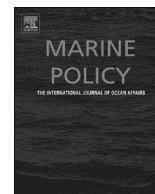




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Challenges for New Zealand's individual transferable quota system: Processor consolidation, fisher exclusion, & Māori quota rights



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ABSTRACT

This paper identifies three management initiatives in New Zealand's Individual Transferable Quota system that facilitated consolidation of the processing sector and limited market access for fishers, even those with quota rights. They are: (1) the placement of responsibility onto a Māori trust in 1992 and tribes (*iwi*) in 2004 to manage a limited amount of quota to benefit all Māori, fishers and non-fishers, which increased the use of quota as an investment asset; (2) the creation of Annual Catch Entitlement (ACE) as a fish access right separate from the quota ownership right, which made it possible to overcome consolidation limits by leasing ACE; (3) the 1997 Licensed Fish Receiver Act that made it illegal for fishers to sell fish off the boat without food safety certification. This account of the fishery policy environment in New Zealand explains why, despite owning significant portions of New Zealand's fishing quota, few Māori are fishing, processing, or selling fish caught by Māori quota.

1. Introduction

In 1986, the New Zealand government established one of the world's most celebrated sustainability success stories of fisheries privatization, the nation's comprehensive Individual Transferable Quota (ITQ) system [1,2].¹ ITQ system implementation, however, was only possible after Māori agreed to give up their aboriginal title rights to the nation's fisheries [3]. In return, in 1992, the government granted Māori 10% of the quota ownership rights for the 26 marine species already in the ITQ system, 20% for all species added in the future, and 50% shares in the nation's largest fishing company [3]. The government allocated the quota shares to a trust, and in 2004, the trust divided the quota asset between 57 Māori tribes, or *iwi* [4]. The goals of the 1992 Fisheries Settlement were two-fold. The first was to involve Māori in the business of fishing [3,5,6]. The second was to do this without changing the design of the ITQ system. While the second goal was achieved – the Māori settlement did not change the structure of the ITQ system – the first was not.

Māori represent about 15% of New Zealand's population of 4 million [7]. As of 2016, they own almost 50% of the nation's fishing quota [8]. But few Māori are fishing, processing, or selling fish caught by Māori quota [9]. Instead, quota managers lease quota to the highest bidding fishing operations, and use the lease profits to purchase more quota for *iwi* [10]. Rarely are the highest bidding companies Māori-

owned. As a result, a handful of vertically integrated processing companies, which control access to and wealth distribution from the majority of New Zealand's fisheries, also fish, process, and sell most fish caught by Māori-owned quota [10–15].

Māori groups manage quota for capital gain, rather than as a fish access right, in order to protect the value of their fisheries grievance settlement asset for future generations. In addition to purchasing more quota, *iwi* also use revenue from quota leasing to fund social and cultural development initiatives, including Māori language revitalization. However, as Donald Brown, an intergenerational eel, abalone, and flounder fisher who does not own quota, explains: fishing, not language learning, is his culture. “*I never knew te reo [Māori language]. Being told I need to know te reo to be Māori – that's not what Māori culture is for me. Fishing is my culture. Taking away my fishing right takes away my culture.*”

When *iwi* manage quota for profit, however, Māori fishers without adequate cash to out-bid vertically integrated processors are excluded. Over the last ten years, in attempt to amend fisher exclusion, without diminishing the overall value of their quota asset, quota managers from larger *iwi* implemented additional quota management strategies that aim to promote small-scale fishers' economic development by subsidizing fishers' access to fishing rights. This paper examines these strategies. In doing so, it analyzes the extent to which the re-allocation of quota to small-scale fishers can curb processes of fisher exclusion

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¹ Stocks of known status show improvement in New Zealand, but the status of an increasing number of fish stocks is unknown [34]. Prior to ITQ system establishment, New Zealand's fisheries were managed by a licensing system, which restricted new entrants but did not restrict total fish take [23].

and processor consolidation in New Zealand's commercial fisheries [11,12,15]. This analysis is significant for fishers, fisheries managers, and for broader understandings of possibilities for equity in ITQ fisheries, *after* quota consolidation has already occurred.

From 2013–16, the author spent four seasons fishing with inshore Māori fishers, and working with fishers, processors, and quota managers from the Māori *iwi* (tribe) Ngāi Tahu on strategies to manage quota to promote the economic development of small-scale fishers. The Ngāi Tahu *iwi*, whose territory covers most of the South Island, holds one of the largest *iwi*-owned quota packages in New Zealand. Data gathered during this time highlights regulatory aspects of New Zealand's ITQ system that continue to facilitate processor consolidation and exclude fishers—even those who own quota. These findings re-direct responsibility for small-scale fishers' exclusion away from Māori *iwi*, and onto the government, who, unlike *iwi*, has the authority to change how the ITQ system is governed. As demonstrated by Foley et al., when governments implement ITQ systems, they can simultaneously implement policies that maintain fishery benefits for local communities [16]. The opposite is also true. Policies, especially those the New Zealand government implemented to monitor fishers' compliance with the ITQ system, can facilitate the removal of fishing benefits from local communities, even when local fishers hold ITQ rights.

