

Rural is not a proxy: Accounting for Indigenous participation in Bristol Bay salmon fisheries

Rachel Donkersloot ^{a,*}, Andria Agli ^b

^a Coastal Cultures Research LLC, PO Box 163, Aniak, AK 99557, USA

^b Bristol Bay Native Corporation, 111 West 16th Avenue, Suite 400, Anchorage, AK 99501, USA

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ABSTRACT

The rise in attention to equity as a goal in fisheries management has revealed a dearth of data related to how certain communities and groups participate in, rely on, and may be impacted by fishery management decisions. Lack of data on impacts to Tribal and Indigenous participants and other underserved communities have been identified as a primary barrier to assessing and improving equity considerations in fishery governance. Data on fishery participation trends, including who benefits from fisheries, is essential to determining if and how fishery management and decision-making are achieving desired management objectives such as providing for intergenerational access and preserving a way of life. Understanding changes in participation trends is also critical for developing effective conservation solutions. In Alaska salmon fisheries, shifts in permit holdings are generally categorized by the residency of permit holders. This means that little is known about how Alaska Native participation, as well as women's participation, in Alaska commercial fisheries has changed over time. This paper presents a case study on local salmon permit holdings in the Bristol Bay region of southwest Alaska. We discuss the consequences of conflating rural with Alaska Native in data-driven decision-making, and highlight the ways in which official fishery statistics can mask past and ongoing harms to Indigenous communities and peoples. We situate this study in the broader science-policy arena of state and federal fishery governance and data collection efforts that often render invisible impacts to Indigenous communities and livelihoods.

1. Introduction

The rise in attention to equity as a goal in fisheries management has revealed a dearth of data related to how certain communities and groups participate in, rely on, and may be impacted by fishery management decisions. Lack of data on impacts to Tribal and Indigenous participants and communities and other underserved communities have been identified as a primary barrier to assessing and improving equity considerations in fishery governance [1–3,5,9–11].

Data on fishery participation trends, including who benefits from fisheries, is essential to determining if and how fishery management and decision-making are achieving desired management objectives such as providing for intergenerational access, preserving a way of life, protecting fleet diversity and small-scale operations, and accounting for community dependence on fisheries [18]. Understanding changes in these trends is also critical for developing effective and equitable conservation solutions [13,14,22,24,32,33,35,38,40,41] and assessing impacts to fishing community and livelihood sustainability. For example,

Watson et al. [44] analyze how and where Alaska fishing dollars circulate and multiply noting that commercial fishery benefits primarily accrue where permit holders live. The authors found that every dollar earned by a fisherman generates an additional 0.50 cents in revenue in their home community compared to only 0.07 cents in the port community where fish are landed (ibid.). Such findings reenergize long-standing debates in the State of Alaska spurred by decades of research documenting a large loss of commercial fishery permit holdings in many rural and Alaska Native fishing villages since implementation of a limited entry system nearly 50 years ago [9,15,28–30,34,36,37].

Data and debates on who does and does not benefit from Alaska fisheries management tends to focus on the geographic distribution of permit holdings. The State of Alaska's Commercial Fisheries Entry Commission (CFEC) tracks who participates in Alaska fisheries as permit holders by defined residency categories. A limited entry permit can be held by an individual that lives in an Alaska rural or urban community that is local or nonlocal to a fishery as well as nonresidents of the State. CFEC also reports on aging patterns in state managed fisheries.

* Corresponding author.

E-mail addresses: rachel@coastalculturesresearch.com (R. Donkersloot), aagli@bbnc.net (A. Agli).

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This paper presents a case study on local salmon permit holdings in the Bristol Bay region of southwest Alaska. In this paper, we examine the ways in which official fishery statistics can mask past and ongoing harms to Indigenous communities and citizens in Bristol Bay. We situate this study in the broader science-policy arena of state and federal fishery governance and data collection efforts that often render invisible impacts to Indigenous communities and livelihoods.

2. What we know about the impacts of Alaska's limited entry system

Passage of Alaska's Limited Entry Act in 1973 (AS 16.43) created the largest limited entry program of its kind in the United States. The designers of Alaska's limited entry program intended for the program to support a "stable economic base in the relatively isolated fishing communities where fisheries occur" ([24]:2). A key objective of Limited Entry was to keep fishing rights in the hands of people who depend on fisheries [26].¹ One of the greatest concerns with the program design was how the creation of freely transferable permits might impact rural and Alaska Native fishing communities and livelihoods.²

Limited Entry transformed Alaska fisheries and fishing communities. The impacts of limiting entry were quickly apparent and have been documented across multiple fishing regions including Southeast, Kodiak Archipelago, and Bristol Bay (see SASAP n.d.; see also [7,17,24,28,29,31,34,36]). The large loss of permit holdings in many rural and Alaska Native fishing communities runs counter to a key goal of Alaska's Limited Entry Act which sought to keep fishing rights in the hands of Alaskans dependent on fisheries, especially rural residents with limited alternative economic opportunities (Alaska Constitution VIII:15; see also [26]). This paper does not discuss in great detail the social, cultural, and economic dimensions and incompatibilities contributing to limited entry's failure to account for rural and Alaska Native fishing livelihoods and ways of life. These have already been extensively documented and tend to show how rural fishermen face both higher barriers to entry and greater pressure to sell when compared to urban fishermen due to financial and capital constraints [11,19,29,31,34–36,39].

