

Performance Audit Report

Puget Sound Dungeness Crab Fishing

Department of Fish and Wildlife

Report No. 1002690



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www.sao.wa.gov

About the audit

Why we did this audit

We audited the Department of Fish and Wildlife's Puget Sound Dungeness Crab Fishing Program in response to a legislative request. This audit was designed to determine whether the Department of Fish and Wildlife successfully manages the Puget Sound state crab fishery, including adequately monitoring the fishery and using scientific sampling and analysis methods to estimate the recreational crab catch.

What we audited

We audited the performance of the Puget Sound Dungeness Crab Fishing Program from 2000 through 2008. The audit focuses on whether the Program is meeting Department goals and Program objectives, as well as whether it uses best practices to meet those goals and objectives. Originally the scope was limited to the state recreational fishery, but we expanded the scope to include the state commercial fishery because the Department jointly manages the commercial and recreational fisheries in its effort to comply with legal requirements for sharing the crab resource with tribes. Management of the state program is interlinked with the tribal fisheries and the fisheries share the same resource; thus, we introduce aspects of the tribal fishery where appropriate. We did not audit the coastal Dungeness crab program or other species of crab in the Puget Sound.

We conducted this performance audit in accordance with generally accepted government auditing standards, prescribed by the U.S. Government Accountability Office. In addition, we addressed the nine elements contained in Initiative 900, detailed in Appendix A.

What we found

The Department's primary responsibilities for managing the Puget Sound Dungeness crab fishery are to:

- Ensure the harvest is allocated between the tribes and state to preserve tribal treaty rights.
- Maintain sustainable harvest levels that ensure an economically viable and stable state commercial fishery and a quality recreational fishery.

The Department manages the fishery jointly with the tribes to comply with a 1994 court decision.

We identified two factors that are critical to effective management of the Puget Sound Dungeness Crab Program:

- Reasonably accurate crab harvest data that is available to the Program at critical decision-making points.
- A framework to effectively manage the crab fishery at a sustainable level that fulfills legal mandates while providing opportunities for recreational and commercial fisheries.

About Initiative 900

Washington voters approved Initiative 900 in November 2005, giving the State Auditor's Office the authority to conduct independent performance audits of state and local government entities on behalf of citizens to promote accountability and cost-effective uses of public resources.

I-900 directs us to address the following elements in each performance audit:

- Identification of cost savings.
- Identification of services that can be reduced or eliminated.
- Identification of programs or services that can be transferred to the private sector.
- Analysis of gaps or overlaps in programs or services and recommendations to correct them.
- Feasibility of pooling auditee's information technology systems.
- Analysis of the roles and functions of the auditee and recommendations to change or eliminate roles or functions.
- Recommendations for statutory or regulatory changes that may be necessary for the auditee to properly carry out its functions.
- Analysis of the auditee's performance data, performance measures and self-assessment systems.
- Identification of best practices.

Initiative 900 provides no penalties for auditees that do not follow recommendations in performance audit reports.

The complete text of the Initiative is available on our [Web site](#).

About the audit

The Department needs accurate and timely harvest data to fulfill its responsibilities but faces numerous challenges in obtaining the data it needs when it needs it. The harvest estimate is subject to inaccuracies due to the low rate of recreational crabbers' self-reporting of harvests. The Department relies heavily on its seasonal telephone survey results, although over half of the crabbers responding to the survey report their harvest from memory. The Department does not receive or process commercial harvest data as timely as needed. Expanding its use of Web-based reporting technologies could help the Department have more accurate and timely harvest data.

The Department follows best practices in crab fishery management, but external factors beyond the Department's control can endanger the fishery. Recreational crabbers' high rate of noncompliance with fishery management rules and environmental and biological factors can threaten the population. The Department performs limited monitoring of these factors and recently confirmed the crab population in Hood Canal has declined. The Department has met the intent of the Fish and Wildlife Commission policy to maintain an economically viable commercial fishery and quality recreational fishery. However, increasing recreational crab activity has increased competition with the commercial fishery.

What's next?

Initiative 900 requires the legislative bodies for the government agencies in this report to hold at least one public hearing to consider the audit findings and to receive comments from the public within 30 days of this report's issue.

The corresponding legislative body must consider this report in connection with its spending practices. A report must be submitted by the legislative body by July 1 each year detailing the status of the legislative implementation of the State Auditor's recommendations. Justification must be provided for recommendations not implemented. Details of other corrective action must be provided as well.

The state Legislature's Joint Legislative Audit and Review Committee (JLARC) will summarize any statewide issues that require action from the Legislature and will notify the appropriate fiscal and policy committees of public hearing agendas. Initiative 900 provides no penalties for audited entities that do not follow recommendations in performance audit reports.

Follow-up performance audits of any state or local government entity or program may be conducted when determined necessary by the State Auditor.



Mission Statement

The State Auditor's Office independently serves the citizens of Washington by promoting accountability, fiscal integrity and openness in state and local government. Working with these governments and with citizens, we strive to ensure the efficient and effective use of public resources.

Audit results

Audit issue	Recommendations
Issue 1: Harvest estimation challenges make it difficult for the Department to assess how well it is managing the fishery and meeting Rafeedie Decision requirements.	The Department should take the following actions pertaining to the recreational fishery:
	Recommendation 1: The Department should facilitate recreational crabbers' use of online reporting.
	Recommendation 2: The Department should calculate a crab conversion weight that reflects the recreational harvest by marine area.
	Recommendation 3: To improve harvest estimate accuracy, the Department should follow through on collecting the \$10 penalty authorized by state law (RCW 77.32.070) for recreational crabbers who do not self-report their harvest.
	Recommendation 4: The Department should monitor improvements in reporting rates and discontinue telephone surveys when self-reporting rates are sufficiently high.
	The Department should take the following actions pertaining to the state commercial fishery:
	Recommendation 5: The Department should prioritize the processing of fish tickets during critical reporting times, particularly during October.
	Recommendation 6: The Department should discontinue the daily commercial reporting requirement once it achieves an acceptable level of confidence in the accuracy of harvest information.
Issue 2: The Department follows best practices and fulfills the intent of Commission policy for crab fishery management but conducts limited monitoring of other factors that can threaten the resource.	Recommendation 7: The Department should establish an electronic reporting system for commercial dealers when cost-effective.
	Recommendation 8: The Department should increase its use of penalties on late commercial reporting.
	Recommendation 9: The Department should manage the crab fishery conservatively if the violation rate is too high.
	Recommendation 10: The Department should develop materials to educate the public on how to properly return crab to the water unharmed.
	Recommendation 11: The Department should develop a monitoring program to ensure it continues to manage the fishery in a manner that maintains sustainable harvest levels.
	Recommendation 12: The Department should work with the tribes to adjust the methodology for establishing harvest targets when there is evidence that the crab population is trending downwards.
	Recommendation 13: The Fish and Wildlife Commission should clarify its policy on the commercial/recreational allocation.

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Introduction

Why We Did This Audit

We audited the Department of Fish and Wildlife's Puget Sound Dungeness Crab Fishing Program in response to a legislative request. This audit was designed to determine whether the Department of Fish and Wildlife successfully manages the Puget Sound state crab fishery, including adequately monitoring the fishery and using scientific sampling and analysis methods to estimate the recreational crab catch.

What We Found

The Department's primary responsibilities for managing the Puget Sound Dungeness crab fishery are to:

- Ensure the harvest is allocated between the tribes and state to preserve tribal treaty rights.
- Maintain sustainable harvest levels that ensure an economically viable and stable state commercial fishery and a quality recreational fishery.

The Department manages the fishery jointly with the tribes to comply with a 1994 court decision.

We identified two factors that are critical to effective management of the Puget Sound Dungeness Crab Program:

- Reasonably accurate crab harvest data that is available to the Program at critical decision-making points.
- A framework to effectively manage the crab fishery at a sustainable level that fulfills legal mandates while providing opportunities for recreational and commercial fisheries.

The Department needs accurate and timely harvest data to fulfill its responsibilities but faces numerous challenges in obtaining the data it needs when it needs it. The harvest estimate is subject to inaccuracies due to the low rate of recreational crabbers' self-reporting of harvests. The Department relies heavily on its seasonal telephone survey results, although over half of the crabbers responding to the survey report their harvest from memory. The Department does not receive or process commercial harvest data as timely as needed. Expanding its use of Web-based reporting technologies could help the Department have more accurate and timely harvest data.