The remainder of this section discusses theoretical considerations that inform the paper's methodology. Part 2 identifies policies related to New Zealand's ITQ system establishment that facilitated small-scale fisher exclusion, gave rise to the use of quota as an investment asset, and concentrated control of the processing sector. Part 3 illustrates how these policies continue to exclude fishers, even those fishers who have fish access rights, by examining strategies that the Ngāi Tahu *iwi* deployed to subsidize small-scale fishers' economic development. Part 4 discusses the broader impacts of small-scale fishers' exclusion and processor consolidation in New Zealand, and presents alternative ITQ system management options.

1.1. Accumulation by dispossession

This paper examines processor control and fisher exclusion as processes of accumulation by dispossession [17]. Accumulation by dispossession, a concept geographer David Harvey popularized with his adaptation of Karl Marx's primitive accumulation, is the process whereby elites obtain control of wealth through practices that restrict others' access to resources necessary for economic development (or means of production) [17,18]. In this case, ITQ system implementation restricts small-scale fishers' access to commercial fisheries. Those with access, including vertically integrated processors with ITQ rights, accumulate wealth by paying low wages to those without access, who must labor for their subsistence. In this conception, wealth is not accumulated by the frugality of the elite, but rather through the exploitation of those without resource access. Those with resource access are thus incentivized to continue to maintain exclusive control [18,19]. Privatization of resource rights, as is the case with ITQ system implementation, facilitates processes of accumulation by dispossession [20]. However, for Māori, as well as other indigenous groups, privatization can also be an opportunity to claim and obtain rights lost under colonial regimes.

1.2. Exclusion and access

To understand why fisher exclusion and processor control of New Zealand's commercial fisheries (evidenced in economic analyses of consolidation [11,12]) persists, despite Māori quota ownership, this paper draws on Jesse Ribot and Nancy Peluso's theory of access [19]. According to Ribot and Peluso, property ownership, such as ITQ rights, is one of multiple factors influencing an individual's ability to derive benefit (derived economically) from, or "access," a resource. Other

factors that shape an individual's ability to derive benefit from resources include access to technology, markets, identities, regulatory officials, as well as biological and ecological conditions [19]. To identify these factors, Ribot and Peluso focus on situated and historical conditions shaping the terrain in which individual resource users operate.

This paper's access analysis highlights policies regulating all quota and fish trade, as well as colonial legacies impacting individual Māori fishers' access to capital, that limit fishers' abilities to derive benefit from fisheries, even when they hold quota rights. These limits incentivize the use of quota as an investment asset by non-fishers. For example, Māori groups who own quota for offshore fisheries, but do not own the boats and gear needed to access the fishery, find it more immediately lucrative to use quota as an investment asset than a fish access right. Access to markets also impacts how benefits from New Zealand's fisheries are distributed. In particular, in situations where individual fishers have access to boats, gear, and quota, but do not meet the government's requirements to become a fish processor, certified processors control fishers' incomes and potentials for economic development. Vertically integrated processors thus accumulate wealth by dispossessing small-scale fishers.

Here, vertically integrated processors are defined as operations who pay non-owners for their labor because the operation's fishing and processing capabilities – determined by ownership of fishing rights, boats, gear, and food safety certified processing infrastructure – exceed the owners' labor capacities. Small-scale fishers are defined as fishers who do not own the means necessary to fish, process, and sell their own fish.

2. Processes of exclusion in the management of New Zealand's ITQ system

New Zealand's ITQ system, which the government implemented in 1986, was the world's first comprehensive ITQ system: a privatized fisheries management initiative that governments elsewhere have since emulated and adapted [21]. New Zealand's system was closely based on the theoretical model designed by fisheries economists to address overfishing due to overcapitalization, or the problem of too many boats and too few fish [12,22–24]. In New Zealand and elsewhere, fishery economists attributed overcapitalization to government subsidies of fishing fleets [24,25]. Governments increased subsidies dramatically in the lead up to the 1982 United Nations Convention on the Law of the Sea agreements, which gave nations the authority to administer all economic activity taking place up to 200 miles out from shore (a range defined at this time to be the exclusive economic zone (EEZ) of nations) [26]. Starting in the late 1970s, fishery economists argued that privatization of fishing rights, in the form of individual transferable quota, could stop overfishing caused by overcapitalization [22,27]. The New Zealand government, governing the world's fifth largest EEZ, was at the time transitioning to a market-based economy [28] and therefore was a willing test site for ITQ system design [12].

To establish the ITQ system, the New Zealand government set a cap on the Total Allowable Commercial Catch (TACC) for 26 commercial fish stocks, defined by species and geographical region [29]. Additionally, the government allocated fishers a right to a percentage of that cap in the form of a quota, and also created a market for quota trade [23,24,30–34]. To monitor compliance, the government regulated fish buyers and sellers. The government's goal in creating a market for quota exchange was to provide an economic incentive for fishers to exit the fishery, without stifling economic activity related to fishing. The market created the possibility for more efficient fishing operations (defined in economic theory as those operations with the most surplus capital) to buy quota from fishers with a higher cost per unit of catch ratio.

New Zealand's ITQ system reduced overcapitalization [30]. It also led to small-scale fishers' exclusion [35] and processor consolidation

[11,12,15,36,37]. Documented effects of small-scale fisher exclusion and processor consolidation in New Zealand include economic stagnation [38,39], reduced local monitoring [40], and the destruction of local fishing communities [41]. This exclusion impacted Māori fishers, in particular.