Efforts to improve local/rural access in Alaska fisheries have had limited success and include fishery regulatory changes, education and training programs, and fishery loan and grant programs (see [14,15,19]; Ruby 2016). Alaska's State Constitution includes equal access clauses (Article VII Section 3, 15, and 17) that prevent the kinds of solutions that have worked well in other states and nations that have sought to mitigate similar impacts following introduction of limited entry and catch share management systems.

Alaska's Limited Entry System is somewhat exceptional because it required amending the State Constitution in a rare program-specific authorization.³ Limiting entry was motivated by salmon crises in the 1960s marked by poor salmon returns, declining ex-vessel revenues, and a rising number of nonresident fishermen. Despite the program's intentions, Limited Entry is a good example of the ways in which conservation solutions or top-down management measures can negatively impact local and Indigenous communities (Dawson et al., 2021). To

date, numerous legal challenges and court decisions have resulted in only minor modifications to the program.

This paper builds on existing scholarship to highlight management impacts and inequities often eclipsed by data collection and classification that limits categorization of fishery participation trends to rural/urban and local/nonlocal. A single analysis of Alaska Native participation in Alaska fisheries was undertaken by the State of Alaska in the early 1980s. Kamali's [24] study was conducted at a time of high interest in understanding the impacts of creating transferable permits. It provides an early indication of an entrenched problem that remains largely unaddressed at the state-level (see [15] for review of State programs intended to support rural fishery participation). Kamali [24] notes that by 1983 there were 288 fewer Bristol Bay salmon permits held by Alaska Natives in the region than in 1975, a 21 % decline.⁴

Similar to Alaska Native permit holdings, CFEC does not systematically collect or publish data on women's participation in Alaska fisheries. In the sections below we argue that attention to changes in the geographic distribution of permit holdings (and related aging trends tracked by CFEC) is integral to sustainable fisheries management, but limiting official fishery statistics to these variables conceals impacts that are critical to assessing trade-offs and improving fishery policy design and outcomes.

3. Objectives

This paper examines changes in Bristol Bay salmon permit holdings among shareholders of the Bristol Bay Native Corporation (BBNC) between 1980 and 2019. We use BBNC shareholder participation in Bristol Bay salmon fisheries as a proxy for Alaska Native participation. We explain why this analysis is limited to BBNC shareholder status rather than all Alaska Natives in Section 4.0.

The Bristol Bay Native Corporation (BBNC) was created under the Alaska Native Claims Settlement Act (ANCSA). Passed by Congress in 1971, ANCSA extinguished aboriginal land claims in the State of Alaska. As part of the settlement, ANCSA created 13 for-profit regional Native corporations (12 in Alaska and one in the Lower 48), and over 200 village corporations. BBNC is the Bristol Bay region's for-profit regional corporation. Region and village-level corporate entities were created to distribute the cash compensation of \$962.5 million for lands lost as part of the settlement. Alaska Natives born before December 18, 1971 became shareholders of their regional and village corporations. Those born after this date did not receive ANCSA stock but are eligible to inherit stock from current shareholders.

ANCSA recognized 44 million acres of Indigenous land title. BBNC's land selections under ANCSA totaled more than 3 million acres and represents roughly 11 % of land in the Bristol Bay region.⁵ BBNC land selections under ANCSA prioritized lands of high subsistence and cultural value, as well as continuity of lands adjacent to the region's prolific salmon bearing river systems.

This analysis focuses on BBNC shareholder participation in Bristol Bay salmon fisheries. We investigate how key variables interrelate with trends in permit holdings to more fully account for how Limited Entry impacts community-based and Alaska Native participation in commercial salmon fisheries in Bristol Bay. Specifically, we examine change in

¹ It tried to achieve this goal by considering the degree of hardship someone would suffer if they did not receive a permit through initial allocation (i.e., a hardship ranking system).

² Transferable limited entry permits can be gifted, inherited, and/or bought and sold on the open market.

³ Alaska's Limited Entry System required amending [amendment in italics below] the State Constitution in 1972. Article VIII Section 15 reads: No Exclusive Right of Fishery - No exclusive right or special privilege of fishery shall be created or authorized in the natural waters of the State. *This section does not restrict the power of the State to limit entry into any fishery for purposes of resource conservation, to prevent economic distress among fishermen and those dependent upon them for a livelihood and to promote the efficient development of aquaculture in the state.*

⁴ This includes a 24 % decline in setnet permits held by Alaska Natives ($n = 137$), and a 19 % decline in drift permits ($n = 151$) (ibid.). Bristol Bay represented the largest absolute drop in number of Alaska Native permit holders in the State at the time. This is in part explained by the large number of limited entry permits issued in Bristol Bay salmon fisheries compared to other Alaska fisheries. In 1975, a total of 1875 salmon drift (S03T) permits and 1041 salmon setnet (S04T) permits were issued ([12]; [19]:8 for how this compares to other Alaska salmon fisheries).