The Department follows best practices in crab fishery management, but external factors beyond the Department's control can endanger the fishery. Recreational crabbers' high rate of noncompliance with fishery management rules and environmental and biological factors can threaten the population. The Department performs limited monitoring of these factors and recently confirmed the crab population in Hood Canal has declined. The Department has met the intent of the Fish and Wildlife Commission policy to maintain an economically viable commercial fishery and quality recreational fishery. However, increasing recreational crab activity has increased competition with the commercial fishery.

Scope and Methodology

We audited the performance of the Puget Sound Dungeness Crab Fishing Program from 2000 through 2008. The audit focuses on whether the Program is meeting Department goals and Program objectives, as well as whether it uses best practices to meet those goals and objectives. Originally the scope was limited to the state recreational¹ fishery, but we expanded the scope to include the state commercial fishery because the Department jointly manages the commercial and recreational fisheries in its effort to comply with legal requirements for sharing the crab resource with tribes. Management of the state program is interlinked with the tribal fisheries and the fisheries share the same resource; thus, we introduce aspects of the tribal fishery where appropriate. We did not audit the coastal Dungeness crab program or other species of crab in the Puget Sound.

We gained an understanding of the program through interviews with members of the oversight committees, executive and program management, and staff. A consultant conducted some of these interviews. We reviewed Department policies and procedures; the results of user surveys; and applicable laws, regulations, executive orders and directives. To identify best practices, we researched publications of nationally recognized organizations and reviewed other states' programs. We performed quantitative analysis of randomly or judgmentally selected data samples. We also analyzed the methodology the Department uses to estimate crab harvest.

The Department provided the crab harvest data we used in our analysis. Although we verified that data in the Department's systems matches the data reported, we could not verify the reliability of the data itself, since it is self-reported. The Department uses this data in its own reports and publications and to manage the fishery, including meeting allocation requirements resulting from court decisions. *Based on the Department's reliance on this data, we determined that using it in our analysis would not change the audit results.*

We conducted this performance audit in accordance with generally accepted government auditing standards, prescribed by the U.S. Government Accountability Office. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

In addition, we addressed the nine elements contained in Initiative 900, detailed in Appendix A.

¹ The recreational fishery is also referred to as the sport fishery.

Commendations

The Department engages in several activities to protect and manage the Dungeness crab fishery. It:

- Follows a scientifically recognized best practice known as the "3-S" system for crab fishery management. The 3-S system allows only male crabs over a certain size to be harvested to protect the reproductive ability of the population, and fishing seasons that protect sensitive molting periods.
- Requires crabbers to use gear that meets several specific requirements, including maximum size, having a natural fiber cord that can rot away to allow crab to escape freely if the crab pot is lost and having escape rings that allow undersized crab to escape.
- Negotiates with the tribes regarding the annual harvest allowed by region and limits the number of crabs recreational crabbers may catch each day to prevent overfishing, which could affect the sustainability of the fishery.
- Provides an abundance of easily-accessible information to the public regarding the Dungeness crab fishery, including Web pages with information to educate the public on fishery rules, a shellfish rule hotline, and pages devoted to Dungeness crab fishing rules in its annual sport fishing rule booklet.
- Has developed an online reporting system to facilitate recreational crabbers' compliance with harvest reporting requirements.
- In 2008, the Department supported successful legislation that allowed it to begin assessing a \$10 penalty to recreational crabbers who do not self-report their harvest as required by state law. The penalty should increase the self-reporting rate over time, which should improve the accuracy of the recreational harvest estimate and eliminate the need for its seasonal telephone surveys.

Background

About the Department of Fish and Wildlife

The Legislature created the Department of Fish and Wildlife in 1993 by combining the Department of Fisheries and the Department of Wildlife. The supervising authority for the Department is the Fish and Wildlife Commission, which is composed of nine citizens, appointed by the Governor, who serve staggered six-year terms. The Commission:

- Appoints the Department Director.
- Establishes Department policy.
- Monitors the Department's implementation of the goals, policies and objectives the Commission establishes.

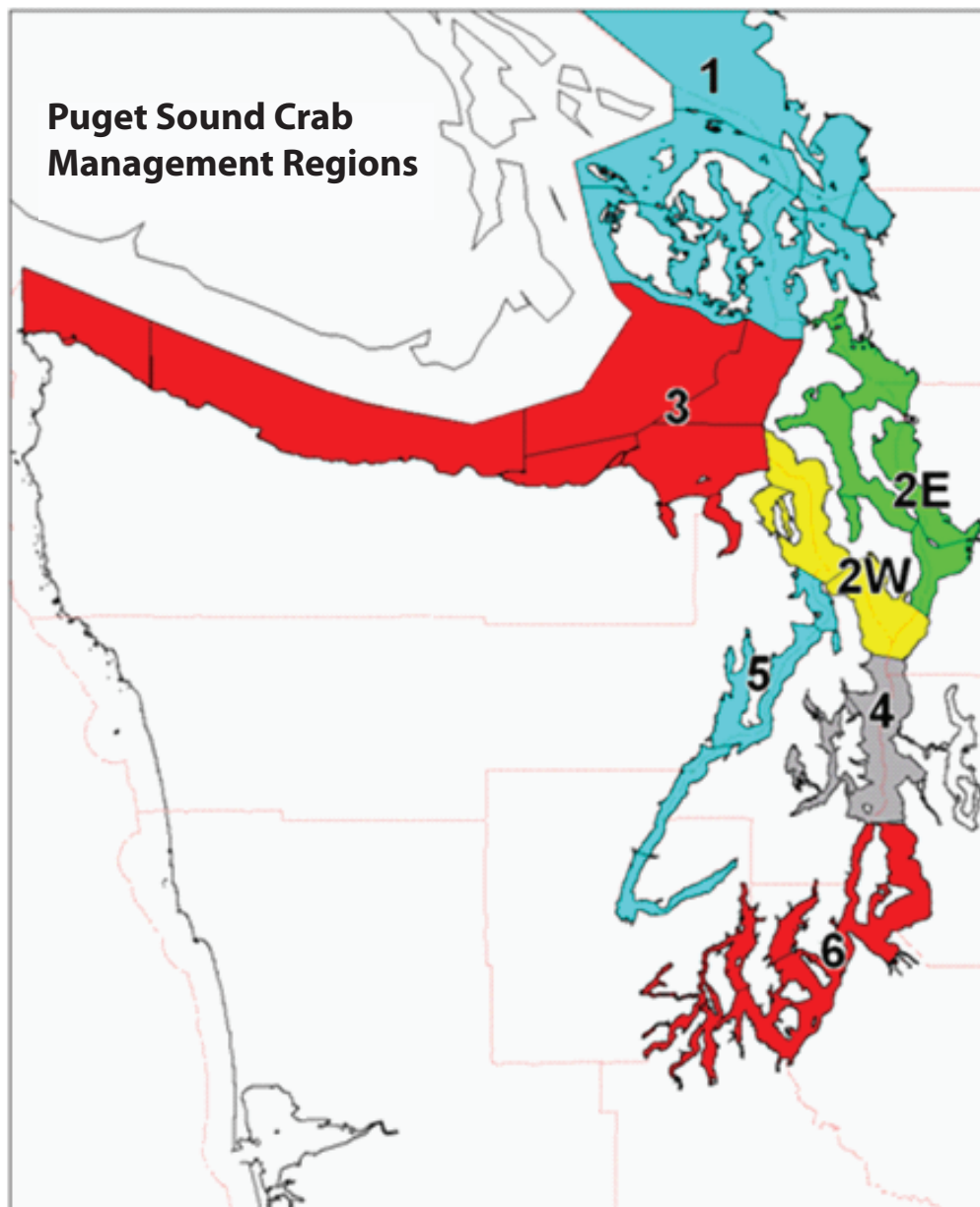
The Department has a dual mission to protect, restore and enhance fish and wildlife and their habitats while providing sustainable fish and wildlife-related recreational and commercial opportunities. The Commission established goals to assist the Department in achieving this mission:

- Achieve healthy, diverse and sustainable fish and wildlife populations.
- Ensure sustainable fish and wildlife opportunities for social and economic benefit.
- Ensure effective use of current and future financial resources in order to meet the needs of the state's fish and wildlife resource for the benefit of the public.
- Implement processes that produce sound and professional decisions, cultivate public involvement and build public confidence and agency credibility.
- Promote development and responsible use of sound, objective science to inform decision-making.

Puget Sound Crab Management Regions

Exhibit 1 shows the Puget Sound is divided into six crab management regions, and Region 2, located in central Puget Sound, is further divided into east and west. Appendix B provides details regarding the recreational and commercial harvest in each region for the 2000-2001 through 2007-2008 seasons.

