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Understanding Trends of Sport Fishing on Critical Fishery Resources in Olympic National Park Rivers and Lake Crescent

Natural Resource Technical Report NPS/OLYM/NRTR—2012/587

ON THE COVER
Creel Survey on Lake Crescent, July 29, 2010
Photograph by: Phil Kennedy, Olympic National Park

Understanding Trends of Sport Fishing on Critical Fishery Resources in Olympic National Park Rivers and Lake Crescent

Natural Resource Technical Report NPS/OLYM/NRTR—2012/587

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Abstract

Anglers come from around North America to fish the waters of Olympic National Park (OLYM). The park consists of 12 major watersheds, ~4,000 miles of rivers and streams, 31 fish species, and 70 unique salmonid populations. Pacific salmonids that inhabit park rivers are of high ecological and cultural importance, and significantly contribute to recreational and commercial fisheries. Fishing pressure poses threats to the persistence of wild and federally threatened fish in OLYM. Despite high ecological, recreational, and cultural values, managers have little information to evaluate levels of sport fishing in OLYM. The goal of this report is to summarize two years (of three) of angler interviews across key park watersheds from 2009 to 2011. Specific objectives were to: 1) characterize angler demographics and preferences; 2) quantify the extent and seasonality of sport fishing effort; 3) report catch by fish species with an emphasis on the Queets River; and 4) determine incidental catch of federally threatened bull trout. We completed intensive angler interviews in the Queets, Hoh, and Salmon rivers from 2009 to 2011 and extensive interviews in the Elwha River and Lake Crescent in summer, 2010. A total of 2,017 anglers were interviewed and fished 10,639 hours among four rivers and lake. Anglers caught 11 fish species. Anglers were from 27 States, two Canadian Provinces (British Columbia, Quebec), England, New Zealand, Scotland and the Philippines. Eighty-eight percent of all anglers were from Washington State followed by Oregon (3%), California (2%), and the remaining anglers were from 24 States or other countries. Anglers were from 27 (of 39) Washington counties. A total of 52% of the anglers were from nearby Puget Sound and 29% were from counties that surround the park. King (21%), Pierce (18%), and Grays Harbor (14%) were the most common counties of origin. Ninety-five percent of anglers were male, 40% were older than 50 years old, and 77% were satisfied with OLYM fishing regulations. Anglers generally preferred catch-and-release regulations although results varied by watershed (57% of parkwide; Queets/Salmon=50%; Lake Crescent=79%; and Hoh=90%). Ninety-two percent of anglers were aware that they were fishing in waters managed by the National Park Service (NPS) and 72% had seen a copy of OLYM fishing regulations. A total of 482 anglers (of 2,017) were active members of organized fishing groups and 233 were affiliated with the Coastal Conservation Association. In the Queets and Salmon rivers, 1,603 anglers fished 9,349 hours based on 115 weekday and 73 weekend day interviews from November, 2009 to April, 2011. Surveys occurred during 72% of the 262 fishable days. Forty five percent (n=714) were boat anglers, 55% (n=889) were bank anglers, and 7% were guided trips. Steelhead was the most common fish species targeted (85% of anglers). From 2009 to 2011, anglers caught 717 steelhead (392 hatchery; 306 wild; 19 unknown), retained 294 fish, and averaged one steelhead per 13 hours of fishing. The peak number of angler interviews occurred in December and March which corresponded with hatchery and wild steelhead runs, respectively in the Queets. A total of 76 and 16 federally threatened bull trout were encountered in the Queets and Hoh rivers, respectively. Incidental catch of bull trout comprised 7% and 28% of the catch in the Queets/Salmon and Hoh rivers. Information derived from this study is being used to better understand spatial and temporal fishing pressures. This project was funded through the NPS Natural Resource Preservation Program.

Acknowledgments

Thanks to all of the anglers who were interviewed and provided data for this project. We thank the following Olympic National Park employees for their contributions to this study: John Boetsch, Pat Crain, Brian Densmore, Heidi Hugunin, Ruth Jenkins, Phil Kennedy, Kristen Kirby, George Leite, Mark McCool, Rebecca Paradis, Joe Petersen, Bill Rohde, and Janice Thomas. We also thank James Gramann (Visiting Chief Social Scientist) and Kirsten Leong (Human Dimensions of Biological Resource Management, Fort Collins, Colorado) for their assistance with this project. Additional technical and field support was provided by Randy Cooper, Mike Gross, David Low, Deb Smith, and Dave Smith of the Washington Department of Fish and Wildlife. Pat Crain and one anonymous reviewer provided constructive comments to the report. Mark Huff served as our peer review manager. Lise Grace provided technical support and insight. This project was funded through the National Park Service Natural Resource Preservation Program

Introduction

Encompassing nearly one million acres of designated wilderness on the Olympic Peninsula of northwestern Washington, Olympic National Park consists of 12 major watersheds, 646 high lakes, two large lakes and 4,000 miles of rivers and streams. The park is a designated World Heritage Site and Biosphere Reserve that contains one of the largest contiguous areas of relatively pristine habitat throughout the range of several west coast fish species. On the west side of the park are major coastal rivers that include the Hoh, South Fork Hoh, Queets, and Quinault (Figure 1). To the north are the Elwha and Sol Duc rivers and to the east is the North Fork Skokomish River. These rivers drain directly into the marine waters of the Pacific Ocean, Strait of Juan de Fuca, or Hood Canal/Puget Sound. In the park's rugged terrain that ranges in elevation from 8,000 feet to sea level are two large lakes – Lake Crescent, the crown jewel of the park, and Lake Ozette, the second largest lake in Washington State.

The diverse aquatic habitats of OLYM harbor 31 species of freshwater and anadromous fish and at least 70 unique populations of sockeye salmon (*Oncorhynchus nerka*), Chinook salmon (*O. tshawytscha*), coho salmon (*O. kisutch*), chum salmon (*O. keta*), pink salmon (*O. gorbuscha*), steelhead (*O. mykiss*), rainbow trout, cutthroat trout (*O. clarkii*), bull trout (*Salvelinus confluentus*) and Dolly Varden (*S. malma*). There are a total of five species in the park that are recognized as federally threatened under the Endangered Species Act including Puget Sound Chinook salmon, Puget Sound steelhead, Puget Sound/Coastal bull trout, Hood Canal summer chum salmon, and Lake Ozette sockeye salmon.

Salmonid populations that inhabit park rivers are of high ecological importance. Pacific salmonids are known to provide food for over 130 species of aquatic and terrestrial wildlife species (Cederholm et al. 2001), and studies have shown that 20 to 40% of the phosphorus, nitrogen, and carbon in freshwater systems may be marine-derived through carcasses of spawned salmon (Kline et al. 1990, 1994; Bilby et al. 1996).

In addition to their ecological importance, these salmonid populations have a significant role in the cultures of eight Treaty Tribes that surround the park including the Elwha S'Klallam, Hoh, Jamestown S'Klallam, Makah, Queets, Quileute, Quinault, and Skokomish tribes. Salmon that return to rivers that drain from OLYM are economically important, and are annually harvested in commercial and subsistence fisheries that are operated by the Tribes. Commercial gill-net fisheries operate during most weeks of the year in coastal rivers.

Despite high ecological, recreational, and cultural value and known threats to park resources, managers at OLYM have little information to understand sport fishing pressure on fishery resources. Park managers do know that migratory salmonids are especially vulnerable to harvest because they leave OLYM for most of their life cycle, and are subjected to recreational and commercial fisheries upon their return to watersheds that drain from the park. Ultimately, commercial and recreational fisheries greatly influence the number of adult salmonids that return to National Park waters.

Many of the rivers that drain from the park support important fish populations that are targeted in recreational fisheries. Virtually all of the waters in OLYM support highly popular sport fisheries that include guided and non-guided fishing parties. Olympic National Park requires fishing

guides to register with the park. There were nine, ten and nine registered guides in 2009, 2010 and 2011 respectively. The popularity of fishing in OLYM is fostered by the proximity of Seattle/Tacoma metropolitan area (100 miles away), within which many of the rivers in the Seattle area that still harbor salmonids are closed to fishing. The Seattle/Tacoma area has seen its human population grow significantly over recent decades – growth was about 20% from 1990 to 2000 – a trend that is projected to continue.

Sportfishing in OLYM rivers and lakes is promoted by a consistently high level of media interest. National and regional publications such as Salmon Trout Steelheader, ESPN Outdoor, Northwest Flyfishing, fishing websites, and several guide books regularly promote fishing in OLYM rivers and lakes. An internet search for "Olympic Peninsula Fishing" or "Olympic Peninsula Fishing Guide" provides ready perspective on the popularity of these fisheries.

Road access for bank fishing and boating in OLYM tends to be excellent, and anglers come from around the world to fish for the diverse array of salmonids during most months of the year. Recreational fishing has long been a popular activity on the Olympic Peninsula, and now is a multimillion-dollar industry.

On the western Olympic Peninsula, State and Tribal hatcheries produce and release millions of hatchery steelhead, coho salmon, sockeye salmon, chum salmon, and Chinook salmon in portions of rivers located outside park boundaries. These hatchery fish are used to supplement recreational and commercial fisheries and contribute to recreational fishing catch.

Fishery Management Fabric at OLYM

The inception of OLYM was in 1938 and the first fisheries biologist arrived in the late 1980s. OLYM has exclusive jurisdiction over recreational fisheries in the park and park biologists annually establish harvest and gear regulations in cooperation with the State of Washington and Treaty Tribes. The goal of fisheries management at OLYM is to provide recreational opportunities for quality fishing while preventing unacceptable impacts to park fishery resources. To meet NPS management objectives of protecting and perpetuating native aquatic species and preserving the diversity and ecological integrity of native fish populations, the park generally promotes catch-and-release of wild fish and harvest of non-native and hatchery origin fish.

Fisheries managers currently lack the information on angler effort, catch and harvest necessary to evaluate existing management strategies and sustainability of the fisheries. Existing programs that monitor harvest, catch, and effort are administered by the State and Tribes are typically limited to the lower portions of rivers outside the park boundaries.

The goal of this project is to provide information on trends in fishing effort and catch and angler demographics from park waters. The objectives of this project were as follows: 1) quantify the extent, seasonality, and magnitude of recreational fishing effort in selected OLYM rivers and one lake; 2) estimate fishing effort, catch, and success by fish species based on angler interviews with an emphasis on Queets River; 3) assess angler demographics throughout OLYM; and 4) determine incidental catch of federally threatened bull trout. The project highlights high priority watersheds in need of regular and future monitoring by OLYM's Fisheries Management Program.

The following are specific questions that are important to managers and will be addressed by this project:

- What is the extent and magnitude of recreational fishing pressure in selected park watersheds?
- What are the targeted fish species?
- What is the composition of catch by fish species?
- What percent of the catch in a given river is comprised of wild versus hatchery raised fish?
- What months receive the most intensive recreational fishing pressure?
- How many boats typically fish the Queets River during fall and winter?
- What is the relative catch between permitted guides versus non-guides?
- What is the extent of incidental catch of federally listed and threatened fish species in OLYM's recreational fisheries?

Study Area

This study occurred in portions of the Queets, Salmon, Hoh, Elwha, and North Fork Skokomish rivers and Lake Crescent (Figure 1).

Queets/Salmon Rivers

The Queets River is one of the most pristine rivers in the western United and is the largest river (1,157 km^2) along coastal Washington (Figure 1).The upper 85% of the Queets watershed drains from OLYM and the lower portions of river flow through tribal lands. The Salmon River is a major tributary to the Queets.

The most intensive survey efforts occurred during the winter steelhead and salmon fisheries in the Queets and Salmon rivers from October 27, 2009 to April 15, 2010 and from October 1, 2010 to April 15, 2011. Surveys in the Queets River occurred from the Matheny Creek confluence downstream to the Clearwater River confluence at the Park boundary (from~ rkm 27 to 11; Figure 1). Surveys in the Salmon River were limited to the lowermost portion of the river in OLYM and occurred from rkm 0 to rkm 1.8 (Figure 1).

The Queets River provides a popular sport fishery for Pacific salmonids and supports self-sustaining populations of coho salmon, spring–summer and fall Chinook salmon, chum salmon, bull trout, summer and winter steelhead, cutthroat trout, and mountain whitefish. The Queets River offers diverse fishing opportunities that include: bait fishing (downstream of the mouth of the Salmon River) and single barbless hooks and artificial lure restrictions (Appendix A). Anglers commonly fish from drift boats and pontoon boats throughout the winter. Tribal gill-net fisheries exist for several species in the lower Queets River during most weeks of the year (Appendix B).

Hoh River

The Hoh River is a glacial river that flows in a westerly direction from its headwaters on the western slopes of the Olympic Mountains to its confluence with the Pacific Ocean (Figure 1). Sixty-five percent of the Hoh River watershed (a 45-river-kilometer [rkm] reach) occurs in

OLYM and is managed as a natural area. The lower portion of the river flows through State, tribal, and private lands. The river drains 644 km^2 and descends in elevation from 1,216 m in the headwaters to its confluence with the ocean. River discharge in the Hoh River basin is strongly influenced by rainfall in autumn and winter and glacial runoff in spring and summer. The South Fork Hoh River is the major tributary to the Hoh River. The South Fork Hoh River drains 130 km^2 and descends in elevation from 1,475 to 128 m.

Surveys occurred in the upper Hoh River during the winter steelhead fishery from January 4 to April 15, 2010 and from February 1 to April 15, 2011. The study area for the Hoh River included a short section of river from rkm 50 to 57 where fishing regulations require fly-fishing only. The Hoh River provides a popular sport fishery for Pacific salmonids and supports self-sustaining populations of coho salmon, spring–summer and fall Chinook salmon, chum salmon, bull trout, summer and winter steelhead, cutthroat trout, and mountain whitefish. Tribal gill-net fisheries exist for steelhead and Chinook and coho salmon in the lower Hoh River outside OLYM during most weeks of the year (Appendix B).

Lake Crescent

Lake Crescent is a pristine deep-water lake of glacial origin located in the northwest corner of the park (Figure 1). The lake is situated between the Strait of Juan de Fuca and Olympic Mountains, and is one of the most popular visitor attractions in OLYM. The ultraoligotrophic lake is 18 km in length, drains 12,127 ha, has a surface area of 1,880 ha, has a maximum depth of 191 m, and occurs at 176 m in elevation. Lake Crescent is located within OLYM (91% of watershed) and is managed as a natural area by the NPS. Private landowners, including those who own summer homes or permanent residences, hold approximately 47 ha in 106 tracts.

Angler surveys occurred in Lake Crescent during the summer of 2010. Lake Crescent is ecologically and recreationally significant because of its unique co-occurring populations of rainbow trout and cutthroat trout. These fish are unique based on their large size, life history patterns, and geographic isolation in Lake Crescent over the several thousand years caused by a prehistoric landslide. The trouts of Lake Crescent were first described in the late 1800's as "blueblack trout" *Salmo gairdneri beardsleei*, "long-headed trout" (*Salmo bathoecetor*), and "speckled trout" *Salmo gairdneri crecentis* of Lake Crescent (Jordan 1896, Meek and Elliott 1899, and Jordan and Evermann 1905), and were later recognized as unique and endemic to the lake (Madsen 1939; Pierce 1984). Lake Crescent cutthroat trout (locally termed Crescenti) are among the largest documented for coastal cutthroat at 5.4 kg (Behnke 2002), and lake dwelling rainbow trout (locally termed Beardslee) reach up to 10.4 kg.

Elwha River

The Elwha River flows 72 km from glaciers and ice fields, and descends from 1,372 m at the headwaters to its confluence (at sea level) with the Strait of Juan de Fuca in the Pacific Ocean. The uppermost portions of the Elwha River are remote and only a foot trail parallels the upper 45 km. Eighty-two percent of the watershed occurs in ONP and is managed by the National Park Service as a wilderness area. The mean daily discharge of the Elwha River is 42 m^3/s and annual minimum flows range from 8.5 to 14 m^3/s during summer (Curran et al. 2009). Average annual rainfall ranges from 100 cm/year to over 550 cm/year in the headwaters (Duda et al. 2008).

Limited angler surveys occurred in the Elwha River from June thru September, 2010 in OLYM from Glines Canyon Dam downstream to the park boundary (rkm 21.7 to 15.6; Figure 1). Bull trout, rainbow trout, and non-native brook trout inhabit the river in OLYM. The Elwha River originates in ONP on Washington's Olympic Peninsula (Figure 1). The 6th order (Strahler 1957) river drains 833 km^2 and constitutes 19% of ONP.

North Fork Skokomish River

The study area of the North Fork Skokomish River included the portion of river from the confluence of Four Stream (rkm 50.4) to the park boundary (rkm 45.1) near the inlet to Lake Cushman. The river basin upstream from Lake Cushman drains 126 km^2. Limited angler surveys occurred in the North Fork Skokomish River from June 14 to September 9, 2010 where anglers may catch bull trout, mountain whitefish, rainbow trout, and cutthroat trout.

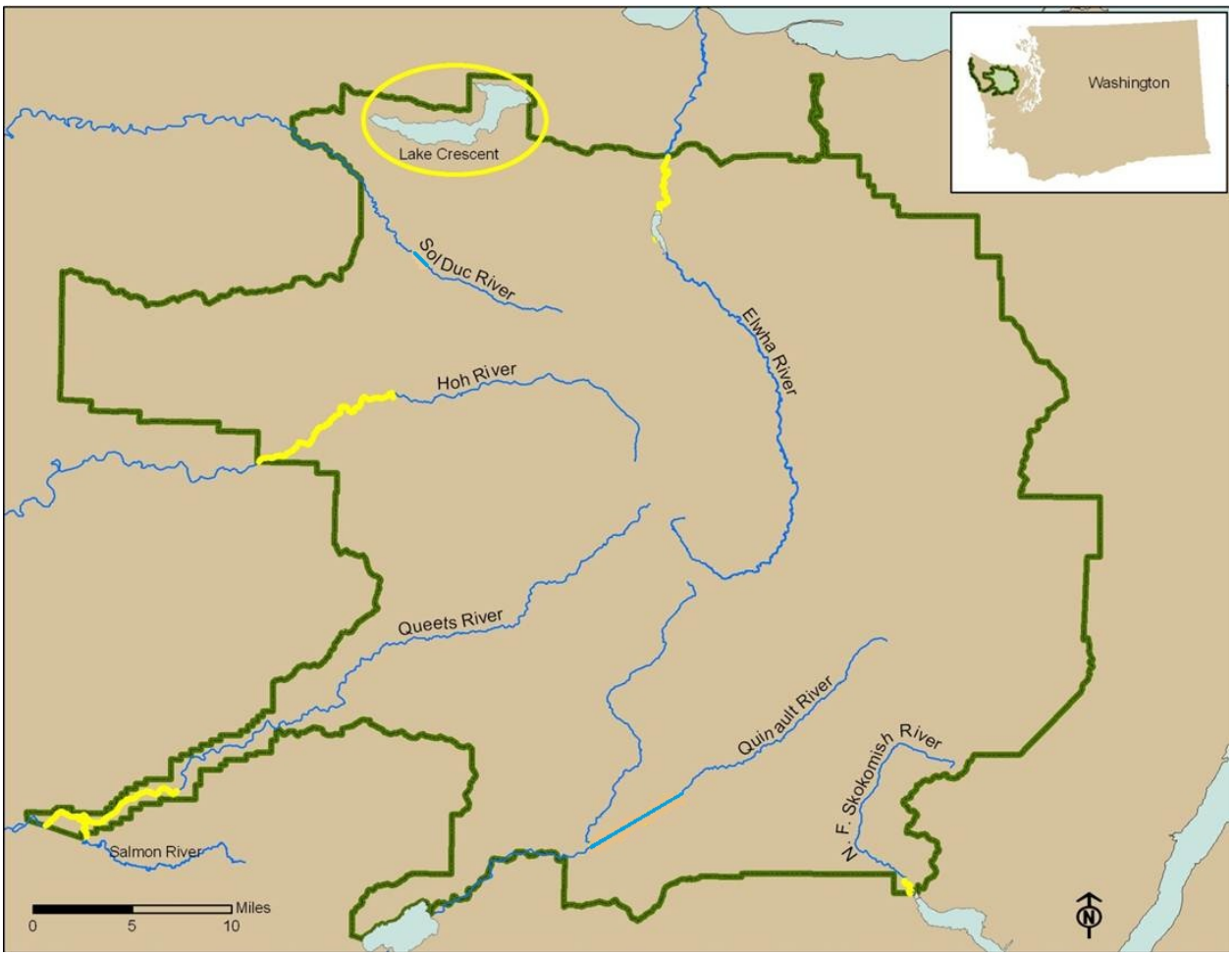

Figure 1. Map of Olympic National Park with survey areas highlighted in yellow.