⁵ <https://www.bbnc.net/our-corporation/land/maps/> Accessed September 4, 2022

salmon permit holdings between 1980 and 2019 in relation to:

- shareholder status (i.e., BBNC shareholder vs. non-shareholder)
- residency of shareholder (i.e., BBNC shareholders and non-shareholders that live in-region vs. outside of the Bristol Bay region)
- gender

4. Methods

Primary data sources for this analysis are CFEC's Public Permit Database and BBNC's confidential shareholder database. To address data constraints related to confidentiality (e.g., limited access to personally identifiable information (PII)), we employed the following methods.

CFEC's public fishery permit database is available online at <https://www.cfec.state.ak.us>. As a first step, we used the public search application tool of the CFEC permit database to select and sort permit files for the Bristol Bay salmon drift gillnet fishery (S03T) and Bristol Bay salmon set gillnet fishery (S04T) for the years 1980 and 2019. For our purposes, only permanent and interim permits with a status of 'permit holder' were selected. Permits with a status of 'temporary permit holders through emergency transfers,' 'permit canceled,' and 'permit holder, permanently transferred permit away' were removed.⁶ To improve data quality, permit files were reviewed for duplicate files and/or errors to ensure that each permit – identified by a unique permit serial number – was not listed more than once per year in our dataset.

CFEC permit files for the years 1980 and 2019 were then cross-referenced with BBNC's confidential shareholder member database for the same years. Kamali's [24] report, *Alaska Natives and Limited Fisheries in Alaska*, relied on CFEC's authorized use of the Bureau of Indian Affairs (BIA) Alaska Native roll. This allowed CFEC to match CFEC permit holders with BIA records using confidential PII, including an individuals' social security number (SSN) and date of birth (DOB). We did not have access to a permit holders' SSN or DOB for this analysis. To address these confidentiality restrictions, we relied on publicly available PII of permit holders including: primarily full name (first name, middle initial, last name and suffix), and secondarily, mailing addresses. This information was then matched with BBNC records for the selected years. BBNC records are also confidential. Members of our team that did not have existing permissions to access these records signed nondisclosure agreements in order to view shareholder data. Table 1 shows the total number of setnet and drift permits included in this analysis as matched files.

A two-step data quality review process was performed by members of our team with a deep knowledge of both commercial fishing family histories in Bristol Bay and the BBNC shareholder database. This high level of familiarity allowed our team to match files based on full name and mailing address with a high level of accuracy. It is quite common among Alaska Natives in the region for given names to be passed down within families. Close attention was given to middle initials, middle names, and suffixes (e.g., Jr. and Sr.) when reviewing data for errors or other issues. Files were also reviewed to identify potential missed

matches and resolve data quality issues around name changes, intermittent use of nicknames (e.g., James versus Jimmy), and typos, especially misplaced or missing apostrophes in select files (e.g., OConnor versus O'Connor). This review process helped to improve the accuracy of matched files however we present findings here with a note of caution. Both the CFEC Public Permit Database and the BBNC shareholder database have undergone changes since 1980 potentially leading to some missed matches. It is also important to note that Alaska Natives who are not BBNC shareholders are identified as non-shareholders for the purpose of this analysis. This includes descendants of shareholders. As such, data presented here represents permit holdings among BBNC shareholders and not all Alaska Natives holding permits in Bristol Bay salmon fisheries.⁷ Lastly, in-region permit counts presented below include some BBNC communities that are classified as nonlocal to Bristol Bay fisheries by the CFEC (e.g., Chignik Bay, Chignik Lake, etc.). There was only one permit holder to apply this designation to, but we note the difference here. With these caveats in mind, we present findings below to highlight trends in Bristol Bay salmon fisheries that deserve greater exploration and attention within both the public and policy arena.

This paper also analyzes data on women's participation in Bristol Bay salmon fisheries. The gender of BBNC shareholders is identified through the BBNC shareholder database. Gender was matched to non-shareholders by the permit holder's first name using Ablebits software to predict the gender probability of a first name.

5. Bristol Bay overview

The Bristol Bay region is home to more than 7000 people (ADWLD 2021) and the largest and most valuable wild salmon fishery in the world. Roughly 77 % of the population identifies as Alaska Native (ibid.) of Yup'ik, Dena'ina Athabascan, and Alutiiq descent, and belong to one of the 31 federally recognized Tribes in the region.

The historical and contemporary significance of commercial and subsistence salmon fishing in the region is well-documented (Borass and Knott 2013; [27]). Subsistence salmon harvests in Bristol Bay are some of the highest in the state with smaller villages harvesting an estimated 426 pounds per person from the 1980s to 2000s ([22]:2, see also [20]).

The commercial fishing economy is predominantly single-resource dependent, with cash income and employment in harvesting, processing, and related sectors largely reliant on an intense 6-to-8-week season revolving around the annual return of sockeye salmon.

