

2012

Recreational specialization: motives and constraints to engage in fishing in Spokane County

Roy W. Scott

Eastern Washington University

Follow this and additional works at: <http://dc.ewu.edu/theses>



Part of the [Exercise Science Commons](#)

Recommended Citation

Scott, Roy W., "Recreational specialization: motives and constraints to engage in fishing in Spokane County" (2012). *EWU Masters Thesis Collection*. 46.

<http://dc.ewu.edu/theses/46>

This Thesis is brought to you for free and open access by the Student Research and Creative Works at EWU Digital Commons. It has been accepted for inclusion in EWU Masters Thesis Collection by an authorized administrator of EWU Digital Commons. For more information, please contact jotto@ewu.edu.

RECREATIONAL SPECIALIZATION:
MOTIVES AND CONSTRAINTS TO ENGAGE IN FISHING
IN SPOKANE COUNTY

A Thesis
Presented to
Eastern Washington University
Cheney, Washington

In Partial Fulfillment of the Requirements
for the Degree
Master of Science

By
Roy W. Scott III
Spring 2012

THESIS OF ROY W. SCOTT III APPROVED BY

MATT CHASE, GRADUATE COMMITTEE CHAIR

DATE _____

JON HAMMERMEISTER, GRADUATE STUDY COMMITTEE

DATE _____

ROBERT SAUDERS, GRADUATE STUDY COMMITTEE

DATE _____

MASTER'S THESIS

In presenting this thesis in partial fulfillment of the requirements for a master's degree at Eastern Washington University, I agree that the JFK Library shall make copies freely available for inspection. I further agree that copying of this project in whole or in part is allowable only for scholarly purposes. It is understood, however, that any copying or publication of the thesis for commercial purposes, or for financial gain, shall not be allowed with my written permission.

Signature _____

Date _____

ACKNOWLEDGEMENTS

It is with immense gratitude that I acknowledge the support, guidance, and friendship of my committee chair and advisor, Dr. Matt Chase. Without his invaluable assistance, commitment to my thesis, and unwavering devotion to academic excellence, this study would not have been successful.

I am most grateful to Dr. Jon Hammermeister, for which I am deeply indebted to for assisting with all statistical calculations and survey implementation guidance. This study could not have been conducted without his thoroughness and sacrifice of time.

Special thanks also goes to the Physical Education, Health, and Recreation department for the financial assistance of this study, for which I cannot express enough appreciation.

I would also like to thank the director of the EWU Challenge Course, Chris Cindirc, for providing me with the opportunity to facilitate groups on the course throughout my graduate work. These experiences have allowed me to grow academically, personally, and professionally more than I could have imagined.

Deepest thanks to my wife, Jennifer Scott, for her love, understanding, and sacrifice during this entire endeavor. Without her support, it is unlikely that I would have even begun my graduate work.

Many thanks to my fellow graduate students: Lemuel Brown, Chris Hammer, Natalie Hughs, Luke Parsons, Lance Plank, Nicolette Stanfill and Jess Stimmel.

Finally, I would like to thank my dad, Roy W. Scott Jr., for taking me fishing as a kid, for without this, my love for the outdoors and all things wild may never have been born.

TABLE OF CONTENTS

Introduction	1
Problem Definition	6
Hypotheses	7
Significance of the Study	9
Review of Literature	11
Historical Importance of the Spokane River and the Region	11
Recreational Fishing Participation Rates	16
Recreational Fishing Constructs	19
General Motivational Factors of Anglers	19
Recreational Specialization	25
Leisure Constraints	32
Instrumentation Review	40
Methodology	52
Participants	52
Recreational Specialization Index	53
Recreation Experience Preference Scales	54
Constraints Inventory	55
Procedures	57
Results	62
Descriptive Statistics	62
Multivariate Analysis of Variance Results	64
Multiple Regression Results	67
Discussion, Conclusions, and Recommendations	68
Recreation Specialization and Angling Motivations	68
Recreation Specialization and Angling Constraints	74
Implications	80
Conclusions	83
Recommendations for Future Research	85
References	88
Appendices	
Appendix A – Demographic Results for Spokane County Anglers	97
Appendix B – Survey Instrument	98
Appendix C – Table to Determine Sample Size	106

LIST OF TABLES AND FIGURES

List of Tables

Table 1 – Descriptive and Reliability Results of Motivation Subscales	<u>63</u>
Table 2 – Descriptive and Reliability Results of Constraint Subscales	<u>64</u>
Table 3 – MANOVA results on motivation variables	<u>65</u>
Table 4 – MANOVA results on constraint variables	<u>66</u>
Table 5 – Multiple Regression Results Predicting Specialization	<u>67</u>

List of Figures

Figure 1 – MANOVA results for motivation variables	<u>66</u>
Figure 2 – MANOVA results for constraint variables	<u>67</u>

Chapter I

Introduction

Recreational fishing, as defined by Pitcher (1999), is catching fish for fun, with *fun* being a “mandatory” (p. 5) component. According to the United States Department of the Interior (2011), recreational fishing “is an integral component of our national heritage and continues to play an important role in the social, cultural and economic well-being of our nation” (para. 13). Moreover, Cordell (1999) claims that fishing is one of the most popular forms of outdoor recreation (pp. 226-228). The U.S. Fish and Wildlife Service (2006) estimates that there are approximately 30.0 million Americans who fish each year (p. 8) and according to Duda, Bissell, and Young (1995), individuals view fishing as an “important and traditional recreational activity” (p. 5). The importance of fishing, as argued by Kearney (1999), is a matrix of social, economic, and ecological values that are interconnected and are particular to the individual who perceives them. In addition, Kearney (1999) claims that the social benefits of recreational fishing on the individual and community level represent the future of fishing (pp. 9-13). Furthermore, the benefits of recreational fishing are individualistic in that varied levels of participation, skill level, family status, etc. can affect the perception of value (Schuett, Lu, Ditton, & Tseng, 2010; Sutton, 2007; Sutton, Dew, & Higgs, 2009).

According to the U.S. Fish and Wildlife Service (2006), fishing rates have declined significantly since 1996 (p. 18). The U.S. Fish and Wildlife Service collects data on five-year intervals and measures a variety of elements, with three key indicators that determine the status of the fishing industry: participation rates, total fishing days per year, and fishing-related expenditures (food and lodging, transportation, equipment,

magazines, and memberships, etc.). From 1996 to 2006, each of these indicators has decreased. In particular, the number of anglers declined from 35.2 million to 30.0 million (-15%), total fishing days decreased from 625.9 million to 516.8 million (-17%), and total fishing expenditures dropped from \$48.6 million to \$42 million (-13%) (p. 19).

While the status of recreational fishing has been in decline, the total United States population has been increasing. According to the U.S. Census Bureau (2011), there was a 14% increase in population from 1996 to 2006 (256.2 million to 308.7 million), which clearly indicates that recreational fishing participation rates are not following the current population trend. As such, a need exists to explore potential rationales that underlie the recent decrease in recreational fishing.

Researchers have identified and measured several facets of recreational fishing to better understand the complex social, programmatic, and managerial implications on the industry. Specifically, work has centered on recreational specialization, motivational factors, and constraints as individual components, yet the literature has failed to link each of the three elements together as a cohesive subject. The purpose of this study is to explore how the differing levels of recreational specialization influence an individual's perception of motives and constraints to engage in angling.

Recreational Specialization

Recreation specialization is a psychological construct developed by Bryan (1977) that refers to a “continuum of behavior from the general to the particular, reflected by equipment and skills used in the sport and activity setting preferences” (p. 175). From his study of trout anglers, Bryan (1977) claimed that individuals could be placed into four categories based upon their distinct level of specialization: occasional fishermen,

generalists, technique specialists, and technique-setting specialists (p. 178). In addition, Bryan (1977) explained the typology of anglers and proposed a conceptual framework based on his findings in relation to the categories of recreation specialization. They include: (1) a predictable syndrome of angling experiences, usually moving into more specialized stages over time; (2) the most specialized fishermen have joined a leisure social world (sportsmen holding similar attitudes, beliefs, and ideologies); (3) as level of angling specialization increases, attitudes and values about the sport change; and (4) as level of angling increases, resource dependency increases (pp. 185-186).

The construct of recreational specialization and the topology that Bryan (1977) developed allowed for comparisons of preference attributes across the various specialized levels. He concluded that occasional anglers are less likely to have equipment preferences and typically fish local waters with family members. Generalists are primarily concerned with maximizing the catch rate of any given species of fish. Specialist and technique-setting specialist orientated anglers prefer the environmental setting over catch rate and size, and are more concerned with the ability to catch a particular species of fish on selected equipment that is matched to the conditions (p. 178-185).

Recreational Fishing Motivation

Although specialization examines the level of participation, degree of involvement, and affiliation an individual has toward a recreational activity, motivational behavior determines why individuals make the leisure decisions they do, and the possible leisure consequences they may encounter (Manfredo, Driver, & Tarrant, 1996, p. 188). Furthermore, Manning (1999) states that motivations for outdoor recreational pursuits are

“diverse and can be related to the attitudes, preferences, and expectation of users” (p. 162). Knopf and Lime (1984) also concluded that two individuals engaged in the same activity, and at the same time, could have differing motivational goals (p. 15), therefore, it is essential to explore how the differing levels of recreational specialization influence an individual’s perception of motives to engage in angling.

Knopf, Driver, and Basset (1973) state that an individual chooses recreation environments or activities based on problem states that “cannot be, or for some reason are not, resolved in non-recreational environments” (p. 30). The authors contend that anglers are motivated by the four unmet needs of temporary escape, achievement, exploration, and experiencing natural settings (p. 33). From their foundational work, Knopf et al. (1973) found that anglers tend to be motivated to fish to escape daily stress, to fulfill the need to achieve, and to experience nature in a natural environment. Similarly, Duda et al. (1995) concluded that experiencing the outdoors with friends and family and learning the utility of catching a fish and the skills of learning how to fish to be the two primary motivational factors for angling (p. 21).

Other considerable motivations that have been examined throughout the literature focus on catch and non-catch aspects of fishing. Finn and Loomis (2001) tested three hypotheses based on size of fish, the number of fish, and the preferred species of fish caught and how the motives changed according to the angler’s previous success in catching the preferred size, number, or species of fish. The authors discovered that catch motives are not static; rather they are dynamic and change according to the success or failure rate of catching fish (Finn & Loomis 2001, pp. 184-185). Duda et al. (1995) also claim that “for many anglers, motivations change throughout their fishing career” (p. 21)

and that the majority of anglers are not motivated by the size of the fish nor the quantity of fish caught (pp. 21-22). Despite numerous studies conducted regarding motivational factors, to date, there is no literature that specifically evaluates perceived angling motives in relation to the varying levels of recreational specialization.

Leisure Constraints

Leisure constraints, as defined by Jackson (1998), are subjective forces that inhibit an individual from participating in a leisure activity, prohibit individuals from taking advantage of leisure services offered, prevent individuals from achieving a desired level of satisfaction, and simply prevent individuals from spending more time in the activity itself (p. 203). Researchers have primarily focused on structural constraints, which are factors that intervene between leisure preference and participation such as climate, season, and opportunities that are available to engage in leisure activities (pp. 122-124).

Researchers have studied recreational fishing constraints to better understand how recreational managers can improve services to users, and to understand how participation rates are affected. Of the various constraints identified, “lack of time” and “work commitments” appear to be the largest constraining factors among anglers (Kuehn, 2004; Lloyd, 1993; Ritter, Ditton, & Riechers, 1992; Schroeder et al., 2008; Sutton, 2007; Sutton et al., 2009). Moreover, Schroeder et al. (2008) state that “because of time constraints, people may select activities that have multiple benefits” (p. 17). The implications of recreational fishing constraints, as posited by Ritter et al. (1992), Sutton et al. (2007), and Schroeder et al. (2008), is that fishing participation rates are likely to decline if individuals are not able to successfully negotiate perceived constraints.

In a study conducted by Sutton (2007), constraints were evaluated in relation to high and low-centrality-to-lifestyle. This study is of particular importance due to the aspects of centrality-to-lifestyle, which are most related to recreational specialization. He concluded that both high and low-centrality-to-lifestyle anglers experienced constraints. High-centrality anglers were found to feel less constrained by other recreational activities, but low-centrality individuals were more likely to report cost, confusing regulation, inadequate facilities, and overcrowding as constraining factors (p. 77). Finally, and not surprisingly, Sutton (2007) also showed that higher income earners are less constrained by the cost of fishing than low-income earners are, however, they are more constrained by lack of time and family commitments (pp. 77, 79-81).

Problem Definition

Currently, there is a gap in the literature that adequately connects the three concepts of recreation specialization, motivation, and leisure constraints to recreational angling. Recreational fishing research has yielded results that have identified specific motives, specific constraints, and levels of recreational specialization; however, researchers have failed to identify two key components of participation rates. First, it is evidenced that anglers with varied levels of specialization have different angling behaviors due to their level of involvement in the sport; however, only two studies (Ditton et al., 1992; Salz, Loomis, & Finn, 2001), have explored specific motives to fulfill the unmet needs detailed by Knopf et al. (1973) at each level of specialization as posited by Bryan (1977). Second, recreational fishing constraints have been examined across demographics such race, gender, socioeconomic status, urban/non-urban environments, (Hunt & Ditton 1996; Lloyd, 1993; Ritter et al., 1992; Schroeder et al.,

2008; Sutton, 2007; Sutton et al., 2009); however, with the exception of one unpublished study (Lloyd, 1993), researchers have failed to connect how individuals at each level of specialization are affected by leisure constraints. The purpose of this study was to explore how the differing levels of recreational specialization influence an individual's perception of motives and constraints to engage in fishing.

Operational Definitions

1. *Angler*: an individual who uses a hook, line, rod and reel to pursue fish.
2. *Leisure Constraint*: subjective forces that inhibit an individual from participating in a leisure activity, prohibit individuals from taking advantage of leisure services offered, prevent individuals from achieving a desired level of satisfaction, and simply prevent individuals from spending more time in the activity itself (Jackson, 1988, p. 203).
3. *Recreational Specialization*: a continuum of behavior from the general to the particular, reflected by equipment and skills used in the sport and activity setting preferences (Bryan, 1977, p. 175).

Hypotheses

- H1: There will be a significant difference in motivation across levels of specialized anglers.
- H2: There will be a significant difference in constraints across levels of specialized anglers.

Limitations

This study is limited to Spokane County in the State of Washington; therefore, the results of this study are not generalizable to the greater public. In addition, this study is limited to individuals in Spokane County who purchased a freshwater fishing license

from the Washington Department of Fish and Wildlife (WDFW) and who fished legally. The format of this study consisted of a typed survey, as such; this study is limited to individuals who are literate.

Delimitations

This study is first delimited to Spokane County residents. Residents of surrounding counties, Washington State at large, or neighboring states are not included. Second, delimitations are made to Spokane County residents who are aged 18 years or older and have purchased an annual freshwater fishing license in 2010 from WDFW. As WDFW provided the database for 2010 license holders, this study is delimited to those anglers who fished legally in the State of Washington, with no effort to obtain information from individuals who did not purchase a fishing license.

A freshwater fishing license can be obtained from WDFW at discounted rates or free of charge due to life circumstances that WDFW have outlined. For example, individuals with disabilities do not have to purchase an annual fishing license, however, they must go through an application process that proves their eligibility. Similarly, resident veterans with at least 30% service connected to a disability, as verified by VA letter, are also granted a license without charge. Upon approval, disabled persons and veterans are mailed a freshwater fishing license (Washington Department of Fish and Wildlife, 2011).

Assumptions

General assumptions have been made with regard to this study. First, due to the nature of the survey instrument, it is assumed that individuals are literate. Second, it is assumed that individuals who received the survey instrument completed the survey

themselves and responded to the questions honestly and thoroughly. Third, due to purchasing a fishing license through WDFW, it is assumed that the individual fished at least one time during the year of 2010 and can provide insight into this study. It is also assumed that individuals who did not purchase a freshwater fishing license in 2010 from WDFW did not contribute to this study. Finally, it is assumed that the database of Spokane County angler contact information provided by WDFW is comprehensive, current, and accurate.

Significance

This study adds to the body of knowledge of recreational fishing, however, this study provides an additional element that is lacking in the literature. Currently, no information exists on recreational specialization and the perceived affects of motivation and constraints. This study provides a connection of recreational fishing specialization and the perceived motivating factors and leisure constraints that anglers encounter when deciding to engage in fishing. By gathering data centered on angling specialization, deductions can be drawn about the profile of average anglers in Spokane County, i.e. where are they located on Bryan's (1977) recreation specialization continuum. Ritter et al. (1992), Sutton et al. (2007), and Schroeder et al. (2008) argued that fishing participation rates are likely to decline if individuals are not able to successfully negotiate perceived constraints, therefore, identifying how constraints and motivations are affected by specialization could aid in recreational managers' participation retention at all levels of specialization. If recreation professionals could manage resources based on levels of specialization, then knowing how individuals are specifically affected by motivations and constraints could allow managers to develop fishing programs, facilities and access, and

overall opportunities that facilitate greater involvement and satisfaction across the various stages of specialization.

The following chapter of this study consists of a literature review that details the constructs of recreation specialization, motivation, and leisure constraints to recreational angling and the specific instrumentation used to measure the respective concepts.

Chapter II

Review of Literature

The purpose of this literature review is to provide background information on recreational fishing and to detail three constructs that have been used to measure engagement in the sport: recreational specialization, motivational factors, and leisure constraints. This literature review consists of four sections in the following order: (1) the importance of the Spokane River and region; (2) recreational fishing participation rates; (3) recreational fishing constructs; and (4) review of instrumentation that have been utilized to gather data.

Historical Importance of the Spokane River and the Region

The Spokane River and Native Americans. Spokane Indians, according to Fahey and Dellwo (1988), have inhabited the Spokane River for approximately 4,500 years, with distinct tribal families occupying the river from lower Spokane Falls down to its mouth at the Columbia River (pp. 4-5). The Spokanes depended on the river as a major food source, catching trout and salmon by means of weirs, dip nets, basket snares, and spearing from horseback. The primary fishing grounds consisted of the Little Falls, confluence of the Little Spokane, the confluence of Hangman Creek, and the Spokane Falls (Fahey, 1988, p. 6). When salmon returned each year to spawn, the Spokane Falls acted as a natural barrier, thus creating a concentration of fish, which attracted several of the surrounding tribes. Indians celebrated the arrival of the salmon and participated in trading, cleaning, drying, contests, and storage, all of which were coordinated by the “salmon chief” (Fahey & Dellwo, 1988, p. 6; Stimson, 1985, pp. 10-11).

The fishing on the Little Spokane River, according to Becher (1974), was remarkable. The river was “literally choked with fish” (p. 30) during the salmon spawning months. In addition, Fahey and Dellwo (1988) state that as many as “10,000 Indians at one time” (p. 6) came to fish the major salmon runs on the Spokane River, and the Spokanes shared in the bounty of fresh fish with neighboring Indian nations such as the San Poil, Palouse, Coeur d’Alene, and Colville (p. 6). Moreover, Youngs (1996) claims that the salmon were so abundant that the rocks on the bottom of the river could not be seen and that Indians came from miles around in the autumn months to fish, dry, and jerk the freshly caught salmon (p. 23).