Methods

We used established fisheries techniques to conduct angler interviews to quantify fishing effort, catch, and angler demographics in portions of the Queets, Salmon, and Hoh rivers in OLYM from 2009 to 2010. Additionally, we conducted cursory creel surveys in 2010 in the North Fork Skokomish River, Elwha River and Lake Crescent.

Survey Design

Creel surveys, or angler interviews, were used to assess the temporal distribution of fishing effort and catch. Sites, dates, and sampling times were selected based on methods described in Sampling the Recreational Fishery by Malvestuto (1983) and Pollock et al. (1997) and methods outlined in Hahn et al. (2000). We also consulted with other agency biologists experienced in the design of creel surveys.

Intensive "roving" interviews were conducted during winter months in the Queets, Salmon, and Hoh rivers when fishing pressure was highest due to returning runs of Pacific salmon and steelhead. In a roving survey, the surveyor interviewed anglers during or after their fishing trips along a predetermined route. The prescribed route was such that all anglers fishing the same length of time have an equal probability of being contacted within an allotted timeframe (Hahn et al. 2000).

For the Queets and Salmon rivers, we relied on sampling all of the weekdays and weekend days that were deemed fishable based on river flow conditions. In the Hoh River, the primary focus was on weekdays due to limited personnel. The goal was to conduct as many angler interviews within a day as possible. Surveyors interviewed anglers to determine: State of permanent residence, length of time fished (defined as time between initiation of fishing and either current time or the time at which angler quit fishing), targeted species, the number and species of fish caught, kept, or released, whether fish were hatchery, wild, or non-native, type of gear, use of guide or no guide, whether they are fishing from bank or by boat, and location of fishing (river, river mile) (Appendix C). In this report, we report unexpanded data on fishing catch, effort, and angler demographics. We did not expand for dates and times not surveyed.

Care was taken when interviewing each angler. Training and instructions were provided to all participating surveyors to ensure standardized contacts among anglers. The training emphasized courteous and professional appearances and contacts with all anglers. Interviews were brief (<5 minutes) and questions were carefully screened, rehearsed, and presented. Short questions were presented first, and more open-ended questions were asked at the end of the interview. Surveyors conducted interviews only with willing participants. For a given fishing party, each angler was interviewed. Some interviewed anglers chose not to answer certain questions, or questions were unable to be answered due to angler time constraints. This resulted in some variability in sample sizes among survey questions.

The time required to complete a tour of the angler survey area under expected angler densities was as follows: Queets River (40 min), Hoh River (25 min), Lake Crescent (60 min), North Fork Skokomish (20 min), and Elwha (25 min).

Sport Catch Estimation:
Catch-per-effort was estimated based on interviews of fishing parties that completed their fishing trip. Instantaneous effort is defined as the number of anglers multiplied by the number of hours in the sampling period. Catch-per-unit-effort estimates were obtained by dividing measured catch or harvest by measured effort in angler hours.

We obtained approval from OMB Social Survey Board to conduct NPS sponsored public surveys. We hired and trained seasonal technicians who performed angler interviews across park watersheds throughout the year. We met with Washington Department of Fish and Wildlife for review of the study design and to discuss types of information being collected.

Results and Discussion

During the study period (October 27, 2009 to April 15, 2011), 2,017 anglers were interviewed on five different rivers and Lake Crescent. These anglers fished a total of 10,369 hours and landed 1,518 fish. The sample size, or numbers of anglers interviewed, varies for each question as some anglers did not respond to particular questions.

Interviewed anglers came from five countries and represented 27 U.S. states. Washington residents were the most frequently interviewed comprising 90% of all anglers interviewed; Oregon (3%), California (2%) and Canada (1%) were the next most common places of origin (Figure 2). Of the Washington anglers interviewed, King (21%), Pierce (19%), and Grays Harbor (14%) were the most common counties (Figure 3).

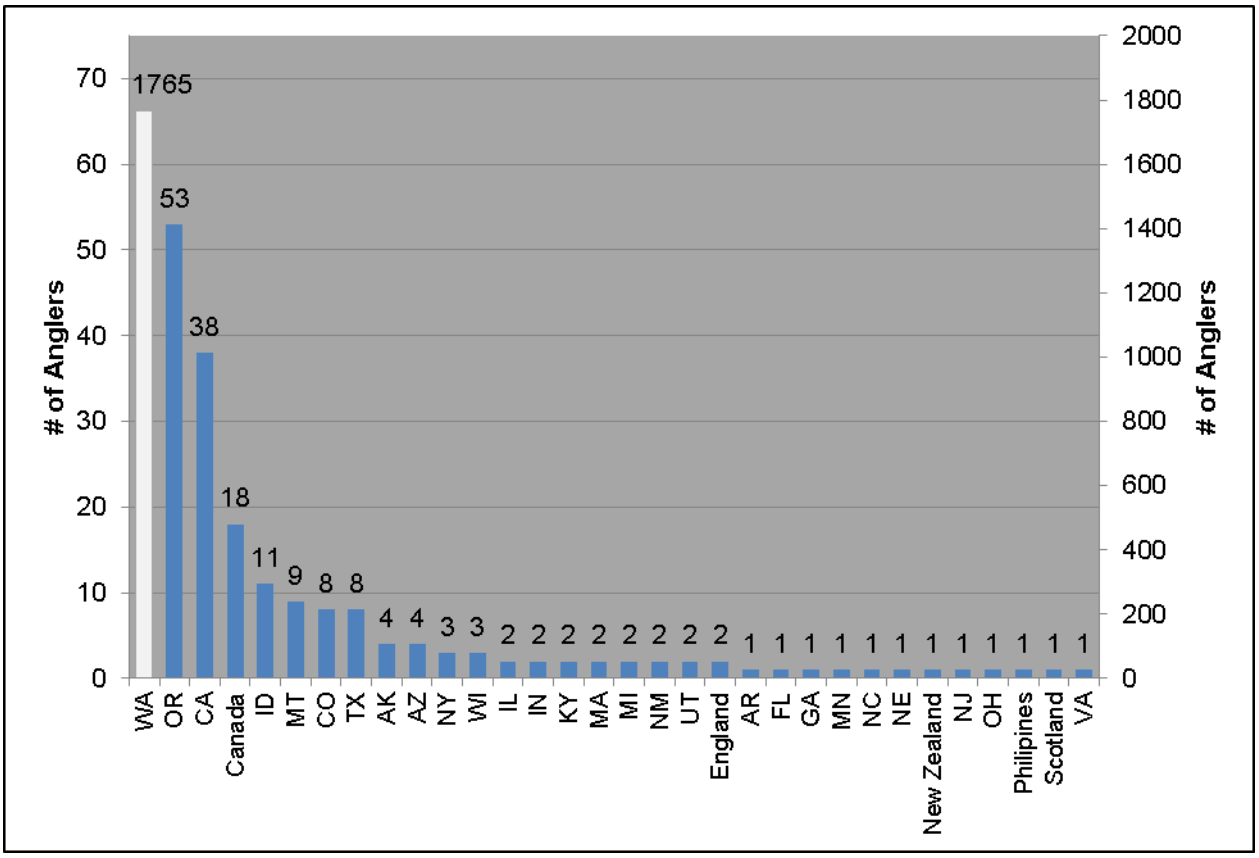

Figure 2. State and country of residence of all anglers (n=1,952) interviewed from October, 2009 to April, 2011.

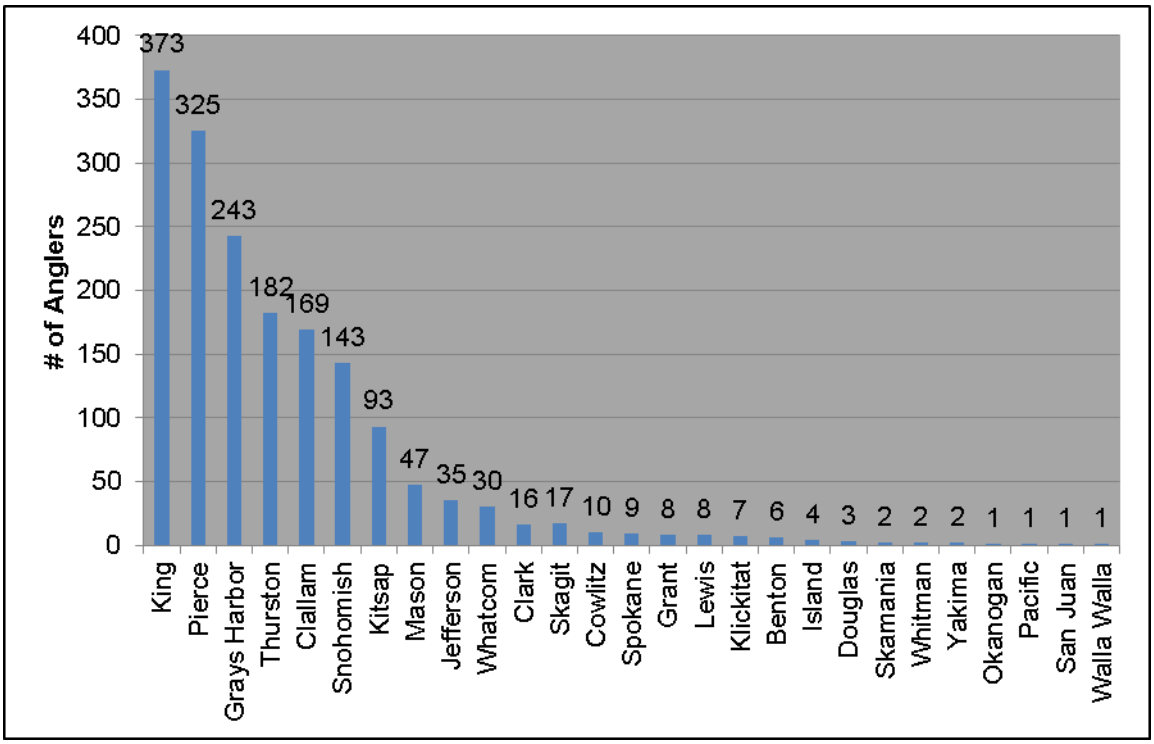

Figure 3. County of residence for Washington anglers (n=1,738) interviewed from October, 2009 to April, 2011.

The vast majority of anglers interviewed were male (95%) with 18% of anglers 18-30 years old, 40% were 31-50 years old, and 41% were over 50 years of age (Figure 4).

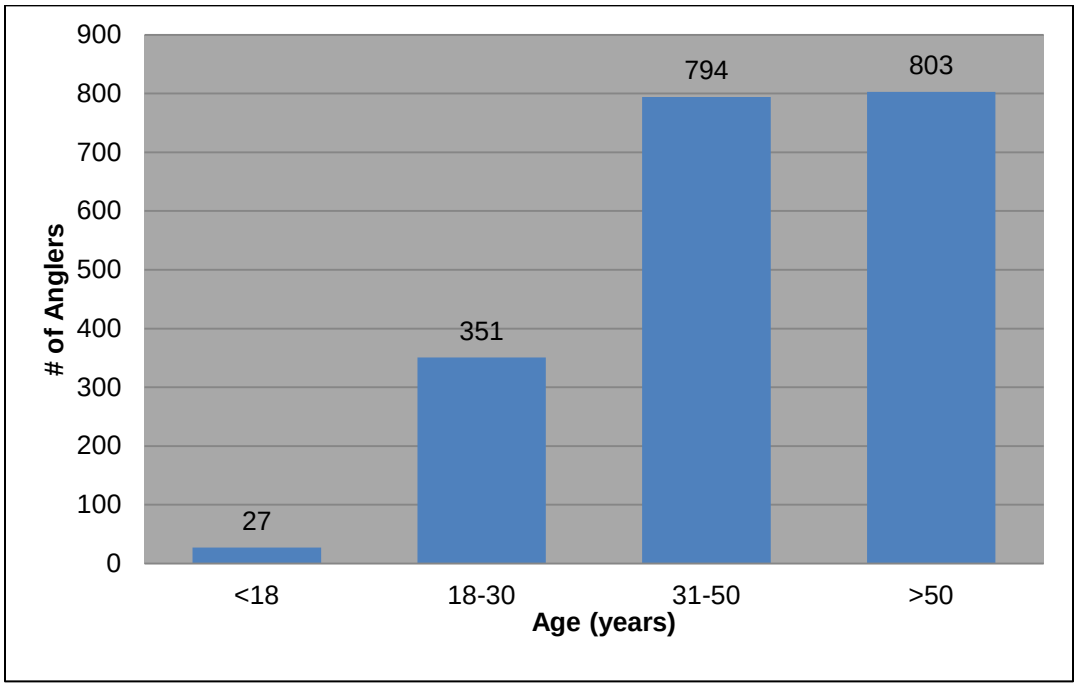

Figure 4. Age distribution of anglers interviewed (n=1975) from October, 2009 to April, 2011.

The majority of anglers made less than five fishing trips to the park each year (61%), compared to 15% who took six to 10 trips and 14% that made 11-20 trips. More frequent users took 21-90 trips per year (9%), with 1% of anglers taking more than 90 trips to the park each year (Figure 5). Of all anglers interviewed, 24% belonged to fishing organizations (Figure 6). The most common fishing organizations were Coastal Conservation Association and Trout Unlimited (Figure 7). When asked how crowded the river/lake was compared to what they were expecting, 47% said it was less crowded, 32% said it was similar to their expectations and 15% thought it was more crowded than expected. The remaining 6% of anglers did not have expectations regarding the amount of additional fishing pressure (Figure 8).

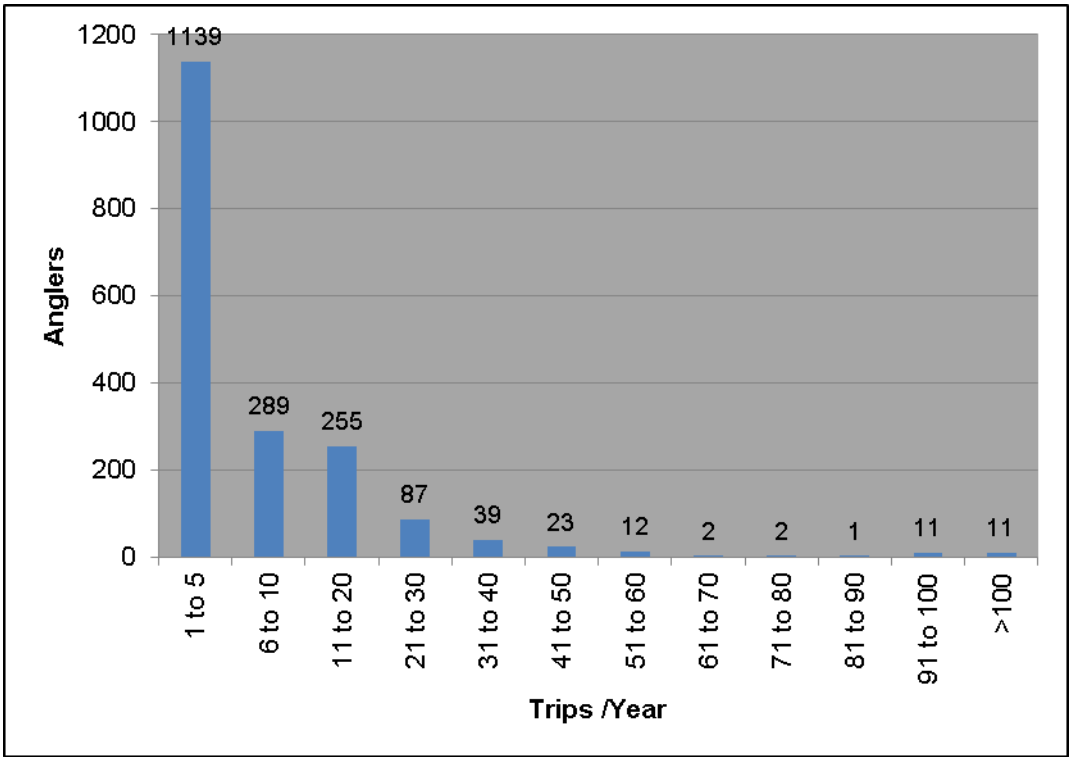

Figure 5. Distribution of average number of fishing trips each angler takes to Olympic National Park each year based on interviews (n=1871 anglers)conducted from October, 2009 to April, 2011.

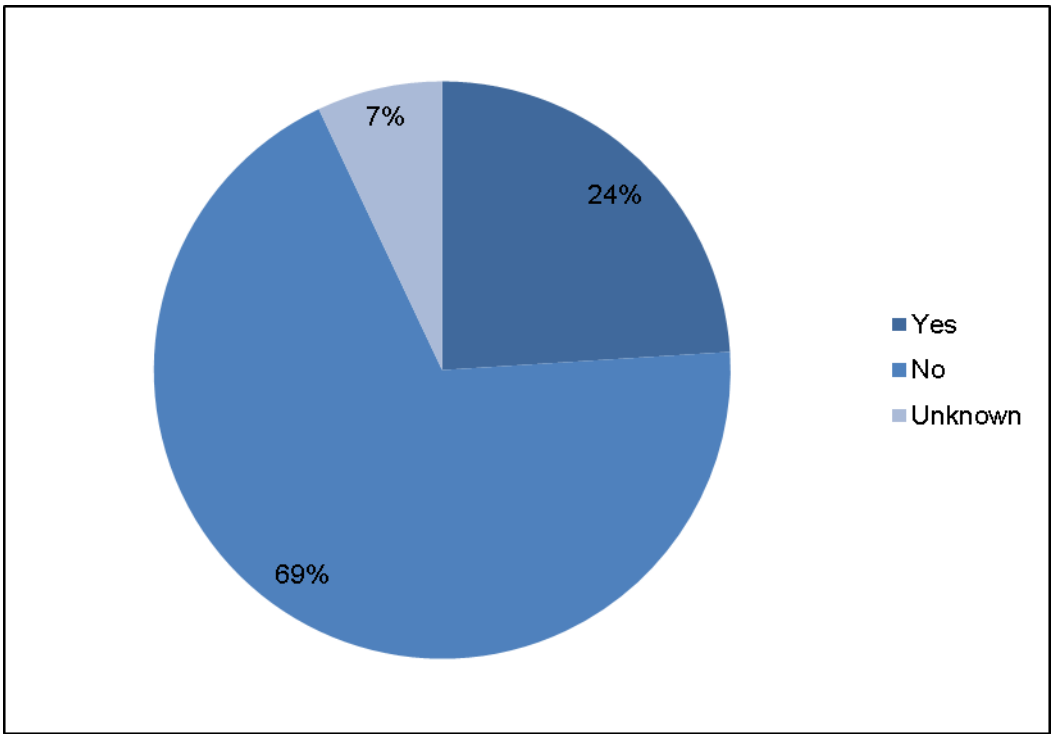

Figure 6. Proportion of anglers that belong to a fishing organization based on interviews (n=2,017 anglers) conducted from October, 2009 to April, 2011.

