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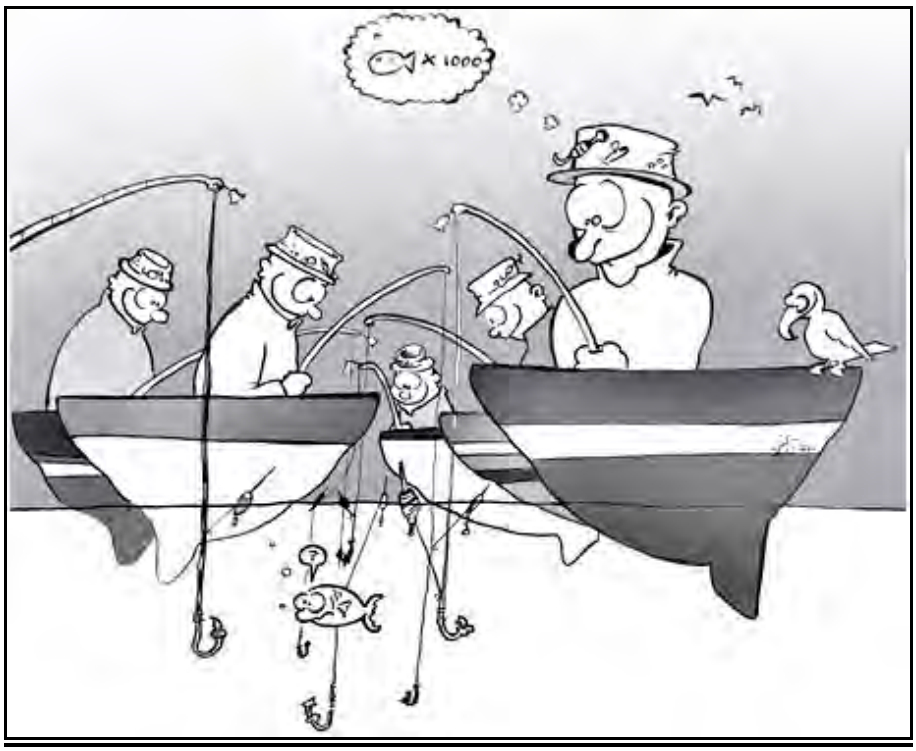

Why is BC's Fish Resource Slipping Through Cracks in the Regulatory System?

AUGUST 2010

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TABLE OF CONTENTS

RECOMMENDATIONS

- ***Identify fish stocks that need to be monitored.***
- ***Initiate legal reform to implement regulations, which legally mandate that all recreational fisherman purchase, hold, and complete a catch-card while fishing.***
- ***Instigate legal reform that mandates obligatory return of catch-cards by specified dates.***
- ***Educate the public about their role in maintaining a viable fishing resource.***
- ***Circulate communications that promote the importance of fish sustainability and the need for a catch-card report system.***
- ***Collect a tariff for the issuance of catch-cards, to provide funds for fishery management.***
- ***Collect an automatic surcharge on fishing licenses for those who have failed to return previous catch-cards.***
- ***Initiate interactive programs for younger generations to feel involved in telling "their" fishing stories and reporting their catch.***
- ***Set up an online system for catch-card data submission so that there are four methods of return: in-person, online, via mail or fax.***
- ***Develop rules setting out how catch-card fees will only be used to enhance fishery management, and make this information clear to the public.***
- ***Provide additional volunteer opportunities for anglers to get involved in resource management.***
- ***Maintain clear and consistent communication of how the funds generated through catch-cards is being used.***

“What could not be weighed, measured and priced had no existence.”

-Charles Dickens, Little Dorritt

A. EXECUTIVE SUMMARY

Keeping track of the number of fish caught by recreational fisherman is vital to good fisheries management. Such information can tell agencies:

- how many fish are being taken in certain areas;
- who is taking what fish, and in what area;
- where fish are plentiful and where they are scarce;
- where enhancement measures may be needed;
- where enhancement measures may not be needed;
- the fish species in specific areas; and
- the demographic of anglers in different areas, catching specific fish.

Yet little tracking is being done of fish caught by recreational fishermen in BC.

This report canvasses the monitoring systems for recreational fisherman in neighbouring jurisdictions and emphasizes the need for British Columbia to employ a catch-card reporting system with legally mandated return. The report describes:

- catch-card tracking systems;
- the requirements of such systems, and how they work;
- additional voluntary tracking systems;
- marketing initiatives to encourage a comprehension understanding of the importance of monitoring sports fishing harvest;
- compliance and enforcement mechanisms for making catch-card reporting systems effective;
- how funds from catch-card systems are used in other jurisdictions; and
- the effectiveness of different systems.

Legal reform is necessary to enforce a monitoring system in British Columbia. A catch-card strategy will not only create a valuable monitoring system; it will increase individual environmental accountability, build relationships and generate critical information about fish species, habitat and harvesting. Therefore, for each topic discussed, this report outlines a clear recommendation for reform.

> “Securing vibrant and robust fisheries resources is the cornerstone for sustaining recreational fisheries and increasing the growth of this sport and its associated economic activity.”
>
> - A Vision for Recreational Fisheries in British Columbia 2009 – 2013 (see footnote 2)

B. INTRODUCTION

Fish are Common Property and must be managed for the benefit of all Canadians.

The fishery resource belongs to the people of Canada and is managed by governments for the benefit of all Canadians. Research and monitoring of all fishing activities is essential to the sustainability of ecosystems. Comprehensive regulation of sports fishing will benefit all Canadians, including First Nations, recreational and commercial harvesters and other stakeholders.

Sport fishing occurs in both tidal and fresh waters throughout British Columbia. It is a major tourist attraction for both domestic and foreign tourism markets. According to *Environment Canada* the sector supports approximately 7,700 jobs and generates $288 million a year in Gross Domestic Product.[1]

Fisheries and Oceans Canada ("FOC") acknowledges that the foundation of sound management is accurate and adequate information.[2] It is clear that the importance of this information is increasing with the growing need to address conservation concerns through limiting and shaping British Columbia fisheries. More specifically, FOC is clear that their ability to provide future stable and predictable fishing opportunities will be enhanced by accurate and timely catch information.[3]

In 2004, the BC Ministry of Agriculture, Food and Fisheries' Seafood Sector and Tidal Waters Recreational Fishing Assessment identified that FOC has no formal system for estimating recreational harvest and effort (angler-days) on a coast-wide basis. This report demonstrated that FOC Pacific Region produces in-house estimates from a combination of creel surveys, logbooks, and observations by FOC staff. However, these estimates do not necessarily cover all areas of the coast, all months, and all types of angling; moreover, the results can vary widely in precision and accuracy.[4]

Fisheries and Oceans' primary recreational fish monitoring system is creel surveying complemented by aerial surveillance. At best creel surveying provides a summary estimate based on what is primarily *ad hoc* monitoring. Creel Surveying started in the 1980s in the Georgia Straight and is now also performed on the north end and coast of Vancouver Island. The area of creel surveying in

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[1] Ministry of Envrionment, Oceans and Marine Fisheris Branch. online: <http://www.env.gov.bc.ca/omfd/fishstats/sport/index.html>

[2] B.C. Ministry of Environment, Sports Fishing Advisory Board and Fisheries and Oceans Canada. "A Vision for Recreational Fisheries in British Columbia 2009-2013." (January 2010) at page 12.

[3] Ibid at page 10.

[4] GSGislason & Associates Ltd. for BC Ministry of Agriculture, Food and Fisheries Victoria, BC British Columbia Seafood Sector and Tidal Water Recreational Fishing: A Strengths, Weaknesses, Opportunities, and Threats Assessment, online: <http://www.agf.gov.bc.ca/fisheries/reports/SWOT/summary.pdf>

the Georgia Straight runs from Victoria to Campbell River and from Powell River to Vancouver. Creel Surveillance entails FOC employees setting up at boat launch sites and randomly asking to survey anglers on their catch. The voluntary survey involves asking what was caught and released as well as biological reporting of any catch that has been taken. This information provides FOC with an idea of the catch rate in certain areas and on certain days -- FOC refers to this as a catch per unit. This catch per unit effort is multiplied by an estimate of the number of boats in the given area on the specific day, which is gathered through aerial surveillance. The resulting information provides FOC with an estimate of the recreational fish taken in specific statistical areas and this is the extent of Sports fishing monitoring in British Columbia.[5]

In January 2010, Fisheries and Oceans Canada introduced a Pacific Fisheries Reform, aimed at improving biological sustainability and fishery management. The new policy directive, entitled *A Vision for Recreational Fisheries in British Columbia 2009 – 2013,* ("Pacific Fisheries Reform") provides a set of visionary goals and principles for strengthening conservation efforts through improving the monitoring, certainty and stability of all fisheries.

> *Recreational fishing has given Canadians a unique opportunity to connect with their natural environment. It has given them both an appreciation of the importance of maintaining a healthy ecosystem capable of supporting an abundance of marine life and a sense of the need to work responsibly with others to protect that ecosystem.*
>
> - "A Vision for Recreational Fisheries in British Columbia 2009–2013," pg 3

Premised with a forward-looking perspective for sustainable fisheries, the Pacific Fisheries Reform makes clear that there is a need for a resolute management strategy to permit the continued social, cultural and economic benefits of recreational fishing.[6] The next essential step towards realizing this goal is to implement practical long-term strategies for management. One practical tool would be a mandatory self-directed reporting system imposed on the recreational fishing community.

Today is the time for change. Fish stocks in British Columbia's oceans are at record lows and management strategies are essential to long term sustainability. Limited resources mean that it is critical that everyone is educated about their role in maintaining a viable and enjoyable fishing culture in the province. Currently, the formal system for monitoring recreational harvest -- creel surveys, aerial surveillance and FOC staff logbooks -- is below standard and at best provides only a limited estimation. What is needed is a comprehensive monitoring strategy, which involves a more interactive regulatory management initiative driven by citizen and government collaboration.