The Spokane River was an integral component of the lives of early Native Americans, as it provided transportation via barked canoes, hunting grounds that yielded deer and bear, gathering opportunities that produced camas root and huckleberries, and a staple diet of trout and salmon throughout the year (Bamonte & Bamonte, 1999, p. 113; Stimson, 1985, pp. 10-11).

Brief history of Spokane. Spokane County is located on the eastside of Washington State, and is situated between the Cascade Range to the west and the Coeur d’Alene Mountains of Idaho to the east. The Spokane River is formed from the outlet of Lake Coeur d’Alene and flows 111 miles west, bisecting the city of Spokane and the Spokane Valley, before merging with the Columbia River (Fahey & Dellwo, 1988, pp. i.-vi.). Throughout its history, the land adjacent to the Spokane River has provided camping grounds for Native Americans, well-worn trails for travel, and prime locations for early settlers.

It is debatable when the first white man entered the Spokane area, however, Bamonte and Bamonte (1999), state that in 1810 the Spokane House was the first established trading post and was located at the confluence of the Spokane and Little Spokane Rivers (p. 14). This site provided opportunities for beaver trapping, access to the abundant salmon, level ground for building and grazing, and a natural land barrier in case of Indian hostility (Becher, 1974, pp. 26-27). The Spokane House was in operation until 1825 and had brought a number of traders into the Inland Empire, of which, some traders stayed in the area while others relocated to more navigable posts (Becher, 1974, pp. 29-47; Bamonte & Bamonte, 1999, pp. 14-17). After the abandonment of the Spokane House, the Spokane area saw little settlement, and activities between the years of 1824 and 1873 primarily included exploration, Native American treaties and battles, and the establishment of missionaries (Bamonte & Bamonte, 1999, pp. 147).

In 1871, the Downing family settled on the south side of the Spokane Falls and began building a sawmill with the help of the Scranton family. The mill was completed approximately a year later and was the first commercial business in Spokane (Fahey & Dellwo, 1988, p. 20). When James Glover and Jasper Matheny approached Spokane Falls on horseback in 1873, they discovered the small community of Spokane, which consisted of three families including the Downings and Scrantons, two single men, six cabins, and the sawmill (Youngs, 1996, p. 7). Glover was instantly interested in purchasing the Spokane Falls, and on May 12, 1873, just one day after arriving into “town”, James Glover had secured the lower falls from the Downings and the surrounding land, thus becoming the “Father of Spokane” (Youngs, 1996, p. 3, 11).

After a few years of slow growth and the promise of the railroad, the small townsite on the river bank called Spokane Falls was platted out in 1878, which qualified it for incorporation (Fahey & Dellwo, 1988, p. 20). For a brief period, the Spokane Indians and the whites lived alongside one another, sharing their traditional fishing sites and the river as a sustenance fishery (Fahey & Dellwo, 1988, pp. 20-22). Early settlers estimated a 100 Indians a day passed by their front doors on their way to the fishing grounds during the salmon run, carrying dip nets and cone shaped corrals made from switches (Becher, 1974, p. 243).

The Northern Pacific Railroad finally reached Spokane Falls from the west in 1881, connecting it with the rest of the modern world of transportation (Youngs, 1996, p. 34). Two years later, the transcontinental line linked Spokane to the east, and the young town saw a rapid growth in population. Subsequently, Spokane became a hub for railroad lines, which served nearly every surrounding region. This also prompted early settlers to claim land in the surrounding Spokane County, creating establishments such as Medical Lake, Cheney, Deer Park, Deep Creek, and many others (Bamonte and Bamonte, 1999, pp. 147). The influx of settlers, however, pushed the Native Americans further away from the Spokane River and their traditional hunting and fishing grounds, and with the discovery of gold, silver, and lead in nearby Idaho, Spokane was poised to become a regional capital (Stratton, 2005, p. 35).

Hydroelectric dams and shaping the river. Becher (1974) claims that the Spokane River was “one of the most turbulent rivers in the world” (p. 22). The swift current, a 1050-foot drop in river elevation, and a desire for electricity, inspired a conglomerate of business to form an association called the Washington Water Power

Company (WWP), which would subsequently change the course of the Spokane River indefinitely. Until 1889, the Spokane River's flow was unimpeded, however, the WWP purchased water rights and large dynamos and selected the upper falls as its first site for hydroelectric power in Spokane. As the population of the city grew, so did the demand for electricity, and as a result, the Washington Water Power Company began acquiring property and water rights to the Spokane in locations that were ideal for hydropower construction. Over the next thirty-three years, the WPP and the City of Spokane installed and operated a total of seven dams on the river, thus controlling flow rate, electricity production, and the ecology of the river (Fahey & Dellwo, 1988, pp. 26, 33-34).

As each dam was put on line, the landscape, the falls, and culture were changed. The ravine had been filled, blasted, and reshaped to provide maximum power generating potential. The once grandeur vistas were quickly obscured by buildings and mills that depended on the river for manufacturing. In addition, the falls had been so altered, rerouted, and hydroelectrically harnessed, that in 1891, the citizens had changed the name from Spokane Falls, to just Spokane (Youngs, 1996, pp. 86-88).

According to Youngs (1996), with the Indian wars over, a reservation in place, and limitless number of whites settling in Spokane, the Native Americans were pushed aside and forgotten (p. 83). Their culture and livelihood were also compromised as the Spokanes were driven west onto their newly designated reservation. In addition, "Colville employees destroyed fish traps in the Spokane and Little Spokane Rivers" (Fahey & Dellwo, 1988, p. 19) in an attempt to discourage and dishearten the Natives. Last, with the completion of Little Falls Dam in 1910, effectively eliminating the salmon

migration up the Spokane River, the remaining Spokanes conceded and moved downstream onto the reservation (Fahey & Dellwo, 1988, p. 34; Stimson, 1985, p. 19).

Recreational Fishing Participation Rates

United States fishing data. The United States has a wide variety of fishing opportunities available to the public such as lakes, rivers, streams, reservoirs, and saltwater. In addition, many varieties of wild, stocked, and introduced game fish exist for anglers to pursue. Common examples of game fish include rainbow trout, cutthroat trout, salmon species (king, coho, sockeye), large and smallmouth bass, catfishes, northern pike, walleye, and steelhead, etc. Because of the large diversity of fish species and the abundant freshwater resources in the United States, American anglers can partake in fishing activities throughout each season and in countless outdoor settings, both in urban and rural alike.

The U.S. Fish and Wildlife Service conducts a national survey of fishing, hunting, and wildlife-associated recreation every five years, with most recent data collected in 2006. From the survey, the U.S. Fish and Wildlife Service (2006) concluded that 30.0 million persons over the age of 16 fished in 2006, of whom, 25.4 million fished freshwater. Furthermore, the total number of days fished for freshwater species was 516.8 million, with a total expenditure of \$26.3 billion spent on freshwater trips and equipment (pp. 4-8). Surveys conducted in 1996 and 2001 indicate that freshwater fishing declined in 2006 in number of anglers by 15%, fishing days decreased by 17%, and total fishing expenditures dropped by 13% overall, with a 24% reduction in expenses related to fishing equipment (U.S. Fish and Wildlife Service, 2006, pp. 18-19).

Demographic information was also collected during the 2006 survey. The U.S. Fish and Wildlife Service (2006) found that 20% of all males over the age of 16 went fishing, while only 6% of all females over the age of 16 fished at least one day. In addition, the largest percent of anglers by age group was 35 years to 44 years old. Last, large populated areas (1 million or more) had the smallest fishing participation at 10%, while medium (250,000 – 1 million) and small-populated areas (249,999 or less) had 13% and 18% participation respectively (U.S. Fish and Wildlife Service, 2006, pp. 15-16).

Washington State fishing data. The national survey of fishing, hunting, and wildlife-associated recreation conducted by the U.S. Fish and Wildlife Service was further examined at the individual state level. Data discussed within this section will consist of resident and nonresident combined totals as reported by the U.S. Fish and Wildlife Service (2006). Washington State accounted for 736,000 anglers in 2006 that were aged 16 years or older. Of them, 20% were male and 8% of them were female, with 55 to 65 year olds identified as the highest percentage of anglers. Anglers were also grouped into categories of population size of area, as in the national survey. Larger metropolitan statistical areas (MSA) (1 million or more) accounted for 12% of anglers, medium MSA (250,000 – 1 million) participant levels were 12%, and small MSA (249,999 or less) saw an angling participation rate of 16%, thus following the national trend of higher participation rates among smaller communities. In addition, the total fishing expenditure, which includes food, lodging, transportation, and equipment, etc., was \$904.8 million, with \$485.9 million (54%) spent on equipment alone. As in the

national survey, Washington State angler participation rate and total expenditures decreased from 1996 to 2006 (U.S. Fish and Wildlife Service, 2006, pp. 14, 25, 27).

The U.S. Fish and Wildlife Service also gathered data about specie specific fishing habits within Washington State. The salmonid species of trout, salmon, and steelhead were the highest sought fishes, both in number of anglers targeting them and the number of days fishing for them, with all trout species collectively being the most desired fish (U.S. Fish and Wildlife Service, 2006, p. 18). According to the Washington Department of Fish and Game (WDFW) (2010), the rainbow trout is the most popular game fish in the state due to its wide dispersion across the cool temperature lakes and streams in Washington. Moreover, the rainbow trout's popularity is also attributed to the millions of hatchery fish WDFW supplements to the state's rivers and lakes each year (p. 17).

From the data collected by the U.S. Fish and Wildlife Service (2006) and the Washington Department of Fish and Game (2010), it is evident that there has been a steady decline in participation rates among anglers on the national level, as well as the state level. As a consequence of declining participation rates, the total expenditure on fishing related products and services has also weakened. Additionally, a gap in participation rates between males and females clearly exists, with females angling significantly less frequently than males. Last, while urban fishing programs are contributing to overall participation rates (Hutt & Neal, 2010, p. 91), the location of anglers relative to population centers is dominated by individuals living outside larger metropolitan statistical areas.

Recreational Fishing Constructs

Millions of Americans fish each year and view fishing as an “important and traditional recreational activity” (Duda, Bissell, & Young, 1995, p. 5). For this reason, numerous studies and researchers have focused on why anglers choose particular locations to fish, the gender differences between anglers, angler attitude toward fisheries management, and overall fishing preferences through extensive data collection (Bryan, 2000; Ditton & Sutton, 2004; Duda, Bissell, & Young, 1995; Hunt & Ditton, 2001; Lloyd, 1993; Schroeder, Fulton, Nemeth, Sigurdson, & Walsh, 2008; Schramm & Gerardm, 2004). This section, however, will explore three areas of recreational fishing that collectively address why an angler chooses to fish or chooses not to fish, they are (a) general motivational factors of anglers; (b) recreational specialization; and (c) the participation constraints of a recreational fishing experience.

General motivational factors of anglers. There is a growing body of knowledge that relates several motivational factors to fishing. The intent of this section is to provide an overview of the breadth of studies and to highlight several key findings and constructs that have shaped modern research as it applies to recreational fishing. The following information depicts the chronological progression of motivational studies that have been conducted by prominent authors in relation to recreational angling in the United States.

The study of motivational factors that influence leisure behavior helps to determine why individuals make the leisure decisions they do, provides information regarding leisure consequences, and can assist recreational practitioners with programming activities (Manfredo & Driver, 1996, p. 188). On the individual level, Manning (1999) states that motivations for outdoor recreational pursuits are “diverse and

can be related to the attitudes, preferences, and expectation of users” (p. 162). In addition, Knopf and Lime (1984) concluded that two individuals engaged in the same activity, and at the same time, could have differing motivational goals. For example, an angler fishing a river may be interested in catching only large fish, while another angler, who is fishing the same river, is simply enjoying the solitude (p. 15). These discrepancies and dynamic behaviors are primary reasons social scientists continue to study why individuals make recreational decisions under circumstances that appear to have no compelling external force (Manning, 1999, p. 160).

The foundation of studying modern motivating factors related to recreational fishing was laid by Knopf, Driver, and Basset (1973). According to Knopf et al. (1973), an individual chooses recreation environments or activities based on problem states that “cannot be, or for some reason are not, resolved in non-recreational environments” (p. 30). This suggests that individuals choose preferred environments due to unmet needs prior to the time the decision was made to recreate, which influences the “direction, intensity, and persistence of the recreation behavior” (p. 31). The authors developed scales based on a four-year, three-area, study that examined twenty different recreational activities and identified the reasons for, and the degree of importance, of the engagement and applied their findings to recreational fishing. (Knopf et al., 1973, pp. 31-33).

According to Knopf et al. (1973), “fishermen are motivated by four unmet needs: temporary escape, achievement, exploration, and experiencing natural settings” (p. 33). The need/desire to escape stressful conditions ranked exceptionally high among anglers, which was further depicted by a positive relationship between an individual’s residence (upkeep, and degree of crowdedness) and the importance of escape. Need achievement

was identified in both high and low income wage earners, however, lower income individuals place more emphasis upon angling achievement possibly due to frustrations in non-recreational activities. The desire for anglers to explore new environments and seek out new experiences ranked particularly high on the authors scales, with hikers and mountain bikers the only other recreation groups to score above anglers. Recreational anglers also aspire to experience natural environments, and in particular, appreciate natural surroundings (pp. 32-35). Knopf et al. (1973) also analyzed data surrounding motivational factors among anglers and canoeists and identified various differing motives. The largest difference in the two user groups centered around affiliation, with anglers much less likely to be motivated by human engagement, while canoeists actively pursue it (pp. 35-36). In addition, Knopf et al. (1973) discovered that anglers who were motivated by the need to experience nature were inclined to react unfavorably to seeing canoeists while participating in fishing, with the highest scoring individuals favoring restricted canoe use on the river (pp. 36-38).

According to Knopf et al. (1973), anglers tend to be motivated to fish to escape daily stress, to fulfill the need to achieve, and to experience nature in a natural environment. Additionally, anglers appear to be negatively affected by other recreational users, and do not regard affiliation as a primary source of motivation. The authors argue that recreation managers should be cognizant of different user group motivations and the potential discrepancies among them and program accordingly. Knopf et al. (1973) also conclude that outdoor recreationalists are increasingly using outdoor facilities, natural areas, and outdoor pursuits to help mitigate issues they are experiencing on a daily basis (pp. 32-40).

Duda, Bissell, and Young (1995) combined data from the 1980, 1985, and 1991 National Survey of Fishing, Hunting, and Wildlife Associated Recreation with data they had collected over a three-year span. The authors concluded that “anglers in the United States value the experience of being outdoors with friends and family above all other factors” (p. 21). Secondary to socialization and naturalistic values, Duda et al. (1995) identified the utility of catching a fish and the skills of learning how to fish to be factors of importance. In addition, the authors found that while catching numerous fish and the size of the fish is important to some segments of angler population, the majority of anglers are not motivated by the size of the fish nor the quantity of fish caught (pp. 21-22).

Hunt and Ditton (1996) conducted a statewide survey of Texas anglers to assess participation rates, social and demographic information, and constraints to fishing more frequently. Their results paralleled Duda et al. (1995) findings in that both urban and non-urban anglers placed importance on fishing with a social unit or with families, however, non-urban anglers placed more emphasis on fishing with family (pp. 40-41). The authors also revealed that urban anglers are more likely to be motivated by “escaping the regular routine” and “for relaxation” than non-urban anglers. In addition, urban anglers are more likely to fish where there are opportunities to catch a diverse population of species, whereas non-urban anglers preferred to target featured species (p. 42).

According to Finn and Loomis (2001), there are two sets of motives that are central to recreational anglers. The first set of motives are focused on non-catch aspects of fishing, while the second set of motives pertain to the actual catching of fish (pp. 176-177). The authors tested three hypotheses based on size of fish, the number of fish, and

the preferred species of fish caught and how the motives changed according to the angler's previous success in catching the preferred size, number, or specie of fish. Finn and Loomis (2001) concluded several key findings. First, "catching fish of the preferred size or number became significantly more important if trout anglers had not caught their preferred size or number of fish during their previous five fishing trips" (p. 184). Second, "trout anglers might be slightly less sensitive to failing to catch their preferred species than they are to not catching their preferred size or number of fish" (p. 185). Finally, the results from the study indicated that the level of importance anglers associated with catch motives is not static, rather it is dynamic and changes according to the success or failure rate of catching fish (Finn & Loomis, 2001, p. 185).

A 10-year study (1987 – 1997) of temporal changes in motivations among 4,287 fishing club members was preformed by Schramm and Gerard (2004). The results concluded that "the most important fishing motivation items in 1997 were relaxation, being outdoors, experience of catching fish, and escaping the regular routine" (p. 315). Interestingly, Schramm and Gerard (2004) found that fishing motives "for family recreation," "being with friends," and "fishing for consumption" all declined from 1987 – 1997 (p. 316). The authors posited that anglers who live in more urbanized areas are less likely to place importance on family recreation than non-urban anglers, which further confirmed the findings of Duda et al. (1995). Moreover, they contend that the study "indicates that further decline in the importance of family recreation as a reason for fishing as urbanization increases, at least for the avid angler, is likely" (p. 319).

Schuett, Lu, Ditton, and Tseng (2010) evaluated data collected by the Statewide Surveys of Texas Anglers over the years of 1989, 1990, 1994, 1997, 2001, and 2004.

The authors discovered that there was a significant decrease in interest in fishing with friends or a club, however, there was an increase in the percentages of anglers who preferred to fish with family or alone (p. 250). Additionally, Schuett et al. (2010) found that over time, the perceived importance of motivation decreased in four areas: natural environment and social aspects, challenge and adventure, skills and equipment, and escaping and relaxing. Furthermore, anglers with higher incomes were found to place less importance on skills and equipment and to focus more on the natural environment and social aspects of fishing (pp. 253-254).

This section of literature review discussed prominent motivational factors that are related to recreational fishing. The motives of *temporary escape*, *achievement*, *exploration*, and *experiencing natural settings* argued by Knopf et al. (1973) appear to categorize several factors that have been addressed throughout the literature. For example, *temporary escape* can categorically capture the motives of being outdoors with friends and family (Duda et al., 1995), relaxation and escaping the regular routine (Schramm & Gerard, 2004), and fishing with a social unit (Hunt & Ditton, 1996). *Achievement* motives can consist of catch and non-catch aspects of angling (Finn & Loomis, 2001), fishing for consumption (Schramm & Gerard, 2004), and the utility and skill of catching fish and learning how to fish (Duda et al., 1995). The motivational category of *exploration* can address the desire to fish alone (Schuett et al., 2010) and to experience adventure and excitement (Schramm & Gerard, 2004). Finally, the category of *experiencing natural settings* can include motives such as focusing on the natural environment (Schuett et al., 2010), to experience unpolluted natural surroundings (Schramm & Gerard, 2004), and targeting featured species (Hunt & Ditton, 1996).

The following section of literature review will address recreational specialization and the connection of motivational factors that influence individuals to participate in angling. The intent of the section is to explore the topology of specialization and to recognize that individuals at various stages of their fishing career have different motives for engaging in the sport.