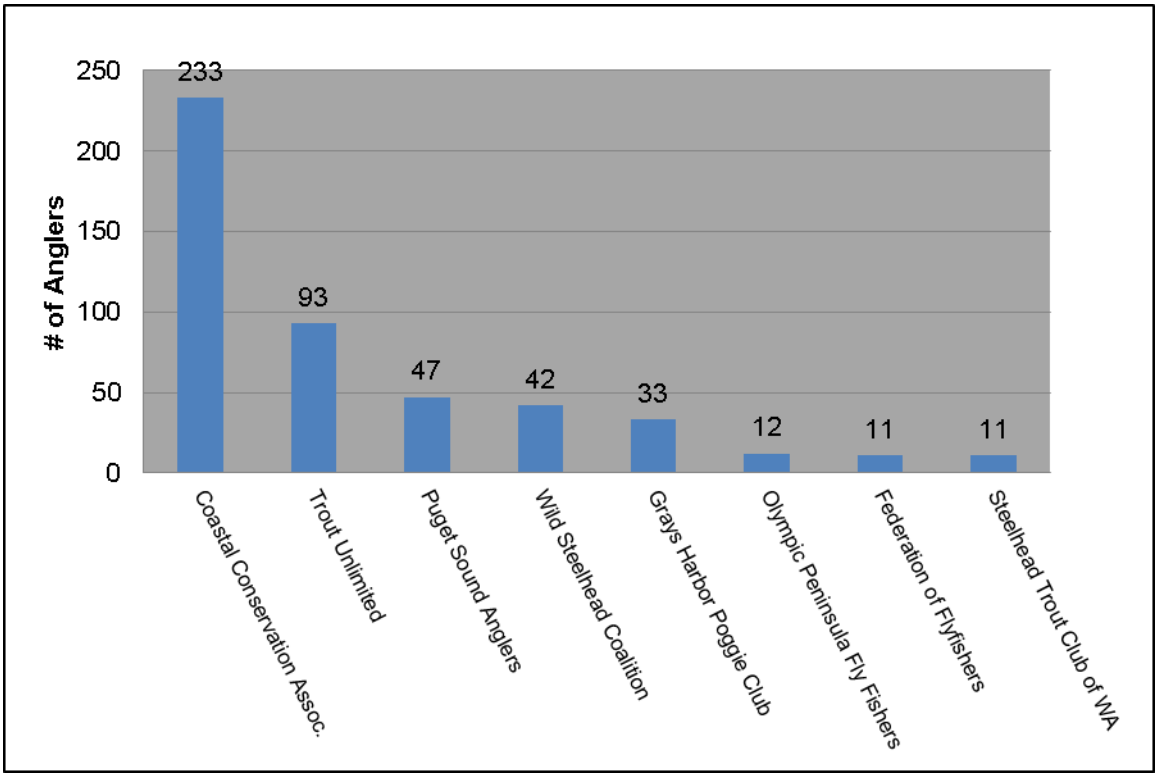

Figure 7. Number of anglers in each of the most popular fishing organization (n=482 anglers) based on interviews conducted from October, 2009 to April, 2011.

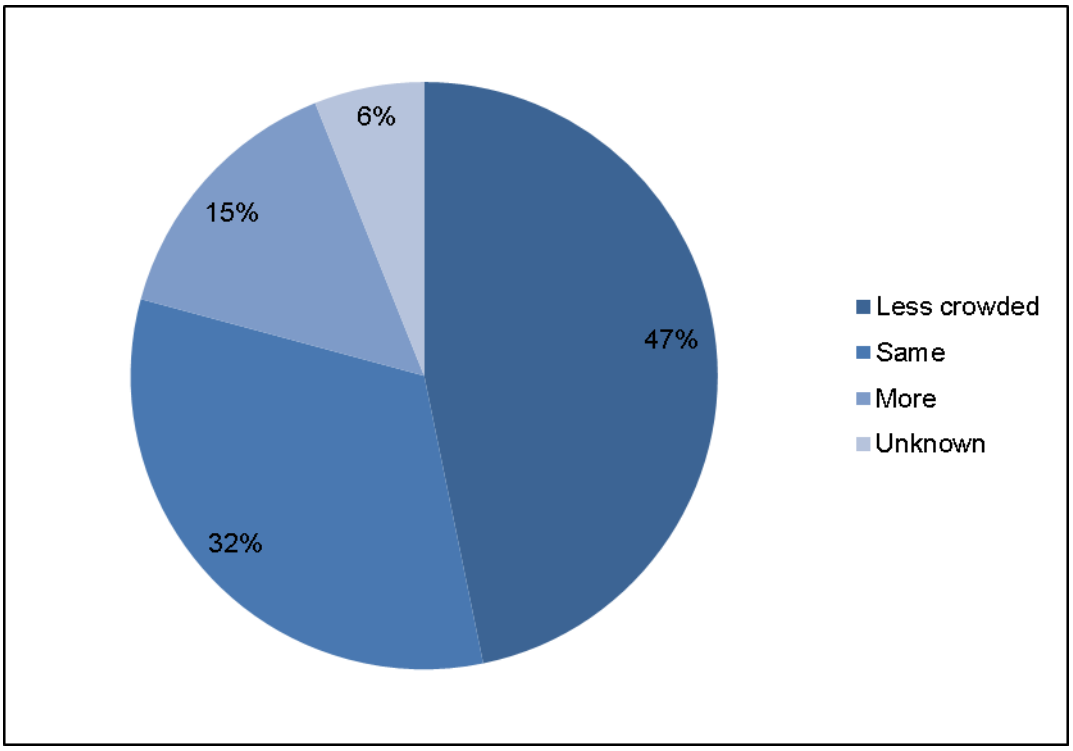

Figure 8. Angler expectations regarding crowding on the river/lake fished based on interviews (n=1,255 anglers) conducted from October, 2009 to April, 2011.

Of all the anglers interviewed throughout the park, 92% were aware the river/lake was managed by the National Park Service (Figure 9), 72% had seen a copy of OLYM fishing regulations (Figure 10), and 77% were satisfied with the regulations (Figure 11). OLYM fishing regulations can be found online, as well as at entrance booths, ranger stations and local fishing related businesses. These regulations are specific to individual lakes and rivers, time of year and target fish species (Table 1). Fifty-seven percent of anglers stated that they preferred to release fish, compared to 19% who preferred to retain fish (Figure 12). OLYM anglers reported catching 11 different species of fish during the study period. Steelhead was the most frequently caught fish (47%) with rainbow trout (14%) and coho (12%) as the next most commonly caught (Figure 13).

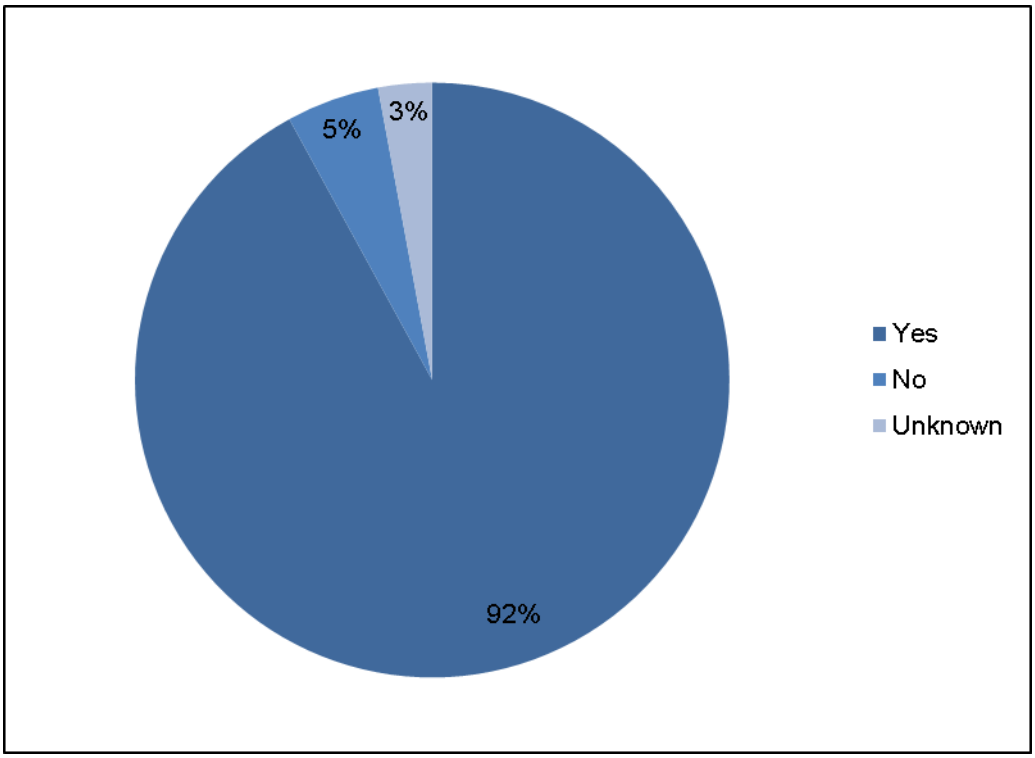

Figure 9. Proportion of anglers (n=2,017 anglers) that were aware of National Park Service jurisdiction based on interviews conducted from October, 2009 to April, 2011.

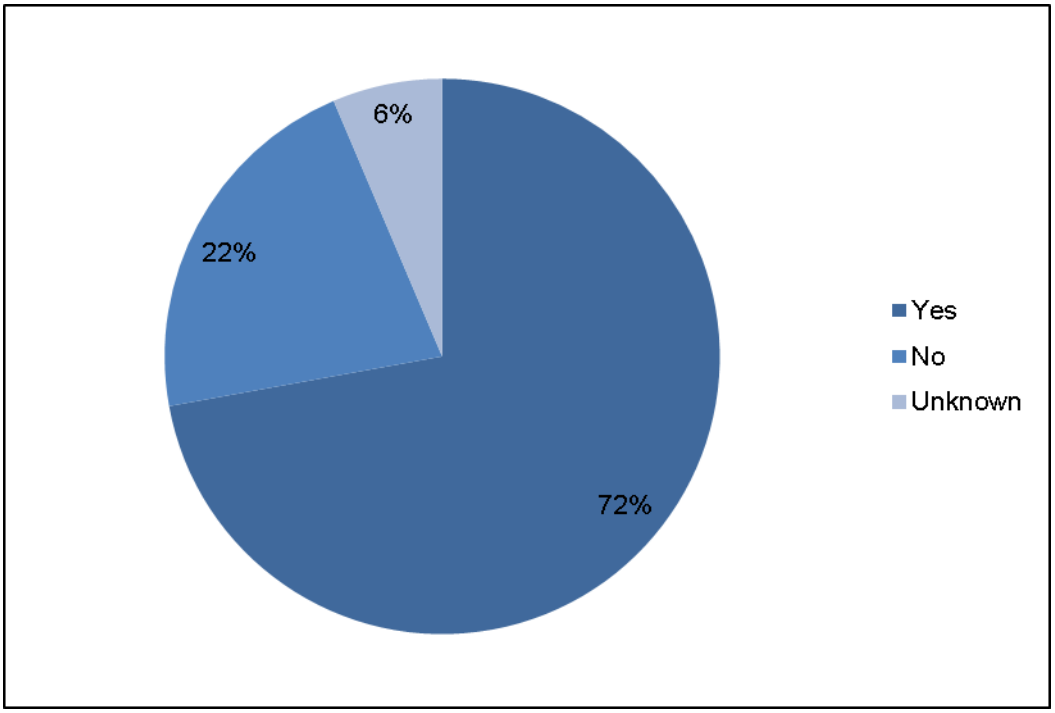

Figure 10. Proportion of anglers (n=2,017 anglers) that had seen a copy of Olympic National Park fishing regulations based on interviews conducted from October, 2009 to April, 2011.

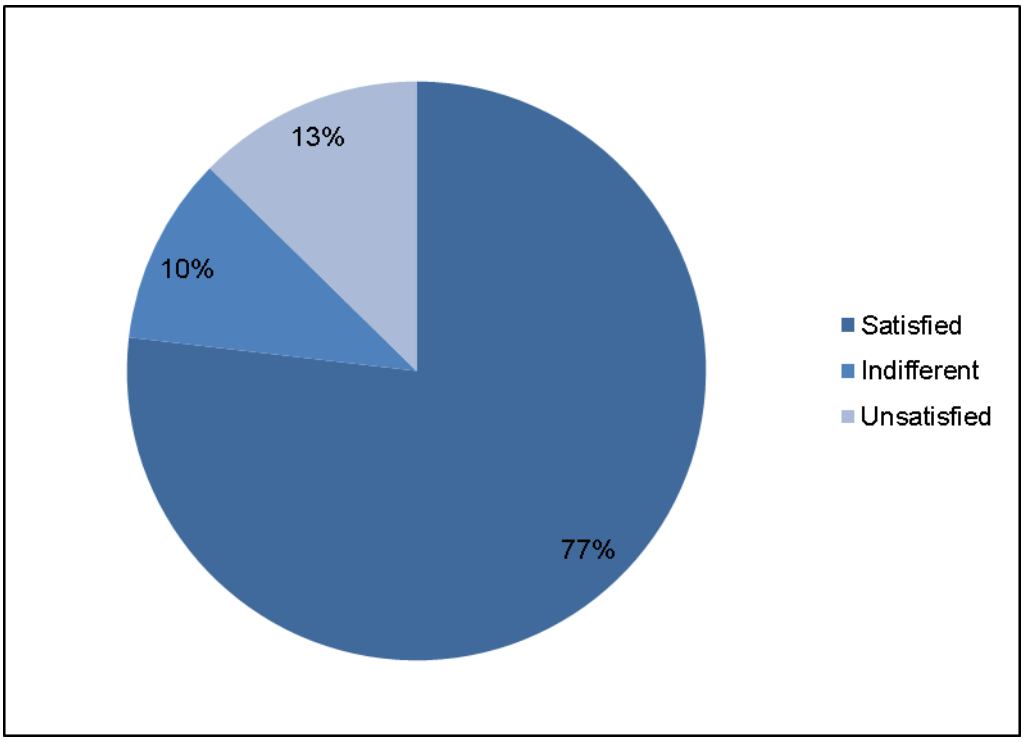

Figure 11. Percent of anglers (n=933 anglers) that were satisfied with Olympic National Park fishing regulations based on interviews conducted from October, 2009 to April, 2011.

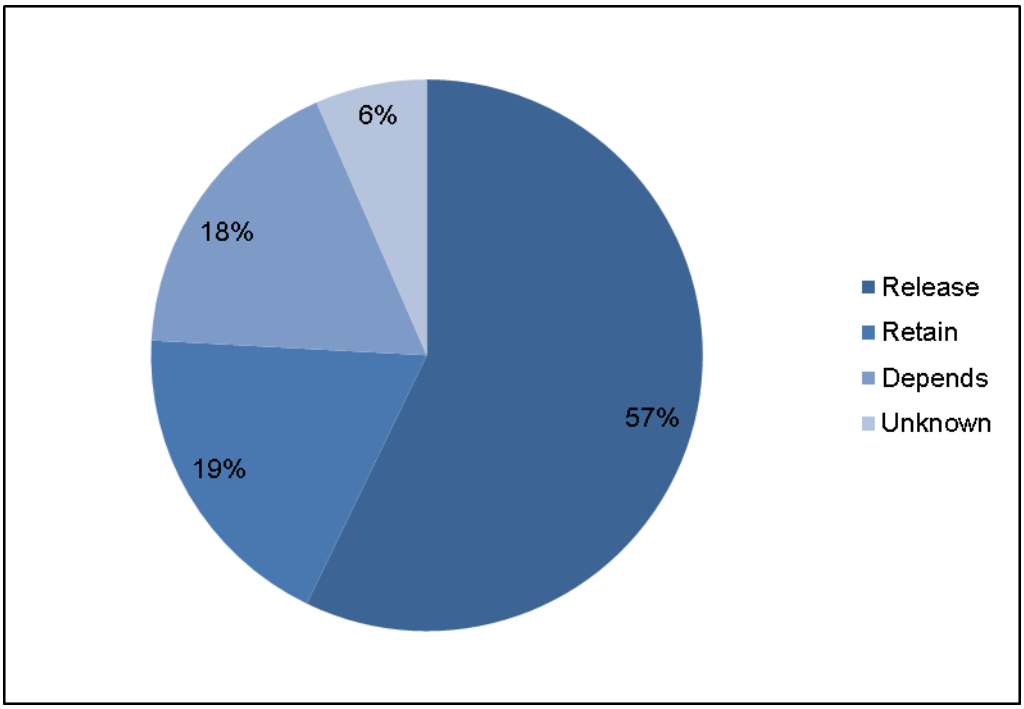

Figure 12. Angler preferences regarding releasing or retaining wild fish based on interviews (n=2,017 anglers) conducted from October, 2009 to April, 2011.

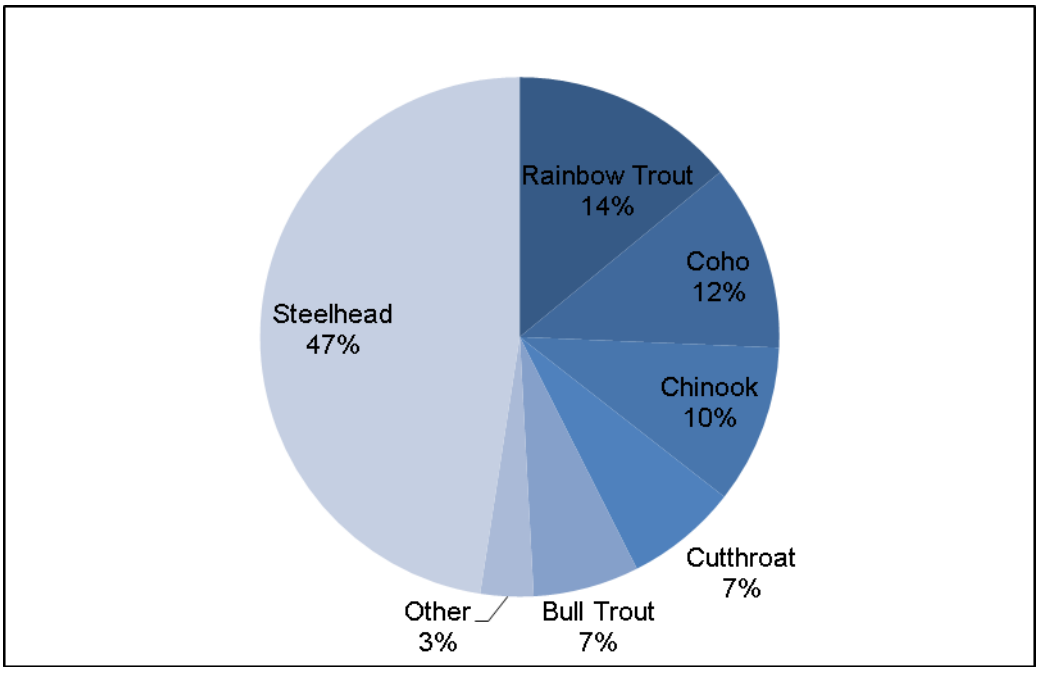

Figure 13. Percent of each fish species (n= 1,512 fish) caught in all designated survey areas from October, 2009 to April, 2011.

