

Access Restrictions in Alaska's Commercial Fisheries: Trends and Considerations

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Part I: Access Restrictions in Alaska's Commercial Fisheries

Commercial fisheries in Alaska have long been prosecuted by two different groups of participants: Alaskans and people from elsewhere in the United States (most commonly Washington and Oregon) who come to Alaska seasonally to participate in specific fisheries. These two groups have different observable characteristics: commercial fishermen from Alaska tend to participate in a greater number of fisheries per year than residents of other states, and non-Alaskans tend to realize greater economic returns (in pounds harvested and resulting ex-vessel value) in the fisheries in which they participate. Alaska fishermen, who live closer to the resource year-round, are able to participate in smaller, more marginal fisheries, and take advantage of modest opportunities in the fishing industry while supporting community businesses and infrastructure. This approach to harvesting, drawing on multiple fisheries over the course of a year or a multi-year cycles, is called “combination fishing.”

A fishing business that relies upon “combination fishing” is a diversified fishing business, characterized by decisions that reflect dynamic conditions in the fisheries. But this model relies on access to multiple fisheries. It pulls from the most promising opportunities in a given year and blends them together to form an optimum portfolio. Profitability may be excellent in one or two fisheries, while others may offer more marginal returns. But the flexible nature of the combination fishing operation gives it greater ability to respond to the dynamism inherent in fisheries.

For more than a decade, there have been signs that the combination fishing model in Alaska may be faltering. Access restrictions have been implemented across numerous fisheries across nearly all regions of Coastal Alaska—from Southeast to the Bering Sea. With these access restrictions comes rigidity. Fishermen who were once able to make strategic choices between numerous fisheries now see their opportunities to move around limited by regulatory barriers. The flexibility that once characterized Alaska's coastal fleets has been challenged, and consolidation and fleet contraction have occurred.

In the last decade and a half there have been increasing signs of distress in the economies of many fishing towns in Alaska. Fishermen and support businesses have been hit hard by

the changes in the industry. Various stakeholders, including fishery regulators, communities, and non-profit organizations have been working to identify ways to address the changing face of Alaska's fishing towns. The Alaska Marine Conservation Council and the Gulf of Alaska Coastal Communities Coalition are two of the organizations that work to promote the wellbeing of independent fishermen and coastal communities in Alaska. They contracted with Dory Associates for an assessment of the impacts of incremental access restrictions on fishermen and communities. This research examines observable trends and likely outcomes of continued access restrictions for commercial fishing communities in Alaska.

Combination fishing is more characteristic of Alaskan fishermen than those who live out of state and travel to Alaska annually to participate in specific fisheries. As noted in the 2006 draft report *State of Alaska Seafood Economic Strategies* by McDowell Group, "harvesters may 'roll' in and out of fisheries over a multi-year cycle. Similar fishing behaviors exist in many fishery-dependent regions around the world. The practice allows harvesters to be flexible given changing market biological, weather, or personal factors."

Fish abundance and market trends are among primary factors that underline the importance of combination fishing. Others range from weather and sea conditions to personal circumstances. When salmon prices reached severe lows throughout most of Alaska in the early 2000s, well diversified fishing businesses that included halibut, cod, or other species in their portfolios were better equipped to weather the challenges in the salmon industry. Current stock challenges in the 2C halibut fisheries of Southeast Alaska also suggest that diversification is critical. With the International Pacific Halibut Commission recommending nearly a 30% decrease in harvest levels, fishermen will need to look to alternate fisheries to fill time and income gaps created by the stock changes and allocation issues related to sport fisheries. (This assumes that factors such as price remain relatively consistent.)

Limited access fishery management methods were first implemented to respond to biological pressures. Technological advances—from the internal combustion engine to more modern developments such as radar, depth sounding equipment, loran and GPS, improved safety equipment, hydraulic equipment and other shipboard improvements—meant that harvesting power created excessive pressure on some resources. Limited entry

was developed in response to crashing salmon stocks around the state. (The stock crises had been set in motion, in part, by unsustainable management practices prior to statehood.) The new management tools it provided helped rebuild Alaska's salmon stocks by limiting the number of vessels that could target biologically strained fish stocks. (Other contributions include the development of the hatchery system in certain areas of the state.)

The introduction of the limited entry program also marked an economic and socioeconomic shift in Alaska's fisheries. With its implementation, the "privilege" to fish now had its own value. In other words, not only did fish have value to a harvester when it was removed from the ocean and delivered into the marketplace, but the *access to the resource* also had its own value. This value became an asset to those who held the fishing privileges and a obstacle to those who did not and were attempting to buy their way into the fisheries. This difference—which is, at its root, a question of financing—has become one of the most important factors driving the evolution of Alaska's fishing industry in the last generation.

Trends in financial inequity that accompanied the introduction of the limited entry program was thrown into hyper-drive with the introduction of the halibut and sablefish program. The "haves" and "have-nots" (as they have been called) were more distinctly different than under the limited entry program. In the limited salmon fishery, for example, you only could own one permit in a given region, and it simply gave you the opportunity to compete. While it certainly conferred some financial advantages, at its base it was a doorway to participation, with no guarantee of earnings.

With halibut, the ownership stake could be increased, and each incremental addition of quota further strengthened the owner's financial position relative to his peers. The resulting differences between owners and non-owners, particularly where individuals received relatively larger initial allocations, are apparent in fishing communities around the state. The multiplying effect of the initial allocation, with its subsequent financing benefits, has created real disparities within communities. Trajectories of individual fishing businesses have been importantly influenced by receipt of halibut in initial issuance or the entry into the program in the years immediately following its creation when quota prices were still extremely low.

There is another, less apparent trend that is an important piece of the overall equation. This trend—the incremental implementation of access restrictions of many types throughout Alaska’s state and federal fisheries—and the cascading impacts of these relatively small and seemingly independent decisions. The cumulative effect of these restrictions is resulting in important shifts in the Alaska fishery landscape, particularly in the arena of community socioeconomics.

Socioeconomic impacts are difficult to measure because they depend either on robust demographic and economic data or thorough qualitative data collection that is systematic and comprehensive throughout an adequate geographic region. The socioeconomic landscape is almost always impacted by many more factors than just fisheries. However, few would argue that fishery regulations have no impacts on community and individual socioeconomics, or that actions in one fishery do not cause impacts in others that may be unintended. Regardless of the existence or lack of systematic methods for measuring these impacts, we suggest that these impacts have several important characteristics:

- They are observable.
- They are predictable.
- They are self-perpetuating.

Additionally, it is clear that the fisheries in Alaska are complex and interdependent, not only from a biological/ecological standpoint, but from a social, cultural, and economic perspective. Fishing activities can be influenced by local conditions such as crew availability, as well as macro-level factors such as energy costs. Overall, the socioeconomic system knows no jurisdictional boundaries, and actions in one fishery or fishery jurisdiction *are certain to have impacts that extend out into other areas.*

Overall, an important strength of many Alaska fishing communities has been their diversified nature—the fishermen’s ability to combination fish. This model is characterized by flexibility; and yet fishermen increasingly operate in a constrained environment, where they cannot shift their behavior to accommodate changes in their operating environment, because their access to fisheries has been restricted and barriers to entry are too high.

Types of Access Restrictions

Access restrictions come in many forms. Many different tools are used across the world's various fishery management regimes. Some are direct and can clearly be identified as access restrictions. Others are indirect, and are only revealed as restriction points on closer consideration of their impacts.

In Alaska, direct access restrictions include limited entry programs, license limitation permit (LLP) programs, cooperative requirements, individual fishing quota (IFQ)/individual transferable quota (ITQ) programs, community-based programs such as the community development quota (CDQ) programs of Western Alaska or other methods. These restrictions share the characteristic of creating a closed class of participants.

Indirect access restrictions do not *de facto* create a closed class of participants, but they do have structural elements that limit possibilities for participation by certain individuals. In Alaska, the most important example of indirect restrictions include application of fishery exclusivity or super-exclusivity regulations, which limit fishermen's ability to harvest the same species of fish in multiple registration areas in a single year. While fishermen still have open access to a fishery, exclusivity or super-exclusivity has the functional impact of limiting the "suite of fisheries" through which he or she can move in a given year. Another example is vessel size restrictions, typically implemented in Alaska by length overall (LOA), though they can also be done by tonnage or other methods. Yet another example is limiting ownership of fishing quota or permits to individuals with historical participation in a fishery. Examples of this include the Transfer Eligibility Certificate that is required by individuals seeking to own halibut and sablefish quota, or post-rationalization participation in crab fisheries for individuals seeking to purchase crew shares in the Bering Sea Crab Rationalization program. Regulatory "sideboards," which limit participation in one fishery for vessels or individuals who receive fishing privileges in another, also act as restriction points. (Sideboards are typically implemented when a change in a federal program means fishermen could participate in a fishery that had previously had a season conflict. The pressure from a fleet that has been freed from seasonal constraints can have a deleterious impact on otherwise stable fisheries. In exchange for their new fishing privileges, vessels or owners are prevented from moving into the other fishery.)

Specific examples of regulations that have acted as further “restriction points” include loosening of ownership caps for Alaska sablefish and halibut, which ultimately give vested owners the opportunity to obtain more quota, tightening the market and reducing the number of individuals who will own IFQs. Another example currently in the regulatory process is a potential LLP reduction in federal Gulf of Alaska cod fisheries, which also acts to further consolidate the group of participants in the fisheries.

Access restrictions are often implemented to try to control for the lesser of two evils. For example, super-exclusive registration in the Chignik state waters cod fishery was intended to help preserve the local character of the fishery, though local fishermen are then somewhat constrained in their opportunities to fish elsewhere in the state. But it is critical to remain aware that no single action occurs in a vacuum. Actions taken by one regulatory body can impact fisheries managed by another, in the worst case creating a domino effect that creates new situations that need to be controlled through regulatory actions. Viewed as a whole, the restriction points applied in fisheries are numerous; and their rate of occurrence is increasing in certain regions of the state.