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[5] Information gathered from Ted Carter at Fisheries and Oceans Canada, Pacific Biological Station on July 16, 2010.
[6] B.C. Ministry of Environment, Sports Fishing Advisory Board and Fisheries and Oceans Canada. See note 2.

Post-season sport harvest estimates are a necessary component in evaluating future fishery management options. Information from fishing report cards in jurisdictions outside of British Columbia has been shown to provide tremendous insight into the status and ecology of specific fish populations.[7] Implementing a catch-card system in British Columbia is critical to a comprehensive management program since it is essential that the type, quantity, size and location of all recreational catch is known and recorded.

The fact is that current estimation monitoring of sport fishing in British Columbia results in very little being known about where, when and what fish are being taken. This is a cause for great concern. First Nations communities along with progressive members of the sports fishing community understand the importance of developing a comprehensive, long-term monitoring strategy and recognize that legal reform is needed. Research, organization, enforcement and collaboration are integral to protect our marine life and maintain a viable recreational fishing environment, and a comprehensive mandatory reporting system is necessary.

This project has canvassed several jurisdictions with long-established catch-card monitoring and reporting procedures which have proved essential to the management and sustainability of recreational fishing. The following report summarizes these regulatory systems, to demonstrate how the law could be reformed to create an effective mandatory monitoring system for BC recreational fishing.

C. CATCH-CARD INITIATIVES

***RECOMMENDATION*: Legislation should be enacted to establish a mandatory catch-card recording and reporting system for recreational fishers.**

Securing vibrant and robust fisheries resources is the cornerstone for sustaining recreational fisheries and its associated economic activity.

FOC has stated that conservation is a top priority and that to maintain sustainable marine resources it must adopt a precautionary approach and ecosystem-based management. However, effective ecosystem management requires accurate information on the ecosystem – including how many fish are being caught. To make post-season harvest estimates accurate, it is necessary that all anglers' harvests be represented.

> **Alaska Monitoring**: Alaska is BC's only neighbouring Pacific Coast jurisdiction that does not have a catch-card system in place. Instead a survey is sent to anglers annually to maintain an information database: http://www.sf.adfg.state.ak.us/statewide/FishingSurvey/

[7] See Appendix H for an example of the data collected in the Yukon.

Requiring fishers to provide this information is consistent with FOC's view that conservation and ecosystem management requires a shared conservation ethic by all stakeholders. [8]

How it Can be Done: A Summary of different Catch-Card Systems

American states began using catch-card reporting as early as the1950's, and today Washington, Oregon, California, and the Yukon are a few jurisdictions that have catch-card reporting systems in place for specified species.[9] These catch-cards are purchased with fishing licenses and all sports fisherman are required to have them on their person. Catch-cards oblige anglers to report the species, location, size and date using a ballpoint pen, as soon as a fish is taken from the water.

Different jurisdictions require the catch-card for different species. However, salmon is covered by all jurisdictions surveyed, and in the Yukon it is the only species with a catch-card requirement. The salmon species currently being monitored through catch-cards in these jurisdictions are: Chinook, Coho, Jack, Chum, Sockeye and Pink. Other species that require catch-card monitoring include: Steelhead, Sturgeon, Halibut, Dungeness crab, Spiny Lobster and Abalone.[10]

All jurisdictions with catch-card requirements oblige anglers to carry the catch card at all times when fishing in specific areas. In Washington, neglecting to have your catch card can result in citation that involves an $80 fine. Catch-card instructions are generally on the back of all catch cards and the return deadline and return procedure is listed both on the card and on the regulating board's website. Catch cards must be returned by the specified date even if no fish were caught and the general methods of returning the card include: mail-in, in-person drop off and fax transmission. Online reporting is increasingly being utilized. Replacement cards can be attained for an additional fee.

[8] [8] B.C. Ministry of Environment, Sports Fishing Advisory Board and Fisheries and Oceans Canada. See note 2.
[9] See Appendix A for further information about the separate strategies.
[10] See Appendix A for specific information

Looking to One's Neighbour: Yukon's Salmon Conservation Catch Card

In 1998, after public consultation and discussion with Yukon anglers, the Salmon Sub-Committee, an organization with the mandate to advise the Minister of Fisheries and Oceans and Yukon First Nations on "all matters related to salmon, their habitats and management," recommended implementation of a mandatory Salmon Conservation Catch Card for anglers wishing to fish for salmon.

In 1999, regulations came into effect that required all sport salmon anglers to purchase a Salmon Conservation Catch Card along with their Yukon Sport Fishing Licence. Anglers must have the catch card in their possession while angling for salmon, and must keep the card up to date with all required information. They must report this information by November 30 each year.

This initiative has potential for fish sustainability since it encourages sport fisherman to share in the responsibility and reap the benefits of a healthy salmon harvest. In addition, the Salmon Conservation Catch Card provides a cost-effective method of assessing the annual sport harvest of salmon.
http://www.yukonsalmoncommittee.ca/

Additional Monitoring: Cross-reference checking

In addition to catch reporting, in California anglers are required to affix tags to each Abalone and Sturgeon they catch and keep. Anglers must attach a tagging device that corresponds with their catch card so that catch-card enforcement is straightforward. The Sturgeon tags are serialized and are provided with each catch card to help enforce the annual bag limit by enabling law enforcement to cross-reference the tag with a particular card.[11]

Some jurisdictions have created additional voluntary tracking procedures, which illustrate the interactive and creative potential that can be provided through complementary monitoring initiatives. Some examples include:

Washington's Volunteer Tracking Procedure was implemented to increase angler monitoring participation and functions much like FOC's Creel surveillance. Washington Department of Fish and Wildlife staff are stationed at selective Chinook area boat ramps to ask anglers if they would be willing to fill out a Voluntary Tracking Report form while on their salmon fishing trip. Anglers are asked to record the date, number of anglers, target species, Catch Record Card Area, encountered species (if fish have been positively identified), including each Chinook or Coho salmon, whether the fish was kept or released, total length to the nearest 1/8th inch, and whether the fish was adipose fin-clipped (marked) or not clipped (unmarked).[12]

[11] California Department of Fish and Game http://www.dfg.ca.gov/licensing/fishing/sportfishingfaqs.html
[12] See Appendix D for a copy of the Voluntary Tracking Report

The return of these voluntary reports has been instrumental in providing critical information to maintain and increase salmon fishing opportunities.[13]

California's Fishing Passport "a new fishing incentive and angler recognition program designed to highlight and promote fishing throughout California" involves a fishing passport which lists 150 different species of popular fresh and saltwater finfish and shellfish.[14] The program encourages anglers to try and catch every species listed and participants receive a stamp in their passport for each successful catch. The program was established to encourage a greater understanding of California's fishing environment, to stimulate the sport fishing industry and to encourage high ethical fishing standard and conservation practices. For more information check out California's Fishing passport website at: www.dfg.ca.gov/fishingpassport.

California's Trip Track Logbook is part of California's fishing passport program. The Trip Track Logbook initiative allows a user to create their own real-time personal online fishing logbook. It provides a website that one can log into to record fishing trips, enter fish data (species, size, location, and numbers), and even post photos. The site allows the user to track progress and compared themselves to others. Trip information can also be emailed to friends.[15]

The data compiled is added to a statewide fishing database but personal information is kept private. This data resource provides biologists with summaries of catch data entered by anglers and the information is used to better manage California's fisheries.[16]

D. COMMUNICATION STRATEGIES

FOC's Pacific Fisheries Reform policy directive makes clear that collaborative effort between the government, fishing communities and other stakeholders is essential to overcome the barriers of the government's limited financial and physical capabilities.[17] In order to effectively accomplish this, it is necessary to encourage involvement and to highlight the importance of individual accountability. As FOC states, "Providing resource users an opportunity to play a greater role in the decision-making process and take greater responsibility for resource management and fishery monitoring data collection will increase their commitment to conservation and fisheries sustainability."[18]

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[13]The Washington Department of Fish and Wildlife website, online: < http://wdfw.wa.gov/fishing/vtr/>
[14] The California Department of Fish and Game website, online: <http://www.dfg.ca.gov/fishingpassport/program.asp>
[15]The California Department of Fish and Game website, online: <http://www.dfg.ca.gov/fishingpassport/triptracks.asp>
[16] The California Department of Fish and Game website, online: <http://ca.triptracks.com/>
[17] "B.C. Ministry of Environment, Sports Fishing Advisory Board and Fisheries and Oceans Canada, at page 10. See note 2.
[18] Ibid at page 7.

***RECOMMENDATION*: Marketing initiatives should be undertaken to encourage compliance with catch-card requirements. The following options should be considered:**

- *promoting catch-card return through the incentive of lotteries and contests;*
- *providing prizes for the first 50 returned catch cards each season;*
- *implementing interactive internet programs where anglers can log where they have been fishing and what they've caught so that they are able to compare themselves to other anglers in the area;*
- *encourage volunteer monitoring of fish through easily accessible information and logbooks;*
- *get kids involved by providing a system where they can up load photos, check out fishing areas and record the fish they've caught in different areas; and*
- *creating an interactive system where users can log in and see geographically where they caught their fish.*

Marketing Initiatives: Building Relationships and Accountability

American states understand the importance of individual accountability and routinely communicate with the public about the important role they can play in maintaining a viable fishing resource. Promotional strategies convey the important message that paying for and complying with catch-card requirements is actually an investment in the future of recreational fishing. The impact of this marketing is two-fold it encourages involvement and compliance but it also has the larger affect of inspiring individuals to play a more active role in environmental conservation in partnership with the government.