Recreational specialization. This section of literature review will focus on the construct of recreation specialization developed by Bryan (1977) and the significant study conducted by Ditton, Loomis, and Choi (1992) that examined, expanded, and re-conceptualized the original ideology of recreation specialization. Recreation specialization is a psychological construct developed by Bryan (1977) that refers to “a continuum of behavior from the general to the particular, reflected by equipment and skills used in the sport and activity setting preferences” (p. 175). The construct of recreation specialization maintains that experience alone does not constitute specialization; rather it is one component among psychological, behavioral, and cognitive aspects that define types of recreationists (Manning, 1999, pp. 223, 227). A large portion of studies regarding recreation specialization have focused on traditional outdoor pursuits such as backpacking, hiking, boating, bird watching, and hunting, etc., and researchers have “regarded specialization as an indicator of intensity of involvement” (Scott & Shafer, 2001, p. 320). From this foundation, numerous authors have aimed to build upon and test various aspects of specialization, including measuring recreation experience, skill level of particular pursuits, level of commitment, perceived crowding during outdoor activities, wilderness purism, and methods of specialization (Manning, 1999, pp. 223-230).

The recreational specialization construct. Bryan (1977) pioneered the construct of recreation specialization by conducting on-site interviews with trout anglers in rural parts of Wyoming, Montana, and Idaho over a four-summer period. Interview questions were centered on “(1) fishing preferences, (2) orientation toward the stream resource, (3) history of interest and activity in the sport, and (4) relationship of the leisure activity to other areas of life, such as family, career, or other leisure activities” (p. 177). From his research, Bryan (1977) posited that anglers could be categorically placed into one of four distinct levels of specialization:

1. *Occasional Fishermen* – those who fish infrequently because they are new to the activity and have not established it as regular part of their leisure, or because it simply has not become a major interest.
2. *Generalists* – fishermen who have established the sport as a regular leisure activity and use a variety of techniques.
3. *Technique Specialists* – anglers who specialize in a particular method, largely to the exclusion of other techniques.
4. *Technique-Setting Specialists* – highly committed anglers who specialize in method and have distinct preferences for specific water types on which to practice the activity. (p. 178)

Furthermore, Bryan (1977) explained the typology of anglers and proposed a conceptual framework based on his findings in relation to the above mentioned categories of recreation specialization:

1. Fishermen tend to go through a predictable syndrome of angling experiences, usually moving into more specialized stages over time. But increasing

specialization does not necessarily imply narrowing or restriction of activities outside the specialty. Instead, an ever-increasing commitment to the sport in general may be found. The more specialized fishermen tend to have high knowledge and commitment to a variety of angling pursuits as an outgrowth of high time and skill commitment to the sport.

2. The most specialized fishermen have in effect joined a leisure social world – a group of fellow sportsmen holding similar attitudes, beliefs, and ideologies, engaging in similar behavior, and having a sense of group identification. This leisure social world serves as a major reference group for its members. As a cohesive group, it is effective in propounding the values of the so-called minority recreationist.
3. As level of angling specialization increases, attitudes and values about the sport change. Focus shifts from consumption of the fish to preservation and emphasis on the nature and setting of the activity. In short, for the most specialized fishermen, the fish are not so much the object as the experience of fishing as an end in itself.
4. The values attendant to specialization are inextricably linked to the properties of the resource on which the sport is practiced. As level of angling increases, resource dependency increases. What appeals to the specialist is a resource setting allowing for predictability and manipulation, a degree of control so as to be able to determine the difference between luck and skill. (pp. 185-186)

From his research, Bryan (1977) concluded that within each level of specialization there are distinct preferences and attributes that further segregate groups.

For example, occasional anglers are less likely to have equipment preferences than generalists, while specialists prefer fly fishing only implements. With regard to catch rate, size of fish caught, and desired specie, occasional and generalists anglers emphasize size and quantity of any fish caught. Conversely, the specialist orientated anglers prefer the environmental setting over catch rate and size, and are more concerned with the ability to catch a particular specie of fish on fly fishing tackle. The philosophy of managing fisheries differs at various levels also, with the occasional angler and generalists preferring stocking programs, whereas the specialists are focused on habitat management. In terms of proximity to residency and time spent fishing, the more specialized an angler is, the more likely he or she is to travel to a fishing destination and dedicate larger amounts of time to the sport. Occasional anglers are more likely to fish local waters after work or during weekends with family members when it is convenient, however, specialists and technique-setting specialists center their vacations, leisure time, and lives around fishing (pp. 178-185).

According to Bryan (1977), the recreation specialization construct could aid recreation managers in the decision-making process in regard to providing users with the appropriate resource, based on his or her specialization motivation. Furthermore, Bryan (1977) states that the construct has the “explanatory potential” (p. 186) for numerous leisure activities, and that overall, the tendency is for an individual to progress along the continuum of specialization, from occasional participants to technique-setting specialists (pp. 182, 186).

Re-conceptualizing recreational specialization. Ditton, Loomis, and Choi (1992) re-conceptualized the recreation specialization model and built upon the construct of

leisure social worlds which Bryan (1977) explored during his study. A leisure social world, according to Unruh (1979) is “an internally recognizable constellation of actors, organizations, events and practices which have coalesced into a perceived sphere of interest and involvement for participants” (p. 115). Social worlds are then reference groups of individuals “who share a common level of specialization and help to define the meanings, preferences, and norms of behaviors that are associated with such levels of specialization” (Manning, 1999, p. 230). Furthermore, Ditton et al. (1992) claim that the sport fishing social world is larger than the groups of which it is comprised, has no formal boundaries, and is not regulated by a centralized authority (p. 35).

To re-conceptualize recreation specialization, Ditton et al. (1992) linked the social worlds construct developed by Unruh (1979) to the foundation of specialization proposed by Bryan (1977) and developed eight propositions of specialization:

1. Persons participating in a given recreation activity are likely to become more specialized over time.
2. As level of specialization in a given recreation activity increases, the value of side bets will likely increase (cost of obtaining and learning to use equipment and emotional cost of developing and maintaining social relationships).
3. As level of specialization in a given recreation activity increases, the centrality of that activity in a persons life will likely increase.
4. As level of specialization in a given recreation activity increases, acceptance and support for the rules, norms, and procedures associated with the activity will likely increase.

5. As level of specialization in a given recreation activity increases, the importance attached to equipment and the skillful use of that equipment will likely increase.
6. As level of specialization in a given recreation activity increases, the dependency on a specific resource will likely increase.
7. As level of specialization in a given recreation activity increases, level of mediated interaction relative to that activity will likely increase.
8. As level of specialization in a given recreation activity increases, the importance of activity-specific element of the experience will decrease relative to non activity-specific elements of the experience. (pp. 39-41)

Ditton et al. (1992) tested propositions six through eight by collecting data through a mail survey of saltwater anglers in Texas. The authors confirmed each proposition analyzed and concluded the following: (a) highly specialized anglers have a higher resource dependency than lower specialized anglers; (b) higher specialized anglers are more reliant on mediated interaction (newspaper, magazines, trade publications, etc.) than lower specialized anglers; and (c) higher specialized anglers are shown to focus less on the activity-specific elements than lower specialized anglers and further equalize the experience with non-activity elements, i.e. catching fish is an added “bonus” of going fishing rather than the totality of the activity (pp. 41-48). Based on the author’s findings, Ditton et al. (1992) state there is “strong support for the re-conceptualization of recreation specialization” (pp. 47-48).

The way researchers assess and measure recreation specialization has not been standardized since its inception proposed by Bryan (1977) and re-conceptualized by

Ditton et al. (1992). According to Scott and Shafer (2001), there have been assorted studies focusing on behavior, attitude, values, and experience etc., with overlapping dimensions of many of these attributes. Manning (1999) also states that there has been “considerable disparity in the ways in which specialization have been measured” (p. 234). Researchers have relied on demonstrate-able expertise, self-assessment, number of magazine subscriptions to indicate both behavioral and psychological components, and attitudinal rather than behavioral measures of recreation (pp. 234-235).

Although Ditton et al. (1992) claim that the construct of recreation specialization could be re-conceptualized to include leisure social worlds and eight additional propositions; the foundation of Bryan’s (1977) model has not changed. The general premise for recreation specialization is that an individual will progress in skill, commitment, equipment choice, and resource awareness over time. In addition, Manning (1999) states that recreation specialization is self-reinforcing; in that an individual who increases participation in an activity may acquire additional skills, which can contribute to his or her psychological involvement in the activity (p. 231).

This section of literature review has examined the construct and topology that Bryan (1977) posited and Ditton et al. (1992) built upon. Based on the above mentioned studies, it appears that as an individual progresses in specialization, his or her motivation will also increase. The following examples depict how the four categories of specialization (occasional fishermen, generalists, technique specialists, and technique-setting specialists) relate to the four motives to fulfill unmet needs (temporary escape, achievement, exploration, and experiencing natural settings) developed by Knopf et al. (1973).

Generalists are mainly concerned with the size and quantity of fish caught, which is in alignment with the motivation category of *achievement*. Occasional anglers, however, may be less motivated by the achievement aspects of fishing due to possible achievement gained in other recreational activities they are engaged in. Furthermore, occasional anglers are more likely to fish local waters during convenient hours with family members as a motivational means of *temporary escape*. Technique-setting specialists have distinct preferences for water type and species, which relates to the motivation category of *exploration*. These individuals appear to be motivated to seek out new destinations and find challenging, specific species to target. Finally, technique-setting specialists are more likely to be involved in non activity-specific aspects of angling, such as preservation, habitat management, and resource awareness, which coincides with the motive of *experiencing natural settings*. Moreover, these anglers appear to be less motivated by achievement (catching and retaining fish) than any other segment of specialization.

The following section of literature review will explore the concept of leisure constraints and how they are related to recreational fishing. The intent of the section is to examine the concept of leisure constraints and to identify thematic relationships between constraints and motives in regard to an angler's location on the continuum of recreational specialization.

Leisure constraints. Leisure constraints are subjective forces that inhibit an individual from participating in a leisure activity, prohibit individuals from taking advantage of leisure services offered, prevent individuals from achieving a desired level of satisfaction, and simply prevent individuals from spending more time in the activity

itself (Jackson, 1988, p. 203). The study of leisure constraints has been of primary interest for several decades, and consequently, has been researched by numerous authors in a variety of facets including diversified populations, socioeconomic status, specific activities, available free time, and negotiating constraints, etc. (Burns & Graefe, 2007; Crawford & Godbey 1987; Ditton & Sutton, 2004; Freudenberg & Arlinghaus, 2010; Jackson, 1994; Jackson, 2005; Jackson, Crawford, & Godbey, 1993; Jackson & Rucks, 1995; Lloyd, 1993; White, 2008). Furthermore, leisure constraint research, according to Jackson (2000), investigates “factors that are assumed by researchers and/or perceived or experienced individuals to limit the formation of leisure preferences and/or to inhibit or prohibit participation and enjoyment in leisure” (p. 62).

Leisure constraints construct and topology. Leisure constraints, according to Crawford and Godbey (1987), can be broadly placed into three categories, intrapersonal, interpersonal, and structural. Intrapersonal constraints can include factors such as stress, anxiety, perceived self-skill, while interpersonal constraints are the result of interpersonal interaction, and structural constraints are factors that intervene between leisure preference and participation and include climate, season, and opportunities that are available to engage in leisure activities (pp. 122-124). Jackson (2000) identified primary structural constraints of cost to participate, individuals’ available time, available facilities, social and geographical isolation, and lack of skills and abilities (p. 64), however, Crawford, Jackson, and Godbey (1991) contend that these are the least important factors that shape leisure behavior, and that intrapersonal constraints are the most powerful, followed by interpersonal constraints (p. 314).

To overcome intrapersonal, interpersonal, and structural constraints, Jackson, Crawford, and Godbey (1993) developed six propositions that re-conceptualized the prevailing notion that constraints were “insurmountable obstacles to leisure participation” (p. 2). The six propositions are as follows:

1. Participation is dependent not on the absence of constraints (although this may be true for some people) but on negotiation through them. Such negotiation may modify rather than foreclose participation.
2. Variations in the reporting of constraints can be viewed not only as variations in the experience of constraints but also as variations in success in negotiating them.
3. Absence of the desire to change current leisure behavior may be partly explained by prior successful negotiation of structural constraints.
4. Anticipation of one or more insurmountable interpersonal or structural constraints may suppress the desire for participation.
5. Anticipation consists not simply of the anticipation of the presence or intensity of a constraint but also of anticipation of the ability to negotiate it.
6. Both the initiation and outcome of the negotiation process are dependent on the relative strength of, and interaction between, constraints on participating in an activity and motivation for such participation. (pp. 4-9)

Furthermore, the authors created a topology of individuals in regard to their response to constraints by categorizing them in one of three ways: “(1) people who do not participate in their desired activity; (2) people who, despite experiencing a constraint, do not otherwise change their participation at all; or (3) people who participate, but in an altered

manner” (Jackson et al., 1993, p. 8). Finally, Jackson et al. (1993) conclude that the level of participation of a leisure activity by an individual must be balanced between constraints and motivations (pp. 8-9).

Recreational fishing constraints. Many leisure researchers have followed the model and topology that Crawford and Godbey (1987) and Jackson et al. (1993) developed and applied it specifically to the field of recreational fishing. While there are numerous studies that have examined constraints and recreational fishing, this section of literature review will address only a sample of studies that have highlighted major findings and their implications on the industry as a whole. Specifically, this section will explore the following: (1) how constraints can affect the way recreational managers deliver services to users; and (2) how constraints affect participations rates at large.

Ritter, Ditton, and Riechers (1992) evaluated constraints in sport fishing in Texas and focused on “constraints that intercede between a person’s preference to fish (as evidenced by having a fishing license) and his or her frequency of participation in fishing (it is not as often as required)” (p. 17). Ritter et al. (1992) created twenty code categories across seven dimensions of time, economics, access, social, ability, management and interests and found that “lack of time” and “work constraints” were the highest ranking constraints overall, with an “over-riding importance” (p. 18) placed upon lack of time. Moreover, the authors’ study supported four core constraints of lack of time, facilities, money, and interest (pp. 17-18). Ritter et al. (1992) explained that these constraints will have implications on fisheries managers as the number of participants who are aging, lower wage earners, and single heads of households demand more services. By understanding participants’ needs, Ritter et al. (1992) posited that fisheries

managers will be better equipped to improve on delivery of services. In addition, by identifying nonparticipants and understanding constraints to recreational fishing, managers will better understand how to improve facilities, programs, and services (p. 18).

Sutton (2007) conducted a study of recreational anglers in Queensland, Australia and addressed how motivations influenced the perception of constraints. His findings paralleled those of Ritter et al. (1992) in that the constraints found to be most prevalent were “lack of time, (due to other commitments), inadequate facilities (lack of facilities, or facilities too crowded), and costs associated with fishing” (p. 79). Additionally, Sutton (2007) noted that 70% of respondents to his survey indicated that “constraints intervened between angler’s desire to participate in recreational fishing and their ability to participate at the desired frequency” (p. 79). Constraints to recreational fishing were recorded by both high and low-centrality-to-lifestyle anglers, however, they differed in context. High-centrality anglers were found to feel less constrained by other recreational participation (activities), but low-centrality individuals were more likely to report cost, confusing regulation, inadequate facilities, and overcrowding as constraining factors (Sutton, 2007, p. 77). Finally, Sutton (2007) also showed that higher income earners are less constrained by the cost of fishing as low-income earners are, however, they are more constrained by lack of time and family commitments (pp. 77, 79-81).

In a follow-up study to understand why individuals stop participating in recreational fishing, Sutton, Dew, and Higgs (2009) examined lapsed anglers and the constraints that prevented them from resuming participation. Results were generated through a mail survey with a variety of questions surrounding participation and satisfaction in other leisure activities since ceasing fishing. Respondents were also asked

to rate the likelihood that they would return to recreational fishing at different time intervals. Finally, Sutton et al. (2009) identified specific constraints based on the interpersonal, intrapersonal, and structural constructs developed by Crawford and Godbey (1987) and Jackson et al. (1993) (pp. 443-445).

Sutton et al. (2009) concluded that respondents identified lack of time (34%), lack of interest (21%), and poor fishing quality (17%) as the three most common reasons for ceasing recreational fishing participation. In addition, lack of time to fish was attributed to other time-constraining obligations such as work or family related activities. The lack of interest in fishing response was attributed to respondents becoming interested in other recreational pursuits, found fishing boring, and became concerned about the environmental issues associated with fishing (p. 446). Of the total respondents, 50% indicated that they were interested in fishing more frequently than their current level, and as a result, were asked questions regarding interpersonal, intrapersonal, and structural constraints. The three highest interpersonal constraints were “the people I know do not have the time to fish more” (55%), “the people I know are not interested in fishing more often” (37%), and “I do not know other people to fish with” (29%). Intrapersonal constraints were identified as “I do not have the necessary fishing skills” (20%), “I believe increasing my fishing activity would be bad for the resource” (12%), and “I do not like to kill fish” (11%). Overall, structural constraints were most the prevalent category, with “I have too many work/family commitments” (64%), “I do not always know the regulations for each type of fish I catch” (61%), and “I do not always know the regulations for the area I fish” (54%) being the highest rated constraints (p. 448).

The findings in the above mentioned studies regarding constraints to recreational fishing are not unique. Schroeder et al. (2008) identified seven constraint factors among Minneapolis-St. Paul anglers to be “family and work commitments,” “costs, regulations, and crowding,” “planning required,” “physical ability,” “discomfort in the outdoors,” “access,” “and “discrimination and fear.” Moreover, Schroeder et al. (2008) state that work and family commitments are the most constraining factors of recreational fishing (pp. 10-11, 14). In a gender-based constraint study, Kuehn (2004) found that during adulthood, the highest constraining factors are time due to work and time due to family and marital status (pp. 349, 352-353). Finally, Lloyd (1993) examined the relationship between angler specialization and constraints to trout fishing by measuring 16 factors of perceived constraints. The results from that study concluded that lack of time was a “substantial constraint” (p. 91) among trout anglers (pp. 59, 91).

The implications of recreational fishing constraints, as posited by Ritter et al. (1992), Sutton et al. (2007), and Schroeder et al. (2008), is that fishing participation rates are likely to decline if individuals are not able to successfully negotiate perceived constraints. Lack of time due to work and other family commitments is a constraint that has been identified across all demographics, particularly among higher wage earning males. Recreational managers are therefore vulnerable to this issue due to the lack of control they have over this aspect of participants’ lives. Resource managers should also be aware of regulatory confusion among anglers and provide access to information as regulations change based on environmental conditions. Additionally, individuals who cease fishing may be likely to participate in other forms of recreation, and as a result, managers should be cognizant of the needs and of different groups based on their

constraints and aim to retain and recruit participants accordingly (pp. 450-451). White (2008) argues that outdoor recreation participation can be attributed to the perception of negotiating leisure constraints. Individuals with higher awareness of negotiation-efficacy are more likely to overcome adversity (p. 356).

This section of literature review detailed the construct of leisure constraints and identified specific constraints anglers potentially encounter when deciding to participate in fishing. Similar to the relationship between motivation and specialization, there also appears to be a correlation between negotiating constraints and the level of recreational specialization of an angler. The following examples illustrate the associations between the above mentioned fishing constraints and the four categories of recreational specialization (occasional fishermen, generalists, technique specialists, and technique-setting specialists) developed by Bryan (1977).

