pacific Fishery Management Council (Ancillary B, SSC Minutes, Sep 2009).

The U.S. groundfish fixed gear fishery on the West Coast is comprised of three sectors that target sablefish and other deepwater groundfish species. Two of these are considered limited entry (LE) sectors, while the other is considered an open access (OA) sector from a federal groundfish management perspective. A federal groundfish permit is required to participate in the LE fixed gear fishery. These permits are either sablefish-endorsed or non-sablefish-endorsed. The first of the three fixed gear sectors is therefore the LE sablefish-endorsed sector, or "primary" sector. This sector consists of vessels with LE permits that are sablefish-endorsed, fishing during the primary season from April to October. LE sablefish-endorsed vessels operate primarily off of Washington and Oregon and receive the highest sablefish quota. Second, the LE non-primary sector, or "non-primary" sector, consists of federally permitted (non-sablefish-endorsed) fixed gear vessels that target both sablefish and other deepwater groundfish species but operate under daily/weekly trip limit regulations. In addition to vessels with non-endorsed LE permits, the non-primary sector includes LE sablefish-endorsed vessels that have either reached their tier quota or are fishing outside of the primary season. Once LE sablefish-endorsed vessels meet one of these criteria, they then operate under the daily/weekly trip limits like other non-endorsed vessels (50CFR Part 660, Subpart G, 660.372). Finally, the open access (OA) fixed gear sector includes vessels that are not federally permitted in the groundfish fishery, but that target a similar complex of sablefish and deepwater groundfish. Like the LE non-primary sector, the OA fixed gear sector operates under daily/weekly trip limit regulations.

Fish tickets that caught sablefish using fixed gear were partitioned into these three commercial fixed-gear sectors through the following process. Commercial fixed-gear fish tickets were first divided out by whether the vessel had a federal groundfish permit (limited entry) or no federal groundfish permit (open access). OA fish tickets were placed in the OA fixed gear sablefish sector. Next, LE fish tickets were separated based on whether the vessel's federal groundfish permit(s) had a sablefish endorsement (sablefish-endorsed) with tier quota for the primary season or if it was not endorsed (also referred to as '0' tier). Fish tickets for all LE sablefish vessels with tier endorsements that were operating within this period and within their allotted tier quota were placed in the LE sablefish-endorsed primary sector. If LE sablefish-endorsed vessels fished outside of the primary season (November through March) or made trips within the season after they had reached their tier quota, the fish tickets were placed in the LE sablefish non-primary sector. In addition, fish tickets from non-endorsed LE vessels were also placed in the LE sablefish non-primary sector.

Further processing of fish tickets was then conducted to identify landings from the directed Pacific halibut fishery and remove them from our analysis. The directed Pacific halibut fishery occurs for only a few days each year, during 10-hour openings that are designated by the IPHC. LE and OA fixed gear vessels that typically target groundfish can participate in this fishery. For most fixed gear vessels, this is the only time during which they are allowed to land Pacific halibut. However, LE sablefish-endorsed primary vessels fishing with longline gear north of Pt Chehalis, Washington (46° 53.30' N latitude) are allowed some retention of Pacific halibut during the primary sablefish season (most recent regulation: 74FR Part 19011). For the LE primary sector in this area, fish tickets from the directed Pacific halibut fishery were identified as those on which landings of Pacific halibut were greater than landings of any other groundfish species or market category. For all other sectors, including LE primary longline vessels landing south of Pt Chehalis, any fish ticket with landings of Pacific halibut was designated as part of the directed Pacific halibut fishery and was removed from our analysis.

The WCGOP observes these non-nearshore fixed gear sectors with the following priority: LE sablefish-endorsed primary season, the LE non-sablefish-endorsed ('0' tier) sector, and the OA fixed-gear sector. LE sablefish-endorsed vessels that fish outside of the primary season or that have reached their tier quota in the primary season are not observed. Again, for more information see the most recent WCGOP non-nearshore fixed gear report (NMFS 2008).

WCGOP observer data were stratified according to sector and gear type (longline and pot/trap). One additional latitudinal stratification line at Pt Chehalis, Washington (46° 53.30' N latitude) was used for the LE sablfish-endorsed longline sector. Although additional latitudinal breaks at 40° 10' N and 36° N. latitude have been used for stratification in other discard estimates for this fishery, these lines coincide with regulations in the groundfish fishery and are not relevant in the context of Pacific halibut management. As noted above, some retention of Pacific halibut per fishing trip is allowed in the LE sablefish-endorsed primary season north of Pt Chehalis, Washington (46° 53.30' N latitude) using longline gear only, and it must be landed north of Pt

Chehalis as well (most recently updated regulation 76 FR 19011). The most recent regulation allows retention from May through the end of October. This regulation has been in place for all years for which there is observer coverage, with some slight differences in the weight of Pacific halibut which could be retained. This was the only latitudinal stratification incorporated into our analysis and was only applied to the LE sablefish-endorsed primary sector. Discard amounts provided for the other two fixed gear sectors represent coastwide estimates.

The number of observed trips, sets, and vessels are summarized for each sector, gear type and area (where applicable) in Table 1. Table 2 provides the landed weight of sablefish and FMP groundfish (excluding Pacific hake) used as a measure for expanding discard from observed trips to the entire fleet. Observed discard ratios (also in Table 2) were calculated by sector, gear group and area based on the following equation:

$$\hat{D}_s = \frac{\sum_t d_{st}}{\sum_t r_t} \times F_s$$

where:

s: strata (sector / gear group / area)
t: observed tows
d: observed discard (lbs) of Pacific halibut
r: observed retained weight (mt) of sablefish or all FMP groundfish except Pacific hake
F: weight (mt) of retained sablefish or all FMP groundfish excluding Pacific hake recorded on fish tickets in strata *s*
D_s*:* Discard estimate for strata *s*

For all sector/gear/area strata, except the LE non-primary longline sector, discard ratios were calculated by dividing the stratum discard weight of Pacific halibut by the retained catch weight of sablefish. Retained groundfish was used as the ratio denominator for the LE non-primary longline sector, rather than sablefish weight alone, because this sector targets a wider range of deepwater species. A broader denominator was therefore necessary in order to effectively capture the level of fishing effort in this sector. No pot gear was observed in the LE sablefish non-primary sector. Also, discard ratios from the OA fixed gear sector in 2002-2006 were not used because the WCGOP only covered OA vessels in California during this time and the data set was not considered adequate to represent discard for the entire fishery sector coastwide. Therefore, only 2007 and 2008 discard estimates for the OA fixed gear sector were included in final discard mortality summaries. An averaged discard rate from the 2007 and 2008 OA data was subsequently applied to approximate potential discard amounts in earlier years, however this is only provided for comparison purposes.

Where FMP groundfish (excluding Pacific hake) was used to compute discard ratios, any retained weights that were recorded by the observer but that did not appear on fish tickets were excluded from the denominator. This was necessary to prevent double-counting

associated with differences in the species codes used by observers and processors. For instance, while observers may record rockfish catch at the species level, various species of rockfish are often grouped, weighed, and recorded together on the fish ticket by the processor under a grouped species code such as NUSP - northern unspecified slope rockfish. In some cases, this difference in species coding prevents observer and fish ticket weights from being matched and adjusted properly. Species coding on fish tickets varies considerably between processors and over time, and it is not possible to make assumptions regarding which individual observer-recorded species likely coincide with species grouping codes on fish tickets. Instead, by using only the retained groundfish weight from fish tickets in discard ratio denominators, we prevent double-counting of retained weights. This is not a factor when using a single species in the denominator, such as sablefish, as any retained weights in observer and fish ticket data that share the same species code will match and adjust properly.

In each stratum, the observed discard ratio (Table 2) was multiplied by the fish ticket retained weight of sablefish or all FMP groundfish species (excluding Pacific hake) as indicated in Figure 2. Figure 2 demonstrates how each fishery sector/gear, expansion factor, and observed discard rate were used. This provided an expanded fleet-level discard estimate for each stratum. If landings were made by a fixed gear sector for which there were no or very few WCGOP observations, the most appropriate observed discard ratio was selected and applied to those landings based on similarities in the fishery management structure, fishing and discard behavior, and the gear fished. For example, the LE sablefish non-primary sector landed 18 mt of FMP groundfish with pot gear in 2008, but this portion of the fleet was not observed by the WCGOP program. Given similarities in gear type and catch composition, OA fixed gear pot observations were selected as the most appropriate source of information for an observed discard rate to apply to those landings by vessels fishing with pots in the LE sablefish non-primary sector (Figure 2).