Highlighting the direct benefit monitoring and information gathering has on the recreational fishing community is important. This involves stressing the fact that increased understanding of fish populations in certain regions allows fishers to know the best spots to go fishing and may also result in increased catch limits in future years. Different jurisdictions do this in different ways: see the above description of the California passport promotion for an example.

A BC Initiative: Salmon Conservation Stamps

The Pacific Salmon Foundation is a non-profit, charitable organization in British Columbia, which is dedicated to conserving and rebuilding Pacific salmon population through implementing strategic efforts to get people and resources to work together and achieve common goals. One such effort is the Salmon Conservation Stamp, an effort developed in collaboration with Fisheries and Oceans Canada, which involves a stamp that must be purchased and affix to the license of any angler wishing to retain any species of Pacific salmon.

The Salmon Conservation Stamp costs $6.30 and a portion of the revenues generated from the sale of these stamps is used to fund salmon restoration and enhancement projects supported by the Foundation. www.psf.ca

Appealing to the Individual: Using Promotional Tools to Attract Participation
California, Oregon and Washington utilize marketing initiatives to encourage catch-card return. The primary strategy involves returned catch cards being used as ballots to win different prizes.

In Washington, last year's anglers were encouraged to return their catch cards so that they could be entered in a draw to win a fishing boat which had been donated by a local fishing supply store.[19]

The California example: Trout Unlimited of California offered a free guided steelhead fishing trip to anglers who utilize the online reporting system by January 31, 2010. The winner will be selected the first week of February through a random drawing of all anglers using the system. Mailed-in catch cards will also be accepted

E. ENFORCEMENT MECHANISMS

Approximately 300,000 licence holders participate in British Columbia's diverse fishing opportunities every year.[20] Because of this large number of resource users, the continued viability of recreational fishing is dependent on effective, mandatory enforcement of sustainability strategies.

RECOMMENDATION: Government should legislate enforcement mechanisms and establish other mechanisms to ensure return of catch-card records by recreational fisherman.

Voluntary to Mandatory: A Spectrum of Compliance Devices
In other jurisdictions, catch-card use is routinely enforced through spot checks in the field. However, the catch-card initiative is primarily a self-directed initiative that depends on individual responsibility. The general approach in the majority of jurisdictions canvassed involves: regular spot checks, reminders about catch-card return, community watch programs and consistently educating citizen about individual accountability.

It is noteworthy that all canvassed jurisdictions with a voluntary catch-card return policy reported a low rate of return. Initiatives that have been used to remedy this low return rate range from the use of promotional schemes to legal reform so that the return of catch cards is legally mandated.

a) Postcard Reminders: A Gentle Push with Limited Results
In Washington and Oregon, reminder postcards are sent out to a proportion of individuals who have purchased fishing licenses. These postcards remind individuals of the return date and submission method for catch cards. In both Washington and Oregon, the return of catch cards is not mandatory and the

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[19] Oregon Department of Fish and Wildlife, 2010 Oregon Sport Fishinig Regulations, at page 20. Online: <http://www.dfw.state.or.us/fish/docs/2010_Oregon_Sport_Fishing_Regs.pdf>
[20] B.C. Ministry of Environment, Sports Fishing Advisory Board and Fisheries and Oceans Canada. at page 8. See note 2.

reminder postcards are only sent to a proportion of licensed recreational fishermen, and only a portion of these individuals return the catch card. Using this approach, both Washington and Oregon see only a low rate of catch-card return. This demonstrates that even with the reminder postcards, the reports generated from catch-card returns are mainly estimates generated from limited information.[21]

b) Upping the Ante: Individual Fines for Non-Compliance

In 2009, Washington, implemented a $10 fine for not returning a Dungeness Crab Catch Record Card. [22] This $10 fine attaches to the anglers next Dungeness Crab catch-card purchase so if a catch card has not been returned then the following year the angler will have to pay an additional $10 fee. This is an interesting and perhaps not fully utilized compliance mechanism. According to the Washington Fish and Wildlife Board, the effectiveness of this strategy has yet to be seen since it is such a new strategy.[23]

c) Setting an Example: California's Legally Mandated Catch-Card Return

The low rate of voluntary catch-card returns creates a powerful argument for making return of cards mandatory. Making the return of catch cards obligatory can be explained to the public by reaffirming the necessity of wildlife management and educating citizens about individual responsibility.

For example, in 2002, California responded to the consistently low voluntary return rate of Steelhead catch cards by reforming legislation.[24] The Fish and Game Code 6900 now requires that Steelhead catch-cards must be returned. Today, anglers who do not return their Steelhead report card or report online by January 31 the following year of use, risk a misdemeanor charge.[25] The Department of Fish and Games explains to the public that this change is consistent with the goal to improve steelhead habitat and populations, which requires accurate and complete data from anglers.[26]

This example is interesting, as it demonstrates that providing legal sanctions for failure to return catch-cards may be necessary to improve efficacy of the program. It also illustrates California's commitment to acting in a transparent manner, which demonstrates that they are dedicated to educating resource user about their role in oceans management.

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[21] See Appendix F for Oregon's Sports Catch 1987 – 2007 Summary Table

[22] Washington Fish and Wildlife Board website, online:<http://wdfw.wa.gov/fish/shelfish/crabreg/crc.htm>

[23] Eric Kraig, Catch Record Card Data Manager, WA Dept. of Fish and Wildlife explained that the effectiveness of this strategy is yet to be seen.

[24] Califorina reports an average return rate of 8% online: <http://www.dfg.ca.gov/licensing/fishing/sportfishingfaqs.html>

[25] The California Department of Fish and Game website, online: <http://www.dfg.ca.gov/fish/Fishing/Monitoring/SHRC/SHRC_FAQs.asp#q12>

[26] Ibid.

Community Involvement: Civilian Watch Programs

All jurisdictions canvassed have a secret witness program that encourages the public to report any information that may lead to the arrest of poachers and polluters. In British Columbia, the Ministry of Environment provides a similar service: The Report All Poachers and Polluters (RAPP) Program, which is a toll-free tip line and web-based service to facilitate the reporting of known or suspected violations of fisheries, wildlife, or environmental protection laws – anonymously and without risk of confronting the offender.[27]

Jurisdictions south of the border promote this as an important control mechanism. However, while it may contribute to the important commitment of individual environmental stewardship, it may not be an effective initiative to encourage catch-card return.[28]

California's Creative monitoring practice: TripTracks Fishing Logbook

As explained above, the TripTracks Fishing Logbook allows a user to create their own real-time personal online fishing logbook, which will record each fishing trip and all fish data. This site will allow the user to track their progress and post photographs, and at the same time valuable information is being collected in an interactive and encouraging manner. This promotional strategy stimulates data collection and encourages a relationship between the Department of Fish and Wildlife and individual anglers who are brought into the process of management and monitoring. The communication strategies utilized speak directly to anglers about the importance of their participation through announcements that their fishing data will go to the Department to help fishery biologists better monitor and manage California's fisheries. *http://ca.triptracks.com/*

F. THE USE OF FUNDS FROM CATCH CARDS

RECOMMENDATION: Funds raised through catch-cards initiatives should be dedicated to enhancement of the fishing resource being monitored.

The roles and responsibilities of different participants in the management of fisheries must be clearly identified and the mechanisms for funding must be communicated to the public. The rights of future generations to similar or improved resources are a responsibility of both government and resource user. Contributions to the cost associated with ensuring such benefits are also necessary.

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[27] See British Columbia Ministry of Environment, Compliance Division, Conservation Officer Service, online: <http://www.env.gov.bc.ca/cos/rapp/rapp.html>

[28] See Washington Department of Fish & Wildlife, Enforcement website, online: http://wdfw.wa.gov/enforcement/reporting_violations.html & Oregon State Police – Fish and Wildlife Division website, online:<http://www.oregon.gov/OSP/FW/f_w_tip.shtml>

Transparency: Seeing where the money goes

In light of limited public funding and resources available for managing fisheries, FOC has been clear that resource users must share the responsibility for conservation.[29] Funds accumulated from a catch-card reporting system could be used to finance resource management research and strategies, and also help with initiatives that educate and encourage individual involvement in environmental sustainability.

In addition to communicating and educating the public about their necessary role in environmental sustainability, jurisdictions south of the border demonstrated a clear commitment to informing the public about the use of funds generated from licenses and catch cards. This provides an important rationale to anglers who may be opposed to the added cost.

Demonstrating to the public that the use of accumulated funds is going directly to sustainability efforts will encourage resource users to feel that they are not just paying a higher fee, they are also contributing to conservation efforts. However, note that thus far the resources accumulated through catch-card purchases have been minimal in the jurisdictions canvassed.

In California, regulations specify that revenue received from species-specific catch cards may only be spent on monitoring, restoring and enhancing the particular species. This is the case for Steelhead catch-card revenue, which is typical for projects such as: assessing angler harvest, restoring spawning and rearing habitat, securing adequate flows, and removing barriers to migration.[30] See Appendix G for further details on the funds generated from sport fishing in California.

In Washington, the funds generated by sports fishing licenses are funneled back into department services. Between July 1, 2001, and June 30, 2002, the Washington State Department of Fish and Wildlife collected $31,302,327 from the sale of permits, licenses and fees and this funded 33% of the department's services and programs.[31]

Forward-Thinking: Use of catch card funds in the Yukon

In the Yukon, the Salmon Sub-Committee's original vision was that revenues in excess of operating costs would be used to fund salmon management and enhancement programs that are not already being funded by the federal government;[32] for example, a youth contest for responsible fishing. [33] However,

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[29] B.C. Ministry of Environment, Sports Fishing Advisory Board and Fisheries and Oceans Canada. at page 10.See note 2.