Understanding the Impacts of Access Restrictions on Combination Fisheries

The process of restricting access to fisheries in Alaska has been well underway for decades. Alaska’s history as a state is marked by important access restrictions—statehood was spurred, in part, by a desire to move away from corporate access to the fishing resources and toward public ownership. The limited entry legislation of the early 1970s initiated controls at the level of the individual. In the 1980s federal legislation eliminated foreign access to fishery resources within 200 miles of American shores.

Federal programs were introduced in the last decade that seek to control non-biological elements of access at the individual and vessel level. Rationalization programs that have been implemented include issues such as “overcapitalization” or competition among different participants in the industry. Economic protectionism has even become an overt goal of certain federal actions. (For example, the “fixed gear recency” problem statement, which is discussed in Section II of this document, includes language on protecting long-term participants from the possibility of competition by new fishery entrants.)

The creation and implementation of programs that restrict access has economic and socioeconomic impacts and consequences that may be unintended but certainly are predictable. Actions in a single fishery can have impacts on other fisheries, the viability of fishing businesses perhaps unrelated to the specific action, and overall community wellbeing. Though these impacts may not be measurable with available data, it is nevertheless important to consider and attempt to mitigate them.

In this research, we feel it is necessary to distinguish between state and federal access restrictions. While both share some kinds of impacts—reducing the number of participants in fisheries, for example—there are essential differences between the methods and the types of restrictions that are possible. First, limited entry permit recipients must be individual people and, save in two specific cases, people are not allowed to own more than one fishing permit in a given fishery. Second, participation in the fisheries is also restricted to individuals holding permits (so-called “owner-on-board”). While there are other differences, these two factors have important impacts on the nature of participation in limited state fisheries.

Federal restrictions, on the other hand, can be implemented for a number of reasons outlined under the Magnuson-Stevens Act that have no direct bearing on biology. Over-capitalization, fishery economics, and safety are among some of the reasons that can be used to drive access restriction efforts. Additionally, some programs (such as halibut and crab IFQs) enable consolidation of fishing privileges at the level of the individual or corporation. In absence of the owner-on-board provisions, privilege holders can increase their fishing privilege holdings without actively participating in the fishery. This means that the ability to participate in the fishery is not a factor in the ability to accumulate fishing privileges and realize resultant earnings.

While both systems can claim certain merits, they are significantly different in their implementation and impacts, and we differentiate between the two systems in this report.

We hypothesize an acceleration of consolidation amongst those who are awarded access privileges or otherwise benefit from access restrictions. This story is plainly illustrated by the last ten years of fishing behavior in the Central and Western Gulf of Alaska and the Eastern Bering Sea. While data can tell part of the story, trying to capture the whole picture

through the restrictive lenses of datasets can render an obvious environment—one of consolidation, community impacts, and the concentration of power and bureaucratic legitimacy in a smaller and smaller group of people, at great cost to many Alaskan communities and fishermen—impossible to see.

Part II: Viewing Access Restrictions through Existing Data

When one considers the socioeconomic and lifestyle impacts of access restrictions, the analysis suggests strong links between access restrictions and changes in the fisheries. But it can be difficult to draw direct conclusions about causality. Obviously, factors beyond fishery management impact the wellbeing and activities in a community, and fishing behavior by hundreds of independent fishermen. Nevertheless, when viewed as a whole, information about fisheries, communities, economics and demographics (both quantitative and qualitative) suggest that several decades of fishery trends are driven, to a certain extent, by access restrictions.

In our research we looked at data for communities in four different regions. These are communities in which definite changes are observable and can be reasonably linked to access restrictions with thoughtful analysis and consideration. Yet data for these communities can actually act to cloud the picture of access restrictions and their impacts. We asked ourselves the following research questions to guide our analysis.

What access restrictions have we seen over time?

For the scope of this research, we considered the progression of access restrictions from the point of limited entry forward. While regulatory restrictions certainly occurred in fisheries off Alaska prior to limited entry, the program marks a significant turning point in the authority of the State of Alaska to limit participation in its fisheries. Additionally, data availability improved significantly with the creation of the Commercial Fisheries Entry Commission (CFEC) and much of that data is available electronically through CFEC's data-rich website. The scope of this project prevented significant investigation outside of the electronic realm.

We worked to identify major "restriction points" for our study regions. While our list may not be comprehensive, it does underscore major events that impacted fishermen.

In all the study regions, limited entry actions by the State of Alaska were the major restrictions applied during the 1970s and 1980s. These began with salmon fisheries in 1973, and expanded to most herring fisheries (typically in the late 1970s/early 1980s) in all the regions. Southeast Alaska saw the greatest number of restriction points overall. Most were

State of Alaska limited entry actions: Tanner and king crab (1984), sablefish (1985), Dungeness (1992), herring spawn on kelp (1995), shrimp trawl (1997), and urchin, sea cucumber and geoduck dive (1996). Southeast fishermen were far less impacted by federal actions (largely because most Southeast fishing grounds are within State of Alaska jurisdiction). The major exception is the halibut and sablefish IFQ program (1994), and the impacts of Bering Sea and Gulf of Alaska programs (e.g. crab rationalization, Pacific cod LLPs) on the Southeast fishermen who participated in them. It is also interesting to consider the pace of implementation. In Southeast, fishermen saw fisheries limited in six of the years between 1973 and 1993. (In some years multiple fisheries were limited.) Then from 1994 to 1997 nine fisheries were limited. Since then, with the exception of an exclusive registration regulatory change in the Icy Bay dingle bar fishery, the only actions impacting Southeast fishermen have been federal ones in other regions of the state.

In Prince William Sound, early fishing access restrictions were state mandated and implemented at a moderate pace, about one every four years. After the state established limited entry for salmon in 1973, it went on to implement limited entry in the Prince William Sound purse seine roe herring fishery (1977), the gillnet roe herring fishery (1980), and the herring spawn on kelp fishery (1987). Federal managers created halibut and sablefish IFQs in 1994, and the following year state managers implemented limited entry for sablefish in Prince William Sound. In 1998, the Pacific cod fishery in Prince William Sound was given exclusive status. In 2000, the federal LLP program was implemented in the Gulf of Alaska and the Bering Sea/Aleutian Islands groundfish fisheries, affecting Prince William Sound fishermen who participated in these neighboring regions. In 2005, crab rationalization was implemented in the Bering Sea, impacting fishermen from various regions of the state who were squeezed out by the changes.

Central and Western Gulf (including our study communities of Kodiak, Larsen Bay, King Cove, and Sand Point) have seen access restrictions applied far more frequently. After the State of Alaska established limited entry for salmon in 1973, Kodiak and other Central Gulf fishermen did not initially see another access restriction until 1981, when the state established limited entry for roe herring in both the purse seine and gillnet fisheries. It was another seven years until the Togiak spawn-on-kelp herring fishery was limited in 1989, affecting some Central Gulf fishermen who had traditionally traveled to Togiak to

participate in that fishery. After halibut and sablefish IFQs were implemented in 1994, the pace of access restrictions quickened significantly. In 2000, the federal license limitation program (LLP) became effective in the Gulf of Alaska and Bering Sea/Aleutian Island groundfish fisheries, impacting fishermen statewide who participated in groundfish. The state herring food and bait fishery in Kodiak was limited entry in 2001 and federal regulators began requiring an LLP for scallops in federal waters. In 2002, the Kodiak Tanner crab fishery became super-exclusive, a move aimed at protecting local fishermen. The next year, the state established a limited entry system for Kodiak Tanner crab. In 2005, the federal Bering Sea crab rationalization program began, impacting many Kodiak and other Central Gulf fishermen who participated in the king crab and opilio fisheries by radically reducing the number of vessels actively participating in the fishery. Finally, in 2007, the Central Gulf Rockfish Pilot Program was implemented, further restricting access to groundfish in the area. In the Central Gulf area, only three fisheries access restrictions were established between 1971 and 1989. In 1994, the pace quickened, and between 2000 and 2007, Central Gulf fisheries were limited at a rapid rate, with half a dozen access restrictions implemented during that time.

Access restrictions in the Western Gulf followed a trajectory similar to those in the Central Gulf. After the state implemented limited entry for salmon in 1973, other fisheries in the Western Gulf remained open access for more than 15 years. The state created a limited entry system for the Togiak spawn on kelp herring fishery in 1989. The pace of restrictions accelerated in 1994 when federal regulators implemented the IFQ system for halibut and sablefish. In 1997, the state waters cod fishery was created and given exclusive status. Two years later (1999), the Chignik state waters cod fishery was changed to super-exclusive status, preventing fishermen who fished in that area from fishing cod anywhere else in the same year. Also in 1999, the Southern Alaska Peninsula Dungeness crab fishery was granted super-exclusive status as well. The federal license limitation program for groundfish in the Gulf of Alaska and Bering Sea/Aleutian Islands areas took effect in 2000, further restricting access to stocks. In 2003, both the Chignik Tanner crab fishery and the Chignik black rockfish fishery were changed to super-exclusive status. These incremental restrictions were meant to protect Chignik's local fishermen, but also prevented those fishermen from participating elsewhere if they had a poor season or prices plummeted. Then, in 2005, crab

rationalization was implemented in the Bering Sea, resulting in a decreased number of active fishing boats and radical job losses. This precipitated a sharp economic decline in Western Gulf communities such as King Cove, which were important supply and stop-over points for many boats no longer participating in the crab fisheries. In 2007, the Central Gulf Rockfish Pilot Program took effect, creating harvest cooperatives and further reducing open access opportunities for Gulf fishermen.