Comparisons Among Rivers

Although the intention of this report is to not extensively compare results between the focal rivers, a few interesting differences are noteworthy. Washington residents were the most commonly interviewed anglers on all three rivers; however half of Lake Crescent anglers were from nearby Olympic Peninsula counties. The Hoh River had only 28% of Washington anglers from Olympic Peninsula counties, the Queets even less at 23%. The Queets River anglers were more likely to be from Puget Sound counties (64%) as were those on the Hoh River (56%), followed by Lake Crescent (26%) (Figures 16, 27, 33)

Hoh River anglers showed a marked preference for fly fishing (77% anglers) compared to those on Lake Crescent (21%) and the Queets (14%) (Figures 20, 30, 37). On the Hoh River, 90% of anglers interviewed also expressed a preference for releasing rather than retaining wild fish compared to 76% on Lake Crescent and 50% on the Queets River. Hoh anglers increased preference for a catch and release fishery may also be attributed to gear restrictions present on the surveyed section of this river (Figures 18, 29, 35).

Queets and Salmon Rivers

From October 2009 to April 2011, 1603 anglers were interviewed fishing the Queets and Salmon rivers. Anglers on the Queets and Salmon rivers fished 4,894 and 4,455 hours in 2009-2010 and 2010-2011, respectively. There were variable riverflows during the winter fishing season (October-mid-April). The maximum flows recorded were 45,800cfs and 66,500cfs in 2009-10 and 2010-11 respectively, while the minimum flows were 1,780cfs and 1,280cfs (Figures 14a, 14b).

We surveyed 72% of the fishable days excluding October, 2009, the onset of the project. We conducted surveys on 115 weekdays and 73 weekend days from November, 2009 to April, 2011. Survey effort was concentrated on the days that were deemed fishable based on Queets riverflows that were less than 5,000 cfs for the Queets and 8,000 cfs for the Salmon. During the 2009- 2010 season (Nov-April 15), 74% of the days during the fishing season were deemed fishable and 68% of those days were surveyed. In the 2010-2011 season, 70% of the days of the fishing season were determined to be fishable and 76% of those days were surveyed (Table 1).

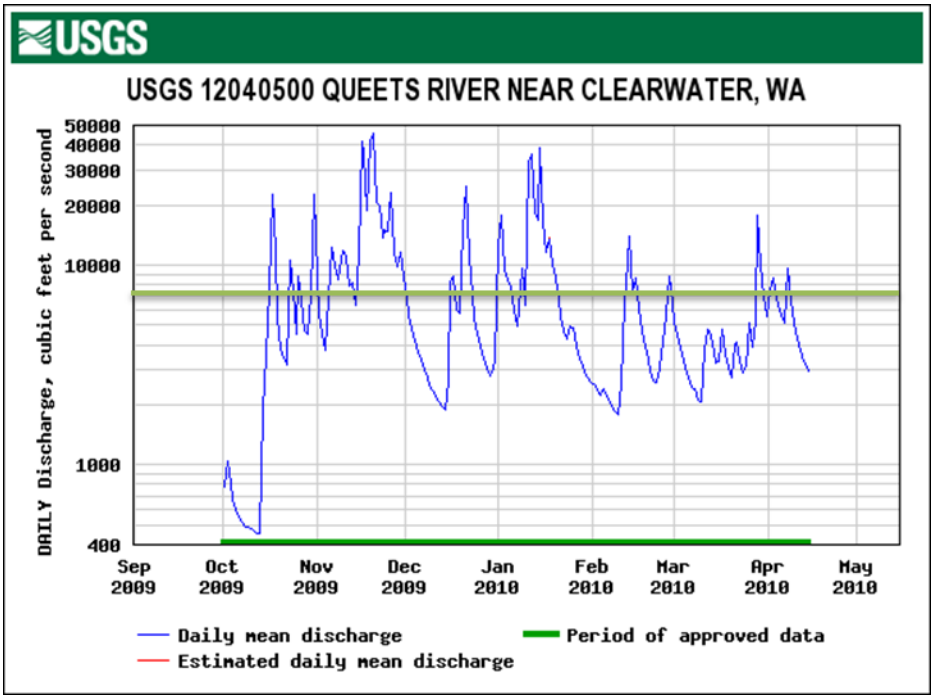

Figure 14a. Riverflows for the Queets River during the 2009-10 fishing season http://waterdata.usgs.gov/wa/nwis/uv/?site_no=12040500&PARAmeter_cd=00060,00065. No surveys were conducted on dates when riverflows were above the green line.

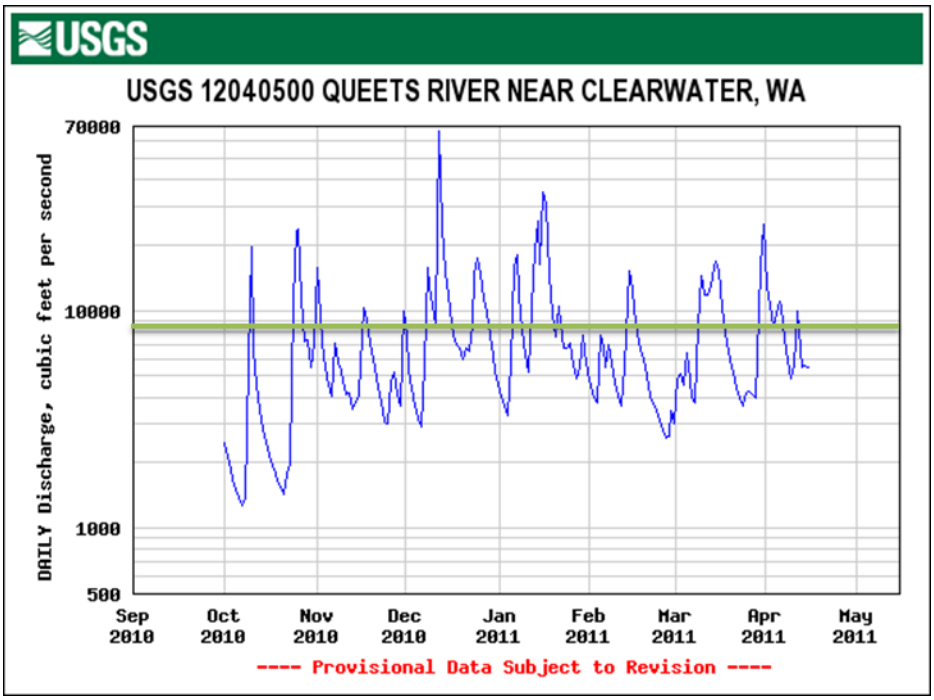

Figure 14b. Riverflows for the Queets River during the 2010 to 2011 fishing season http://waterdata.usgs.gov/wa/nwis/uv/?site_no=12040500&PARAmeter_cd=00060,00065. No surveys were conducted on dates when riverflows were above the green line.

Table 1. Percent of weekdays and weekend days surveyed in Queets River from 2009 to 2011. Survey effort was concentrated on the days that were deemed fishable based on riverflows that were less than 5,000 cfs for the Queets and 8,000 cfs for the Salmon.

	Month	Total# Weekdays	Total# Weekend days	# Weekdays Fishable	# of Fishable Weekdays Surveyed	# Weekend days Fishable	# Fishable Weekends Days Surveyed	%Fishable **Weekdays** Surveyed	%Fishable **Weekend days** Surveyed
Queets/Salmon 2009-10	October	22	9	18	1	5	0	6%	0%
	November	21	9	7	5	5	4	71%	80%
	December	23	8	21	12	8	8	57%	100%
	January	21	10	11	7	7	7	64%	100%
	February	20	8	18	10	8	8	56%	100%
	March	23	8	20	10	8	6	50%	75%
	April	11	4	8	4	2	2	50%	100%
Queets/Salmon 2010-11	October	21	10	15	6	10	8	40%	80%
	November	22	8	16	10	8	8	63%	100%
	December	23	8	14	8	5	5	57%	100%
	January	22	10	15	13	7	4	87%	57%
	February	20	8	19	16	8	7	84%	88%
	March	23	8	12	10	4	4	83%	100%
	April	11	4	4	4	2	2	100%	100%

Demographic Information

Queets River and Salmon River anglers came from a variety of different locations. Anglers were interviewed from four different countries and 14 different states within the U.S.. Of those anglers who lived in the U.S., most were from Washington State (93%) followed by Oregon (3%),

California (1%) and Idaho (1%) anglers (Figure 15). Washington anglers came from 26 different counties, with King (22%), Pierce (21%) and Grays Harbor (17%) being the most represented counties (Figure 16). Ninety-six percent of anglers interviewed in the Queets and Salmon rivers were male with 18% of all anglers 18-30 years old, 42% 31-50 years old, and 39% over 50 years of age (Figure 17).

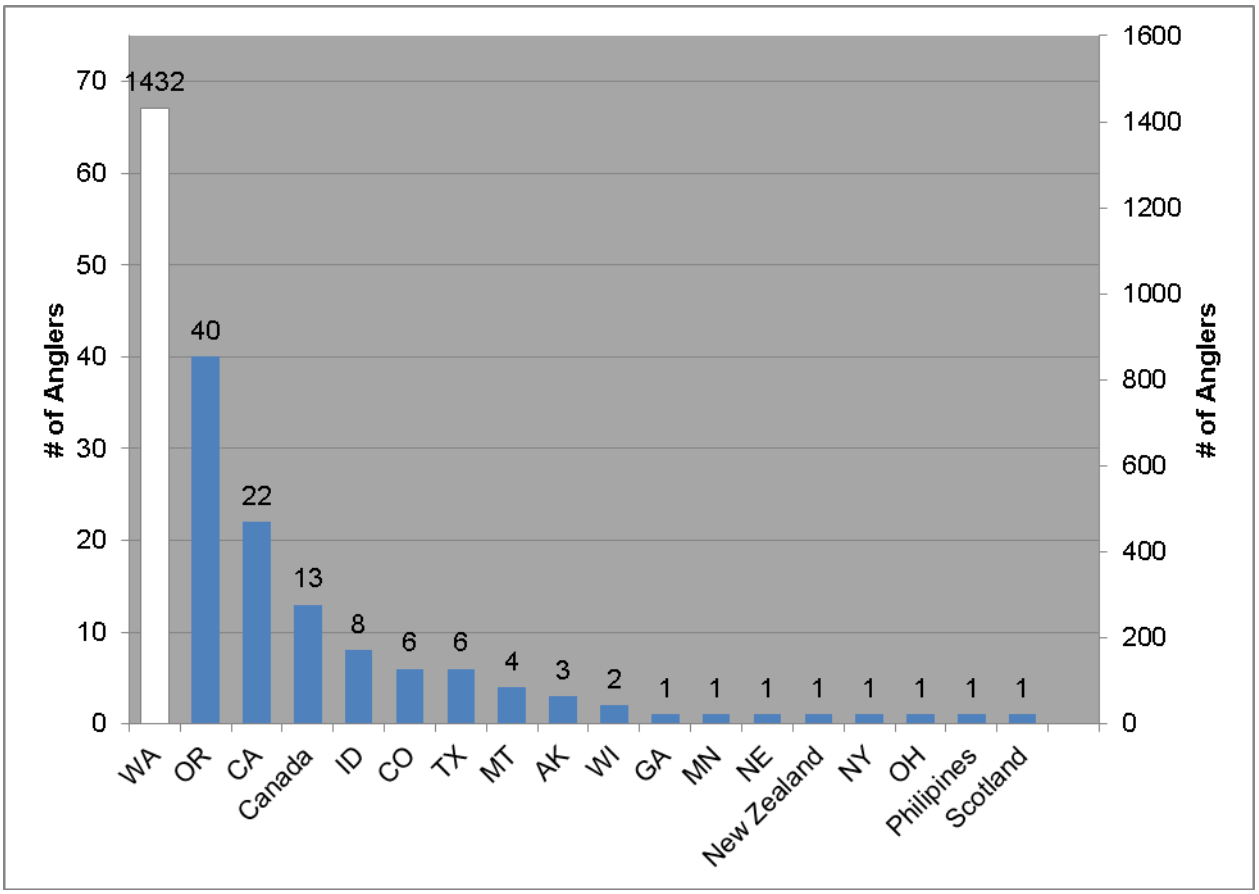

Figure 15. Angler State and country of residence on Queets River based on interviews conducted from October, 2009 to April, 2011 (n=1,544 anglers).

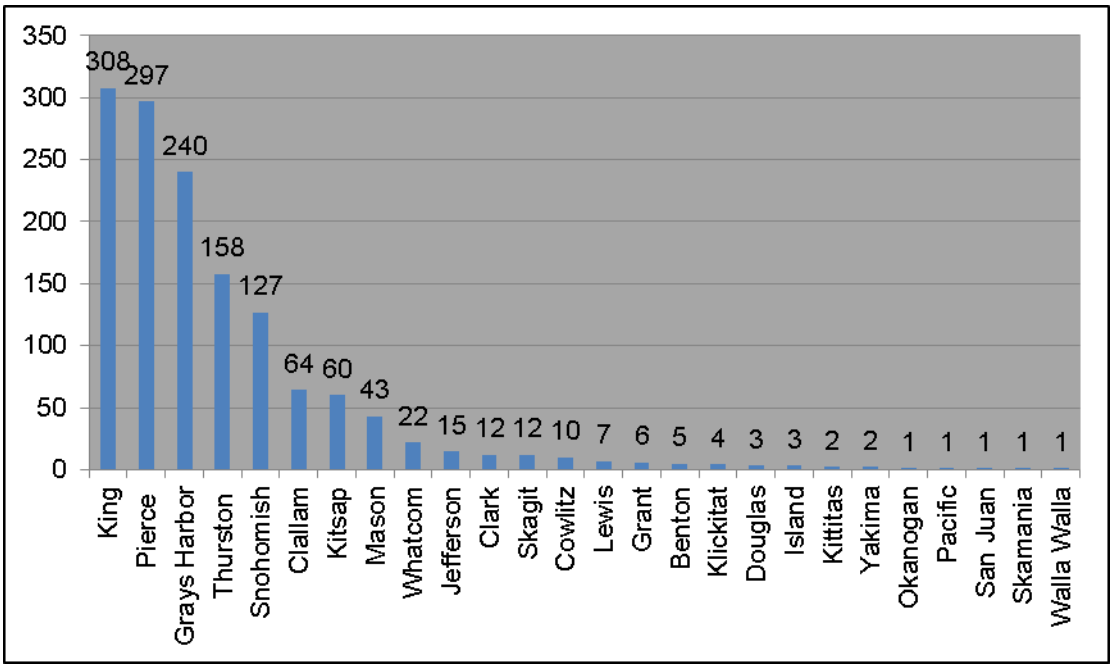

Figure 16. County of residence for Washington anglers in the Queets River based on interviews conducted from October, 2009 to April, 2011 (n=1,405 anglers).

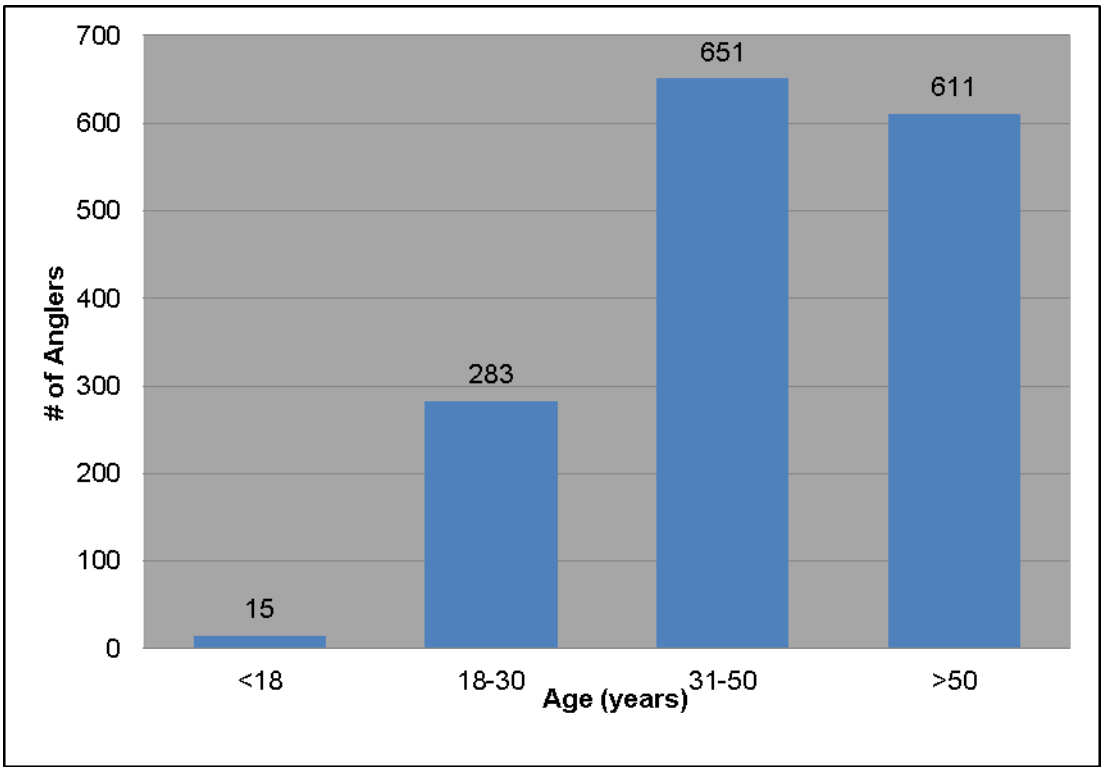

Figure 17. Age distribution of anglers fishing the Queets River based on interviews conducted from October, 2009 to April, 2011 (n=1,560 anglers).

Half of all the anglers interviewed on the Queets and Salmon rivers, preferred catch and release fishing, compared to 22% that preferred to retain wild fish. Twenty percent of anglers

interviewed indicated that their preference was dependent upon the fishing season, river, or fish species and 8% did not answer the question (Figure 18). Of all anglers interviewed on the Queets and Salmon rivers, 24% belonged to at least one fishing organization. The most popular fishing organizations were the Coastal Conservation Association (CCA) and Trout Unlimited (TU).