[30] California Fish and Wildlife Board website, online <http://www.dfg.ca.gov/fish/Fishing/Monitoring/SHRC/SHRC_FAQs.asp#q2>

[31] Washington State Department of Fish and Wildlife website, online: <https://fishhunt.dfw.wa.gov/wdfw/faqs_general.html#Gene230>

[32] The Salmon Sub-Committee website, online: <http://www.yukonsalmoncommittee.ca/regulations.shtml>

[33] The Salmon Sub-Committee website, online: <http://www.yukonsalmoncommittee.ca/accomplishments.shtml>

the Salmon Catch Card has never generated an excess of funds and after an audit by FOC, the funds generated from sales of Salmon Catch Cards have been funneled into the General Revenue Fund.

G. EFFECTIVENESS

***RECOMMENDATION:* Legal reform is necessary to fully realize the potential gains of data compiled through angler reporting.**

The tracking of recreational fish harvest provides a fuller picture of the habitat and life span of local fish stocks and identifies where enhancement measurements may be needed. It is clear that British Columbia's neighbouring jurisdictions are actively monitoring recreational fishing and although the effectiveness of these monitoring strategies varies, the important fact is that critical data is being compiled so that it can be used in various ways.

The reports generated from voluntarily returned catch cards provide an important representation of the fish taken in different areas and at different times. This data is generally used to create an estimate of the total harvest taken at various locations and times. Clearly, this estimate does not provide a complete depiction of recreational harvesting; however, a monitoring system with a voluntary catch-card return policy is still useful. The process of catch-card reporting instills a sense of responsibility on individual fisherman, so that they are actively aware of the role they are playing as resource users and as management agents. Additionally, the data generated can be used to gain a better depiction of recreational fishing activities and demographics, which may prove useful for recreational fishing industry and marketing. The Yukon's Salmon Card Report, attached as Appendix H demonstrates the potential value of this sort of data.

Compliance is key to the effectiveness of any monitoring system. The effectiveness of California's legally mandated catch-card return demonstrates that legal reform can play a significant role in the success of data generating strategies. In addition, legally mandated monitoring strategies send a strong message to fisherman about personal accountability and the partnership necessary to sustain a viable and healthy fishing resource.

It is clear that British Columbia's neighbouring jurisdictions are actively monitoring recreational fishing and the effectiveness of these monitoring strategies result in data that may be used in different ways.

Catch-card reporting may also generate funds both through the purchase cost and the funds raised through payment of fines for non-return of catch-cards. The suggested law reform is consistent with FOC policies and objectives. FOC is clear that the interests of future generations should be taken into account by government and resource users. They point out that recreational fishermen

benefit directly from a healthy resource and must be encouraged to partner with the government and other resource users to manage and protect this important resource[34]

Catch Card Demographics: An Anglers' Profile

In the Yukon, data from Salmon Catch Cards has been used to generate important records on the demographics of recreational fisherman. In December of 2002, the data compiled from 1999-2001 catch cards was used to outline information such as: anglers profile, gear selectivity by sex, age distribution of anglers and territory of anglers. This report is attached as Appendix C and illustrates the huge potential catch-card reporting information can have on understanding the recreational fishing community. See Appendix C for further details.
www.yukonsalmoncommittee.ca/publications.shtml#catchcard

H. SOLUTIONS

One possible reform proposal is to develop a catch-card monitoring system, similar to California's steelhead system, so that the purchase of a license would require the purchase of a catch-card with an additional tariff that would be used for further fisheries management. There could be similar legal sanctions for not reporting. Additionally, interactive catch-card reporting procedures could be developed to increase involvement and understanding of the role resource user's can play in fish conservation.

This combination of legally mandated and voluntary programs may prove the most successful in remedying some of the effects of unregulated recreational fish harvesting while encouraging collective conservation involvement between the public and FOC.

Such a focused long-term initiative to monitor recreational fishing, increase funding for research and management and help nurture sustainable fish stocks could be an important step in building a relationships between First Nations communities and the Sports Fish Advisory Board.

All Hands on Deck: A Closer Look at the Yukon's Efforts

The Salmon Sub-Committee (SSC) is a unique multi-party non-representative public advisory body, able to make recommendations to the Minister of Fisheries. Prior to 1999, information about Yukon's salmon sports fishery was largely unreliable and incomplete. The SCC realized the importance of this information and recommended the introduction of the Salmon Conservation Catch Card.

[34] B.C. Ministry of Environment, Sports Fishing Advisory Board and Fisheries and Oceans Canada at page 8. See note 2.

Today, anglers in the Yukon must purchase a Salmon Catch Card with their fishing license and there is a legal obligation to return the card. Implementing the catch card has not been without its problem both in terms of enforcement and purchase cost, but the SSC has been committed to the project and it remains in effect today.

Although, the return of the Salmon Catch Card is legally mandated, today there is no penalty for non-return. Originally, an angler who did not return their catch card would be ineligible to receive a salmon fishing license in consequent years.

This penalty caused practical problems since it necessitated that vendors be aware of who had and had not returned their catch-cards. This logistical problem gave rise to the even great privacy issue surrounding disclosure of personal information.

Similarly, the SSC's original vision saw revenues in excess of operating costs being used to fund salmon management and enhancement programs that are not already being funded by the federal government. After an audit by FOC, the SSC was told that they did not have the authority to charge the purchase fee and that all funds generated would go directly to the General Revenue Fund. The SSC felt that removing the purchase cost would lessen the entire initiative so a cost is still being charged.[35]

I. CONCLUSION

The conservation activities that are required to manage healthy fish stocks and sustainable fisheries are multi-faceted and challenging. In January 2010, FOC voiced a commitment to improving biological sustainability and fishery management, with their Pacific Fisheries Reform. The new policy directive makes clear that there is an immediate need for strategic development of systems to strengthen monitoring and conservation efforts. Clearly, the essential next step is to implement a comprehensive monitoring procedure, which will generate the information needed to guide the policy and actions necessary to achieve a stable and sustainable fishery.

A catch-card reporting system could have significant long-term benefit for conservation and management, and also for the British Columbia recreational fishing industry. It could strengthen the relationship between resource user, and also between the recreational fishing community and the government.

It is certainly consistent with FOC policy. The FOC makes clear in their 2010 policy directive that a guiding principle for action today is that:

> *Providing resource users an opportunity to play a greater role in the decision-making process and take greater responsibility for resource management and fishery monitoring data collection, will*

[35] As per Steve Smith, Regional Negotiator, Treaties and Aboriginal Policy Directorate, Fisheries and Oceans Canada, via telephone on July 19, 2010

increase their commitment to conservation and fisheries sustainability.[36]

British Columbia's monitoring system is half a century behind places like Washington's and it is time that we implement an active, cost-effective strategy so that we can begin to fully understand the effects of recreational fish harvesting, and so that the sustainability of our oceans is no longer slipping through the cracks.

[36] B.C. Ministry of Environment, Sports Fishing Advisory Board and Fisheries and Oceans Canada at page 7. See note 2.

APPENDIX

A. Spreadsheet of recreational fish monitoring systems in different jurisdictions

B. Example of a Washington Catch-card

C. Yukon – Salmon Conservation Catch-card Online Submission Form

D. Washington's Voluntary Angler Report

E. Instruction for Completing Catch-card Requirements in Washington

F. Oregon's 1987 – 2007 Catch-card Summary Table

G. California Summary of Annual Revenue for Sport Fishing

H. Yukon report of statistical data compiled from catch-card reporting

APPENDIX A: Catch-card Summary

CALIFORNIA

Species/Catch-card	Cost	Data Collected
Abalone	$19.95	Date, time and fishing location
Sturgeon	Free	Date, location and length of the fish with corresponding tag number
North Coast Salmon	$5.50	Date and location
Steelhead	$6.30	Date and location
Spiny Lobster	$8.40	Prior to beginning fishing: the date, location and gear code

- Catch-cards must be returned by January 31 of the following year

OREGON - species codes are used to on generic catch-cards whether caught in a stream or an ocean port.

Species	Data Collected
Chinook: Fin-Clipped & Unmarked	Code & date
Coho Fin-Clipped/Unmarked	Code & date
Jack Salmon	Code & date
Steelhead	Code & date
Sturgeon	Code, date & length in inches
Halibut	Code, date & length in inches

- Oregon has two generic catch-cards:
    1) Combined Angling Harvest Tag: $17.00
    2) Juvenile Angling Harvest Tag: $8.50

WASHINGTON

Species/Catch-card	Cost	Data Collected
Salmon	Free	The place, date and species and whether or not the fish was marked
Sturgeon	Free	The place, date and species and the length of the fish
Halibut	Free	The place, date, species and vessel type
Dungeness Crab	Free	The place, date, fishery type and a tally mark for each crab retained. The tally must then be totaled for each fishery type

- Generally cards are valid until all spaces for reporting are full, but Sturgeon cards that are full, continue to be valid for catch and release.
- Catch-cards are must be returned by April 30 of the following year

YUKON

Species	Catch-Cards	Cost	Data Collected
Salmon	Salmon Conservation Card - Yukon resident aged16- 64	$10	Date, location, species, sex, presence of tags, presence of adipose fin and type of gear used
	Salmon Conservation Card – Canadian resident over 16	$20	Date, location, species, sex, presence of tags, presence of adipose fin and type of gear used
	Salmon Conservation Card – Non-resident over 16	$50	Date, location, species, sex, presence of tags, presence of adipose fin and type of gear used
	Salmon Conservation Card - Minors	Free	Date, location, species, sex, presence of tags, presence of adipose fin and type of gear used
	Salmon Conservation Card - Yukon resident over 65	Free	Date, location, species, sex, presence of tags, presence of adipose fin and type of gear used

- All Salmon Conservation Catch-cards are valid from April 1 – November 30
- Cards must be returned by November 30 by: drop-off at the Whitehorse FOC office, Mail-in, fax or online

APPENDIX B: WASHINGTON - Puget Sound Dungeness Crab: CATCH RECORD CARDS

08 DOC#: 56908506587124

SUMMER Puget Sound Dungeness Crab Catch Record Card
Valid through September 1, 2008

Name: WLD ID:
City/State of Residence
Dealer ID: Issue Date

Report Crab Catch

Option 1

Return card to address below by September 15, 2008

Return To: WDFW Fish / CRC Office
600 Capitol Way N
Olympia WA 98501-1091

Option 2

Report catch card information on the Internet between September 2-15, 2008, at www.fishhunt.dfw.wa.gov

NOTE: Card must be returned or information reported on the Internet even if no crab were kept

Season opening dates, closures, and restrictions are available in the Sport Fishing Rules pamphlet, on the toll-free shellfish rule change hotline 1-(866) 880-5431, and on the Internet at www.wdfw.wa.gov

Use ballpoint pen only. Do not use a felt tipped pen

No more than 5 legal-sized male Dungeness crab can be kept on each open day.