2.1. Māori fisher exclusion

At the time of ITQ system implementation, New Zealand's inshore fisheries and fishing communities were predominately fished and populated by Māori [5,42,43]. However, few Māori fishers met the government's requirements to obtain quota [3,44–46]. The government only allocated quota to those fishers with reported catches of up to 80% of their income for the three years preceding the implementation of the ITQ system in 1986 [24]. Additionally, to reduce the number of fishers in New Zealand's waters, the government also set minimum amounts of quota fishers must have to fish commercially [24]. Fishers who reported lower catches were excluded, including many Māori [42,43,47].

Māori exclusion was not due to limited participation in fishing. Instead, for many, exclusion was the result of their diversified livelihood strategies, as fishers supported meager fishing incomes with additional employment elsewhere [42,43]. For others, exclusion was due to a lack of reported catches. Fishers did not report catches in part to reject the need to participate in a government system that regulated fishing in coastal regions that Māori historically governed and owned [42,43]. Fishers also failed to report due to a lack of knowledge of impending ITQ system implementation and the potential benefits of reporting. Māori fishers' reported catch histories were particularly low in areas removed from state-sponsored development initiatives, where reporting did not seem necessary or was onerous due to the amount of time or distance required to report [42,43].

While Māori fishers failed to report catches in the pre-quota years, owners of vertically integrated processing companies with knowledge of ITQ system implementation, and access to extra boats and gear, put additional boats on the water to increase their reporting. The government took account of this increased reporting through a reduction of TACC, or fish take limits, instituted after ITQ system establishment [24]. The government initially, therefore, allocated quota primarily to previously state-subsidized operations that fishery economists blamed for the depleted state of the fisheries to begin with [34].

Small-scale fisher exclusion increased immediately after allocation, when representatives of vertically integrated processing companies headed to the docks, "checkbooks in hand," to offer fishers cash for quota [11,24]. Processors, most of whom were non-Māori, who had invested in physical infrastructure contingent on fish catch, now wanted to ensure their access to quota and fish. Fishers, especially those fishing in fisheries that were risky to access, accepted payments from these processors to exit the fishery. In situations where fishers might have wanted to grow their operation by buying more quota, processors had an advantage: at the time of quota allocation, banks would not loan against quota or boats, but they would loan against physical infrastructure on land, including that owned by processors [48]. Māori fishers had already suffered dispossession of their right to own land by colonial-era regulations and were largely fishing in small-scale operations. Due to a lack of capital, Māori were especially unable to access cash to buy quota.

2.2. The Māori fisheries settlement

Māori fishers voiced their exclusions, and in 1987 the New Zealand Māori Council, a group representing all Māori, brought the fishers' concerns to the courts [42]. The claimants argued, successfully, that the government's presumed ownership of the nation's fisheries, a claim that was necessary to allocate ITQ rights, violated Māori fishing rights, as protected in aboriginal title and by the nation's founding document,

the 1840 Treaty of Waitangi [3]. To determine the extent of Māori fishing rights—given the lack of reported data on Māori fish catches—tribal leaders, academics, and government historians initiated a multi-year process of meeting with fishers around the country and analyzing historical documents that discuss Māori activity in fishing. The collected data culminated in two extended reports from the Waitangi Tribunal [42,43], a government research institute that was (and is) charged with interpreting the meaning of Māori treaty rights in contemporary times [49]. In the reports, the Tribunal supported claims from Māori fishers that their customary fishing rights were always also commercial fishing rights, a finding in contrast to the popular imagery of indigenous peoples as existing outside of commercial exchange. The Tribunal also argued that Māori fishing interests extended to offshore fisheries: despite a lack of Māori ownership of boats in these fisheries at the time of ITQ system, the Tribunal argued that Māori would be offshore boat owners had the government not restricted Māori access to capital through unjust colonial policies, including those that removed Māori from lucrative farmland without compensation [42,43].

To allow the ITQ system to continue while negotiations were underway, an interim settlement was reached in 1989. The 1989 Māori Fisheries Act lifted the halt on ITQ system implementation and granted 10% of the quota already allocated to a newly established Māori Fisheries Commission, which the government purchased from fishers [3,5]. The final 1992 Fisheries Settlement allocated commercial fishing rights to Māori collectively under the Te Ohu Kaimoana trust, which was mandated to represent all Māori. Additionally, the government also created a new category of rights for Māori. Incongruously referred to as "customary" rights, these rights permit fish take above daily recreational limits but prohibit the sale of this fish [46,50].

In signing the settlement, Māori representatives and the government agreed that this exchange not only addressed Māori grievances in ITQ system implementation, but also all previous marine fisheries-related grievances that Māori had with the government pre-ITQ system implementation [3]. Māori involvement with fishing was extensive prior to the British colonization of New Zealand, which began in the late 1700s [5,42,43]. Starting in the mid-1800s, the government slowly restricted Māori access to fisheries by restricting Māori access to capital and commercial markets to sell fish [42,43]. With the fisheries settlement, the government abdicated responsibility of mitigating effects of colonial-era fishers' dispossession, as well as contemporary fishers' exclusion, onto the Māori trust, and later, Māori *iwi* (tribes).

2.3. The Māori quota trust

Ironically, the transfer of quota shares to settle Māori fishery grievances concentrated control of fish sales and trade in the hands of non-Māori processors. This occurred in several ways. First, the allocation of quota to a trust created a new player in the fishing industry with quota but no boats. As an entity that itself does not fish, the trust managed the quota as an investment asset and made a pool of quota available for processors with surplus capital. Processors could lease (or rent) this quota to avoid limitations on industry consolidation.² The trust's management of Māori-owned quota as an investment asset furthered processor control through accumulation by dispossession: processors with quota obtained capital to fund additional quota purchases by paying hired fishers a low percentage of the total sale of the fish. Researchers studying other ITQ systems describe this dynamic of fisher dispossession from processor control of fishery access rights as "sharecropping" [51,52].

