



# “Before we asked for permission, now we only give notice”: Women’s entrance into artisanal fisheries in Chile

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## Abstract

Small-scale fisheries (SSF) in the Global South are increasingly subjected to the internationalisation of food systems. Guided by a feminist political ecology approach, we examine how gender relations and power structures within SSF are changing through policy interventions and market linkages. Chilean women working in SSF have traditionally been unregistered direct producers. Since the early 2000s, however, women have formally entered as fishers within this hitherto male-dominated space. Today, women constitute almost a quarter of artisanal fishers in Chile. While women have become more visible in their engagement in territorial use rights in fisheries (TURFs), little research attention has been paid to women’s roles within SSF. We redress this shortfall by examining the struggle to obtain TURFs by an all-women seaweed gatherers union in Coliumo (Bio-Bio Region, Chile). Using participatory research tools, we describe key gendered interactions and events over a local struggle for resources. Our findings show how closely related episodes of cooperation and conflict were involved in realising TURFs, which included differently-gendered relationships. While the women implicated in formalising fishing entitlements accrued individual benefit and enhanced their collective standing, the conflict left a deep scar among women in the community.

**Keywords** Women seaweed gatherers · TURFs · Power struggles · Coastal resources · Community conflicts · Chile

## Introduction

As a broad-spectrum solution to sustainability problems, including depleted fisheries and loss of coastal habitats (UN 2016 SDG No. 14; Brennan 2013; IIASA 2015), there is significant attention currently being paid to algae (harvesting and aquaculture). Women working within small scale fisheries (SSF) around the world, who have traditionally been seen as a vulnerable group (Kleiber 2014; Porter 2011) are becoming increasingly active in the growth of shore seaweed and shellfish gathering and farming (de la Torre-Castro et al. 2017; Brennan 2013; Ramachandran 2012), thereby contributing to the livelihood strategies of coastal populations as well as securing additional incomes for women.

This paper details the experience of a Chilean women seaweed shore gatherers fishing union in the small fishing community of Coliumo in southern Chile. In particular, we focus on the struggle by an all-female union to attain exclusive use rights for fisheries (TURFs) and to exercise these rights.<sup>1</sup> In 1997 in Chile, TURFs as an institution, came into being as a solution to halt resource degradation after an export boom of benthic resources and diverse policy efforts failed to solve the fishery crisis (Gallardo 2008; Gelcich et al. 2012, 2017; Orensanz et al. 2005). As an institution, TURFs have their origins in feudal Japan. In both their ancient and contemporary manifestations, TURFs place control of fisheries with fisher associations (Gallardo 2008). Different forms of TURF have been promoted as pathways to sustainable SSF around the world (Camacho and Steneck 2017; Afflerbach et al. 2014; Cancino et al. 2007; Saunders et al. 2016).

Since its inception in Chile in 1997, TURF encompasses practically all artisanal fishers working with benthic resources in the country (Box 1). The process of establishing TURFs

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<sup>1</sup> The TURF in Chile are known popularly as Areas de Manejo (Management Areas or MA), but officially as AMERB (*Áreas de Manejo y Explotación de Recursos Bentónicos*); MEARB in English: Management Exploitation Areas of Benthic Resources).

involved struggles for recognition, as well as having implications for gender and material relations in fisheries. During this time, women's involvement also increased in other emerging fishery-related activities (e.g. processing plants—mainly related to salmon and value adding of marine products e.g. tourism and gastronomy) (Álvarez et al. 2017). Women slowly but surely started to officially register nationally, predominantly as seaweed gatherers.

#### Box 1 TURFs designation rules

To apply for exclusive rights for benthic resources, artisanal fishers are required to organise as collectives. The sea areas available for the development of TURFs are established regionally through a supreme decree (Gallardo 2008). When two or more artisanal fishing organisations claim the same area, or when areas overlap, the nearest situated to the proposed TURFs is given precedence. If there is more than one fishing organisation in the same place and both are interested in TURFs, priority is given to the one with most members. If both are equal in numbers, the oldest is favoured (LGPA 1991, Art. 48). For the applicant fisher organisation, the process to establish TURFs involves three steps: (1) a proposal for a baseline study (ESBA), (2) the execution of the ESBA and (3) the formulation of a management and exploitation plan project for the area (Ibid). When the project is approved by Subsecretaría de Pesca (SUBPESCA), the applicant organisation attains a TURFs entitlement through an agreement that is in effect for 4 years and which is renewable by the same procedure (Ibid).