Occasional anglers engage in fishing infrequently and have not established fishing as a part of their leisure routine, therefore fishing regulations, access points, and facilities may not be completely understood. If an individual perceives regulations as difficult to understand, facilities that are “not adequate,” and finding sufficient fishing access difficult, he or she is not likely to choose to participate in fishing. *Generalists* have established themselves in the sport and use a variety of fishing tactics and equipment; however, they may perceive catch rate and size as larger constraints than those encountered by occasional anglers (regulations, access points, and facilities). Therefore, if sufficiently sized and quantity of fish are not consistently caught, these anglers may perceive this as a constraint and withdraw from participating. *Technique specialist* anglers specialize in a particular method of fishing and equipment used to have

the greatest success while fishing. These anglers actively pursue destinations to match equipment with conditions (e.g. light tackle to small creek) and could potentially perceive overcrowding as a larger constraint than generalists due to the motivating factor of exploration. If technique specialists continually encounter anglers in remote locations, they could perceive this as an insurmountable constraint due to geographic limitations. Finally, *technique-setting specialists* anglers are highly committed to the sport and have developed preferences for specific types of water and species. Although these individuals have the self-identification of being an “angler,” they appear to have the greatest amount of motivation to engage in the activity and appear to have the greatest success of negotiating leisure constraints, however, they are still vulnerable to lack of time. Technique-setting specialists, however, have made life-choices that afforded them to be close to exceptional fishing locations, career choices that allows additional recreation time (e.g. teachers or physicians with summers off), or combed career aspirations with leisure experiences such as guiding or owning a tackle shop (Bryan, 1977, pp. 183-184).

Instrumentation Review

Substantial research has been conducted in the field of recreational fishing as outlined above. This section of literature review will focus on the specific instrumentation that has been utilized for measuring each respective area of recreational fishing. The following areas of instrumentation will be explored: (a) recreational specialization index; (b) recreational experience preference scales; and (c) angler constraint inventory.

Recreation specialization index. Although there have been numerous studies identifying recreational specialization, there has been little contiguity in the approach to gather data. For example, Bryan (1977) interviewed 263 on-site anglers, made observations of anglers around traditional fishing camps, hangouts, and tackle shops, as well as corresponded with individuals in the sportfishing industry about anglers to develop the framework of recreational specialization (p. 177). Unruh (1979) posited from a psychological stance that strangers, tourists, regulars, and insiders are social types that are found in nearly all social worlds and have characteristics that center around orientation, experiences, relationships, and commitments (p. 116). Neither of these cases utilized a standardized instrument to gather data or develop their respective constructs.

Ditton et al. (1992) recognized that the definition of recreation specialization developed by Bryan (1977) was circular. The authors concluded that the definition of recreational specialization is also its explanation (p. 34), therefore, Ditton et al. (1992) initiated the development of a testable theory that linked the typologies from Bryan (1977) and Unruh (1979) to re-conceptualize recreational specialization. To accomplish this, the authors developed and pretested a questionnaire and modified several questions based on three hypotheses to increase their effectiveness, however, the intent of each question remained the same (p. 42). The results provided empirical support for recreational specialization by showing that the social worlds differed as predicted in resource dependency, mediated interaction, activity-specific elements of fishing, and the importance of non activity-specific elements of fishing (Ditton et al., 1992, pp. 43-48).

Salz, Loomis, and Finn (2001) developed and validated a recreation specialization index (RSI) based on the social world view work from Bryan (1977), Unruh (1979) and

Ditton et al. (1992). The RSI was created based on the four characteristics of sub-worlds (strangers, tourists, regulars, and insiders) conceptualized by Unruh (1979). Within these levels, four specific characteristics exist that describe the type of participant, which are orientation, experiences, relationships, and commitments and are related to the four types of sub-world (specialized) participants. From this, the authors created and validated a survey instrument that contained four questions for each characteristic of the sub-world, for a total of 16 items.

In a related study, Salz and Loomis (2005) used the RSI to determine if levels of specialization affect attitudes toward restricted fishing areas. The authors again used the four characteristics of sub-worlds to identify specialization, thus verifying the reliability and validity of the instrument. Finally, to ensure validity and reliability of the RSI, Hawkins, Loomis, and Salz, (2009) studied four unrelated populations: divers, snorkelers, Florida Keys anglers, and Northeast anglers. The authors concluded that the recreational specialization index (RSI) was valid because “it measured how well one item predicted response to another item” (p. 297) and was reliable because results exceeded Cronbach’s coefficient alpha level of 0.70 (p. 297).

While the RSI has been developed, tested, and validated, it has had limited use in field research. Hawkins et al. (2009) speculate it is due to researchers using previously developed instruments, lack of awareness, or concerns about the reliability and validity of the RSI as a research instrument (p. 298). Based on their findings, however, Hawkins et al. (2009) conclude that the “recreation specialization index continues to be an internally valid and reliable measure of the construct” (p. 298).

The recreation experience preference scales. The Recreation Experience Preference scales (REP) were developed to assess the importance of appraised leisure benefits and the psychological outcomes of outdoor leisure opportunities. The premise behind measuring recreation experience preferences was rooted in the idea that leisure opportunities help individuals fulfill unmet needs. Research has been conducted to measure the demand of specific recreational pursuits in order to assist recreational professionals with managerial operations such as multiple-use, resource allocation, and access etc. (Driver, Tinsley, & Manfreda, 1991, pp. 263-264, 272).

There are 43 REP scales that measure the extent to which specific experiences are desired and expected from leisure activities (Driver et al., 1991, p. 275). The 43 REP scale items have been placed into 19 domains that collectively identify each of the scale items. For example, the domain of “Outdoor Learning” has four subsets of REP scales which include (1) general learning; (2) exploration (3) learn geography of area; and (4) learn about nature, while the domain of “Enjoy Nature” has two REP subsets of (1) scenery and (2) general nature experience (p. 276). Researchers have used these scales to measure preferred outcomes to leisure experiences, however, they have approached the response format differently. According to Manfreda, Driver, and Tarrant (1996), there are four different response scales that ultimately measure an individual’s motivation to recreate in the outdoors. The four possible response scales that measure motivation and recreation experiences are as follows: (1) satisfaction scale – with end points of “strongly adds” or “strongly detracts” from satisfaction; (2) importance scale – with end points of “not at all important” or “very important”; (3) valence scale – with questions about outcomes adding to satisfaction and the likelihood of outcomes; and (4) experience scale

– with questions about if the outcome “added to” or “detracted from” the overall experience (p. 196).

Through the inception of the REP scales during the 1970s to the present, there have been countless empirical studies conducted aimed at developing, refining, and validating the scales (Driver et al., 1991, p. 275). The REP scales were developed in two phases. Phase one identified scales that would measure the concepts of interest, with primary concern about content validity and reliability. Phase two established scale reliability and tested the validity of the scales as a measuring device of the desired experiences of individuals recreating in a specific activity (Manfredo et al., 1996, p. 191). According to Driver et al. (1991), REP scale reliability and validity focused on maintaining an average Pearson correlation between items within a scale of at least 0.40 and a Cronbach alpha of 0.60 or higher, which have been realized (p. 275). The authors also concluded that “it can safely be said that the REP scales seem to have reasonable validity and reliability” (p. 277).

Manfredo et al. (1996) conducted a meta-analysis that included 36 independent REP scale studies from 1975-1979. In total, 108 REP scale items were analyzed, indicating that some studies included all domain items, while other studies only included selective subsets. The authors found that motivations are a relatively stable and basic human characteristic. In addition, Manfredo et al. (1996) state that the REP scales can be utilized to determine trip-specific motivations and activity-specific motivations, i.e. why people took a particular trip and why people engage in a particular activity (pp. 206-207). Manfredo et al. (1996) concluded that their findings offered “evidence supporting the reliability, and to some extent, the construct validity of the REP item scales” (p. 204).

Manfredo et al. (1996) suggest that researchers using the REP scales to measure motivation of outdoor activities include all scales from the item because of the content validity criterion applied during the REP scale development. However, the authors state that a reasonable alternative is to administer a pretest to determine which of the REP domains are applicable to the population being studied. The pretest should include all REP scale items and the final test should be narrowed to the REP scales that were of high importance. Furthermore, administration of the REP scale instrument should be as close as possible to the time of engagement of the interested activity being studied (p. 208).

Angler constraint inventory. Although theories and constructs around general leisure constraints had been developed, (Crawford & Godbey, 1987; Crawford, Jackson, & Godbey, 1991; Jackson, 1988), angling researchers Ritter et al. (1992) stated that there had been “no effort to identify constraints in sport fishing” (p. 16). To lay the foundation of recreational fishing constraints, Ritter et al. (1992) developed a single survey questionnaire asking “What prevented you from fishing more often in Texas?” (p. 17). Responses of the survey were answered in sentence form, lists, or as a single word such as “time.” From this, the authors used qualitative methods to derive seven dimensions of constraints of recreational anglers, which include: time, access, management, economics, interest, ability, and social. Ritter et al. (1992) then coded twenty categories of statements that could collectively be placed within each of the dimensions. For example, “work commitments,” “family commitments,” “school commitments,” and “lack of time,” represent the dimensional constraint of “Time” (p. 17). The authors urged future researchers to use the set of dimensions and categories in angler surveys to further understand the emerging field of recreational fishing constraints (pp. 17-18).

Building on the work of Ritter et al. (1992) and utilizing leisure science research, Fedler and Ditton (2001) created a survey instrument that explored recreational fishing constraints across interpersonal, intrapersonal, and structural constraint categories that Crawford and Godbey (1987) and Crawford et al. (1991) developed (p. 286). Specifically, the authors investigated why anglers were inactive, dropped out of fishing, resumed fishing, or remained active in fishing. Survey questions were five-point Likert style questions with endpoints indicating the level in which respondents agreed with the question asked (strongly agree versus strongly disagree).

Jackson (1988) completed a survey of past leisure constraints research and identified 17 common items that had been used to gather data. This list is not considered comprehensive, however, it contains the most common constraints related to recreation (p. 206). Fedler and Ditton (2001) adapted the general constraints identified by Jackson (1988), added four additional constraints (a total of 21 constraints), and modified the constraints to recreational fishing. For example, questions related to intrapersonal constraints consisted of “I don’t like to kill fish,” “I don’t feel it’s appropriate to fish,” and “fishing is bad for the resource,” interpersonal constraint questions included “the people I know don’t have time to fish,” “the people I know don’t have the money to fish,” and “the people I know don’t feel it’s appropriate to fish.” Structural constraint questions centered on items such as “I don’t have access to fishing opportunities,” “I can’t afford to fish more often,” and “I have too many family/work commitments” (p. 288).

Sutton (2007) researched anglers in Queensland, Australia and used a condensed list of interpersonal, intrapersonal, and structural constraint categories to determine

overall constraining factors. Items for this survey instrument followed Fedler and Ditton's (2001) work, however, only twelve items were used for identification, with the majority of questions focused on structural constraints (p. 78).

In a follow-up study, Sutton et al. (2009) conducted investigated why people dropped out of recreational fishing in Queensland, Australia. To gather data for their study, the authors created a survey instrument based on the instrument developed by Fedler and Ditton (2001) and Sutton (2007). Each question within each category of interpersonal, intrapersonal, and structural constraint mirrored those of Fedler and Ditton (2001). Sutton et al. (2009) created eight additional structural constraint questions that were focused on the complexity of fishing regulations, with "fishing regulations are too confusing," "fishing regulations are too strict," and "there are too many fishing regulations" as example questions (p. 448).

From the above-mentioned studies, it is evidenced that there has been continuity in how researchers gather data regarding recreational fishing constraints. Survey instruments designed to gather data on angler constraints have followed the interpersonal, intrapersonal, and structural constraints construct developed and modified by Crawford and Godbey (1987), Crawford et al. (1991) and Jackson (1988). Ritter et al. (1992) identified a need to explore recreational fishing constraints, and as a result, subsequent authors (Fedler & Ditton, 2001; Sutton, 2007; Sutton et al., 2009) have built upon this foundation into a seemingly cohesive list of constraints specific to anglers.

This section of literature review detailed the instrumentation used by various researchers to identify recreational specialization, angler motivations, and angler constraints. Manning (1999) observed the lack of standardized instrumentation and

measurement of recreational specialization (p. 234) since the inception of the Bryan's (1977) construct, however, in recent studies the Recreational Specialization Index (RSI) has been developed, tested, and validated as a reliable measuring tool (Hawkins et al., 2009; Salz et al. 2001; Salz & Loomis, 2005).

The Recreation Experience Preference scales (REP) were developed by social scientists (Driver & Cooksey, 1977, Driver & Knopf, 1977; Driver et al., 1991; Driver & Tocher, 1970, Knopf et al., 1973; Lawler, 1973; Manfredo et al., 1996) and measure the extent to which leisure opportunities help individuals fulfill unmet needs. Recreational fishing researchers have used the REP scales to measure motivational factors related to angling in a number of facets to better understand why individuals make specific angling decisions (Fedler & Ditton, 1994; Schramm & Gerard, 2004; Schuett et al, 2010; Sutton, 2007). Through a meta-analytic study, Manfredo et al. (1996) stated that the REP scales were a valid and reliable way to measure motivational preferences (p. 204).

Measuring recreational fishing constraints is largely rooted in the construct of interpersonal, intrapersonal, and structural constraints developed by Crawford and Godbey (1987). Several researchers interested in recreational fishing constraints have followed this model and adapted instrumentation specific to recreational fishing that measures a variety of items across the three constraints categories. Notably, Fedler and Ditton (2001) created an instrument that measured 21 items, with seven items in each of the three categories, while Sutton (2007) and Sutton et al. (2009) used a combination of these items in their respective studies.

Summary

The purpose of this literature review was to highlight background information on recreational fishing and to discuss three constructs that measure engagement in the activity. An overview of the Spokane River and region was presented to better understand the historical connection Spokane County anglers might have to the river. Second, participation rates, demographics, expenditures, etc. of recreational fishing were presented to understand the fishing industry as a whole and to illustrate the recent decline of angler involvement on the state and national level.

Motivational factors of recreational fishing were explored to better understand specific motives that influence anglers to engage in the sport. Numerous motivation studies throughout the literature were presented that examined a variety of aspects of recreational fishing and identified several motives for angling. Angling motives can be measured using the Recreational Experience Preference (REP) scales that were developed to assess the importance of appraised leisure benefits and the psychological outcomes of outdoor leisure opportunities. The REP scales measure the extent to which specific experiences are desired and expected from leisure activities (Driver et al., 1991, p. 275) and are designed to assist individuals to fulfill unmet needs.

The construct of recreational specialization was discussed to better understand the level of commitment to recreational fishing. Bryan (1977) posited that anglers could be categorically placed into one of four distinct levels of specialization: (1) occasional anglers (2) generalists; (3) technique specialist; and (4) technique-setting specialists (p. 178). Furthermore, the Recreational Specialization Index (RSI) developed by Salz (2001) and later tested and re-validated by Salz and Loomis (2005) and Hawkins et al.

(2009) was presented as an accurate means of measuring recreational specialization. The RSI is a survey instrument that contains four questions with four possible outcomes, for a total of 16 items that determines the level of specialization of the respondent.

To gain insight on reasons why anglers choose not to participate in recreational fishing, a review of angling constraints was presented. As evidenced in the literature, several angling studies have followed the interpersonal, intrapersonal, and structural constructs developed by Crawford and Godbey (1987) and Jackson et al. (1993) and applied it specifically to the field of recreational fishing. Fedler and Ditton (2001), Sutton (2007) and Sutton et al. (2009) each utilized a variation of the constraint topology and adapted instrumentation specific to recreational fishing. Intrapersonal constraints consist of questions centered on the self, while interpersonal constraint questions focus on social/relational aspects of angling. Finally, structural constraint questions address issues such as climate, season, and opportunities that potentially influence an individual's desire to engage in fishing.

Inferences were drawn about the constructs that appeared to be linked together as a basis for this particular study. Specifically, the motives of *temporary escape, achievement, exploration, and experiencing natural settings* argued by Knopf et al. (1973) appear to categorize several factors that have been addressed throughout the literature. Examples were offered that connected Bryan's (1977) level of recreational specialization (occasional fishermen, generalists, technique specialists, and technique-setting specialists) to Knopf et al. (1973) ideology of fulfilling unmet needs of *temporary escape, achievement, exploration, and experiencing natural setting*. Associations were then drawn between specific angling constraints discussed in the literature and how those

correlated to the level of involvement within the sport according to Bryan's (1977) model of recreational specialization.

The following chapter of this study consists of the methodology that was utilized in obtaining participants, the procedures for implementing the instrumentation, and the analysis of the data.

Chapter III

Methods

The purpose of this study was to explore how differing levels of recreational specialization influence an individual's perception of motives and constraints to engage in angling in Spokane County, Washington. Two hypotheses were formulated to address the purpose of this study. First, there will be a significant difference in motivation across levels of specialized anglers. Second, there will be a significant difference in leisure constraints across levels of specialized anglers. To gain access to anglers in Spokane County, the Washington Department of Fish and Wildlife (WDFW) was contacted and provided a database of names and contact information for anglers who purchased a freshwater fishing license in 2010. A mail survey instrument was developed that aimed to measure angler specialization, motivation, and constraints to freshwater angling. In addition, general demographic information was collected to understand socioeconomic status of the respondents. This methodology chapter consists of four sections in the following order: (1) participants; (2) instrumentation; (3) procedures; and (4) analysis.

Participants

Participants for this study consisted of freshwater anglers who reside in Spokane County ages 18 years and older. Of the 212 surveys that were returned, 162 (76.4%) indicated that they were male, while 44 (20.8%) individuals responded as female. The two highest categories of ages was bimodal, with 55-64 years old and 65 years and older both accounting for 48 responses each, which represented 45.2% of the sample population. The majority of respondents (90.6%, $n = 192$) considered their ethnicity as white, while the most common response of annual income was \$50,00 – \$74,999 (20.8%,

$n = 44$). Thirty-five percent (34.9%, $n = 74$) of the participants had an education level of 1 – 3 years of college, 32.1% ($n = 68$) indicated they had 4 years of college or more, 26.4% ($n = 56$) indicated they had 12 years, and 3.3% ($n = 7$) had less than 12 years of education. Finally, the average number of times the respondents claimed to fish in the last year was 14.55 times, however, the results were bimodal. Responses of 20 times fished in the last year and 0 times fished in the last year both represented 22 responses each. Appendix A presents the demographic information collected from the survey implementation.

Instrumentation

Four separate instruments were utilized for this study. The instruments included measurements of recreational specialization, motivations, leisure constraints, and demographics.

Recreational specialization index. Dimensions of recreational specialization were assessed with the Recreation Specialization Index (RSI) developed by Salz et al. (2001), and subsequently retested by Salz and Loomis (2005), and re-validated by Hawkins et al. (2009). Questions developed for this instrument are designed to identify where respondents are located on Bryan's (1977) continuum of specialization. Four subscales related to participation, experience, relationships, and commitment, respectively, were used to determine the connection of the participant to the activity. Each of the 4 recreation specialization dimensions was measured on a four-point Likert scale format ranging from: (1) least specialized to (4) most specialized. A complete copy of the Recreation Specialization Index (RSI) instrument can be located in Appendix B.

Recreational experience preference. Dimensions of angler motivation were assessed on the Recreation Experience Preference scales (REP), which were conceptually developed by an aggregate of authors in the 1970s, including Driver and Tocher (1970), Knopf et al. (1973), Lawler (1973), Driver and Knopf (1977), and later re-validated by Driver and Cooksey (1977), Driver et al. (1991), and Manfredo et al. (1996). The REP scales have been adapted and used extensively in sportfishing literature (Chi, 2006; Driver & Cooksey, 1977; Fedler & Ditton, 1994; Schramm & Gerard, 2004; Schuett et al. 2010; Sutton, 2007). The REP scales instrumentation used by Schuett et al. (2010) were administered for the purpose of this study.