The government's use of quota to settle Māori grievances also gave an indication to banks and potential investors that the government had

² In 1992, quota consolidation limits in New Zealand were restricted to 35% of quota holdings in offshore fisheries and 10% in high-value inshore fisheries, including rock lobster and abalone. The government since increased these limits to 45% and 20% respectively.

a vested interest in maintaining the long-term value of this property right, or else risk a re-negotiation of the fisheries settlement. If the government decided to close a fishery, a power granted in the Fisheries Amendment Act 1986 that established the ITQ system, the value of the quota for that fishery would vanish. A substantial decline in the value of quota would alter the terms of the settlement agreement and create a legal possibility for the renegotiation of the fishery settlement. Banks therefore had more confidence in the permanent value of ITQs after the Māori Fisheries settlement.

According to the terms of the settlement, Māori were to decide amongst themselves how to divide up the asset. The potential to obtain fishing rights, however, prompted contentious negotiations among Māori groups to determine both the nature of Māori governing structures and governing groups' relationships to fishing in contemporary times [53]. The negotiators designed the settlement to benefit all "Māori," but there was, and is, no "all-Māori" governing body [54]. Instead, Māori individuals are represented in part by mandated *iwi* representatives and corporately structured Mandated Iwi Organizations [54]. Individuals affiliate with *iwi* genealogically, but for some the experience of being Māori is not tied to an *iwi* identity, and they are not affiliated with any *iwi* [55].

Following several contentious court cases and a multi-year series of meetings with fishers around the country, the Māori Fisheries Act 2004 divided Māori-owned quota between *iwi* based on population and coastline, and kept a portion in the trust's hands to manage as an investment asset for unaffiliated Māori. The decision to allocate quota to *iwi* based on population prompted a wave of tribal enrollment initiatives, as *iwi* sought to grow their population numbers, which are not diminished through intermarriage [54].

The dividing up of Māori-owned quota posed challenges for smaller *iwi* and those with limited coastlines. Both fishers and managers view the smaller quota packages held by these groups as "uneconomical." Quota shares are uneconomical when the fish the quota share corresponds to obtains a market price that does not cover fishing costs. Larger *iwi*, with fewer "uneconomical" shares, are under pressure to mitigate fisher exclusion from ITQ system implementation, while simultaneously maintaining the broader and long-term benefits of the quota asset for non-fishers (including decedents of previously excluded fishers) and future generations. In doing so, however, *iwi* quota managers must work against the effects of two policies in New Zealand's ITQ system that – unintentionally – maintain processor control: the creation of Annual Catch Entitlement and the Licensed Fisher Receiver certification regulations. The government designed these policies to promote ITQ system monitoring. However, they also limit the extent to which *iwi* quota re-allocation initiatives can promote small-scale fishers' economic development.

2.4. Annual Catch Entitlement (ACE)

The government's creation of Annual Catch Entitlement (ACE), established by the 1996 Fisheries Act, implemented in 2001, separated the quota ownership right from the fish access right and furthered processor concentration. The government's aim in creating this legislation was to incentivize fishers to report their catches by promoting within-season trading of fish access rights [13]. Accurate fisher catch returns are integral to ITQ system functioning, as fishers' accounts of their catches (per unit of effort for each fishing trip), are the main source of data that the government uses to determine the TACC for most fisheries [29]. Under the ACE regulations, quota ownership corresponds to a right to a percentage of the 100 million registered quota shares for each fishery each year. ACE is the specific tonnage a quota right corresponds to. With ACE, fishers no longer have to ensure their quota package at the start of the year matches the fish they will catch. This is especially important in multispecies fisheries when fishers use unspecified fishing gear and cannot easily target specific species. At the end of each fishing year, a fisher's ACE package must

match the fish they reported as caught, or the fisher will be charged a fine, called a "deemed value." The government aims to set species-specific deemed value fines high enough to discourage commercial fishers without ACE from intentionally targeting the species and low enough to encourage fishers who unintentionally catch it to report it [15].

The ACE legislation increased processor control because ACE does not count against quota consolidation limits [15]. The possibility for ACE to override consolidation limits, arguably, promotes processor investment in more efficient fishing and processing infrastructure that can increase New Zealand fishers' competitive edge against international fishing companies, especially those fishing offshore and in the deep-sea. However, the opportunity for larger operations to raise capital by decreasing competition excludes small-scale fishers and new fishers, especially those seeking ACE to fish inshore, higher-value species, such as abalone (*Haliotis iris*), rock lobster (*Jasus edwardsii*), and oyster (*Tiostrea chilensis*). By making it possible for one entity, usually a vertically integrated processor, to own major portions of the ACE for a particular fishery (as is the case, for example, in the abalone fishery), ACE regulations exclude new fishers. Fisher exclusion has adverse economic effects, as reduced domestic competition is shown to also reduce the competitive push for processors to invest in or develop value-added fish commodities [38,39].