It has been widely argued by scholars and Chilean fishing authorities that TURFs in Chile has empowered and strengthened SSF (cf. Crona et al. 2016; Moreno and Revenga 2014; Gallardo and Friman 2010; Gelcich et al. 2012; Gallardo et al. 2011; San Martín et al. 2010). As much as there has been some progress at a more general level to make women's contributions more visible, recognised and possibly enhanced, further detailed empirical-based research is needed to provide firm evidence for such optimism. This work needs to encompass a mapping of interaction that not only describes women's situations and strategies with the unfolding of key events, but also illustrates the constraints that restrict their possibilities for manoeuvre and advancement (de Sardan 2005). While keeping in mind global processes that are implicated in instigating initiatives like TURFs, here we focus mostly on capturing gendered power relations to shed light on the struggle for resource access, exercise and constraints to both informal and formal powers in a localised Chilean TURFs context.

Despite TURFs' central focus on benthic resources, some fisher organisations working with open-sea fishing have also applied and obtained TURFs with the consent of the authorities. We see this as contradicting the spirit of the law, in that it reduces opportunities for new pathways for others, such as women, who started to register and organise later than men. The registration system only started in 1993—incorporated as an administrative requirement of the 1991 Ley General de Pesca y Acuicultura (LGPA). Lately, TURFs have been

extended to include small-scale aquaculture (limited to use of indigenous species) (Ministerio de Economía 2015). This broadening of income-earning possibilities from TURFs enhances their economic potential, but also stimulates increased competition over securing TURFs entitlements. Furthermore, since the 2013 Law No. 20.657, fishers with TURFs have the possibility to request the exclusive exploitation of benthic resources on the intertidal zone adjoining their TURFs (Biblioteca del Congreso Nacional 2013).

## Fishers collective organisation in Chile

In Chile, the overarching definition of a fisher includes the following four categories: seaweed gatherer, boat owner, diver (mainly of shellfish) and fisher. Therefore, a seaweed gatherer is a fisher (or a category of fisher) in the Chilean context. SERNAPESCA (Servicio Nacional de Pesca) only includes in its statistics fishers registered on the National Fishing Register, which is why a large number of unregistered fishers are not counted.

As of 2016, there were 98,789 officially registered fishers in Chile, of which 26,122 were women (26.4%) (RPA, SERNAPESCA 2016a). Women constituted 19.9% of the total of ca. 53,975 organised fishers (in trade unions, guild associations and cooperatives) (SERNAPESCA 2016b). Of the total of 1,318 artisanal organisations, only 2.8% are all-female. However, some of these women's organisations include the noun, fishers, before seaweed gatherers; sometimes in masculine form in Spanish (see Table 1). This makes it difficult to identify all-female organisations with TURFs by name. Looking at the registers from SERNAPESCA, we identified five all-female organisations with TURFs entitlements and four of them have as a first name, Pescadoras (female fishers i.e. in feminine form). However discerning gender from name only can be misleading as our TURFs case study shows—it has a masculine name (see Table 1): Sindicato de Trabajadores Independientes (STI) Pescadores Artesanales Recolectores de Orilla y Algueros (Union 2) (SERNAPESCA 2018).

Nonetheless, of the total of registered fisherwomen, 24,963 are registered as seaweed gatherers, 4,447 as fishers, 486 as boat owners and 56 as divers (RPA, SERNAPESCA 2016a; see above-mentioned classification). As some can be registered in more than one category, the total sum here surpasses the total given above (26,122 registered fisherwomen).