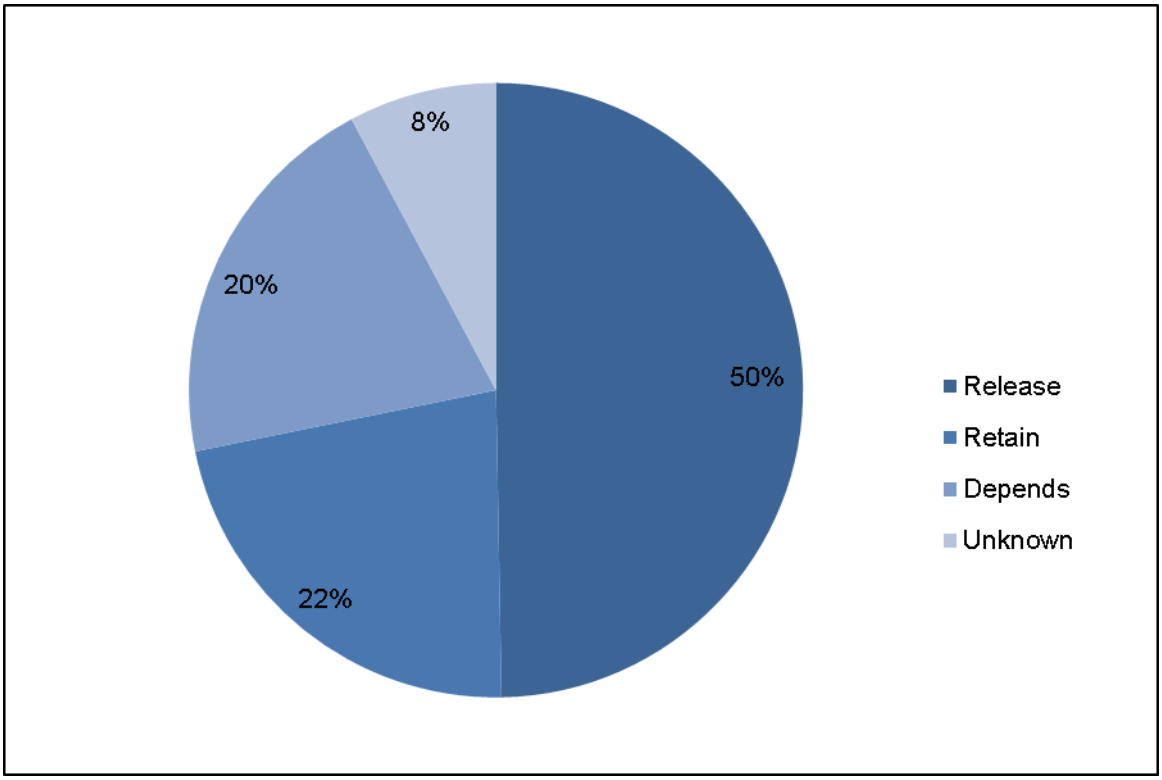

Figure 18. Angler preference for releasing or retaining wild fish on the Queets and Salmon rivers based on interviews conducted from October, 2009 to April, 2011 (n=1,603 anglers).

Catch and Effort Information

A variety of different choices are available to anglers fishing the Queets River and Salmon River, in regard to fishing location, gear type, employing a fishing guide, even the retention or release of certain fish species. Interviewers asked anglers about their choices on the day of the interview to get an understanding of common angler choices.

On the Queets River, anglers have the option of fishing from a boat, thereby allowing them greater access to the river. The maximum number of boats recorded by surveyors during the study period was 15 boats floating ~8 km section, making the distribution of boats almost 2 per river kilometer. During the study period, 55% of anglers fished from the bank and 45% fished from a boat (Figure 19). A variety of different gear types may be used on the Queets and Salmon rivers during specific seasons. Using a combination of gear types was the most popular choice (34%) closely followed by using lures (33%). Bait fishing (15%), fly-fishing (14%) and plug fishing (5%) were also represented, although not as popular (Figure 20). Of a total of 812 fishing trips (1,603 anglers) on the Queets and Salmon rivers, 7% were reported as guided trips (Figure 21). The majority of the guided fishing trips were fly fishing trips (56%), followed by lure fishing (20%), those fishing with a combination of gear (20%) and bait and plug fishing comprised 2% each of the guided fishing trips.

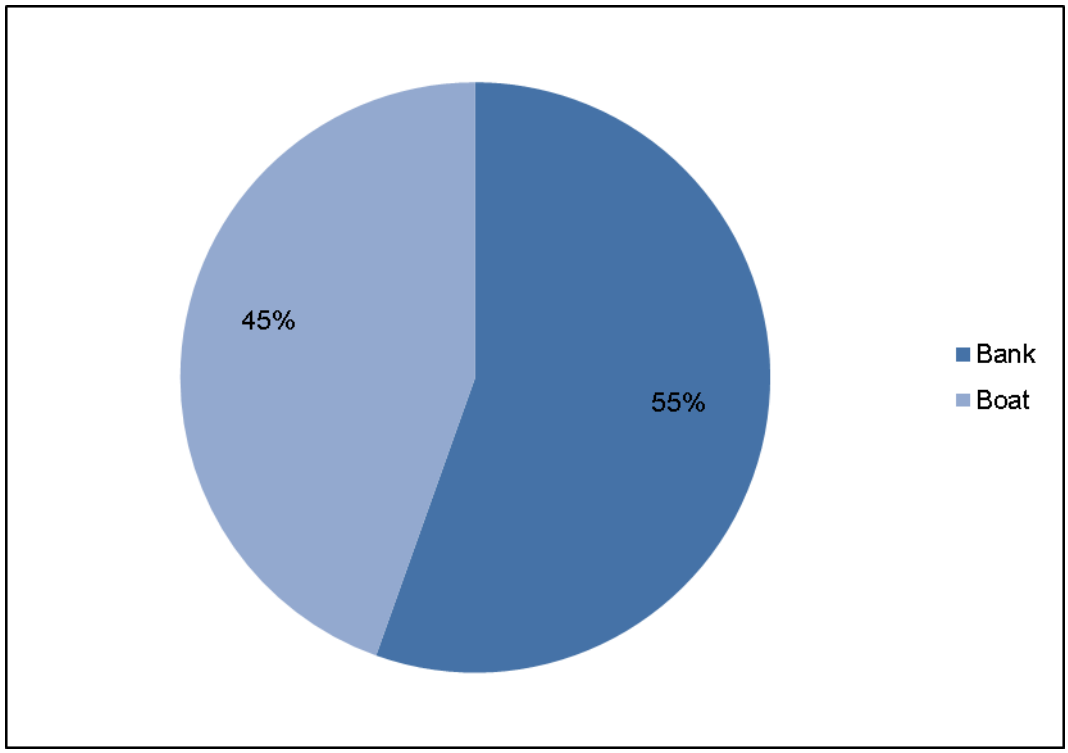

Figure 19. Proportion of boat versus bank angler on the Queets River based on interviews conducted from October, 2009 to April, 2011 (n=1,603 anglers).

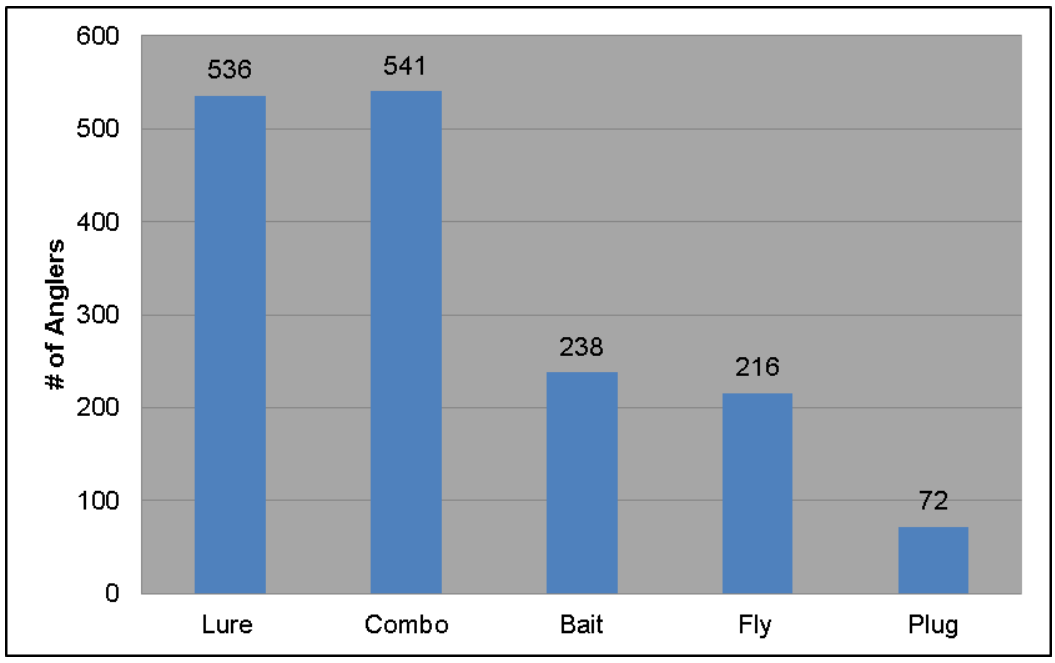

Figure 20. Gear types used on the Queets River from 2009 to 2011 (n=1,603 anglers).

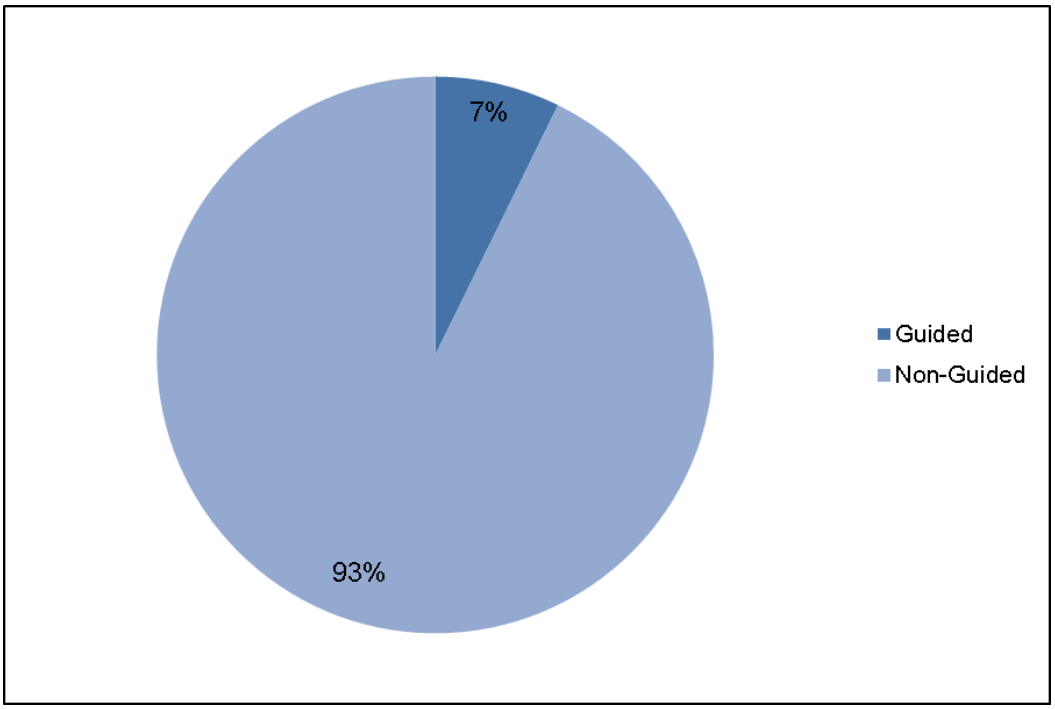

Figure 21. Guided and non guided fishing trips on Queets River from 2009 to 2011 (n=1,505 trips).

During interviews anglers were asked about both target and non-target fish species. A total of 10 different fish species were caught during the study period, four of which were non-target species. Steelhead was the most common fish targeted with 85% of anglers fishing specifically for steelhead. The next common target species was coho with 10% of anglers targeting coho (Figure 22).

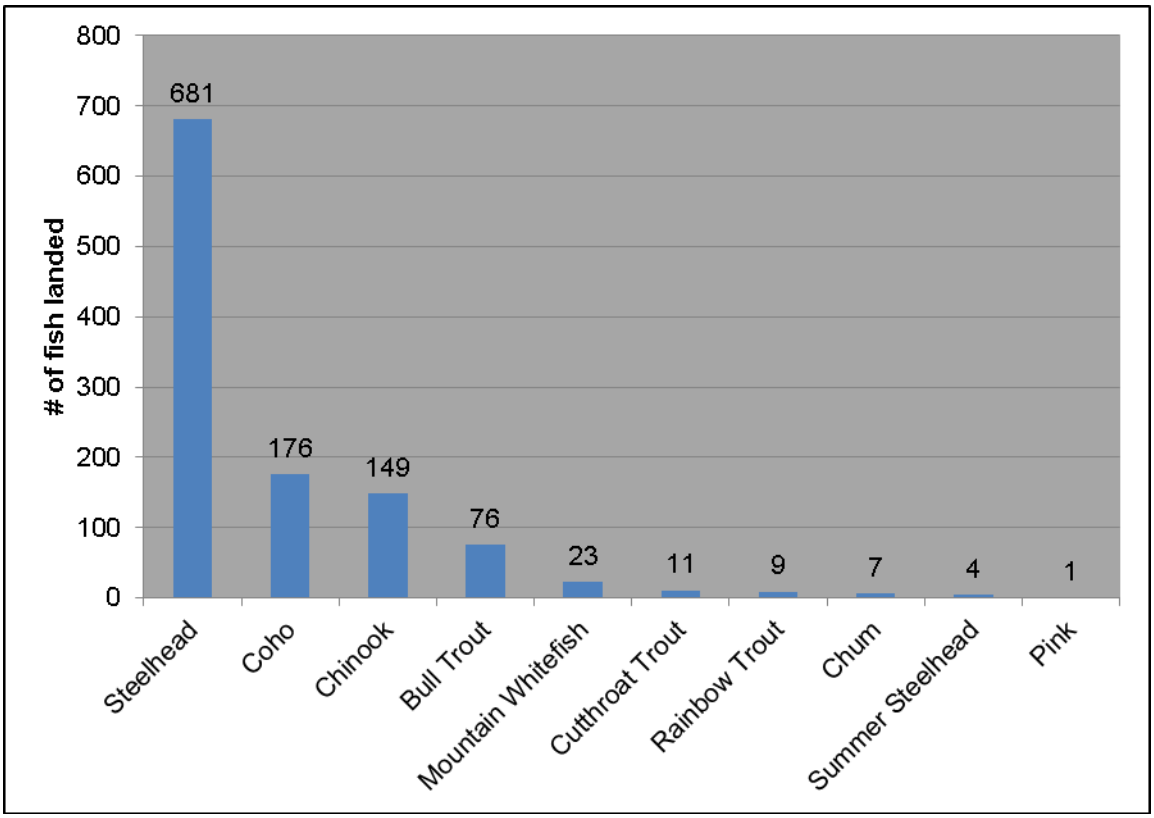

Figure 22. Numbers of each fish species captured in the Queets River sport fishery from 2009 to 2011 (n=1,137 fish).

During the study period a total of 685 steelhead were caught on the Queets and Salmon rivers, 57% of which were of hatchery origin and 40% were wild steelhead, the remaining were of unknown origin (Figure 23). Anglers released 57% of steelhead caught and retained 43%. Although the retention of wild or unmarked steelhead is prohibited in OLYM, two of the steelhead harvested were unmarked fish. Of the fish that were released 99 were marked, 270 unmarked and 18 of unknown origin (Table 2).

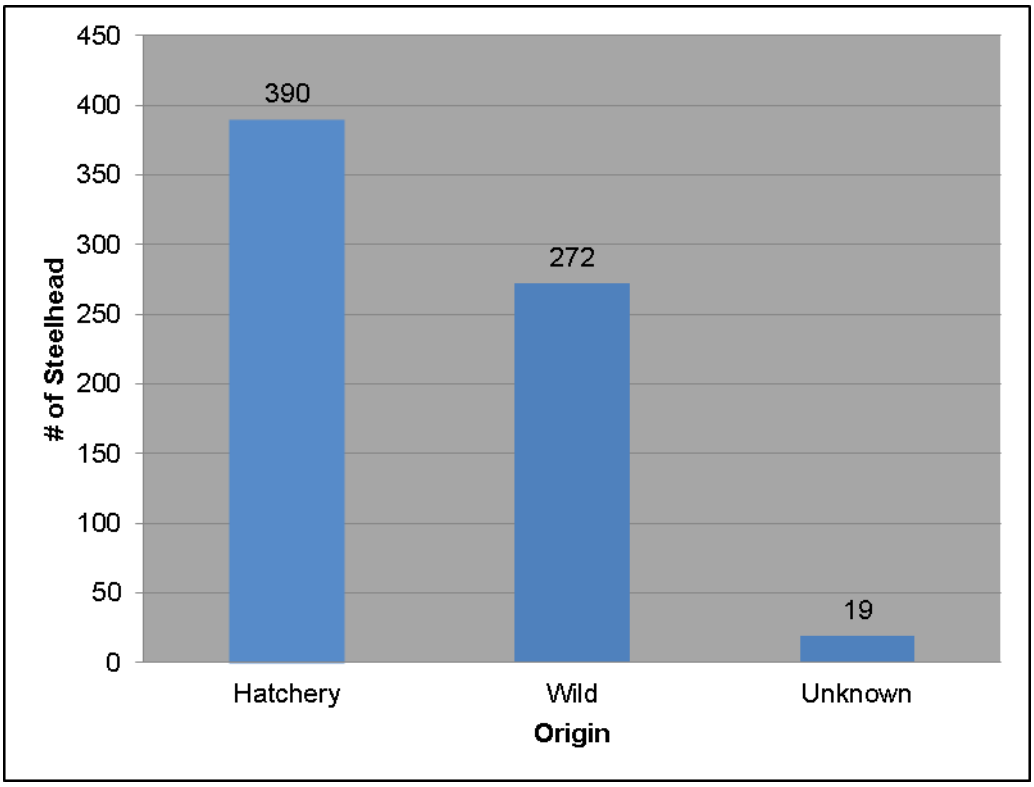

Figure 23. Numbers of wild and hatchery winter steelhead captured in the Queets and Salmon rivers from 2009 to 2011 (n=681 winter steelhead).

Table 2. Monthly catch and reported fishing effort for steelhead in the Queets and Salmon rivers.

Month		Hours of Effort	Marked Steelhead Released	Unmarked Steelhead released	Unknown Steelhead Released	Total Steelhead released	Marked Steelhead Harvested	Unmarked Steelhead Harvested	Unknown Steelhead Harvested	Total Steelhead Harvested
2009-2010	October	14.72	0	0	0	0	0	0	0	0
	November	433.92	0	0	0	0	2	1	0	3
	December	1557.67	8	11	2	21	83	0	0	83
	January	514.33	14	5	5	24	3	0	0	3
	February	955.28	17	34	3	54	6	1	0	7
	March	1214.93	6	79	2	87	0	0	0	0
	April	203.13	0	25	0	25	0	0	0	0
2010-2011	October	840.46	0	3	0	3	0	0	0	0
	November	852.19	17	13	3	33	89	0	0	89
	December	999.3	8	7	1	16	101	0	0	101
	January	125.96	5	1	2	8	1	0	0	1
	February	665.95	21	29	0	50	7	0	0	7
	March	717.38	3	39	0	42	0	0	0	0
	April	266.65	0	24	0	24	0	0	0	0

Angler success was measured in the number of hours it took to catch each fish or catch per unit effort (CPUE), by this measurement the lower the CPUE the higher the success of the angler. In 2009 to 2011, anglers that were targeting steelhead from November through April fished for an average of 13 hours per steelhead landed (Figure 24).