The ACE regulations additionally furthered processor control and small-scale fisher exclusion by making it possible for quota owners to register quota as a security for raising capital [15,38]. This possibility makes it lucrative for those no longer fishing and for non-fishers to buy quota as an investment asset. It also makes it possible for those who accumulated quota in the early quota years to increase their competitive edge in accumulating more quota, by using their quota to raise capital for investments. The possibility to use quota to raise capital addresses a reason small-scale fishers were excluded from accumulating quota in the early quota years: due to their own lack of capital as compared to processors. This, however, came too late, after quota prices for inshore species increased substantially due to processor control.

2.5. Licensed fish receivers

Also in 1996, the government introduced legislation to regulate fish sale and trade that furthered processor control and small-scale fisher exclusion in New Zealand's ITQ system. Under New Zealand's Fisheries Act 1996, commercial fishers are not allowed to sell the fish they catch to anyone other than a Licensed Fish Receiver. To become a Licensed Fish Receiver, an individual or corporation must obtain and maintain fish processing operations that are in compliance with food safety code requirements. Would-be processors must construct processing facilities that meet building code certification standards for commercial food preparation facilities, they must obtain land to build the facility on, and they must pay certified engineers and builders to design and construct the facility.

Licensed Fish Receiver regulations increase the government's ability to monitor fish sales, to ensure that all fish sold in New Zealand is in compliance with the quota system, as well as national and international food safety standards. These regulations also increase the amount of capital one must obtain to access fish markets. Anyone wishing to sell New Zealand fish must first obtain land to develop a processing facility, cash to pay certified engineers and builders to construct the facility according to code, and access to either large amounts of fish or high-end markets to cover processing costs.

Processor certification requirements that increase the amount of capital individuals must obtain to access fish markets are especially challenging for Māori to meet. Effects of colonial-era policies continue to restrict access to capital for Māori. These policies include government land-titling schemes for Māori-owned land in the late 1800s that allocated titles to groups of Māori individuals and their descendants, as

opposed to individuals. The government designed group-titling to prevent dispossession of Māori-owned land, but it led to a situation where Māori land blocks in contemporary times can have upwards of 300 owners [56,57]. Over the last ten years, multiple-ownership in land posed problems for small-scale Māori fishers who are attempting to also establish fish processing operations. Land with multiple owners cannot be used to raise significant capital, as profits from investment and sale are split between owners. These contemporary effects of restricted access to capital historically for Māori present challenges for *iwi* quota managers, as *iwi* negotiate trade-offs between subsidizing individual fishers' development of fishing and processing operations, or leasing quota as an investment asset to obtain revenues to benefit the *iwi* as a whole.

3. *iwi* quota management

In 2004, the Māori *iwi* Ngāi Tahu,³ covering most of the South Island, became one of the first tribes to acquire quota from the Māori trust. Ngāi Tahu, with a population over 50,000, also obtained one of the largest quota packages [58]. Ngāi Tahu therefore has fewer uneconomical quota holdings compared to smaller *iwi*, and has made some of the longest-running attempts at managing quota to promote small-scale fishers' abilities to sustain their livelihoods from fishing. Analysis of Ngāi Tahu's quota management strategies provides an opportunity to examine the extent to which the re-allocation of quota, an exclusionary right, can address small-scale fishers' dispossession from New Zealand's commercial fisheries.

The following sub-sections discuss three strategies for quota management that aim to facilitate fishers' economic development without diminishing the overall value of Ngāi Tahu's quota asset. Each strategy is defined by ACE ownership (the tradable fish catch right derived from quota) and involves a different relationship between processors and fishers. These strategies are described here as: (1) the sharecropper strategy, in which the *iwi* sells ACE to non-*iwi* processors who allocate it to Ngāi Tahu fishers; (2) the development pool strategy, in which the *iwi* sells ACE through an *iwi*-owned processing plant, at a subsidized rate, to Ngāi Tahu fishers; and (3) the fisher-owned Annual Catch Entitlement (ACE) strategy, in which the *iwi* sells ACE directly to *iwi* fishers. Each strategy gets progressively closer to devolving more benefits to tribal fishers, but none do this in a completely successful way.

3.1. The “sharecropper” strategy

The most common management strategy for Ngāi Tahu-owned quota – a non-subsidized strategy – is sale of ACE (tonnage) derived from *iwi* owned quota (a percentage of the TACC) in multi-species packages by auction. This strategy ensures that the *iwi* obtains revenue to cover the cost of annual quota levies that are part of the ITQ cost recovery system. In leasing, processors obtain rights to ACE for a multi-year period (usually a maximum of 5 years, as per fishery regulations). This mirrors the strategy employed by the Māori trust to lease quota. The only stipulation from the *iwi* is that the processor must make the ACE available to Ngāi Tahu fishers, when they want it. This stipulation contradicts the ITQ system design to reduce over-capitalization in the fishery because it introduces new boats to the fishery and takes ACE away from larger, arguably more efficient boats. This rarely happens, however, as Māori fishers are constrained by lack of gear to access offshore fisheries (that extend beyond 12 nautical miles).