The commercial sockeye fishery includes two gear types; set gillnets and drift gillnets. Setnetting is operated from shore with both ends of the net anchored (one end of the net is anchored onshore above the high tide line). The drift fishery takes place from vessels that are required by regulation to be less than 32 feet in length overall. The report, *The Struggle for Equity: Resident Participation in the Bristol Bay Commercial Fishery*, further describes how Alaska Natives were historically excluded from participating in the drift fishery (BBEDC 2009). The setnet fishery has historically had a higher percentage of local participation than the drift fishery which requires higher investments in capital and technology. Lavoie et al. (2019) note the high level of engagement by women in the 'family-oriented' setnet fishery in Bristol Bay (see also [31]). Prior to Statehood, federal regulations established in 1938 restricted setnetting exclusively to Bristol Bay residents due to the importance of setnetting to local families and communities in the region. This type of exclusive access would be deemed unconstitutional today due to equal access clauses outlined in Article VII of the State Constitution.

Bristol Bay residents have the lowest average earnings per permit fished compared to nonlocal and nonresident permit holders ([27]:121).

Table 1
Total number of matched files by fishery and year.

Fishery	1980	2019
Setnet (S04T)	935	985
Drift (S03T)	1803	1887

⁶ An interim-use permit allows an individual to fish in a limited fishery on an interim basis. For example, while waiting for their limited entry permit to be issued and/or denied.

⁷ BBNC is in the process of creating a database of shareholder descendants, but it is incomplete at the time of writing. Our preliminary review of data drawn on in this analysis suggests that less than a dozen shareholder descendants held Bristol Bay salmon permits in 2019.

These operations are often referred to as 'inefficient' in economic thinking. Donkersloot [19] summarizes ethnographic studies that provide a more nuanced understanding of local fishing practices including the tendency for some Alaska Native fishermen to approach fishing as a 'livelihood practice' versus profit-maximizing endeavor (BBEDC 2009; [8,17,18]; Stariwat 2008; [34]). As a livelihood practice, the goal is 'needs based' in that one does not desire to harvest as much as possible, but rather to harvest what one needs to "obtain a sufficient livelihood to maintain their village existence ([30])." Local vessels participating in Bristol Bay salmon drift fishery tend to be smaller scale and less capitalized than nonlocal vessels (Gho 2020; [27]). The commercial salmon fishery represents the primary private source of cash employment in the region.

Since limiting entry, local permit holdings in the Bristol Bay region have declined by 50 % [16]. Donkersloot [19] notes that local permit holdings in the setnet fishery declined by 48 % between 1975 and 2019, from 63 % to 36 % of the total number of permits. Local permit holdings in the drift fishery declined by 53 %, from 38 % to 18 % of the total number of permits.

6. Results and discussion

This section presents findings on shareholder status, residency, and gender in relation to salmon setnet and driftnet permit holdings. Data on change in permit holdings between 1980 and 2019 is presented as both percentages and actual numbers to provide a more accurate depiction of the degree of change in permit holdings within select categories. In some cases, a 25 % decline may signify the loss of nearly 150 permits while in others a 25 % decline represents 25 permits.

6.1. BBNC shareholder status and fishery participation

Overall, BBNC shareholder permit holdings declined by 38 % between 1980 and 2019 (-431 permits). In 1980, BBNC shareholders accounted for 42 % of all setnet and drift permit holdings. In 2019, BBNC shareholders held 25 % of all setnet and drift permits.

Fig. 1 shows change in setnet permit holdings in relation to BBNC shareholder status. BBNC shareholders held more than half (roughly 54 %) of all setnet permits in 1980 (507 out of 935). In 2019, shareholders held 37 % of setnet permits (367 out of 985). Between 1980 and 2019, setnet permit holdings among non-shareholders increased by 44 %, from 428 to 618 permits. Fig. 2 shows change in drift permit holdings in relation to BBNC shareholder status. BBNC shareholders held 35 % of all salmon drift permits in 1980 (640 out of 1803). By 2019, shareholder permit holdings had declined by -291 permits to account for 18 % of all drift permits. This represents a 45 % decline in the number of drift permits held by shareholders. Non-shareholder drift permit holdings increased by 32 % (375 permits).

6.2. BBNC shareholder residency in relation to fishery participation

This section examines change in salmon permit holdings in relation to BBNC shareholder status and residency, i.e., whether a shareholder lives in or outside of the Bristol Bay region. The majority of locally held setnet permits in the Bristol Bay region are held by BBNC shareholders. In 1980, BBNC shareholders held 81 % (435 out of 538) of locally held setnet permits. In 2019, BBNC shareholders held 75 % (268 out of 360) of all locally held setnet permits (see Fig. 3). The majority of locally held drift permits are also held by BBNC shareholders, 84 % in 1980 and 76 % in 2019 (see Fig. 4).