Exhibit 1
Map of Puget Sound Dungeness Crab Fishery



Source: Department of Fish and Wildlife

Commission Policy for the Puget Sound Crab Fishery

The Commission established policy for the Puget Sound crab fishery that requires the Department to:

- Preserve, protect and perpetuate Puget Sound Dungeness crab resources and associated habitat.
- Manage the Puget Sound crab fisheries conservatively to prevent over-harvest and provide for consistent sustained yields.
- Provide for an economically viable and stable commercial harvest opportunity for high quality crab (Regions 1, 2 and 3).
- Maintain a quality recreational fishery with emphasis on spring and summer seasons and recreational exclusive-use areas (Regions 1, 2 and 3).
- Manage Regions 4, 5 and 6 for the exclusive benefit of the recreational fishery.

Legal Requirements for Preserving Tribal Rights to Harvest Crab

Fulfilling court-mandated resource allocation agreements with the state's tribes is a critical element in the Department's management of the crab resource.

In 1905, the U.S. Supreme Court adopted a "reservation of rights" approach in interpreting treaties between tribes and the United States. The Court ruled that a treaty is not a grant of rights to the tribes, but a grant of rights from them; and when signing the treaties, the tribes reserved the right to harvest fish from their "usual and accustomed grounds."

In 1974, a U.S. District Court decided a lawsuit that Washington tribes filed to reaffirm their 19th-century treaty rights to marine resources. The Court ruled the tribes were entitled to take 50 percent of the harvestable fish from their usual and accustomed grounds.

The tribes filed suit again to reaffirm that shellfish are fish within the meaning of the tribal treaties, and that the tribes had the right to take 50 percent of harvestable shellfish within their usual and accustomed grounds. In September 1993, a U.S. District Court ruled shellfish are fish within the meaning of the treaties. In 1994, the Rafeedie Decision reaffirmed tribal treaty rights to up to half of all shellfish in Washington, including Dungeness crab, within the tribes' usual and accustomed grounds.

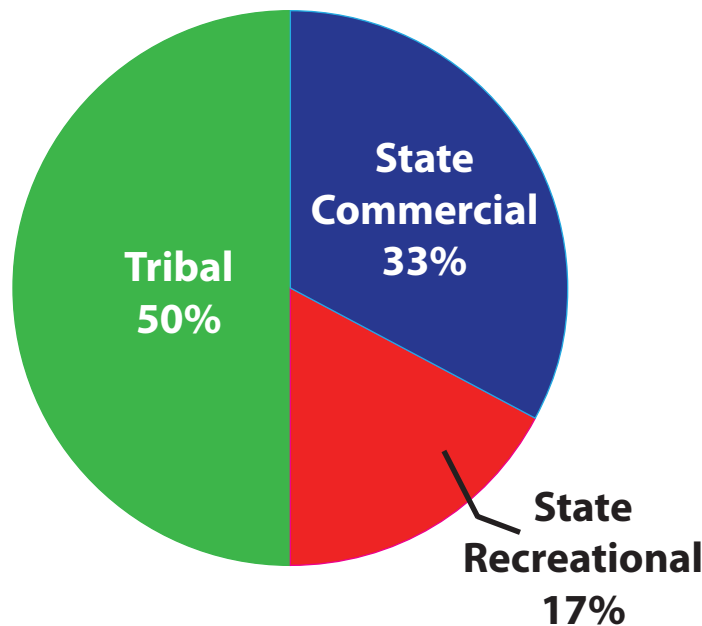
The Department has responsibility for managing the fishery on behalf of the state. The Northwest Indian Fisheries Commission assists tribes in managing the tribal fishery. The court decisions established the basis for how the Department and tribes co-manage the Puget Sound Dungeness crab fishery today.

Management Plans Help State and Tribes Manage the Crab Fishery

The three Dungeness crab fisheries in the Puget Sound are tribal, state commercial and state recreational. The commercial fishery is for crab that is caught by commercial fishermen then bought and sold by dealers, while the recreational fishery is for individuals who catch crab for their personal use. The tribal fishery includes crab harvested for commercial, ceremonial, and subsistence purposes. Tribal members who want to participate in recreational crabbing outside of their usual and accustomed fishing grounds purchase a license and participate under the state recreational fishery.

The total harvest of Dungeness crab in the Puget Sound varied from 7.7 million pounds to 8.8 million pounds during the 2000-2001 through 2007-2008 seasons. This was split evenly between the tribes and state in accordance with the Rafeedie Decision. The state allocates its share of the crab harvest, which the Department is responsible for monitoring, between commercial and recreational fisheries. Since 2000, the commercial fishery has averaged 66 percent of the state allocation, while the recreational fishery has averaged 34 percent. Exhibit 2 shows the average allocation of crab among the three fisheries.

Exhibit 2
Average Dungeness Crab Harvest in Puget Sound
2000 - 2001 through 2007 - 2008



Source: Based on harvest data provided by the Department of Fish and Wildlife
Note: See limitation on data in Scope and Methodology section on page 2.

In 2001, the Department and the tribes adopted seven regional harvest management plans that set guidelines to jointly manage the Puget Sound Dungeness crab fishery in accordance with the Rafeedie Decision. Each of the six regions has its own management plan; Region 2 has separate plans for the east and west sides of the region.

The harvest management plans are updated annually and include:

- A provision to manage the fishery in accordance with the scientifically recognized best practice commonly referred to as the "3-S" system – size, sex, and season:
 - Size – A minimum harvestable size of 6.25 inches, measured across the widest part of the back, ensures mature male crabs have mated at least once prior to capture.
 - Sex – Only mature male crabs may be harvested with no effect on longer-term crab populations. Males below the legal size, all females and all soft-shelled crab that are caught must be returned alive to the water.
 - Season – The fishery closes during the peak molting period in spring to prevent excessive mortality of soft-shell crab due to fishery-induced handling.

- Harvest limits, in pounds, which are expressed as allocations or quotas, for the tribes and state. These limits are adjusted annually based on historical harvest data and vary widely depending on the region. For example, during the 2007-2008 season, the tribes and state had allocations that ranged from as little as 40,000 pounds each in Region 6 to as much as 2.35 million pounds each in Region 1.
- A requirement for the tribes' or state's total overharvest to be deducted from next season's share if that party's harvest exceeds its share by more than two percent.
- Dates and hours during which the parties are allowed to harvest crab.
- A provision for tribal harvest of crab for ceremonial and subsistence purposes.
- The type and amount of crabbing gear that may be used to allow other species and undersized crabs to escape.
- Requirements to track specific data about harvested crab; the tribes and state must share that information with each other at regular intervals.
- Requirements for the state and tribes to adopt and enforce regulations that comply with the plans' provisions.

The tribes and Department manage the fishery at the subregional level – by catch area for the tribal and state commercial fisheries and by marine area for the recreational fishery.

How the Department Allocates the State's Share of the Crab Harvest

The Department divides the state's 50 percent of the harvest between commercial and recreational fisheries. Recreational and commercial crabbing occur in Regions 1, 2E, 2W and 3. The Department sets fixed recreational allocations based on historical catch data and allocates the balance of the harvest to the commercial fishery in these regions. If the recreational harvest exceeds its allocation, the Department decreases the commercial allocation to maintain the overall state allocation. On the other hand, if the recreational harvest does not reach its target, the balance is available to the commercial fishery for harvest. Thus, overall changes in the allocation affect only the commercial fishery and the recreational allocation remains fixed. Regions 4, 5 and 6 are recreational-only regions and the annual allocation varies according to crab abundance. Appendix B provides annual harvest data by region for the state recreational and commercial fisheries.

Crabbing Seasons in the Puget Sound

Crabbing seasons vary by region and fishery. Tribal and recreational seasons open in spring or early summer. The tribal fishery closes in April, although periodic closures may occur in catch areas during this time. The recreational fishery closes in early September while the harvest is counted. If the count shows the recreational allocation has not been met, areas that close in September may reopen for winter crabbing through January 2. State commercial areas historically open October 1 and close in April. The Department may close commercial areas early if it determines the harvest allocation has been met prior to the scheduled closing date. Crabbing is not permitted during the spring molting "soft-shell" season.

Harvest Reporting Requirements

Tribal and state commercial crabbers sell their harvest to dealers for resale. Washington Administrative Code requires dealers to report their crab purchases on documents called fish receiving tickets by forwarding tribal tickets to the Northwest Indian Fisheries Commission and state tickets to the Department, to be received within

six working days. The NWIFC forwards copies of the tribal tickets to the Department, but there is no requirement for how soon it must do this. State commercial dealers are required to report their crab purchases by mailing their fish tickets to the Department's main office in Olympia. In addition, they must phone or fax information regarding their purchases to the Department's Brinnon office by 10 a.m. on the business day following the purchase. This secondary reporting requirement, which the Department refers to as "quick reporting," ensures the Department has timely information regarding the state commercial crab harvest, and is codified in the Washington Administrative Code.