Even when Ngāi Tahu fishers have boats, gear, and fuel, fishers are

³ Ngāi Tahu is governed by a board represented by an appointed official from each of the 18 Ngāi Tahu sub-tribes, or *runanga*. The board appoints a CEO to manage assets owned by the tribe, which include capital obtained from the tribes' land based settlement in 1995 in addition to quota.

reliant on the processor for both their fish access right and their access to revenue from fish sales. Processors take the cost of the ACE out of the price they pay the fisher for the fish. Fishers do not obtain ACE, which is necessary to avoid a deemed value fine, until after they land the fish to the processor. Reliant on processors for access to *iwi* ACE, fishers cannot negotiate prices between processors. This “sharecropper” relationship exemplifies structural poverty. Despite limited benefits conferred to fishers, this strategy is the main quota management strategy deployed by Ngāi Tahu and most other *iwi*, especially when quota shares are uneconomical, because it displaces the risk of uncaught fish onto processors. However, for inshore fisheries, the benefits from this displaced risk are limited by fishers' lack of economic stability and potential to develop.

The “sharecropper” dynamic is evident in Ngāi Tahu fisher William Booker's⁴ “privileged” access to *iwi* ACE. Booker purchases flounder (*Rhombosolea plebeia*) ACE from a major processing plant, which purchases the ACE in five-year terms from Ngāi Tahu. Booker is an intergenerational fisher who fishes this ACE on Te Waihora/Lake Ellesmere, a brackish lagoon on the east coast of the South Island. Te Waihora/Lake Ellesmere was an economically and culturally important fishery pre-ITQ system implementation. In 2016, only a handful of fishers remain.

Booker lived in a tent for two years to obtain enough revenue to pay for his boat. He distributes fish (caught on customary permits) to local community members and elderly fishers who were excluded from the fishery at the time of ITQ system implementation. Booker uses revenues from fish sales to pay for his boat, fuel, gear, ACE from the processor, as well as housing and food payments for two other previously unemployed Ngāi Tahu tribal members. He maintains his access to capital in part by fishing high quality fish, by freezing fish on the boat, and by delivering fish to the processor within 24 h after it is caught, so that his fish obtains a higher return at the processor's fish auction. Booker's ability to accumulate enough wealth from fishing to expand his operation, however, is limited by his inability to negotiate fish prices between potential buyers. Despite forming relationships with several local fish-shop owners, Booker cannot sell fish to these individuals directly because the processor controls his access to *iwi* ACE, and because Booker does not yet have the Licensed Fish Receiver certification required to sell fish publicly.

Processor control of *iwi* ACE also restricts potential value-add to fish from direct fisher to market sales. If Booker's flounder is not bought at auction the same day he delivers it, the processor aggregates it with lower-value fish into fish blocks for export to grocery store chains overseas. The processor participates in block export fish sales in order to move large amounts of fish quickly, but this export form obliterates any potential value added to the fish from the identity of the fisher or the fishing method.

Ngāi Tahu quota managers are attempting to capture value from fish sales, and not just quota leases, by developing an *iwi* processing plant that processes and exports higher value species. However, as seen in the next case study, this strategy also places processors in competition with fishers for revenue. Fishers cannot accumulate capital, in the form of fish access rights (ACE and quota) needed to develop economically when processors control fish access rights.

3.2. The “development pool” strategy

The second strategy for quota allocation is one in which Ngāi Tahu developed their own processing plant in order to control access to profits from fish sales. This strategy is used for high-value, inshore species, including rock lobster. However, the amount of rock lobster quota the *iwi* owns is not sufficient to cover the cost of running the plant and is therefore uneconomical. To obtain fish to cover processing

⁴ Name changed.

costs, the *iwi* engages in one-for-one ACE arrangements with fishers. Under these arrangements, the *iwi* processor only sells ACE to those fishers with access to an equal amount of ACE, who land fish caught with their own ACE to the *iwi* processor. Both Māori and non-Māori processors use this one-for-one ACE strategy to secure access to fish from fisher-owned ACE. As with the previous strategy's "sharecropping" arrangement, one-for-one fishers are also required to sell fish back to the processor and cannot negotiate prices.

Māori fishers are rarely able to participate in one-for-one ACE arrangements. They rarely own their own quota or have access to capital to purchase third-party ACE. As a result, Ngāi Tahu employs an alternative, subsidized strategy for ACE allocation to *iwi* fishers. Through a program called the "development pool," Ngāi Tahu provides ACE to fishers without the one-for-one stipulation. The theoretical design behind the development pool is that, over time, Ngāi Tahu fishers will accumulate enough profits to buy their own ACE. Fishers who obtain their own ACE will "graduate" from the development pool and use their ACE to participate in one-for-one, fish-for-ACE, arrangements with the *iwi* processor. Graduated fishers will benefit the *iwi* processing plant by providing the plant with access to additional fish.

However, this mutual development strategy places the *iwi* processor in competition with *iwi* fishers. The development pool graduation goal requires both fishers and the *iwi* processor to purchase ACE from third party sources, in order to fulfill their parts of the one-for-one arrangement. Fishers cannot outbid the processor for ACE purchases, and fisher-processor collusion on bids violates anti-trust regulations.

In 2008, Ngāi Tahu Seafood, an *iwi*-owned processing company, implemented the "development pool" model in the cray-8 (CR8) rock lobster fishery, located at the end of New Zealand's South Island. Ngāi Tahu owns 8% percent of New Zealand's total lobster quota, and the processing company primarily exports rock lobster to China. Ten fishers are in the development pool and are exempt from the one-for-one agreement. All are intergenerational Ngāi Tahu fishers. All were excluded from New Zealand's commercial fisheries with ITQ system implementation. Initially, the plan was for fishers to graduate from the pool within five years, so that new Ngāi Tahu fishers could enter. As of 2016, however, eight years later, only two fishers have graduated—both of whom had access to outside capital.