While many of these access limitations were driven by reasonable concerns about resource health, we will emphasize that, for a fisherman on the ground in a fishing community in recent years, and particularly in a Gulf community, fishery restrictions are a constant pressure. No sooner have fishermen cleared through one restriction process than another one comes up. To remain current in the regulatory processes, constant engagement is required.

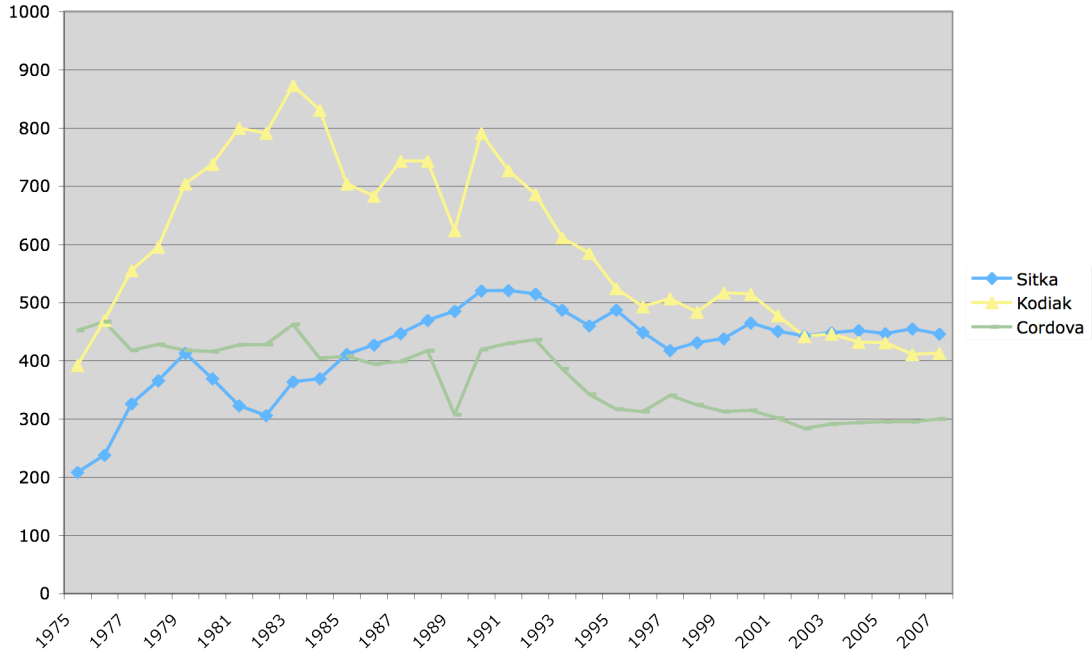
How many fishermen are fishing in our study communities and how has that changed over time?

This is an obvious question that is an important component of analysis of long term trends. While the number of fishermen in a given community is obviously impacted by a number of factors, not all of which are directly the result of fishery regulations, it is the most basic measure of the scope of fishing as an economic and lifestyle driver in a community.

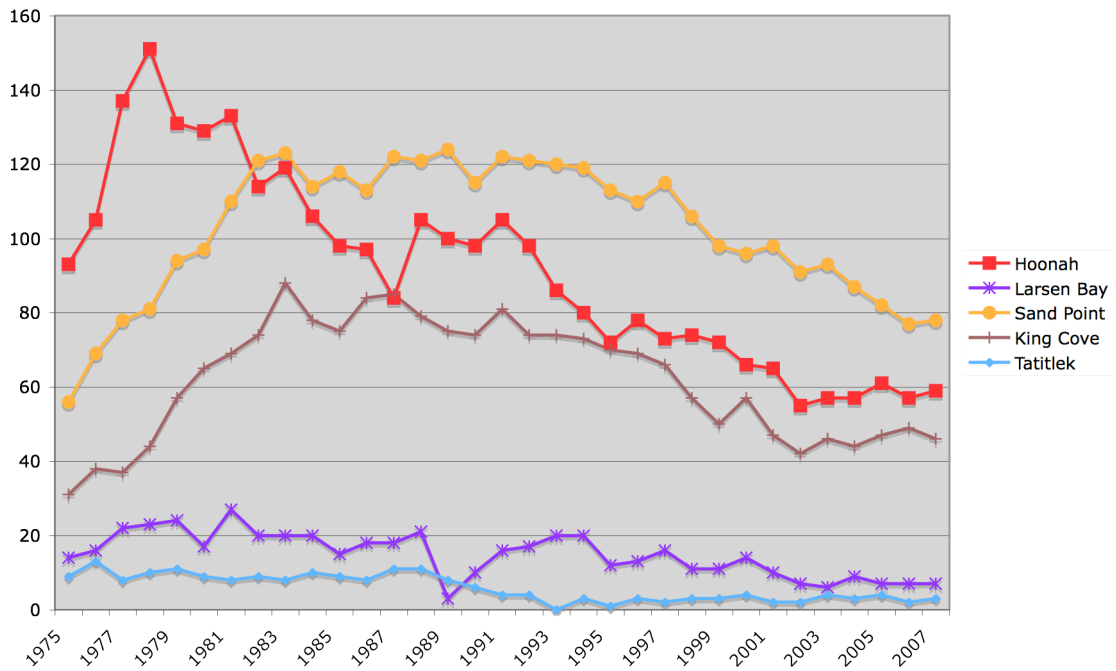
We considered one hub and village community in each of our study regions. CFEC data, which count the “number of fishermen who fished” (in both federal and state fisheries) each year since the mid-1970s, show differing trends in all our study communities. Though peak fishing years are somewhat different depending on the community, most saw the height of their fishing activity in the 1980s. (The exceptions are Sitka, which saw peak fishing in the early 1990s, and Sand Point, which had fishing participation near its peak levels for a decade, from the early ‘80s to early ‘90s.) In all communities, there were significant declines in participation from 1990 to 2007, ranging from a low of 14% in Sitka to a high of 48% in Kodiak. From their individual peak years to 2007, all communities but Sitka lost 35% or more of their fishermen, with the rural communities losing the greatest percentages (57% in Hoonah; 71% in Larsen Bay, though Larsen Bay had so few fishermen that percentage comparisons are relatively meaningless.).

The following charts show the numbers of fishermen who fished in the sample communities during the years from 1975 to 2007.

Number of Fishermen Who Fished



Number of Fishermen Who Fished



We see that fishing participation has declined radically in many communities, but particularly smaller communities, since the late eighties or early nineties. Have access restrictions made the fishing fleet less viable? Has it reduced the participants to only those who are most diversified?

It is worth noting that of all the communities, only Sitka has been relatively isolated from steep declines in participation. This may be due in part to the fact that Sitka is isolated from the federal fishery limitations that have impacted Gulf communities so severely in recent years. (Nearly all Southeast fisheries occur within State waters, so Southeast fishermen interact almost exclusively with the state regulatory bodies and the IPHC.) Hoonah, the other Southeast community, was likely more impacted by factors that have driven down permit ownership in rural communities. Owner-onboard provisions in the Area 2C (Southeast Alaska) halibut IFQ fishery also mean that the deleterious impacts of IFQs on participation and ownership have not been as extreme in Southeast as in other areas. In that region, owners must actively participate in the harvest of their fish, so consolidation is limited by their ability to actually participate in the fishery.

How many permits are fished by the average permit holder? How has that changed over time?

The following figure shows the average number of permits fished annually per fisherman in each of eight communities—a hub and a village community in the four study regions. In general, the higher the number, the more diversified the fishermen in the community. This is a basic indicator of the presence of combination fishing practices in a community.

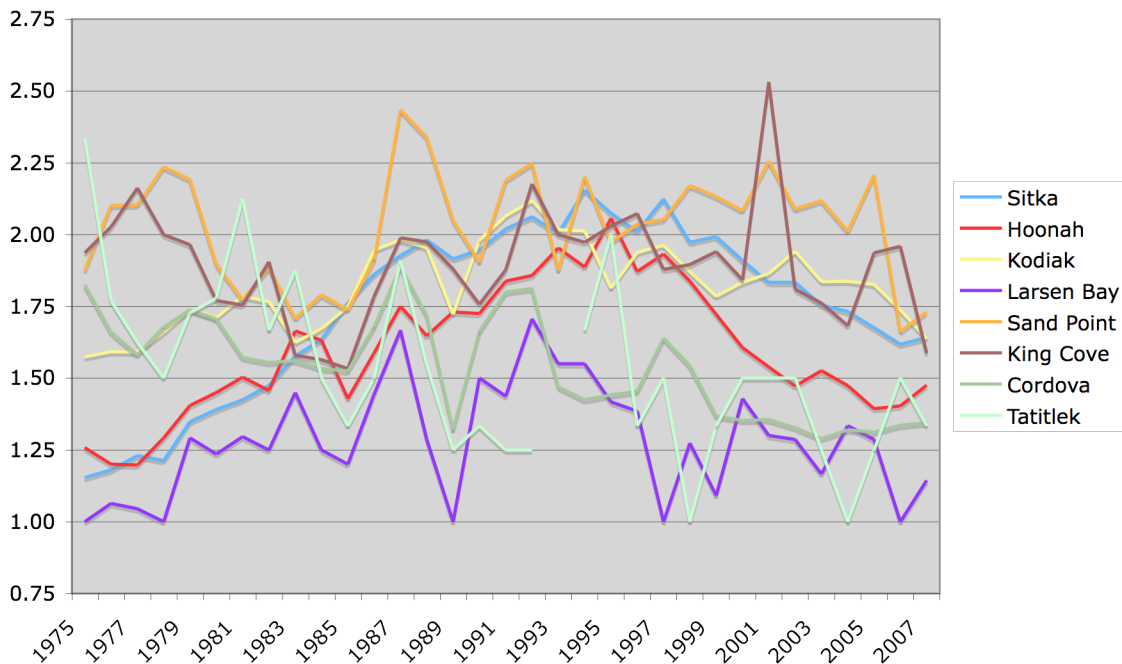
In communities with lower populations—particularly Tatitlek and Larsen Bay—the extreme variability is due to low numbers of participants (fewer than 10 on average in both communities in any given year). Changes in behavior by one or two individuals can significantly impact averages. In the larger communities, though, the data reveal meaningful trends.