Immediately upon retaining a Dungeness crab, you are required to record your catch by completing the record below. Failure to do so is a violation of WAC 220-52-175.

SUMMER CATCH CARD
08 DOC#: 56908506587124

	Month	Day	Marine Area	Check (✓) one box for each crab kept					Crab Kept Per Day
EX	7	5	8-2	✓	✓	✓	✓	✓	5
EX	8	7	12	✓	✓	✓			3

- Immediately after catching a Dungeness crab and before fishing again, record in ink: marine catch area, catch date (month and day), and one tally mark for **each crab kept**. Use a separate line for each marine area in which you fish.
- At the end of each fishing trip, or prior to moving to a new catch area, enter the total number of tally marks in the "Total Crab Kept" column. In this column, the total number of crab kept for that marine catch area and day should be recorded.
- Only record your catch on your CRC. Catch from other individuals fishing with you should be recorded on their CRCs.
- Return your Dungeness crab CRC or report your catch on the Internet by:
  September 15th, for the summer fishery, and **January 15th**, for the winter fishery

Return your CRC **whether you crabbed or not**. Failure to turn in your card could cause inaccuracies in the catch estimates. The CRC may be returned to any WDFW regional office.

Please check Fishing Regulation page for regulation changes or Shellfish Hotline 1-866-880-5431 (360-796-3215 locally)

APPENDIX C: Yukon – Salmon Conservation Catch-card Online Submission Form

Yukon/Transboundary area - Salmon Conservation Catch Card

If you have more than 20 catches to report, please submit this form, then click on the link on the confirmation page to submit more catches.

Full Name:

Catch Card #:

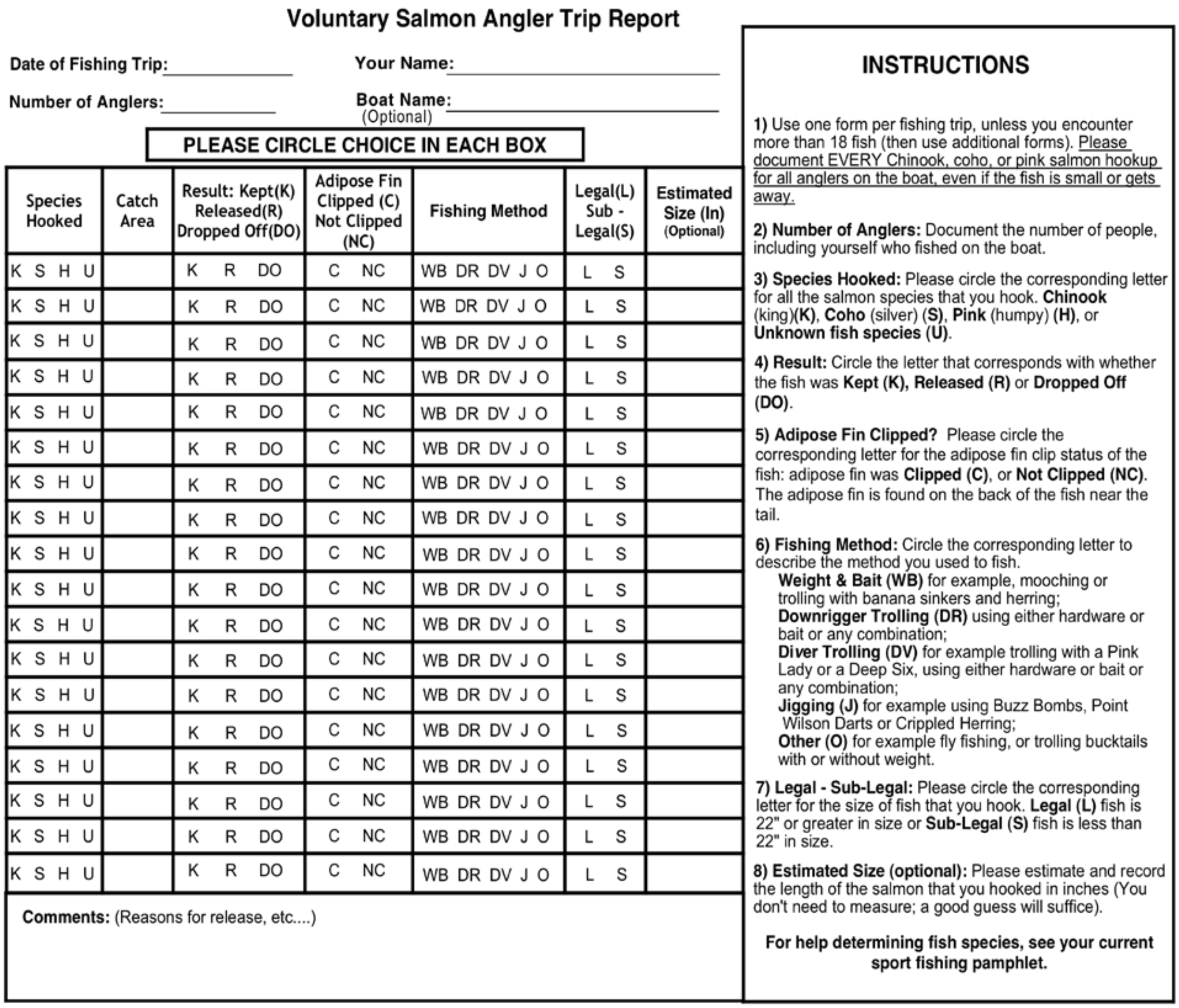
Valid for the year:

Check here if you did not angle for salmon this year:

Total number of days you fished for salmon this year:

DATE (Month/Day)	LOCATION CODE (See map)	FISHING RESULTS	SPECIES TYPE	SEX	TAG	ADIPOSE FIN MISSING	GEAR TYPE
1							
2							
3							
4							
5							
6							
7							

APPENDIX D: Washington’s Voluntary Angler Report



Voluntary Salmon Angler Trip Report

Date of Fishing Trip:____________ **Your Name:**________________________

Number of Anglers:___________ **Boat Name:**________________________
(Optional)

PLEASE CIRCLE CHOICE IN EACH BOX

Species Hooked	Catch Area	Result: Kept(K) Released(R) Dropped Off(DO)	Adipose Fin Clipped (C) Not Clipped (NC)	Fishing Method	Legal(L) Sub - Legal(S)	Estimated Size (In) (Optional)
K S H U		K R DO	C NC	WB DR DV J O	L S	
K S H U		K R DO	C NC	WB DR DV J O	L S	
K S H U		K R DO	C NC	WB DR DV J O	L S	
K S H U		K R DO	C NC	WB DR DV J O	L S	
K S H U		K R DO	C NC	WB DR DV J O	L S	
K S H U		K R DO	C NC	WB DR DV J O	L S	
K S H U		K R DO	C NC	WB DR DV J O	L S	
K S H U		K R DO	C NC	WB DR DV J O	L S	
K S H U		K R DO	C NC	WB DR DV J O	L S	
K S H U		K R DO	C NC	WB DR DV J O	L S	
K S H U		K R DO	C NC	WB DR DV J O	L S	
K S H U		K R DO	C NC	WB DR DV J O	L S	
K S H U		K R DO	C NC	WB DR DV J O	L S	
K S H U		K R DO	C NC	WB DR DV J O	L S	
K S H U		K R DO	C NC	WB DR DV J O	L S	
K S H U		K R DO	C NC	WB DR DV J O	L S	
K S H U		K R DO	C NC	WB DR DV J O	L S	
K S H U		K R DO	C NC	WB DR DV J O	L S	

Comments: (Reasons for release, etc....)

INSTRUCTIONS

1) Use one form per fishing trip, unless you encounter more than 18 fish (then use additional forms). Please document EVERY Chinook, coho, or pink salmon hookup for all anglers on the boat, even if the fish is small or gets away.

2) Number of Anglers: Document the number of people, including yourself who fished on the boat.

3) Species Hooked: Please circle the corresponding letter for all the salmon species that you hook. **Chinook** (king)**(K)**, **Coho** (silver) (**S**), **Pink** (humpy) **(H)**, or **Unknown fish species (U)**.

4) Result: Circle the letter that corresponds with whether the fish was **Kept (K), Released (R)** or **Dropped Off (DO)**.

5) Adipose Fin Clipped? Please circle the corresponding letter for the adipose fin clip status of the fish: adipose fin was **Clipped (C)**, or **Not Clipped (NC)**. The adipose fin is found on the back of the fish near the tail.

6) Fishing Method: Circle the corresponding letter to describe the method you used to fish.
Weight & Bait (WB) for example, mooching or trolling with banana sinkers and herring;
Downrigger Trolling (DR) using either hardware or bait or any combination;
Diver Trolling (DV) for example trolling with a Pink Lady or a Deep Six, using either hardware or bait or any combination;
Jigging (J) for example using Buzz Bombs, Point Wilson Darts or Crippled Herring;
Other (O) for example fly fishing, or trolling bucktails with or without weight.

