



## Expedited Approval for NPS- Sponsored Public Surveys

1. **Project Title** Understanding Trends of Sport Fishing on Critical Fishery Resources in Olympic National Park Rivers and Lakes **Submission Date:** 10/1/09

2. **Abstract:** The goal of this project is to describe recreational fishing effort and provide clear guidance to management to prevent unacceptable impacts to park resources. Anglers come from around the world to fish the waters of Olympic National Park (OLYM). The park consists of 12 major watersheds, 4,000 miles of streams, 31 fish species, and 70 unique salmonid populations. Salmon that inhabit park rivers are of high ecological and cultural importance, and significantly contribute to recreational and commercial fisheries. We propose to: 1) quantify the location, extent, seasonality, and magnitude of recreational fishing effort in rivers and lakes; 2) estimate the catch by fish species; 3) better understand angler demographics; and 4) assess incidental catch of federally threatened species. Information will be used to better understand spatial and temporal pressures on fishery resources.  
(not to exceed 150 words)

### 3. Principal Investigator Contact Information

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## Project Information

5. Park(s) For Which Research is to be Conducted:

6. Survey Dates:  (mm/dd/yyyy) to  (mm/dd/yyyy)

7. Type of Information Collection Instrument (Check ALL that Apply)

Mail- Back Questionnaire       On- Site Questionnaire       Face- to- Face Interview       Telephone Survey       Focus Groups

Other (explain)

8. **Survey Justification:**  
(Use as much space as needed; if necessary include additional explanation on a separate page.)

Social science research in support of park planning and management is mandated in the *NPS Management Policies 2006* (Section 8.11.1, "Social Science Studies"). The NPS pursues a policy that facilitates social science studies in support of the NPS mission to protect resources and enhance the enjoyment of present and future generations (National Park Service Act of 1916, 38 Stat 535, 16 USC 1, et seq.). NPS policy mandates that social science research will be used to provide an understanding of park visitors, the non-visiting public, gateway communities and regions, and human interactions with park resources. Such studies are needed to provide a scientific basis for park planning, development, operations, management, education, and interpretive activities.

The goal of this project is to provide information on trends in fishing effort and catch in Olympic National Park. This information will be used to identify possible regulatory measures that may be necessary to protect OLYM fishery resources. The objectives of this survey are: 1) quantify the extent, seasonality, and magnitude of recreational fishing effort in selected OLYM rivers and lakes; 2) assess incidental catch of federally threatened species in recreational fisheries; 3) estimate the harvest or catch rates of hatchery, wild, non-native, and federally threatened salmonids based on angler interviews; and 4) use the information to better predict spatial and temporal pressures on fishery resources in OLYM.

Encompassing nearly one million acres of designated wilderness on the Olympic Peninsula of northwestern Washington, OLYM consists of 12 major watersheds, 600 high lakes, two large lakes, and 4,000 miles of rivers and streams. The park contains one of the largest contiguous areas of relatively pristine habitat throughout the range of several west coast fish species. These diverse aquatic habitats harbor 31 species of freshwater and anadromous fish and at least 70 unique populations of salmon and trout. Five species in the park are recognized as federally threatened.

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).

These salmonid populations are also of significant recreational value. Virtually all of the waters in OLYM support highly popular sport fisheries. This popularity is fostered by the proximity of OLYM to the Seattle/Tacoma metropolitan area (100 miles away). The Seattle/Tacoma area has seen its population grow significantly over recent decades – growth was about 20% from 1990 to 2000 – a trend that is projected to continue.

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 promotes catch-and-release of all wild fish, but allows harvest of non-native and hatchery-origin fish.

To make appropriate fisheries management decisions, particularly as related to fishing regulations, we need to understand trends in angling effort, catch, and angler demographics. An evaluation of fishing pressure, effort, and catch is the first important step in successful management of the park's fishery resources.

The following are specific types of biological 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 a given river during summer, fall, and winter?
- What is the relative catch between permitted guides versus non-guides?
- Is there significant incidental catch of federally listed and threatened fish species in OLYM's recreational fisheries?

In addition, information on angler demographics, background, and preferences will be gathered to inform future management decisions related to fishing regulations. These surveys will represent the first studies of human dimensions of fisheries in OLYM.