Between 1980 and 2019, setnet permits held by BBNC shareholders living in-region declined by 38 % (-167 permits) (see Fig. 3). Nonlocal shareholders experienced a slight gain of 27 permits (an increase from 72 to 99 permits or 38 %). This gain is likely the result of shareholders moving out of region and taking their permits with them. Local non-shareholders experienced a decline of -11 setnet permits (11 %

decline, or 103 to 92 permits). Nonlocal non-shareholders experienced a gain of 201 permits, a 62 % increase in setnet permit holdings.

Between 1980 and 2019, drift permits held by BBNC shareholders living in-region declined by 54 %, a loss of -303 permits (see Fig. 4). Similar to trends in the setnet fishery, nonlocal shareholders experienced a small increase of 12 drift permits (74 to 86 permits or 16 %). Drift permit holdings among local non-shareholders experienced a decline of -24 permits (106 to 82 permits or -23 %). Nonlocal non-shareholders experienced the greatest increase in drift permit holdings, a gain of 399 permits representing a 38 % increase. Overall, setnet and drift permits held by BBNC shareholders living in-region declined -47 % (from 1001 to 531 permits).

Data described above indicate that the loss of rural local permit holdings in Bristol Bay salmon fisheries is largely the loss of Alaska Native permit holdings. Generally, we see similar trends in the setnet and drift fishery, notably large declines in permit holdings among local shareholders as permit holdings among nonlocal non-shareholders increase.⁸ It is noteworthy that 94 % of setnet permits lost from the region between 1980 and 2019 were held by BBNC shareholders (167 out of 178). BBNC shareholders account for 93 % of drift permits lost from the region.

6.3. Women's participation in Bristol Bay salmon fisheries

In 1980, 57 % of all setnet permits were held by women. By 2019, the proportion of setnet permits held by women had dropped to 35 %. This decline stems from the loss of setnet permits holdings among women shareholders. In 1980, women shareholders held 67 % of the setnet permits held by women. Fig. 5 shows that setnet permits held by women shareholders declined by -179 permits between 1980 and 2019 representing a 50 % decline. Setnet permit holdings among women non-shareholders remained steady with a loss of -2 permits (174 to 172 permits). Overall, men's share of setnet permit holdings increased with the greatest gains among men non-shareholders who experienced a 76 % increase in setnet permit holdings between 1980 and 2019 (254 to 446 permits).

Fig. 6 shows change in drift permit holdings in relation to shareholder status and gender. Of particular interest here is the large decrease of 275 drift permits (-47 %) among men shareholders in relation to increases among both women and men non-shareholders. Women non-shareholders saw an increase of 98 drift permits. This represents a 223 % increase. Men non-shareholders experienced a 25 % increase of 227 permits.

The gendered dimensions of change in permit holdings was somewhat expected but the degree of loss among women shareholder permit holdings in the setnet fishery was alarming in part because the Bristol Bay setnet fishery is well cited as a prominent example of women's role and visibility in commercial fisheries (Lavoie et al., 2017). Fishery management systems affect men and women differently yet these

⁸ Our analysis does not examine how permits leave the region, e.g., whether change in permit holdings is the result of permit transfers/sale, migration of permit holder, or permit cancellation, but it is worth noting here that the large loss of locally held permits in the Bristol Bay drift fishery is primarily due to permit transfers. Between 1975 and 2019, permit transfers account for a net change of -301 locally held drift permits while migration accounts for a net change of -83 permits [12]. In the setnet fishery, permit transfers account for a net change of -131 locally held permits while migration accounts for a net change of -154 locally held permits in this timeframe (ibid.). To a lesser degree, local permit holdings in the setnet fishery are also affected by permit cancellations. Between 1975 and 2019, 34 locally held setnet permits were canceled, more than double the amount of permit cancellations for other residency categories in this period [12]. This is likely due to the larger portion of nontransferable setnet permits issued to locals compared to other residency categories [12,19] for review of criteria used to determine whether an individual was issued a transferable or nontransferable permit in the setnet fishery.