7) Legal - Sub-Legal: Please circle the corresponding letter for the size of fish that you hook. **Legal (L)** fish is 22" or greater in size or **Sub-Legal (S)** fish is less than 22" in size.

8) Estimated Size (optional): Please estimate and record the length of the salmon that you hooked in inches (You don't need to measure; a good guess will suffice).

For help determining fish species, see your current sport fishing pamphlet.

This trip report form will assist WDFW in the management of its selective fisheries by providing data on species encountered, fishing methods used, mark status and sizes of salmon that are encountered. If you have any questions, please call Mark Baltzell at (360) 902-2807.

THANK-YOU for Participating!
Before mailing, please fold so that the address shows on the front. No postage is necessary.

Fold here

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 240 OLYMPIA WA

POSTAGE WILL BE PAID BY ADDRESSEE

DEPARTMENT OF FISH AND WILDLIFE
600 CAPITOL WAY N
OLYMPIA WA 98501-9960

Fold here

Source: wdfw.**wa**.gov/fishing/vtr/vtr_form.pdf

APPENDIX E: Instruction for Completing Catch-card Requirements in Washington

Catch Record Cards

The Catch Record Card is an important management tool for estimating the recreational catch of sturgeon, steelhead, salmon, halibut, and Puget Sound Dungeness crab. A catch record card must be in your possession to fish for these species. **Washington Administrative Code (WAC 220-56-175, WAC 220-69-236) requires all kept sturgeon, steelhead, salmon, halibut, and Puget Sound Dungeness Crab to be recorded on your Catch Record Card, and requires all anglers to return their Catch Record Card by April 30, or for Dungeness crab by the date indicated on the card, even if nothing is caught or you did not fish.** Please use the instruction sheet issued with your card. Please return Catch Record Cards to: WDFW CRC UNIT, 600 Capitol Way N, Olympia WA 98501-1091. Use examples below to help complete card correctly.

FOR CATCH AREA CODES, REFER TO THE NEXT PAGE OR THE INSTRUCTION SHEET RECEIVED WITH YOUR CATCH RECORD CARD, OR REFER TO THE WESTSIDE AND EASTSIDE RIVERS SPECIAL RULES SECTIONS WITHIN THIS PAMPHLET

IMMEDIATELY AFTER RETAINING THE SPECIES BELOW AND BEFORE FISHING AGAIN, RECORD CATCH INFORMATION IN INK.

STURGEON

Did you fish for Sturgeon? X Yes ___No

Do Not Record Released Sturgeon

A 50" white sturgeon kept from Lower Columbia Buoy 10 section on June 15 with a vent behind pelvic fins, would be entered as:

CATCH AREA CODE	MO (1-12)	DAY (1-31)	SPECIES CODE	FORK LENGTH
519	6	15	W	50

Species Codes:

W = White Sturgeon (barbels near snout tip, vent behind pelvic fins)

GREEN STURGEON MAY NOT BE RETAINED

Green Sturgeon (barbels near mouth, vent between pelvic fins)

Immediately after retaining a white sturgeon and before fishing again, record catch information in ink. The annual limit is 5 fish, even if an angler possesses both a Washington and an Oregon license and catch record card. Anglers may continue to catch and release after retaining 5 white sturgeon in waters of the Columbia River forming the Oregon/Washington boundary.

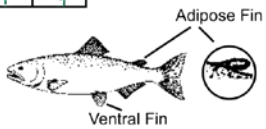
STEELHEAD

Did you fish for Steelhead? X Yes ___No

One Wild Steelhead Allowed On This Card

		CATCH AREA CODE	MO (1-12)	DAY (1-31)
	30	830	12	2
Record Wild Fish Here only:	1	398	1	9

A **hatchery** steelhead kept from the Skagit River on Dec. 2 and a **wild** steelhead kept from the Bogachiel River on Jan. 9 would be entered as above.



Hatchery Fish (adipose or ventral fin clipped and a healed scar at the location of the clipped fin)

Wild Fish (adipose and ventral fins intact)

Immediately after retaining a steelhead and before fishing again, record catch information in ink. Additional Catch Cards are available for hatchery steelhead only.

HALIBUT

Did you fish for Halibut? X Yes ___No

Do Not Record Released Halibut

A halibut kept from Area 5 on May 28 caught from a private boat would be entered as:

CATCH AREA CODE	MO (1-12)	DAY (1-31)	CHARTER PRIVATE*
5	5	28	C : (P)

Circle boat type: C= Charter P= Private

All halibut kept are required to be recorded on your catch record card in ALL MARINE AREAS. Immediately after retaining a halibut and before fishing again, record catch information in ink.

SALMON

Did you fish for Salmon? X Yes ___No

Do Not Record Released Salmon

A 19" Chinook salmon kept from the Cowlitz River below Mayfield Dam on Sept. 15 with clipped adipose fin would be entered as:

CATCH AREA CODE	MO (1-12)	DAY (1-31)	Check One Box Per Line For Species Kept							CLIP TYPE
			CHIN	COHO	CHUM	PINK	SOCK	CHIN JACK	COHO JACK	
561	9	15						√		(H) W

H = Hatchery (adipose fin clipped and a healed scar at the location of the clipped fin)

W = Wild (adipose fin intact)

Marine Areas and Adults in Freshwater

CHIN = Chinook/King
COHO = Coho/Silver
CHUM = Chum/Dog
PINK = Pink/Humpy
SOCK = Sockeye/Red

Jacks in Freshwater, Willapa Bay (area 2-1) and Grays Harbor (area 2-2).

CHIN JACK = King jacks or Chinook jacks (12 to less than 24 inches)

COHO JACK = Silver jacks or Coho jacks (12 to less than 20 inches)

Salmon caught under landlocked salmon rules should **not** be recorded.

Immediately after retaining a salmon and before fishing again, record catch information in ink.

DUNGENESS CRAB

Did you fish for Crab? X Yes ___No

Do Not Record Released Crab

Three male Dungeness crab kept from Hood Canal on July 16 would be entered as:

MARINE AREA	MONTH	DAY	CHECK (√) ONE BOX FOR EACH CRAB KEPT					CRAB KEPT PER DAY
12	7	16	√	√	√			3

When you purchase a Puget Sound Dungeness crab endorsement you will be issued a Catch Record Card for the summer reporting period which runs through Labor Day. Catch Record Cards for the winter period which begins the day after Labor Day are optional and are available at any time. All Puget Sound Dungeness crab kept are required to be recorded on your Catch Record Card immediately after capture and before fishing again. Record catch information in ink. Be sure to make a check mark for each crab kept. The check mark is used by field enforcement officers to ensure each crab kept is immediately recorded. At the end of the fishing trip, or prior to moving to a new marine area, enter the total number of check marks in the **CRAB KEPT PER DAY** column. The number should equal the number of checkmarks on that line.

A $10.00 penalty will be added to the cost of your next Puget Sound crab endorsement if you fail to either return your cards by mail or report your catch information on the Internet (http://fishunt.dfw.wa.gov) by the deadlines printed on the card.

REMINDER!

Return your Catch Record Cards by the date printed on the card "With or Without Catch"

Send to:
WDFW CRC Unit, 600 Capitol Way North, Olympia, WA 98501-1091

For more information regarding the purpose of the crab Catch Record Card, how the catch information is used, and the public's role in providing the necessary data, please visit our webpage at http://wdfw.wa.gov/fishing/shellfish/crab/crc.html.

16

http://wdfw.wa.gov/fishing/regulations/

APPENDIX F: Oregon's 1987 – 2007 Catch-card Summary Table

OREGON DEPARTMENT OF FISH AND WILDLIFE
FISH DIVISION

Oregon Salmon and Steelhead Catch Data, 1987-2007

All catch estimates from salmon-steelhead tag returns have been corrected for nonresponse bias, using the method described in "An Evaluation of the Punch Card Method of Estimating Salmon-Steelhead Sport Catch," by Ronald H. Hicks and Lyle D. Calvin, Oregon State University Agricultural Experiment Station, Technical Bulletin 81, November 1964. Fish caught by daily license holders is included in the catch estimates.

Table: Salmon-Steelhead Tag Return Data and Estimated Salmon and Steelhead Catch, 1987-2007

Year	Salmon-Steelhead Annual Tags Issued (a)	Percent Of Salmon-Steelhead Annual Tags Annual Tags Returned	Annual Salmon Catch	Annual Steelhead Catch	Annual Total Catch
1987	299,821	14.1	406,880	161,020	567,900
1988	312,331	18.38	499,398	174,106	673,504
1989	307,066	19.43	502,104	112,764	614,868
1990	301,512	23.68	380,541	142,336	522,877
1991	282,357	24.84	583,809	95,022	678,831
1992	250,969	21.97	299,350	122,687	422,037
1993	237,127	18.76	211,929	94,982	306,911
1994	176,009	23.75	91,825	71,040	162,865
1995	187,494	25.7	147,777	74,611	222,388
1996	184,900	24.84	151,955	79,438	231,393
1997	184,308	23.41	115,301	83,417	198,718
1998	173,624	21.13	93,049	64,193	157,242
1999	178,610	31.2	115,919	64,753	180,672
2000	211,313	21.9	160,520	63,399	223,919
2001	244,708	25.8	318,955	103,363	422,318
2002	259,188	26.6	267,858	119,086	386,944
2003	260,199	26.0	353,031	79,967	432,998
2004	255,590	23.7	311,538	94,818	406,356
2005	248,623	20.3	172,835	66,346	239,181
2006	240,882	20.7	141,989	94,049	236,038
2007	248,830	18.5	155,811	81,739	237550
Average (1987-07)	240,260	22.6	261,065	97,292	358,358

(a) Daily tags are not included.
* Preliminary figures.