Between 2004 (when fisher statistics started to be disaggregated by sex) and 2015, the number of women formally registered at SERNAPESCA had increased by 500%, while male fishers increased by 40% over this period (Registro (Registry) Pescadores Artesanales (RPA) SERNAPESCA 2012, 2015). It is likely that these statistics understate women's

**Table 1** Fishers unions with TURFs designation in Coliumo

Organisation name	Union establishment	TURFs MINECOM <sup>a</sup> Decree	Resolution management and exploitation plan (PMEA)	Sector	Ha	Gender	No. of members
STI <sup>b</sup> Pescadores Caleta Coliumo	1950	1997	2002	B	150	Male	ca 150
STI Pescadoras Artesanales Recolectoras de Algas (Union 1)	2002	2002	2005/2008	Rari El Tope Litril	0.61 2.49 0.98	Female	ca 30
STI Pescadores Artesanales Recolectores de Orilla y Algueros (Union 2)	2006	Part of the 1997 designated TURFs is ceded to Union 2 in 2008	2002	A	70.83	Female	65

Sources: SERNAPESCA 2017a, AM, VIII Region

<sup>a</sup> Ministerio de Economía, Fomento y Turismo

<sup>b</sup> STI: Union of Independent Workers

participation in SSF, as not all women engaged in fisheries are formally registered (Godoy et al. 2005).

Presently, there is a total of 1,318 artisanal fishing organisations (SERNAPESCA 2016b) of which 70.5% are of mixed gender, 26.6% are men only and 2.8% are women only. Thus, mixed organisations are predominant. This indicates that when women unionise, they tend to do so by joining already established men's organisations. In 2005,<sup>2</sup> of the then total of 652 existing fisher organisations, the majority (77.4%) were unions in all the regions, with the exception of one region, where guild associations dominated.

## Planting the seeds for a gendered change

Women in artisanal fisheries in Chile have traditionally been unregistered direct producers on the shore, with men working from boats, either near the shore or on the sea. Since early 2000, however, women have been formally entering fisheries—up until then it was an overwhelmingly male-dominated space. Within this context, seaweed gathering has become institutionalised/formalised, which is likely to have had the effect of enhancing its importance as a livelihood strategy for women situated in vulnerable coastal locations (Godoy et al. 2005; Álvarez et al. 2017; Calderón and Morales 2016). Extra income within the salmon aquaculture industry in Southern Chile has also increased women's economic power, which is generating shifts in gender roles (Álvarez et al. 2017).

Chilean export of algae is not a new phenomenon, however, it has ramped up in recent years. Relatively small amounts of algae (i.e. 1,567 tonnes) began to be exported to USA and Japan in 1967. However, it is with the neoliberal opening of the

market, during Pinochet's dictatorship that algae extraction and export of benthic resources in general boomed. When neo-liberal incentivised export started in 1978, 9,015 tonnes of algae were landed, which had increased over 200% by 1985 to 182,410 tonnes. In 1995, landings increased to 299,221 tons. By 2005, landings had increased again to 425,343 tonnes. The peak was reached in 2013 when landings rose to 517,929 tonnes. By 2015, landings had decreased to 345,704 tonnes, (SERNAPESCA 2018). In 1990, the export of algae was equivalent to 18.6 million dollars, while in 2007 it reached 41.5 million dollars (Calderón and Morales 2016).

Women's increasing participation in SSF in Chile not only implies increasing numbers, but also an unfolding (slow, but significant) process of gender desegregation of fisheries. Despite women's integration into SSF being evident now for some time, thereby showing a clear trend that should be regarded as more than a temporary phenomenon, there are few studies that examine this gendered change with its likely important political economy implications. The emergence of women in SSF is generating novel scenarios, creating tensions and conflicts (Gallardo and Friman 2010; López 2006) over access to and use of natural resources; not only between women and men, but also among women. Despite this, there is a pronounced gender blindness in SSF research in Chile with some notable exceptions, such as López (2003, 2006); Donoso et al. (2016) and Álvarez et al. (2017). We argue that this research bias, which centres "fishermen", falls short if we are to understand struggles over resource access, use, environmental change (Rocheleau 1995) and opportunities for ecosystem recovery and protection (Bavington et al. 2004). As Ramachandran (2012) suggests, "Just as agriculture makes the terrestrial production system a contested space, mariculture makes the marine production system also a contested space" (p. 2).