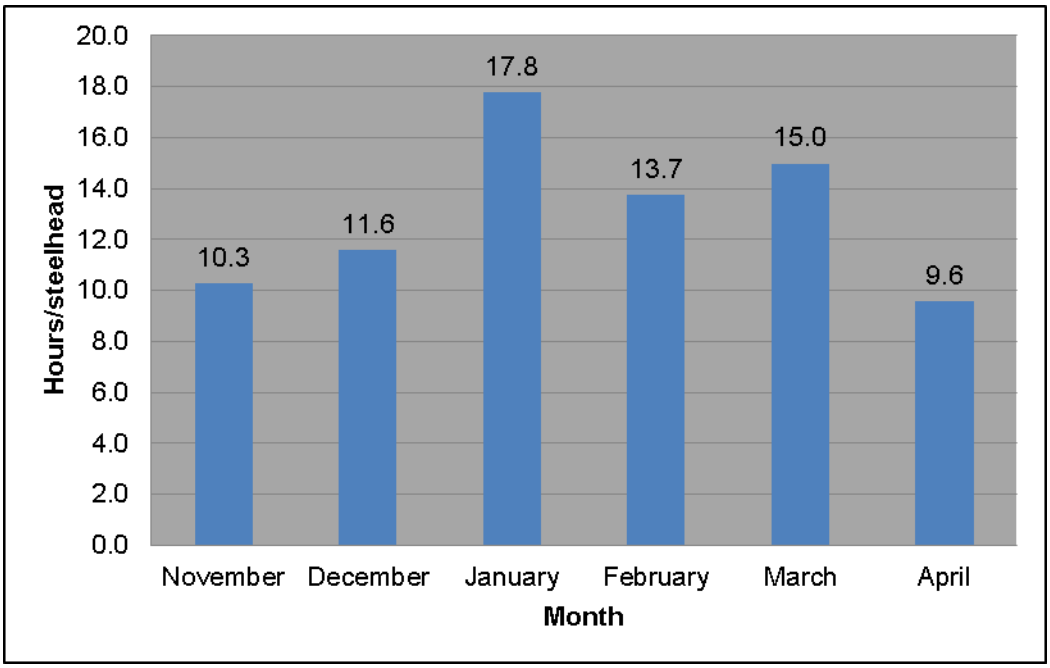

Figure 24. Steelhead catch per unit effort in hours per fish caught based on angler interviews conducted from 2009 to 2011 (n=9,349 hours of effort).

Incidental Catch of Federally Threatened Bull Trout

The most common non-target species caught were federally threatened bull trout. Incidental catch of bull trout made up 7% of the total catch. During the study period 42 and 34 bull trout were caught on the Queets and Salmon rivers in 2009-10 and 2010-11, respectively (Table 3). Other non-target catch included mountain whitefish (2%), cutthroat trout (1%) and rainbow trout (1%) (Figure 22).

Table 3. Comparisons of bull trout catch and fishing effort on the Queets/Salmon and Hoh rivers, 2009 to 2011.

Month		Hours of Effort	Bull Trout Caught & Released		Total Bull Trout Caught & Released
			Queets	Hoh	
2009-2010	October	14.7	0	n/a	0
	November	433.9	9	n/a	9
	December	1557.7	7	n/a	7
	January	556.8	9	3	12
	February	1079.5	8	9	17
	March	1366.2	9	0	9
	April	241.0	0	0	0
2010-2011	October	840.5	1	n/a	1
	November	852.2	8	n/a	8
	December	1016.1	4	n/a	4
	January	126.0	5	n/a	5
	February	789.0	10	4	14
	March	798.4	6	0	6
	April	287.4	0	0	0
Total		9959.2	76	16	92

Hoh River

During the study period (January 2010 – April 2011), 205 anglers were interviewed fishing the Hoh River. Anglers on the Hoh River fished 356 and 217 hours in 2010 and 2011, respectively. Anglers that fished the Hoh River during the winter fishing season (January – mid-April) encountered variable river conditions. The maximum flows recorded during those months were 18,400 cfs and 9,350 cfs in 2010 and 2011 respectively, while the minimum flows were 1,130 cfs and 1,320 cfs (Figure 25a, 25b). Our survey effort was concentrated on the days where river flows were less than 4,000 cfs, which we determined to be the fishable flows on this stretch of the Hoh River. In 2010, 77% of the days during the fishing season were determined to be fishable, 63% of those days were surveyed. In 2011, 65% of the days of the fishing season were determined to be fishable, 56% of those days were surveyed (Table 4).

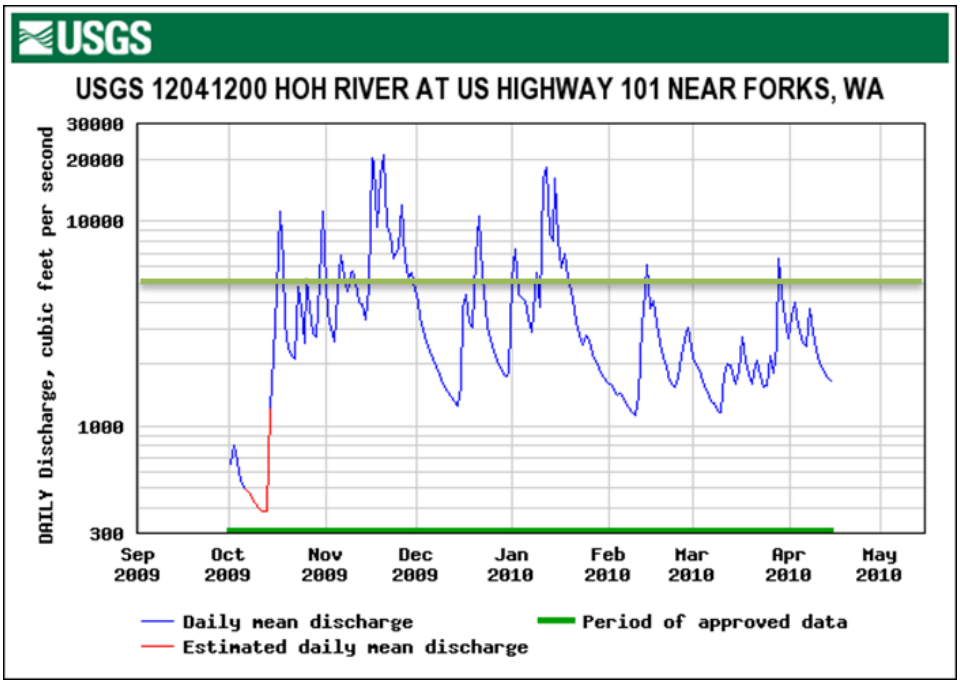

Figure 25a. Hoh River flow, 2010 season courtesy of USGS streamflow website at http://waterdata.usgs.gov/wa/nwis/uv/?site_no=12041200&PARAmeter_cd=00060,00065. No surveys were conducted on dates when river flows were above the green line.

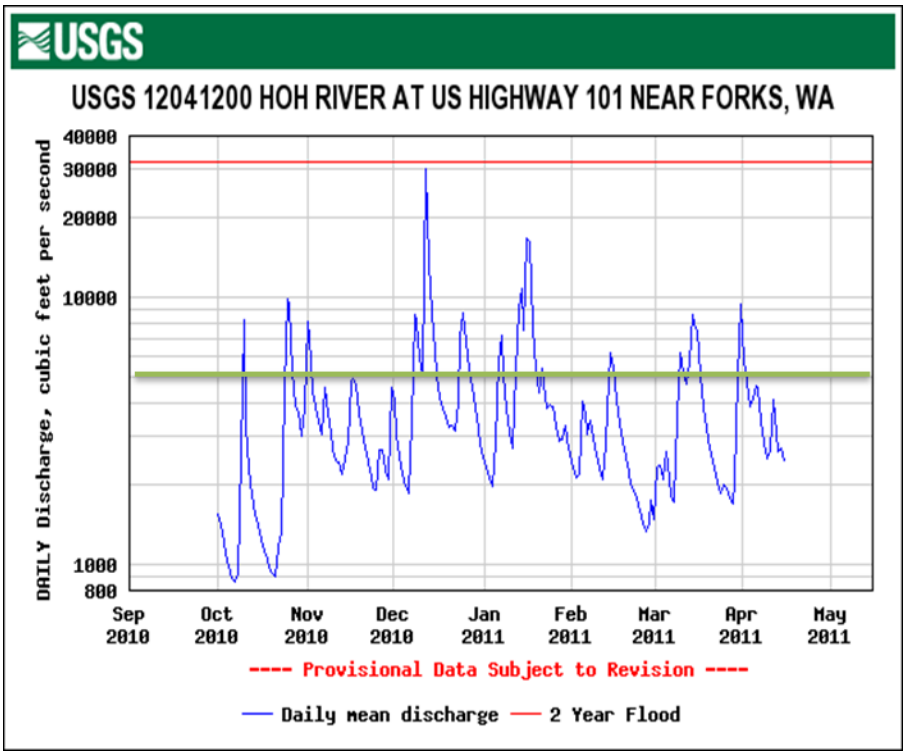

Figure 25b. Hoh River flow, 2011 season courtesy of USGS streamflow website at http://waterdata.usgs.gov/wa/nwis/uv/?site_no=12041200&PARAmeter_cd=00060,00065. No surveys were conducted on dates when river flows were above the green line.

Table 4. Breakdown of fishable and surveyed days on Hoh River.

	Month	Total# Weekdays	Total# Weekend days	# Weekdays Fishable	# of Fishable Weekdays Surveyed	# Weekend days Fishable	# Fishable Weekends Days Surveyed	%Fishable **Weekdays** Surveyed	%Fishable **Weekend days** Surveyed
Hoh 2010	January	21	10	10	6	5	4	60%	80%
	February	20	8	19	10	6	6	53%	100%
	March	23	8	20	10	8	8	50%	100%
	April	11	4	10	4	3	3	40%	100%
Hoh 2011	February	20	8	12	11	5	1	92%	20%
	March	23	8	13	9	6	0	69%	0%
	April	11	4	8	6	4	0	75%	0%

Demographic Information

Hoh River anglers came from a variety of different locations. We interviewed anglers from three different countries and 11 different states within the U.S. Of those anglers who lived in the U.S. the majority were Washington State residents (86%); California (3%), Montana (3%) and Idaho (2%) anglers were the next most abundant (Figure 26). Washington anglers came from 13 different counties, with King (28%), Clallam (19%) and Pierce (11%) being the most represented

counties (Figure 27). The vast majority of anglers interviewed were male (91.2%) with 18% of all angler 18-30 years old, 38% 31-50 years old, and 44% over 50 years of age (Figure 28).

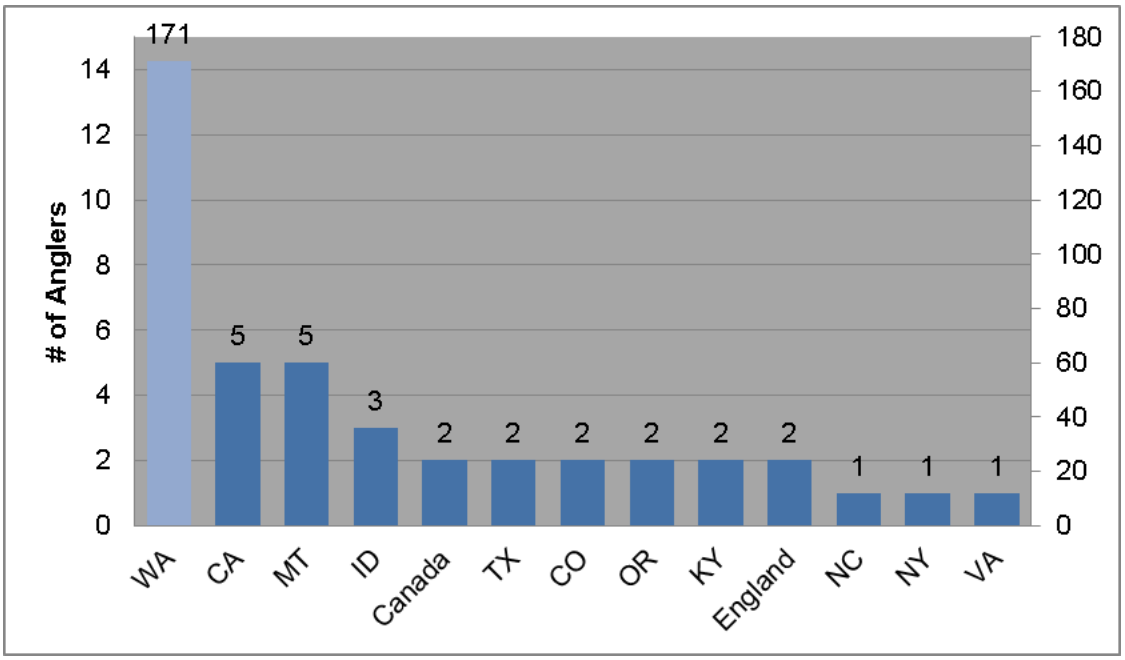

Figure 26. State or country of residence of anglers interviewed in the Hoh River, 2010 to 2011 (n=199 anglers).

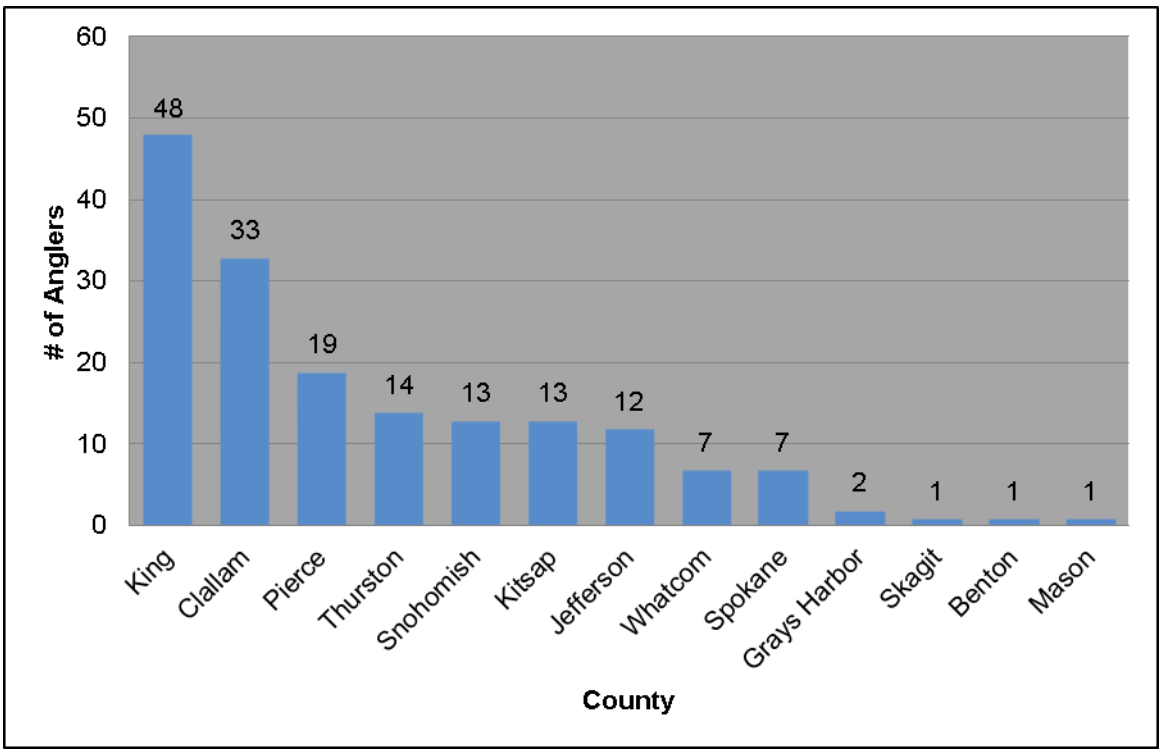

Figure 27. County of residence for anglers in the Hoh River, 2010 to 2011 (n=171).

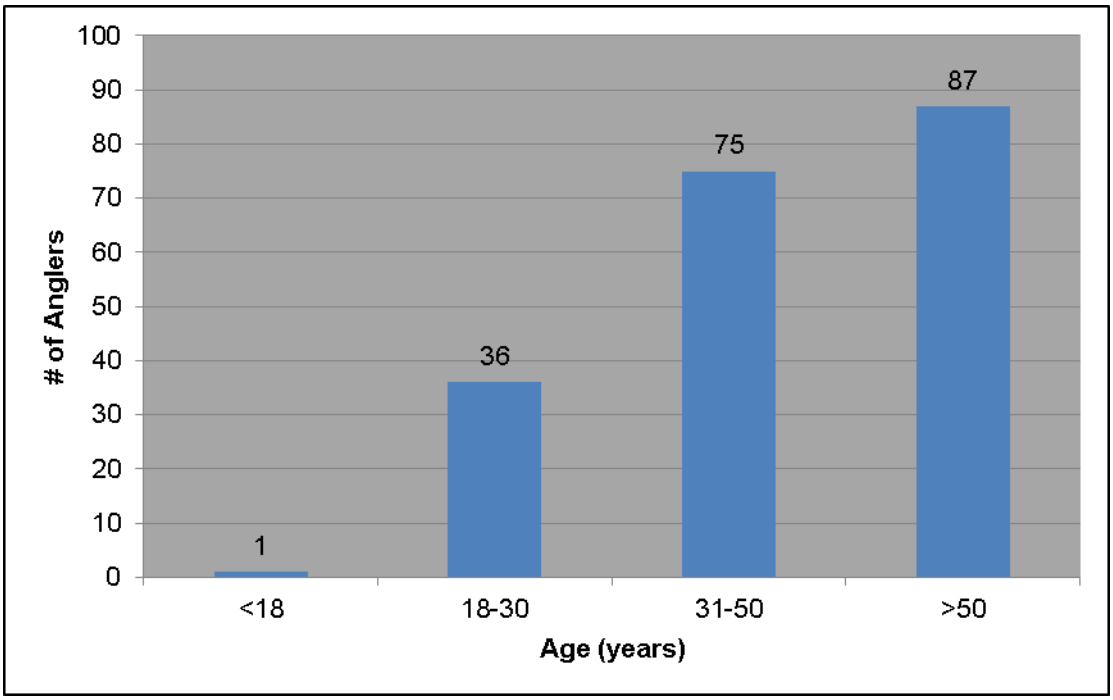

Figure 28. Angler age distribution on Hoh River, 2010 to 2011 (n=199 anglers).

Ninety percent of the anglers interviewed on the Hoh River, preferred catch and release fishing; only 4% preferred to retain wild fish. Some anglers (3%) preferences on release or retention was dependent upon the fishing season, river, or fish species (Figure 29). Of all anglers interviewed on the Hoh River, 28% belonged to fishing organizations. The most popular fishing organizations were Trout Unlimited (TU) and the Wild Steelhead Coalition (WSC).