Recreational crabbers report their harvest on documents called catch record cards. The crabbers receive two catch record cards when they purchase a \$3 crab endorsement on their fishing license – one for the summer crabbing season and one for the winter season. Washington Administrative Code 220-56-175 requires the crabbers to report to the Department the number, location, and dates they caught and kept crab by submitting their catch record cards by mail or by reporting the information through the Department's Web site at the end of each season. Reporting is mandatory, even if the licensee did not fish or keep any crab. Recreational crabbers can report online, but the Web site is open for only about two weeks at the end of the summer and winter seasons. The Department mails notices to recreational crabbers about a week before the end of the summer season reminding them about the mandatory reporting requirement.

The Department tracks the tribal and state commercial harvests in its Licensing and Fish Ticket system and the recreational harvest in its Viking system. It maintains a separate database for the state commercial harvest information collected through quick reporting. We verified the reliability of data in the fish ticket and Viking systems. We compared the information in each system to 20 fish tickets and 20 catch record cards and compared 20 fish tickets and 20 catch record cards to information in each system to confirm that the data matched, and did not identify any errors.

Harvest Estimates

The Department tracks the tribal and state harvests to ensure compliance with the Rafeedie Decision requirements and harvest management plans for allocating crab between the tribes and state. However, the Department must estimate the recreational harvest because many recreational crabbers do not report their harvest. The Department stops accepting self-reported harvest data two weeks after the recreational season closes and relies on a telephone survey to capture harvest data for recreational crabbers who did not report. A survey firm calls a sample of recreational crabbers who purchased crab endorsements but did not self-report their harvest and provides the survey results to the Department. The Department extrapolates the harvest reported through the survey to all recreational crabbers who did not self-report and adds the extrapolated results to the total self-reported recreational harvest.

We identified concerns regarding the methodology the Department uses to estimate the recreational crab harvest, which are addressed in the Audit Results section of this report.

Audit Results and Recommendations

Issue 1: Harvest estimation challenges make it difficult for the Department to assess how well it is managing the fishery and meeting Rafeedie Decision requirements.

The Department needs crab harvest estimates to ensure it fulfills the state's responsibilities under the Rafeedie Decision to allocate up to half of the harvest to tribes; to determine seasonal harvest targets; and to adjust commercial allocations based on recreational harvest, if necessary. Crab harvest data also are potentially useful for measuring population trends to ensure crab harvests are kept at a sustainable level.

The Department and tribes face challenges regarding the accuracy of harvest estimates and timeliness of reporting that impair the usefulness of harvest estimates for managing the crab resource. Inaccuracies may occur due to recreational crabbers' low self-reporting rates of their harvest and high level of noncompliance with catch record card requirements while crabbing. They also occur due to the Department's reliance on a telephone survey to estimate most of the recreational harvest and its use of a single crab conversion weight for all of Puget Sound. Challenges regarding timeliness arise due to the Department's late receipt of some commercial fish tickets and delayed processing of state commercial and recreational harvest data. Expanded use of Web-based reporting technologies has the potential to improve the accuracy and timeliness of crab harvest data.

Crab harvest estimates are subject to inaccuracies

Estimating crab harvest is difficult due to the nature of the fishery. It would be prohibitively expensive to monitor crab harvests to the extent necessary to establish a high degree of confidence in the harvest data. For example, it would be cost prohibitive for the Department to have staff at every landing site² in the Puget Sound every day during crab season to count the number of crab harvested. Commission policy recognizes the difficulty in estimating the harvest and therefore requires the Department to accurately monitor all recreational and commercial Dungeness crab harvests "within budget constraints." The regional harvest management plans include similar language. Region 6, for example, requires the Department and tribes to report the "best available data."

All three fisheries self-report their harvest, which causes the harvest counts to be subject to inaccuracies, whether accidental or intentional. Specific issues that adversely affect the accuracy of recreational harvest estimates include:

- Self-reporting rates are low for recreational crabbers.
- The Department relies heavily on telephone survey results because of the low self-reporting rates.
- Enforcement statistics show a high level of noncompliance with catch record card requirements.
- The Department uses the same average conversion weight for crab for all areas of the Puget Sound recreational fishery.

² A "landing site" is the location on land where crabbers unload their catch.

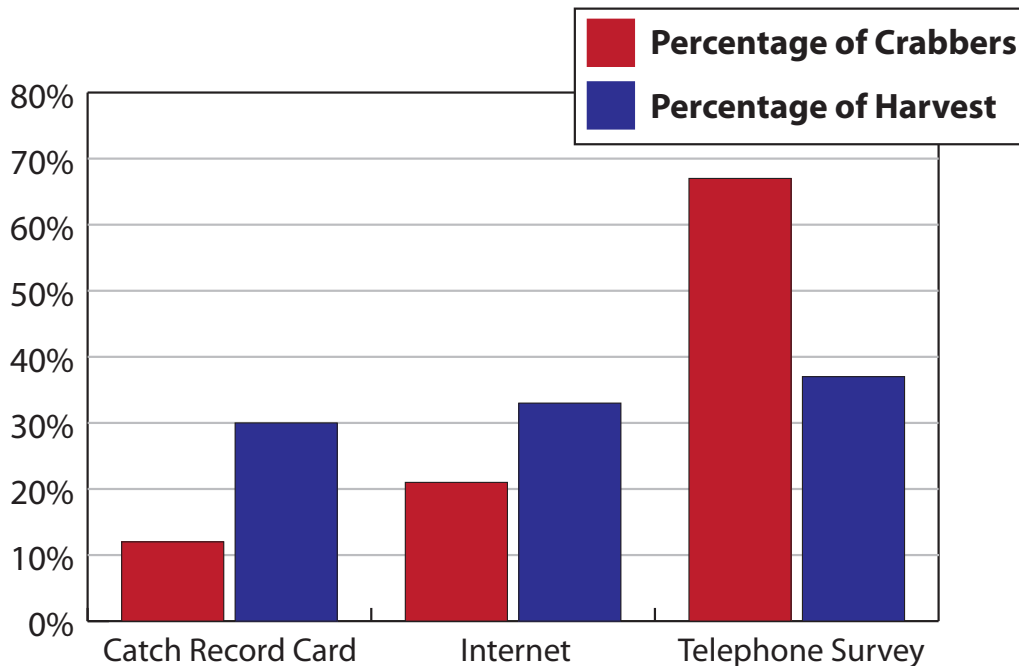
Reporting rates are low for recreational crabbers. Only about one-third of summer crabbers and 10 percent of winter crabbers self-report their harvest by mailing their catch record card or using the Department's Web site. This rate is low despite the Department's reminder notices to recreational crabbers to report their harvest at the end of the summer season. Because response rates are so low, the Department cannot assume the harvest rates of self-reporters represent all crab endorsement holders. Starting in the 2009-2010 winter season, recreational crabbers are subject to a \$10 fine per year if they fail to self-report. The Department hopes the fine will increase reporting rates to a level that will allow it to discontinue the telephone surveys, which cost more than \$100,000 during fiscal year 2007-2008. However, the effect of the fine on improving reporting rates will not be apparent until the close of the 2010 summer recreational crabbing season.

The Department relies heavily on the results of its telephone survey because of the low self-reporting rates. The Department uses the telephone survey to estimate the harvest for more than two thirds of recreational crabbers who do not self-report their harvest in the summer and 90 percent who do not report in the winter. The Department used telephone survey results to estimate the harvest for over 140,000 crabbers during the 2008 summer season. The survey methodology follows best practices for survey design, but certain elements may affect the reliability of the results. For example:

- For the 2008 summer season, 48 percent of self-reporters caught and kept crab compared to 23 percent of survey respondents. Self-reporters who caught and kept crab harvested an average of 23 pounds of crab, while those reporting through the telephone survey averaged 15 pounds. This difference in reported crab harvest success rates confirms that the Department cannot estimate the total recreational harvest simply by extrapolating the self-reported data to all crab license holders.
- Many survey respondents report their harvest from memory rather than from their catch record card. For the 2008 summer season, almost 61 percent of the 6,036 survey respondents reported their harvest from memory.

Exhibit 3 shows the proportion of recreational crabbers who report their harvest through each method and the resulting harvest estimates.

Exhibit 3 Recreational Crabbing Reporting Methods and Harvest Percentages - Summer 2008 Season



Source: Based on harvest data provided by the Department of Fish and Wildlife

Note: See limitation on data in Scope and Methodology section on page 2.