9. **Survey Methodology:** (Use as much space as needed; if necessary include additional explanation on a separate page.)

(a) Respondent universe: Adult (18 and older) anglers who fish the park's rivers and lakes between December 15, 2009 and June 30, 2011. The period of data collection represents two full fishing seasons for Pacific salmonids.

(b) Sampling plan/procedures:

We will use established fisheries techniques to conduct a statistically rigorous survey to quantify fishing effort and catch in readily accessible portions of one east side river (North Fork Skokomish), two north side rivers (Elwha and Sol Duc), and three west side rivers (Hoh, Queets, and Quinault Rivers) where fishing pressure is intense. We also will monitor effort and catch on Lake Ozette and Lake Crescent. This project will occur over two fiscal years.

*Survey Design*

Creel surveys (or angler interviews) will be used to assess the temporal and spatial distribution of fishing effort and catch. Sites, dates, and sampling times will be selected based on methods described in "Sampling the Recreational Fishery" by Malvestuto (1983) and Pollock et al. (1997). Sampling days for each waterway will be selected from a random stratified design (weekdays vs. weekend days), under the assumption that increased fishing pressure occurs on the weekend. A random sample of weekdays and another random sample of weekend days will provide relatively precise estimates of fishing effort that will then be combined to estimate effort for each river or lake.

Sites for angler interviews will be randomly selected from a list of known access sites along each river or lake. Interview days will be divided into three time periods of early morning, midday, and evening. A random number table will be used, with replacement, to select a time period to conduct an individual survey. Surveys will be conducted only with willing participants. For a given fishing

party, each angler 18 years of age or older will be interviewed.

Each study day will be divided into two tasks: 1) conduct counts of the number of vehicles and trailers along a given river or lake; and 2) interview anglers. Two estimates of angler effort will be conducted daily, and the average of these two counts will be used to estimate effort for the day. Surveyors will interview anglers to determine: State of permanent residence; length of time fished; 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; angler satisfaction with existing fishing regulations; preference for catch-and-release; and knowledge of threatened species in each system.

(c) Instrument administration: Face-to-face interviews will be conducted with willing participants. Park fisheries staff will conduct angler surveys along rivers and lakes. Anglers will be informed that the survey is voluntary. Interview forms will be completed by surveyors in the field.

(d) Expected response rate/confidence levels: The total number of anglers is estimated to be 700 per year based on anecdotal information and past surveys by the State of Washington. The expected response rate is 75% based on similar surveys conducted by the State of Washington in nearby coastal rivers (Personal communication, Randy Cooper, Washington Department of Fish and Wildlife). This yields a margin of error for dichotomous measures of +/- 2.14 (assuming a finite population of 700).

(e) Strategies for dealing with potential non-response bias: Observations regarding gender, group size, the presence of children, and the number of anglers in each group, as well as the reason for refusal (if given), will be recorded on a log sheet. These items will be used to compare non-respondents with respondents. The implications of any non-response bias for interpretation of results will be discussed in the final report.

(f) Description of any pre-testing and peer review of the methods and/or instrument (recommended): We are using widely accepted and proven survey methods to interview anglers. The approach and study design are statistically sound and were reviewed by biostatisticians and peers in fisheries. We have pre-tested the survey instrument for burden estimate and clarity of questions with 10 federal employees and 9 members of the public.

10.	<b>Total Number of Initial Contacts   Expected Respondents:</b>	700 per year	525	11.	<b>Estimated Time to Complete Initial Contact   Instrument (mins.):</b>	1	15	12.	<b>Total Burden Hours:</b>	143
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13.	<b>Reporting Plan:</b>	<p>Surveyors will complete the angler interviews in the field. Survey forms will be summarized weekly by park staff in the Fisheries Management Division.</p> <p>Data summaries will include the following: 1) number of angler interviews that were conducted monthly each year; 2) number of fish species landed, catch per hour, number kept, and number released in each river or lake; 3) summary of total fish species landed and catch-per-unit effort for those species commonly encountered; 4) boat effort on rivers and lakes; 5) angler demographics by river (age, residence, level of fishing experience); 6) gear types by river and month; 7) encounters with hatchery vs. wild fish; and 8) encounters with federally threatened bull trout.</p>
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OLYM will write a final technical report that will be published by the National Park Service or in a leading fisheries journal (i.e. North American Journal of Fisheries Management or Transactions of the American Fisheries Society). A copy of the final report will be archived with the Social Science Studies Collection in Washington, D.C. We also will produce a one-page "Findings Brief" to be distributed to the public.