In all of the larger communities the average fisherman participates in more than one fishery annually.

Communities that fall lower on the scale are those where salmon fishing is the dominant kind of fishing activity, and tend to be the village communities. The more diversified fishing activity occurs in the hub communities, plus King Cove.

It should be noted that diversification appears to have remained relatively high and stable for the larger communities. However, it's important to keep in mind that overall numbers of fishermen have declined significantly in some communities. For example, Sand Point and King Cove fishermen appear to be maintaining relatively high levels of diversification in their fleet. But when you consider the declines in participation since the early 1990s, as shown in the previous chart, the picture is less positive.

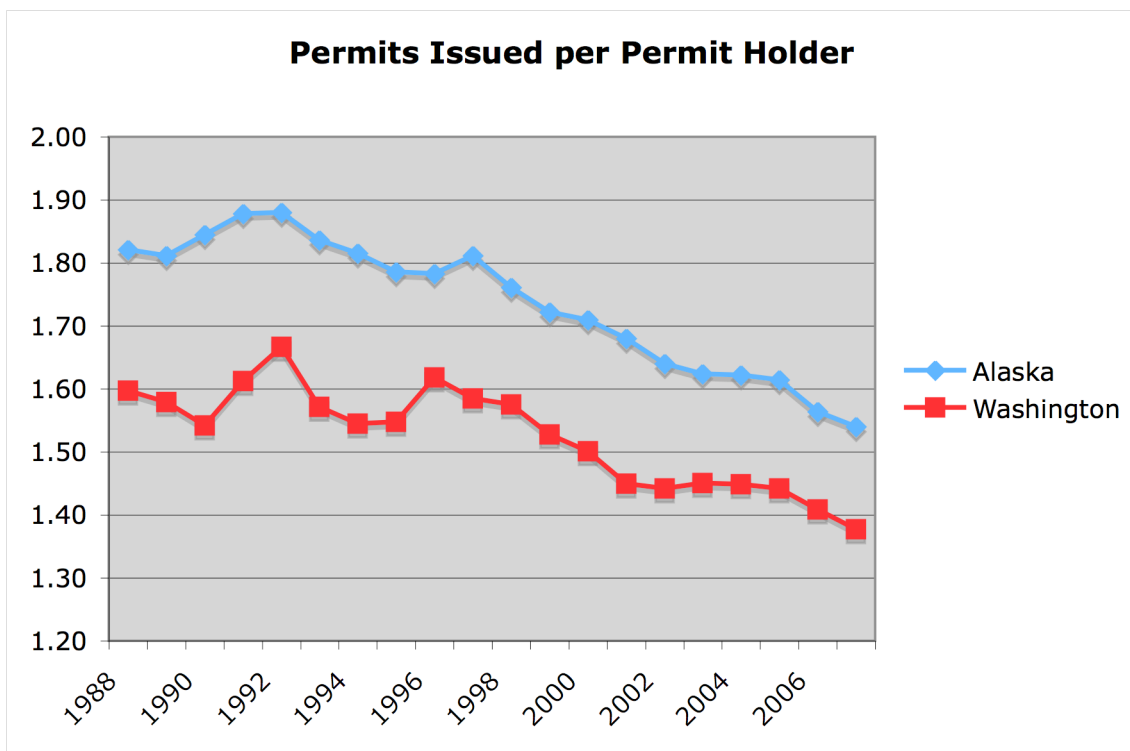
Permits Fished per Fisherman



Another approach is to consider the number of permits issued per permit holder. A fisherman must renew any limited entry permits he owns each year, or else the permits are forfeited. We can therefore assume that the number of limited entry permits will remain relatively constant each year (with a slight loss due to some interim use permit adjudications). But additional fluctuations in the number of total permits issued can be assumed to be primarily the result of changes in the limited access fisheries. (Limitation of additional fisheries can impact these figures, as those individuals would then be obligated to

a yearly permit renewal. But that impact is expected to be small overall, and limited to particular years.)

We see in the following chart that the numbers of permits issued per permit holder have trended downward for more than fifteen years, for both Alaska and Washington residents. Alaskan permit holders hold a greater number of permits on average than Washington permit holders, confirming that combination fishing is more important to Alaskans than to Washingtonians. (Combined, the residents of these two states are approximately nine out of 10 participants in Alaska fisheries.)



How could this question be better answered?

An important variation on this analysis may be the consideration of fishing and participation trends *excluding fishermen who only participate in salmon*. The season and nature of salmon fisheries in Alaska mean that there are many fishermen who will never participate in any other fishery. Some have employment during other times of the year (such as teachers) that prevents them from participating in other fisheries, or they have setnet operations that have no usefulness for any fishery other than salmon. Because the number of salmon-only fishermen is so large in many communities relative to the year-round diversified fleet, the

impact of these participants on average data from the CFEC and analysis of trends among combination fishermen can be hard to see. Nevertheless, this year-round component of the total fishing activity can be very important to the fishery-based economy. Removal of the salmon-only fishermen from the data, for purposes of analysis, would have to be done by the CFEC, which has access to the individual data points. Such an analysis may yield interesting results for understanding fishing behavior among the diversified fleets.

Presented in the aggregate the data do not reveal underlying drivers in fishery participation from year to year. They also don't show us *which* fisheries fishermen participate in. Are they the same from year to year? Does a fisherman participate in the same two fisheries every year, or two different ones? Why do they change their behavior from year to year? And what had led the trends toward less diversification? Answering this nature of question likely requires qualitative data collection. Examples of this kind of work are discussed briefly in the third section of this report.

How have permit values and the values of fishing “privileges” changed? What might a typical “portfolio” of fishing assets look like?

Assembling a “typical” fishing portfolio for a given community is a challenging and subjective exercise. We will not attempt to undertake such an activity within the scope of this project. However, extension staff at the University of Alaska Marine Advisory Program recently undertook such an exercise for Petersburg fishermen, and the results are revealing.

The researchers hypothesized a “typical” limit seiner in Petersburg as follows:

- Harvests 60,000 pounds of halibut, 125,000 pounds of dressed black cod, 900,000 pounds of salmon, participates in the Southeast golden and red king crab fisheries. The gross earnings for that vessel were estimated at \$675,250.
- Employment was estimated at four seining crew for two months; three longline crew for one month; and two crabbing crew for one month. Estimated total earnings by crew were \$210,600, with wages supporting three families with six children total. (Crew earnings obviously are included within the gross earnings above.)

- In-community expenditures by the vessel were estimated at \$71,000 for fuel, groceries, and maintenance/supplies. An additional \$4,260 was estimated for sales tax assuming all purchases were local, and \$42,200 in raw fish tax to the State of Alaska and to Petersburg (assuming half the fish was landed locally).
- The researchers estimated the cost to buy out this business at \$4.32 million, for the vessel, gear, permits, and fishing quota. They looked at this as the cost to keep the fishing business local to the community.

This hypothetical fishing operation goes a long way to demonstrate the challenge of entering fisheries from scratch, or of acquiring fishery businesses without significant financial backing.

An examination of permit and quota values further highlights the challenge of diversifying into multiple fisheries as an entry-level fisherman.

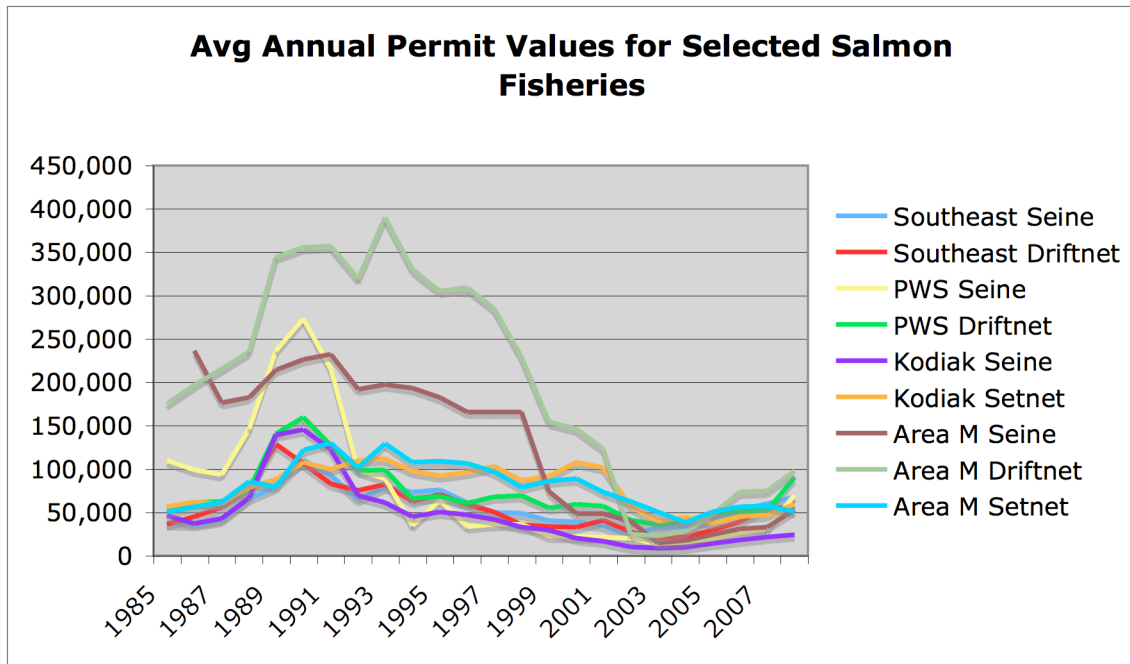
Permit Values in Select Salmon Fisheries

Fishery	2008	5-Yr Avg
Southeast Seine	\$67,800	\$50,860
Southeast Driftnet	\$54,400	\$40,100
PWS Seine	\$70,200	\$32,080
PWS Driftnet	\$90,300	\$56,400
Kodiak Seine	\$24,200	\$17,600
Kodiak Setnet	\$59,600	\$46,820
Area M Seine	\$52,900	\$31,680
Area M Driftnet	\$97,900	\$64,220
Area M Setnet	\$51,300	\$50,820

Source: CFEC

It is obvious that the cost of a limited entry salmon permit is significant. Salmon is the most commonly prosecuted fishery in the Alaska, and it is frequently included in the portfolios of combination fishermen. It is also worth noting, though, that the value of limited entry salmon permits has fallen significantly in the last decade, and that all the salmon permits for fisheries in our study regions had fallen to levels below \$50,000 (and even lower than \$10,000 in some cases) by the early 2000s. Market conditions have shifted and salmon permit prices have begun to trend upward again, but most are well below historical highs.

