

Fishing for Food:
Exploring Kitsap County's Subsistence Fishing Harvest

by
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ABSTRACT

Fishing for Food: Exploring Kitsap County's Subsistence Harvest

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Non-indigenous subsistence fishing activities have received little attention in the United States and most of the world, with the exception of the state of Alaska, which devoted a division of government to studying and the management of subsistence activities of both Indigenous Alaskans and Alaskan residents. The topic of non-indigenous subsistence fishing has just begun to benefit from scholarly focus (Nieman et al., 2019). Even such, one would think that among the robust literature on indigenous subsistence fishing that the question of how to define it would have already been answered, but as Ebbin, Galligan, and Nieman have pointed out, the definition still needs work (Ebbin, 2017; Galligan, 2021; Nieman et al., 2021). In addition, there are non-indigenous peoples practicing many different methods of subsistence fishing, and doing so for a variety of different reasons.

Following the studies of a group of researchers from Duke Universities Marine Lab who have started to investigate the social and cultural aspects and values of subsistence fishers in Carteret County, North Carolina, (Nieman et al., 2021), this thesis examines subsistence fishing in Kitsap County, Washington. Kitsap County has a diverse collection of rural and urban fishing locations to study spread over 15 different piers and other fishing sites. This study aims to understand the characteristics and public infrastructure preferences of the subsistence fishers in Kitsap County in order to better understand who the Kitsap County subsistence fishers are, how they utilize the fishing infrastructures, and what they look for when choosing infrastructure.

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Positionality

I have been a part of the fishing community for as long as I can remember. Some of my first memories are catching minnows with my great-grandfather in the lake in their backyard in Pymatuning, Pennsylvania. He taught me how to bait a hook with them in order to catch the bigger fish with an old bamboo fishing pole. My parents kept up the lessons with a new Snoopy fishing pole for my 4th birthday, along with a fishing net, flippers, and a mask-- one could not be Jacques Cousteau without them. I have learned a great deal since coming to Washington from New York; fishing is different, the fish are different. Subsistence is different. I was taught by my parents growing up that you can take what you need, and if you have extra, share it with those in your neighborhood who might need the boost. Here in Washington, I have had the chance to work within the fishing community from the marina side, it is a business that depends on fishers to frequent it to stay afloat, which is why my first instinct is to not focus within the county that I am working, and only use Pierce County as a backup if I need more data. The Kitsap County community knows me as a graduate student who wants to help the fishing pier communities save fishing piers, rather than be developed into commercial piers.

Introduction

This thesis examines the experiences of fishers participating in non-indigenous subsistence fishing activities in Kitsap County, Washington. Kitsap County has the advantage of being surrounded by water, as it is located on the western side of Puget Sound. Kitsap County encompasses most of the Kitsap Peninsula, with a small portion of Pierce and Mason counties making up the remainder. There are currently sixteen fishing infrastructures in Kitsap County, listed on the Washington Fish & Wildlife (WDFW) website, as well as numerous water accesses, boat ramps, state parks, and beaches, for fishers to access. This study is focused on the Kitsap WDFW fishing infrastructures.

This study is motivated by the disrepair and potential elimination of two fishing piers in Kitsap County (the latter for possible construction of Kitsap Fast Ferry Maintenance Docks).



Figure 1: Manchester Boat Dock at Sunrise. Photo by: Robyn Dally

These fishing piers and the many like them in Washington State have not been properly studied for their impacts for what their usage is for by fishers for subsistence fishing. Removing access of these piers has the potential to create environmental injustices in areas where food expenses are rising and the cost of housing is increasing(*Cost of Living in Kitsap County, Washington,*

n.d.). Additionally, decisionmakers do not know who or how many subsistence fishers use that pier or what issues removal of that vital part of the physical fishing infrastructure may create for



Figure 2: Harper Pier from a distance. Photo by: Robyn Dally

those who depend on it for part of their livelihood. Specifically, in the beginning of 2022 at the time of authoring this thesis, the Kitsap Transit is considering converting the Harper Fishing Pier to a maintenance and docking facility for the fast ferry fleet. This would

disrupt not only fin fishing and

squid jigging at Harper Pier, but also the scuba garden that has been cultivated for recreational divers. Transformation of the pier would also affect the ability of the locals to launch their kayaks and canoes from the float dock located there.

Why look at subsistence beyond the issues with pier removal? Subsistence, as defined by the Cambridge English Dictionary has traditionally meant you have what you need to stay alive, but no more. Fishing is the activity of catching fish either as food or as sport (*Cambridge Dictionary / English Dictionary, Translations & Thesaurus*, n.d.). When we look at the combination a traditional definition of subsistence fishing would be the act of catching fish to support oneself at a minimum level. One would think with the vast literature repository that comes up when searching for subsistence fishing that the question of how to define the term beyond this basic definition would have already been answered, but as Ebbin, Galligan, and Nieman have pointed out, the definition still needs work (Ebbin, 2017; Galligan, 2021; Nieman

et al., 2021). The traditional definition of subsistence no longer covers the modern need or use of the word.

Historically, most literature and studies have been done on the subsistence fishing habits and traditions of the indigenous peoples of the United States. Until recently little research has been done on any other group or people who fishes or how they are using their catch and what subsistence means to them. As recently as April 2021 researchers like Neiman et al. acknowledged that the primary focus of studies on subsistence fishers and fisheries has been indigenous communities (Nieman et al., 2019).

The State of Alaska has devoted a division of government to studying and the management of subsistence activities of Indigenous Alaskans and Alaskan residents of more than 12 months (dfg.webmaster@alaska.gov, n.d.-a), but little focus has been on subsistence fishing



Figure 3: Fisher at Waterman Point Pier. Photo by: Robyn Dally

activities in the rest of the United States and most of the world, unless conducted by the indigenous peoples of the area. In Washington State, studies have been done on indigenous people's subsistence fishing habits and customs, but there is no research on the non-indigenous people who subsistence fish, what they do with their catch, or who they

are. Despite this, the studies of subsistence fishing communities in the United States that have been published have come to the same conclusion: determining what type of subsistence fishing is occurring should take place before management decisions are made on how subsistence fishers are managed.

A group of researchers from Duke Universities Marine Lab have started to investigate the social and cultural aspects and values of subsistence fishers in Carteret County, North Carolina. They began with a focus on the values that various characteristics of physical infrastructure provide (Nieman et al., 2021). Their aim is to understand the most desirable facility for fishing for food and what the fishers valued when choosing an infrastructure to fish at.

This thesis builds on the work of Nieman et al. (2021) and focuses on Kitsap County, WA. Kitsap County is unique because it has a diverse collection of rural and urban fishing locations to study spread over 14 different sites. This study aims to understand the characteristics, experiences, and needs of the subsistence fishers in Kitsap County, including what they look for when choosing public infrastructure to fish at.



Figure 4: Kitsap County (in green) from the Washington State Association of Counties website

Through this thesis we will explore the current literature that has been published on subsistence. This will include an analysis on why researchers have not been looking at subsistence fishers at the same level as recreational or commercial fishers. How subsistence has been defined by the current literature is the next item to be analyzed. Followed by a brief history

of fishing infrastructure within Puget Sound. Finally, the literature review will summarize the discussion on the published materials.

The methodology used in this thesis is discussed in the next chapter. A discussion on the study area begins the chapter. Next the sampling and administration aspects of the survey are discussed. Rounding out the content for the methodology chapter is a section on the survey measures and the analytical strategy used.

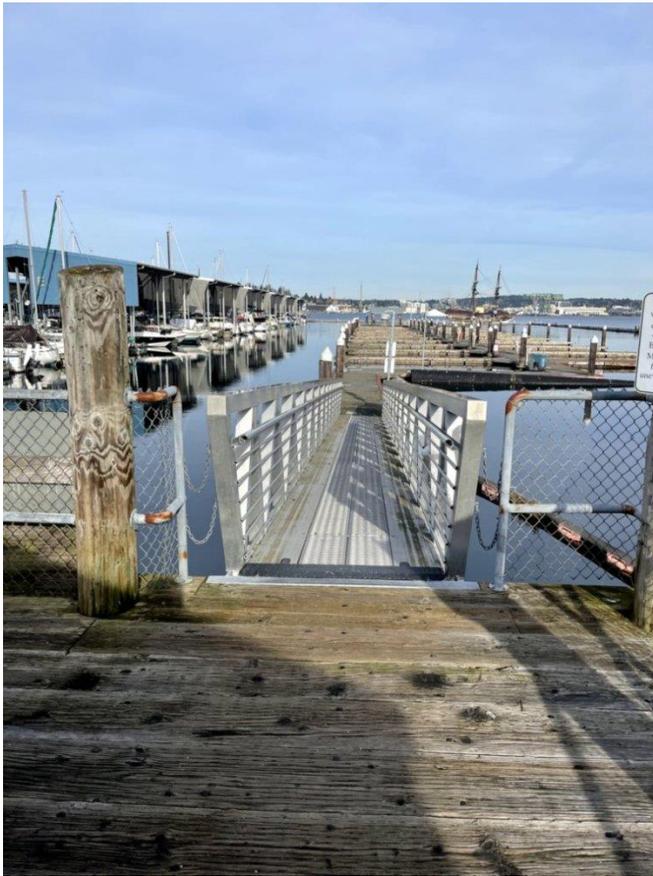


Figure 5: Port Orchard Marina Dock View from top of ramp. Photo by: Robyn Dally

A look at the survey results is in the next chapter. The survey results will LAY OUT the data on how the survey questions were answered based on diverse groups of questions. First we will look at the demographics of the survey respondents. Next the survey responses for the question on the fishing structure where the respondent was contacted, where else they fish, and what else they look for when picking a location to fish. Following this a look at the survey answers for general fishing questions pertaining to how someone learned to fish and if they have taught

anyone else to fish. Next we looked at the consumption of fish when or how the respondents used their catches, as well as how many meals they ate of caught fish, and in which seasons they ate more caught finfish or shellfish. Also, under the heading of consumption of fish we look at

the responses for cultural preparation/practices and the respondent's favorite finfish & shellfish to consume. Finally, to finish the results of the survey we look at the questions on subsistence fishing, and the respondents understanding of the term.

Next a detailed review of each of the survey sites is included. This section discusses the where to find each of the infrastructures, at least the best street address, local amenities if any were found, and some history of why a pier or infrastructure was put in that location.

The discussion chapter is next. Contained here is an explanation of the results in reference to some of the other works. The focus of this section has been directed at fishing structures, fishing, fish consumption, and subsistence fishing.

Finally, the conclusion summarizes the project, discusses future research, provides a critical look at what improvements could be made by future researchers, and offers a discussion on how this study might affect fishers in research.