**Literature Cited:**

Bilby, R. E., B. R. Fransen, and P. A. Bisson. 1996. Incorporation of nitrogen and carbon from spawning coho salmon into the trophic systems of small streams: Evidence from stable isotopes. *Canadian Journal of Fisheries and Aquatic Sciences* 53:164-173.

Cederholm, C. J., D. H. Johnson, R. E. Bilby, L. G. Dominguez, A. M. Garrett, W. H. Graeber, E. L. Greda, M. D. Kunze, B. G. Marcot, J. F. Palmisano, R. W. Plotnikoff, W. G. Pearcy, C. A. Simenstad, and P. C. Trotter. 2001. Pacific salmon and wildlife: Ecological contexts, relationships, and implications for management. Pages 628-687 in D. H. Johnson and T. A. O'Neil, editors. *Wildlife-Habitat Relationships in Oregon and Washington*. Oregon State University Press, Corvallis.

Kline, T. C., J. J. Goering, O. A. Mathisen, P. H. Poe, and P. L. Parker. 1990. Recycling of element transported upstream by runs of Pacific salmon: I.  $\delta^{15}\text{N}$  and  $\delta^{13}\text{C}$  evidence in Sashin Creek, southeastern Alaska. *Canadian Journal of Fisheries and Aquatic Science* 47:136-144.

Kline, T. C., Jr., J. J. Goering, O. A. Mathisen, P. H. Poe, P. L. Parker, and R. S. Scanlan. 1994. Recycling of element transported upstream by runs of Pacific salmon: II.  $\delta^{15}\text{N}$  and  $\delta^{13}\text{C}$  evidence in the Kvichak River watershed, Bristol Bay southwestern Alaska. *Canadian Journal of Fisheries and Aquatic Science* 50:2350-2365.

Malvestuto, S.P. 1983. Sampling the recreational fishery. Pages 397 to 430 in *Fisheries Techniques* by L.A. Nielsen and D.L. Johnson, editors. American Fisheries Society. Southern Printing Company, Blackburg, Virginia.

Pollock, K.H., Hoenig, J.M., Jones, C.M., Robson, D.S. & Greene, C.J. 1997. Catch rate estimation for roving and access point surveys. *North American Journal of Fisheries Management* 17, 11-19.

**INTERVIEWERS :**

**LOCATION (Check one) :**    \_\_\_ North Fork Skokomish River                      \_\_\_ Hoh River  
                                 \_\_\_ Elwha River    \_\_\_ Queets River  
                                 \_\_\_ Sol Duc River    \_\_\_ Quinault River  
                                 \_\_\_ Lake Ozette    \_\_\_ Lake Crescent

**DATE :**  
**TIME :**

## **Olympic National Park Fisheries Survey**

**Interview Protocol:**

The interviewer will make a brief introduction to approach anglers and invite them to participate in a face-to-face interview. Individuals who agree to participate will be further informed about the survey and its subject matter. Interviewers will ask participants if they are 18 years of age or older. Names will not be recorded, so anonymity will be assured. Interviewers will note time of contact, whether angler is male or female, number of people in group, presence of children, and refusals for all contacts.

**Interview Script:**

Interviewer: “Are you planning to fish today?” [Topic Area 3: Individual Activities and Uses of Park Resources]

If NO → END CONTACT

\_\_\_ YES → My name is \_\_\_\_\_. I work with Olympic National Park and am helping to conduct a survey of fishing in this park. Would you be willing to answer a few questions about your fishing today? The questions will take about 15 minutes to complete. All of your answers are voluntary and anonymous.

If NO → Thank you for your time. Have a good day.