It is interesting to note that the salmon fisheries have been more accessible in recent years because of depressed permit prices than they had been for many years previous. But the higher permit prices of earlier decades may have been manageable investments, in part, because numerous additional fisheries were open access. Fishermen were more free to diversify in order to meet their loan obligations. So a single limited access permit was not the barrier that multiple permits and additional access privileges can be today.



Another way to look at it is through consideration of halibut IFQs, which have been an important part of diversified fishing operations in recent years. Consider the following scenario:

- For a halibut vessel of approximately 45 to 50 feet in length, a reasonable sized halibut trip would range from 10,000 to 20,000 pounds of halibut, for purposes of vessel economics.
- If this is the only halibut harvested by the vessel, trip length including vessel changeover before and after the trip, is estimated at approximately 15 days (5 days fishing time plus 10 days before and after for vessel transitioning). If the vessel is already geared up for halibut this might be a three to five day trip.

- At approximately \$25 per pound, the cost to purchase the IFQs for such a trip would be between \$250,000 and \$500,000—for a single trip's worth of quota. (It is worth noting that purchase prices for halibut are higher than this price, depending on the size of the quota block, in some areas.)
- For an individual who *already owns quota*, the purchase of the additional quota can be leveraged against the equity in the existing quota, leading to further consolidation.
- For an individual who *does not own quota*, financing \$250,000 to \$500,000 is a significant challenge and, depending on the maturity of the business, other debt service, and a host of other factors, *is likely a significant barrier that may not be overcome*. That individual's financing options may be limited to home equity or leveraging of other assets. With downpayment requirements somewhere between 25 and 50 percent, an individual needs access to cash or equity equal to somewhere between \$62,500 and \$250,000—for one trip's worth of halibut.

This lending picture will look significantly different depending on the geographic location of the fisherman, as well. Note that home equity is one method for leveraging IFQ purchases. (Conversations with commercial lenders for this project suggest that home equity loans are common tools for IFQ purchases.) In rural communities where home values tend to be lower or private home ownership is uncommon, fishermen have less ability to use home equity to finance IFQ purchases. Functionally, rural residents will have less opportunity to purchase IFQs than competing fishermen in larger communities, as IFQ prices will be driven upward because of the market dynamics. Commercial lenders also noted that they tend to do business with individuals who are local to their banks—suggesting that rural residents, who don't have access to banking near their homes, will also be disadvantaged.

An interesting analysis that was not conducted in this research would be to examine how the volume of sales has changed during the period of low permit prices. Are new participants finding opportunities to enter the fisheries at these relatively low prices? Or do the factors explored in this paper act as enough of a barrier to keep fishermen from entering the fishery, even at this stage?

Consideration of the cost of permits, quota, vessels, and other necessary assets begs the question: how can a fisherman realistically enter the industry? Fishery managers have tried to maintain entry points in the commercial fisheries. But these opportunities may be too small to be meaningful. Let's consider an entry-level fisherman in Kodiak or Sand Point, where one of the few remaining open-entry fisheries is the state waters Pacific cod fishery. This fishery was created and has been maintained with the explicit intent of providing an entry point for new fishermen. The jig fishery is among those with the lowest barriers to entry, as it can be prosecuted with a small vessel and has very modest gear requirements.

- Assume a vessel can be purchased with appropriate jig gear for \$60,000
 - Debt service on this vessel, with a six-year loan, would be \$7,539 (in two payments per year).
 - Assuming a price of \$0.30 per pound for Pacific cod, a fisherman would need to land 25,130 pounds of cod in order to service his debt.
- To get a sense for the scale of the fishery we consider the 2007 season. In that year, the average Pacific cod jig fisherman in Kodiak landed 16,400 pounds of fish. On the Alaska Peninsula the average catch was 8,900 pounds.

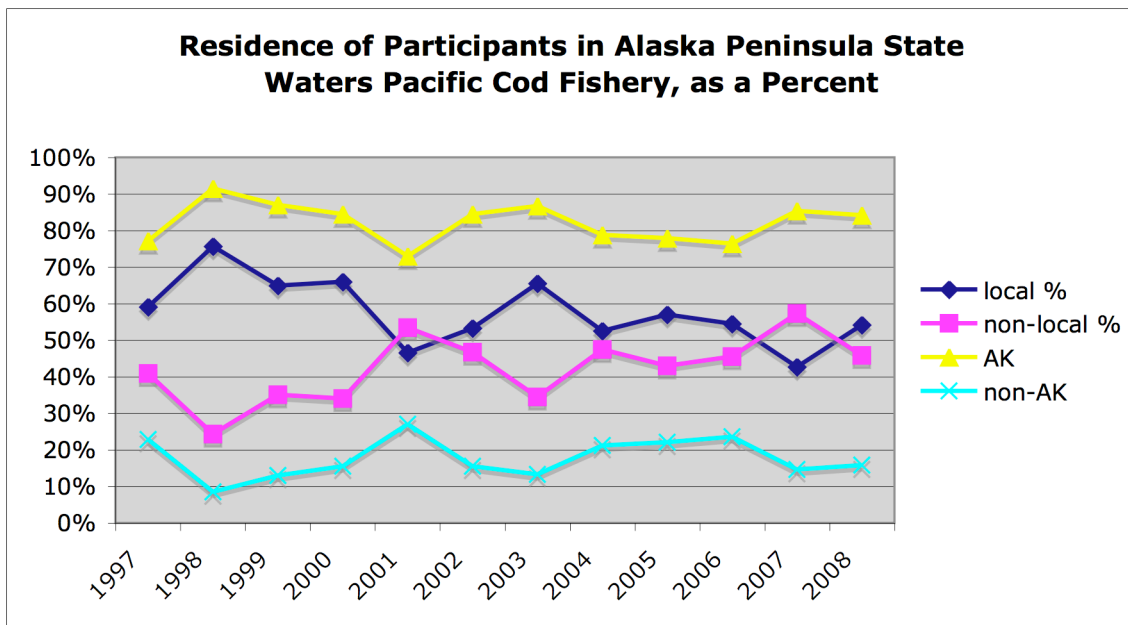
From this scenario, it is evident that a fisherman cannot enter commercial fisheries purely through the open-access jig cod fishery, though that has long been lauded as the entry-level fishery in the Gulf region. A fisherman must then participate in additional fisheries to meet the debt load for his vessel.