Revised 6/22/09

This Chart was supplied by the Oregon Fish and Wildlife Board.

APPENDIX G: Summary of California's Sport Fishing Revenue

Sport Fishing

Sales Reported by License Year (Dollars)

As Of June 30, 2010

Licenses	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Resident Fishing	34,433,560	34,238,589	32,877,702	39,643,375	39,528,528	41,788,101	45,564,463	44,535,790	46,290,587	33,654,711
Lifetime Fishing	91,280	122,815	159,822	207,704	223,236	249,971	276,120	296,741	316,017	332,953
Non-Resident Fishing (I Yr.)	870,643	873,444	824,564	957,600	959,318	1,025,402	1,089,851	1,054,333	1,095,407	887,465
Non-Resident Fishing (I0 Day)	389,116	355,163	353,867	478,813	500,888	549,789	613,014	592,333	569,321	259,910
1-Day Sport Fishing	N/A	N/A	N/A	5,350,940	5,669,285	6,434,595	6,998,969	6,849,036	7,294,250	2,473,003
2-Day Sport Fishing	4,711,935	4,998,210	4,958,226	2,629,242	2,436,352	2,483,958	2,601,973	2,480,462	2,530,054	822,173
Reduced Fee Sport Fishing	82,607	82,588	58,093	59,310	61,089	62,557	59,955	60,294	65,425	60,850
Discontinued Items:										
Resident Upgrade Stamp	186,737	203,748	177,372	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Resident Pacific Ocean Only	2,521,118	2,661,214	2,466,457	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pacific Ocean (1 Day)	593,094	598,544	523,588	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pacific Ocean/Enhancement (1 Day)	1,496,541	1,504,494	1,389,650	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sub Total - Sportfishing Licenses	*45,376,629*	*45,638,809*	*43,789,339*	*49,326,984*	*49,378,696*	*52,594,372*	*57,204,344*	*55,868,989*	*58,161,060*	*38,491,064*
Duplicate:										
Duplicate Sport Fishing License	110,245	108,015	102,690	106,150	103,149	121,493	128,792	114,337	112,149	49,499
Stamps:										
Second Rod Sport Fish Stamp	1,609,047	1,706,366	1,716,763	1,678,660	1,742,900	1,908,550	2,149,697	2,538,694	2,791,579	2,435,153
Lifetime Second Rod Sport Fish Stamp	Not Avail.	Not Avail.	Not Avail.	31,718	33,661	37,056	40,330	42,994	45,149	46,537
Spiny Lobster Report Card	N/A	N/A	N/A	N/A	N/A	N/A	N/A	206,040	258,872	99,216
Sport Abalone Report Card	490,284	430,284	441,228	546,090	534,467	598,256	676,413	663,974	667,013	511,917
North Coast Salmon Report Card	N/A	N/A	N/A	N/A	N/A	N/A	N/A	62,915	81,695	27,657
Lifetime North Coast Salmon Report Card	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4,649	4,890	5,033
Steelhead Report Card	166,550	181,168	209,089	259,135	235,455	212,930	275,891	258,716	263,322	197,490
Lifetime Steelhead Report Card	Not Avail.	Not Avail.	Not Avail.	12,863	13,646	15,023	16,350	17,434	18,353	18,874
Ocean Enhancement	683,693	682,810	629,945	949,925	909,790	1,013,726	1,081,760	1,092,288	1,128,285	823,901
Lifetime Ocean Enhancement	Not Avail.	Not Avail.	Not Avail.	8,573	9,098	10,015	10,900	11,620	12,203	12,578
Discontinued Items:										
Bay-Delta Enhancement Stamp	N/A	N/A	N/A	1,607,430	1,525,400	1,540,198	1,688,748	1,602,433	1,682,910	N/A
Lifetime Bay-Delta Enhancement Stamp	N/A	N/A	N/A	12,002	12,737	14,021	15,260	16,268	17,084	N/A
Sport Salmon Punch Card	40,862	42,234	41,467	37,448	44,882	37,382	48,053	N/A	N/A	N/A
Lifetime Sport Salmon Punch Card	Not Avail.	Not Avail.	Not Avail.	3,429	3,639	4,006	4,360	N/A	N/A	N/A
Striped Bass Stamp	1,058,124	1,057,532	1,069,562	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sub Total - Sportfishing Stamps	*4,048,559*	*4,100,394*	*4,108,053*	*5,147,271*	*5,065,674*	*5,391,161*	*6,007,761*	*6,518,025*	*6,971,354*	*4,178,355*
TOTAL SPORT FISHING	**$ 49,535,433**	**$ 49,847,218**	**$ 48,000,082**	**$ 54,580,405**	**$ 54,547,518**	**$ 58,107,026**	**$ 63,340,897**	**$ 62,501,350**	**$ 65,244,562**	**$ 42,718,917**

Footnote:

North Coast Salmon Report Card and Lifetime North Coast Salmon Report Card - In 2008 and 2009 was good in Klamath & Trinity Rivers only. In 2010 was good in Klamath, Trinity & Smith Rivers only.

Source:
http://www.dfg.ca.gov/licensing/statistics/statistics.html#Sport%20Fishing%20Licenses

APPENDIX H: A Summary of data compiled from Catch-cards in the Yukon

Yukon Salmon Catch Card Analysis, 1999 – 2001, Public Report

December, 2002

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Table of Contents

List of Tables

Yukon Salmon Catch Card Analysis, 1999 – 2001, Public Report
Prepared by Michael Dehn

Over the three years 1999-2001, just short of 2000 salmon conservation catch cards were issued to Yukon residents, other residents of Canada, and non-residents (see table below). By far the largest number of cards was issued in 1999. There were closures or partial closures on the Yukon River chinook and chum fisheries in 2000 and 2001 and Tatshenshini sockeye in 2000. Although the daily catch and possession limits for Tatshenshini coho were increased in October, 2001, the number of catch cards issued was still well below the number in 1999. However the number of salmon landed did not decrease nearly as much as the number of anglers.

Over 70% of the catch cards have been returned and this gives us a good picture of the fishery. Yukon residents returned a good percentage of their cards in 1999 and 2000, but there may be some cause for concern because the rate fell off in 2001.

Anglers by Country				
	1999	2000	2001	Total
Canada	899	266	507	1672
Germany	42	17	23	82
Switzerland	25	31	25	81
USA	13	16	15	44
Austria	16	3	10	29
France	8		1	9
Spain	3	3		6
Other	5			5
Unspecified	3			3
Total	1014	336	581	1931

Angler Profile (1999-2001)
By far the largest number of sport fishers were residents of Canada, totaling 1672 (87%) over 1999-2001. Germany and Switzerland vie for second and third places, depending on the year, but at approximately 80 anglers each over the three year period, they each contributed less than 5% to the total number of anglers. Fishers from the U.S. and Austria formed the next largest groups. Other countries contributed minimally to the total number of salmon anglers in the Yukon.

American anglers, totaling only 44 over the three years, came in small numbers from many states. No particular region of the U.S. appears to predominate, although Alaska is notably low on the list given it's proximity to the Yukon. This is likely because of abundant alternate opportunities to fish for salmon in Alaskan coastal and inland waters. California contributed the most fishers, followed by Texas and New York.

Although not shown, the proportion of men and women fishing for salmon varied dramatically between Yukon residents, other Canadian residents, and foreign residents. Women typically comprised 20-25% of Yukon salmon anglers, but around 20% of other Canadians, and typically less than 10% of non-Canadian anglers.

Within the large group of Canadian residents, Yukon residents made up 74% of all anglers, a total of 1423 anglers over the period (see Table below). Whitehorse anglers accounted for 66% of all anglers and 89% of Yukon-resident anglers during this period. Other Canadian residents comprised the next largest group of anglers, substantially larger in every year than the number of European or American fishers.

Canadian Anglers by home Prov/Territory				
	1999	2000	2001	Total
Yukon	784	208	431	1423
Alberta	50	28	27	105
BC	32	14	23	69
Ontario	13	8	14	35
Saskachewan	6	2	4	12
Quebec	9	3	6	18
Other	5	3	2	10
Total	899	266	507	1672

The vast majority of Yukon sport salmon fishers reside in Whitehorse (see table below). In fact almost 90% of these anglers call Whitehorse home. The next largest contingents of sport fishers reside in Haines Junction and Dawson, but these each made up just over 2% of the total. A few residents from most other Yukon communities join the sport fishery.

Yukon Anglers by Community 1999-2000		
	Total	%
Whitehorse	1267	89.0%
Haines Junction	32	2.2%
Dawson City	30	2.1%
Faro	22	1.5%
Teslin	16	1.1%
Carmacks	15	1.1%
Mayo	14	1.0%
Carcross	9	0.6%
Tagish	4	0.3%
Ross River	3	0.2%
Watson Lake	3	0.2%
Other	8	0.6%
Total	1423	100.0%

The age distribution of anglers varied somewhat across the various jurisdictions (see table below). Yukoners tended to be weighted just slightly toward the younger end of the age spectrum with 35.3% younger than 30 years of age compared with the overall 32%. Conversely, there were relatively more people age 60-69 in the category 'Other Canadian residents' than overall. This was also the case with categories of foreign residents, particularly the U.S. It is noteworthy that for both German and Swiss residents, the age range 50-69 was strongly represented.