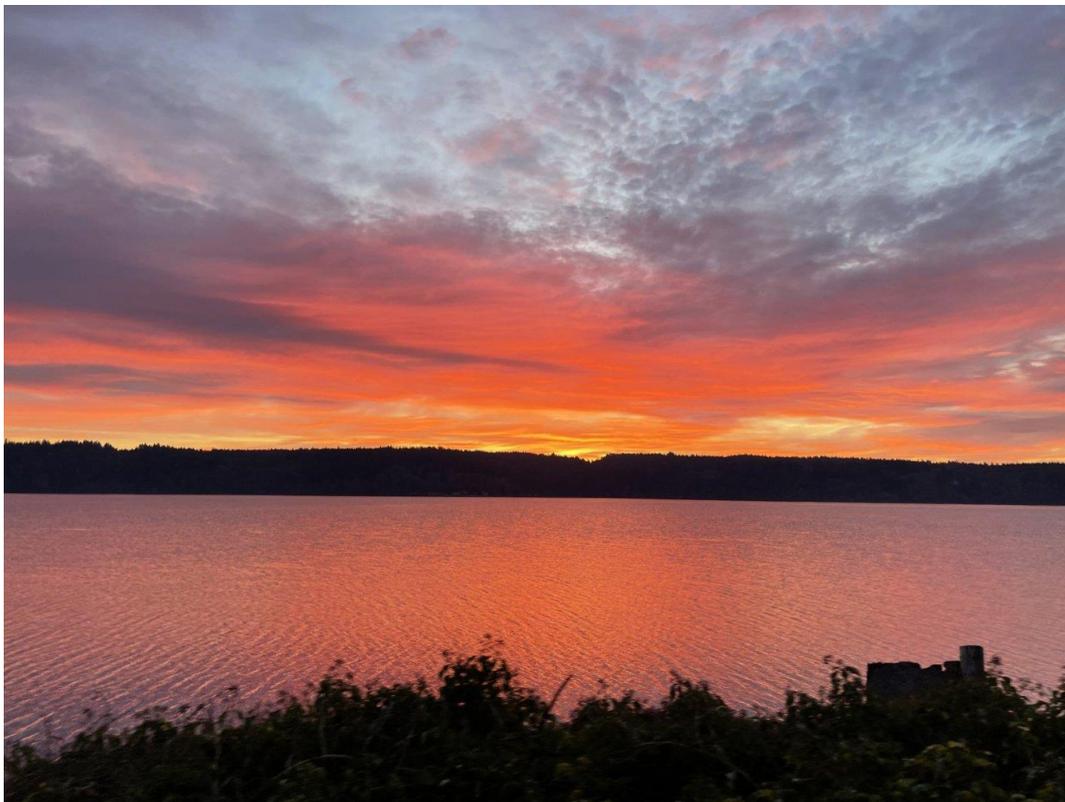


Figure 6: Sunrise at proposed fishing pier in Olalla, WA. Photo by: Robyn Dally

Literature review

Introduction

In 2021 non-indigenous subsistence fishing has become more than feeding the belly, it can also be about feeding the mind, the soul, and the community. The modern subsistence fisher is no longer one who simply fishes to exist, those that are fishing are doing it for a multitude of reasons.

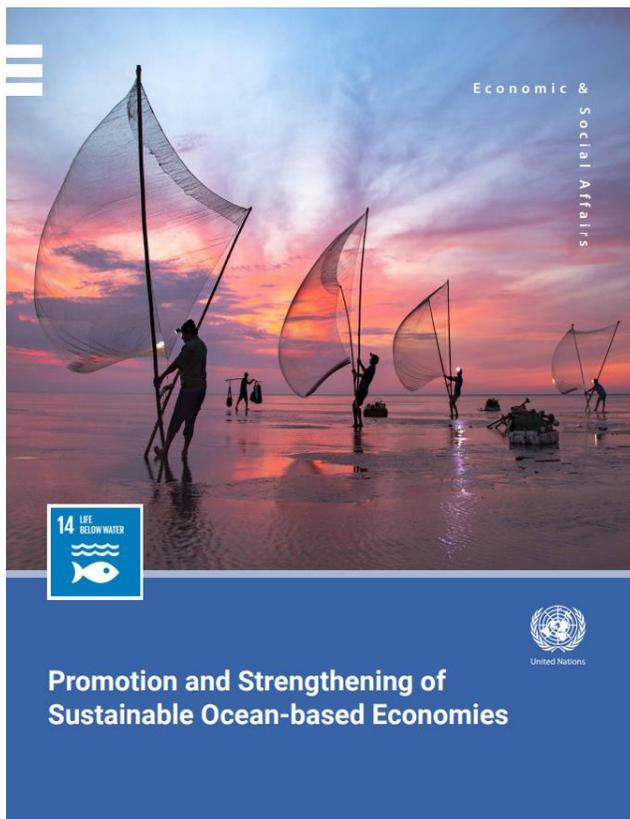


Figure 7 United Nations Sustainable Development Goal 14. From The United Nations SDG

Subsistence fishing is at the confluence of planning, environmental science, & policy (Marjadi et al., 2021). This puts subsistence fishing in a unique position as an internationally recognized livelihood practice. The United Nations has recognized subsistence fishing as such (FAO, n.d.). The Food and Agriculture Organization (FAO) of the United Nations has been charged with helping to meet the Sustainable Development Goal (SDG) number two which is to “End hunger, achieve food security and improve nutrition and promote agriculture” (THE 17

GOALS / Sustainable Development, n.d.). The FAO has focused on how people are using subsistence fishing to meet their food needs and what they can do to improve their success in acquiring the nutrition they get from these activities.

Billions of people currently live in a survival subsistence economy worldwide where their basic nutritional needs are not being met; this is due to lack of government support, few viable employment options, and monetary troubles. These populations use subsistence to meet their food or nutrition needs. Those living in food deserts who use subsistence fishing practices to supplement their diets (Boucquey, 2017), and those in urban environments who live close to the resource and supplement their diet by subsistence fishing (Quimby et al., 2020) are all included in this group. The topic of non-indigenous subsistence fishing has been largely ignored due to the existing literature viewing subsistence as a ‘monolith’ (Raghubanshi et al., 2021) as an activity that has no variation. Viewing subsistence fishing as a monolith ignores the complex social structures, processes and communities which function as part of the subsistence fishing system.

Though out the literature several themes surface repeatedly with regards to subsistence fishing for non-indigenous populations. These themes include reasons it has not been studied much, how to define ‘subsistence,’ and focus on the subsistence economy. This literature review will first review these three themes and discuss findings of the existing studies, then will provide an overview of fishing structures relevant to this thesis.

[The problem with subsistence fishing, or why hasn’t it been studied?](#)

Non-indigenous subsistence fishers are an ‘invisible’ population; there is no clear definition of ‘subsistence fishing’ which can be applied broadly. In fact, the literature presents a distinct lack of a clear definition, and this has created ambiguity among researchers (Berkes, 1988; Macinko & Schumann, 2007; Marjadi et al., 2021; Nieman et al., 2021; Pitchon & Norman, 2012; Schumann & Macinko, 2007). When NOAA conducted a survey in the Pacific Islands on subsistence fishing there was familiarity with the term among the survey respondents, but the respondents assumed it was only applicable ‘to indigenous groups, federally recognized tribes, or

other groups with specific legal standing due to precedent in other states' (Leong et al., 2020). This can lead to confusing interpretations of the laws relating to subsistence fishing.

For one thing, the word 'subsistence' is typically associated with indigenous populations. For example, the United States National Forest Service (USFS) looks specifically at commercial fishing, recreational fishing, and subsistence fishing, and how they are integral components of the USFS operations (Gillespie et al., 2018). However, there is a distinction between recreational and subsistence, under USFS all subsistence activities only can occur if you are indigenous, and part of an indigenous group that has obtain permissions to conduct subsistence activities within the National Forest boundaries. While this in and of itself is problematic, it is not the problem that we are discussing within the bounds of this paper. USFS does not recognize that the recreational fishers are or could be conducting the same or similar subsistence activities as the indigenous groups.

Another reason subsistence fishers are viewed as an "invisible" population and are not studied at the same volume as commercial or recreational fishers is that they do not garner the same income for the government or businesses. This means subsistence fishers are ignored in management discussions in favor of commercial and recreational sport fishers. Billions worldwide live in a subsistence market to meet their needs, but because they do not fit specific characteristics, specifically ethnicity, income, reason for fishing, and others, they do not receive the attention in studies that should be given to them (Macinko & Schumann, 2007; Nieman et al., 2021).

Within the United States, Alaska is the first state to define a subsistence harvest for non-indigenous people with the subsistence provisions of the Alaska National Interest Lands Conservation Act (ANILCA) (Alaska Department of Fish and Wildlife). This piece of legislation

not only added 45 million acres to the National Parks, it also specifically provided for any person who has been a resident of the state for longer than 12 months automatic subsistence rights to that land. ANILCA provided the residence these accesses under the definition “the customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, clothing, tools, or transportation; for the making and selling of handicrafts out of nonedible by-products of fish and wildlife resources taken for personal or family consumption, and for customary trade.” (*ANILCA - Title 8*, n.d.). Yet, Virginia D. Nazarea (1999) states that they do not understand why when it came to the non-indigenous cultures that subsistence was only a “social” existence, rather than the “cultural” existence (Nazarea, 1999) that the ANILCA legislation laid out for the indigenous people of Alaska.

How to define ‘subsistence’?

As recently as 2021, there is disagreement about how to define the term subsistence fishing for non-indigenous populations. This comes about mainly because of discrepancies of different academic and professional disciplines using different views of the term. For example, an economist’s view is different from an environmentalist’s view.

No longer is it acceptable to only use the rigid Merriam-Webster definition of subsistence mentioned earlier, “the minimum necessary to support life.” We have move to a more broadly diverse spectrum that encompasses not only this definition but many others, and allows for a complex social and market economy to take place under the umbrella of ‘subsistence.’ This concept was brought to the forefront of thinking first by Fikret Berkes in 1988 discussing different concepts of subsistence fishing in Canada. Berkes saw that there were multiple terms being used to describe the same activities being conducted within the Canadian local, non-commercial fisheries to meet food needs (Berkes, 1988). He took these terms, subsistence,

domestic, harvest, recreational, and food fishing, and explained how in Canada there is at least under the various Canadian Provincial law reason enough to combine these to best describe the activity as subsistence fishing. His paper also goes on to discuss why subsistence is the best definition for these activities. Washington State looks at all fishers as personal use fishers (*WAC 220-300-170*: n.d.). This definition from the Washington State Administrative Code refers to only taking or fishing for food fish and shellfish to use as food or for other personal use, and not for sale or barter. It runs into the issues that are seen in the Berkes (1988) paper discussing the definitions on subsistence because the definition currently being used in Washington State promotes the idea that community is not supported though subsistence fishing, it is to only feed the individual.