Schuett, et al. (2010) used the REP scales to develop an instrument that aims to identify 17 motives across four dimensions of recreational fishing: (1) natural environment/social; (2) challenge/adventure; (3) skill/equipment; and (4) escape/relaxation.

The natural environment/social subscale consisted of the following six variables: “to be outdoors,” “for family recreation,” “to experience new and different things,” “to be close to the water,” “to experience unpolluted natural surroundings,” and “to be with friends.”

The skills/equipment subscale consisted of the following four variables: “to win a trophy or prize,” “to catch a trophy fish,” “to test my skills” and “to test my equipment.”

The challenge/adventure subscale consists of the following three variables: “for the fun of catching fish,” “for the experience of the catch,” “for the challenge or sport,” and “to experience excitement and adventure.”

The escape/relaxation subscale consisted of the following three variables: “to get away from the demands of others,” “to get away from the regular routine,” and “for relaxation.”

Each of the 17 motivational items utilized a five-point Likert scale format ranging from: (1) not at all important to (5) extremely important. A complete copy of the angler REP can be located in Appendix B.

Constraints inventory. Dimensions of angler constraints were based on the interpersonal, intrapersonal, and structural constraints construct developed and modified by Crawford and Godbey (1987), Crawford et al. (1991), and Jackson (1988) and adapted by sportfishing researchers (Fedler & Ditton, 2001; Ritter et al. 1992; Sutton, 2007; Sutton et al., 2009). The constraints instrumentation used by Sutton et al. (2009) was administered for the purpose of this study.

Sutton et al. (2009) identified 29 items related to angler constraints across three dimensions: interpersonal, intrapersonal, and structural. Sutton et al. (2009) also included an additional section of six questions regarding fishing regulations, which were also utilized for this study.

The interpersonal subscale consisted of the following seven variables: “I don’t know other people to fish with,” “the people I know don’t have the money to fish more,” “the people I know don’t have the necessary fishing skills,” “the people I know are not interested in fishing anymore,” “the people I know don’t fish for the species I prefer to catch,” “the people I know don’t feel it’s appropriate to fish more,” and “the people I know don’t have time to fish more.”

The intrapersonal subscale consisted of the following seven variables: “I believe increasing my fishing activity would be bad for the resource,” “I don’t like to kill fish,” “catching fish causes too much injury to the fish,” “when fishing, I feel uncomfortable or self-conscious,” “I don’t feel it’s appropriate to fish more often,” “at times, fishing can be stressful,” and “I don’t have the necessary fishing skills.”

The structural subscale consisted of the following fifteen variables: “fishing areas are crowded,” “I have too many work/family commitments,” “I can’t catch enough fish to suit me,” “I don’t have access to fishing opportunities close to home,” “I can’t afford to fish more often,” “I don’t have the physical ability to fish more often,” “other leisure activities take up my time,” “the cost of fishing equipment and supplies is too expensive,” “fishing facilities are poorly developed and/or maintained,” “there are too many fishing regulations,” “fishing regulations are too confusing,” “fishing regulations are too strict,” “I don’t always know the regulations for each type of fish I catch,” “the areas I like to fish have been closed to fishing,” and “I don’t always know the regulations for the area I fish.”

Each of the 29 constraining factors was measured on a five-point Likert scale format ranging from: (1) strongly disagree to (5) strongly agree. A complete copy of the angler constraints instrument can be located in Appendix B.

Demographic questionnaire. Questions regarding gender, age, ethnicity, affluence, and education level were asked to gain insight into potential demographic patterns between types of anglers. Demographic items provided information about how anglers of varied backgrounds negotiate constraints and perceive motivations at various levels of recreational specialization. These items followed the standardized format the

U.S. Fish & Wildlife Service (2010) administers every five years to collect data for the national survey of fishing, hunting, and wildlife-associated recreation. A complete copy of the demographic questions can be located in Appendix B.

Procedures

Consistent with Washington Public Records Act RCW 42.56.430 (3), WDFW provided a database of Spokane County residents that purchased an annual freshwater fishing license in 2010. Individuals who are below the age of 15 are not required to purchase a fishing license; therefore, these individuals were excluded from this study. In addition, any individual who was below the age of 18 was asked not to participate in this study as a means to simplifying the IRB process. Information provided by WDFW contained the first and last name of each individual, along with a physical mailing address, however, no other contact information was provided, i.e. email and phone numbers were not present. In total, 51,182 names and addresses of Spokane County freshwater fishing license holders aged 15 years or older were provided for the purpose of this study.

Participants for this study were randomly selected from the database provided by WDFW. This study assumed that the entire population of anglers was captured via WDFW's database of licensed anglers; therefore, the technique of simple random sampling was implemented. According to Henderson and Bialeschki (2010), a simple random sample is the best method for selecting participants if the entire population is known (p. 126). Moreover, by having access to all licensed anglers in Spokane County, each individual had an equal chance of being selected, thus reducing the risk of introducing non-probability sampling bias (pp. 124-125).

Krejcie and Morgan (1970) developed a table for determining an appropriate sample size based on the total population to be studied. A complete copy of the table can be located in Appendix C. This study had access to 51,182 individuals, making the minimum sample size is 381 (Krejcie & Morgan, 1970). Due to non-response rates, potentially inaccurate mailing addresses, and other unforeseeable issues that could jeopardize the sample size, 635 individuals were selected for this study. This number was generated based on Dillman's (1991) assessment of response rates. The author states that "there is no longer any reason to accept low response rates to mail surveys and there are procedures available to assure response rates of 50% and higher for most populations" (p. 238). Additionally, in a meta analytic study to assess angler motivations in fisheries management, Fedler and Ditton (1994) discovered that response rates for mail surveys ranged from 47% to 77%, indicating positive return rates in regard to recreational fishing.

Each participant was placed into an Excel spreadsheet and assigned a number through the random number function built into the program. Participants were then sorted in ascending order by the random number generated, while retaining contact information integrity. The first 635 participants, who were identified by the previously mentioned technique, were selected for this study.

Data collection for this study was in accordance with Dillman's (2007) guidelines for conducting mail surveys, which recommends five mailings for maximum response rates (pp. 150-151). Due to financial and logistical constraints of this study, two changes were made to Dillman's (2007) protocols: (1) three mailings were utilized instead of the recommended five; (2) first-class postage was not used for outgoing or returned

envelopes. The first mailing consisted of a cover letter, survey instructions, the actual survey instrument, and a pre-paid business reply envelope. The cover letter detailed the nature of the study, the importance of each response, confidentiality, and the social usefulness of the survey. The cover letter provided brief instructions for completing the survey and contact and mail back information of the researcher (pp. 158-165). In addition, respondents were informed that the results of this study could be provided upon their request. An email detailing the results was delivered to the respondents upon completion of this study, if the respondent indicated that he or she would like a summary of the study.

A follow-up post card notification was mailed out one week after the initial mailing. The purpose of the post card was to remind the individual that he or she had been selected to participate in a study and aimed to convey the importance and timeliness of returning a completed survey (pp. 178-181). Finally, approximately three weeks from the initial cover letter and survey mailing, a third mailing was sent out to the remainder of individuals who failed to return the survey in a timely manner. The intent of the final mailing was to reinforce the importance of the study and to state that the success of the survey depended on their response. In addition, a replacement survey was provided in the event the original survey had been misplaced, lost, or thrown away (pp. 181-184). A complete copy of the cover letter, instructions, and follow-up letters can be located in Appendix B.

Based on the above-mentioned process, 635 surveys were randomly sent to participants. Overall, 212 usable surveys were returned for a response rate of 33.4%.

Analysis

This study was quantitative in nature. The Multivariate Analysis of Variance (MANOVA) technique was utilized to explore the two hypotheses (i.e. there will be significant differences in motivations and constraints across levels of specialized anglers) of this study. Participants were divided into tertile groups based on the distribution of the RSI and then compared on the dependent variables of interest. Post hoc multivariate analyses were then conducted utilizing the discriminate analysis technique. To enhance interpretability, univariate post hoc analyses were also conducted utilizing the Tukey Honestly Significant Difference (HSD) method. Finally, a stepwise multiple regression analysis was conducted to predict angling specialization.

Summary

The purpose of this study was to explore how the differing levels of recreational specialization influence an individual's perception of motives and constraints to engage in angling. Participants for this study consisted of freshwater anglers in Spokane County ages 18 years and older who reside in Spokane County and were randomly selected from a database provided by WDFW. Simple random sampling was utilized to select 635 individuals for this study.

A mail-back survey instrument was developed for this study and measured aspects of recreational specialization, leisure constraints, motivations, and demographics. Questions regarding specialization followed the RSI developed by Salz et al. (2001) and were validated by Hawkins et al. (2009). Dimensions of angler motivation were assessed with the REP scales and adapted by Schuett et al. (2010). Aspects of angler constraints were based on the interpersonal, intrapersonal, and structural construct adapted by Sutton

et al. (2009). Demographics were also gathered for this study and followed the standardized format of the U.S. Fish & Wildlife Service (2010).

Data collection for this study followed Dillman's (2007) guidelines for conducting mail surveys, however, only three mailings were utilized and bulk mail postage was used to reduce the overall cost of this study. The initial mailing consisted of a cover letter, survey instructions, the actual survey instrument, while the second and third mailings were intended to be follow-up reminders stressing the importance of the study and urging the respondent to return the survey. Overall, there were 212 returned surveys, for a response rate of 33.4%.

Descriptive and inferential statistical analyses were run on the data collected from the survey instrument. Descriptive statistics were used to calculate mean, median, and mode, variance, and standard deviation, while inferential statistical calculations consisted of two MANOVA, a stepwise regression analysis, a multivariate discriminate analysis, and univariate Tukey post hoc tests to determine relationships between recreation specialization, motivations, and constraints. Significance of all calculations was measured at the alpha of 0.05 level of probability. In addition, all data was analyzed by using SPSS for Windows version 19.0 at Eastern Washington University, Cheney, Washington.

The following chapter of this study details the results and major findings from the data collected during the survey implementation.

Chapter IV

Results

The purpose of this study was to explore how differing levels of recreational specialization influence an individual's perception of motives and constraints to engage in angling in Spokane County, Washington. This chapter provides the results of the two hypotheses developed for this study: (1) there will be a significant difference in motivation across levels of specialized anglers and (2) there will be a significant difference in leisure constraints across levels of specialized anglers. Results will be presented in the following order: (1) Descriptive statistics and Chronbach's alpha results; (2) multivariate analysis of variance (MANOVA) results; and (3) multiple regression results.

Descriptive Statistics and Chronbach's Alpha Results

Cronbach's alpha (Cronbach, 1951), which quantifies the degree of internal consistency (reliability) of a set of items, was calculated for each subscale. In general, a Cronbach's alpha of at least 0.70 is viewed as the minimum acceptable level of reliability. The subscales of the REP inventory displayed adequate reliability with natural environment/social $\alpha = 0.81$, challenge/adventure $\alpha = 0.84$, skill/equipment $\alpha = 0.78$, and escape/relaxation $\alpha = 0.84$. Table 1 presents the descriptive and reliability results of the motivation subscales prior to analyzing them against the specialization groups.

Table 1. Descriptive and reliability results of motivation subscales (1 = not at all important, 5 = extremely important)

Subscale Item	\bar{x}	SD	α	<i>n</i>
Natural Environment/Social	3.90	0.71	0.81	203
To be outdoors				
For family recreation				
To experience new and different things				
To be close to the water				
To experience unpolluted natural surroundings				
To be with friends				
Challenge/Adventure	3.78	0.86	0.84	202
For the fun of catching fish				
For the experience of the catch				
For the challenge or sport				
To experience adventure and excitement				
Skills/Equipment	2.39	0.88	0.78	202
To win a trophy or prize				
To obtain a “trophy” fish				
To develop my skills				
To test my equipment				
Escape/Relaxation	3.95	0.99	0.84	203
To get away from the demands of other people				
To get away from the regular routine				
For relaxation				

The subscales of the constraints inventory also displayed acceptable internal consistency. Reliability measures for constraint subscales included: interpersonal $\alpha = 0.76$; intrapersonal $\alpha = 0.81$; and structural $\alpha = 0.86$. Table 2 presents the descriptive and reliability results of the constraint subscales prior to analyzing them against the specialization groups.

Table 2. Descriptive and reliability results of constraint subscales (1 = strongly disagree, 5 = strongly agree)

Subscale Items	\bar{x}	SD	α	n
Interpersonal	2.28	0.68	0.76	205
I don't know other people to fish with				
The people I know don't have the money to fish more				
The people I know don't have the necessary fishing skills				
The people I know are not interested in fishing anymore				
The people I know don't fish for the species I prefer to catch				
The people I know don't feel it's appropriate to fish more				
The people I know don't have time to fish more				
Intrapersonal	1.71	0.62	0.81	206
I believe increasing my fishing activity would be bad for the resource				
I don't like to kill fish				
Catching fish causes too much injury to the fish				
When fishing, I feel uncomfortable or self-conscious				
I don't feel it's appropriate to fish more often				
At times, fishing can be stressful				
I don't have the necessary fishing skills				
Structural	2.61	0.66	0.86	208
Fishing areas are crowded				
I have too many work/family commitments				
I can't catch enough fish to suit me				
I don't have access to fishing opportunities close to home				
I can't afford to fish more often				
I don't have the physical ability to fish more often				
Other leisure activities take up my time				
The cost of fishing equipment and supplies is too expensive				
Fishing facilities are poorly developed and/or maintained				
There are too many fishing regulations				
Fishing regulations are too confusing				
Fishing regulations are too strict				
I don't always know the regulations for each type of fish I catch				
The areas I like to fish have been closed to fishing				
I don't always know the regulations for the area I fish				

Multivariate Analysis of Variance Results

Participants were placed into tertile distributions based on specialization to determine if anglers with differential levels of specialization perceive motivations and constraints differently to engage in recreational fishing. Participants with a mean specialization score of less than 2.5 were labeled low specialized anglers ($n = 81$), participants with a mean specialization score between 2.51 and 3.0 were labeled medium

specialized anglers ($n = 53$), and participants with a mean specialization score of greater than 3.0 were labeled highly specialized anglers ($n = 67$).

MANOVA results comparing specialization groups on motivation variables.

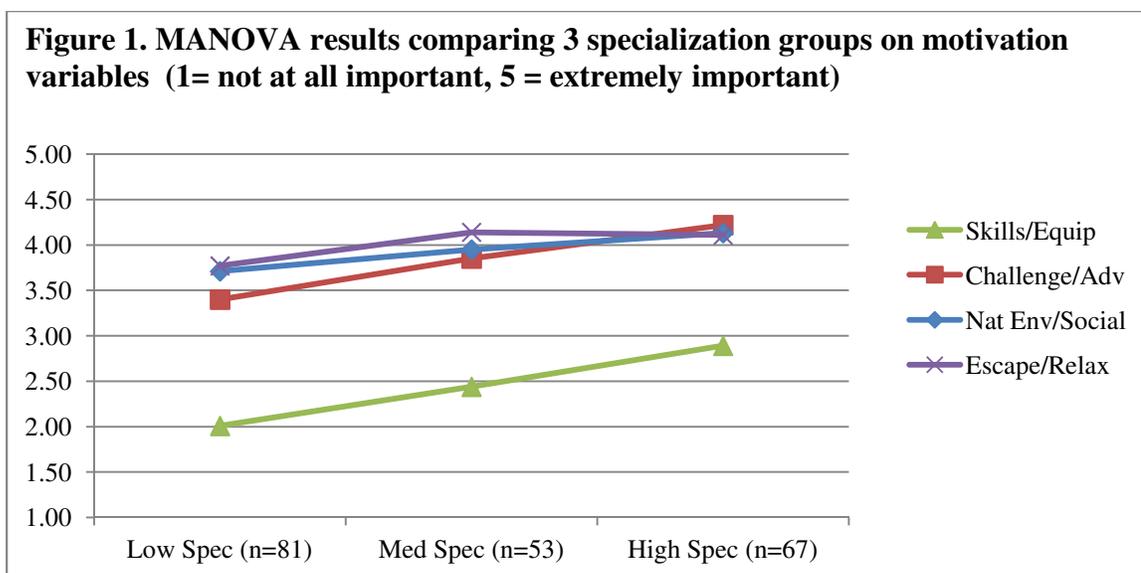
Multivariate analysis of variance results revealed significant main effects for motivation, Wilks' Lambda = .77, $F_{(8, 374)} = 6.68$; $p < 0.001$, eta squared = .23. Post hoc discriminate analysis results for motivation found that challenge/adventure and skill/equipment best distinguished between the specialization groups. Univariate Tukey follow-up results also showed challenge/adventure and skill/equipment differed across the specialization groups, while further revealing that natural environment/social ($p = .001$) also differed between the various levels of specialization (Table 3, Figure 1).

Table 3. MANOVA results comparing 3 specialization groups on motivation variables

Motivation Variables	Low Specialized ($n = 81$)		Medium Specialized ($n = 53$)		High Specialized ($n = 67$)		F	p	Standardized DFC
	\bar{x}	SD	\bar{x}	SD	\bar{x}	SD			
Nat Env/Social	3.71	0.77	3.95	0.58	4.13	0.54	7.25	0.001 ²	0.11
Challenge/Adv	3.40	0.89	3.85	0.70	4.22	0.61	20.17	< .001 ^{1,2,3}	0.56
Skills/Equip	2.01	0.71	2.44	0.66	2.89	0.97	21.18	< .001 ^{1,2,3}	0.60
Escape/Relax	3.77	0.90	4.14	0.97	4.11	0.94	3.55	0.031	-0.19

Notes:

- 1: Univariate group differences exist between low and medium specialization groups
- 2: Univariate group differences exist between low and high specialization groups
- 3: Univariate group differences exist between medium and high specialization groups



MANOVA results comparing specialization groups on constraint variables.

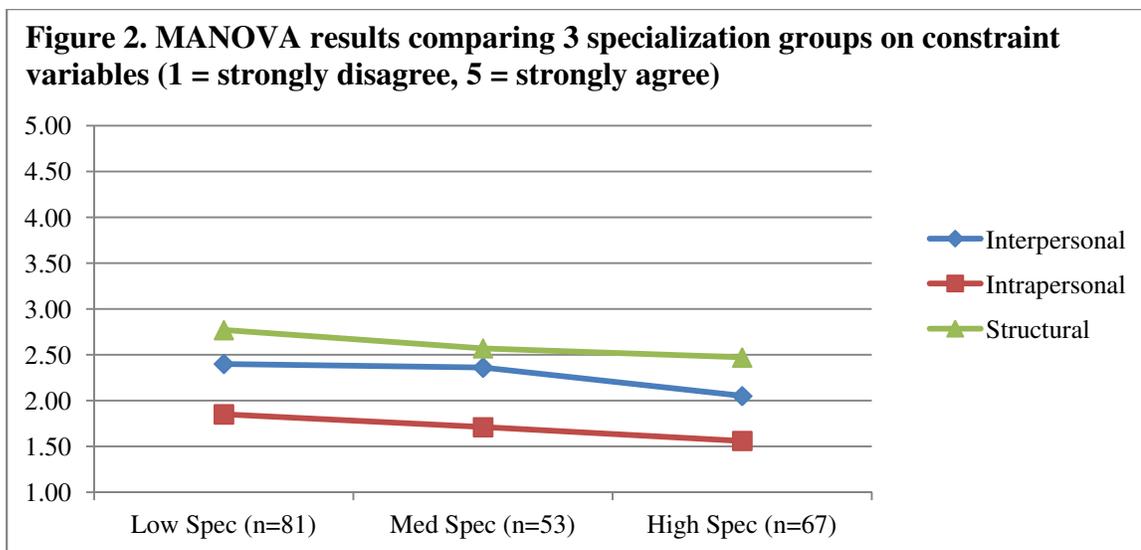
Multivariate analysis of variance results revealed significant main effects for constraints, Wilks' Lambda = .91, $F_{(6, 378)} = 2.884$; $p = 0.009$, eta squared = .09. Post hoc discriminant analysis results for constraints found that interpersonal constraints best distinguished between the specialization groups. Univariate Tukey follow-up results also showed interpersonal constraints differed across specialization groups, while further revealing that intrapersonal constraints ($p = .017$) and structural constraints ($p = .013$) also differed between the various levels of specialization (Table 4, Figure 2).