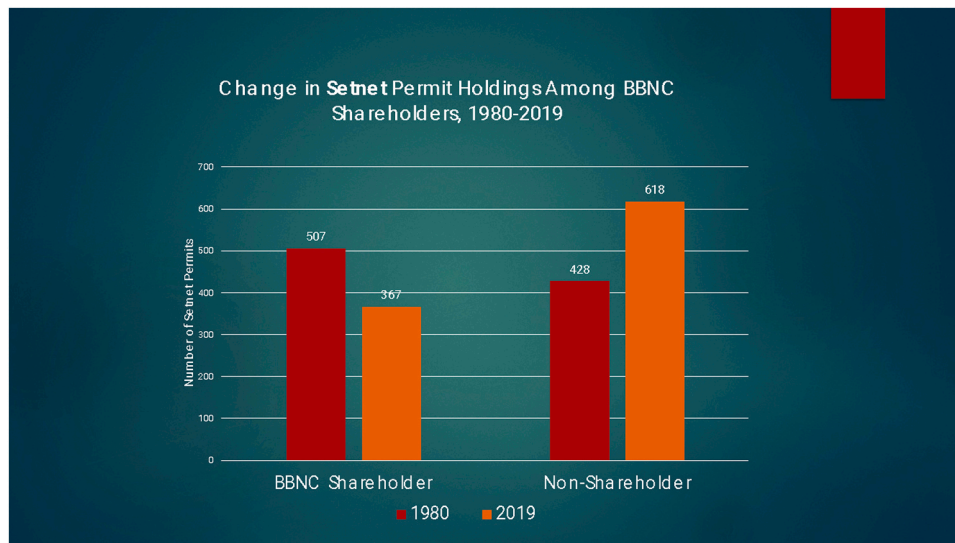


Fig. 1. Change in setnet permit holdings among BBNC shareholders between 1980 (in red) and 2019 (in orange). This includes all shareholders regardless of where they reside.

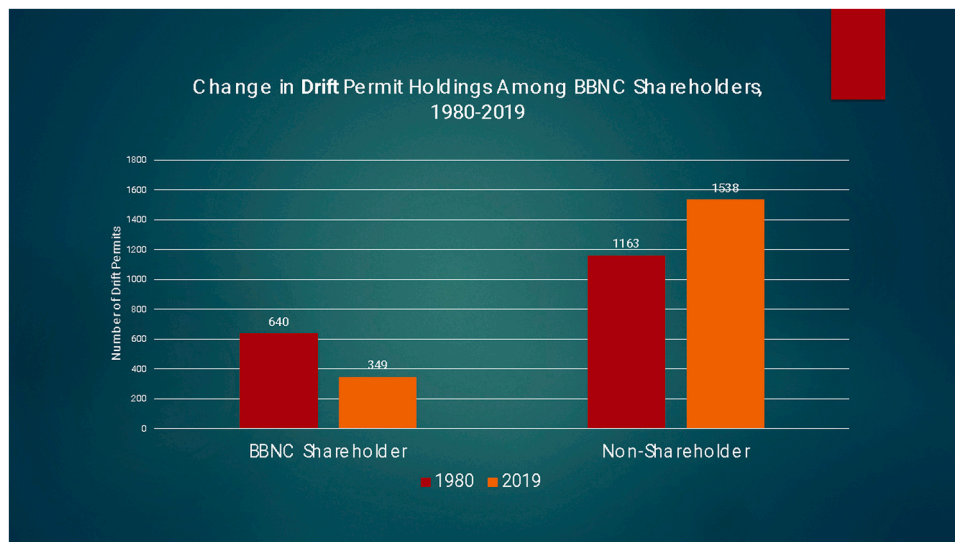


Fig. 2. Change in drift permit holdings among BBNC shareholders and non-shareholders between 1980 and 2019. This includes all shareholders regardless of where they live.

differences remain largely unaccounted for in many fishery policy and decision-making spaces [6,25]. Research shows that gender is an important factor to consider when evaluating policy effects and understanding differences in upward mobility, adaptive capacity, and community resilience [4,21,31,42,43]. Our analysis suggests that Alaska Native women's participation in the setnet fishery remains meaningful, but their participation has declined significantly - by roughly 50 % - since 1980. This decline remains invisible in official data classification systems that prioritize residency categories over other groups within and across Alaska fishing communities and regions.

The lack of data on how management decisions and other fishery changes may differentially impact fishery participation among various groups of participants within communities is particularly problematic when thinking about the ways in which commercial fisheries and subsistence fisheries are mutually supportive. Commercial fisheries participation often supports subsistence harvests and practices in rural communities. Wolfe et al. [46] found that households with commercial fishing permits are often high producers of subsistence foods (see also

[23]). The authors note that a household's subsistence harvest increases by 126 % if the household is also involved in commercial fishing (ibid.). In this light, the implications of declining participation in commercial fisheries among Alaska Natives in the Bristol Bay region raise concerns not only for lost cash income, but also impacts related to one's ability to continue cultural practices and traditions linked to fishing as well as household and community strategies related to food security and food sovereignty [45].

7. Conclusion

Rural permit loss is perhaps the most prominent social feature of Limited Entry's effect on Alaska fisheries and fishing communities. Official fishery statistics for Alaska fisheries indicate that the loss of rural permit holdings is a pressing management issue, particularly in regions where high value salmon fisheries occur [19]. Sustaining community-based fisheries access is imperative and policy-makers should carefully consider the needs of rural fishing communities as