Macinko & Schumann (2007) and Schumann & Macinko (2006) opened the research community's eyes to the spectrum on subsistence fishing. These papers were impactful in future studies seeking to defining the term subsistence fishing. Macinko and Schumann created a way to ensure that there was recognition for not only the consumption of a fishing catch but the social aspects of a catch as well.

Following this, Pitchon & Norman (2012), Poe et al. (2015), Cooke et al. (2017), Ebbin (2017), Marjadi et al. (2020), Quimby et al. (2020), Nieman et al. (2019), and Nieman et al. (2020) expanded on these concepts and applied them to different case studies. Nieman et al. (2020) defined six unique ways in which subsistence fishing occurs through using food provisioning, economics, anthropological and sociological terms (Nieman et al., 2021)

Nieman et al. (2020) six definitions for subsistence fishing:

1. A dependence on fishing for survival
2. Having little to no other source of income
3. Living close to the resource
4. Using low technology gear (as part of traditional or cultural practice)

5. Harvesting fish to eat or sell in order to meet basic food requirements
6. Relying on the harvest to meet nutritional needs

These six descriptions help researchers start demonstrating how subsistence fishing is being used in various parts of the United States. This will help define subsistence fishing for the present case study within Kitsap County.

To help define these six methods further we will have to look outside of Nieman et al. for more answers. They discuss much of the literature from South Africa on their website which is where a number of these ideas and concepts come from, as well as ANILCA which has been discussed previously in this paper.

Nieman et al's idea that dependance on fishing to survival this concept is from the studies completed in South Africa. It spawns from a group of fishers who self-identify as subsistence. Subsistence has been legally recognized in South Africa since 1998 under the Marine Living Resources Act (MLRA) (Hauck et al., 2002). These fishers only take as much as they need but there is confusion on how the rules work surrounding the permit process.

Having little to no other source of income, this concept from Nieman et al.(2020) could be said to have come from Cooke et al.(2018). This paper is about the importance of fishing not just in a recreational sense for catch-and-release but also for the harvest component of consumption by the individual.

Living close to the resource provides a fisher an easy access and easy meal, provides yet another way to define subsistence. This definition was also found within the study from South Africa that discussed the MLRA, as well as a study by Branch et al. (2010). Both of these studies broadly defined subsistence as an access driven activity. Meaning that if an individual lived near the resource, in this case waters that are good for fishing, they would use it to provide sustenance for themselves and their family or community.

Turning to the use of low technological gear, this shows that the fisher does not have the intention to overfish or take more than what they or their close community needs. Instead, this highlights an intention to only harvest the fish of a specific species and size for consumption purposes.

Each of these ways to define subsistence has also touches on the access of other food sources that are available to the fisher indirectly, as they make the decision to fish. Many of them are in areas where it is not convenient, or financial easy to go to the grocery store. Fishing provides an alternative that is a nearby inexpensive food source that is abundant in many locations (Boucquey, 2017). This makes it easy to see how the harvest of fish to eat or sell could be in order to meet a basic food requirement.

How does a basic food need differ from a basic nutritional need? According to the United Nations Sustainable Development Goals (UN SDG) just having food is not enough, it must be nutritious food as well (*UN SDGS*, n.d.) This is the difference between a food need vs a nutritional need. When there is a basic food need, there is no food (*FAO*, n.d.), and a fisher is after fish to fill the table when there is nothing else. In the case of a basic nutritional need the fisher is after the fish to cover the vitamins, minerals, and nutrients that are provided by the fish to fill out the portion of the diet that is missing.

Fishing infrastructure

The type and accessibility of fishing infrastructure plays an important role in the ability of subsistence fishers ability to be able to participate in the fishing community (Nieman et al., 2021). The connections to the environment, and cultural connections that are made during the act of fishing from an infrastructure provide entertainment and relaxation (Boucquey & Fly, 2021). These connections demonstrate that these spaces provide more than base dependance on fishing

for survival. Subsistence fishing and fishing infrastructures are closely intertwined, and different types of infrastructures can have different impacts on the quality of the experience (Pitchon & Norman, 2012).

Fishing piers make up the vast majority of fishing infrastructures discussed in the literature, while docks, bridges, and boat ramps make up the rest. Fishing piers are either fixed or floating structures or a combination of these, that allow fishers to access water deeper water. Mixed use piers follow the previously mentioned fixed, floating, or combination, then also have a boat ramp, launches for human powered vessels such as kayaks or paddle boards. Some boat ramps do not allow fishing from the tie up areas as it limits the access for boaters despite having floating piers.

The current list of fishing piers on the Washington Department of Fish & Wildlife (WDFW) is added by its managing partner, they reach out to their contact at WDFW, provide the information required such as restrooms, lighting, ADA access, parking, hours, and other amenities. In addition, the pier managers can add if the pier is good for squid fishing. Then WDFW will add a map location with GPS coordinates for the pier location for fishers to find the pier. This process is not easily found and only known from my personal experience in assisting in the management of the listing for the Point Defiance Marina Fishing Pier listing. Fishing piers make it easier for those who participate in urban subsistence fishing to access the resource (Burger et al., 1999).

In Puget Sound, Ray Buckley and his colleagues at Washington Department of Fish & Wildlife began looking at “a way to reintroduce the social aspect of fishing, where people could gather, and when one person caught a fish everyone was happy.” (Williams, 2021). Buckley’s group developed the idea of public fishing piers, and these first piers appeared in Edmonds and Elliot Bay in late 1979 and early 1981, respectively. These piers not only provided an easy and accessible fishing space, but also had included design components to attract a variety of fish. These fishing piers began replacing the disappearing boathouse culture throughout Puget Sound; the vanishing boathouses had left a gap in where fishers could easily access boat rentals, buy bait and other fishing gear, and most importantly gather to tell the story of their trophy fish. Of the 140-some boathouses (Williams, 2021) that once lined the shores of Puget

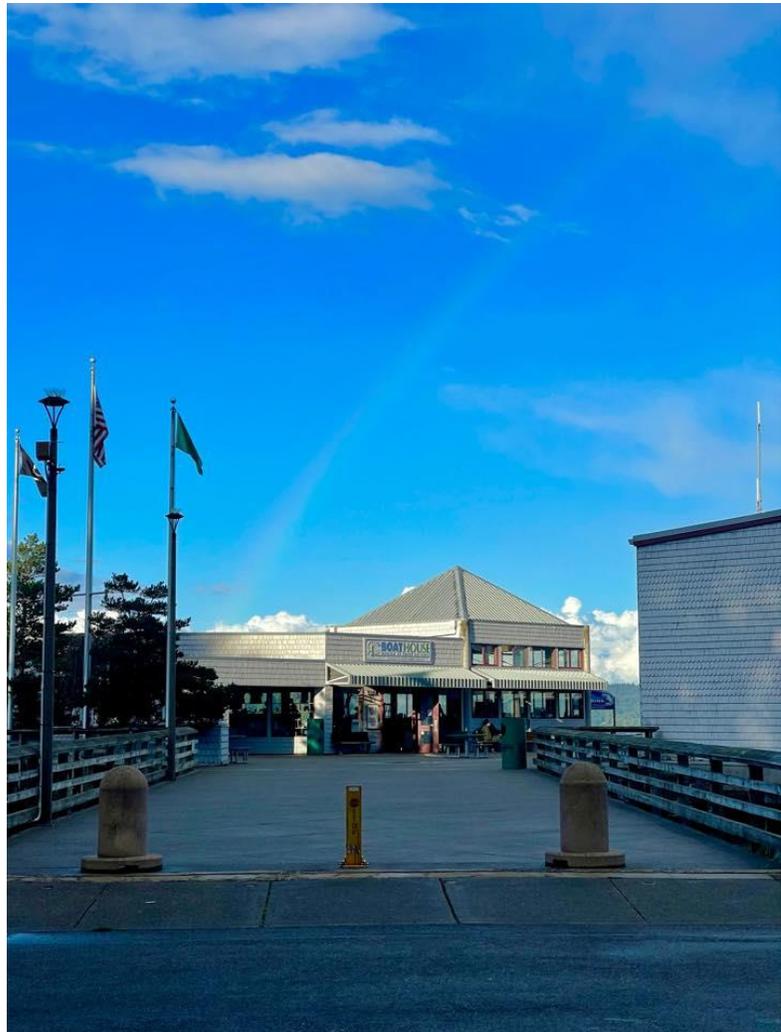


Figure 8: Puget Sound's Last Remaining Boathouse Point Defiance Boathouse. Tacoma, WA. Photo by: Robyn Dally

Sound there are only a handful left (Williams, 2021). The only one of the well-known boathouses that is still in operation in a traditional manner is Point Defiance Marina Boathouse in Tacoma, WA. here they still offer a public fishing pier as well as boat rentals, bait & tackle, and a morning meeting of fishers for

coffee to discuss their latest catches, or upcoming seasons. These development of fishing infrastructures/piers opened up public spaces to fish and thus opportunities to populations that might not otherwise have access to fishing due to disability, financial, or other limiting reason. These factors have been (and still are) considered in the new designs and re-designs of the fishing piers within Puget Sound.

Design of fishing piers for those with disabilities falls under the United States Access Board or more specifically the Architectural Barriers Act (ABA) is responsible for the standards and regulations related to accessibility for everyone on fishing piers and platforms. The United States Access Board is the independent federal agency that has been placed at the forefront of promoting equity for the those with disabilities by insuring that the Architectural Barriers Act and the Americans with Disabilities Acts are followed (*U.S. Access Board - About the U.S. Access Board*, n.d.). Both of these acts apply to fishing infrastructures, particularly fishing piers, and platforms. Americans with Disabilities Act Accessibility Guidelines (ADAAG) are designed to provide the minimum acceptable accessibility requirements for new construction or redesigns of old fishing piers or platforms. These guidelines include accessibly designs such as, accessibility routes, gangways, railing requirements, and edge protection. They were developed with input from a large number of public participants as well as groups and associations that included the Disabled American Veterans, National Park Service, Paralyzed Veterans of America States Organization for Boating Access, National Council on Independent Living, and U.S. Army Corps of Engineers (*ABA Standards*, 2014). The diversity that was invested in developing these guidelines allowed for more unrestricted access and ease of use for some who may have a harder time otherwise accessing a subsistence source for them or their community.

There are more than 60 fishing infrastructures listed on the Washington Fish and Wildlife website (*Public Fishing Piers*, n.d.); 42 infrastructures say they are ADA accessible. As of the writing of this thesis, Kitsap County has 16 public fishing infrastructures listed on the Washington Fish and Wildlife website (*Public Fishing Piers*, n.d.). These infrastructures range from boat launches, piers, and mixed-use piers. One of these piers is inaccessible by most subsistence fishers unless they have a boat as it is located on Blake Island.