Table 4. MANOVA results comparing 3 specialization groups on constraint variables

Constraint Variables	Low Specialized (n = 81)		Medium Specialized (n = 53)		High Specialized (n = 67)		F	p	Standardized DFC
	\bar{x}	SD	\bar{x}	SD	\bar{x}	SD			
Interpersonal	2.40	0.72	2.36	0.59	2.05	0.64	5.39	0.005 ^{2,3}	0.58
Intrapersonal	1.85	0.63	1.71	0.71	1.56	0.49	4.14	0.017 ²	0.45
Structural	2.78	0.66	2.57	0.63	2.47	0.63	4.45	0.013 ²	0.21

Notes:

- 1: Univariate group differences exist between low and medium specialization groups
- 2: Univariate group differences exist between low and high specialization groups
- 3: Univariate group differences exist between medium and high specialization groups



Multiple Regression Results

A stepwise multiple regression analysis was conducted to predict angling specialization. In the best fit regression model predicting specialization using the four motivation variables and the three constraint variables as predictors, a three variable model was found with challenge/adventure, intrapersonal and skills/equipment accounting for 26% of the variance in specialization (Table 5).

Table 5. Stepwise Multiple Regression results predicting specialization from motivation and constraint variables

Model	Step Entered	β	R^2	F	p
Challenge/Adventure	1	.255	.17	38.72	< .0001
Interpersonal	2	-.22	.05	11.56	.001
Skills/Equipment	3	.25	.04	9.95	.002

The following chapter of this study consists of a discussion and conclusions based on the results and findings from this study, as related to the current literature. In addition, the following chapter will provide an overall conclusion and recommendations for future studies.

Chapter V

Discussion, Conclusions, and Recommendations

This chapter will provide a discussion of the results from the survey implementation with respect to the two hypotheses that were developed for this study: (1) there will be a significant difference in motivation across levels of specialized anglers; and (2) there will be a significant difference in constraints across levels of specialized anglers. This chapter consists of five sections in the following order: (1) recreation specialization and angling motivations; (2) recreation specialization and angling constraints; (3) implications; (4) conclusions; and (5) recommendations for future research.

Recreation Specialization and Angling Motivations

The hypothesis that there will be a significant difference in motivation across levels of specialized anglers was supported by this study. Findings from this study showed significant differences between low, medium, and high specialization groups across the motivational variables of challenge/adventure ($p < .001$), skills/equipment ($p < .001$), natural environment/social ($p = .001$) and escape/relaxation ($p = .031$). This study supports Bryan's (1977) argument that within each level of specialization there are distinct preferences and attributes that segregate angling groups.

This section will address each of the motivating subscales and the implications of this study in the following order: (1) challenge/adventure; (2) skills/equipment; (3) natural environment/social; and (4) escape/relaxation.

Challenge/adventure. Anglers responded positively linear to the motivating factors of challenge/adventure, indicating that as the level of specialization increases,

more importance is placed on the challenge and adventure aspects of fishing (Figure 1). A post hoc discriminate analysis found that challenge/adventure motivation variables best distinguished the levels of specialization (Table 3). Furthermore, the stepwise multiple regression analysis showed challenge/adventure to be the best predictor in determining specialization (Table 5). These results indicate that Spokane County anglers view the challenge/adventure aspects of fishing to be highly important factors when deciding to engage in recreational fishing.

Bryan (1977) states that generalists and occasional anglers (low/medium specialization) emphasize size and quantity of any fish caught, which illustrates less of a desire to be challenged while fishing (pp. 178-185). Low specialized anglers, as argued by Ditton et al. (1992), are not interested in “rare events” while fishing (p. 48), reaffirming distinct differences in motivating factors across levels of specialization. These results suggest that highly specialized anglers need opportunities to seek out excitement and challenge themselves with regard to recreational fishing and are highly motivated by the fun and experience of the actual catch. Local recreational and resource managers should be mindful of anglers’ desire to fulfill challenge and adventure motives and the potential implications it has on fisheries. Ditton et al. (2001) found that as the level of specialization increases, resource dependency will likely increase (pp. 44, 48), which suggests that the quality of fisheries could change as anglers progressively get more specialized. Furthermore, managers should be aware of the importance of balancing fishery resources with fun and adventure. For the more specialized angler, being motivated by fun and adventure does not always relate to catching numerous non-native fish (Bryan, 1977, p. 182).

Diverse fishing opportunities and environments should be available for various levels of specialization to help ensure anglers achieve a state of flow. According to Csikszentmihalyi (1990), a state of flow occurs when an individual is engaged in an activity where his or her ability is matched with the challenge of the activity. If the challenge and ability are not properly matched, two conditions can occur. First, if the challenge exceeds the individual's ability, the individual will experience anxiety. Second, if the individual's ability exceeds the challenge, the individual will experience boredom (pp. 74-77). Resource and land managers should be cognizant that either of these conditions can result in loss of participation, and therefore should be aware that different levels of specialization perceive the value of adventure differently. Having a variety of fishing locations that facilitate higher or lower challenges and adventurous opportunities could be essential for retaining anglers across the specialization continuum.

Finally, irrespective of specialization group, anglers indicated they are moderately motivated ($\bar{x} = 3.78$; $SD = 0.86$, Table 1) by the challenge and adventure aspects of fishing. According to Pitcher (1999), fun is a "mandatory" (p. 5) component of fishing, which implies that regardless of an angler's position on the recreation specialization continuum, managers could emphasize how fishing is an easy way to bring excitement and adventure back into one's life.

Skills/equipment. Anglers responded positively linear to the motivating factors of skills/equipment, indicating that as the level of specialization increases, more importance is placed on the skills and equipment that are essential for fishing (Figure 1). A post hoc discriminate analysis found that skill/equipment motivation variables best distinguished the levels of specialization (Table 3), which also reflects Bryan's (1977)

model of recreation specialization. The stepwise multiple regression analysis also showed that skills/equipment to be the third best predictor in determining specialization (Table 5).

Higher specialized anglers tend to have increased knowledge and commitments to angling as an outgrowth of increased time and skill commitments to recreational fishing. Furthermore, higher specialized anglers are more motivated to catch a particular species of fish on particular fishing tackle and have a variety of angling equipment to exactly match the fishing situation (Bryan, 1977, p. 185-186). While the results of this study do show a linear relationship between skills/equipment and recreational specialization, the mean values at each level of specialization were all below the neutral (3.0) threshold on the 5-point Likert scale. This suggests that there are differences between the specialization groups with regard to being motivated by equipment and skills; however, respondents were not highly motivated by these variables. Fedler and Ditton (1994) and Schramm and Gerard (2004) also found that skills and equipment to be the lowest ranking motives to engage in recreational fishing (p. 11). Possible reasons for low motivation scores for this study could be attributed to the limited amount of professional angling competitions offered within Spokane County.

Natural environment/social. Anglers responded positively linear to the motivating factors of natural environment/social, however, univariate Tukey follow-up results only showed significance between the low and high specialization groups, not the medium specialization group (Table 3, Figure 1). These results suggest that as the level of specialization increases, more importance is placed on the natural environment and social aspects of fishing, which is in alignment with Bryan's (1977) model of recreation

specialization in that angling attitudes and values shift the more specialized the angler becomes. Bryan (1977) states that with higher specialized anglers, “the fish are not so much the object as the experience of fishing as an end in itself” (p. 186). Furthermore, Fedler and Ditton (1994) and Duda et al. (1995) found that being outdoors was one of the most important motives across all populations.

These results are congruent with other research (Schramm & Gerard, 2004; Schroeder et al., 2008) that has identified the natural environment and social aspects of fishing as important motivating factors. Ditton et al. (1992) examined the non-activity aspects of fishing and found that low specialized anglers placed more importance on the actual fish to the exclusion of other intrinsically important benefits, i.e., being outside, fishing with friends and family, and being close to the water (pp. 47-48). This suggests that if individuals fail to become highly specialized anglers, it may be detrimental to environmental awareness and protecting local fisheries. Schramm and Gerard (2004) also contend that the current trend of more specialized, anglers but lower participation rates, “may warrant management attention” (p. 319), implying that resource policies should parallel the values held by the constituents.

Irrespective of specialization group, Table 1 shows that anglers from this study are moderately motivated to engage in fishing to simply be in the outdoors, to experience unpolluted natural surroundings, and for family recreation. This suggests that Spokane County anglers are cognizant of the importance of healthy fisheries and find value in fishing with friends and families on clean bodies of water. An example of this could include members of various Spokane fishing clubs (Trout Unlimited, Spokane Fly

Fishers, and Inland Empire Fly Fishing Club) participating in environmental initiatives such as the annual Spokane River Cleanup as a way to protect the local water they fish.

Escape/relaxation. Anglers did not respond positively linear to the motivating factors of escape/relaxation. Medium specialized anglers had the highest mean score across each group of specialization ($\bar{x} = 4.14$; $SD = 0.97$), and while there was significance within the subscale ($p = .031$, Table 3, Figure 1), Tukey follow-up results did not show significance between the low, medium, or high specialization groups.

According to Knopf et al. (1973), anglers tend to be motivated to fish to escape daily stressors and use outdoor pursuits to help mitigate daily issues they are experiencing (pp. 33-34). Furthermore, Bryan (1977) states that generalists have established fishing as a regular leisure activity (p. 198) and fish a variety of water (lakes, rivers, and streams) to maximize their success rate, while staying in close proximity to their homes (pp. 181, 183). This study implies that medium specialized anglers (generalists) *most* commonly use fishing as a quick and easy way to temporarily escape extraneous demands of life and to get away from their daily routines. Possible explanations for these results could include the following: (1) low specialized anglers (occasional) possibly do not find fishing relaxing as they do not have the appropriate skills to be proficient; (2) high specialized anglers (technique-setting specialists) possibly do not find fishing as relaxing due to a desire to continually compete with themselves to improve their angling skills. Although escape/relax did not show a linear relationship across specialization, it is apparent that anglers view this variable to be a moderate to highly important factor to engage in recreational fishing, which is consistent with current research.

Irrespective of specialization group, Table 1 shows that anglers from this study are strongly motivated to engage in fishing for relaxation and as a means to escape. Schramm and Gerard (2004) and Duda et al. (1995) found that fishing for relaxation to be the highest motivating factor among anglers. Recreation and land managers should be mindful of the importance Spokane County anglers place on using angling as a tool to relax and temporarily get away from the demands of others and the regular routine. Having easily accessible places to fish that provide peace and solitude should be of primary importance for managers concerned with angler retention.

Recreation Specialization and Angling Constraints

The hypothesis that there will be a significant difference in leisure constraints across levels of specialized anglers was supported by this study. Findings from this study showed significant differences between low, medium, and high specialization groups across the constraint variables of interpersonal ($p = .005$), intrapersonal ($p = .017$), and structural ($p = .013$). This study supports Bryan's (1977) argument that within each level of specialization there are distinct preferences and attributes that segregate angling groups.

This section will address each of the constraint subscales and the implications of this study in the following order: (1) interpersonal; (2) intrapersonal; and (3) structural.

Interpersonal. Responses were negatively linear on these constraint factors, indicating that as the level of specialization increases, anglers are less interpersonally constrained to engage in fishing (Figure 2). A post hoc discriminate analysis found that interpersonal constraint variables best distinguished the levels of specialization (Table 4).

Moreover, a stepwise multiple regression analysis showed interpersonal constraints to be the second best predictor in determining specialization (Table 5).

This study suggests that as the level of specialization increases, the less likely anglers feel constrained to engage in fishing as a result of not knowing other anglers, not knowing other individuals with the time to fish, or not knowing other individuals with the appropriate angling skills, which supports Bryan's (1977) model of specialization. Bryan (1977) states that the most specialized anglers have joined a leisure social world in which fellow sportsmen hold similar attitudes, beliefs, and ideologies (p. 178). Highly specialized anglers in this study suggest that finding or knowing other anglers to fish with does not prevent them from engaging in recreational fishing. Moreover, it appears that highly specialized anglers are more likely to have friends or family members who have the necessary time and skills to join them on fishing trips.

Bryan (1977) states that occasional anglers (low specialization) view the fishing experience as secondary during family outings, picnicking, and sightseeing. Highly specialized anglers, however, view fishing as the primary purpose of the trip and are more likely to be surrounded by family or peers who hold similar values and skills (p. 183). The results of this study appear to be congruent with Bryan's (1977) and Ditton et al. (1992) assessment of recreation specialization in the context of the leisure social world.

The importance of fishing with others should not be understated. Fedler and Ditton (2001) claim that fishing is "a social activity in which participating with someone else is the norm" (p. 290). Therefore, recreational managers should be mindful of this relationship and its impact on retention and recruitment. Managers could solicit the help

of local fishing organizations such as Trout Unlimited, Spokane Fly Fishers, or Inland Empire Fly Fishing Club to provide educational sessions about local fishing opportunities and environmental stewardship. This would provide a social forum for like-minded anglers to meet one another and as a way to encourage the public to engage in recreational fishing (recruitment). Also, highly specialized anglers encourage, teach, and enhance fishing opportunities for others (Salz et al., 2001) and would likely want to participate as a way to bring awareness to the sport, which could potentially retain existing anglers.

Finally, Table 2 shows that irrespective of specialization group, anglers from this study did agree that interpersonal constraints kept them from fishing more often. Fedler and Ditton (2001) also found that anglers did not perceive interpersonal constraints to exert a major influence on their willingness to engage in recreational fishing (p. 287).

Intrapersonal. Responses were negatively linear on these constraint factors, indicating that as the level of specialization increases, anglers are less constrained by intrapersonal relationships to engage in fishing, however, univariate Tukey follow-up results only showed significance between the low and high specialization groups, not the medium specialization group (Table 4, Figure 2).

It is not surprising the results of this study indicate that lower specialized anglers would perceive intrapersonal constraining variables such as “I don’t feel like I have the necessary skills,” “I feel self-conscious,” or “fishing can be stressful” to be more influential than highly specialized anglers would. Lower specialized anglers, by definition, have fewer fishing skills (Bryan, 1977, p. 178), therefore being self-conscious and stressed about fishing as reasons not to fish more frequently appear to be connected

to not having the appropriate knowledge and skills to successfully catch fish. Highly specialized anglers, on the other hand, have acquired the appropriate angling skills and knowledge as reflected by their high commitment to the activity itself (Bryan, 1977, p. 186). Highly specialized anglers, therefore, are more likely to have increased confidence in their angling ability, which likely results in less stress and lower self-consciousness than that of their lower specialized counterparts.

The intrapersonal constraint subscale also contained perceptions of resources. It is also not surprising that higher specialized anglers found this variable to be a less constraining factor to engage in recreational fishing. These results confirm Bryan's (1977) assessment that the focus of fishing shifts from consumption to preservation as the level of specialization increases (p. 186). Lower specialized anglers in this study indicated that they were more constrained by "killing fish," "fishing causes injury to the fish" and "fishing is bad for the resource," which is potentially a reflection of their lack of practicing catch and release techniques.

It appears that education and skill acquisition are the best solutions for overcoming intrapersonal constraints. Resource and recreational managers have the opportunity to provide both services to their constituents in the form of public clinics and stewardship initiatives. Providing introductory workshops targeted toward occasional anglers (low specialized) that focus on equipment, skills, locations, techniques, fish species, etc. could be a catalyst for recruitment, retention, and a ultimately a means to progress along the specialization continuum.

Finally, Table 2 shows that irrespective of specialization group, Spokane County anglers did not agree that intrapersonal constraints kept them from fishing more

frequently. These results are congruent with the findings of Fedler and Ditton (2001) in which anglers did not perceive intrapersonal constraints to exert a major influence on their willingness to engage in recreational fishing (p. 287). This should also be encouraging news to managers, as lower perceived intrapersonal constraints should result in increased fishing trips.

Structural. Responses were negatively linear on these constraint factors, indicating that as the level of specialization increases, anglers are less structurally constrained to engage in fishing, however, univariate Tukey follow-up results only showed significance between the low and high specialization groups, not the medium specialization group (Table 4, Figure 2).

This study suggest that lower specialized anglers perceive structural constraints as more influential reasons not to engage in recreational fishing than highly specialized anglers do. Bryan (1977) claims that generalist anglers (medium specialized) typically fish in close proximity to their home, whereas more specialized anglers may travel across the country to target particular fish during prime fishing times (p. 183). It is not surprising that low specialized anglers would be more constrained by “not having fishing access close to home” or “fishing areas are crowded” than highly specialized anglers due to the geographical preferences each group has. In addition, generalists tend to fish after work or during the weekends (Bryan, 1977, pp. 183-184), further implying they frequently fish in established areas that are easily accessible and perceive “fishing facilities are poorly developed or maintained” as more constraining than highly specialized anglers.

With regard to fishing regulations and amount of fish caught, Bryan (1977) states that low and medium specialized anglers favor more stocking programs and employ catch and keep practices as a means to see value in their license dollar (p. 182), which was reflected in this study. Results also indicate that lower specialized anglers would fish more frequently if changes were made to fishing regulations. Overall, lower specialized anglers viewed regulations more confusing, more strict, and more numerous than higher specialized anglers. Conversely, highly specialized anglers in this study suggest that they view fishing regulations as a necessary component of fishing, which is consistent with Bryan's (1977) assessment of management preferences across the levels of recreation specialization (p. 182). These results are also congruent with Salz et al. (2001) findings that showed highly specialized anglers supported greater management regulations than lower specialized anglers (p. 250-251, 253, 256).

It appears that resource managers have the opportunity to provide greater education on the utility of fishing regulations, access, facilities, stocking programs, etc., which could potentially bridge the structural constraints gap between high and low specialized anglers. Point of sale information could be provided to anglers purchasing a fishing license as a way to increase regulation awareness and education. Also, fisheries managers could provide informative lectures at local schools, universities, fishing club meetings, etc., as a community outreach program designed to educate existing and potential anglers on regulations, close access locations, and facility amenities.