Slow – perhaps impossible – fisher graduation from the development pool is in part due to the fact that from 2007 to 2014 rock lobster prices more than doubled, from US\$50/kg to US\$105/kg. As fish prices spiked, so too did quota prices, as outside investors sought to capitalize on fishers' demand for rock lobster ACE (derived from quota). During this time, Ngāi Tahu Seafood also bought rock lobster quota and ACE, in order to keep it away from outside investors, and to ensure that the Ngāi Tahu processing operation would have enough ACE to obtain fish to cover operating costs. In 2015, New Zealand rock lobster quota sold for \$1 million/tonne, prices that quota investors make back by leasing ACE at high prices to fishers. Increased ACE prices are prohibitively expensive for development pool fishers, and inhibit graduation goals. It is unlikely that all ten fishers in the pool will graduate any time soon, if at all.

The development pool therefore operates through subsidies rather than capital accumulation. It brings benefits to the *iwi* not from increased revenue, but from the ability of the *iwi* processing company to market itself, to *iwi* members and outside customers, as a company that supports Māori fishers.

3.3. The fisher-owned Annual Catch Entitlement (ACE) strategy

The third strategy for quota management deployed by Ngāi Tahu quota managers is direct allocation of ACE to fishers. As of 2016, Ngāi Tahu primarily used this strategy for species with high cultural significance, but less well-established commercial markets. Included in this category is short-finned eel (*Anguilla australis*) (or *tuna* in *te reo* Māori). Eel is a culturally significant species due to Māori reliance

on eel for dietary fat, especially after the mid-1800s, when colonial policies removed Ngāi Tahu from lucrative agricultural regions and restricted Māori from accessing land, agricultural markets, and fish markets [43].

Ngāi Tahu directly allocates eel ACE to fishers to overcome the sharecropper-like situation found when fishers are mandated to land their catches to a particular processing plant. However, due to Licensed Fish Receiver certification requirements that increase the amount of capital an individual must obtain to become a processor, eel fishers' abilities to profit from fish sales remain limited by consolidation of the processing sector.

Ngāi Tahu eel fisher Richard Dawson's attempt to obtain Licensed Fish Receiver certification highlights how certification requirements exclude small-scale fishers. Dawson fishes short-finned eel ACE from the Ngāi Tahu *iwi* on Te Waihora/Lake Ellesmere. As of 2016, Dawson employs three people locally, provides daily updates on the status of the fishery to Ngāi Tahu managers, and routinely distributes fish to those in need. However, his potential to earn capital for investment into quota purchases, and establish long-term security in the fishery, is limited by Licensed Fish Receiver regulations that prevent Dawson from selling his own fish.

Requirements that mandate Licensed Fish Receivers, the only legal fish sellers in New Zealand, to have access to ACE and food-grade certified processing facilities in order to legally sell fish, decrease the number of potential buyers for Dawson's fish. There are only a handful of eel buyers in New Zealand. This consolidation restricts Dawson's ability to access capital (in the form of boats and gear) necessary to fish, despite his control of Ngāi Tahu eel ACE. Consolidation in the processing sector hurt Dawson acutely in 2014, when the United States imposed a trade embargo on Russia. A subsequent drop in Russian currency then impacted New Zealand trade to Russia, and meant that Dawson's eel, processed for sale to Russia as frozen, remained unshipped and unpaid for, for over twelve months. Dawson could not seek out an alternative market for his fish because he did not have a Licensed Fish Receiver certification. Dawson's restricted income during this time limited his ability to purchase additional ACE from third-party sources. Dawson is attempting to become a Licensed Fish Receiver so he can sell his own fish.

Dawson's efforts to become a Licensed Fish Receiver, however, illuminate the role that food safety and building certification codes play in limiting new forms of economic development for fishers, even when they have access to ACE. Despite generations of experience processing and smoking eel on outdoor drying racks, Dawson had to construct a new processing facility, and obtain capital to do so, because eel processed in these traditional ways is not legal for commercial sale under the Licensed Fish Receiver food safety requirements. To construct the new indoor processing plant, Dawson had to pay a certified engineer for plans to establish the facility. To build it, he had to pay a certified builder. The need for Dawson to pay for outside help to design and build the facility was not because Dawson and his family and friends lack building experience. On the contrary, he built his own home and the homes of several others on the lake, as well as the smoker and the drying racks community members use to process eel. However, Dawson's building skills are not legally suitable forms of expertise for constructing a food safety certified facility because Dawson does not have the educational background required to become a licensed engineer or builder.

Dawson's attempts to become a Licensed Fish Receiver are additionally stymied by his lack of access to suitable land. Dawson has land. He has rights to several hectares of land an hour from Te Waihora/Lake Ellesmere, where the government moved his family to in the early 1900s. But Dawson does not have exclusive ownership rights to his land. This is because Dawson has access to "Māori" land, designated as such through colonial era regulations that made it illegal for Māori to sell land to non-family members. Because no owner could sell the land to anyone outside of their immediate family, as families

grew, so too did the numbers of owners on that land [57]. Today, over 300 people have a right to the land that Dawson also has a right to. This multiple ownership poses a challenge for Dawson's investment in processing facilities on this land: most of the owners live nowhere near this piece of land but nonetheless have a potential claim to it, and to the profits from any investments. To avoid this risk of failed returns on his investment, Dawson purchased privately owned land to build the processing facility on, a step requiring capital assets few Māori fishers have.