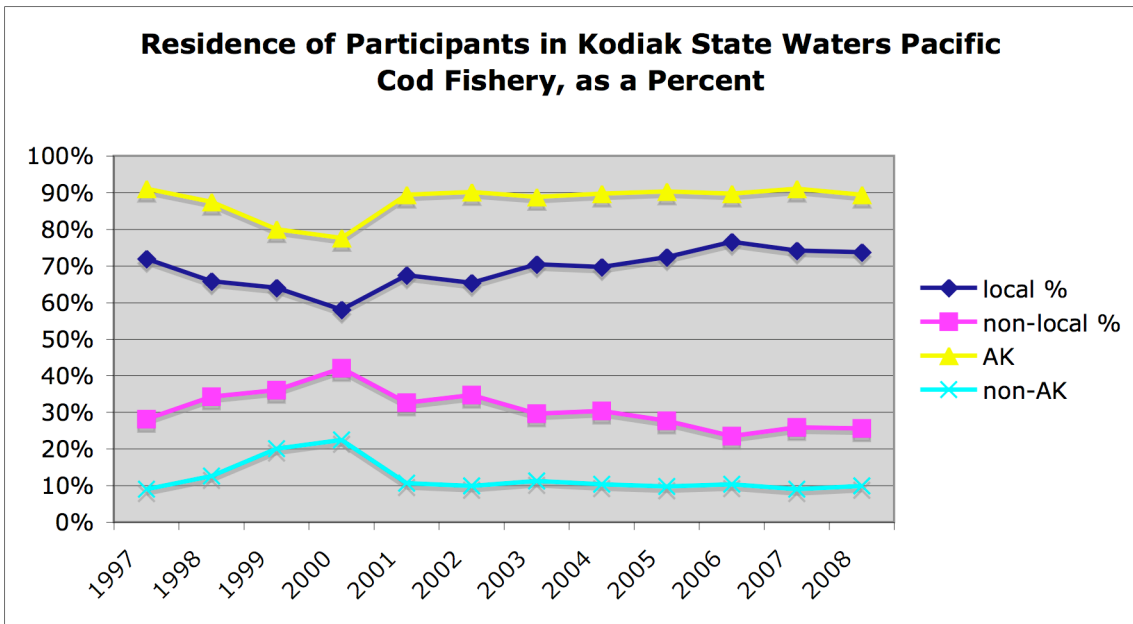
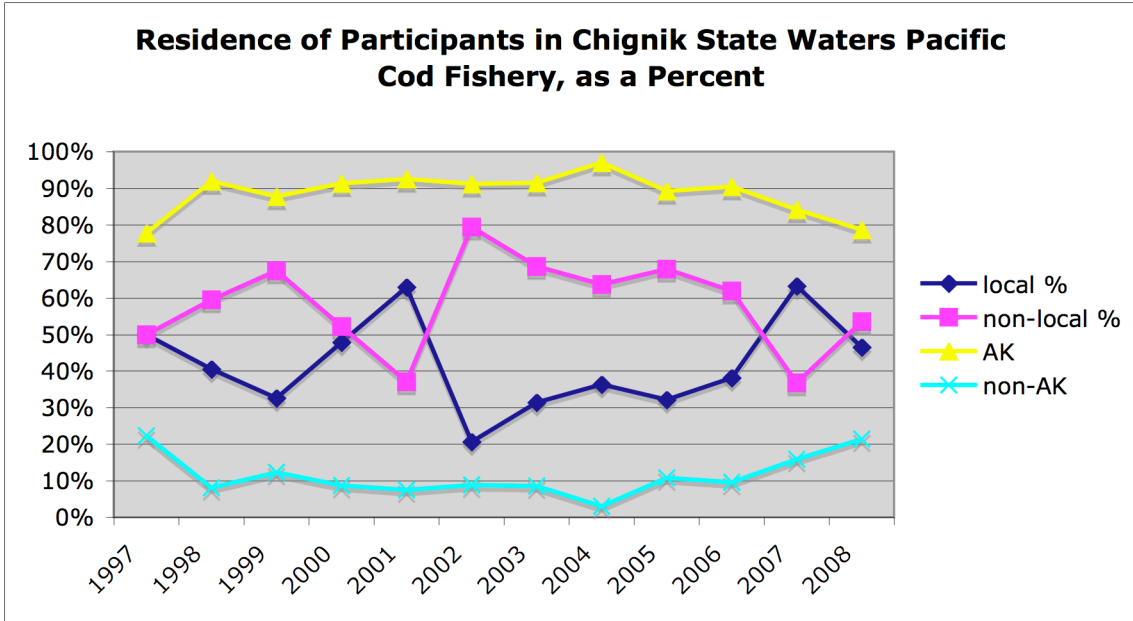
Beyond these and a few other small fisheries, though, a new entrant would be required to purchase limited access permits, quota, LLPs, and various types of additional gear. Each incremental addition of a permit, access privilege, or gear and equipment increases the total debt load of the fisherman. Add to this maximum loan amounts for loan programs, requirements for down-payments and/or leveragability, it becomes rapidly evident that the possibility for entering the commercial fisheries as a new participant is very limited.

Have residency characteristics changed among some of the smaller, open-access fisheries in recent years?

To consider the question of residency in open-access fisheries, we placed a special data request with the Westward Region groundfish office at ADF&G. Fishermen are required to register with ADF&G to participate in any of the Westward region (Kodiak, Chignik, or Alaska Peninsula) fisheries because they all have exclusive or super-exclusive management provisions. The regional office collects information about residency at that time.

Overall, an examination of the residency characteristics of the three open access Pacific cod fisheries does not yield particularly interesting results related to residency. All three are dominated by Alaska fishermen, and have been since their creation in 1997. When examining participation by local fishermen (e.g. Chignik fishermen in the Chignik fishery or Kodiak fishermen in the Kodiak fishery) we see that the Kodiak and South Peninsula fisheries are primarily prosecuted by locals. The Chignik fishery has shifting participation. In recent years it has begun to trend toward local participation again after a period of non-local domination.





An additional layer of analysis in this question would be to determine whether there is a significant difference in harvest by Alaska residents and non-residents, and by participants who live in the communities near where the fisheries occur, or do not. Rationalization systems that link historical harvest volumes to fishing privileges—as was the case in the halibut IFQ and Bering Sea crab rationalization programs—can confer comparatively more fishing privileges on non-Alaskans than on residents of the state and its coastal

communities. As was noted in the 2006 *State of Alaska Seafood Economic Strategies* report prepared by the McDowell Group:

[Rationalization programs] tend to favor out-of-state fishermen whose activities are already concentrated on a smaller number of fisheries. As a result, these non-Alaskans tend to be positioned to benefit more from rights associated with a single fishery. Fewer access rights for Alaskans not only means that they benefit less from the most profitable fisheries, but that they are unable to exploit fully the more marginal fisheries that otherwise would lend themselves to local participation.

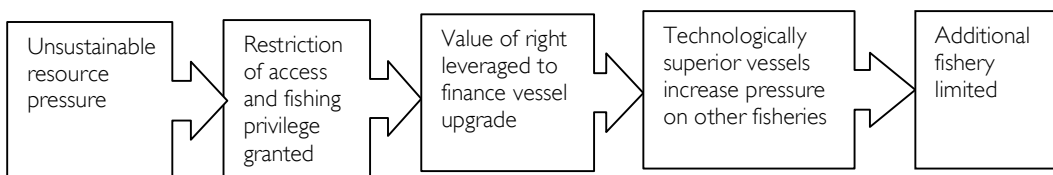
Presently, an analysis to consider the relative earnings of resident and non-resident fishermen in these fisheries cannot be readily conducted.

Have vessel characteristics changed in a given fishery or community?

Fishery regulations are blunt instruments. Policy makers and regulators set a goal, such as supporting small-boat fisheries or regional fleets. They then must use limited tools like pot limits, daylight fishing hours, maximum vessel lengths, size splits on quota, and others to try to control participation and efficiency in fisheries. But technology and innovation are important tools that enable well-capitalized fishermen to push toward the outward limits of the regulation. Fishermen innovate within the restrictions, and over time technological advances can eat away some of the original intent of the regulatory action.

An important way in which these limits have been pushed in Alaska since the implementation of the halibut IFQ program is in the creation of the so-called “Super-8” class of 58-foot or 60-foot fishing vessel, or the sponsoring of trawl boats to keep them within certain size limits for LLPs. The 58-foot limit for salmon seine vessels has long existed in Alaska fishery regulations. (The halibut IFQ fishery relies upon a 60-foot break between the two most common classes of halibut quota.) But a limit seiner that was constructed in the 1970s or 1980s has little or nothing in common with the new class of vessel that is being constructed for use in the Alaska fisheries. These vessels, which have frequently been constructed by individuals or businesses that were significant recipients of IFQs at initial allocation, are superior to the classic limit seiner in numerous ways (including their maximum weather capabilities, hold sizes, engine and mechanical systems, hull design, width).

Why does this evolution become important? Largely because these vessels—which meet all the regulatory strictures as “small boats,” are in significantly stronger positions to out-compete the classic limit seiners in the remaining open-access fisheries. The financial advantage that was gained in the original issuance is self-perpetuating—larger vessels enable fishermen to out-fish the competition, leading to more fishing history and greater potential gains in the case of a restriction. In addition, the fishing power of these more efficient vessels means that resource challenges may be more likely to occur in the future, which would suggest or necessitate limitation of additional fisheries. Finally, the economic scale at which these vessels must operate means that owners are likely to advocate for additional limitations in order to secure the inputs necessary to support these vessels. The following diagram demonstrates how the award of fishing privileges, such as IFQs or limited access privileges leads to increased fishing power, additional resource pressure, and additional fishery limitations.



And in fact, we see this issue—the pressure to confer economic advantages on a certain class of participants—playing itself out in fishery regulation in Alaska today. The problem statement adopted by the North Pacific Council to drive its consideration of the removal of latent LLPs in the Gulf of Alaska groundfish fisheries includes the following language:

Competition among fixed gear participants in the Western Gulf and Central Gulf fisheries has increased for a variety of reasons... The possible future entry of latent effort would have detrimental effects on LLP holders that have exhibited participation in, and dependence on, the fixed gear groundfish fisheries. Many fixed gear vessel owners have made significant investments, have long catch histories, and are dependent on [Western Gulf of Alaska] and [Central Gulf of Alaska] groundfish resources. These long-term participants *need protection from those who have little or no recent history and who have the ability to increase their participation in the fisheries.* [Emphasis added.]

How could this question be better answered?

The North Pacific Fishery Management Council has been considering the question of vessel tonnage in its analysis of latent LLPs and sector splits in the GOA. Vessel tonnage is one

way to attempt to measure the actual capacity of the fishing fleet (when length has become an arbitrary measure). Their analysis points to the poor quality of data on vessel tonnage.

Nevertheless, understanding the actual capacity of the fishing fleet—and validating the obvious connections to economic advantages conferred by the restriction of access to fisheries—is important. As actions by regulatory bodies in a given fishery beget consolidation of the fleet and concentrate economic power in a narrower band of fishermen, we can expect fleet capacity to continue to expand and apply pressure outwardly into other fisheries in a self-perpetuating manner.

The following data are taken from the November 2008 environmental assessment prepared by the NPFMC. They represent catch by vessels 58 and 59 feet in length. They show that the “super” class of limit seiner is growing.