Conclusion

The aim of this thesis is to discover the type of subsistence that is occurring within Kitsap County by asking fishers how they are utilizing their catches and what their understanding of subsistence is. Despite living in a state with vast aquatic resources, the type of non-indigenous subsistence fishing that occurs has not been defined. The state codes have archaic definitions that do not fully encompass the meaning or usage of a subsistence fisher.

This thesis conducts the first study of its kind in Kitsap County to bring a voice to the invisible population of subsistence fishers. Additionally, this study will begin to define what type of subsistence is occurring in Kitsap County. And finally, it will begin a review of the fishing infrastructures or fishing piers that have been listed on the WDFW website as accessible for fishers to fish from. Using definitions and parameters from this literature review will allow this study to show how these elements link together for Kitsap County.

Methods

This quantitative study captures survey data related to subsistence fishing in Kitsap County. I used an in-person survey at 14 fishing piers to analyze the needs and views of subsistence fishers. As discussed in the previous chapter, subsistence fishers are an overlooked group that receives much less attention than indigenous fishers, are not perceived to contribute much financially to the recreational fishing industry, and also lacks definitional understanding.

Study area

Kitsap County is located in western Washington State on the eastern side of the Olympic Peninsula. It has the largest Naval installation in Washington state. The poverty rate was 7.5% in 2019 and the per capita income in the county was \$58,874, below that of Washington State's \$64,758 in 2019. The Kitsap County unemployment rate for the same period was 7.5% (*U.S. Census Bureau QuickFacts*, n.d.) These data suggest that subsistence fishing may be a lifeline for some of the local residents. With a population of more than 270,000 people Kitsap County and 250 miles of saltwater shoreline. Compared to Carteret County, North Carolina, where researchers have performed initial studies of non-indigenous fishing along the 80 miles of saltwater shoreline, Kitsap County has 3.8 times as many people and 250 miles of shoreline.

Survey sampling & administration

Kitsap Fishing for Food Survey Locations

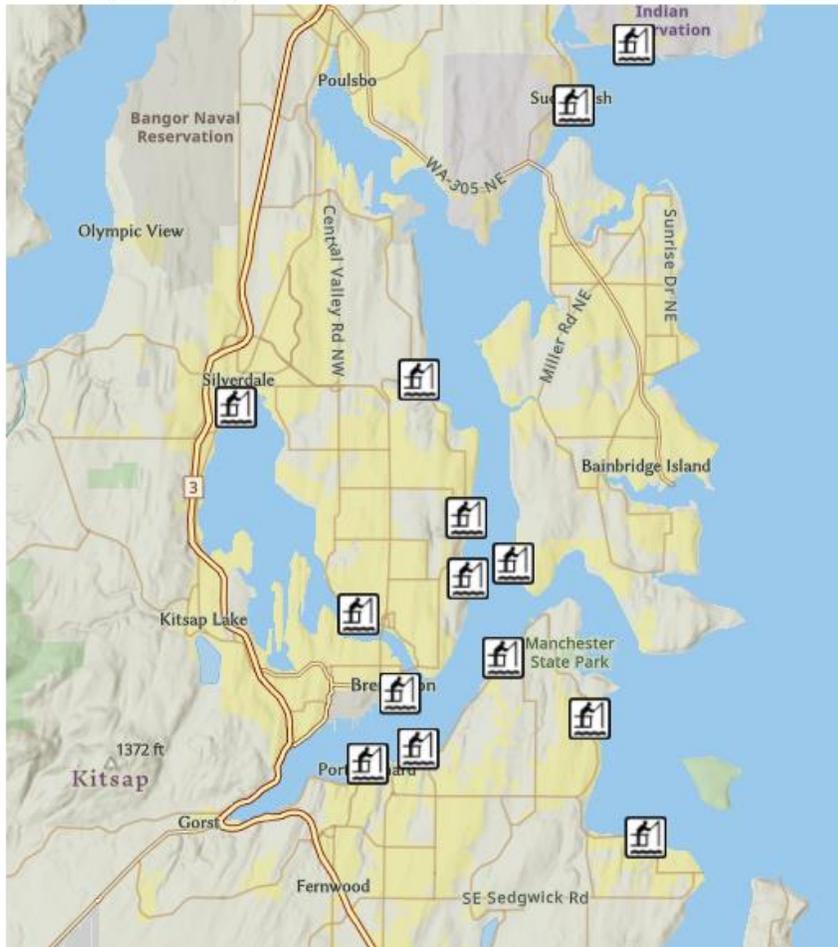


Figure 9: Kitsap County survey sites. Map by: Robyn Dally

The survey was conducted at 14 sites (shown in Figure 9) designated as Fishing Piers by Washington Department of Fish and Wildlife within Kitsap County. Participants of the survey were recruited using a convenience sampling method based on their presence at the study sites when the researcher visited in the months of February and March 2022. Oral consent was obtained from each respondent prior to beginning the survey.

The survey was administered in person and data were collected on an iPad. Respondents were asked to either self-report their answers on the iPad or if they preferred me to recording

their answers to allow them to continue fishing. Alternately paper copies of the survey were used when weather was not conducive to having electronic equipment out, these answers were then translated to the digital survey and the paper copies destroyed by shredding. In addition, survey participants were provided with a card that had the author’s information for further questions and a survey QR code on it to further expand the reach of the survey.

The survey was also submitted to interest groups and online groups to spread to their membership to spread to a wider audience after a technical issue was discovered with the survey that affected the number of responses that were coming back from certain locations from the QR codes on the Survey cards.

Each of the fourteen sites were visited a minimum of twice, as noted in figure 2, on different days of the week and various times of day to try and capture a variety of responses from different fishers. Coal Dock at Lion’s Community Park in Bremerton, WA was the exception to the 2 visits, as it

Kitsap County survey sites and number of visits	
Site Name	Number of Visits
Harper Pier	2
Annapolis Dock (Restil Pier)1	2
Manchester Boat Dock	2
Port Orchard Marina Dock	2
Waterman Point Pier (Sinclair Inlet)	2
Bremerton Marina Public Dock	2
Coal Dock (Lion's Community Park	1
Illehee State Park Pier	2
Illehee City Pier	2
Silverdale Pier	2
Brownsville Dock	2
Squamish Dock	2
Indianola Pier	2
Crystal Springs Public Fishing Pier	2

Table 1: Listing of Fishing sites with number of visits per site. By: Robyn Dally

has been shut down due to safety issues. Note that this survey has been vetted through the Evergreen State College Institutional Review Board, a copy of the approval letter is attached in Appendix A.

Survey measures

The survey consisted of 29 questions covering demographics, socio-cultural characteristics, and cultural aspects including religion, and cultural beliefs surrounding the catch and consumption of fish, fishing habits, what is done with the catch, familiarity with the term subsistence, what the qualities of a fishing location fishers look for, and finally if there were any additional information they would like to share for this study. Please see Appendix B for the full survey instrument.

Analytical strategy

Descriptive statistics were performed on the Survey123 responses to gain insight into what Kitsap County fishers are doing with their catches, and how subsistence fishing is being conducted within Kitsap County.

Results

This survey was conducted over a seven-week study period, during part of which there was a winter Chinook season that was open on Thursday, Friday, and Saturdays only. From my own fishing experience, winter Chinook is a deeper water caught fish at a depth of 100 to 150 feet and not commonly fished from the fishing piers in Washington State. This limited the number of fishers on the piers during the study period as the large squid runs had already come through, and many groundfish species (flounder, sole, cod, hake, walleye pollock, ling cod, cabezon, surf perch, etc.) were either not biting, or not open for fishing, Dungeness and Red Rock Crab seasons were closed.

A total of twenty-five participants were surveyed. Of the twenty-five respondents, seven responded in-person at the piers and eighteen responded online, using a weblink shared through the use of the QR code, through local interest groups, or by word of mouth. Figures 3 displays demographic characteristics of the respondents. The highest rate of response was from Harper Fishing Pier with 9 respondents, as this was the most popular alternative fishing pier for the survey respondents. The consumption of fish showed that 48% of respondents preserved their catch for later with most respondents eating at least one meal of caught fish a month. Salmon was the favored finfish for consumption. All but one respondent had familiarity with the term subsistence, and many understood it as only take what you needed.

Demographics

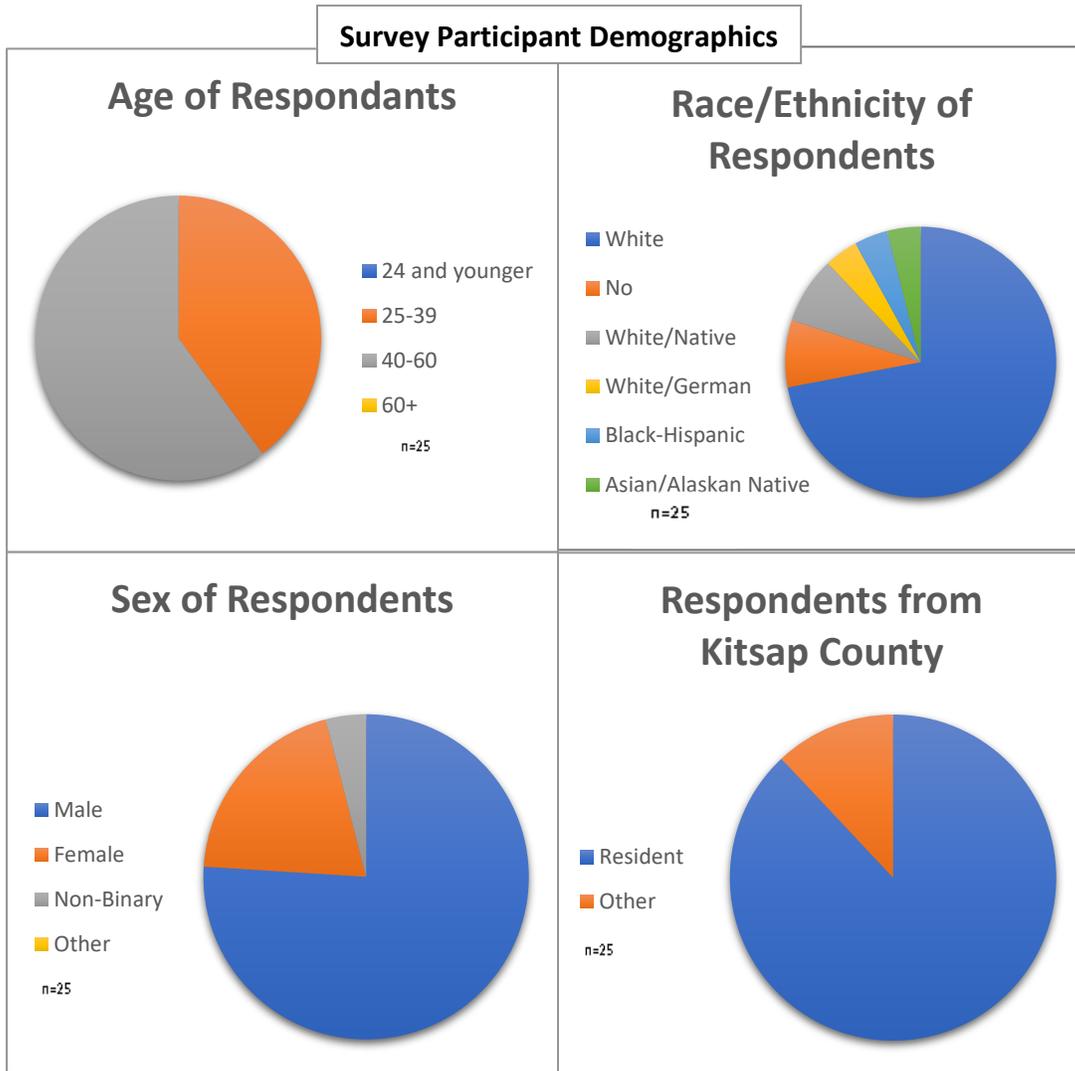


Figure 10: Upper Left age of Survey Respondents.