Enforcement statistics show a high level of noncompliance with catch record card requirements. Washington Administrative Code 220-56-175 requires recreational crabbers to have a catch record card in their possession at all times when on the water and to record their harvest immediately upon pulling a crab pot from the water. During the 2007-2008 season, enforcement officers made face-to-face contact with 382 recreational crabbers who had caught crab, and identified 177 (45 percent) who had not recorded their harvest on their catch record card. Although the Department knows the number and type of violations observed, it does not know the true extent of violations and how they affect the accuracy of the recreational harvest estimate.

The Department uses a single conversion weight for all areas of the Puget Sound recreational fishery. The Department uses the results of periodic crab weight studies it conducts to convert the recreational harvest from the number of crabs harvested to pounds. It currently uses an average conversion weight of 1.8 pounds for all of Puget Sound. However, the 2007 study showed the average weight varies by marine area, ranging from 1.68 to 1.91 pounds, and the number of study observations in each marine area was disproportionate with the recreational harvest in that area. These factors could affect the reliability of the recreational harvest estimate. For example:

- Crabs caught in Marine Area 9 averaged 1.91 pounds; the area accounted for 30 percent of the study observations but only 4 percent of the 2008 summer recreational harvest.
- Crabs caught in Marine Area 7 averaged 1.76 pounds; the area accounted for only 10 percent of the study observations but 35 percent of the 2008 summer recreational harvest.

The Department does not receive or process harvest data timely

The Department and tribes recognize the importance of timely reporting. All of the harvest management plans require the parties to report on harvest at least monthly, using the "best available data." The Department needs timely harvest estimates:

- In early spring to negotiate with the tribes regarding updates to harvest management plans, including establishing regional quotas for the coming season and determining if overharvests occurred during the current season that will require adjustments to the following season's allocation.
- In early spring to make decisions regarding extending the state commercial season if quotas have not been met, so long as the percentage of crabs in the soft shell stage is not above levels set in regional harvest plans.
- In mid-October to make decisions regarding reopening the recreational fishery if its targets were not reached during the summer season.
- In mid-October to determine if the commercial allocation needs adjustment based on the recreational fishery's summer season harvest. Having this information early also provides the commercial fishery time to adjust if its allocation is reduced due to the recreational harvest being over its target.
- To ensure the state's harvest is within its management plan allocations.
- To fulfill its data sharing agreements with the tribes.

Timeliness is particularly crucial in September and October because the recreational summer season closes and more than half of the commercial harvest is caught in October. During the 2007-2008 commercial crabbing season:

- 37 percent was caught by October 15.
- 54 percent was caught by October 31.

Reporting timeliness is less critical following the fall/winter season because the recreational harvest is much lower than during the summer season, and the state commercial harvest has leveled off.

Specific issues that result in the Department not having timely harvest data include:

- Crab dealers do not always submit state commercial fish tickets to the Department within the required time.
- The Department does not enter fish ticket data in a timely manner.

The Department established its redundant quick reporting requirement because it did not have timely commercial harvest data to meet its needs for making decisions.

Crab dealers do not always submit state commercial fish tickets to reach the Department within six working days as prescribed in the Washington Administrative Code.

During the 2007-2008 harvest year, the Department received 581 (10 percent) of the 5,638 state commercial fish tickets more than six working days after the crab purchase date. These tickets represented more than 222,000 pounds (8 percent) of the commercial crab harvest. Eight (17 percent) of 47 dealers submitted 524 (90 percent) of the late tickets.

State law (RCW 77.15.565) prescribes penalties for violating reporting requirements. Penalties include a \$50 fine for each of the first 15 documents in a series that are submitted late and \$10 for each subsequent document in the same series. The Department took enforcement action against one dealer and received the fish tickets later in the season. However, it generally does not penalize dealers to the extent provided in the law. Instead, it issues warning letters for first offenses and imposes \$50 and \$100 penalties for second and subsequent offenses, regardless of the number of fish tickets not turned in. This strategy provides minimal incentive to report on time, and a large-volume dealer may prefer to pay the occasional fine.

The Department does not enter fish ticket data in a timely manner. Department staff review all fish tickets and catch record cards for inaccuracies before the Department's data entry unit processes them. Because catch record cards are not date-stamped when received, we could not determine whether late submittals or delayed processing caused delays in data entry for recreational harvest. However, the Department took a median time of nine working days to process state commercial fish tickets for the 2007-2008 commercial crabbing season. Fish tickets received in October, which is the most critical period for commercial fish ticket timeliness, had a median processing time of 11 working days and took a minimum of seven working days to be processed. The earliest date the Department processed a state commercial fish ticket received in October was October 16, although it began receiving fish tickets on October 3. This suggests that the Department does not prioritize fish tickets to accommodate the large volume of crab reporting that occurs during October.

The Department does not use Web-based reporting to its fullest

Recreational crabbers can report their harvest through the Department's Web site, but online reporting is available for only two weeks after the close of each summer and fall/winter season. The Department has not made online reporting available to the commercial fishery. Using Web-based technologies could increase recreational crabbers' reporting rates and allow the Department to receive state commercial harvest information sooner, particularly during the month of October when having current harvest information is critical.

Since recreational crabbers who self-report their harvest generally wait until the end of each season to do so, having the Web site open throughout the season could encourage them to report their harvest immediately upon return from their trip. This could increase the self-reporting rate while providing more accurate harvest information. The Department has been reluctant to do this, saying it would not have assurance that crabbers reported their harvest from all of their trips. However, an online reporting system could incorporate a feature that would send an email to recreational crabbers who already have reported reminding them to sign off on their record when they have reported all of their harvest.

Using Web-based technologies to report commercial harvest would allow the Department to eliminate the quick-reporting system while providing current harvest data at critical decision-making points throughout the season. Having duplicate reporting systems is inefficient for dealers and the Department, as it requires the dealers to double report the harvest and the Department to enter data multiple times. Effective April 2006, British Columbia instituted a requirement for all commercial crab vessels to have electronic or at-sea observer monitoring. All vessels selected the electronic monitoring option. They use electronic equipment to monitor individual crab traps and crabbing activity, including location, date and time; to record harvest data in a tamper-proof data storage system; and to provide feedback so vessels masters can ensure the systems are operational.

Recommendations

The Department should take the following actions pertaining to the recreational fishery:

Recommendation 1: The Department should facilitate recreational crabbers' use of online reporting. The proliferation of electronic communications offers the Department the opportunity to shift from paper-based reporting that requires data entry to electronic reporting. To facilitate this for recreational crab harvest reporting, the Department should extend the period of time electronic reporting is available each season. Since the Department plans to rely more on electronic reporting over time, it should test the accuracy of this reporting by, for example, checking catch record card data against harvest reported online.

As the Department gains assurance that harvest data reported online is accurate and reliable, it should offer the option of direct electronic reporting, whereby a recreational crabber could report catch immediately to an online account via a portable communications device.

Recommendation 2: The Department should calculate a crab conversion weight that reflects the recreational harvest by marine area. The Department can do this in one of three ways:

- Conduct the crab weight survey observations in a manner that is proportionate with each marine area's historical recreational harvest.
- Use separate conversion weights that reflect the average crab weight for the marine area to which it is applied.
- Use one conversion weight based on weighted averages of crab weights that reflect the proportionate share of each marine area's historical recreational harvest.

Recommendation 3: To improve harvest estimate accuracy, the Department should follow through on collecting the \$10 penalty authorized by state law (RCW 77.32.070) for recreational crabbers who do not self-report their harvest. If self-reporting rates remain low, the Department should consider raising the penalty, but only to a level that would not provide an incentive to fish for crab without a license. The Department should develop policies and procedures, in collaboration with the Commission, describing how it will impose and collect the \$10 penalty.

Recommendation 4: The Department should monitor improvements in reporting rates and discontinue telephone surveys when self-reporting rates are sufficiently high. The Department and tribes should agree on a minimum self-reporting rate that would provide the level of confidence necessary to eliminate the telephone survey.

The Department should take the following actions pertaining to the state commercial fishery:

Recommendation 5: The Department should prioritize the processing of fish tickets during critical reporting times, particularly during October. Providing fish ticket data within seven to 10 days to state fishery managers would provide timely information regarding whether adjustments are needed to the state commercial harvest allocation and to meet data-sharing requirements with the tribes.

Recommendation 6: The Department should discontinue the daily commercial reporting requirement once it achieves an acceptable level of confidence in the accuracy of harvest information. Quick reporting should be continued, but limited to peak periods such as October and possibly the end of each month, only if it is cost prohibitive or otherwise difficult to improve fish ticket processing time during peak periods.