Although the literature shows "lack of time" to be a substantial constraint (Ritter et al., 1992; Schroeder et al., 2008; Sutton, 2007; Sutton et al., 2009), it is difficult to ascertain the level of importance this one variable placed on the entire structural

constraint subscale during this study. In light of this finding, however, it should be noted that Table 3 shows that irrespective of specialization group, Spokane County anglers did not agree that structural constraints kept them from fishing more frequently. This should be encouraging to fisheries and recreational managers, as anglers' ability to negotiate leisure constraints are directly related to participation and retention rates (Fedler & Ditton, 2001; Sutton, 2007; Sutton et al., 2009).

Implications

A stepwise multiple regression analysis revealed what motivation variables (natural environment/social, challenge/adventure, skills/equipment, and escape/relaxation) and constraint variables (interpersonal, intrapersonal, and structural) best predicted angler specialization. The three variables of challenge/adventure, interpersonal, and skills/equipment were significant predictors of angler specialization, accounting for 26% of the variance in the model (Table 5). These results suggest that highly specialized anglers are more motivated by the challenge and adventure aspects of fishing, less constrained by interpersonal relationships, and more motivated by the skills and equipment necessary for fishing than their lower specialized counterparts.

From a practical point of view, managers could use this recreation specialization model as a tool to provide more satisfying angling experiences and potentially increase the level of angler specialization. For example, this study found that the motivating factor of challenge/adventure best predicted angler specialization, implying that managers could focus on creating opportunities that facilitate a higher level of angling challenge. Evaluation of current stocking programs would be a good starting point, as these programs typically do not provide adequate challenges for the highly specialized angler.

Next, creating, modifying, or promoting fishing locations that provide a sense of adventure appears to be a necessity to increase specialization. The Spokane River is the most logical place to concentrate efforts, as the river runs directly through Spokane County and could provide various opportunities to increase specialization. Marketing the Spokane River as “an adventure right in your own backyard” could be an effective tactic to increase overall participation rates and level of angling specialization.

Additionally, creating an angling culture that supports its fellow members and provides outreach for new recruits appears to be of primary importance for resource managers. For individuals to progress in specialization, this study suggests that it is essential for anglers to build relationships with individuals who will share similar values, interest, skill sets, and will ultimately have the time to fish together.

Furthermore, this study suggests to increase angler specialization, individuals need opportunities to better utilize their angling skills and equipment. Complementary relationships could be formed between recreational agencies and local fishing businesses to provide higher levels of services to anglers designed around improving skills and increasing knowledge of specific angling equipment. Moreover, recreational agencies and commercial businesses could develop, promote, and sponsor additional angling competitions focused on the diverse fishing opportunities that require particular skill sets and equipment for the numerous species within Spokane County (e.g., smallmouth bass, largemouth bass, northern pike, tiger muskie, catfishes, and a variety of trout).

Finally, overall management implications from the specialization model developed from this study are in alignment with other research (Bryan, 1977; Bryan, 2000; Ditton et al., 1992; Fedler & Ditton 2001; Lee & Scott, 2004; Salz et al., 2001; Salz

& Loomis, 2005; Schuett et al., 2010). It appears, however, that the construct and practical implications of recreational specialization for resource managers become disconnected at the user level. In other words, while much work has been done on specialization and its application since its inception by Bryan (1977), to what extent have social scientists' recommendations been adopted? Furthermore, is it entirely recreational and resource managers' onus to ensure angler satisfaction, to create accessible locations, to provide social connectedness, to recruit new anglers, and to retain existing ones, all the while ensuring angling regulations are being followed? It is the intent of this study to suggest that recreational and resource managers need additional support from a variety of sources to maximize effectiveness for their constituents. A stronger presence of a nationally recognized entity, such as the Recreational Boating and Fishing Foundation could provide additional programs targeted at various levels of specialization to help ensure all anglers' needs are being met. On the local level, organizations such as the chamber of commerce, visitors bureau, Greater Spokane Incorporated, and other non-profit organizations could aid in advertising, promoting, and marketing unique and diverse fishing opportunities that are within Spokane County, and consequently "near nature, near perfect" (City of Spokane's slogan). Last, manufacturers of fishing equipment and supplies and local fishing business could develop programs and services specifically created for highly specialized anglers to help ensure long-term retention. In short, resource managers should solicit support from local and national organizations to better balance the needs of anglers while attempting to fulfill the requirements of an already overstretched agency.

Conclusions

The purpose of this study was to explore how the differing levels of recreational specialization influence an individual's perception of motives and constraints to engage in recreational fishing. Currently, only two studies (Ditton et al., 1992; Salz et al., 2001) have explored specific motives at each level of specialization, and only one unpublished study (Lloyd, 1993) has examined how trout anglers are affected by leisure constraints. To the author's knowledge, this is the first study to examine fishing motivations *and* constraints across Bryan's (1977) levels of recreational specialization.

A comprehensive literature review that detailed three constructs centered on recreational fishing was presented to provide a foundation for this study, which included: recreational specialization, angler motivations, and angler constraints. The recreational specialization model contends that individuals can be characterized by their level of specialization and placed into the following categories: (1) occasional anglers (2) generalists; (3) technique specialist; and (4) technique-setting specialists (Bryan, 1977, p. 178). Several angler motivation studies throughout the literature were presented that examined a variety of aspects of recreational fishing and identified several motives for engaging in recreational fishing. Finally, to better understand the reasons why anglers choose not to participate in recreational fishing; a review of angling constraints was also presented.

To study how the differing levels of recreational specialization influence an individual's perception of motives and constraints to engage in angling, a mail-back survey was administered to 635 randomly selected Spokane County anglers and followed Dillman's (2007) protocols with minor adjustments. The survey instrument was divided

into four sections: (1) the recreational specialization index (RSI) with four questions; (2) recreational experience preference (REP) scales with four subscales containing 17 questions; (3) constraints inventory with three subscales containing 29 questions; and (4) demographics with six questions. The overall response rate for this study was 33.4%, which constituted 212 usable returned surveys.

Respondents were placed into tertile distribution groups based on overall responses to the RSI (low specialized anglers, $n = 81$; medium specialized anglers, $n = 53$, and highly specialized anglers, $n = 67$). Several analyses were then run on the data to explore motivations and constraints across levels of specialization. First, a MANOVA was run on the motivation subscales of natural environment/social, challenge/adventure, skill/equipment, and escape/relaxation against the specialization group. Second, a MANOVA was run on the constraint subscales of interpersonal, intrapersonal, and structural against the specialization group. A stepwise multiple regression analysis was also run to best predict angler specialization. Additionally, univariate post hoc Tukey tests were run on all MANOVA calculations to determine where significant differences had occurred between the levels of specialization.

Results from this study showed statistical significance ($p < .05$) on each of the motivation and constraint variables across the specialization groups for each of the two MANOVA run. Motivation variables were positively linear, indicating that higher specialized anglers are more motivated to engage in recreational fishing than lower specialized anglers. Constraint variables were negatively linear, indicating that higher specialized anglers are less constrained to engage in recreational fishing than lower specialized anglers. Finally, the stepwise multiple regression analysis showed that

challenge/adventure, interpersonal constraints, and skills/equipment respectively were the best predictors of angler specialization among the population sampled.

Recommendations for Future Research

While this study found statistical significance across all variables of motivation and constraints, several interesting questions still remain as a basis for further research. Recreational specialization, as defined by Bryan (1977), is a “continuum of behavior from the general to the particular, reflected by *equipment and skills*” [italics added] (p. 175). The subscale of skills/equipment was the third best predictor of specialization in this study; however, this variable had the lowest mean scores across all motivation variables, which is also consistent with the findings of Fedler and Ditton (1994, p. 11). If skills and equipment are requisites for specialization, then why are anglers not highly motivated by these factors? Also, to what extent would it take anglers to become highly motivated by skills and equipment essential for fishing? Finally, 45.2% of respondents for this study were aged 55 years and older, which may imply that older anglers place less importance on skills and equipment, however, no analyses were conducted with regard to age. Further research is needed to determine to what extent age influences an angler’s motivation to develop skills, test equipment, win a prize, or to catch a “trophy” fish, and more important, overall level of specialization.

A longitudinal study to assess if Spokane County anglers increase, decrease, or remain stable with regard to their level of specialization would also be useful for recreation managers on a number of fronts. First, as specialization is an indicator of behavior, involvement, skills, equipment, and commitment (Bryan, 1977), measuring specialization across time could give managers a better picture of potential reasons why,

and to the degree, that anglers drop out, drop in, or remain active in their angling pursuits. Additionally, managers could develop plans and offer services better matched to the needs of their constituents with the intent of long-term retention. Longitudinal data could also provide insight into the relationship between motivations and specialization by determining if recreationalists are motivated to be specialists or if highly specialized anglers are simply highly motivated?

Another area for future study could be the relationship between recreational specialization and the concept of progression. Bryan (1977) claimed that anglers go through a predictable syndrome, progressing into higher specialization over time (p. 185) and that fly fishing for trout “represents the end-product of a progression of angling experiences to a more and more “mature” or specialized state” (p. 177). Recent research, however, has shown that progression into higher levels of specialization tends to be the exception, not the rule (Kuentzel & Heberlein, 2006; Kuentzel & Heberlein, 2008; Scott & Godbey, 1994; Scott & Lee, 2010). Research could examine if the specie of fish is a determinate in recreational specialization progression. In other words, to what extent are anglers who typically target bass, or walleye, or perch, or catfish, etc. likely to progress in specialization? Do these anglers have a *need* or *desire* to increase the level of specialization? Additionally, are there certain types of fishing or angling that simply do not require a high level of specialization in terms of skills, challenges, commitments, etc. due to the nature of the activity (e.g., bait fishing for catfish, or jigging for crappie)?

Exploring how leisure constraints intervene with an individual’s desire to progress in specialization would be particularly useful to recreational and resource managers. Occasional and generalists may aspire to become more specialized over time, however,

due to a combination of constraints, they may never progress in specialization. Exploring the extent in which anglers face contingencies outside their control (Stebbins, 1992) and life course changes (Kuentzel & Heberlein, 2008) that alter their involvement could provide insight into why individuals may never progress or choose not to. At what point do contingencies become causation for cessation?

In the broader context of specialization, research is needed to determine the extent to which individuals choose to engage in an activity for the purpose of specialization. Moreover, what strategies do individuals use to better develop specialization in areas of skill, challenge, adventures, and social worlds? Also, to what extent do recreationalists exclude other activities, social structure, careers, education, etc. to pursue recreational interests with the intent to become highly specialized? Finally, exploring the realm of leisure as we work toward specialization begs the question – is it still leisure or has the activity morphed into something else?

References

- Bamonte, T., & Bamonte, S. S. (1999). *Spokane and the Inland Northwest: Historical images*. Spokane, WA: Tornado Creek Publications.
- Becher, E. T. (1974). *Spokane corona: Eras and empires*. Spokane, WA: C.W. Hill/Printers.
- Bryan, H. (1977). Leisure value systems and recreational specialization: The case of trout fisherman. *Journal of Leisure Research*, 9(3), 174-187.
- Bryan, H. (2000). Recreation specialization revisited. *Journal of Leisure Research*, 32(1), 18-21.
- Burns, R. C., & Graefe, A. R. (2007). Constraints to outdoor recreation: Exploring the effects of disabilities on perceptions and participation. *Journal of Leisure Research*, 39(1), 156-181.
- Chi, Y. N. (2006). Segmenting fishing markets using motivations. *E-Review of Tourism Research*, 4. (3), 64-73.
- Cordell, H. K. (1999). *Outdoor recreation in American life: A national assessment of demand and supply trends*. Champaign, IL: Sagamore Publishing.
- Crawford, D. W., & Godbey, G. G. (1987). Reconceptualizing barriers to family leisure. *Leisure Sciences*, 9(2), 119-127.
- Crawford, D. W., Jackson, E. L., & Godbey, G. G. (1991). A hierarchical model of leisure constraints. *Leisure Sciences*, 13(4), 309-320.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16, 3, 297-334.

- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York, NY: Harper Perennial.
- Dillman, D. A. (1991). The design and administration of mail surveys. *Annual Review of Sociology*, 17(1), 225-249.
- Dillman, D. A. (2007). *Mail and internet surveys: The tailored design method* (2nd ed.). Hoboken, NJ: John Wiley & Sons, Inc.
- Ditton, R. B., Loomis, D. K., & Choi, S. (1992). Recreation specialization: Re-conceptualization from a social worlds perspective. *Journal of Leisure Research*, 24(1), 33-51.
- Ditton, R. B., & Sutton, S. G. (2004). Substitutability in recreational fishing. *Human Dimensions of Wildlife*, 9(2), 87-102.
- Driver, B. L., & Cooksey, R. W. (1977). Preferred psychological outcomes of recreational fishing. In R. Barnhart, & T. Roelofs, (eds.), *Catch-and-release fishing as a management tool: A national sport fishing symposium* (27-40). Arcata, CA: Humboldt State University.
- Driver, B. L., & Knopf, R. C. (1977). Personality, outdoor recreation and expected consequences. *Environment & Behavior*, 9(2), 169-193.
- Driver, B. L., Tinsley, H. E., & Manfreda, M. J. (1991). The paragraphs about leisure and recreation experience preference scales: Two inventories designed to assess the breadth of the perceived psychological benefits of leisure. In B. Driver, P. Brown, G. Peterson (Eds.), *Benefits of leisure* (263-286). State College, Pa: Venture Pub.

- Driver, B. L., & Tocher, S. R. (1970). Toward a behavioral interpretation of recreation engagements with implications for planning. In B. Driver (Ed.), *Elements of outdoor recreation planning: Proceedings of a national short course held in Ann Arbor, Michigan, May 6-16, 1968*. Ann Arbor, MI: University Microfilms, Michigan.
- Duda, M. D., Bissell, S. J., & Young, K. C. (1995). *Factors related to hunting and fishing participation in the United States. Phase V: Final Report*. Federal Aid in Sport Fish and Wildlife Restoration Grant 14-48-0009-1252. Washington, DC: U.S. Fish and Wildlife Service.
- Fahey, J., & Dellwo, R. (1988). *The Spokane River: Its miles and its history*. Spokane, WA: Spokane Centennial Trail Committee.
- Fedler, A. J., & Ditton, R. B. (1994). Understanding angler motivations in fisheries management. *Fisheries*, 19(4), 6-13.
- Fedler, A. J., & Ditton, R. B. (2001). Dropping out and dropping in: A study of factors for changing recreational fishing. *North American Journal of Fisheries Management*, 21, 283-292.
- Finn, K. L., & Loomis, D. K. (2001). The importance of catch motives to recreational anglers: The effects of catch satiation and deprivation. *Human Dimensions of Wildlife*, 6(3), 173-187.
- Freudenberg, P., & Arlinghaus, R. (2010). Benefits and constraints of outdoor recreation for people with physical disabilities: Inferences from recreational fishing. *Leisure Sciences*, 32(1), 55-71.

- Hawkins, C., Loomis, D. K., & Salz, R. J. (2009). A replication of the internal validity and reliability of a multivariable index to measure recreation specialization. *Human Dimensions of Wildlife, 14*(4), 293-300.
- Henderson, K. A., & Bialeschki, M. D. (2010). *Evaluating leisure services: Making enlightening decision* (3rd ed.). State College, PA: Venture Publishing, Inc.
- Hunt, K. M., & Ditton, R. B. (2001). Perceived benefits of recreational fishing to Hispanic-American and Anglo anglers. *Human Dimensions of Wildlife, 6*(3), 153-172.
- Hutt, C. P., & Neal, J. W. (2010). Arkansas urban resident fishing site preferences, catch related attitudes, and satisfaction. *Human Dimensions of Wildlife, 15*(2), 90-105.
- Jackson, E. L. (1988). Leisure constraints: A survey of past research. *Leisure Sciences, 10*(3), 203-215.
- Jackson, E. L. (1994). Activity-specific constraints on leisure participation. *Journal of Park & Recreation Administration, 12*(2), 33-49.
- Jackson, E. L. (2000). Will research on leisure constraints still be relevant in the twenty-first century? *Journal of Leisure Research, 32*(1), 62-68.
- Jackson, E. L. (2005). *Constraints to leisure*. (ed.). State College, PA: Venture Publishing, Inc.
- Jackson, E. L., Crawford, D. W., & Godbey, G. G. (1993). Negotiation of leisure constraints. *Leisure Sciences, 15*(1), 1-11.
- Jackson, E. L., & Rucks, V. C. (1995). Negotiation of leisure constraints by junior-high and high-school students: An exploratory study. *Journal of Leisure Research, 27*(1), 85-101.

- Kearney, B. (1999). Evaluating recreational fishing: Managing perceptions and/or reality. In T. Pitcher (Ed.), *Evaluating the benefits of recreational fishing: Papers, discussions, and issues: A conference held at the UBC Fisheries Centre, June 1999*. Vancouver, B.C: Fisheries Centre, University of British Columbia.
- Kerr, A. W., Hall, H. K., & Kozub, S. A. (2003). *Doing statistics with SPSS*. London: Sage Publications Ltd.
- Knopf, R. C., Driver, B. L., & Basset, J. R. (1973). Motivations for fishing. In J. Hende & C. Schoenfeld (Eds.), *Human dimensions of wildlife programs* (28-41). Rockville, MD: Mercury Press.
- Knopf, R. C., & Lime, D. W. (1984). *A recreation manager's guide to understanding river use and users*. U.S. Department of Agriculture Forest Service General Technical Report WO-38.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational Psychological Measures, 30*(3), 607-10.
- Kuehn, D. (2004). Gender-based constraints to sportfishing participation in the Eastern Lake Ontario area. In J. Murdy (ed.), *Proceedings of the 2003 Northeastern recreation research symposium* (345-354). Newton Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station.
- Kuentzel, W. F., & Heberlein, T. A. (2006). From novice to expert? A Panel study of specialization progression and change. *Journal Of Leisure Research, 38*(4), 496-512.
- Kuentzel, W. F., & Heberlein, T. A. (2008). Life course changes and competing leisure interests as obstacles to boating specialization. *Leisure Sciences, 30*(2), 143-157.

- Lawler, E. E. (1973). *Motivation in work organizations*. Monterey, CA: Brooks/Cole Publishing Company.
- Lee, J. H., & Scott, D. (2004). Measuring birding specialization: A confirmatory factor analysis. *Leisure Sciences*, 26(3), 245-260.
- Lloyd, G. S. (1993). *An examination of the relationship between angler specialization and constraints to trout fishing* (Unpublished master's thesis). The Pennsylvania State University, University Park, PA.
- Loomis, D. K., & Holland, S. M., (1996). Specialization and sport fishing: Angler support for rules and regulations. *Proceedings of the 49th annual Gulf and Caribbean Fisheries Institute, Inc. Meeting*. Dover, Christ Church, Barbados.
- Manfredo, M. J., Driver, B. L., & Tarrant, M. A. (1996). Measuring leisure motivation: A meta-analysis of the recreation experience preference scales. *Journal of Leisure Research*, 28(3), 188-213.
- Manning, R. E. (1999). *Studies in outdoor recreation: Search and research for satisfaction*. Corvallis, OR: Oregon State University Press.
- Pitcher, T. J., & University of British Columbia. (1999). *Evaluating the benefits of recreational fishing: Papers, discussions, and issues: A conference held at the UBC Fisheries Centre, June 1999*. Vancouver, B.C: Fisheries Centre, University of British Columbia.
- Ritter, C., Ditton, R. B., Riechers, R. K. (1992). Constraints to sport fishing: Implications for fisheries management. *Fisheries*, 17(4), 16-19.
- Salas, S., & Gaertner, D. (2004). The behavioural dynamics of fishers: Management implications. *Fish & Fisheries*, 5(2), 153-167.