Age Distribution of Anglers 1999 - 2001						
Age	Yukon	Other Canada	Germany	Switzerland	USA	All Anglers
<20	16.6%	13.6%	7.5%	13.8%	15.9%	15.4%
20-29	18.7%	11.6%	12.5%	5.0%	9.1%	16.6%
30-39	24.7%	22.0%	30.0%	17.5%	4.5%	23.8%
40-49	23.7%	20.8%	20.0%	21.3%	34.1%	23.3%
50-59	11.7%	13.6%	21.3%	30.0%	11.4%	13.4%
60-69	2.9%	14.4%	8.8%	10.0%	20.5%	5.6%
70+	1.7%	4.0%	0.0%	2.5%	4.5%	2.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Anglers reported spending a total of three days to three and a half days fishing for salmon (below). The same approximate statement holds true for Canadian anglers, with Albertans fishing a bit longer on average (not shown). Within the Yukon, the average number of days angled varies widely from community to community – this is in part an artifact of the small number of people fishing in each community, because one person has a large influence on the average.

Average number of days angled by country		
Canada	3.46	
Germany	3.14	
Switzerland	1.76	
USA	3.00	
Austria	3.11	

Salmon Catch Profile

Many salmon which are landed by anglers are subsequently released. In this report, the term 'landed' is used to refer to fish which were captured by anglers, whether the fish were subsequently retained or released. The term 'catch' is used to identify fish which were landed and retained by the angler.

In examining self-reported information such as this survey, it is important to keep in mind that several sources of potential error exist. Errors may arise from a number of causes. For example, a fisher may misidentify the species, may be reluctant to identify the location where the fish was caught, may not be able to determine which zone was being fished, may check the wrong column indicating whether the fish was released, etc. The summaries shown below are based on the data as reported by anglers, but corrected where obvious errors in location occurred. The following table shows the number of each species of salmon landed in each drainage over the three year period.

Total Salmon Reported Landed, By Drainage 1999-2000*						
(includes fish retained, released, and unkknown disposition)						
				Chinook	**Coho**	**Sockeye**
Alsek River Drainage						
		Blanchard		114		3
		Dalton Post		82	29	46
		Klukshu		34	1	5
		Takhane Creek		32		2
		Tatshenshini River		294	133	70
		Village Creek		6		5
		Unknown		216	68	23
Alsek River Drainage Total				**778**	**231**	**154**
Yukon River Drainage						
	Pelly R					
		Blind Creek		9		
		Lapie River		1		
	Stewart R					
		Mayo		9		
	Takhini R					
		Takhini River		10		
	Teslin R					
		Big Salmon River		19		
		Morley River		3		
		Teslin Lake		5		
		Teslin River		34		
	White R					
		Donjek River		2		
		Kluane River		2		
	Yukon R					
		Klondike River		1		
		Tatchun Creek		686		
		Yukon River				
			Zone 8	4		
		Unknown				
			zone 2	1		
			zone 3	12		
			zone 7	6		
			zone 8	16		
			zone 9	2		
			zone 10	4		
			unkn zone	14		
	Misc					
		Scout Lake		3		
		Kusawa Lake		4		
Yukon River Drainage Total				**847**		
Grand Total				**1625**	**231**	**154**
*Excludes salmon whose drainage and species identification were inconsistent (less than 5 fish)						

The reported number of salmon of each species released and retained is shown in the three tables below. The number of chinook and coho salmon released was about a third larger than the number retained. The number of sockeye released, 149 over the three year period, was much higher than the number reported retained. This is attributed to the regulation prohibitting retention of sockeye prior to August 15. The number of chinook retained dominates the catch with coho making up less than 15% of the reported number of salmon retained.

The fact that more chinook and coho were released than were retained indicates that a large component of angler's successful activity involves catching fish which are subsequently released. The proportion of female chinook released (not shown) was roughly the same as the proportion among those retained, running in the neighborhood of 34% to 39%. But for coho, females tended to be released and made up 40% of the coho released compared with 30% retained.

Although not shown, the total numbers of salmon retained in 1999 and 2001 were nearly equal, but within the total catch there was a shift from chinook to coho, which occurred in the Alsek. This shift is likely due to the closure of the Yukon chinook and chum seasons on July 14, 2000, and again on June 18, 2001, and the increase in the Tatshenshini drainage coho daily catch limit (from 2 to 4) and possession limit (from 4 to 8) on Oct 5, 2001. Coho, which comprised just 1% of the fish retained in 1999, made up nearly 27% of the total in 2001. The increase in the reported number of coho retained is matched by a corresponding increase in the number of coho landed; that is, both the number of coho retained and the number released increased dramatically in 2001 compared with 1999.

Reported Disposition of Chinook by drainage 1999 - 2001								
					Chinook			
Alsek River Drainage					Released	Retained	Unknown	Total
		Blanchard			21	92	1	114
		Dalton Post			51	31		82
		Klukshu			5	29		34
		Takhane Creek			17	15		32
		Tatshenshini River			174	116	4	294
		Village Creek			4	2		6
		Unknown			119	92	5	216
Alsek River Drainage Total					**391**	**377**	**10**	**778**
Yukon River Drainage								
	Pelly R							
		Blind Creek			3	6		9
		Lapie River				1		1
	Stewart R							
		Mayo			1	2	6	9
	Takhini R							
		Takhini River			4	6		10
	Teslin R							
		Big Salmon River			13	6		19
		Morley River			1	2		3
		Teslin Lake				5		5
		Teslin River			5	26	3	34
	White R							
		Donjek River			2			2
		Kluane River				2		2
	Yukon R							
		Klondike River				1		1
		Tatchun Creek			437	245	4	686
		Yukon River						
			Yukon River, Zone 8		2	2		4
		Unknown						
			zone 2			1		1
			zone 3		10	2		12
			zone 7		4	2		6
			zone 8		6	10		16
			zone 9		2			2
			zone 10			4		4
			unknown zone		12	2		14
	Misc							
		Scout Lake			2	1		3
		Kusawa Lake			4			4
Yukon River Drainage Total					**508**	**326**	**13**	**847**
Grand Total					**899**	**703**	**23**	**1625**

Reported Disposition of Coho by drainage 1999 - 2001*						
Alsek River Drainage		**Released**	**Retained**	**Unknown**	**Total**	
	Dalton Post	11	15	3	29	
	Klukshu		1		1	
	Tatshenshini River	74	59		133	
	Unknown	43	25		68	
Alsek River Drainage Total		**128**	**100**	**3**	**231**	
*Excludes salmon whose drainage and species identification were inconsistent (less than 5 fish)						

Reported Disposition of Sockeye by drainage 1999 - 2001*						
Alsek River Drainage		**Released**	**Retained**	**Unknown**	**Total**	
	Blanchard	3			3	
	Dalton Post	44		2	46	
	Klukshu	5			5	
	Takhane Creek	2			2	
	Tatshenshini River	67	3		70	
	Village Creek	5			5	
	unknown	22		1	23	
Alsek River Drainage Total		**148**	**3**	**3**	**154**	
*Excludes salmon whose drainage and species identification were inconsistent (less than 5 fish)						

Gear Selectivity

The following table shows the sex ratio of fish caught with various gear types. The only categories which contain enough fish to draw any conclusions concerning the possible selectivity of gear type for one sex or the other are chinook in the Alsek/Tatshenshini and Yukon drainages. Anglers using flies caught a smaller proportion of female than male chinook in both drainages (36.1% and 13.6% females, respectively), and both of these figures are below the overall percentages for their respective drainages (50.8% and 27.2%). However, caution must be used in drawing this conclusion because of the small number of chinook caught on flies in the Yukon drainage (22).

The results for roe indicate that neither the percentage of female chinook caught in the Alsek/Tatshenshini drainage (52.2%) nor in the Yukon (29.1%) differs substantially from the overall percentage of females caught in each drainage (50.8% and 27.2%).

Gear Selectivity for Sex 1999 - 2001							
Per cent Females (fish of unknown sex excluded)							
		Gear Type					
		Fly	Roe	Spoon	Other	Unspecified Gear	Total
Alsek River Drainage							
	Chinook						
	F	36.1%	52.2%	63.6%	38.5%	71.4%	50.8%
	M	63.9%	47.8%	36.4%	61.5%	28.6%	49.2%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	# of fish	(36)	(414)	(22)	(39)	(7)	(518)
	Coho						
	F	60.0%	14.3%	36.9%	66.7%	0.0%	39.3%
	M	40.0%	85.7%	63.1%	33.3%	100.0%	60.7%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	# of fish	(15)	(14)	(103)	(12)	(1)	(145)
	Sockeye						
	F	43.7%	27.3%	21.1%	0.0%		35.3%
	M	56.3%	72.7%	78.9%	100.0%		64.7%
	Total	100.0%	100.0%	100.0%	100.0%		100.0%
	# of fish	(71)	(22)	(19)	(4)		(116)
Yukon River Drainage							
	Chinook						
	F	13.6%	29.1%	22.1%	26.3%	25.0%	27.2%
	M	86.4%	70.9%	77.9%	73.7%	75.0%	72.8%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	# of fish	(22)	(398)	(77)	(76)	(4)	(577)

Conclusion

The catch card is being redesigned to make it less bothersome to fill out. One of the problems which the new design attempts to address is the difficulty an angler has determining what zone he is fishing in. The new catch card will use zones, but rather will use generalized locations which the angler should have no difficulty determining.

The disposition tables show that a number of salmon were not reported as released or retained – the Unknown category. For chinook, this number totaled 23 over the three years, and for coho only 4. While neither of these numbers is large in proportion to the number of fish retained, fishers are asked to cooperate to help reduce these gaps in the data.

As this report is a summary, it does not contain all the detail of the technical report. In that report the disposition tables show that the sex of a surprisingly large number of fish is not reported. For example, of the 1625 chinook landed, the sex of 100 was not reported. This number is not insubstantial because it represents over 17% of the female chinook reported. Anglers should be aware of the importance of this information and are encouraged to identify and report the sex of their salmon.

This first analysis of information provided by salmon fishers has provided useful information on the characteristics of the fishing community and of the catch. It has also pointed up deficiencies in the salmon catch card which are being addressed. It is hoped that with a re-designed catch card and continuing cooperation of those who fish for salmon our information base can be further strengthened.