RESULTS

Table 3 provides a summary of the percent observed trips that caught Pacific halibut by sector, gear group, and area. Table 3 also includes the observed annual catch (mt) and discard (mt) of Pacific halibut, as well as the percentage of Pacific halibut catch that was discarded. Pacific halibut was most commonly encountered by the LE sablefish primary longline sector fishing north of Pt Chehalis, Washington, with catch occurring during 94-100% of observed trips. Catch of Pacific halibut was much less common in the LE sablefish non-primary sector, which primarily operates off of California and southern Oregon. Although retention of Pacific halibut is prohibited for LE sablefish-endorsed primary vessels fishing with longline gear south of Pt Chehalis, observers did record retained Pacific halibut in this area on a total of 6 trips in 2002, 2003, 2004, and 2006. On 5 of these trips, fishing took place south of Pt Chehalis but the vessel landed their catch in ports north of this line. Sablefish was still the dominant retained species (in weight) on these trips, and they did not, therefore, appear to be part of the directed Pacific halibut fishery.

Annual estimates of Pacific halibut gross discard and discard mortality in the LE sablefish primary, LE sablefish non-primary and OA fixed gear sectors are presented in Table 4. In the LE sablefish primary longline sector, Pacific halibut discard estimates were consistently higher in the area north of Point Chehalis than in the area south. Discard estimates for both areas followed a similar trend across time, with particularly high values in 2006 (Figure 3). Coastwide discard amounts in the LE primary pot sector were considerably less than those associated with longline gear, with estimates of gross discard ranging from 0.3 to 33 mt. Discard in the LE non-primary sector was also found to be quite low, with the largest annual gross discard estimate of 2.6 mt occurring in 2008 with longline gear.

Between 2002 and 2006, the WCGOP only covered OA fixed gear vessels in California. Observer coverage was extended to OA fixed gear vessels in Oregon and Washington in 2007. Because the spatial distribution of Pacific halibut is centered primarily in northern areas off the U.S. west coast, it was deemed inappropriate to use earlier California-only discard ratios to estimate discard in this sector from 2002-2006. Expanded OA discard amounts for this time period were therefore excluded from final discard estimates for the fishery as a whole (Table 5).

However, averaged discard rates from 2007 and 2008 OA data were used to provide expanded 2002-2006 discard estimates for comparison purposes only. These estimates are shown in brackets in Table 4. Discard estimates in the OA hook-and-line sector represented the second largest component of discard mortality in our analysis, after the LE sablefish-endorsed primary longline sector. Assuming a fixed 2007-2008 discard rate for 2002-2006, gross discard in this sector may have been as high as 55 mt in previous years. When using the fixed discard rate in earlier years, trends in discard are a direct result of the level of fishing effort in this sector, as represented by sablefish landings (mt) in Table 2. Far less discard was associated with the OA pot sector in 2002-2006, with annual estimates ranging from 0.2 to 0.9 mt of Pacific halibut.

A final summary of estimated discard mortality from all three non-nearshore fixed gear groundfish sectors is presented in Table 5. Estimated total discard mortality was much larger in 2006 than in any other year. High discard mortality from this year appears to be solely driven by higher encounter rates of Pacific halibut, which were subsequently discarded, particularly on LE sablefish-endorsed primary vessels fishing north of Pt Chehalis, Washington.

Estimates provided in this report differ from estimates previously provided in groundfish total mortality estimation for three reasons. First, a new latitudinal stratification line was employed at Pt Chehalis, Washington (46° 53.30’ N latitude) in the LE sablefish-endorsed primary longline sector. This change was initially reviewed in response to an outside data request and was adopted into our methodology because it appeared to coincide well with both observed spatial differences in discard behavior in this sector and with management distinctions north and south of this line. In most years, this change had a net effect of increasing estimates slightly, with notable exceptions in 2003 and 2007, for

which gross discard of Pacific halibut decreased by approximately 20 mt. Second, additional work was conducted to isolate fish tickets associated with the LE and OA fixed gear groundfish fishery from those associated with the directed Pacific halibut fishery, a derby fishery that occurs during several 10-hour openings annually, and is managed separately from groundfish. In the LE sablefish-endorsed primary longline sector north of Pt Chehalis, fixed gear fish tickets were identified as part of the directed Pacific halibut fishery if they contained more weight of Pacific halibut than any other species landed. In all other sectors, all fish tickets that contained any landed weight of Pacific halibut were identified and removed, as landings are prohibited in the federal groundfish fixed gear regulations for the remaining sectors analyzed. Finally, a 16% discard mortality rate is now being applied to gross discard estimates rather than the 25% rate used previously. This, of course, reduces the level of discard mortality associated with gross discard estimates.

Point estimates may fluctuate due to a number of non-biological factors, including random annual variation in observer coverage rates, fishing behavior, and various physical characteristics. In addition, several sources of uncertainty that were not accounted for in this analysis may influence Pacific halibut discard estimates. These include uncertainty in landings amounts, observed retained catch weight, discard mortality rates, as well as others. Currently, it is not possible to quantify uncertainty for discard estimates presented in this report, as measures of the variability or bias associated with outside data sources are not available. As with all point estimates, Pacific halibut discard mortality values presented in Tables 4 and 5 should be considered with caution.

The Pacific halibut discard mortality values presented in Table 5 provide one component of the data necessary for determining total fishing mortality of Pacific halibut in the non-nearshore fixed gear groundfish fishery. The additional data component, which is not provided in this report, but necessary for calculating final total fishing mortality estimates, is the actual landings of Pacific halibut from the non-nearshore fixed gear groundfish fishery. Although the PacFIN database provides a complete source of landings data for groundfish, landings information for Pacific halibut are considered incomplete. Pacific halibut landings can instead be obtained directly from the IPHC.

For additional context, Table 6 attempts to present the proportion of sampled Pacific halibut discard in the non-nearshore fixed gear groundfish fishery that was of legal ($\geq$ 80cm) and sublegal ($<$ 80 cm) size. The majority of Pacific halibut lengths recorded in this fishery have been collected through visual length estimation, during which observers round to the nearest 10 cm. In other words, specimens that are 76 cm and 82 cm are both visually estimated to be 80 cm. With this level of resolution, it was not possible to compute the exact proportion of sublegal versus legal Pacific halibut from visually estimated lengths. Visual estimates were instead summarized in the manner in which they are recorded; with sublegal and legal sized Pacific halibut falling within the 75 – 84 cm length bin. Actual length measurements are available for 84 Pacific halibut from September 2003 through December 2008. Although sublegal versus legal percentages were computed from this data, actual lengths do appear to contain a higher frequency of smaller individuals than visual estimates (Figure 4).

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FIGURES

Figure 1. Fish ticket data processing for division into groundfish fishery sectors after retrieval of a full calendar year data set from the Pacific Coast Fisheries Information Network (PacFIN) database. Shaded sectors indicate sectors for which federal observer data is available. 'DTL' refers to sectors fishing under daily/weekly trip limit regulations.