- Salz, R. J., & Loomis, D. K. (2005). Recreation specialization and anglers' attitudes towards restricted fishing areas. *Human Dimensions of Wildlife*, 10(3), 187-199.
- Salz, R. J., Loomis, D. K., & Finn, K. L. (2001). Development and validation of a specialization index and testing of specialization theory. *Human Dimensions of Wildlife*, 6(4), 239-258.
- Schramm Jr., H. L., & Gerard, P. D. (2004). Temporal changes in fishing motivation among fishing club anglers in the United States. *Fisheries Management & Ecology*, 11(5), 313-321.
- Schroeder, S. A., Fulton D. C., Nemeth, M. L., Sigurdson, R. E., & Walsh, R. J. (2008). Fishing in the neighborhood: Understanding motivations and constraints for angling among Minneapolis-St. Paul, Minnesota metro residence. In R. Eades, W. Neal, T. Lang, K. Hunt, & P. Pajak (eds.), *Urban and community fisheries programs: Development management, and evaluation*. Bethesda, MD: American Fisheries Society (1-19).
- Schuett, M. A., Lu, J., Ditton, R. B., & Tseng, Y. P. (2010). Sociodemographics, motivations, and behavior: The case of Texas anglers 1989-2004. *Human Dimensions of Wildlife*, 15(4), 247-261.
- Scott, D., & Godbey, G. (1994). Recreation specialization in the social world of contract bridge. *Journal Of Leisure Research*, 26(3), 275.
- Scott, D., & Lee, J.-H. (2010). Progression, stability, or decline? Sociological mechanisms underlying change in specialization among birdwatchers. *Leisure Sciences*, 32(2), 180-194.

- Scott, D., & Shafer, C. S. (2001). Recreational specialization: A critical look at the construct. *Journal of Leisure Research*, 33(3), 319-343.
- Stratton (2005). *Spokane & the Inland Empire: An interior Pacific Northwest anthology*. Pullman WA: Washington State University Press.
- Stebbins, R. A. (1992). *Amateurs, professionals, and serious leisure*. Montreal, Canada: McGill-Queen's University Press.
- Stimson, W. (1985). *A view of the falls: An illustrated history of Spokane*. Northridge, CA: Windsor Publications Inc.
- Sutton, S. G. (2007). Constraints on recreational fishing participation in Queensland, Australia. *Fisheries*, 32(2), 73-83.
- Sutton, S. G., Dew, K., & Higgs, J. (2009). Why do people drop out of recreational fishing? A study of lapsed fishers from Queensland, Australia. *Fisheries*, 34(9), 443-452.
- United States Census Bureau. (2011). *Statistical abstract of the United States*. Retrieved from http://www.census.gov/prod/www/abs/statab1995_2000.html
- United States Department of the Interior. (2011). *Recreational fishing questions and answers*. Retrieved from http://www.doi.gov/news/pressreleases/fishing_QA.cfm
- United States Fish and Wildlife Service (2006). *2006 national survey of fishing, hunting, and wildlife-associated recreation*. Retrieved from <http://fws.gov>
- United States Fish and Wildlife Service (2006). *2006 national survey of fishing, hunting, and wildlife-associated recreation: Washington*. Retrieved from <http://fws.gov>
- Unruh, D. R. (1979). Characteristics and types of participation in social worlds. *Symbolic Interaction*, 2(2), 115-130.

- Washington Department of Fish and Wildlife (2010). *2010 Washington fishing prospectus: Where to fish in the evergreen state*. Retrieved from <http://wdfw.wa.gov>
- White, D. D. (2008). A structural model of leisure constraints negotiation in outdoor recreation. *Leisure Sciences*, 30(4), 342-359.
- Youngs, J. W. T. (1996). *The fair and the falls: Spokane's Expo '74: Transforming an American environment*. Cheney, WA: Eastern Washington University Press

Appendix A

Demographic results of Spokane County anglers

		<i>n</i>	% of respondents
Gender	Male	162	76.4%
	Female	44	20.8%
	Non response	6	2.8%
Age	18 – 24 years	12	5.7%
	25 – 34 years	19	9.0%
	35 – 44 years	30	14.2%
	45 – 54 years	48	22.6%
	55 – 64 years	48	22.6%
	65 years and older	50	23.6%
	Non response	5	2.4%
Ethnicity	Asian	4	1.9%
	Black	1	0.5%
	Hispanic	2	0.9%
	White	192	90.6%
	All others	6	2.8%
	Non response	5	2.4%
Income	Under \$10,000	7	3.3%
	\$10,000 – \$19,999	12	5.7%
	\$20,000 – \$29,999	20	9.4%
	\$30,000 – \$39,999	23	10.8%
	\$40,000 – \$49,999	22	10.4%
	\$50,000 – \$74,999	44	20.8%
	\$75,000 – \$99,000	30	14.2%
	\$100,000 or more	32	15.1%
	Non response	22	10.4%
Education	11 years or less	7	3.3%
	12 years	56	26.4%
	1 – 3 years of college	74	34.9%
	4 years of college or more	68	32.1%
	Non response	7	3.3%

Appendix B

Recreation Specialization Index (RSI), adapted from Hawkins, Loomis, and Salz (2009)

For each question below, please circle the response that best fits your belief about fishing. These questions are intended to provide information about your angling background and experiences.

1. When I participate in the sport of fishing, I feel like:

1. a beginner. I don't really feel like I am part of the fishing scene.
2. an occasional or irregular participant. Sometimes it is fun, entertaining, or rewarding to fish.
3. a habitual and regular participant in fishing.
4. an insider to the sport. Fishing is an important part of who I am.

2. During a fishing experience, I can best be described as:

1. having very little understanding of fishing. I am often unsure about how to do certain things when I am fishing.
2. having some understanding of fishing, but still in the process of learning more about the sport. I am becoming more familiar and comfortable with the activity.
3. being comfortable with fishing. I have a good understanding of what I can do while participating in fishing, and know how to do it.
4. a knowledgeable expert in fishing. I encourage, teach, and enhance opportunities for others who are interested in fishing.

3. My relationships with others who fish are:

1. not established. I really don't know any other people who fish.
2. very limited. I know some other people who fish by sight and sometimes talk with them, but I don't know their names.
3. one of familiarity. I know the names of others who fish, and often speak with them.
4. close. I have personal and close relationships with other people who fish. These friendships often revolve around the sport.

4. My commitment to fishing is:

1. very slight. I have little connection to fishing. I may or may not continue to participate in the sport in the future.
2. moderate. I will continue to fish as long as it is entertaining and provides the benefits I want.
3. fairly strong. I have a sense of being a member of the activity, and it is likely that I will continue to fish for a long time.
4. very strong. I am totally committed to fishing. I encourage others to participate in the sport and seek to ensure that the sport continues into the future.

Appendix B (cont)

Recreation Experience Preference (REP) Scales, adapted from Schuett et al. (2010)

Please circle the level of importance of activities that are associated with fishing for each of the following 17 questions. These questions are intended to provide information about personal motivational factors surrounding angling preferences.

Item Description	Not at all Important	Slightly Important	Moderately Important	Very Important	Extremely Important
5. To be outdoors	1	2	3	4	5
6. For family recreation	1	2	3	4	5
7. To experience new and different things	1	2	3	4	5
8. To be close to the water	1	2	3	4	5
9. To experience unpolluted natural surroundings	1	2	3	4	5
10. To be with friends	1	2	3	4	5
11. For the fun of catching fish	1	2	3	4	5
12. For the experience of the catch	1	2	3	4	5
13. For the challenge or sport	1	2	3	4	5
14. To experience adventure and excitement	1	2	3	4	5
15. To win a trophy or prize	1	2	3	4	5
16. To obtain a "trophy" fish	1	2	3	4	5
17. To develop my skills	1	2	3	4	5
18. To test my equipment	1	2	3	4	5
19. To get away from the demands of other people	1	2	3	4	5
20. To get away from the regular routine	1	2	3	4	5
21. For relaxation	1	2	3	4	5

Appendix B (cont)

Recreational Fishing Constraints Instrument, adapted by Sutton et al. (2009)

Below is a list of reasons why people do not fish more frequently. Please indicate the extent to which you agree or disagree with each of the following statements as to why you don't fish more often:

Item Description	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I don't fish more often because...					
22. I don't know other people to fish with	1	2	3	4	5
23. The people I know don't have the money to fish more	1	2	3	4	5
24. The people I know don't have the necessary fishing skills	1	2	3	4	5
25. The people I know are not interested in fishing anymore	1	2	3	4	5
26. The people I know don't fish for the species I prefer to catch	1	2	3	4	5
27. The people I know don't feel it's appropriate to fish more	1	2	3	4	5
28. The people I know don't have time to fish more	1	2	3	4	5

I don't fish more often because...

29. I believe increasing my fishing activity would be bad for the resource	1	2	3	4	5
30. I don't like to kill fish	1	2	3	4	5
31. Catching fish causes too much injury to the fish	1	2	3	4	5
32. When fishing, I feel uncomfortable or self-conscious	1	2	3	4	5
33. I don't feel it's appropriate to fish more often	1	2	3	4	5
34. At times, fishing can be stressful	1	2	3	4	5
35. I don't have the necessary fishing skills	1	2	3	4	5

I don't fish more often because...

36. Fishing areas are crowded	1	2	3	4	5
37. I have too many work/family commitments	1	2	3	4	5
38. I can't catch enough fish to suit me	1	2	3	4	5
39. I don't have access to fishing opportunities close to home	1	2	3	4	5
40. I can't afford to fish more often	1	2	3	4	5
41. I don't have the physical ability to fish more often	1	2	3	4	5
42. Other leisure activities take up my time	1	2	3	4	5
43. The cost of fishing equipment and supplies is too expensive	1	2	3	4	5
44. Fishing facilities are poorly developed and/or maintained	1	2	3	4	5

I don't fish more often because...

45. There are too many fishing regulations	1	2	3	4	5
46. Fishing regulations are too confusing	1	2	3	4	5
47. Fishing regulations are too strict	1	2	3	4	5
48. I don't always know the regulations for each type of fish I catch	1	2	3	4	5
49. The areas I like to fish have been closed to fishing	1	2	3	4	5
50. I don't always know the regulations for the area I fish	1	2	3	4	5

Appendix B (cont)Demographic Information Instrument, adapted from U.S. Fish & Wildlife Service (2010)

Please circle the designated number for each of the following questions. These questions are intended to provide information about how anglers of varied backgrounds deal with constraints, motivations, and level of participation.

51. What is your gender?
- 1 ----- Male
2 ----- Female
52. What is your age?
- 1 ----- 16 – 17 years
2 ----- 18 – 24 years
3 ----- 25 – 34 years
4 ----- 35 – 44 years
5 ----- 45 – 54 years
6 ----- 55 – 64 years
7 ----- 65 years and older
53. What is your ethnicity?
- 1 ----- Asian
2 ----- Black
3 ----- Hispanic
4 ----- White
5 ----- All others
54. What is your annual household income?
- 1 ----- Under \$10,000
2 ----- \$10,000 – \$19,999
3 ----- \$20,000 – \$29,999
4 ----- \$30,000 – \$39,999
5 ----- \$40,000 – \$49,999
6 ----- \$50,000 – \$74,999
7 ----- \$75,000 – \$99,000
8 ----- \$100,000 or more
55. What is your education level?
- 1 ----- 11 years or less
2 ----- 12 years
3 ----- 1 – 3 years of college
4 ----- 4 years of college or more
56. How many times have you fished in the last year? _____

Appendix C

Survey Instrument Cover Letter

Dear Spokane County Angler:

I am writing to ask for your assistance with a study being conducted through Eastern Washington University. This study has two purposes; (1) to determine if levels of recreational fishing participation are affected by factors of motivation, and (2) to determine if recreational fishing participation levels are affected by factors that inhibit anglers from fishing.

You have been randomly selected to participate in this survey through 2010 fishing license information provided by the Washington Department of Fish and Wildlife (WDFW). If you are under the age of 18, please do not fill out the survey, simply return the blank survey in the enclosed stamped envelope. Responses from this survey may aid in identifying different types of anglers and the reason they choose to fish or not fish. Results from this study, therefore, could potentially help WDFW managers understand particular fishing issues and interests of Spokane County anglers and address them through management practices.

Your answers will remain completely confidential and your responses will only appear as summaries in which no individual's answers will be identifiable. Your name will never appear on any survey. The return envelope is marked with an identification number for tracking purposes to determine overall returns. Once your survey has been returned, your name will be deleted from the mailing list and your survey will be separated from the return envelope, preventing a connection of your name and answers.

This survey is voluntary. By taking approximately ten minutes to complete this survey, the results of this study will be more accurate due to a broad representation of anglers that probably share similar interests as you do. If you wish not to respond, please return the blank survey in the enclosed stamped envelope. A timely response of the completed survey in the enclosed stamped envelope is of great importance. Please complete and return the survey in the enclosed stamped envelope within two weeks.

If you have any concerns about your rights as a participant in this research or any complaint you wish to make, you may contact Ruth Galm, Human Protections Administrator, at 509-359-7971/6567 or email: rgalm@ewu.edu.

Thank you very much for helping with this important study.

Sincerely,

Roy Scott - PEHR Graduate Student / Principle Investigator
208-661-2222 - rscott@eagles.ewu.edu

Appendix B (cont)

Survey Instrumentation Instructions

Please read each section of this survey thoroughly and completely before answering any questions. Responses are intended for the individual whose name appears on the envelope only. Please respond honestly about the questions, keeping in mind that there are no right or wrong answers, just your honest beliefs about fishing in Spokane County.

There are four sections in this survey. Section (1) deals with angling and experience and commitments. Section (2) contains questions about motivation factors that determine fishing preferences. Section (3) includes questions about factors that inhibit you from participating in recreational fishing. Section (4) of this survey includes demographic questions.

As mentioned in the cover letter, you can be assured of complete confidentiality during the duration of this study. Your answers will not be able to be identified with any question and your name will never appear in the study. Once your survey has been returned, your name will be deleted from the mailing list and your survey will be separated from the return envelope containing a tracking number, thus preventing any connection between your name and answers.

Your response can potentially help fishery managers better serve Spokane County anglers by providing information about preferences, motives, and factors that inhibit you from fishing more often; however, there are a few demographic questions that you may not feel comfortable answering. An example of this could include: "Please indicate your annual household income." If you feel uncomfortable answering this question, please leave it blank. You do not have to answer any question you feel is objectionable, and may return a partially completed survey. Furthermore, if you do not feel like completing the survey, please put the partially filled out survey in the enclosed stamped envelope and your name will be removed from the list.

Results of this study can be sent to you via email or postcard at your request. For a summary of the results, please contact me directly either by email or postage at the addresses listed below and indicate how you would like to receive the summary. Results of this study will be available approximately June 2012.

Please complete and return the survey in the enclosed stamped envelope within two weeks. Your timely response is appreciated. If you have any questions about this study, feel free to contact me directly.

Roy Scott - PEHR Graduate Student / Principle Investigator
200 Physical Education Building, Cheney, WA 99004
208-661-2222 - rscott@eagles.ewu.edu

Appendix B (cont)**Survey Instrument Follow-up Post Card Mailing**

Dear Spokane County Angler:

Last week a survey about fishing participation levels, motivations, and factors that inhibit you from fishing was mailed to you. You were randomly selected by your contact information that was provided by the Washington Department of Fish and Wildlife (WDFW) through your purchase of a 2010 freshwater fishing license.

If you have already completed and returned the survey, please accept my sincere thanks. If not, I would greatly appreciate it if you would fill it out at your earliest convenience. Your survey is extremely important to this study because your experiences and interests help represent the entire Spokane County angling population. The accuracy of this study depends on your response to adequately represent angler attitudes.

If you did not receive an initial survey, or it has been misplaced, please contact me so I can send another copy out today.

Sincerely,

Roy Scott - PEHR Graduate Student / Principle Investigator
200 Physical Education Building, Cheney, WA 99004
208-661-2222 - rscott@eagles.ewu.edu

Appendix B (cont)Survey Instrument Final Mailing Letter

Dear Spokane County Angler:

About three weeks ago I sent a survey to you asking for your assistance with a study being conducted through Eastern Washington University about fishing participation levels, motivations, and factors that inhibit you from fishing more frequently. I have not heard from you and hope that you will contribute to this study, which depends on a widely-based sample to represent everyone's views.

The comments of fellow Spokane County anglers who have already responded could potentially be useful for Washington Department of Fish and Wildlife (WDFW) managers to better serve anglers. WDFW managers will better understand specific fishing motivations, inhibiting factors, and participation levels through this research, which could potentially benefit you.

I am writing to you because of the importance of your survey and the accuracy of this study. I have sent surveys to a representative sample of Spokane County anglers, however, it is only through hearing back from nearly everyone in the sample that will ensure overall accuracy and representativeness of the study.

Your answers will remain completely confidential and your responses will only appear as summaries in which no individual's answers will be identifiable. Your name will never appear on any survey. The return envelope is marked with an identification number for tracking purposes to determine overall returns. Once your survey has been completed and returned, your name will be deleted from the mailing list and your survey will be separated from the return envelope, preventing a connection of your name and answers.

In the event that you did not receive an initial survey or it has been misplaced, I have enclosed another copy for your convenience. I hope you will complete the angler survey soon, but if you prefer not to, please return the blank survey in the enclosed stamped envelope and your name will be removed from the mailing list.

Thank you, I appreciate your assistance.

Sincerely,

Roy Scott
Graduate Student / Principle Investigator
208-661-2222 - rscott@eagles.ewu.edu

Appendix C

Table for determining sample size, adapted from Krejcie & Morgan (1970)

Population (N)	Sample	Population (N)	Sample	Population (N)	Sample
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10,000	370
150	108	750	254	15,000	375
160	113	800	260	20,000	377
170	118	850	265	30,000	379
180	123	900	269	40,000	380
190	127	950	274	50,000	381
200	132	1000	278	750,000	382
210	136	1100	285	1,000,000	384

Vita

Author:

Roy W. Scott III

Birthplace:

Greenville, IN

Undergraduate Schools Attended:

Eastern Washington University, Cheney, WA
Bachelor of Arts, Outdoor Recreation, 2010

Indiana State University, Terre Haute, IN
Bachelor of Science, Packaging Technology, 2000

Honors and Awards:

Graduate Assistantship, Physical Education Health and Recreation Department,
Eastern Washington University: 2012 – 2012

Poster Presentation at the Student Research and Creative Works Symposium,
Eastern Washington University: 05/2012

Physical Education Health and Recreation graduate student of the year: 2012

Recreation and Leisure Services outdoor recreation student of the year: 2010

Graduated Summa Cum Laude, Eastern Washington University: 2010

Professional Experience:

ACCT Challenge Course Practitioner Level 2

Outdoor Recreation Internship – Mountain Gear, Spokane Valley, WA: 2010

Camp Counselor – Camp Goodtimes East, Post Falls, ID: 07/2011

Packaging Engineer – Telect Inc., Liberty Lake, WA: 05/2007 – 11/2008

Application Engineer – Alliance Machine Systems, Spokane, WA: 05/2006 –
05/2007

Packaging Engineer – Kimball International, Post Falls, ID/Jasper, IN: 01/2001 –
05/2006