Recommendation 7: The Department should establish an electronic reporting system for commercial dealers when cost-effective. The cost of electronic reporting declines as technology improves. The Department should investigate the availability and cost of developing or purchasing an electronic reporting system that can meet its needs better than existing systems. The Department may be able to take advantage of operational efficiencies by developing a system for commercial reporting in conjunction with upgrades to the recreational online reporting discussed in Recommendation 1.

Recommendation 8: The Department should increase its use of penalties on late commercial reporting, particularly if it also succeeds in improving its in-house fish ticket processing timeliness. Imposing penalties on late fish ticket submittals, as provided in state law, will improve timeliness, but for this to have its intended effect, in-house processing of fish tickets must improve.

Issue 2: The Department follows best practices and fulfills the intent of Commission policy for crab fishery management but conducts limited monitoring of other factors that can threaten the resource.

The Department manages the Dungeness crab fishery using the 3-S system – size, sex and season – which protects the reproductive ability of the population by allowing only mature males to be harvested and prohibiting fishing during sensitive molting periods. Following the system is critical given that approximately 90 percent of legal-sized crabs are harvested annually. However, enforcement statistics show some crabbers do not follow 3-S system rules, and environmental and biological factors can threaten the population even when the 3-S system is followed. The Department performs limited monitoring of crab population characteristics to make decisions on season openings, closings and extensions, but it is not regular and systematic. The Department is monitoring the decline in crab populations in Hood Canal, but it does not know the cause or whether it is a long-term decline.

The state and tribes manage the fishery through regional harvest management plans, which are updated annually. These plans include harvest allocations and provisions to adjust allocations if overharvest occurs, but these adjustments are not always made.

In regions where both recreational and commercial harvest takes place, recreational allocations were set based on historical recreational harvests. However, recreational crab endorsement sales have grown, increasing competition for the state's share of crab between commercial and recreational interests.

The state and tribes follow best practices for protecting crab

The "3-S" system is recognized as an effective practice by monitoring organizations such as Seafood Watch, a program of the Monterey Bay aquarium that evaluates the sustainability of fisheries. The system ensures sustainable population levels because it limits harvests to mature (size) males (sex) that may be harvested only during certain times of the year (season). Regional harvest management plans for the Puget Sound fishery require that these provisions, as well as limitations on acceptable gear that help promote compliance with the crab size requirement, be included in state and tribal regulations.

Violations by some recreational crabbers may jeopardize the fishery

Enforcement statistics suggest that a significant number of recreational crabbers violate rules related to the 3-S system, which can affect its effectiveness. Enforcement officers contacted 1,417 crabbers during the 2007-2008 season and identified 164 violations related to the 3-S system³ for the 382 crabbers with crab in their possession. We cannot extrapolate these numbers to the fishery as a whole because the enforcement was targeted toward likely violators in areas in which violations were known to frequently occur. However, the number of violations suggests that longer-term populations could be endangered if 3-S violations are too high at the same time that the great majority of legal-sized crabs are harvested.

³ Violations of the 3-S system include possessing undersized crab, possessing female crabs, possessing soft-shell crabs, and possessing mutilated crab. Crabbers sometimes mutilate crabs to disguise keeping female or undersized crabs.

Environmental and biological factors can threaten the population even when the 3-S system is followed

Crabs naturally repopulate as long as the 3-S system is followed. However, sustaining populations also depends on adequate environmental and biological conditions the Department cannot control. Environmental factors such as higher water temperatures and lower water oxygen levels, and biological factors such as disease and changes in predator abundance have had devastating effects on Dungeness crab fisheries in the past. Factors such as these are likely to have caused the permanent loss of some crab fisheries in Alaska.

Because about 90 percent of the legal-sized crabs are harvested annually, the fishery is particularly sensitive to these factors. One particular concern is the number of undersized crabs that are caught and have to be put back into the water. Recreational crabbers are allowed to use commercial-sized crab pots, which can catch two to three times the daily recreational harvest limit. This sometimes results in legal-sized crabs having to be returned to the water when too many have been caught. Research has shown that crab populations are adversely affected, due to mortality from handling, if the proportion of crabs caught and returned to the water is too high.

The Department does limited monitoring to determine relative crab abundance

It is important for the Department and tribes to understand the relative abundance⁴ of crab in each region to make informed decisions about whether increasing the allocation could result in overfishing. The Department collects limited information to monitor the effects of harvest on crab populations, including:

- Catch per unit effort information from state and tribal crab pot surveys. This is the number of legal crabs per pot found during soft-shell testing.
- Sperm plug testing, which measures the percentage of pregnant females.
- State commercial landings, which show changes in harvest for a given level of effort based on a standard number of pots.

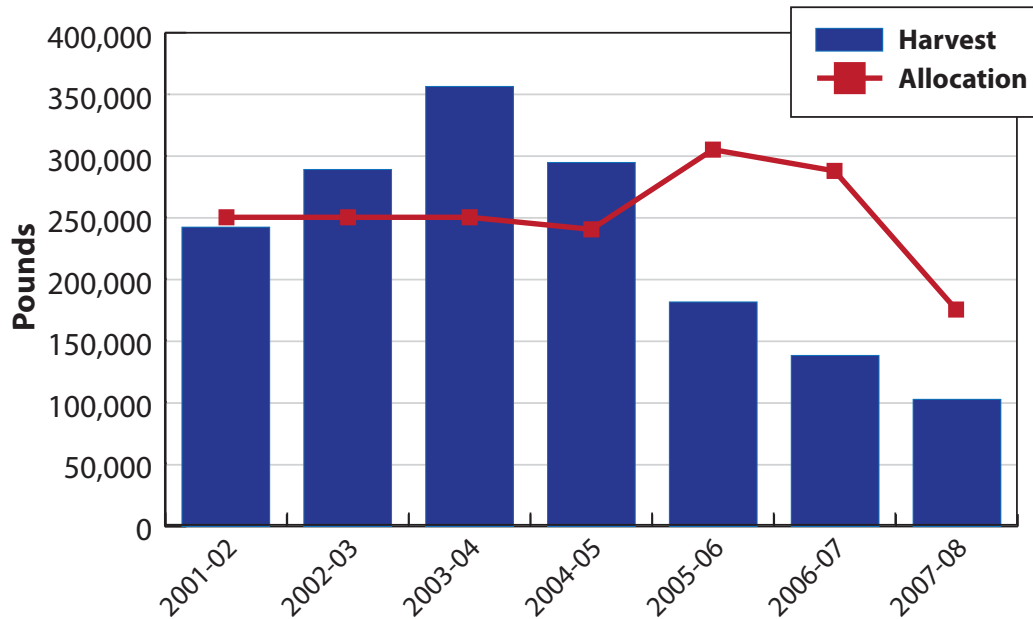
The primary purpose of crab pot surveys is to determine the percentage of soft-shell crab. The surveys also provide information on the percentage of nonlegal crabs, which includes soft-shell, female and undersized male crabs. These surveys could provide other information, such as the proportion of legal-sized crab harvested to those that are not kept, that would be useful for monitoring crab abundance and influencing decision-making. However, the number of pots surveyed would need to be high enough to generate statistically relevant results.

The Department does not know the cause of the decline in crab populations in Hood Canal and whether it is a long-term decline

Washington's crab harvest has remained fairly constant since the 2001-2002 season in all regions except Hood Canal. After a steady increase from about 240,000 pounds in the 2001-2002 season to more than 350,000 pounds in the 2003-2004 season, Hood Canal's harvest declined rapidly to 103,000 pounds in the 2007-2008 season. Because allocations are based on the average harvest of the past three years, they may be higher than sustainable harvest levels if the population is in a long-term decline. In fact, the Department extended recreational crabbing into winter during the 2007-2008 season at Hood Canal because the allocation had not been reached. Exhibit 4 shows that changes in recreational crab allocations lagged behind harvest declines in Hood Canal.

⁴ Fishery managers use the concept of relative abundance to monitor population trends because actual crab populations are unknown.