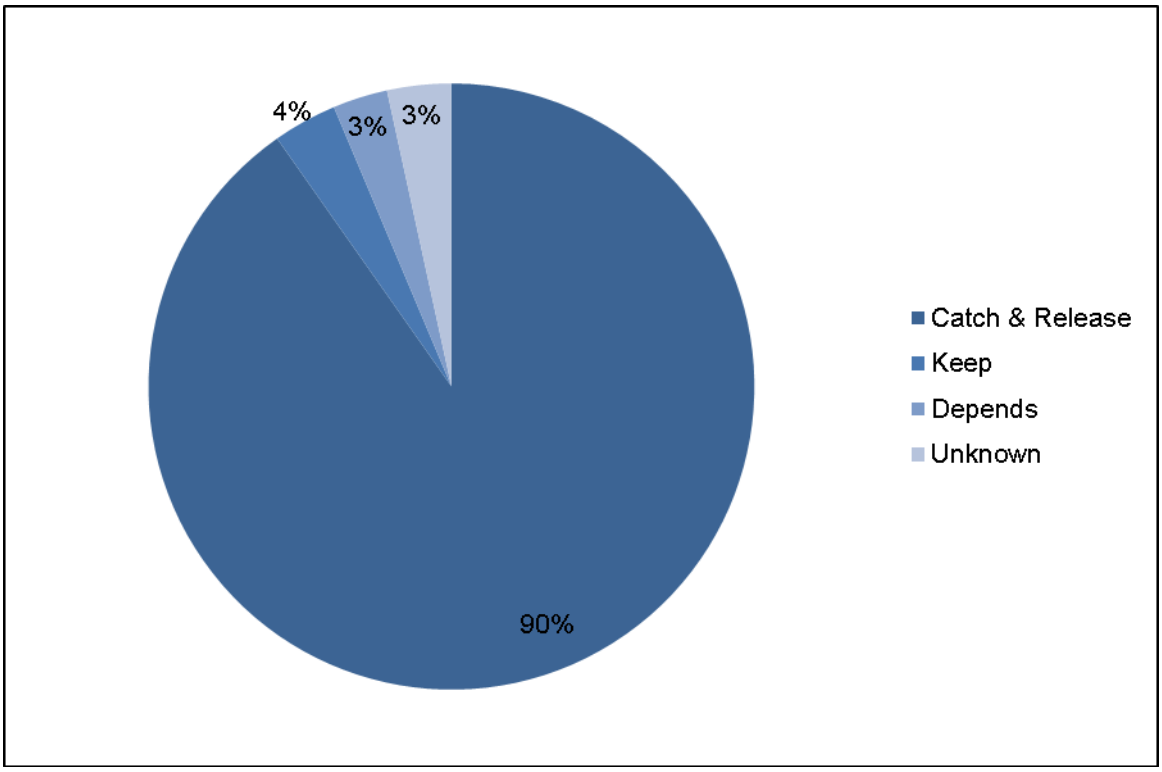

Figure 29. Angler catch and release or retain preference for wild fish, Hoh River, 2010 to 2011 (n=205 anglers).

Catch and Effort Information

Hoh anglers used a variety of different fishing gear types, even though sections of the Hoh River were restricted fly-fishing only areas. Fly-fishing was the most popular gear choice with 77% of anglers fishing this method. Angler interviewed also used lures (22%), combination of gear (1%) and a few individuals used plugs (0.5%) (Figure 30). Of the total of 205 anglers interviewed on the Hoh River, only one angler was employing a fishing guide.

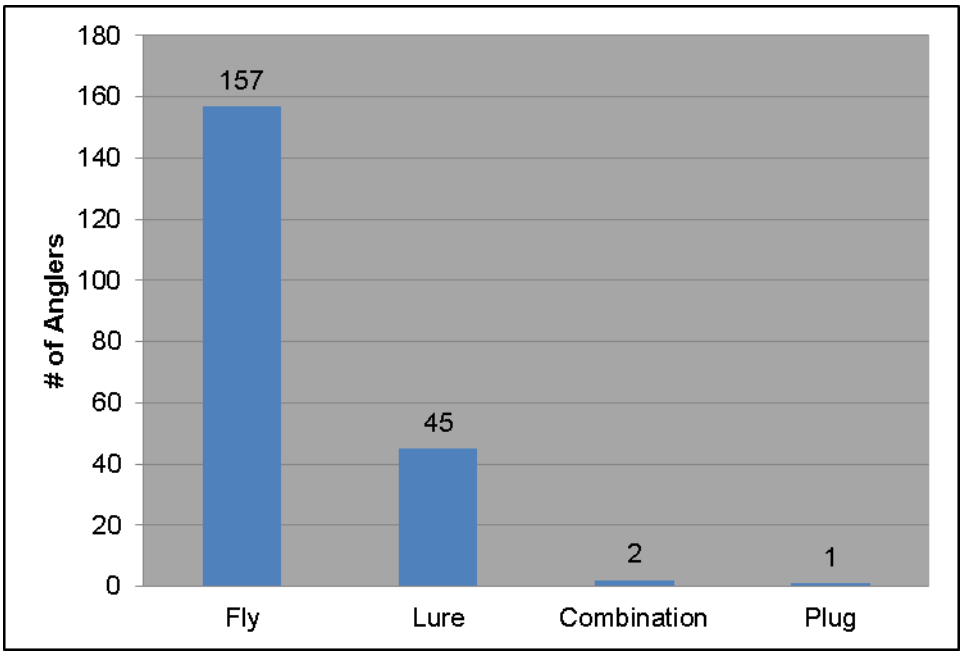

Figure 30. Angler Gear type, Hoh River, 2010 to 2011 (n=205 anglers).

During interviews anglers were asked about both target and non-target fish species. A total of seven different fish species were caught during the study period, two of which were non-target species (Figure 31). Steelhead was the most common fish targeted with 94% of anglers fishing specifically for steelhead. Steelhead made up 54% of the total catch on the Hoh River during our study period (Table 5). The most common non-target species caught was bull trout. Incidental bull trout catch made up 29% of the total catch and mountain whitefish comprised 3%.

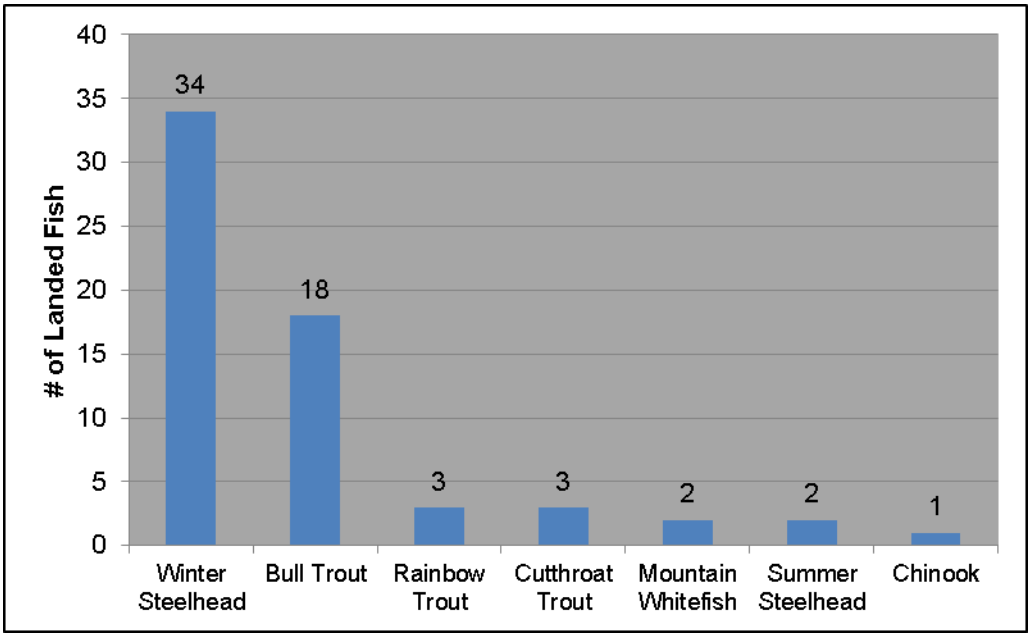

Figure 31. Numbers of each fish species landed in the upper Hoh River in Olympic National Park, 2010 to 2011(n=63 fish)

Table 5. Numbers of marked and unmarked winter steelhead released and harvested by month in the upper Hoh River in Olympic National Park, 2010 to 2011.

Month		Hours of Effort	Marked Steelhead Released	Unmarked Steelhead released	Total Steelhead released	Marked Steelhead Harvested	Unmarked Steelhead Harvested	Total Steelhead Harvested
2010	January	42.42	0	1	1	0	0	0
	February	124.23	1	6	7	0	0	0
	March	151.28	0	5	5	0	0	0
	April	37.83	0	4	4	0	0	0
2011	February	123.05	0	10	10	1	0	1
	March	73.43	0	4	4	0	0	0
	April	20.75	0	3	3	0	0	0

Lake Crescent

During the summer of 2010, 140 fishermen were interviewed on Lake Crescent based on opportunistic roving creel surveys during limited days. Those anglers spent a total of 276 hours fishing the lake.

Demographic Information

We interviewed anglers from the U.S. and Canada. Of those anglers who lived in the U.S., 79% were from Washington State. Anglers from Oregon (5%) and California (4%) were the next most frequently interviewed (Figure 32). Washington anglers came from 16 different counties, with the highest percentages in Clallam (48%), Kitsap (15%) and King (12%) counties (Figure 33). Eighty six percent of anglers were male and 14% of all anglers were 18-30 years old, 33% were 31-49 years old, and 47% were over 50 years of age (Figure 34).

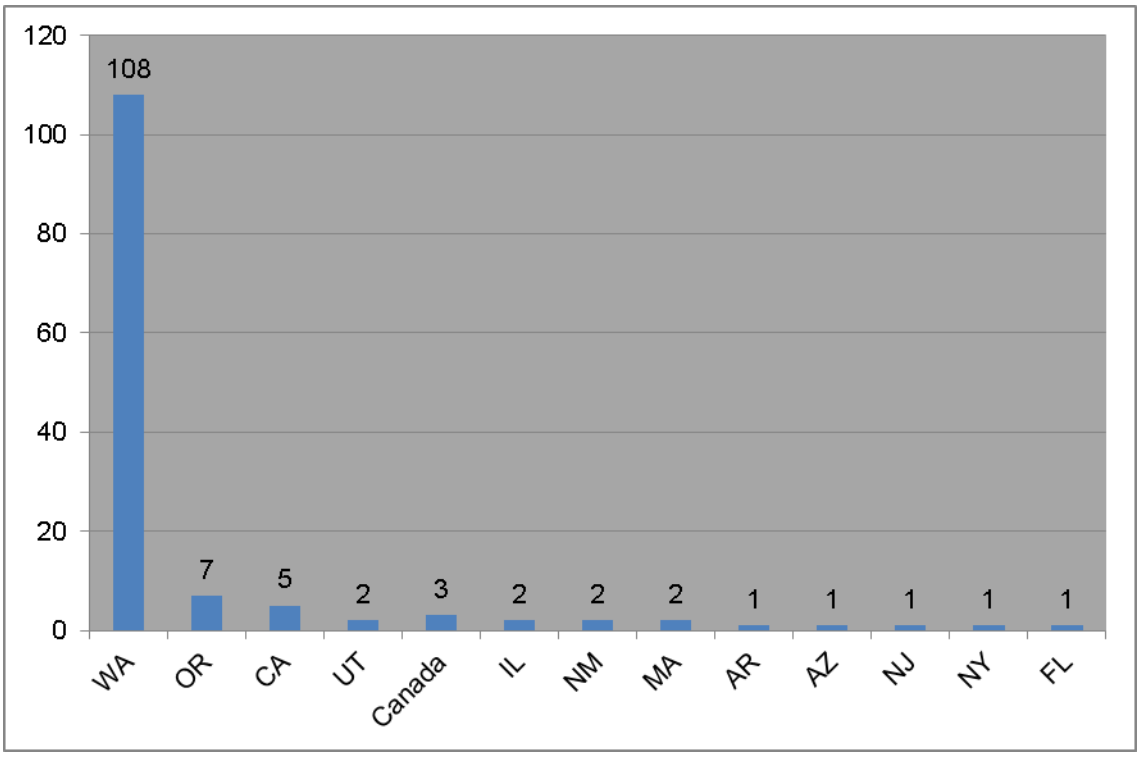

Figure 32. Angler state or country of residence on Lake Crescent based on interviews in summer, 2010 (n=136 anglers).

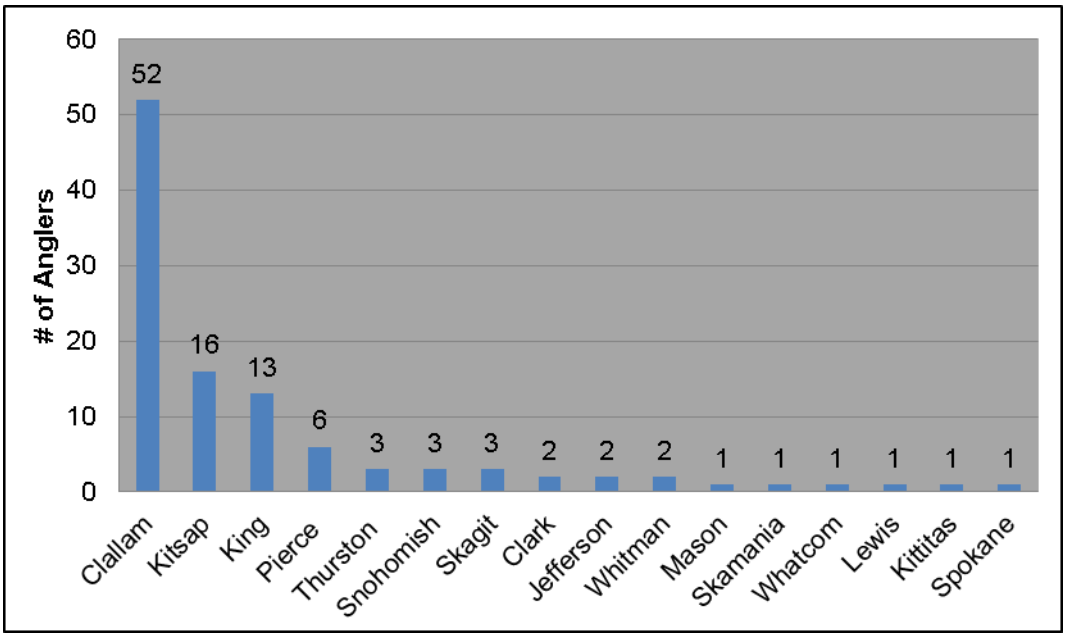

Figure 33. Angler county of residence on Lake Crescent in summer of 2010 (n=108 anglers).

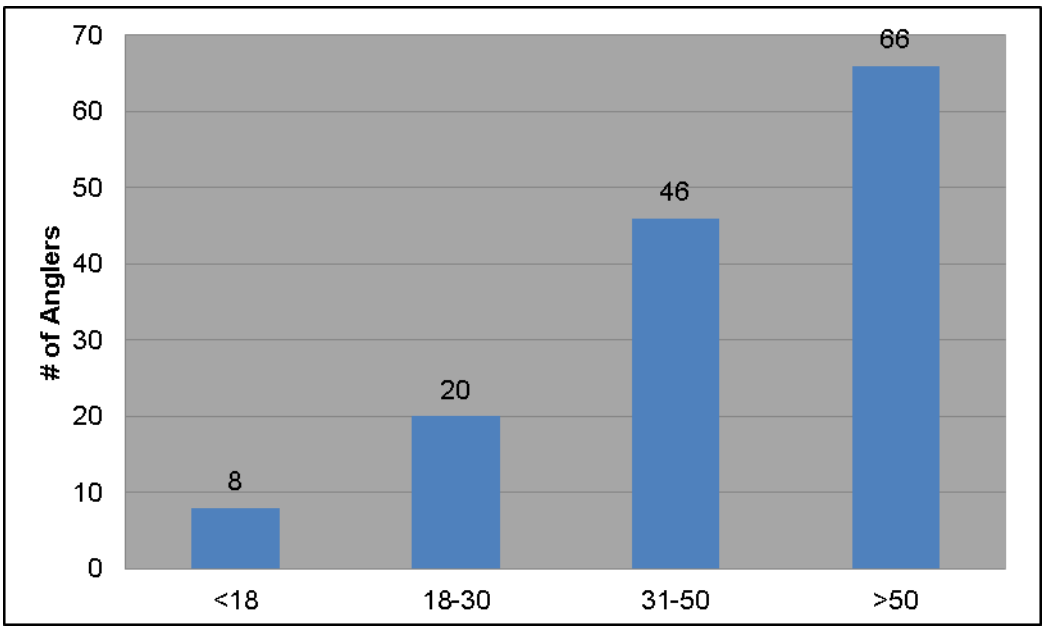

Figure 34. Age of anglers on Lake Crescent in summer of 2010 (n=140).

The majority of anglers interviewed on Lake Crescent preferred catch and release fishing (76%), compared with 9% that preferred to retain caught fish. Some anglers (12%) release or retention preference was dependent on the situation (Figure 35). Of all anglers interviewed on Lake Crescent, 13% belonged to fishing organizations. The most popular fishing organizations were Olympic Peninsula Fly Fishers, Trout Unlimited (TU), and Graywolf Flyfishing Club.

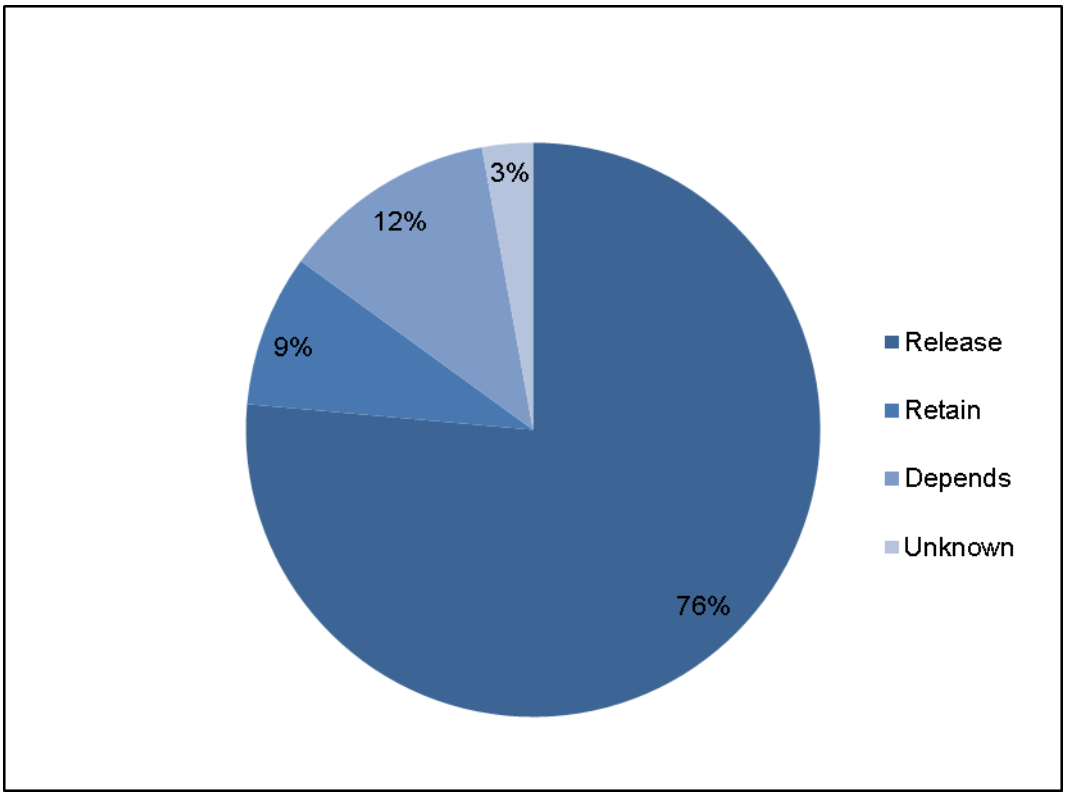

Figure 35. Angler preference regarding retaining wild fish, Lake Crescent Summer 2010 (n=140 anglers).