Figure 11: Upper Right Race/Ethnicity of Survey Respondents.

Figure 12: Lower Left Sex of Survey Respondents.

Figure 13: Lower Right Respondents from Kitsap County.

All respondents were between the ages of 25-60 with 60% falling between 40-60 and 40% between 25-39 as seen in figure 10. 72% of respondents self-identified as white, 8% had no race that they identified with, 8% identified as white/native, 4% identified as Asian/Alaskan native, 4% as Black-Hispanic, and 4% identified as white/German. The majority of respondents were male 76%, while 20% identified at female, and 4% identified as non-binary. 88% of respondents were residents of Kitsap County.

Respondents were from thirteen zip codes, ten of which were located in Kitsap County, one from Thurston County, one from Lewis County, and one from Snohomish County. In Kitsap

Kitsap Respondents with Zip Codes

Location of Fishing Pier



Respondent Zip Codes

Count

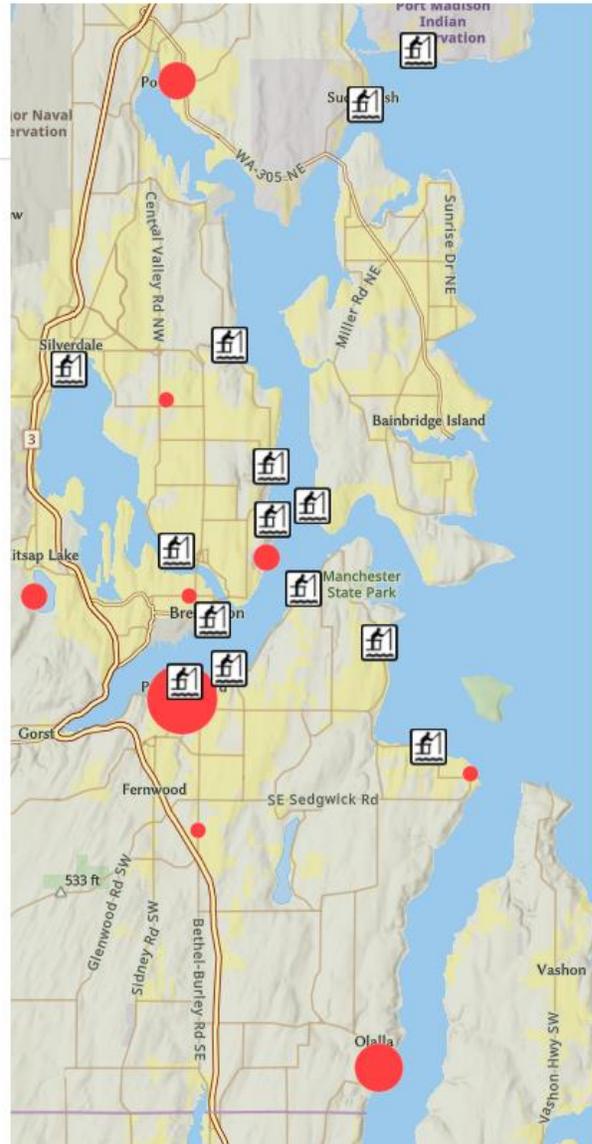
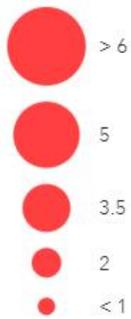


Figure 14: Survey sites with respondent zip codes. Map by: Robyn Dally

County seven respondents were from Port Orchard zip codes, five were from Bremerton zip codes, four were from Olalla zip codes, three were from Poulsbo zip codes, one was from a Gorst zip code, one was from a Manchester zip code, and one was from a Southworth zip code.

When asked about employment, 88% of respondents answered that they were employed full-time. Four percent said they were a student, and 4% defined their employment status as disabled. Finally, 8% marked their employment as “other,” with one filling in that they were a “stay-at-home mom,” and the other not providing an answer.

Fishing structure

The responses from the 14 sites as designated on the WDFW website in Kitsap County that were on this study are represented below. These structures are fishing piers that are either fixed or floating structures or a combination of these, that allow fishers to access water deeper water, mixed use piers follow the previously mentioned fixed, floating, or combination, then also have a boat ramp, launches for human powered vessels such as kayaks or paddle boards.

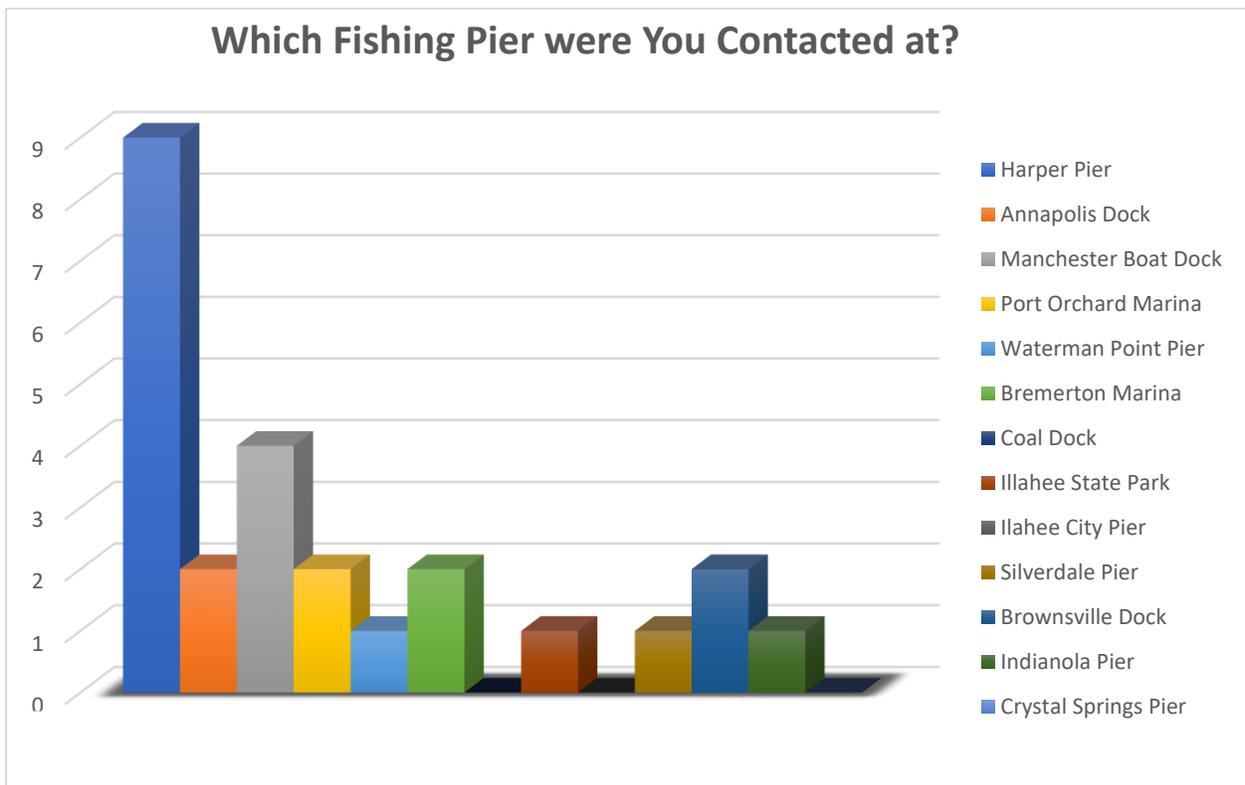


Figure 15: Pier at which respondents were contacted at.

Figure 15 displays that the fishing infrastructure that most respondents 36% were contacted through Harper Pier with Manchester Boat Dock coming in with the next largest response 16%. Annapolis Dock, Port Orchard Marina, Bremerton Marina, and Brownsville Dock each had a response of 8%. Waterman Point Pier, Illahee State Park, Silverdale Pier, and Indianola Pier each had 4% of the responses. There were no respondents from Coal Dock or Crystal Springs Pier.

Most of the respondents (86%) said they did not always fish at the same location. To follow up respondents were asked to select all of the other fishing infrastructures that they fish at. Harper Pier and Manchester Boat Dock were the top 2 alternate fishing locations (n=9) with an equal number of responses. Waterman Point Pier and Illahee State Park came next (n=8) responses for alternate fishing location. Bremerton Marina (n=6) was the next most popular alternate fishing location followed by Silverdale Pier and Brownsville Dock (n=5) with an equal number of responses as alternate fishing sites. Port Orchard Marina and Illahee City Park (n=4) followed with an equal number of responses as alternate fishing sites. Annapolis Dock (n=3), Indianola Pier (n=1) and Coal Dock (n=1) wrapped up the responses as an alternate fishing location. Crystal Springs Pier had 0 responses as an alternate fishing pier.

Respondents were asked “When you choose your fishing location, what helps you decide where to do your fishing?” Species (n=13) was the most popular answer with answers of “what is biting,” “what species is open,” “what I can catch,” as the most common. Looking for underwater structure, “underwater drop-offs,” “presence of bait,” and “deeper water” were other common answers. Accessibility (n=12) to not just home, but also jobsites, and when the pier is open were other answers was the next most popular theme. Within this group there were also those looking for areas with deeper water (n=2) to be able to fish for specific species of shellfish

(crab & squid). Several respondents (n=4) also discussed not wanting to be within “proximity” to many people.

Fishing

Respondents were asked about who taught them to fish. This question allowed respondents to choose multiple people. Most respondents either had their Father (n=13) or Grandfather (n=10) teach them how to fish. Teaching themselves how to fish (n=3) was the next most popular response as to how respondents learned how to fish. Grandmothers and friends (n=2) each gained an equal number of responses from the respondents and the last respondent learned to fish from their mother (n=1).