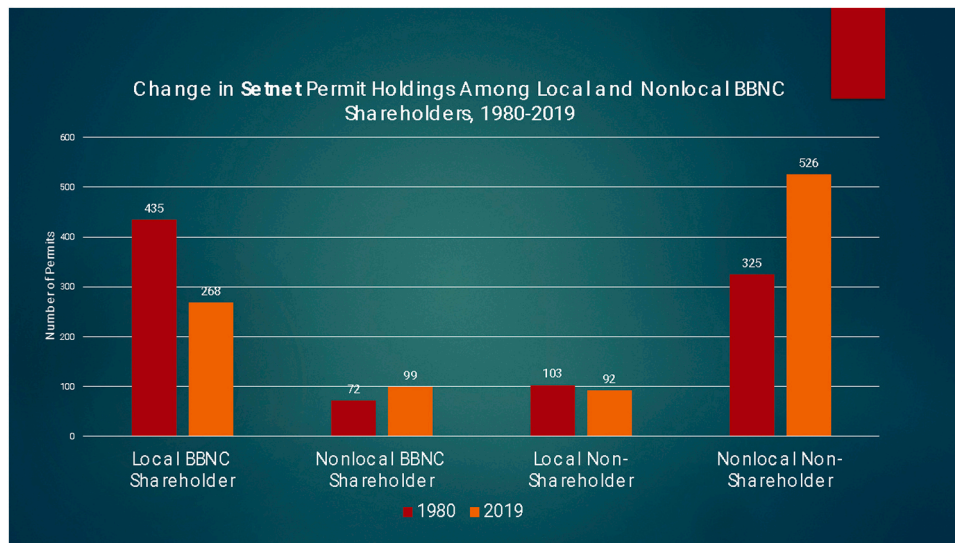


Fig. 3. Change in setnet permit holdings in relation to residency and shareholder status.

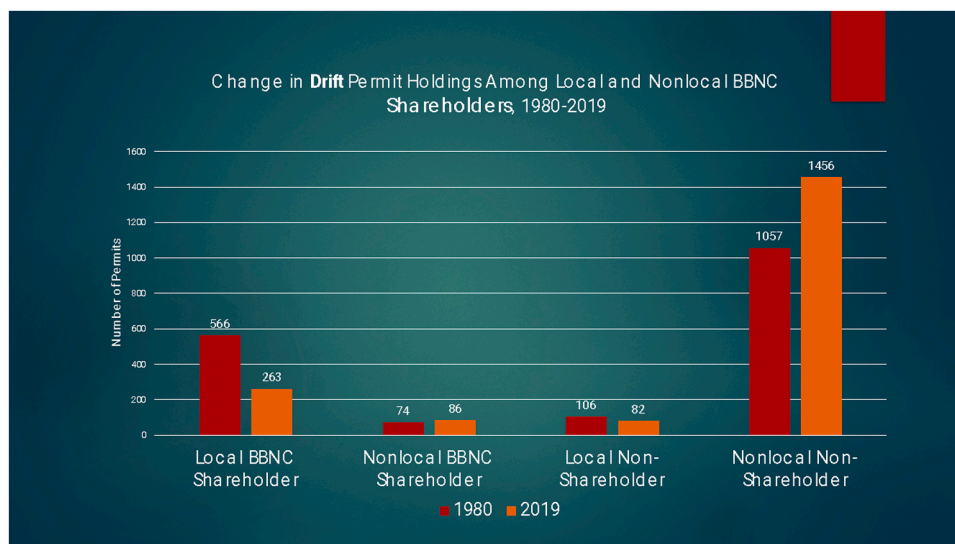


Fig. 4. Change in drift permit holdings in relation to residency and shareholder status.

place-based locales. This paper considers rural fishery participation at the intersection of gender and race/ethnicity. Our analysis suggests that Bristol Bay salmon fisheries are not only becoming less local, they are potentially becoming less diverse with detrimental impacts to Alaska Native fishing livelihoods and families.

From the outset, Alaska's Limited Entry System generated concerns for how the introduction of a freely transferable permit system might impact participation in rural and Alaska Native fishing communities (CFEC 1975; [24,29,30,39]). At the same time, dominant thinking embraced the notion that transferable permits would allow fishery participants 'to enter and exit fisheries at times opportune to them' (CFEC 1975:4). Five decades of social science research continues to unpack this assumption [4,7,19,28,29,31]. Meredith [31] notes that permit sales in Bristol Bay more often "occur under duress" as opposed to leveraging the sale of a permit to invest in new or better opportunities for oneself or one's children. Meredith [31] found that freely transferable permits not only undermine rural fishing livelihoods through increased pressure to sell, they undermine rural community sustainability through increased rural-to-urban migration.

It is not difficult to infer the loss of Alaska Native permit holdings

from official fishery data given that many villages are predominantly Alaska Native. But the conflation of rural or local with Alaska Native or Indigenous suggests a false equivalency and leaves little room to systematically account for policy impacts that remain hidden within the larger category of rural. Rural is not the same as Alaska Native. Using rural as a proxy for Alaska Native erases social and historical contexts, including colonization, and conceals the ways in which Indigenous Peoples are impacted by management decisions, both as members of underserved communities and sovereign Tribal Nations with particular political status in the United States (NASEM 2024).⁹ The category of 'rural' also denies Indigenous Peoples claims to hunting and fishing rights and diminishes their ability to effectively advocate and protect their ways of life (ICC 2020). For example, ANCSA intended but failed to protect Alaska Native subsistence needs after extinguishing aboriginal

⁹ In 2022, Alaska's Governor signed HB 123: An Act providing for state recognition of federally recognized tribes. HB 123 does not change the State's responsibility to Tribes but it does, for the first time, formally recognize tribal sovereignty in State statute.