Catch by 58- and 59-Foot Vessels in Gulf Fisheries

Year	Hook-and-line				Pot				Trawl			
	<100 gross tons		≥100 gross tons		<100 gross tons		≥100 gross tons		<100 gross tons		≥100 gross tons	
	Vessels	Catch	Vessels	Catch	Vessels	Catch	Vessels	Catch	Vessels	Catch	Vessels	Catch
Western GOA												
2003	6	14	0	0	21	3,384	1	*	21	717	3	*
2004	9	14	0	0	29	2,702	2	*	18	1,255	2	*
2005	14	65	1	*	22	654	2	*	22	3,213	2	*
2006	11	60	1	*	15	734	0	0	22	3,813	2	*
2007	17	155	1	*	15	872	2	*	23	3,684	2	*
2008	23	260	3	24	27	1,655	4	530	22	3,897	3	693
Central GOA												
2003	24	522	1	*	11	998	0	0	8	414	1	*
2004	27	589	2	*	9	1,464	1	*	5	61	1	*
2005	30	550	2	*	9	2,044	1	*	4	3	0	0
2006	28	1,514	1	*	15	2,587	1	*	4	34	0	0
2007	39	1,378	2	*	21	3,201	2	*	2	*	0	0
2008	50	1,421	6	507	17	2,024	4	174	1	0	2	*

Source: North Pacific Fishery Management Council; Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis for Proposed Amendment to the Fishery Management Plan for Groundfish of the GOA Management Area Allocation of Pacific Cod Among Sectors in the Western and Central GOA

Can we examine community demographics in light of fishing trends?

Demographic data on communities in Alaska are extremely limited. Decennial US Census data is one of the only consistent time-series sources of data, but its utility in describing trends in rural Alaska has long been debated due to the seasonality of rural communities. In addition, its usefulness in a dynamic policy environment is very limited, as significant changes can occur in the space of just a few years.

The only other consistent demographic indicator is the annual population estimate prepared by the Alaska Department of Labor and Workforce Development (ADOL). This estimate is based upon annual Permanent Fund Dividend filings, birth and death records, and other administrative data collected the State of Alaska.

Population data for three of the larger hub communities that we have considered—Kodiak, Sitka, and Sand Point show generally stable trends over the last decade. Only Cordova has seen substantial declines, with a 17% decrease in population since 1993, when the herring stocks collapsed (post-Exxon Valdez oil spill).

The smaller communities show mixed trends. King Cove has had relatively stable or increasing population. Hoonah has had slight population declines in the last decade but has rebuilt the population overall since 1980. (A major destination cruise ship development just outside of Hoonah—Icy Strait Point—has become an important driver for the Hoonah economy in recent years.) The community that has seen the starkest population declines has been Larsen Bay, on Kodiak Island. That community has lost more than 60% of its population since the population peak in 1985.

The Case of Larsen Bay

The case of Larsen Bay is interesting because it is a traditional salmon fishing and processing community with a significant concentration of setnet sites in the immediate vicinity and a salmon processing plant. (It is the only remote salmon processing plant still in operation on Kodiak Island). But the community currently faces extreme hardships across all levels of administrative function, including basic service provision (such as sewer and water service) by the city, administrative functions such as collecting utility payments, and a crumbling public infrastructure. In fact, a 2008 report by the Rural Utility Business Advisor program at

the Alaska Department of Commerce, Community and Economic Development showed that Larsen Bay was not able to meet essential capacity indicators related to the operation of its utilities.

The community has become a major tourism destination for hunters and sport fishermen, and there are continued frictions within Larsen Bay on how to balance the economic opportunity provided by the tourism industry against the needs of local residents and the demands visitors and tourism businesses place on community infrastructure. The community has seen a decline of more than 60% of its commercial fishing permit holders since 1994, down to only 10 people. Halibut quota ownership has declined from eight individuals in 1995 to zero individuals in 2009. Residents of the community now have very little connection to the fishing resource at their doorstep.

Fishery policy does not dictate all events in a small community, even if it is traditionally fishery dependent. But there are trends that are observable in Alaska and beyond it. The situation in Larsen Bay is similar to one observed in other rural fishing communities—in Alaska but also worldwide. Writing about rural Norway, Bjorn Hersoug notes that "...even if the service sector (public and private) is much larger than the primary fishing sector or the secondary processing sector, the tertiary sector is based on fishing, processing and aquaculture. Without the fisheries there are few reasons to maintain a heavy public infrastructure in these societies, having a limited, mainly seasonal tourist attraction."¹

Though numerous factors contribute to the decline of a community such as Larsen Bay—ranging from educational trends to energy costs, family-level opportunities, shifting economic conditions, and numerous other tangible and intangible elements—overall it seems evident that restricted access to the fishing resource at its shores is an important driver in the economic well-being of the community. As fishery access is chipped away and financial barriers to entry grow more significant, individuals in rural communities have fewer resources for overcoming those barriers than their counterparts in larger communities. Access to financial institutions is limited. Home values are low or owned by housing authorities, eliminating opportunities for home equity financing. Though acquiring fishing access privileges may technically be possible, often it functionally is not.

¹ Hersoug, Bjorn. 2005. *Closing the Commons: Norwegian Fisheries from Open Access to Private Property*. Delft, The Netherlands: Eburon Academic Publishers.

Part III: Challenges for Policy Makers

The discussions above raise important challenges for policy makers. Continued restriction of fishing access has impacts on residents of Alaska's fishing communities. If, as we have proposed in the introduction to this report, these results are observable, predictable, and self-perpetuating, then is it incumbent upon policymakers to observe and predict them, and to shape alternate policy? If not, do they assume some responsibility for the decline of communities that predictably follows?

We have lined out three characteristics of the community impacts that are seen following fishery access restrictions: they are observable; they are predictable; and they are self-perpetuating. Let us consider each of these characteristics in greater detail.

Policy and Regulatory Impacts are Observable

As we've discussed above, data limitations exist that make it difficult to fully answer questions that are pertinent to policy and regulatory decisions. The data gap that has received the most attention in recent years is the lack of meaningful data on crew participation in Alaska's fisheries, but there are additional significant challenges (including a lack of robust data on the value of Alaska's seafood products and no data on costs of operation at the vessel level). Nevertheless, we suggest that impacts are observable.

Unfortunately, policy tends to be driven by factors that are measurable. When moving forward with options for analysis and implementation, regulatory bodies such as the NPFMC tend to structure policy around those aspects of the fisheries for which data exists—how many boats participated, what they caught, where they fished, how many years they fished for. This is complicated by the fact that advocacy entities are sometimes in positions to assist with data collection. The less quantitative (but arguably equally important) elements such as relative community dependence, non-fishery reasons for varying participation, cultural and social importance of fishing activities, opportunity for meaningful participation in decision-making processes, and other factors.

Many of the concerns presented by harvesters and communities are subjective in nature. It can be challenging to show causality between fishery regulations and economic challenges in rural communities, particularly when trying to use existing data to do so. However,

viewed from a slightly greater distance, it is evident that policy decisions have observable impacts. For example, a case-by-case analysis of IFQ implementation on rural coastal communities will reveal specific exceptions and nuances in nearly every case. *But considered as a whole, it is clear that IFQs had a deleterious effect on communities.* This conclusion is supported by resident observation throughout the impacted communities. Similarly, the creation of the limited entry system had an observable outcome of restricting new entrance into commercial fisheries by next-generation participants. Again, nuances can be identified in nearly every case. But overall, there is a significant and valid observable trend.

Results are Predictable

More important than whether results are observable after they have occurred is whether they're predictable before programs are implemented, and *whether policy makers give credence to their potential impacts.* If they are, they can be mitigated.

We suggest that the impacts of continued, incremental access restrictions can be predicted, regardless of whether data explicitly exists to quantify these changes. When data do not exist (either because communities have been too small to have feasible data collection, or data are restricted by confidentiality constraints, or because data have not been developed to answer some of the socioeconomic questions), evidence from other communities and similar actions enable us to make valid predictions about the future impacts. Continued restriction of access to fisheries by a variety of means will:

- Eliminate jobs in the harvesting sector, among both skippers and crew.
- Lead to further consolidation of fishing fleets, quota and permit ownership, economic power and consolidate power in the decision-making processes among individuals or corporations that received access privileges in earlier processes.
- Reduce or eliminate realistic opportunities for new entrance into commercial fisheries by individuals who do not have access (through family, inheritance, or other means) to existing fishery capital.
- Have greater negative consequences for rural communities as compared to larger hub or urban communities.

- Lead to the construction of new vessels (or remodeling of existing vessels) that maximize the potential fishing power within regulatory constraints such as vessel length limits, pot limits, and other attempted control factors, increasing pressure across fisheries.
- Lead to the adoption of new technologies, including electronics and mechanical systems, that increase the fishing power of vessels and increase pressure on additional fisheries.
- Create increased harvest pressures in remaining open access fisheries, so that they are increasingly likely to need control measures to avoid biological harm.
- Create greater need for subsidy in rural communities where fisheries are no longer accessible.
- Exacerbate the current succession issues in the fleet, commonly referred to as the “graying of the fleet.”
- Accelerate as economic and policy power is concentrated in a group of participants who can benefit from additional access restrictions.
- Push fishermen to “fish for history” in otherwise marginal or unprofitable fisheries, in order to hedge against possible future access restrictions.

Policy Choices are Self-Perpetuating

When policies are implemented it can act as a validation of the approach. Hersoug (2005) notes that “an institutional pattern, once adopted, delivers increasing benefits by continued adoption.” He continues by saying, “Over time, such an institutional pattern will be increasingly difficult to change, even if it can be proved that alternative options may be more efficient [at achieving desired outcomes]... In the end we may end up with solutions that are “locked in.””

The history of regulatory action in Alaska’s fisheries shows clear evidence of ideas perpetuating themselves through their initial adoption. Oftentimes practices become enshrined in statute and regulation, making it hard to experiment with alternatives. Hersoug notes that “once a particular option is selected it becomes progressively more difficult to

return to the initial point when multiple alternatives were still available.” The idea that certain decisions restrict the future choices is referred to as “path dependency.”