To follow up on how they learned to fish respondents were asked if they had taught anyone else to fish, and 76% of respondents said they taught someone else to fish. Who they taught to fish was most commonly their children (n=15) and friends (n=11) when asked to select all relationships they had taught to fish, with spouses (n=6) next, and siblings (n=1), pier regulars (n=1) and partners (n=1) finishing the list.

Consumption of fish

When asked what they did with their catch in a “choose all that apply” question, respondents most commonly reported that they preserved their catch for later (n=22). Consuming their catch the same day (n=21) and sharing (n=14) their catches were second and third most common. Using their catch for bait (n=10) was fourth on the list of how respondents used their catch. Finally, a few respondents sold (n=2) and traded their catch for other meats (n=1).

Respondents were asked to estimate how many meals of caught fish they ate, and 48% said they ate at least one meal a month of caught fish, 28% of respondents said at least one meal a week, 16% said at least one meal a year, and 8% said at least one meal every 6 months.

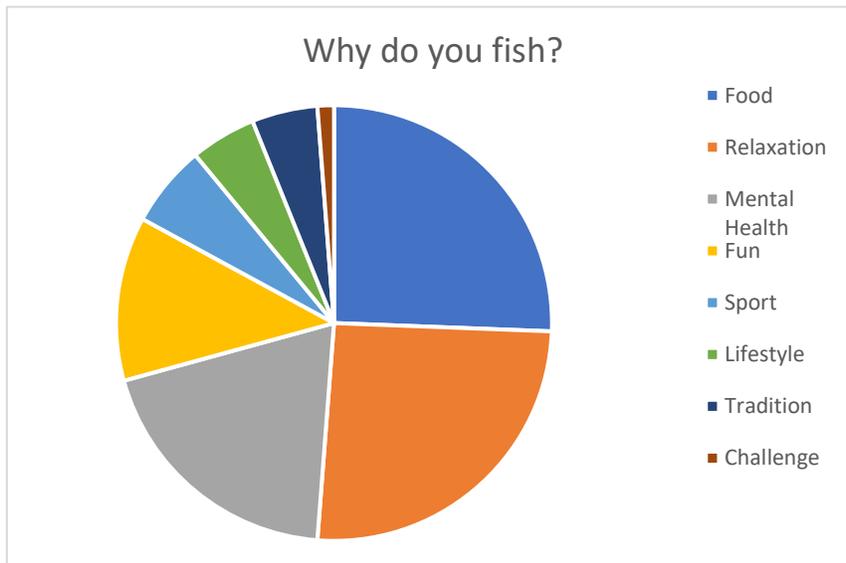
Respondents were then asked about in which season they ate more fish in a “select all question.” Most respondents selected summer (n=23), with fall (n=18) as the next most popular, followed by spring (n=7) and winter (n=5). To follow up on the how often and what seasons, respondents were asked what parts of the finfish they consumed in a select all applicable format. Respondents most frequently selected meat (n=21) as the part consumed. With equal numbers selecting roe (n=7), skin (n=7), bones (n=7), and whole fish (n=7).

Of the 25 respondents, 5 had family or cultural preparations/practices for the fish that were caught. Smoked salmon (n=2) was mentioned by of the respondents as their family tradition. Other respondents discussed family meals (n=2) including the local finfish or shellfish that they had caught. The last respondent declined to share their preparations/practices with me.

To finish the section on fish consumption respondents were asked about their favorite finfish & shellfish to consume in a fill-in-the-blank response. Salmon (n=16) was the largest response. An equal number of respondents put clams (n=8) and oysters (n=8) as the next popular response. Squid (n=7) came in as the fourth most popular response. Crab (n=5), flounder (n=5), and halibut (n=5) were tied for fifth most popular. Anything that is season (n=3) was sixth most popular. Finally, tuna (n=1), steelhead (n=1), sole (n=1), trout (n=1), mussels (n=1), and razor clams (n=1) were tied at eighth most popular finfish or shellfish to consume.

Subsistence Fishing

When asked directly if the respondents were familiar with the term “subsistence,” most respondents (96%) answered yes. To follow up, respondents were asked to define what subsistence means to them in a fill-in the blank style question. The most common theme was the need for food or feeding yourself or family, and 10 responses contained a reference in part or fully to this. Some example responses that highlight this theme are: “Fish to live,” “Harvesting of wild-sourced food to serve as primary or supplemental food source,” “Eating what you catch/capture,” and “Feeding yourself and family.” Another common theme was survival, and nine respondents mentioned survival or taking only what is needed to survive in part or as the whole of the response. Another theme was need (n=6), which addresses additional responses such as “taking only what is needed,” “using only what is needed,” or “having the basics of what



is needed to survive,” was another theme in these responses. Supporting oneself (n=2), living off the land (n=1) and ensure that you harvest cyclically (n=1) appeared less frequently in respondents’ definitions.

To partner with the above question, survey respondents were asked why they fished in a select-all applicable question. As shown in Figure 16, most commonly respondents fished for food (n=21) and relaxation (n=21). Mental Health (n=16) was the next most frequently answered

Figure 16: Responses for why respondents fish

reason for fishing, followed by fun (n=10), sport (n=5), lifestyle (n=4), tradition (n=4), and for the challenge (n=1).

Site review

When Ray Buckley and the Washington Department of Fish & Wildlife began the endeavor to create the fishing piers in the 1970's, a large part of the project was to create an area of comradery and access that the disappearing boathouse culture had left. However, the WDFW website has a gap in information, including exactly where these sites are and what type of amenities beyond a restroom you might find at the pier. To review how a fishing pier makes it on the WDFW Public Fishing Piers Page, the managing company of the pier needs to email their contact at WDFW and provide all of these details including open hours, amenities, ADA access status, lighting, railing, if the pier is good for squid jigging, if they have rest rooms. Then WDFW is responsible for updating the listing on their website. On the WDFW website each of the sites is noted as a map point, not as a street address, which can make it difficult to locate if you are unfamiliar or new to an area. The following section of the thesis provides this information and starts to collect mappable addresses for each of the fishing piers in order to ensure that the information on the WDFW is complete and correct.

Upon visiting each of the sites, notations of the theoretical street address that could be put into a navigation tool to get a fisher to the pier was noted as this was not provided on the WDFW website, if hours of the location were posted these have been recorded. Along with this who operates the pier, what parking is available, what ADA accommodations have been made are noted for each pier if it was noted as an ADA accessible pier on the WDFW website. In addition, if there are lights, restrooms or are there any local amenities such as coffee shops or tackle shops was also noted. Finally, a brief history, and points of interest for the site were also noted.

Harper Fishing Pier:

Harper Fishing Pier is located at 9833 SE Southworth Dr, Port Orchard, WA 98366. Hours of operation are from 5 am to 11pm daily, Port of Bremerton operates the pier. Parking for this pier



Figure 17: Looking South at Harper Fishing Pier. Photo By: Robyn L. Dally

is limited in the immediate area, but there is Harper Park which is operated by Kitsap County less than a quarter mile walk from the pier that provides ample off-street parking. Harper Pier does provide ADA accessibility in the form of lowered railings and no ramps to access the fishing area. I have not observed the kayak ramp in use and therefore have not been able to access its accessibility for ADA standard.



Figure 18: Fishing area of Harper Pier. Photo by: Robyn Dally

There are lights along the walkway of the pier and a porta potty. There is also a coffee shop that is occasionally open at the end of the pier called Audrey's Espresso.

Harper Pier was a Mosquito Fleet Dock in a former life, serving the hamlet of Harper, which had several stores, but was once home to a brick factory, The Harper Brick & Tile Company, which was known to produce one million bricks a month. This Pier is also the site of a Scuba Forest, has dock space for some small vessels, has access to waters both deep enough and in the right conditions for good crabbing and squidding. In the summer months there is a kayak and canoe float to launch vessels from as this pier is also part of the Kitsap Peninsula Water Trail, and the surrounding community uses the pier to swim.

Manchester Boat Dock:

Manchester Boat Dock is located at 8079 E. Main St, Manchester, WA 98353, and is operated by the Port of Manchester.



Figure 19: Manchester Boat Dock. Photo by: Robyn Dally

There is some street parking for this location as well as some lot parking for those that do not have a trailer and are not launching a boat. There is one handicapped trailer parking space, and ample trailer parking.

Launching a kayak is free, a daily launch fee is \$7 and an overnight fee is \$10 (MANCHESTER, n.d.). This fishing location is focused on those who are launching their boats, but they do allow, or more aptly there is no signage to prevent people from fishing from the piers. This site does have permanent bathrooms rather than port-a-potties. The Manchester Grille

is no longer in operation, there are no nearby coffee shops or gas stations, despite this location being a more urban setting.



Figure 20: Pomeroy Park as viewed from Manchester float dock. Photo by: Robyn Dally

There is a small park, Pomeroy Park, associated with this location. The park has a picnic area with one grill, and 8 picnic tables, along with one permanent pavilion. This location is also another former Mosquito Fleet Dock.

Waterman Point Pier

Waterman Point Pier is located at 4282 Beach Dr E, Port Orchard, WA 98366 and is operated by the Port of Waterman.



Figure 21: Waterman Point Pier. Photo by: Robyn Dally

This fixed pier has 1 handicapped parking spot and 11 other parking spaces. This fixed pier has ADA accessible fishing spaces at the end of the pier, where the rail has been lowered. There is one port-a-potty in the parking lot. Rod holders line the pier and picnic tables are located at the end of the pier. The walk out to the end is also lined with lights and there is paddle dock which is part of the Kitsap Peninsula Water Trail.

The Orchard Beach Improvement Company operate this pier. It was a Mosquito Fleet pier for runs on the steamer Advance between Seattle and Silverdale.

This is the first of the piers that is open for salmon fishing year round, specifically Chinook that are a minimum of 22" with a daily limit of 2, only one can be kept from August 1-September 15 (*Marine Area 10 - Washington Fishing*, n.d.) unless Emergency rules supersede.

Annapolis Dock

Annapolis Dock is located at 2067 Bay St, Port Orchard, WA 98366. This pier is operated by Kitsap Transit.



Figure 22: Annapolis Pier & Kitsap Fast Ferry Dock. Pre-Construction. January 2022. Photo by: Robyn Dally

The pier is, as of the time of this study, undergoing construction to become more ADA friendly for foot ferry passengers (Vosler, n.d.)- through the improvement of ramp grade and materials used for the pier.

There is ample parking, with several handicapped parking spaces, there is a daily \$5.00 parking charge. There is one porta potty at the site as well. There is no signage that prevents fishers from fishing.

This pier is currently a Kitsap Foot Ferry Terminal, and a former Mosquito Fleet stop.