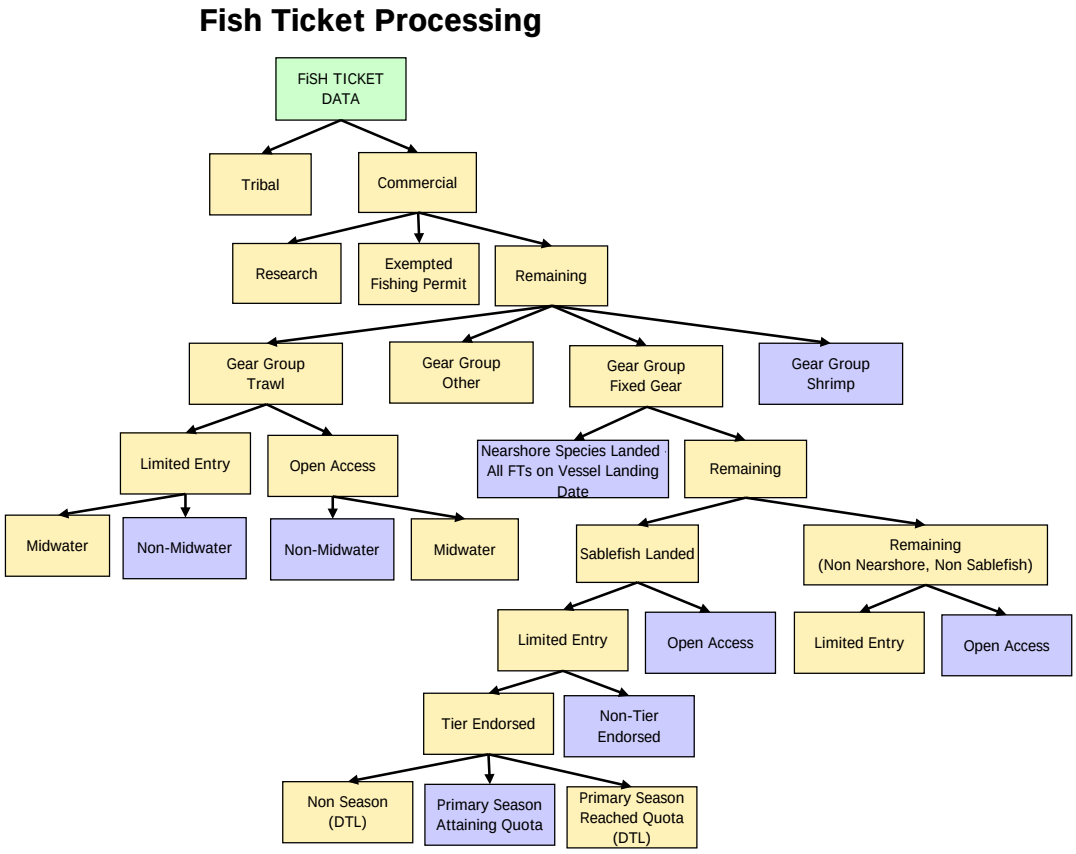


Figure 2. Expansion factors and observed discard rates by gear type for limited entry (LE) and open access (OA) non-nearshore fixed gear sectors used to expand discard estimates of Pacific halibut to the fleet level for each individual year.

Fishery		Expansion Factor	Observed Discard Rate Applied	
LE Sablefish Primary	Longline Pot	Retained Sablefish	LE Sablefish Primary	Longline Pot
LE Sablefish Non-Primary	Longline Pot	Retained Groundfish Retained Sablefish	LE Sablefish Non-Primary OA Fixed Gear *	Longline Pot
OA Fixed Gear	Hook-and-line Pot	Retained Sablefish	OA Fixed Gear *	Hook-and-line Pot

* No discard ratio or discard estimate was computed in the OA fixed gear sector for 2002-2006 because the WCGOP only covered OA vessels in California during this time.

Figure 3. Estimated discard mortality of Pacific halibut in the non-nearshore groundfish fixed gear fishery from 2002 through 2008. Estimates are presented for all components of the limited entry (LE) sablefish primary sector (longline (LL) north and south of Pt Chehalis and pot coastwide), for the open access (OA) sector using hook-and-line gears, and for all other non-nearshore fixed gear sectors combined ('Other fixed gear sectors' includes LE non-primary and OA pot estimates). Although OA 2002-2006 discard estimates are not included in final discard mortality summaries, they are shown here in light gray for comparison purposes. The OA fixed gear sector was only observed in California in 2003-2006 and was not covered in 2002. A fixed average discard rate from 2007 and 2008 data was applied to generate 2002-2006 discard estimates for the OA sector.

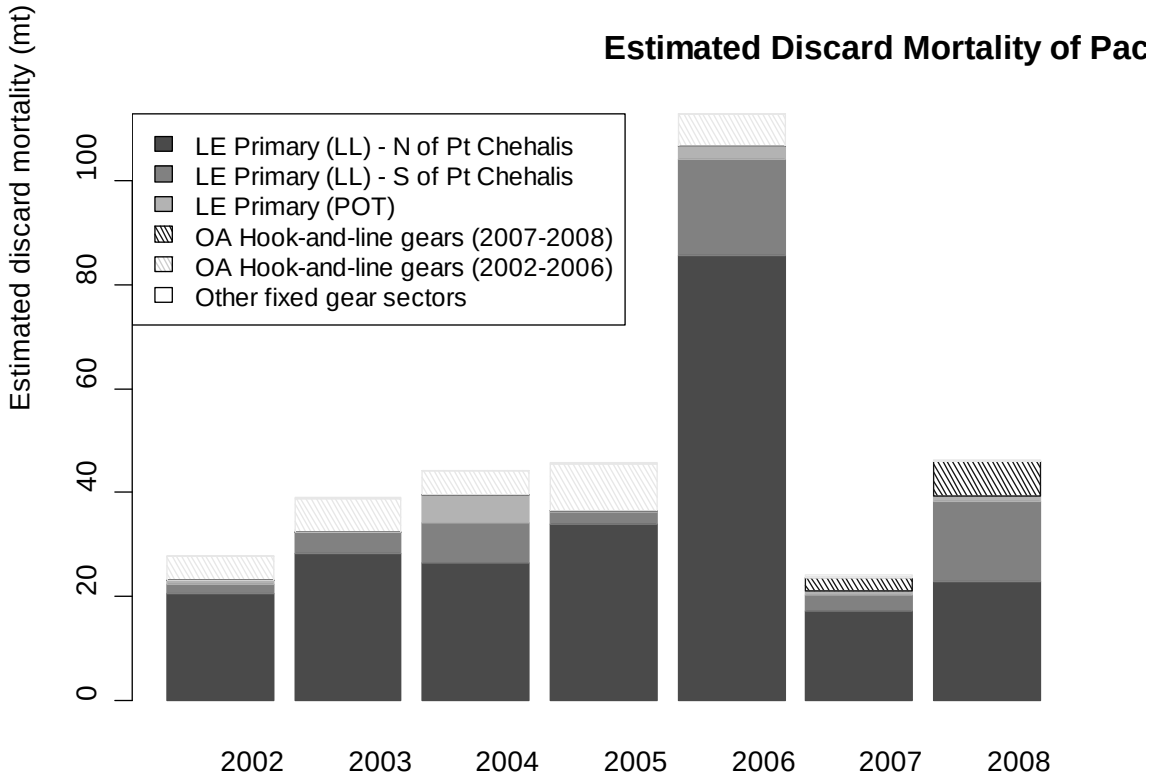
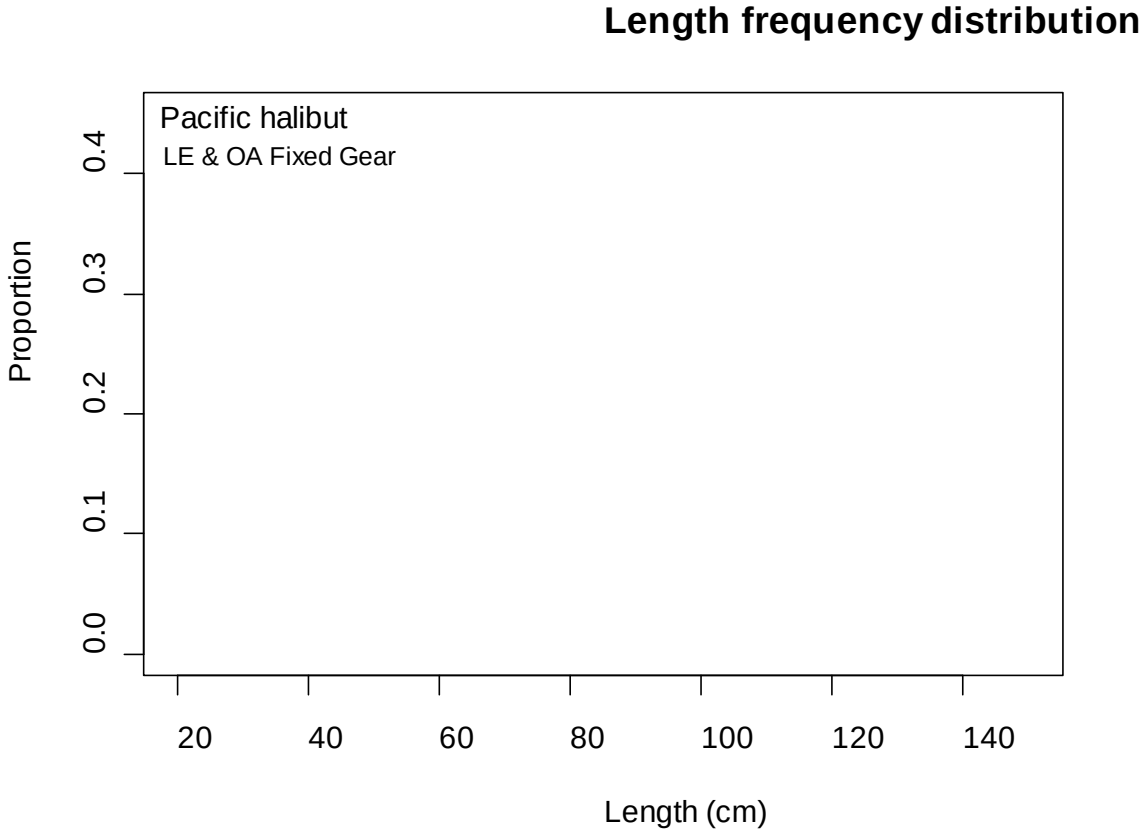