Exhibit 4 Recreational Crab Allocations and Harvests in Hood Canal



Source: Department of Fish and Wildlife

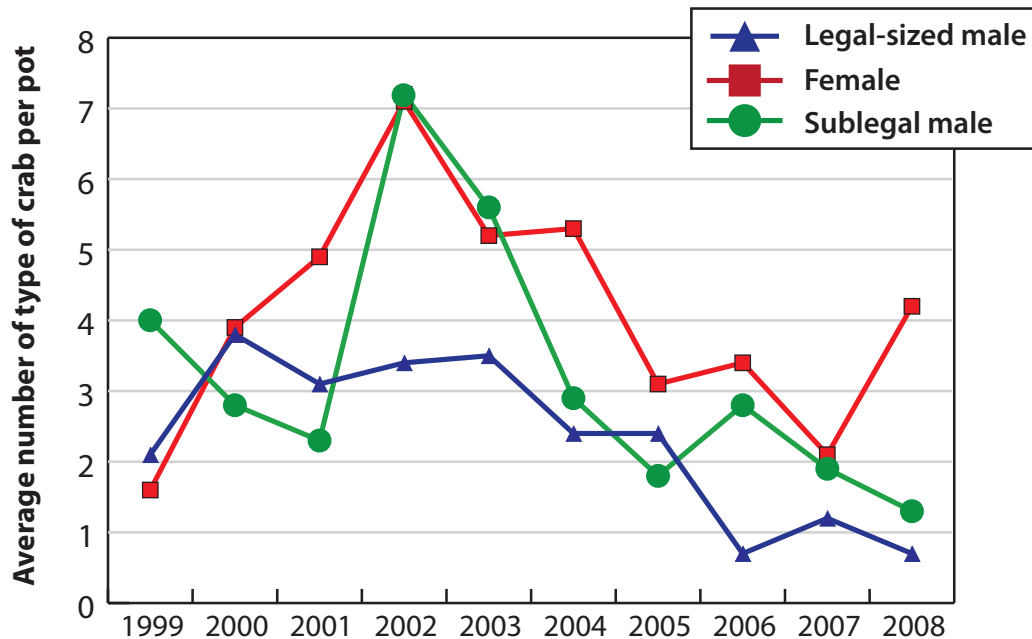
Note: See limitation on data in Scope and Methodology section on page 2.

Hood Canal is prone to reduced oxygen levels, a natural phenomena exacerbated by excess nutrients that flow into it from septic systems and other land-based sources. A program involving federal, state, tribal, local and scientific organizations is studying the issue and will recommend corrective actions. However, preliminary conclusions from a related study⁵ could not conclude what is causing the reduced number of crabs in Hood Canal.

In an effort to better understand the crab decline in Hood Canal, the Department started sperm plug testing in 2007. The Department also conducts catch per unit effort surveys to measure the number of crabs caught per pot during soft-shell testing. These tests show that although the female population rebounded somewhat in 2008, the population of females, legal-sized males and undersized males has steadily declined since 2002. Despite a sharp increase in the number of undersized males in 2002, the Department found no corresponding increase in the legal-sized male population in later years, which suggests that many undersized males did not survive to maturity. Exhibit 5 shows the results of the catch per unit effort testing from 1999 through 2008.

⁵ "Preliminary conclusions from the Hood Canal Dissolved Oxygen Program Integrated Assessment and Modeling Study," June 30, 2008.

Exhibit 5 Catch Per Unit Effort in Hood Canal



Source: Department of Fish and Wildlife

West Coast fisheries recently began conducting population assessments

Until recently, no states conducted population assessments. They relied on harvest estimates to assess relative abundance of crabs, which makes it difficult to determine whether fishing is occurring at sustainable levels. Recognizing that the 3-S system could break down due to environmental and biological conditions and possibly overfishing, fishery managers are increasing monitoring. Fishery managers in British Columbia are shifting to a biology-based management system and commercial crabbers there are responsible for collecting an increasing amount of biological data. Legislation passed in California in 2008 funded a Dungeness crab task force to review fishery management and make recommendations to a joint legislative committee in 2010; additional studies may be funded if warranted. To be more informed about when crab management issues arise, Oregon's Department of Fish and Wildlife recently began monitoring and assessing the crab population in estuaries to identify seasonal trends and annual variation in the harvest rate, size distribution, sex ratio and other aspects. Washington could benefit from similar monitoring activities to assist in its decision-making about changes in how it manages the Puget Sound Dungeness crab fishery over time.

Paybacks for overharvests do not always occur

When the tribes or state harvest more than 2 percent over their season's allocation, the regional management plans require the excess amount to be "paid back" through an equivalent reduction in the following season's allocation. The tribes and state sometimes agree to increase quotas as the season progresses based on tribal testing during the summer season.

Comparisons of harvest allocations with reported harvest for the 2001-2002 through the 2007-2008 seasons showed that overharvesting occurred in every region at least once. However, use of the overharvesting clause varied by region, and we could not draw any definitive conclusions about when or why paybacks do or do not occur. A number of factors affect negotiations between the tribes and the state in establishing initial allocations for each season and may also affect the decision as to whether a payback is needed for the following season.

For example, the tribes and state overharvested in Region 1 during 2006-2007, but instead of paying back the overharvest, the parties agreed to increase allocations by a similar amount for the following year. The tribes and state did not reduce the state's allocation in Region 3, Subarea 3-3, when the state's overharvest was matched by tribal underharvests, resulting in a combined total harvest that was near the combined total allocation. A number of overharvests that were in the 2 percent to 3 percent range also were not adjusted.

The growing number of recreational crabbers has increased competition with the commercial fishery

Commission policy calls for viable and stable commercial and quality recreational crab fisheries. The Department interpreted this to mean maintaining recreational crab harvests at the level experienced during the late 1990s in Regions 1, 2 and 3, where both commercial and recreational harvest occurs. Meanwhile, crab endorsement sales increased from 178,989 in 2005-2006 to 219,163 in 2008-2009. If recreational harvests exceed their targets, the Department reduces the commercial harvest allocations unless the overall tribal and state quotas are increased during the season to a level that compensates for the recreational overharvest. On the other hand, if recreational harvests do not reach their targets, the balance is available to the commercial fishery for harvest.

State allocation and harvest data from 2003-2004 through 2007-2008 show recreational overharvests have occurred in every region, including four of the past five seasons in Region 1, and all of the past five seasons in Region 2E. Recreational overharvests have the greatest effect on the commercial fishery in Regions 1 and 2E because they account for most of the commercial crab harvest — 71 percent and 19 percent, respectively, in 2007-2008 — and more than two-thirds of the recreational harvest. The tribes and state agreed to increase their allocations, which compensated for each recreational overharvest in Region 1, so the commercial fishery was not affected. However, increased allocations in Region 2E compensated for the total recreational overharvest in only one season and for a portion of the overharvest in two seasons, so the commercial fishery absorbed some to all of the recreational overharvest in four seasons. Allocation increases that are not sufficient to offset recreational overharvests suggest that Region 2E is already being fished at its maximum sustainable level and at a level that is affecting the commercial fishery. Recreational overharvests could also begin to affect the commercial fishery in Region 1 if the point is reached that allocations cannot be further increased.

State recreational and commercial harvests have been relatively stable since 2000. Recreational harvest has accounted for 29 percent to 40 percent of the annual state allocation since 2000, leaving 60 percent to 71 percent for commercial crabbers. To maintain this stability, the Department has decreased the number of recreational crabbing days. For example, in Marine Areas 7 and 8, which correspond with Regions 1 and 2E, the number of open crabbing days declined from 254 in 2001-2002 to 39 in 2006-2007.

Recommendations

Recommendation 9: The Department should manage the crab fishery conservatively if the violation rate is too high. The quotas could be set below the maximum sustainable yield to minimize the chance of permanent or temporary loss of the fishery due to 3-S system violations, overfishing, or other violations.

Recommendation 10: The Department should develop materials to educate the public on how to properly return crab to the water unharmed. These materials would demonstrate how to properly handle and release excess catch or crabs that were caught but are noncompliant with 3-S system requirements. The materials can include brochures and videos that can be viewed online, either through the Department's Web site or other sites such as YouTube.

Recommendation 11: Consistent with recent research and emerging practices in other West Coast crab fisheries, the Department should develop a monitoring program to ensure it continues to manage the fishery in a manner that maintains sustainable harvest levels. The Department should consider partnering with organizations already working in the Puget Sound region, including state agencies, the National Oceanographic and Atmospheric Association, Sea Grant, and the universities to leverage the cost of conducting the monitoring.

Recommendation 12: The Department should work with the tribes to adjust the methodology for establishing harvest targets when there is evidence that the crab population is trending downwards. The Department should routinely monitor regional harvest trends to identify when relying on a three- to five-year harvest history could endanger the fishery if the population is in a long-term decline.

Recommendation 13: The Fish and Wildlife Commission should clarify its policy on the commercial/recreational allocation. The growth in recreational crabbing activity will make it increasingly difficult for the Department to fulfill Commission policy to simultaneously maintain healthy recreational and commercial fisheries. Eventually, the Commission may need to make difficult decisions regarding allocation of the state share of the fishery. The Commission should lay the groundwork now for how they will make these decisions given that some regions have already shown increasing competition between the recreational and commercial fisheries.