Dawson sells his fish in high-end markets to cover the cost of his investment, as his potential to capitalize from economies of scale – by selling more fish – is limited by the quota system's cap on fish take. To access these markets, Dawson relies on non-Māori. High-end eel markets are primarily overseas. Within New Zealand, eel is viewed as a “Māori” food [43], and non-Māori rarely pay high prices for eel. Local Māori consumers cannot afford to pay for fish at rates high enough to cover the cost of the processing facility. Dawson and other local fishers' lack of formal education and restricted access to capital limit their knowledge of overseas markets – and Dawson's ability to employ local community members to sell his fish. Non-Māori fish brokers, on the other hand, sell fish through market trade channels established in part through government funded international exchange scholarships, which until the 1990s, primarily funded non-Māori [59]. Dawson's reliance on non-Māori for access to high-end fish markets is thus an effect of colonial policies that resurface in contemporary times.

4. Discussion: More than Māori issues and where to go next

The government's ITQ system management policies that make possible processor control of both fishing rights (ACE) and market access (Licensed Fish Receiver certification) inhibit Māori fishers' economic development. However, these processes of exclusion are more than Māori issues, in at least five ways.

First, regulations that restrict fishers' market access and facilitate consolidation [11,12,15] are also barriers to economic innovation [60]. Fishers' limited access to markets, even with ACE, restricts opportunities for value-added provincial branding, an issue diverse groups of consumers are increasingly concerned with [60]. When fish caught by small-scale fishers is sold to vertically integrated processors and combined with larger boats' catches for package sales to large grocery chains, any potential value added to the fish from the identity of the fisher and the fishing location is not capitalized on. Māori-produced eel, for example, may be a specialty if marketed as such.

Second, barriers for small-scale fishers also limit the effectiveness of local ecological monitoring initiatives. When the number of local commercial fishers on the water reaches close to zero, so does the frequency of reports and analyses of fishing conditions. Reductions in accounts of fishing conditions are especially problematic in light of trends in global environmental governance initiatives to defer monitoring to local communities in situations where government funding for state-sponsored monitoring is insufficient [40].

Third, barriers to small-scale fishers' access also pose barriers to compliance. When fishers are unable to access benefits from fish sales, they may be more likely to engage in illegal, unreported, or undocumented fishing, especially when other economic development opportunities are not available [61].

Fourth, barriers for small-scale fishers also pose threats to local food sovereignty. Increases in fish prices restrict local consumers' access to fish, especially when customary fishing rights prohibit the sale of fish, as is the case in New Zealand [50,62].

Fifth, barriers to small-scale fishers' access pose barriers for local economic development from fishing. Processor consolidation increases the capital fishers' must invest in order to obtain commercial fishing rights and access markets. Fishers target high-end markets to cover costs, especially when the possibility to cover costs by selling more fish is limited by a lack of access to fishing rights. Often these markets are

overseas, especially when the fish is a species that wealthy domestic consumers rarely purchase, as is the case for eel in New Zealand. Reliance on export markets excludes individuals who previously organized local fish sales and exchanges off the docks.

While Māori make up a large portion of small-scale fishers in New Zealand, the effects of small-scale fisher exclusion due to processor control—for Māori and non-Māori fishers—extend even more broadly. However, change is possible. Small-scale fishery development will likely improve if *iwi*, including Ngāi Tahu, continue to directly allocate fishing rights (ACE) to fishers and support fishers to develop their own processing facilities, in individual or collective form. Processor control will likely decrease if the government were to make ACE exchanges count towards consolidation limits. More radically, small-scale fishers' economic development opportunities would improve if the government removed the likelihood that quota could be managed as an investment asset. One way this could be done is to restructure the ITQ system into a system where the government holds the quota rights and leases fish catch rights to fishers for limited periods of time. This was the strategy for management of New Zealand's deep-sea fisheries under the 1983 Fisheries Act, prior to ITQ system implementation [24]. Under such a system, capital is still required to obtain quota, but competition from outside investors for quota is eliminated. Further, a government-owned quota system eliminates on-going dispossession faced by those without quota who face multiple years of fishery exclusion when access rights are privatized.

5. Conclusion

Iwi quota management strategies highlight the fact that the re-allocation of fishing rights to individual fishers does not absolve existing processor consolidation in New Zealand's ITQ system. Processes of fisher exclusion are not reversed by strategies that increase fishers' access to quota-based fishing rights. This is because the government's regulations that structure the ITQ system include policies that – unintentionally – facilitate control of fishery market access in the hands of several vertically integrated processor operations. Regulations for: (1) equity, as found in the government's use of quota to settle the Māori fishery grievances; (2) compliance, as was the government's goal in creating Annual Catch Entitlement as a fish access right that can be traded within-season, above quota consolidation limits, in order to promote reporting of catches; and (3) monitoring, as the government designed the Licensed Fish Receiver certification process to do, all further processor control and fisher exclusion in New Zealand's ITQ system. These processes of exclusion drive consolidation and economic stagnation in New Zealand's fishing industry as a whole. *Iwi* cannot be held responsible for addressing Māori fisher exclusion due to processor control because *iwi* re-allocation initiatives are not sufficient to address these structural challenges. The responsibility to do this lies with government, who, unlike *iwi*, has the authority to implement the regulatory changes that are necessary to promote equity in and economic development of New Zealand's fisheries.

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