Figure 4. Length frequency distribution of discarded Pacific halibut on observed limited entry (LE) and open access (OA) groundfish fixed gear vessels from September 2003 through December 2008. The majority of Pacific halibut lengths collected in this fishery were from visual estimates (solid dark line). Actual length measurements (dashed gray line) were available for far fewer specimens.



TABLES

Table 1. Number of annual observed trips, sets, and vessels in the limited entry (LE) sablefish-endorsed primary, LE sablefish non-primary, and open access (OA) fixed gear groundfish sectors from 2002-2008. The OA fixed gear sector was not observed in 2002 and only observed in California from 2003-2006 (numbers in italics).

	LE Sablefish Primary			LE Sablefish Non-Primary	OA Fixed Gear	
	Longline					
	North of Pt Chehalis	South of Pt Chehalis	Pot	Longline	Hook-and-line Gears	Pot
	Number of observed trips					
2002	23	47	23	11	0	0
2003	25	25	35	130		
2004	13	35	13	62		
2005	31	73	39	35		
2006	31	34	39	121		
2007	36	40	30	158	50	45
2008	17	60	24	122	58	55
	Number of observed sets					
2002	207	181	247	22	0	0
2003	191	158	362	219		
2004	115	205	139	130		
2005	388	275	491	60		
2006	291	159	288	196		
2007	381	136	154	303	66	72
2008	194	345	329	220	68	74
	Number of observed vessels					
2002	9	18	6	4	0	0
2003	8	8	6	17		
2004	6	13	3	14		
2005	10	18	7	11		
2006	9	10	7	21		
2007	9	14	4	36	25	20
2008	6	13	6	32	33	20

Table 2. Total sablefish and groundfish landings (mt) with observed Pacific halibut discard ratios for each non-nearshore fixed gear groundfish sector and gear type. Sablefish landings were used as the discard ratio denominator and expansion factor in all cases, except for the limited entry sablefish non-primary sector, where target species include a variety of deepwater groundfish species.

	LE Sablefish Primary			LE Sablefish Non-Primary		OA Fixed Gear	
	Longline		Pot	Longline	Pot	Hook-and-Line Gears	Pot
	North of Pt Chehalis	South of Pt Chehalis					
Expansion factor Total fleet landings							
2002	390	407	354	452	6	266	109
2003	499	569	604	485	7	375	187
2004	698	654	626	377	6	272	182
2005	641	676	615	519	7	518	374
2006	684	708	611	441	4	347	435
2007	489	607	426	462	9	203	244
2008	385	663	421	652	18	326	235
Observed Pacific halibut discard ratios							
2002	0.3297	0.0283	0.0114	0.0000	*	*	*
2003	0.3532	0.0467	0.0005	0.0003	*	*	*
2004	0.2369	0.0746	0.0526	0.0000	*	*	*
2005	0.3318	0.0204	0.0043	0.0000	*	*	*
2006	0.7827	0.1636	0.0271	0.0000	*	*	*
2007	0.2184	0.0334	0.0092	0.0032	(0.0035)	0.0839	0.0035
2008	0.3715	0.1453	0.0151	0.0041	(0.0010)	0.1259	0.0010

* No discard ratio is provided for the OA fixed gear sector for 2002-2006 because the WCGOP only covered OA vessels in California from 2003-2006 and no observations were made in 2002. Since 2007-2008 OA pot discard rates were used to estimate LE non-primary discard, discard ratios for this sector were also excluded from 2002-2006.

Table 3. Summary of the percent of observed trips that caught Pacific halibut by non-nearshore fixed gear groundfish sector, gear type, and area (where applicable). Observed average, minimum and maximum annual catch and annual discard weights of Pacific halibut are also provided, along with the percent of Pacific halibut catch weight that was discarded by year.

	LE Sablefish Primary			LE Sablefish Non-Primary		OA Fixed Gear	
	Longline		Pot	Longline	Pot	Hook-and-Line Gears	Pot
	North of Pt Chehalis	South of Pt Chehalis					
% of observed trips that caught Pacific halibut							
2002	95.7%	46.8%	17.4%	0.0%	--	--	--
2003	100.0%	52.0%	8.6%	0.8%	--	0.0%	0.0%
2004	100.0%	71.4%	38.5%	0.0%	--	0.0%	0.0%
2005	96.8%	58.9%	33.3%	0.0%	--	0.0%	0.0%
2006	100.0%	76.5%	56.4%	0.0%	--	9.1%	0.0%
2007	94.4%	47.5%	33.3%	1.9%	--	26.0%	6.7%
2008	100.0%	78.3%	83.3%	3.3%	--	34.5%	5.5%
Observed annual catch (mt) of Pacific halibut							
Mean	54.9	13	2.4	0.1	--	0.8	0.0
Min	12.1	3.1	0.1	0.0	--	0.1	0.0
Max	117.2	36.6	5.4	0.1	--	1.6	0.0
Observed annual discard (mt) of Pacific halibut							
Mean	47.4	12.8	2.4	0.1	--	0.8	0.0
Min	9.5	2.9	0.1	0.0	--	0.1	0.0
Max	109.6	36.6	5.4	0.1	--	1.6	0.0
% of Pacific halibut catch that was discarded							
2002	80.1%	95.5%	100.0%	*	--	--	--
2003	82.5%	99.5%	100.0%	100.0%	--	*	*
2004	79.0%	97.7%	100.0%	*	--	*	*
2005	84.8%	100.0%	100.0%	*	--	*	*
2006	93.5%	97.9%	100.0%	*	--	100.0%	*
2007	80.6%	100.0%	100.0%	100.0%	--	100.0%	100.0%
2008	87.4%	100.0%	100.0%	100.0%	--	100.0%	100.0%

* No catch of Pacific halibut was observed, and thus a % discarded calculation is not possible.
-- No WCGOP observations were made for the year/sector/gear type.

Table 4. Estimated gross discard (mt) and discard mortality (mt)in the limited entry (LE) sablefish primary, LE sablefish non-primary, and open access (OA) fixed gear sectors. Estimated discard mortality (mt) was computed by applying a 16% discard mortality rate to gross discard estimates. Discard estimates were not initially computed for the 2002 - 2006 OA fixed gear sector because the WCGOP only observed OA fixed gear vessels off of California from 2003-2006 and no observations were made in 2002. However, in order to produce potential values for these years, a combined discard rate from 2007 and 2008 (during which there were coastwide observations) was subsequently applied. The resulting estimates using the assumed 2007-2008 discard rate are shown in brackets.