Port Orchard Marina

This pier is located at 707 Sidney Parkway, Port Orchard, WA 98366, and is operated by the Port of Bremerton, Washington.

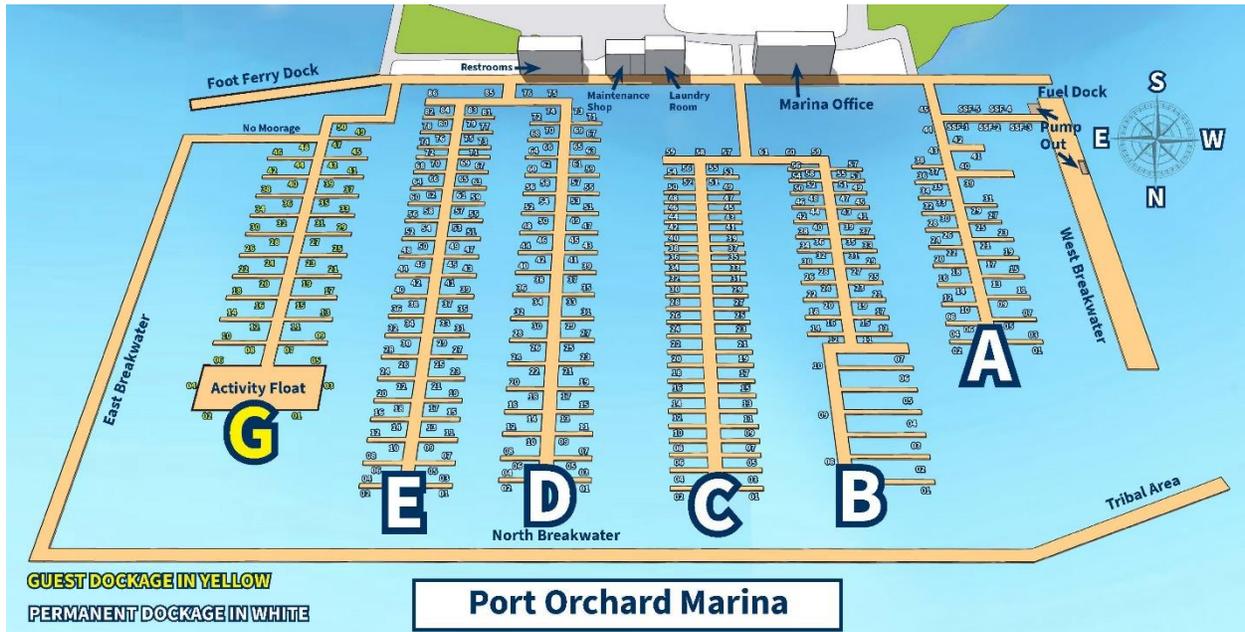


Figure 23: Port Orchard Marina Map, Fishing is allowed on the outer side of this breakwater. From: Portofbremerton.org.

There is ample parking provided for fishers as well as local businesses. There is a variety of coffee and food available. The Port Orchard Marina allows public fishing, squid jigging, and crabbing from the pier provided that fishers are courteous to the marina tenants and guest boaters, and follow the guidelines that they have provided.

Port of Bremerton has asked the fishers is to stay 10 feet away from boats on the docks, not to shine lights into boats, quiet time is 11:00pm, fishing is allowed only on the outside of the breakwater, and that they clean-up after themselves to include any ink sprayed or spilled on the dock from squid ink.

Bremerton Marina Public Dock

Bremerton Marina Public Dock is located at 120 Washington Beach Ave Bremerton, WA 98337. This pier is operated by the Port of Bremerton.

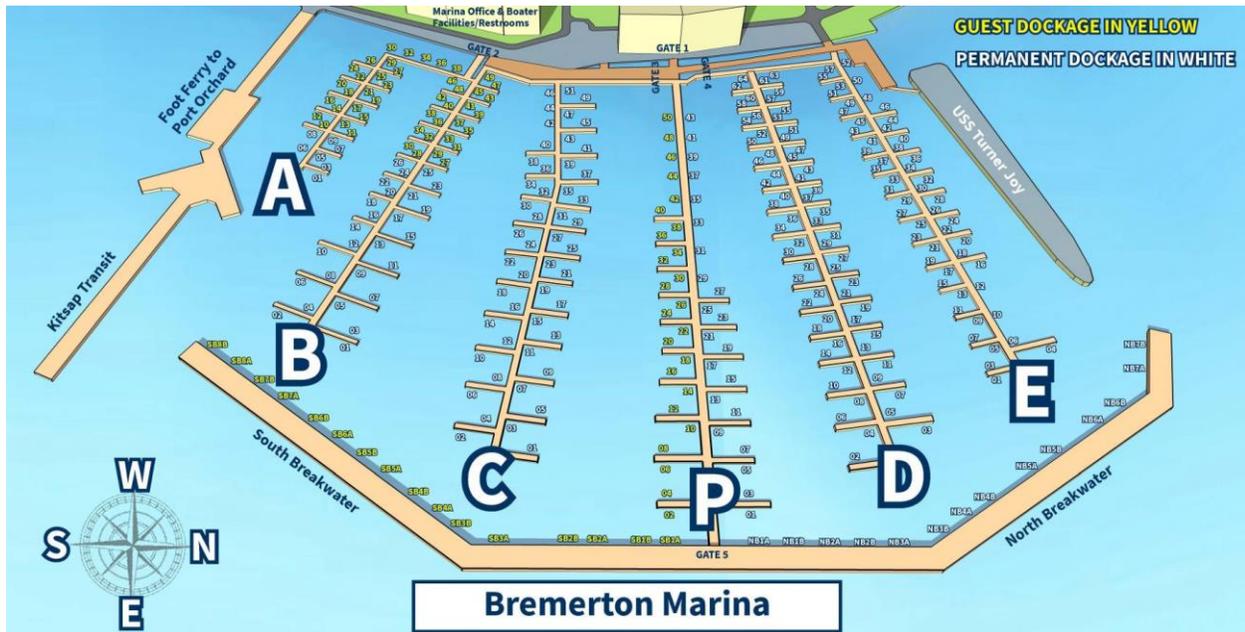


Figure 24: Bremerton Marina Public Dock Map. Fishing is allowed on the outside of the breakwater. From Portofbremerton.org

Due to current construction, there is limited street parking at present. However, there is some paid parking below the conference center. There is lighting along the pathway to the pier as well as low lighting along the pier, there is minimal lighting on the pier. To access the fishing pier a fisher must go to the P dock to fish along the outer breakwater. Fishing is allowed only on the outside of the breakwater from 7am to 10pm. As with Port of Bremerton's other assets, they allow public fishing, squid jigging, and crabbing from the pier provided that fishers are courteous to the marina tenants and guest boaters, and follow the guidelines that they have provided.

The closest restroom is on the promenade by the conference center, and is only open limited hours for safety reasons. There are lights on the walk to and from the breakwater. This pier also provides tables and grills on the breakwater during summer months.

This is the second of the piers that is open for salmon fishing year round, specifically chinook that are a minimum of 22” with a daily limit of 2, only one can be kept from August 1-September 15 (*Marine Area 10 - Washington Fishing*, n.d.) unless emergency rules supersede.

Coal Dock (Lion’s Community Park)



Figure 25: Disrepair of Coal Dock in Bremerton, WA. Photo by: Robyn Dally

Coal Dock is located at 251 Lebo Blvd, Bremerton, WA 98310. This facility is operated by the City of Bremerton.

Currently this pier is closed due to disrepair and does not show a project to repair the infrastructure. There has been no response to inquiries to find out if this pier is slated for repairs and if it will ever be open again.

Access is still available to the boat ramp. In addition to the

boat ramp there is shore fishing that can be easily accessed at this location. This location is part of a larger park in Bremerton that has a playground, several ballfields.

Illahee State Park Pier

This pier is located within the Illahee State Park at 3540 NE Sylvan Way, Bremerton, WA 98310. This facility is operated by the State of Washington.



Figure 25: Illahee State Park Pier with Boat Moorage. Photo By: Robyn Dally

This facility does have ample parking. There is no lighting along the pier. There is a boat ramp. There is a restroom facility that is open seasonally. There are several floating docks that can be accessed from the fixed pier to provide deeper water access. The beach at Illahee State Park is rich with oysters and some clams when opened. The State Park that houses and maintains this location does have campsites that are available to rent throughout the year. There are no full hook-up sites, but an RV dump and water fill are available for use.

This is the last of the piers that is open for salmon fishing year round, specifically chinook that are a minimum of 22” with a daily limit of 2, only one can be kept from August 1-September 15 (*Marine Area 10 - Washington Fishing*, n.d.) unless emergency rules supersede.

Illahee City Pier

This pier is located at 5510 Illahee Rd NE, Bremerton WA 98310. This facility is operated by the Port of Illahee.



Figure 27: View of Illahee City Pier, taken from the parking lot.
Photo by: Robyn Dally

This facility is located on a severe incline and has limited parking. The facility operates between sunrise and 10pm. There is minimal lighting along the pier. One port-a-potty is on site. There is a shoreside launch for human-powered vessels such as kayaks, paddleboards, and canoes.

The site this pier was built on was once the site of another Mosquito Fleet stop. As there were no roads to Illahee in the early 1900's, the ferry access to this dock was the only access the residents and resort-goers had to get to the small town of Illahee.

Brownsville Dock

This dock and marina are located at 9790 Ogle Rd NE, Bremerton, WA 98311. This facility is operated by the Port of Brownsville, WA.

This facility has ample parking 59 trailer spaces, 173 car spaces, 4 motorcycle spaces, and 9 handicapped spaces. There is minimal lighting along the pier. There are 2 boat ramps, which can be used for a \$6.00 daily launch fee or a \$60.00 annual fee. The public dock is open

from 8:30 am until 10 pm. They do have several options for restrooms, at the port office they have male and female restrooms, with showers which cost \$.25 for four minutes, and the Miniloo at the end of the east breakwater which has one unisex bathroom.



Figure 28: A view down the breakwater of Brownsville Marina. Fishing is allowed on the outside of the breakwater. Photo by: Robyn Dally

This pier has been around since 1920 and has been a recreational destination boaters and fishers since its beginning. Brownsville has 20 guest moorage spaces that accommodate vessels 24 ft and larger, 20 for vessels of 40 ft, and 550 linear feet of moorage space. There is a small shellfish beach to the north of the marina that is monitored by Washington State Department of Health.

Silverdale Pier

This pier is located at 3337 NW Byron Street, Silverdale, WA 98383. This facility is operated by Kitsap County.