Catch and Effort Information

Anglers may access Lake Crescent either by bank fishing or fishing from a boat. In the summer of 2010, 50% of anglers fished from the boat, 46% were bank fisherman and 4% used both bank and boat access (Figure 36). The majority (69%) of the anglers interviewed were fishing with lures, 21% were fly fishing and the remaining 10% were using a combination of gear types (Figure 37).

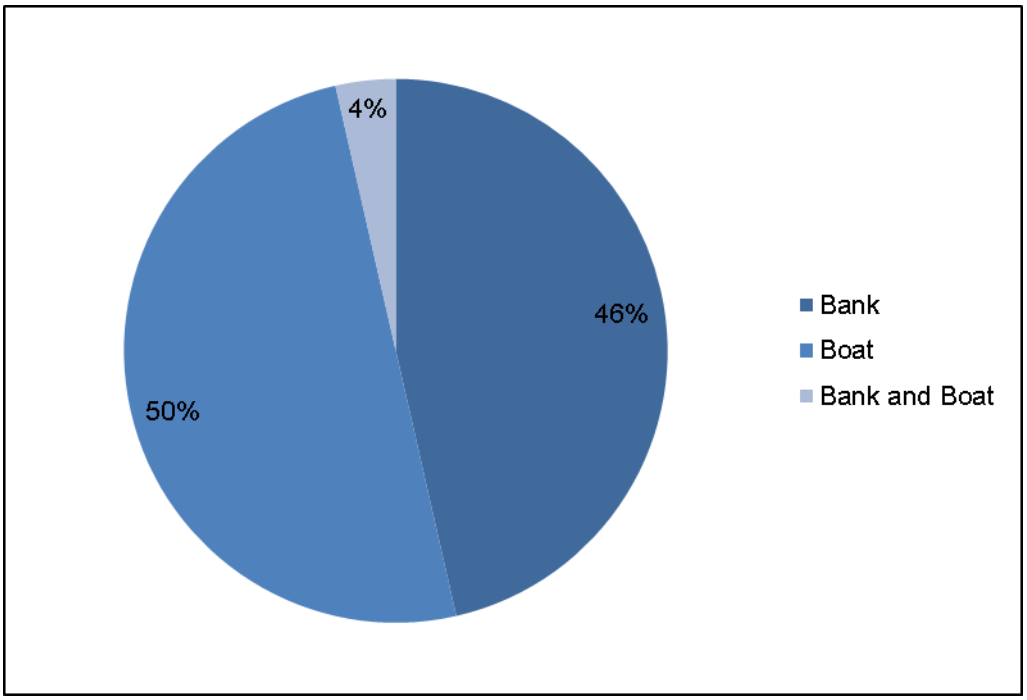

Figure 36. Numbers and percentages of boat and bank anglers, Lake Crescent, 2010 (n=140 anglers).

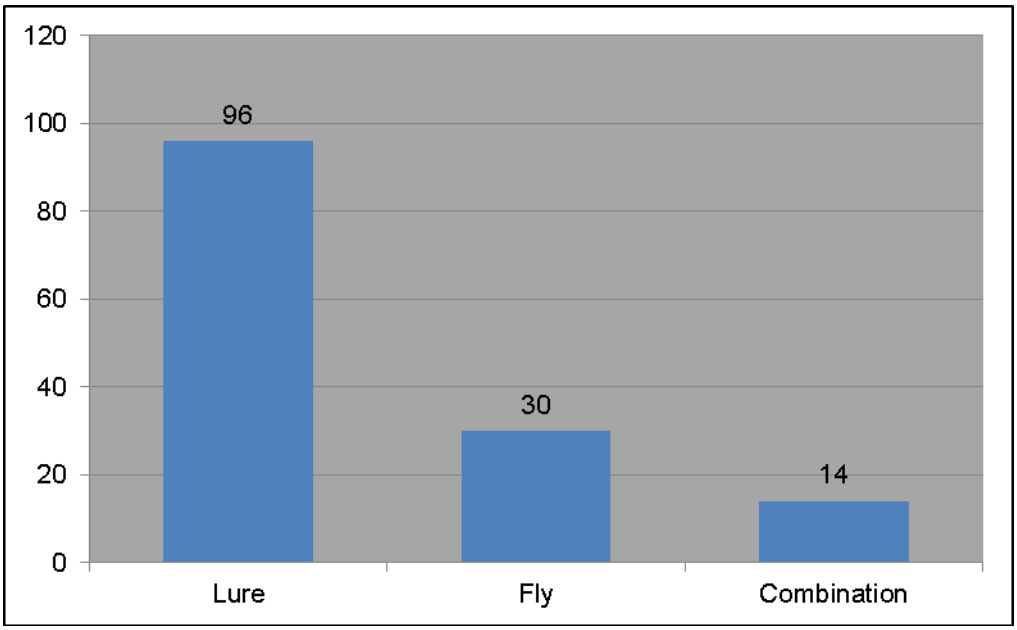

Figure 37. Angler gear type, Lake Crescent, 2010 (n=140 anglers).

Of the 140 anglers interviewed on Lake Crescent during the summer season of 2010, 202 fish were caught. A total of 50% were Beardslee trout, 44.5% were cutthroat trout, 5% were kokanee and 0.5% were sculpin (Figure 38).

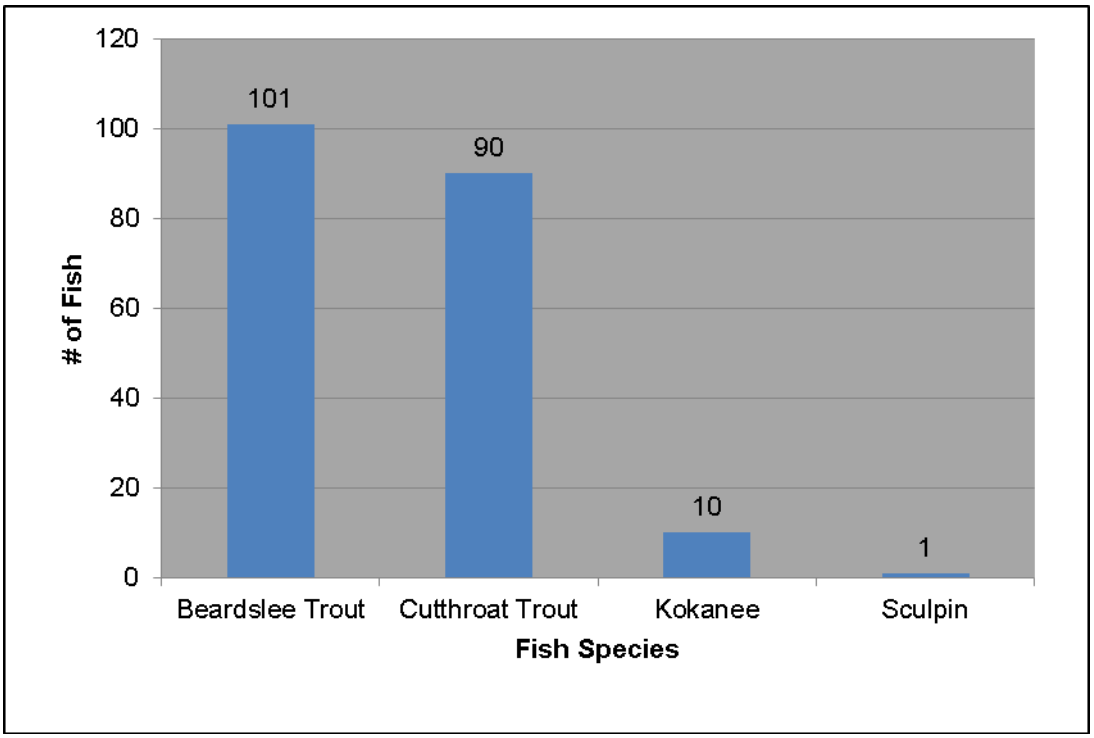

Figure 38. Numbers of each fish species caught on Lake Crescent based on interviews in summer, 2010 (n=202 fish).

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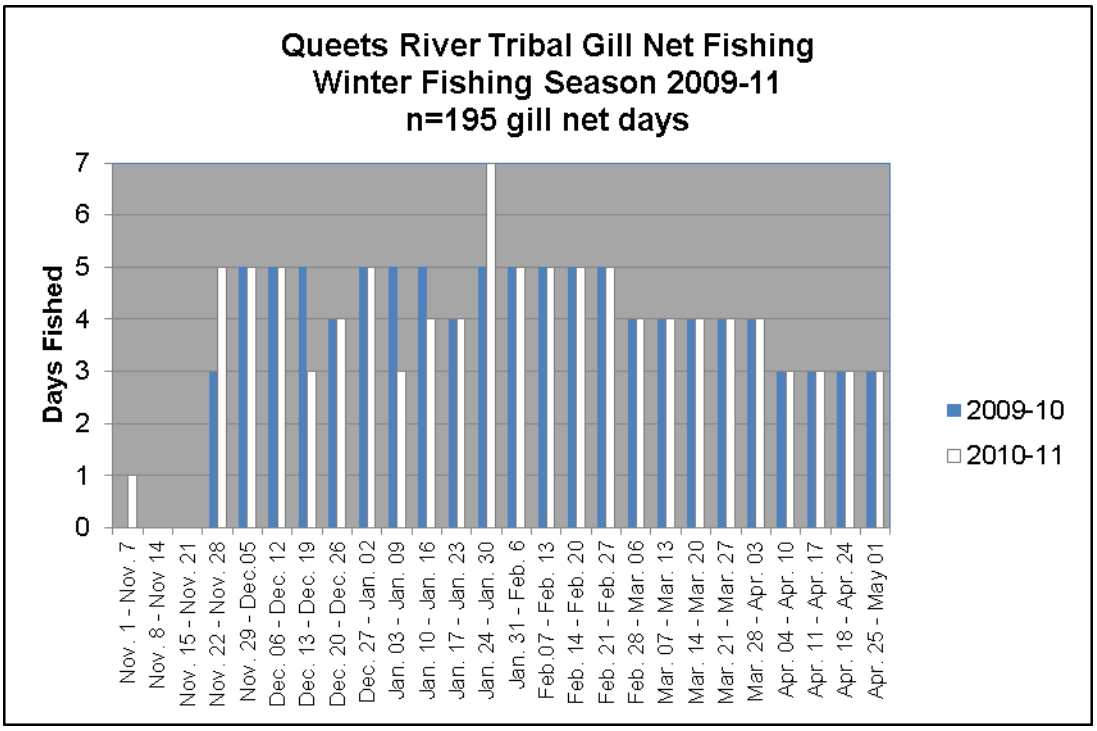
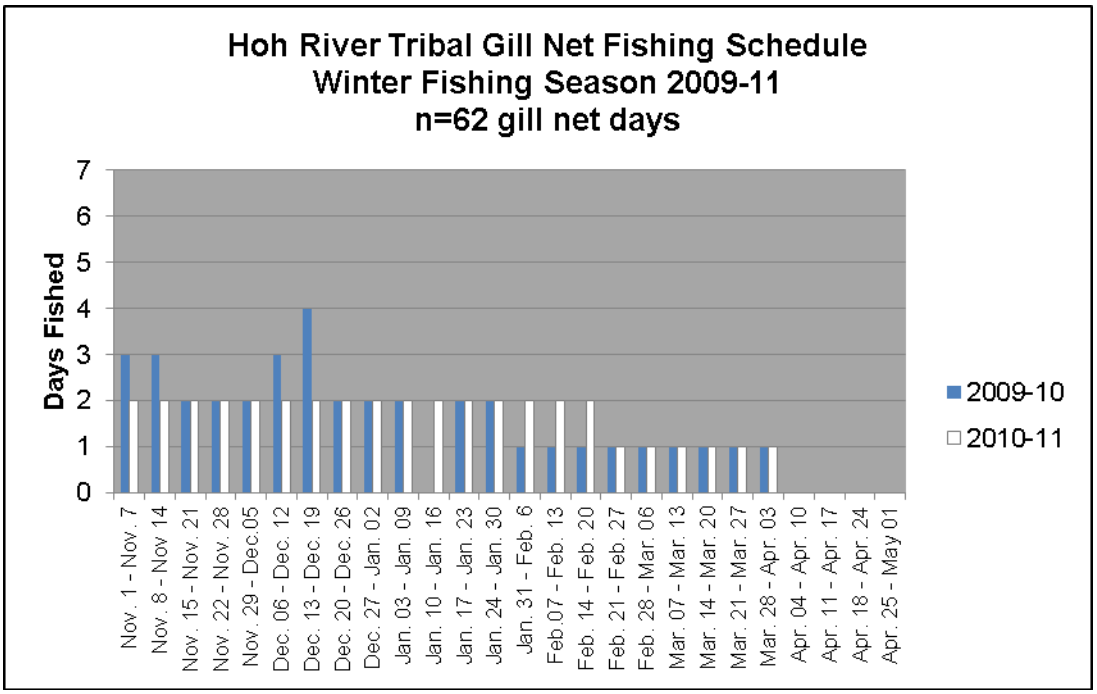
Appendix A. Olympic National Park Fishing Regulations.

Drainage		Species	Season	Gear	Daily Limit
Skokomish, North Fork		All Species	June 1 - Sept. 15	Artificial Lure with barbless single point hook	Catch & release
Queets River	*Mainstem, Below Harzel Boat Launch*	Salmon	Sept. 1 -Nov. 30	Bait, treble and barbed hooks allowed	Can retain 2 hatchery or wild coho. Release ALL wild Chinook
		Steelhead	June 1 - Aug 31	Artificial Lure with barbless single point hook	Catch & release. Can retain 2 adipose clipped hatchery steelhead
			Sept. 1 - Nov 14	Bait, treble and barbed hooks allowed	Can retain 2 adipose clipped hatchery steelhead
			Nov. 15 - Feb. 28	Bait, treble and barbed hooks allowed	Can retain 2 total hatchery steelhead (adipose clipped, ventral clipped, or with dorsal fin height less than 2 1/8 inches)
			Mar. 1 - Apr. 15	Artificial Lure with barbless single point hook	Can retain 2 adipose clipped hatchery steelhead
		All other Species	June 1 - Apr. 15	<u>All season:</u> Artificial Lure with barbless single point hook <u>Sept. 1 - Feb 28:</u> Bait, treble and barbed hooks allowed	Catch & release
	Mainstem, Above Hartzel Boat Launch	All Species	June 1 - Apr. 15	Artificial Lure with barbless single point hook	Catch and release. Can retain 2 adipose clipped hatchery steelhead. From Nov. 15-Feb 28, can retain 2 hatchery steelhad (adipose clipped, ventral clipped, or with dorsal fin height less than 2 1/8 inches
	Salmon River	Salmon	Sept. 1 - Nov 30	Bait, treble and barbed hooks allowed	Can retain up to 3 coho. Release wild Chinook
		Steelhead	June 1 - Aug. 31	Artificial Lure with barbless single point hook	Catch & release. Can retain 2 adipose clipped hatchery Steelhead
			Sept. 1 - Nov. 14	Bait, treble and barbed hooks allowed	Can retain 2 adipose clipped hatchery steelhead
			Nov. 15 - Feb. 28	Bait, treble and barbed hooks allowed	Can retain 2 total hatchery steelhead (adipose clipped, ventral clipped, or with dorsal fin height less than 2 1/8 inches)
		All other Species		<u>All season:</u> Artificial Lure with barbless single point hook <u>Sept. 1 - Feb 28:</u> Bait, treble and barbed hooks allowed	Catch & release
Hoh River (and South Fork Hoh River)		All Species	June 1 - April 15	Artificial Lure with barbless single point hook Fly fishing ONLY 1/4 mile below Hoh campground to boat launch above South Fork Hoh confluence	Catch & release Except can retain 2 hatchery steelhead
Lake Crescent		All Species	June 1 - Oct. 31	Artificial lures with barbless single point hook; 2 ounce weight restriction	Catch & release
Elwha River		All Species	Last Saturday in April to Oct 31	Artificial lure with barbless single point hook	Catch & release

Appendix B. Tribal Gill Net Fishing Days.





Appendix C. Angler Survey Form.

River Angler Survey Form – Olympic National Park

Interviewer:_____ Weather:_____ Page __ of __

Date (mm/dd/yy):_____ Riverflow:_____cfs Visibility(ft): <1 1-2 2-3 3-4 4-5 >5

I. Angler Information-One Line/Angler or Fish Leave a Blank Line Between Parties										*II. Catch Details*								
Angler Number (Sequential by date)	**River Section**	**(A)dult or (J)uvenile**	**Boat (BT) or Bank (BK) Angler**	**# Vehicles (no bikes or motorcycles)**	**Time Started Fishing**	**Time of Interview**	**Completed Trip (Y/N)**	**Gear Type: (B)ait, (F)ly, (L)ure, (P)lug, (C)ombination**	**Guided Trip (Y/N)**	**Species Caught**	**Marks: (N)one, (A)d, (D)orsal, (V)entral**	**# Kept**	**# Released**	**Total Length (in)**	**Sex (M/F)**	**(H)atchery, (W)ild, or (U)nknown**	**Genetic Sample no.**	**Comments:**

Boat anglers = **BT**, Bank anglers = **BK**; **Gear Codes**: (**B**)ait; (**L**)ure (spinners, spoons, corkies, jigs); (**F**)lyfishing; (**P**)lugs (trolled or cast); (**C**)ombination.
Species Codes: WSH=winter steelhead; **COHO**=coho/silver; **CHIN**=Chinook/king; **SSH**=summer steelhead; **DV/BT**=Dolly Varden/Bull trout; **RBT**=rainbow trout; **CTT**=cutthroat trout; **WHF**=mountain whitefish.

River Angler Survey Form – Olympic National Park

Interviewer: _____ Weather:_____

Date (mm/dd/yy): _____ Riverflow:_____cfs Visibility(ft): <1 1-2 2-3 3-4 4-5 >5

I. Angler Information-One Line/Angler Leave a Blank Line Between Parties									*II. Demographic Information*								
Angler Number (Sequential by date)	**River Section**	**Previously interviewed by NPS this season on this river (Y/N)?**	**Target Fish Species**	**(M)ale / (F)emale**	**Aware river managed by NPS (Y/N)?**	***Estimate Age**	**State of Residence or Canadian Province**	**County of Residence**	**# of fishing trips to OLYM each year?**	**# years fishing?**	**# years fishing in OLYM?**	**Do you prefer catch-and-release or to keep wild fish?**	**Have you seen a copy of the park fishing regulations?**	****If yes, how satisfied are you**	**Do you belong to a fishing**	****Were you expecting to see more people fishing**	**Comments:**

***Age Estimate** (A=18-29) (B=30-49) (C= >50)

** (S)atisfied, (I)ndifferent, (U)nsatisfied

*** (L)ess crowded/**Yes**, (S)ame, (M)ore/**No**, (U)nknown

Appendix D. Photographs.

Multiple bank anglers fishing on Queets River.

Angler Interview at Lake Crescent boat ramp.

Guided fishing trip on Hoh River.

Hatchery winter steelhead in the upper Hoh River.

Female winter steelhead caught in the Hoh River (Photo credit: John McMillan).

Full fish box (Photo credit: John Warrick).

Parking area for Salmon River fishing, December 2011.

Wild winter steelhead captured in Hoh River.

The Department of the Interior protects and manages the nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its special responsibilities to American Indians, Alaska Natives, and affiliated Island Communities.

NPS 149/114600, June 2012

National Park Service
U.S. Department of the Interior

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