	2002	2003	2004	2005	2006	2007	2008
LE Sablefish Primary (mt)							
North of Pt Chehalis							
Gross discard estimate	128.7	176.2	165.3	212.6	535.5	106.8	143.2
Estimated discard mortality (16%)	20.6	28.2	26.5	34.0	85.7	17.1	22.9
South of Pt Chehalis							
Gross discard estimate	11.5	26.6	48.7	13.8	115.9	20.3	96.3
Estimated discard mortality (16%)	1.8	4.3	7.8	2.2	18.5	3.2	15.4
Coastwide							
Gross discard estimate	140.2	202.7	214.1	226.4	651.4	127.1	239.5
Estimated discard mortality (16%)	22.4	32.4	34.3	36.2	104.2	20.3	38.3
Coastwide							
Gross discard estimate	4.1	0.3	33.0	2.6	16.5	3.9	6.4
Estimated discard mortality (16%)	0.6	0.0	5.3	0.4	2.6	0.6	1.0
LE Sablefish Non-Primary (mt)							
Coastwide							
Gross discard estimate	0.0	0.1	0.0	0.0	0.0	1.5	2.6
Estimated discard mortality (16%)	0.0	0.0	0.0	0.0	0.0	0.2	0.4
Coastwide							
Gross discard estimate	*	*	*	*	*	0.03	0.02
	[0.0]	[0.0	[0.0]	[0.0]	[0.0]		
Estimated discard mortality (16%)	*	*	*	*	*	0.0	0.0
OA Fixed Gear (mt)							
Coastwide							
Gross discard estimate	*	*	*	*	*	17.0	41.1
	[28.7]	[40.3]	[29.3]	[55.8]	[37.4]		
Estimated discard mortality (16%)	*	*	*	*	*	2.7	6.6
Coastwide							
Gross discard estimate	*	*	*	*	*	0.8	0.2
	[0.2]	[0.4]	[0.4]	[0.8]	[0.9]		
Estimated discard mortality (16%)	*	*	*	*	*	0.1	0.0

* The LE sablefish non-primary pot sector has not been observed by the WCGOP and therefore estimates are based on discard rates from observed OA fixed gear pot vessels. Because the OA fixed gear pot sector was only observed on a coastwide basis in 2007 and 2008, estimates for LE sablefish non-primary pot are only available in these years as well.

Table 5. Estimated discard mortality (mt) from each sector of the non-nearshore fixed gear fishery from 2002 through 2008.

	Estimated discard mortality (mt)			
	LE Sablefish Primary	LE Sablefish Non-Primary	OA Fixed Gear	All Sectors
2002	23.1	0.0	0.0	23.1
2003	32.5	0.0	0.0	32.5
2004	39.5	0.0	0.0	39.5
2005	36.6	0.0	0.0	36.6
2006	106.9	0.0	0.0	106.9
2007	21.0	0.2	2.9	24.1
2008	39.3	0.4	6.6	46.4

Table 6. Number and percentage of sampled Pacific halibut lengths by size. Individuals less than 80 cm are considered to be of sublegal size. While it is possible to compute the percentage of sublegal versus legal individuals from actual length measurements, the majority of observed Pacific halibut length data were acquired through visual length estimation, during which observers round to the nearest 10 cm. With this level of resolution, it was not possible to compute the exact percentage of sublegal versus legal Pacific halibut from visually estimated lengths. Visual estimates were instead summarized in the manner in which they are recorded; with sublegal and legal sized individuals falling within the 75 – 84 cm length bin.

	Pacific halibut lengths	
	Number	Percentage
Actual length		
< 80 cm	56	66.7%
≥ 80 cm	28	33.3%
Visual estimate		
0 - 74 cm	3196	38.6%
75 - 84 cm	1887	22.8%
85 - 150 cm	3200	38.6%

APPENDIX A

Common and scientific names of species included in the Pacific Coast Groundfish Fishery Management Plan, as amended through Amendment 19 (PFMC 2008).

SHARKS
Big skate, *Raja binoculata*
California skate, *R. inornata*
Leopard shark, *Triakis semifasciata*
Longnose skate, *R. rhina*
Soupfin shark, *Galeorhinus zyopterus*
Spiny dogfish, *Squalus acanthias*

RATFISH
Ratfish, *Hydrolagus colliei*

MORIDS
Finescale codling, *Antimora microlepis*

GRENADIERS
Pacific rattail, *Coryphaenoides acrolepis*

ROUNDFISH
Cabezon, *Scorpaenichthys marmoratus*
Kelp greenling, *Hexagrammos decagrammus*
Lingcod, *Ophiodon elongatus*
Pacific cod, *Gadus macrocephalus*
Pacific whiting, (hake) *Merluccius productus*
Sablefish, *Anoplopoma fimbria*

FLATFISH
Arrowtooth flounder, (turbot) *Atheresthes stomias*
Butter sole, *Isopsetta isolepis*
Curlfin sole, *Pleuronichthys decurrens*
Dover sole, *Microstomus pacificus*
English sole, *Parophrys vetulus*
Flathead sole, *Hippoglossoides elassodon*
Pacific sanddab, *Citharichthys sordidus*
Petrale sole, *Eopsetta jordani*
Rex sole, *Glyptocephalus zachirus*
Rock sole, *Lepidopsetta bilineata*
Sand sole, *Psettichthys melanostictus*
Starry flounder, *Platichthys stellatus*

ROCKFISH
Includes all genera and species of the family Scopaenidae, even if not listed, that occur in the Washington, Oregon, and California area. The Scopaenidae genera are *Sebastes*, *Scorpaena*, *Sebastolobus*, and *Scorpaenodes*.

Aurora, *Sebastes. aurora*
Bank, *S. rufus*
Black, *S. melanops*
Black-and-yellow, *S. chrysolmelas.*
Blackgill, *S. melanostomus*
Blue, *S. mystinus*
Bocaccio, *S. paucispinis*
Bronzespotted, *S. gilli*
Brown, *S. auriculatus*
Calico, *S. dalli*
California scorpionfish, *Scorpaena guttata*
Canary, *Sebastes pinniger*
Chameleon, *S. phillipsi*
Chilipepper, *S. goodei*
China, *S. nebulosus*
Copper, *S. caurinus*
Cowcod, *S. levis*
Darkblotched, *S. crameri*
Dusky, *S. ciliatus*
Dwarf-red, *S. rufianus*
Flag, *S. rubrivinctus*
Freckled, *S. lentiginosus*
Gopher, *S. carnatus*
Grass, *S. rastrelliger*
Greenblotched, *S. rosenblatti*
Greenspotted, *S. chlorostictus*
Greenstriped, *S. elongatus*
Halfbanded, *S. semicinctus*
Harlequin, *S. variegatus*
Honeycomb, *S. umbrosus*
Kelp, *S. atrovirens*
Longspine thornyhead, *Sebastolobus altivelis*
Mexican, *Sebastes. macdonaldi*
Olive, *S. serranoides*
Pink, *S. eos*
Pinkrose, *S. simulator*
Pygmy, *S. wilsoni*
Pacific ocean perch, *S. alutus*
Quillback, *S. maliger*
Redbanded, *S. babcocki*
Redstripe, *S. proriger*
Rosethorn, *S. helvomaculatus*
Rosy, *S. rosaceus*
Rougheye, *S. aleutianus*
Sharpchin, *S. zacentrus*
Shortbelly, *S. jordani*
Shortraker, *S. borealis*
Shortspine thornyhead, *Sebastolobus alascanus*
Silvergray, *Sebastes. brevispinus*
Speckled, *S. ovalis*
Splitnose rockfish, *S. diploproa*

Squarespot, *S. hopkinsi*
Starry, *S. constellatus*
Stripetail, *S. saxicola*
Swordspine, *S. ensifer*
Tiger, *S. nigorcinctus*
Treefish, *S. serriceps*
Vermilion, *S. miniatus*
Widow, *S. entomelas*
Yelloweye, *S. ruberrimus*
Yellowmouth, *S. reedi*
Yellowtail, *S. flavidus*

APPENDIX B

Species identification codes used in the Pacific Coast Fisheries Information Network (PacFIN) database and assigned to WCGOP observer data. Columns on the far right specifiy which species codes were included in discard ratio denominators and expansion factors as FMP groundfish species.