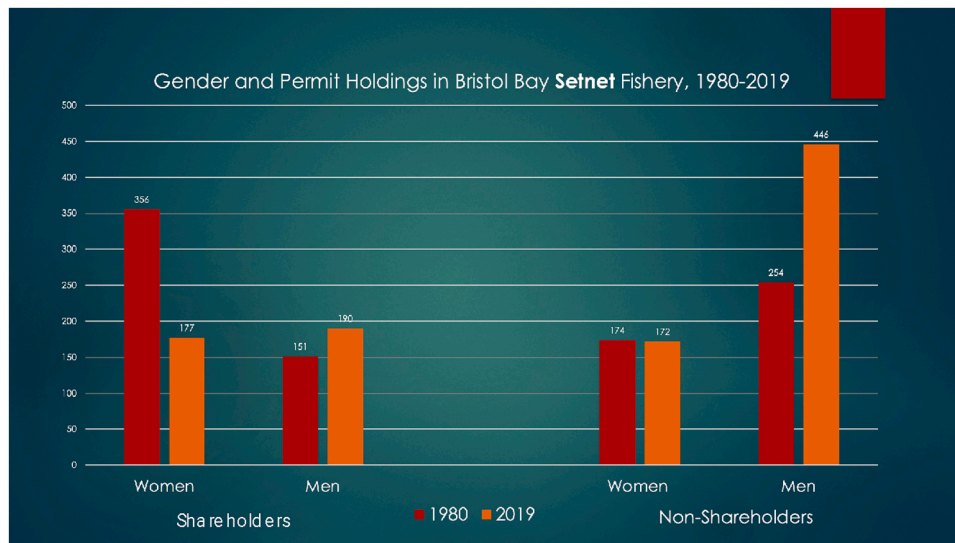


Fig. 5. Change in setnet permit holdings in relation to gender and BBNC shareholder status in 1980 and 2019.

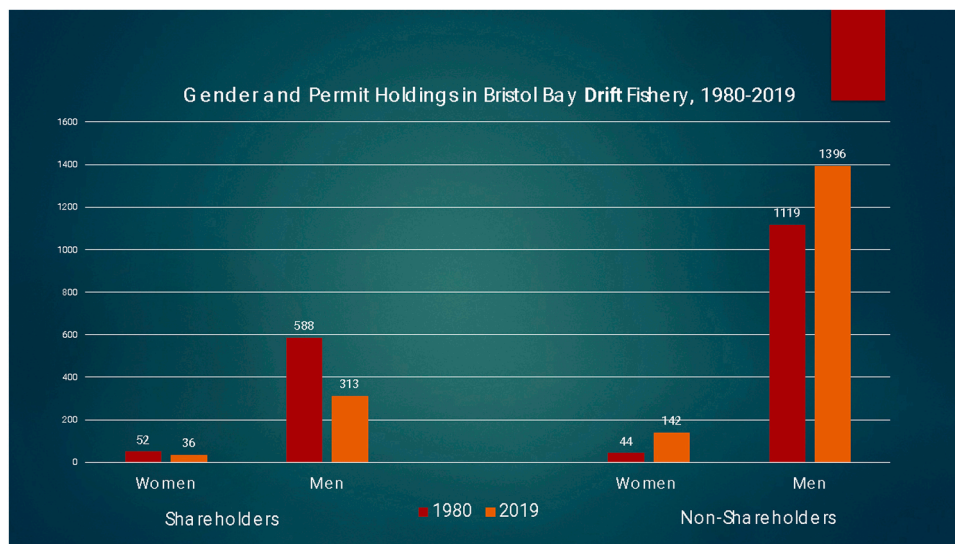


Fig. 6. Change in drift permit holdings in relation to gender and BBNC shareholder status in 1980 and 2019.

hunting and fishing rights in Alaska. The passage of the Alaska National Interest Lands Conservation Act (ANILCA) in 1980 was meant to finally fulfill the promises of ANCSA, but Title 8 of ANILCA created a rural subsistence priority during times of scarcity, rather than a Native subsistence priority. In fisheries management contexts, the rural category is sometimes used to dismiss the gravity of the problem by framing rural permit loss as an outcome of the undesirability of rural places rather than linked to entrenched inequities in management systems that disproportionately negatively impact Indigenous livelihoods, communities, and ways of life. There is a need to breakdown and disaggregate data categories to help policy-makers better understand policy impacts and avoid perpetuating inequities. In this paper we highlight how fishery management impacts can be filtered through data collection and categorization that masks who truly pays the cost of management measures, and equally important, who shoulders the less visible impacts of such data categories. As the State of Alaska works to improve data-driven decision-making in fisheries, an assessment of Tribal impacts and participation in Alaska fisheries should be a priority.

CRediT authorship contribution statement

Andria Agli: Writing – review & editing, Resources, Formal analysis, Data curation. **Rachel Donkersloot:** Writing – review & editing, Writing – original draft, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Data availability

The data that has been used is confidential.

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