If YES → Are you 18 years old or older?” [Topic Area 1: Individual Characteristics]

\_\_\_ NO → END CONTACT (proceed to next person in group)

\_\_\_ YES → Would you be willing to participate?” (If “No” - END OF CONTACT)

**If “Yes,” follow with survey questions:**

1) What fish species are you fishing for today? [Topic Area 3: Individual Activities and Uses of Park Resources]

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Don't know/Refused

2) About what time did you start fishing today? \_\_\_\_\_ ? [Topic Area 2: Trip/Visit Characteristics]

Don't know/Refused

3) About what time do you expect to stop fishing today? \_\_\_\_\_ [Topic Area 2: Trip/Visit Characteristics]

Don't know/Refused

4) How many hours do you usually fish per trip? \_\_\_\_\_ [Topic Area 2: Trip/Visit Characteristics]

Don't know/Refused

5) On average, how many fishing trips do you make to this park per year? \_\_\_\_\_ [Topic Area 2: Trip/Visit Characteristics]

Don't know/Refused

6) What type of gear are you using, or have you used, on this trip? [Topic Area 2: Trip/Visit Characteristics]

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Don't know/Refused

7) How many vehicles did you and your group use to arrive at this location? [1. variation GR4]

\_\_\_\_\_ Number of vehicles



8) Would you mind if I measured your catch? [Topic Area 3: Individual Activities and Uses of Park Resources]

If HAS NO CATCH → Go to question 9.

If YES → Make measurements, then go to question 9.

If NO →

8a) What type (species) of fish did you catch today? [Topic Area 3: Individual Activities and Uses of Park Resources]

\_\_\_\_\_

Don't know/Refused

8b) How many fish did you catch (weight)? [Topic Area 3: Individual Activities and Uses of Park Resources]

\_\_\_\_\_ (record total number and/or weight)

Don't know/Refused

9) How many years have you been fishing? [Topic Area 1: Individual Characteristics]

\_\_\_\_\_

10) Have you ever been fishing in OLYM before? [Topic Area 3: Individual Activities and Uses of Park Resources]

No → Go to question 11

Yes

10a) If yes, for how many years? \_\_\_\_\_ [Topic Area 3: Individual Activities and Uses of Park Resources]

11) On this visit to [insert name of river or lake], compared to what you expected, how crowded did you feel? [CROWD3]

- I didn't know what to expect
- Less crowded than expected
- About the same as expected
- More crowded than expected

12) Prior to your visit, were you and your group aware that [insert name of river or lake] is managed by NPS? [KNOW3]

- No
- Yes
- Not sure

13) Have you seen a copy of OLYM fishing regulations? [Topic Area 1: Individual Characteristics]

- No → Where would you suggest they be made available? \_\_\_\_\_  
\_\_\_\_\_
- Yes → Where did you see it? \_\_\_\_\_

14) Please rate your level of satisfaction with OLYM fishing regulations [Topic Area 7 - Individual Opinions on Park Management]

- Very Satisfactory
- Satisfactory
- Neither satisfactory nor unsatisfactory
- Unsatisfactory
- Very Unsatisfactory

If you rated the fishing regulations as "very unsatisfactory" or "unsatisfactory," please explain why \_\_\_\_\_  
\_\_\_\_\_

15) Do you prefer catch-and-release fishing or catch-and-keep fishing? [Topic Area 1: Individual Characteristics]

- Catch-and-release
- Catch-and-keep
- No preference

16) Do you belong to any fishing group/s? [Topic Area 1: Individual Characteristics]

No → Go to question 17

Yes → Which ones? \_\_\_\_\_

17) What year were you born? \_\_\_\_\_ [1.AGE1]

18) Where do you live? [1. variation RES1]

City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_  
County \_\_\_\_\_

19) Would you like to add anything else about your catch, gear, or time you spent here? [Topic Area 6 - Individual Perceptions of their Park Experiences]

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**\*Additional Information Provided upon Request.**

16 U.S.C. 1a-7 authorizes collection of this information. This information will be used by park managers to better serve the public. Response to this request is voluntary. No action may be taken against you for refusing to supply the information requested. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

**BURDEN ESTIMATE STATEMENT:** Public reporting burden for this form is estimated to average **15 minutes** per response. Direct comments regarding the burden estimate or any other aspect of this form to:

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