Figure 29: Silverdale Pier & Boat Ramp. Photo by: Robyn Dally

This location was under construction for the duration of this study. Under normal circumstances it has ample parking including several handicap spaces. There is lighting along the pier. The restrooms are currently closed due to the construction, but under normal operations are open seasonally. The hours of operation are only during day light hours. There are several nearby restaurants.

The park that houses this pier includes a playground, picnic tables, picnic shelter, and a group BBQ. This location is also one end of the Clear Creek Trail System.

Indianola Pier

This pier is located at 19839 Indianola Rd NE, Indianola, WA 98342. This facility is operated by the Indianola Beach Improvement Club.



Figure 30: Indianola Fishing Pier. Photo by: Robyn Dally

This location does not provide parking. The pier is open from 6 am until 11 pm. There is no lighting along this pier. This location does not provide restroom facilities. The Indianola County Store is close to this pier.

This pier was originally built as a ferry pier 1916 as the only means to reach the community from Seattle. In its current form this pier was completed in 2016 with new pilings, decking and swim float ramp.

Suquamish Dock

This pier is located at 18408 Angeline Ave NE, Suquamish, WA 98392. This facility is operated by the Suquamish Tribe and Suquamish Foundation.



Figure 31: Suquamish Dock. Photo by: Robyn Dally

There is limited parking at this location. The hours of operation are Monday – Thursday 5 am until 10 pm and on Friday & Saturday from 5 am until 11 pm. There is no transient boat moorage at this dock. There are some lights along the walkway on the fixed portion of this pier. There are restrooms available nearby. There is a boat ramp at this location. Crabbing is an incredibly popular activity at this pier however, at the time of this study only Tribal Subsistence crabbing is permitted at the Suquamish pier.

There are several restaurants and Suquamish Tribe and Suquamish Foundation Cultural sites nearby that are of interest. Chief Seattle’s gravesite is near this location.

Crystal Springs Public Fishing Pier

This pier is located at 3992 Crystal Springs Dr NE, Bainbridge Island, WA 98110. This location is now known as Point White Pier. This facility is operated by Bainbridge Island Metro Park & Recreation District.



Figure 32: Point White Pier. Photo by: Robyn Dally

There is limited parking at this location, there are 11 primitive parking spaces with no designated handicapped spaces. No hours are posted for this fishing pier. There is no lighting at this pier. There are no restrooms available at this location. A concern with this facility is that it does have rails along the pier, but they are spaced such that young children are able to easily climb between them.

This location does offer kayak and stand-up paddleboard storage through Bainbridge Island Metro Park & Recreation Districts.

Discussion

The purpose of this study was to address the gap in the literature on the subsistence fishing within Kitsap County, Washington, to explore who is conducting subsistence fishing, and explore subsistence fishing's role in supporting economies, social well-being, culture, and livelihoods in Kitsap County. During the course of this study, I observed that there is a great deal of community connectedness to certain piers, specifically Harper Fishing Pier, especially when it comes to the topic of the Kitsap Fast Ferry.

Fishing structures

Harper Fishing Pier was the most popular of the piers surveyed with Crystal Springs and Coal Dock being the least popular. The community surrounding Harper Fishing Pier is engaged and heavily supports the fishing use of this pier. In addition, with the threat against it from Kitsap Transit, to use the pier as a maintenance facility for the Kitsap Fast Ferry Fleet, the community has been ensuring that the Kitsap voters understand that this is a pier that does get used. I believe this is one of the reasons I receive more responses from this particular pier. There is not much of a community surrounding the pier at Crystal Springs Pier, it would be a walk for someone to access this pier, which is a change from Harper Fishing Pier. This lack of walking accessibility, and the fact that this site is on a dead-end road with no good turn-around after the pier, could be a reason for this pier to be underutilized.

Ray Buckley and colleagues did well in focusing on creating piers that not only had the social aspects of fishing in mind but more importantly to the fishers in Kitsap County, easy accessibility as well as design components such as drop-offs, rock outcrops, and deeper waters. In addition, the site selections for many of these piers appear to overlap with areas that fishers

are able to select from a variety of finfish and shellfish throughout the year if there are open seasons for them.

Fishing

Fishing is a family activity and the findings for the questions in this section have emphasized that most fishing knowledge has been passed down through familial tradition, from father or grandfathers and less frequently from mother or grandmother. The original intent of the fishing pier was to learn from other fishers and replace the boathouse culture in Puget Sound. This mission does appear to be alive and strong in Kitsap County, as evidenced by respondents who reported learning to fish from other pier regulars. Of those that have taught pier regulars to fish, family or friends have taught the majority.

Fish consumption

With most respondents consuming their catch either the same day or preserving it for a later date, and more than half of the respondents consuming one meal a month or one meal a week of caught fish, we start to gain the sense that fishing for food is occurring within Kitsap County. These fishers represent low volume catches - they are not catching large enough numbers to negatively impact fish populations, and many of them discussed how they were concerned about over harvesting. As such they did not fish every day of a salmon season in order to ensure there was enough of the extremely limited quota to go around.

Subsistence Fishing

Many of the participants in this study have indicated that they do use their fish to feed themselves (n=21) and their families they do also participate in subsistence fishing to relax (n=21) or for their mental health (n=16). If we were to revisit Nieman et al. (2020) and their 6 definitions for subsistence fishing, Kitsap County fits most into the third “living close to the

resource.” This is higher than the findings in Ebbin’s (2017) study in Connecticut or Nieman et al (2020). In the Ebbin study (2017) 43% of the 47 respondents cited fishing for food as a motivation, and in Nieman et al (2020) 17 of the 80 respondents responded that they fished for food.

Based on the data analyzed in this thesis, the fishers of Kitsap are subsistence fishers. I found that respondents in my Kitsap County study had a higher-than-average population that fishes for food compared with other studies, and that 24 out of the 25 participants understood the term “subsistence” and many of them linked that understanding to food. The access to this food source and in particular the access to three piers that are open for salmonoid species year-round, may contribute to the specific act of fishing for food year-round.

As such it is critically important to keep these fishing accesses open in order to keep up with the demand of the pier fisher. Removing even one of these piers--even in part, would severely impact the subsistence fishers within Kitsap County. These piers provide areas to fish that are not otherwise accessible from shore and allow for a wider variety of fish to be caught due to the depth and structure that the piers provide.

Conclusion

This thesis presents a survey of Kitsap County subsistence fishing. The results contribute to the body of knowledge on non-indigenous subsistence fishing activities in the United States by beginning to identify and quantify the subsistence fishers within Kitsap County and Washington State. Additionally, it adds to the literature on the social, economic, and cultural characteristics of individuals who fish for food while accessing fishing infrastructure. The results of this study have begun to address a gap and characterize the fishers of Kitsap County.

There is a gap in the Washington Department of Fish and Wildlife's (WDFW) understanding of how Kitsap County residents and Washington residents are utilizing the fish they catch, in addition to a gap in knowledge about how the piers are being used. In similar studies (Ebbin, 2017; Nieman et al., 2021) Connecticut and North Carolina provide limited access to subsistence fishing licenses. In Washington State subsistence fishers are handled the same way as recreational/sport fishers, who are defined as personal-use fishers (*WAC 220-300-170*; n.d.). A personal-use fisher is someone who takes food fish or shellfish for personal use by angling or other means within the gear and limits prescribed by the director, not for sale or barter. The definition has limited how fishers are able to use their catches. Under the current definition of personal-use, fisher sale and barter are illegal. This conflicts not only with the usage that is seen in Kitsap County, but also with the developing definition of subsistence fishing. This gap must be corrected along with the definitions that exist within the laws to begin changes for Washington state fishers as it does not allow for true non-indigenous subsistence fishing to occur within the state.

The findings from this study show insights into a population that has been grossly unstudied, particularly in Washington State. It has shown the value of the WDFW fishing piers

in Kitsap County and the benefits that fishers derive from the access to these piers including fishing for food, mental health, relaxation, and fun. Future research could be done at the additional boat ramps, shore accesses, and fishing points in Kitsap County, which could build from the results of this thesis and further close the gap in knowledge about subsistence fishing in Washington State and elsewhere, as well as help increase the knowledge, impacts, and access for all those who are involved in subsistence fishing.

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Appendix A



To: Robyn Lea Dally
From: Mike Crow, IRB Chair
CC: Shawn Hazboun
Date: March 2, 2022
RE: IRB Request for Review Protocol
IRB Protocol #: 22-001-A1
Protocol Title: Fishing for Food: Exploring the Subsistence Fishing Harvests of Kitsap County, Washington?"

Thank you for submitting your research protocol amendment for human subjects review. Your protocol amendment has been approved as Human Subjects Research. We have reviewed this request and find that it meets the IRB's criteria for protection of human participants in accordance to the federal regulations 45 CFR 46. You are free to begin your research under the amended protocol.

Please note that if there are further changes to the research design or data that is to be collected, you will need to notify the MPA program's human subjects review chair so the changes can be reviewed prior to your implementation of the changes.

Best of luck with your study.

Appendix B

Survey Instrument

Thank you for participating in this survey on subsistence fishing. The purpose of this research is to explore the who is conducting subsistence fishing and to explore subsistence fishing's role in supporting economies, social wellbeing, culture, and livelihoods in Kitsap County. This survey will not contain any identifying information about yourself beyond basic demographic information and a zip code to help determine utilization for the pier. Please be aware that you may stop at any time, if you are uncomfortable answering any of the questions I ask please let me know we can skip certain questions. The data collected is solely for my research and Master's thesis aimed at understanding the who are and the needs of the subsistence fishers. If you have any questions regarding this research I can be reached at Robyn.Dally@evergreen.edu. By clicking yes you consent to starting this survey

Which of fishing infrastructure were you contacted at?

What is your home zip code, to help track distances traveled to piers?

Who taught you to fish?

Have you taught anyone to fish?

If yes, who?

Why do you fish?

What do you do with your catch?

Do you always fish at this location?

What other piers or locations do you fish at?

Do you have any Family or Cultural preparations/practices for fish that are caught? Traditional recipes, Thanks ceremonies, restrictions on fish being used.

If yes, would you share what those beliefs are?

How many meals of caught finfish, shellfish or other do you consume?

Which seasons do you eat more fish?

When consuming your finfish catch which parts do you use?

What are your favorite Finfish & Shellfish to consume?

If you share your catch who do you share it with?

Are you familiar with the term subsistence?

what does it mean to you?

When you choose your fishing location, what helps you decide where to do your fishing?

Do you have anything additional you think I need to know about fishing or this pier?

To finish this survey, I would like to collect some demographic data to create a whole picture of who is utilizing the fishing infrastructures in Kitsap county. Please let me know if you do not wish to answer any of these questions.

What age are you?

Which gender do you identify with?

Do you identify with a particular race?

What is your employment status?

Are you a Kitsap County Resident?

Do you have a religion you identify with?

What is the primary language spoken at home?

What is the secondary language spoken at home? If there is one?