Interest group involvement will be critical to ensure successful deliberations. Meanwhile, the Program should continue to have the flexibility to close seasons when necessary to fulfill Commission policy, protect the fishery and meet state and tribal obligations.

APPENDIX A: Initiative 900 Elements

This table shows where in the report each of the Initiative 900 elements is addressed.

I-900 Element	Issue 1	Issue 2
1. Identification of cost savings	None	None
2. Identification of services that can be reduced or eliminated	None	None
3. Identification of programs or services that can be transferred to the private sector	Not applicable	Not applicable
4. Analysis of gaps or overlaps in programs or services and recommendations to correct gaps or overlaps	√	None
5. Feasibility of pooling information technology systems within the department	√	Not applicable
6. Analysis of the roles and functions of the department, and recommendations to change or eliminate departmental roles or functions	√	√
7. Recommendations for statutory or regulatory changes that may be necessary for the department to properly carry out its functions	√	None
8. Analysis of departmental performance data, performance measures, and self-assessment systems	√	√
9. Identification of best practices	√	√

APPENDIX B

Annual Washington State Commercial and Recreational Dungeness Crab Harvest by Crab Management Region

	Region 1	Region 2E	Region 2W	Region 3	Region 4	Region 5	Region 6	All Regions	% of State Total
State Commercial									
2000-01	1,746,366	319,608	91,055	389,663	0	0	0	2,546,692	64%
2001-02	2,188,883	560,879	101,940	254,170	0	0	0	3,105,872	71%
2002-03	1,959,864	465,387	99,492	324,129	8,982	0	0	2,857,854	68%
2003-04	1,961,635	576,042	73,831	266,111	0	0	0	2,877,619	63%
2004-05	1,690,230	429,512	74,298	212,892	0	0	0	2,406,932	60%
2005-06	1,727,998	511,364	81,053	215,856	0	0	0	2,536,271	68%
2006-07	1,964,604	488,207	39,335	199,629	0	0	0	2,691,775	69%
2007-08	1,919,995	504,688	57,055	228,054	0	0	0	2,709,792	70%
Average	1,894,947	481,961	77,257	261,313	1,123	0	0	2,716,601	66%
State Recreational									
2000-01	360,807	548,122	55,906	96,200	29,500	345,308	4,908	1,440,751	36%
2001-02	307,375	430,171	98,581	91,128	44,800	242,483	41,600	1,256,138	29%
2002-03	357,045	370,972	59,154	139,837	35,869	289,187	62,480	1,314,544	32%
2003-04	547,714	390,504	82,748	177,487	35,798	356,439	84,329	1,675,019	37%
2004-05	483,066	456,959	80,767	137,937	42,572	294,864	97,721	1,593,886	40%
2005-06	304,018	417,159	68,803	119,713	53,237	181,890	55,417	1,200,237	32%
2006-07	374,653	423,451	39,754	110,526	60,398	138,564	61,913	1,209,259	31%
2007-08	433,762	355,396	41,701	84,979	67,685	103,004	61,706	1,148,233	30%
Average	396,055	424,092	65,927	119,726	46,232	243,967	58,759	1,354,758	34%
Source: Based on Department of Fish and Wildlife data Note: Recreational harvest occurs in all regions. Commercial harvest occurs in Regions 1, 2E, 2W and 3 only.									

APPENDIX C: Department's Response



State of Washington
DEPARTMENT OF FISH AND WILDLIFE

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Main Office Location: Natural Resources Building • 1111 Washington Street SE • Olympia, WA

January 11, 2010

The Honorable Brian Sonntag
State Auditor
P.O. Box 40021
Olympia, WA 98504-0021

Dear Auditor Sonntag:

Thank you for the opportunity to respond to the performance audit of the Washington Department of Fish and Wildlife's (Department) Puget Sound Dungeness Crab Fishing Program. The Department strongly supports the use of performance audits as an important tool to improve state government, which is why we have worked so closely with the Auditor's staff on this and past performance audits.

We agree, in most part, with both issues stated in the report. The one exception is found in the first issue where it calls for fishers to report their catch before the season is finally closed. The first issue confirms that harvest estimates present a challenge in assessing populations and meeting the requirements under the Rafeedie Decision. However, allowing reports before the season closes will invalidate the statistical methods used to estimate recreational harvest and create more challenges at this time than it will solve. The second issue recognizes the challenges the Department is confronted with when implementing the Commission policy, and that the Department will continue its efforts to monitor all relevant factors that have an impact on the resource.

We appreciate the Auditor's commendation on the activities the Department has engaged in to protect and manage the Dungeness crab fishery and the successful efforts to begin assessing a \$10 penalty on recreational fishers who do not self-report their harvest. We believe this penalty will further improve the collection of data needed to manage the resource.

The Honorable Brian Sonntag
January 11, 2010
Page 2

Enclosed is the Department's response to the audit. We will track and report our progress on completing these tasks to the Governor.

Sincerely,

A handwritten signature in black ink, appearing to read "Philip Anderson", with a long horizontal flourish extending to the right.

Philip Anderson
Director

Enclosure

cc: Kimberly Dutton Cregeur
Office of the Governor, Accountability and Performance Office

**Official Response to the Performance Audit of the Department of Fish and Wildlife
Puget Sound Dungeness Crab Fishing
From the Department of Fish and Wildlife
Jan 8, 2010**

Issue 1: Harvest estimation challenges make it difficult for the Department to assess how well it is managing the fishery and meeting Rafeedie Decision requirements.

AGENCY RESPONSE:

The Department of Fish and Wildlife concurs that estimating harvest is challenging, however, we have taken numerous steps in the last 3 years to improve harvest estimates and plan to do the following actions:

Action Steps and Timeframe:

- Extend on-line reporting 15 day for a total reporting period of 30 days (previously 15 days) after both summer and winter recreational fisheries close. On-line reporting will be available September 1-30, 2010, for reporting catch from the summer fishery, and again from January 1-31, 2011, for reporting fall and winter catch. In-season reporting will continue to be available to any angler who wishes to send in their Catch Record Card (CRC) when they are finished fishing. The Department has concerns regarding the recommendation to allow recreational fishers to report in-season before they are finished fishing. That action would invalidate the statistical method used to estimate recreational harvest which is based on confirmed completed catch record card information.
- Add a courtesy post card for the winter season that alerts fishers to report their crab information. That postcard will be sent the week of December 27, 2010. The Department will continue to send anglers a courtesy post card the week of August 23, 2010 reminding them to report summer crab information.
- Apply the ten dollar penalty for failure to return a crab CRC or report on-line to both summer and winter CRCs. Final modifications to the Washington Integrated Licensing Database to track anglers who fail to report crab information and issue subsequent penalties are scheduled to be completed in February 2010.
- Reduced reliance on telephone survey data in the harvest estimation process. The phone survey will be eliminated when return rates of CRC's are adequate to ensure accurate harvest estimates. The department will need to identify an expansion factor for cards not returned and will need agreement from tribes to the revised catch accounting method. Timeline March 2011.
- Prioritize the processing and data entry of commercial crab fish tickets by December 2010.
- Expand and promote the web-based reporting system that was initiated in 2009 for daily in-season commercial crab reporting by October 2010.

Issue 2: The Department follows best practices and fulfills the intent of Commission policy for crab fishery management but conducts limited monitoring of other factors that can threaten the resource.

AGENCY RESPONSE:

The Department of Fish and Wildlife concurs with Issue 2 as presented and plans to expand and continue biological monitoring efforts in Hood Canal, including fertilization success rate surveys, and implementation of additional fishery conservation measures cooperatively with the treaty tribes. The department will continually work cooperatively with treaty tribes to co-manage fisheries to comply with Federal mandates and conduct orderly fisheries to reduce conflicts between treaty and non-treaty fishers. Also, the Department will continue to promote resource conservation outreach efforts through sport fishing organizations, WDFW enforcement contacts, public meetings and the department web site. The department will keep Monitoring population parameters through test fishing to collect population information to include.

- Pre-season shell condition
- Ratio of males/females
- Size frequency distribution
- Relative abundance

Action Steps and Timeframe:

- Protect the resource using the current fishery management strategy that restricts fishing by season, sex and size (known as 3S strategy) and will continue to incorporate into annual state and tribal harvest management agreements. Timeline April 2010.
- Review and evaluate additional monitoring methods that could improve our relative abundance assessment capabilities. Assessing population size is not a likely outcome of additional monitoring by December 2010.

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