The validity of certain policies, which were at one point chosen from among many options, often ceases to be questioned. For example, the principles of “historic participation” and “recent history” have both been enshrined in Alaska regulatory processes. The limited entry laws use the basis of recent fishery participation to award permits, and the IFQ halibut program further underscored that principle. These policies sought to recognize reliance on and participation in particular fisheries. Individuals with recent ties to the fishery were given continued access under the restricted programs.

However, there is no inherent rightness to a policy that identifies perpetuation of a given fishing fleet based on participation. An alternative policy approach would be to prioritize local participation as the most important goal of a fishery policy. Another approach would be a policy of “settlement,” such as has existed in Norway—where the maintenance of settlement patterns in rural communities is a policy goal.

Another self-perpetuating principle is the idea that vessel owners’ investment in a fishery prior to the implementation of a limited access privilege program (LAPP) such as halibut IFQs means that they deserve the lion’s share of fishing privileges awarded under such a program. An alternative approach would be to award limited access privileges to crew, communities, or other entities, with a goal of spreading the economic benefit of the allocative process through the widest group possible.

These options are not presented as recommendations, but rather to draw attention to the fact that, under the set of self-reinforcing policy options that have been selected for previous access restrictions, such suggestions can seem unfavorable or even somehow wrong. Certainly the class of owners or privilege-holders might find such suggestions to be out of sync with their own interests. But it is important to realize that the choice of economic efficiency over employment or community wellbeing is a policy that perpetuates itself over time.

Power Relationships in the Restricted Access Environment

We have already hypothesized that receipt of access privileges makes an individual or corporation more likely to receive access privileges in the future. We noted that value of

access privileges can be used to leverage additional financing and procure additional privileges or to increase the fishing power of a fishing vessel and increase the likelihood of receipt of privileges at a future point.

But possession of access privileges may also confer legitimacy on owners, creating power differentials within regulatory processes and bodies. Individuals who successfully advocate for their interests within regulatory processes develop relationships and credibility that can assist them in future efforts. It can be challenging to propose alternate systems, but even more so when the proposer is excluded from the established fishing elite.

The Limits of Quantitative Analysis

This paper has attempted to focus on the concept of combination fisheries. By definition, combination fisheries occur in a complex environment. The combination fishery concept is one of interdependence across years, seasons, gear types, species, and myriad other factors.

But the basic strength of combination fishing—its diversity, adaptability, and dynamism—makes it hard to assess and understand. How do analysts deconstruct complex relationships to identify interdependence and causality? How do you compare the relative benefits of a system that defies attempts to describe it?

Fishery regulators know that it is difficult to incorporate elements into your analysis if data do not exist to describe them. (The most important example of this in recent years has been the lack of crew data, and the subsequent challenge of incorporating crew into the crab rationalization analysis and program.)

But even where data do exist, there can still be barriers to their use. For example, the CFEC is able to perform detailed analysis of fishery statistics beyond that which is presented in their regular reporting. However, those analyses are only available on a fee for service basis, as the commission must cover its own costs. Therefore the richness of the data collected by the group is not necessarily available to all parties.

Another challenge is that data collection is, at its base, an expensive undertaking. The economics of implementing robust data programs in very small communities can be questionable. But without the data to describe past and current conditions and to project

likely future outcomes, small communities will consistently face challenges in articulating their needs in decision-making processes.

Improving the Availability of Data

There are two ways to improve data availability to support decision-making. The first is to expand the accessibility of data that is already being collected. The second is to identify methods for filling data gaps. Options for each category are presented below.

Expand Accessibility of Existing Data

Several superlative data sets already exist. However, the accessibility of data is subject to some constraints, particularly for individual fishermen or small organizations with limited financial resources. Potential expansions to data availability include:

- **Expanding standard analyses conducted by the Commercial Fishery Entry Commission.** The CFEC compiles and publishes some of the best data related to harvest, participation and value that is available. This data is freely available on their website. Data exist related to individual fishermen, residency of fishery participants, specific permits, fishing vessels, and other critical elements of the fishery. The data is systematically analyzed and published in useable data sets in numerous useful ways.

However, CFEC has access to additional layers of information, deeper than those that are published in their standard datasets. CFEC staff can conduct special data analyses upon request. Such analyses are conducted under a fee-for-service arrangement, in order to cover the costs of the additional analysis. This additional data can be highly useful for analyzing commercial fisheries, including impacts or potential impacts of regulatory actions.

However, research fees may serve as barriers for individual fishermen or small fishery organizations that are attempting to assess and advocate about regulatory issues. Additionally, interested parties may not be aware of the existence of the deeper layers of data.

Sample analyses might include:

- *Analysis of vessel characteristics by size class and fishery participation.* This would enable people and organizations to analyze and comment on trends in fleet capacity.
- *Species harvested under “miscellaneous” permits, such as miscellaneous saltwater finfish statewide permits.* This would enable analysis of key species groups within the “miscellaneous” classes, such as Pacific cod.

If greater data accessibility would assist members of the public and small organizations in advocating effectively on behalf of their needs and interests, there may be a compelling public policy argument for expanding CFEC's standard analytical sets.

- **Standardizing data collection and reporting standards within the Alaska Department of Fish and Game.** ADF&G has several commercial fishery administrative regions. Regions have some authority in setting up data collection and reporting standards. While some data points are collected across all state fisheries (typically through the licensing process, which is handled by the CFEC), other information may or may not be collected based on the needs of the regional managers. For example, a region *may* collect data related to vessel characteristics as part of the registration process for a given fishery, but it does not *necessarily* collect the data.

Once data is collected, there are different reporting standards across the various administrative regions. For example, the Westward region (Region IV) issues regular annual management reports (AMRs) for the fisheries that it manages, including data on biological results, economic contributions, and fleet characteristics. Other regions may only issue management reports in advance of Board of Fisheries cycles, or in multi-year cycles. All regions likely collect data that is not tabulated or published, due simply to staff constraints and limited demand for the information.

Nevertheless, standardization of data collection and reporting practices may enable fishery participants and organizations to better assess fishing activity and regional issues.

In general, access to good data is critical if individuals, communities, and other stakeholders are to advocate on their own behalves. Working to ensure that information is available to groups with modest means may inform policies that support smaller communities, smaller businesses, and alternative models of management and allocation.

Alternatives to Major Data Programs

Where existing data are found to have limited utility, or to be inadequate for meaningful assessment, new approaches may be important. In some situations broad-scope data collection programs are desirable. But in many cases, and particularly in rural communities, intensive and ongoing data programs may be very expensive, or difficult to implement for geographic reasons. In those cases, communities can be left with little data to articulate their experience, even when the need for such data is compelling. Additionally, the simple fact that data *is not* being collected can serve as a barrier to inclusion or consideration in regulatory processes, *even if impacts are observable and evident*.

Two of the greatest gaps in data availability are in socioeconomic and demographic data. For reasons discussed above, US Census data are of limited utility when assessing trends and causality related to fishery policy and regulation. The ten-year space between censuses is too long to be useful for examining causality for anything but the largest actions.

When quantitative data are insufficient or fail to provide the depth of information necessary to inform policy, direct inquiry in communities is an appropriate next step. There are numerous methods for community-level data collection, but we highlight two methods that show promise.

- Self-monitoring. When communities face regulatory or policy actions that impact them, they may find that the information they need to portray their interest or position simply does not exist. Data on population trends, local economic trends, age and demographics, fishery participation and catch data, earning and income data, and other critical information points may not be available. Though communities can advocate for large-scale data collection programs that respond to their individual needs, budgetary constraints, political constraints, and other issues can keep essential data from being collected. An alternative approach is to develop

community-level data collection programs. In that way, communities can ensure that they have the necessary information to support their needs.

A model for community-driven data collection has been piloted in the Pribilof Islands. Through the Bering Sea Integrated Ecosystem Research Project (BSIERP), economic researchers partnered with residents in the Pribilof Islands to develop baseline demographic and economic data for the community of St. Paul. The data collection was designed to be replicable by community members. As a result community members are able to be pro-active rather than reactionary when facing potential impacts.

- Rapid Assessment Process. RAP is defined as an “intensive, team-based qualitative inquiry using triangulation, iterative data analysis and additional data collection to quickly develop a preliminary understanding of a situation from the insider’s perspective.”² RAP allows researchers to compile significant amounts of information about a research question, on-site. It takes the perspective of local participants into account, and provides meaningful information from a relatively compressed amount of research time. RAP may show promise for capturing local information about fishery management outcomes and processes when a larger, longitudinal data collection program is not feasible.

Where customary data programs fail to tell the story, or are challenging to implement, alternative data approaches must be recognized and encouraged.

IV. Conclusions

In this research we have examined trends in fishing communities, and considered their linkage with access restrictions. We have explored the shifting landscape of fishery regulation, and the differentials in power, wealth, and legitimacy that regulatory actions can confer. We have also examined the role of combination fishing as a model for Alaskan fishermen, and have discussed the challenges to this model in the face of incremental access restrictions.

² Beebe, James. 2001. *Rapid Assessment Process*. AltaMira Press.

We also have argued that access restrictions are self-perpetuating, and that they are likely to lead to ever more consolidation and a narrowing of the field of participants. We argue that the impact on small boats and small communities is evident, and that these are real and legitimate concerns, even without perfect data sets to describe the changes.

Absent data, it is essential to err on the side of Alaskans and Alaska communities. The changes in Alaska's fishing communities are observable, and they are also predictable. Most importantly, they are self-perpetuating. Without regulatory and policy choices that favor these smaller fishing operations and smaller communities, the trends toward consolidation of fishing privileges and disintegration of communities will likely continue apace.