PacFIN Species ID	PacFIN Common Name	FMP groundfish
ALBC	ALBACORE	
AMCK	ATKA MACKEREL	
APLC	ALASKA PLAICE	
ARR1	NOM. AURORA ROCKFISH	yes
ARRA	AURORA ROCKFISH	yes
ART1	NOM. ARROWTOOTH FLOUNDER	yes
ARTH	ARROWTOOTH FLOUNDER	yes
ASRK	PACIFIC ANGEL SHARK	
BABL	BLACK ABALONE	
BANK	BANK ROCKFISH	yes
BCAC	BOCACCIO	yes
BCC1	NOM. BOCACCIO	yes
BCLM	BUTTER CLAM	
BGL1	NOM. BLACKGILL ROCKFISH	yes
BKCR	BLUE KING CRAB	
BLCK	BLACK ROCKFISH	yes
BLGL	BLACKGILL ROCKFISH	yes
BLK1	NOM. BLACK ROCKFISH	yes
BLU1	NOM. BLUE ROCKFISH	yes
BLUR	BLUE ROCKFISH	yes
BMCK	BULLET MACKEREL	
BMRL	BLUE MARLIN	
BMSL	BLUE OR BAY MUSSEL	
BNK1	NOM. BANK ROCKFISH	yes
BRNZ	BRONZESPOTTED ROCKFISH	yes
BRW1	NOM. BROWN ROCKFISH	yes
BRWN	BROWN ROCKFISH	yes
BRZ1	NOM. BRONZESPOTTED ROCKFISH	yes
BSJK	BLACK SKIPJACK	
BSKT	BIG SKATE	yes
BSOL	BUTTER SOLE	yes
BSRK	BLUE SHARK	
BSRM	UNSP. BAIT SHRIMP	
BTCR	BAIRDI TANNER CRAB	
BTNA	BLUEFIN TUNA	
BTRY	BAT RAY	
BYEL	BLACK-AND-YELLOW ROCKFISH	yes
BYL1	NOM. BLACK-AND-YELLOW ROCKFISH	yes
CBZ1	NOM. CABEZON	yes
CBZN	CABEZON	yes
CEEL	SPOTTED CUSK-EEL	
CHL1	NOM. CALIFORNIA HALIBUT	
CHLB	CALIFORNIA HALIBUT	
CHN1	NOM. CHINA ROCKFISH	yes
CHNA	CHINA ROCKFISH	yes
CHNK	CHINOOK SALMON	
CHUM	CHUM SALMON	
CKLE	BASKET COCKLE	

PacFIN Species ID	PacFIN Common Name	FMP groundfish
CLC1	NOM. CALICO ROCKFISH	yes
CLCO	CALICO ROCKFISH	yes
CLP1	NOM. CHILIPEPPER	yes
CLPR	CHILIPEPPER	yes
CMCK	CHUB MACKEREL	
CMEL	CHAMELEON ROCKFISH	yes
CML1	NOM. CHAMELEON ROCKFISH	yes
CMSL	CALIFORNIA MUSSEL	
CNR1	NOM. CANARY ROCKFISH	yes
CNRY	CANARY ROCKFISH	yes
COHO	COHO SALMON	
COP1	NOM. COPPER ROCKFISH	yes
COPP	COPPER ROCKFISH	yes
CPLN	CAPELIN	
CSKT	CALIFORNIA SKATE	yes
CSOL	CURLFIN SOLE	yes
CTRB	C-O SOLE	
CUDA	PACIFIC BARRACUDA	
CWC1	NOM. COWCOD ROCKFISH	yes
CWCD	COWCOD ROCKFISH	yes
DBR1	NOM. DARKBLOTCHED ROCKFISH	yes
DBRK	DARKBLOTCHED ROCKFISH	yes
DCRB	DUNGENESS CRAB	
DFLT	UNSP. DEEP FLOUNDERS	yes
DOVR	DOVER SOLE	yes
DRDO	DORADO	
DSOL	DEEPSEA SOLE	
DSRK	SPINY DOGFISH	yes
DTRB	DIAMOND TURBOT	
DUSK	DUSKY ROCKFISH	yes
DVR1	NOM. DOVER SOLE	yes
DWRF	DWARF-RED ROCKFISH	yes
EELS	UNSPECIFIED EELS	
EGL1	NOM. ENGLISH SOLE	yes
EGLS	ENGLISH SOLE	yes
ESTR	EASTERN OYSTER	
ETNA	BIGEYE TUNA	
EULC	EULACHON	
EURO	EUROPEAN OYSTER	
FLAG	FLAG ROCKFISH	yes
FLG1	NOM. FLAG ROCKFISH	yes
FNTS	FANTAIL SOLE	
FRCK	FRECKLED ROCKFISH	yes
FSOL	FLATHEAD SOLE	yes
GABL	GREEN ABALONE	
GBAS	GIANT SEA BASS	
GBL1	NOM. GREENBLOTCHED ROCKFISH	yes
GBLC	GREENBLOTCHED ROCKFISH	yes
GCLM	GAPER CLAM	
GDUK	GEODUCK	
GKCR	GOLDEN KING CRAB	
GPH1	NOM. GOPHER ROCKFISH	yes
GPHR	GOPHER ROCKFISH	yes
GPRW	GOLDEN PRAWN	
GRAS	GRASS ROCKFISH	yes
GRDR	UNSP. GRENADIERS	yes
GRS1	NOM. GRASS ROCKFISH	yes
GSP1	NOM. GREENSPOTTED ROCKFISH	yes
GSPT	GREENSPOTTED ROCKFISH	yes
GSQD	GIANT SQUID	
GSR1	NOM. GREENSTRIPED ROCKFISH	yes
GSRK	GREENSTRIPED ROCKFISH	yes

PacFIN Species ID	PacFIN Common Name	FMP groundfish
GSRM	GHOST SHRIMP	
GSTG	GREEN STURGEON	
GTRB	GREENLAND TURBOT	
HBRK	HALFBANDED ROCKFISH	yes
HCLM	HORSE CLAMS	
HLQN	HARLEQUIN ROCKFISH	yes
HNY1	NOM. HONEYCOMB ROCKFISH	yes
HNYC	HONEYCOMB ROCKFISH	yes
HTRB	HORNYHEAD TURBOT	
ISRK	BIGEYE THRESHER SHARK	
JCLM	CALIFORNIA JACKKNIFE CLAM	
JMCK	JACK MACKEREL	
KFSH	GIANT KELPFISH	
KGL1	NOM. KELP GREENLING	yes
KLP1	NOM. KELP ROCKFISH	yes
KLPG	KELP GREENLING	yes
KLPR	KELP ROCKFISH	yes
KMKA	KAMCHATKA FLOUNDER	
KSTR	KUMAMOTO OYSTER	
LCD1	NOM. LINGCOD	yes
LCLM	NATIVE LITTLENECK	
LCOD	LINGCOD	yes
LDAB	LONGFIN SANDDAB	
LDB1	NOM. LONGFIN SANDDAB	
LOBS	CALIF. SPINY LOBSTER	
LSKT	LONGNOSE SKATE	yes
LSP1	NOM. LONGSPINE THORNYHEAD	yes
LSPN	LONGSPINE THORNYHEAD	yes
LSRK	LEOPARD SHARK	yes
LSTR	OLYMPIA OYSTER	
LUVR	LOUVAR	
MACL	MUD CLAMS	
MAKO	SHORTFIN MAKO SHARK	
MCLM	MANILA CLAM	
MEEL	MONKEYFACE EEL	
MISC	MISC. FISH/ANIMALS	
MOLA	COMMON MOLA	
MRLN	STRIPED MARLIN	
MSC2	MISCELLANEOUS FISH	
MSHP	PLAINFIN MIDSHIPMAN	
MSQD	MARKET SQUID	
MSRM	MUD SHRIMP	
MXR1	NOM. MEXICAN ROCKFISH	yes
MXRF	MEXICAN ROCKFISH	yes
NANC	NORTHERN ANCHOVY	
NRCK	NORTHERN ROCKFISH	yes
NSHR	NORTHERN NEAR-SHORE ROCKFISH	yes
NSLF	NORTHERN SHELF ROCKFISH	yes
NSLP	NORTHERN SLOPE ROCKFISH	yes
NUSF	NOR. UNSP. SHELF ROCKFISH	yes
NUSP	NOR. UNSP. SLOPE ROCKFISH	yes
NUSR	NOR. UNSP. NEAR-SHORE ROCKFISH	yes
OABL	OTHER ABALONE	
OANC	OTHER ANCHOVY	
OBAS	OTHER BASS	
OCLM	OTHER CLAM	
OCRB	OTHER CRAB	
OCRK	OTHER CROAKER	
OCTP	UNSP. OCTOPUS	
ODSR	OTHER DEMERSAL RKFSH	yes
OECH	OTHER ECHINODERM	
OFLT	OTHER FLATFISH	yes

PacFIN Species ID	PacFIN Common Name	FMP groundfish
OGRN	OTHER GROUNDFISH	yes
OLV1	NOM. OLIVE ROCKFISH	yes
OLVE	OLIVE ROCKFISH	yes
OMSK	OTHER MOLLUSKS	
OPLG	OTHER PELAGIC RKFSH	yes
ORCK	OTHER ROCKFISH	yes
ORCK	OTHER ROCKFISH	yes
ORND	OTHER ROUNDFISH	yes
OSCL	OTHER SCALLOP	
OSKT	OTHER SKATES	yes
OSLR	OTHER SLOPE RKFSH	yes
OSRK	OTHER SHARK	
OSRM	OTHER SHRIMP	
OSTR	OTHER OYSTER	
OTCR	OPILIO TANNER CRAB	
OTNA	OTHER TUNA	
OURC	OTHER SEA URCHINS	
OWFS	OCEAN WHITEFISH	
PABL	PINK ABALONE	
PBNT	PACIFIC BONITO	
PBTR	PACIFIC BUTTERFISH	
PCLM	PISMO CLAM	
PCOD	PACIFIC COD	yes
PDAB	PACIFIC SANDDAB	yes
PDB1	NOM. PACIFIC SANDDAB	yes
PGMY	PYGMY ROCKFISH	yes
PHLB	PACIFIC HALIBUT	
PHRG	PACIFIC HERRING	
PINK	PINK SALMON	
PLCK	WALLEYE POLLOCK	yes
PNK1	NOM. PINK ROCKFISH	yes
PNKR	PINK ROCKFISH	yes
POMF	PACIFIC POMFRET	
POP	PACIFIC OCEAN PERCH	yes
POP1	GEN. SHELF/SLOPE RF	yes
POP2	NOMINAL POP	yes
PRCL	PURPLE CLAM	
PROW	PROWFISH	
PRR1	NOM. PINKROSE ROCKFISH	yes
PRRK	PINKROSE ROCKFISH	yes
PSDN	PACIFIC SARDINE	
PSHP	PINK SHRIMP	
PSRK	PELAGIC THRESHER SHARK	
PSTR	PACIFIC OYSTER	
PTR1	NOM. PETRALE SOLE	yes
PTRL	PETRALE SOLE	yes
PUGT	PUGET SOUND ROCKFISH	yes
PWHT	PACIFIC WHITING	yes
QCLM	NORTHERN QUAHOG CLAM	
QFSH	QUEENFISH	
QLB1	NOM. QUILLBACK ROCKFISH	yes
QLBK	QUILLBACK ROCKFISH	yes
RABL	RED ABALONE	
RATF	SPOTTED RATFISH	yes
RCK1	BOCACCIO+CHILIPEPPER RCKFSH	yes
RCK2	UNSP. BOLINA RCKFSH	yes
RCK3	UNSP. DPWTR REDS RCKFSH	yes
RCK4	UNSP. REDS RCKFSH	yes
RCK5	UNSP. SMALL REDS RCKFSH	yes

PacFIN Species ID	PacFIN Common Name	FMP groundfish
RCK6	UNSP. ROSEFISH RCKFSH	yes
RCK7	UNSP. GOPHER RCKFSH	yes
RCK8	CANARY+VERMILION RCKFSH	yes
RCK9	BLACK+BLUE ROCKFISH	yes
RCKG	ROCK GREENLING	
RCLM	RAZOR CLAM	
RCRB	ROCK CRAB	
RDB1	NOM. REDBANDED ROCKFISH	yes
RDBD	REDBANDED ROCKFISH	yes
REDS	REDSTRIPE ROCKFISH	yes
REX	REX SOLE	yes
REX1	NOM. REX SOLE	yes
REYE	ROUGHEYE ROCKFISH	yes
RFLT	REMAINING FLATFISH	yes
RGL1	NOM. ROCK GREENLING	
RGRN	REMAINING GROUNDFISH	yes
RHRG	ROUND HERRING	
RKCR	RED KING CRAB	
ROS1	NOM. ROSY ROCKFISH	yes
ROSY	ROSY ROCKFISH	yes
RPRW	RIDGEBACK PRAWN	
RRCK	REMAINING ROCKFISH	yes
RRND	REMAINING ROUNDFISH	yes
RSOL	ROCK SOLE	yes
RST1	NOM. ROSETHORN ROCKFISH	yes
RSTN	ROSETHORN ROCKFISH	yes
RURC	RED SEA URCHIN	
RZCL	ROSY RAZOR CLAM	
SABL	SABLEFISH	yes
SAIL	SAILFISH	
SARY	PACIFIC SAURY	
SBL1	NOM. SHORTBELLY ROCKFISH	yes
SBLY	SHORTBELLY ROCKFISH	yes
SCLM	SOFT-SHELLED CLAM	
SCLP	UNSP. SCULPIN	
SCOR	CALIFORNIA SCORPIONFISH	yes
SCR1	NOM. CALIF. SCORPIONFISH	yes
SDB1	NOM. SPECKLED SANDDAB	
SFL1	NOM. STARRY FLOUNDER	yes
SFLT	UNSP. SHALLOW FLOUNDERS	yes
SHAD	UNSPECIFIED SHAD	
SHP1	NOM. CALIFORNIA SHEEPHEAD	
SHPD	CALIFORNIA SHEEPHEAD	
SHRP	SHARPCHIN ROCKFISH	yes
SKCR	SCARLET KING CRAB	
SLGR	SILVERGREY ROCKFISH	yes
SLNS	SLENDER SOLE	
SMLT	UNSP. SMELT	
SNOS	SPLITNOSE ROCKFISH	yes
SNS1	NOM. SPLITNOSE ROCKFISH	yes
SOCK	SOCKEYE SALMON	
SPK1	NOM. SPECKLED ROCKFISH	yes
SPKL	SPECKLED ROCKFISH	yes
SPRW	SPOTTED PRAWN	
SQID	UNSP. SQUID	
SQR1	NOM. SQUARESPOT	yes
SQRS	SQUARESPOT ROCKFISH	yes
SRFP	SURFPERCH SPP.	
SRKR	SHORTRAKER ROCKFISH	yes
SSCL	SHARPNOSE SCULPIN	
SSDB	SPECKLED SANDDAB	
SSHR	SOUTHERN NEAR-SHORE ROCKFISH	yes

PacFIN Species ID	PacFIN Common Name	FMP groundfish
SSHR	SOUTHERN NEAR-SHORE ROCKFISH	yes
SSLF	SOUTHERN SHELF ROCKFISH	yes
SSLP	SOUTHERN SLOPE ROCKFISH	yes
SSO1	NOM. SAND SOLE	yes
SSOL	SAND SOLE	yes
SSP1	NOM. SHORTSPINE THORNYHEAD	yes
SSPN	SHORTSPINE THORNYHEAD	yes
SSRD	Deep So. Near-shore RF	yes
SSRK	SOUPFIN SHARK	yes
SSRS	Shallow So. Near-shore RF	yes
STAR	STARRY ROCKFISH	yes
STL1	NOM. STRIPETAIL ROCKFISH	yes
STLH	STEELHEAD	
STNA	SKIPJACK TUNA	
STR1	NOM. STARRY ROCKFISH	yes
STRK	STRIPETAIL ROCKFISH	yes
STRY	STARRY FLOUNDER	yes
SUSF	SOU. UNSP. SHELF ROCKFISH	yes
SUSP	SOU. UNSP. SLOPE ROCKFISH	yes
SUSR	SOU. UNSP. NEAR-SHORE ROCKFISH	yes
SUSR	SOU. UNSP. NEAR-SHORE ROCKFISH	yes
SWRD	SWORDFISH	
SWS1	NOM. SWORDSPINE ROCKFISH	yes
SWSP	SWORDSPINE ROCKFISH	yes
TCOD	PACIFIC TOMCOD	
TGR1	NOM. TIGER ROCKFISH	yes
THD1	NOM. THORNYHEADS	yes
THDS	THORNYHEADS (MIXED)	yes
TIGR	TIGER ROCKFISH	yes
TRE1	NOM. TREEFISH	yes
TREE	TREEFISH	yes
TSRK	COMMON THRESHER SHARK	
UABL	UNSPECIFIED ABALONE	
UCLM	UNSPECIFIED CLAM	
UCRB	UNSPECIFIED CRAB	
UDAB	UNSP. SANDDABS	yes
UDF1	UNSP. DEEP-91 FLOUNDERS	yes
UDF2	UNSP. DEEP-95 FLOUNDERS	yes
UDM1	UNSP. DEMERSAL-91	yes
UDNR	UNSP. DEEP NEAR-SHORE RF	yes
UDSR	UNSP. DEMERSAL RKFSH	yes
UDW1	SHORTRAKER+ROUGHEYE	yes
UECH	UNSPECIFIED ECHINODERM	
UFL1	FLOUNDERS (NO FSOL)	yes
UFLT	UNSP. FLATFISH	yes
UGRN	UNSP. GROUNDFISH	yes
UHAG	UNSPECIFIED HAGFISH	
UHLB	UNSPECIFIED HALIBUT	
UJEL	UNSP. JELLYFISH	
UKCR	UNSP. KING CRAB	
UMCK	UNSP. MACKEREL	
UMSK	UNSPECIFIED MOLLUSKS	
UPLG	UNSP. PELAGIC RKFSH	yes
UPOP	UNSP. POP GROUP	yes
URCK	UNSP. ROCKFISH	yes
URCK	UNSP. ROCKFISH	yes
URK1	SRKR+REYE+NRCK+SHRP	yes
URND	UNSP. ROUNDFISH	yes
USCL	UNSPECIFIED SCALLOP	
USCU	UNSP. SEA CUCUMBERS	
USF1	UNSP. SHALLOW-91 FLOUNDERS	yes
USHR	UNSP. NEAR-SHORE ROCKFISH	yes

PacFIN Species ID	PacFIN Common Name	FMP groundfish
USHR	UNSP. NEAR-SHORE ROCKFISH	yes
USKT	UNSP. SKATE	yes
USLF	UNSP. SHELF ROCKFISH	yes
USLP	UNSP. SLOPE ROCKFISH	yes
USLR	UNSP. SLOPE RKFSH	yes
USMN	UNSP. SALMON	
USR1	UNSP. SLOPE-91	yes
USR2	UNSP. SLOPE-93	yes
USRK	UNSP. SHARK	
USRM	UNSP. OCEAN SHRIMP	
USTG	UNSP. STURGEON	
USTR	UNSPECIFIED OYSTER	
UTCR	UNSP. TANNER CRAB	
UTNA	UNSPECIFIED TUNA	
UTRB	UNSP. TURBOTS	yes
UURC	UNSP. SEA URCHINS	
VRM1	NOM. VERMILLION ROCKFISH	yes
VRML	VERMILION ROCKFISH	yes
WABL	WHITE ABALONE	
WBAS	WHITE SEABASS	
WCLM	WASHINGTON CLAM	
WCRK	WHITE CROAKER	
WDOW	WIDOW ROCKFISH	yes
WDW1	NOM. WIDOW ROCKFISH	yes
WEEL	WOLF EEL	
WHOO	WAHOO	
WSTG	WHITE STURGEON	
YEY1	NOM. YELLOWEYE ROCKFISH	yes
YEYE	YELLOWEYE ROCKFISH	yes
YLTL	YELLOWTAIL	
YMTH	YELLOWMOUTH ROCKFISH	yes
YSOL	YELLOWFIN SOLE	
YTNA	YELLOWFIN TUNA	
YTR1	NOM. YELLOWTAIL ROCKFISH	yes
YTRK	YELLOWTAIL ROCKFISH	yes

GROUNDFISH MANAGEMENT TEAM REPORT ON PROPOSED PROCEDURES FOR ESTIMATING PACIFIC HALIBUT BYCATCH IN THE GROUNDFISH FISHERIES

The Groundfish Management Team (GMT) reviewed the estimates of Pacific halibut bycatch in both the trawl and non-nearshore fixed-gear fisheries presented by the National Marine Fishery Service (NMFS) Northwest Fisheries Science Center (Agenda Items H.2.b, Supplemental NMFS Reports 1 and 2). The GMT supports using the most recent mortality estimates presented in H.2.b, Supplemental NMFS Report 2 for estimating halibut mortality in groundfish non-nearshore fixed-gear fisheries operating within International Pacific Halibut Commission (IPHC) Area 2A. This report provides estimated total halibut discard mortality in non-nearshore fixed-gear fisheries from 2008. Alternative total mortality estimates for these fisheries were provided in a previous report (Estimated Discard and Total Catch of Selected Groundfish Species in the 2007 U.S. West Coast Fisheries) using essentially the same methodology. However, the use of more recent information is preferable as it would provide estimates from the same year for both trawl and fixed-gear fisheries.

The GMT also recommends that the Council pursue the exploration of two issues that would further refine the estimate of total mortality of legal-sized halibut in Area 2A in the future. The first issue is the procedure used to estimate halibut lengths by West Coast Groundfish Observers. Lengths of most discarded fish are visually estimated to the nearest 10 cm, which is problematic, because the regulatory discard size (< 81 cm) is encompassed by one of the 10-cm length bins that observers record (75 – 84 cm). The second issue is the assumed discard mortality rate (16 percent) that is applied to total discards. The GMT supports evaluating whether this assumed discard mortality rate is applicable for fixed-gear fisheries in Area 2A.

PFMC
09/16/09

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON PROPOSED PROCEDURES FOR ESTIMATING PACIFIC HALIBUT BYCATCH IN THE GROUNDFISH FISHERIES

Dr. Jim Hastie (NWFSC) briefed the Scientific and Statistical Committee (SSC) on Pacific halibut bycatch estimates for the 2008 groundfish bottom trawl fishery. The SSC also received a document on September 13 pertaining to halibut bycatch in the longline fishery. However, SSC comments are limited to the trawl bycatch estimates because the longline estimates arrived too late for the SSC to review

The catch weight of halibut taken in the trawl fishery was estimated on the basis of bycatch rates provided by the West Coast Groundfish Observer Program (WCGOP), stratified by season, depth, latitude, and arrowtooth flounder catch rate categories. Each bycatch rate was multiplied by the corresponding stratum estimate of 2008 trawl effort, as determined from Oregon and Washington trawl logbooks.

Bycatch mortality is based on WCGOP observer data pertaining to the viability of discarded halibut, which uses a condition key originally developed by the International Pacific Halibut Commission for observers in North Pacific fisheries. The bycatch mortality rates associated with each condition ("dead", "poor", "excellent") are 90 percent, 55 percent and 20 percent respectively. A sensitivity analysis was conducted using alternative methods of stratification, but it did not isolate the effects of viability and bycatch on aggregate halibut mortality.

The SSC endorses the Pacific halibut bycatch mortality estimate (280,515 pounds) for the 2008 trawl fishery. The SSC recommends that in next year's analysis of alternative approaches to stratification, the effect of viability alone on aggregate halibut mortality be distinguished.

PFMC
09/15/09

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August 21, 2009

Mr. David Ortmann
Chairman
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, Oregon 97220-1384

Dear Chairman Ortmann:

At its September 2008 meeting the Pacific Council provided direction to staff and participating agencies to examine bycatch of Pacific halibut in the longline fishery for blackcod. The Port Orford Ocean Resource Team notes that the report given to the SSC (Agenda Item D.1.b, June 2009) Council Meeting only provided limited information on the bycatch and discard mortality of Pacific halibut in all fixed gear fisheries. The December 2008 report on fixed gear mortality was also insightful but additional information is needed. None the less, we request the Council initiate the three-meeting process to consider a range of options for allowing the retention of Pacific halibut in the directed longline fishery for sablefish. POORT still feels that the 2009 and anticipated future reductions in the area 2A halibut TAC increase the need for timely analysis of halibut retention options for the directed longline fishery for blackcod.

For now, we suggest that the scope of options include: 1) status quo; 2) some directed fishing for Pacific halibut with some expanded allowance for bycatch retention of halibut in the hook and line fishery for sablefish, south of Pt. Chehalis; and 3) a coastwide bycatch only fishery in lieu of a commercial area 2A non-tribal directed fishery for Pacific halibut. In its analysis of options for consideration of a bycatch fishery, we would like to encourage staff and participating agencies to provide more details on halibut bycatch in the longline fishery for sablefish. After discussions with fishermen and with agency staff, we have the following questions we would like to see answered by such an analysis:

1. What is the discard and discard mortality associated with each sector of the sablefish longline fishery (limited entry endorsed, limited entry daily trip limit, open access)?
2. What is the spatial distribution of bycatch ratios in each sector of the sablefish longline fishery? In answering the question, the directed longline fishery for sablefish north of Pt. Chehalis needs to be analyzed separately, as it is under a different set of regulations which allows the retention of Pacific halibut.
3. What is the sublegal and legal halibut discard and discard mortality for 1 and 2 above?

Sincerely,

Leesa Cobb

Leesa Cobb, Executive Director