This study is informed by a political ecology (PE) perspective that sees resource issues, such as fisheries, as

<sup>2</sup> Information on how the situation looks today is not available.

fundamentally about contests between different actors over gaining control and access to these resources (Blaikie 1999; Walker 2006; Robbins 2012). We adopt a feminist political ecology approach (Ramachandran 2012; Hovorka 2006; Bavington et al. 2004; Rocheleau 1995) to analyse power relations of fisherwomen working with seaweed to secure TURFs entitlements. Historically, studies focussed on women in fisheries have concentrated on their role within activities such as fish processing, preservation techniques and commercialisation. There has been little research on how gender relations and relations of production, reproduction and distribution are being affected by the changing division of labour in fisheries (i.e. women-men, women-women and men-men relationships) in relation to resource use, control and access.<sup>3</sup>

Taking a gendered perspective to examining SSF is necessarily relational, involving examination of men and women in their mutual relationships in struggles over access and control of coastal resources. This approach focuses on gender aspects as part of understanding changing access and use of these coastal resources; a process we see as heavily influenced by the internationalisation of fisheries (Rocheleau 1995; Gallardo 2008). Several factors are likely to be encouraging low-income women to engage in SSFs, including the export boom which was stimulated by the globalisation of fisheries and the national gender policy launched at the beginning of the 1990s that sought to increase women's participation (Plan de Igualdad de Oportunidades) in all aspects of Chilean social and economic life (Escobar 2003; Gallardo and Friman 2010).

## Research approach

Drawing on Coliumo as a case study, we aim to get insights into women's struggle for recognition, how they have embraced their roles as fishers and how this has affected interdependencies with male fishers and relations more generally within the communities. Within this scope, important to examine is how "gender boundaries" in fishing that have in the past excluded women, are being negotiated, navigated and crossed (Nightingale 2011). Thus, this also includes a focus on TURFs' intra-relations and the interactions between TURFs (as an institution) and other actors.

Implementation of TURFs has translated into a rapid increase in women's participation through three pathways:

- as individual licenced seaweed gatherers,
- as organised seaweeds gatherers forming unions/associations to apply for their own single-sex TURFs,

- by becoming part of already existing organisations with or without TURFs or by applying for TURFs with men (Gallardo and Friman 2010; field observations 2001–2016).

A critical aspect of our study is to describe and understand the extent of women's empowerment and increased agency through their swelling participation in the SSF. We refer here to active agency in the sense of purposeful behaviour rather than passive action which would imply "action taken when there is little choice" (Kabeer 2005:15). Insofar as we consider different axes of power in our account, we mostly focus on women's struggles to establish a viable TURF. In doing so, we examine how women's "new identity" as fishers rubs up against other more entrenched identities related to local socio-cultural norms, such as expectations about women's role in the community (i.e. taking care of the household and the children; not having public representative roles, such as being President of the union's boards; not attending conferences, workshops and courses in other locations if it requires being away for several days). The former leader of the national organisation of artisanal fishers (CONAPACH) is a woman, who has been re-elected several times (El Ciudadano 2011; Terram 2010–2011). SERNAPESCA (2017a) reported that in 2017, there were 1,091 women holding key positions in the 1,440 registered artisanal fisher organisations: 290 as presidents, 424 as secretaries and 381 as treasurers.

To examine the shift in gendered relations in SSF that has come about through TURFs, we focus on how this trajectory has been shaped in an agency and structure relationship (Saunders et al. 2016). Understanding the local politics (within broader structures) of these changes necessitates locating the sources and agents of influence and power, including frictions (through informal and formal institutions) that are working to constrain and/or limit change. The account also seeks to capture the role that outsiders had on the gender dynamics in Coliumo as well as key acts of inclusion and exclusion and their implications. Furthermore, we focus on changes in gender roles and relations (related to SSF and the emergence of TURFs) over time to identify important factors at play during the struggles to establish a TURF.

To generate knowledge on how gender relations are being affected by the changing division of labour in fisheries with the establishment and implementation of TURFs, we have identified the following three interconnected conceptual dimensions to scope and structure the empirical material considered here:

- New social landscapes of cooperation, competition and conflicts around coastal resources
- New gender roles and relations within organisations, communities and households

<sup>3</sup> For contributions in other contexts see Frangoudes et al. (2013); Kusakabe (2003); Agarwal (1998) in Bavington et al. (2004) and Meltzoff (1995).

- Gender differences in managing and operating TURFs.

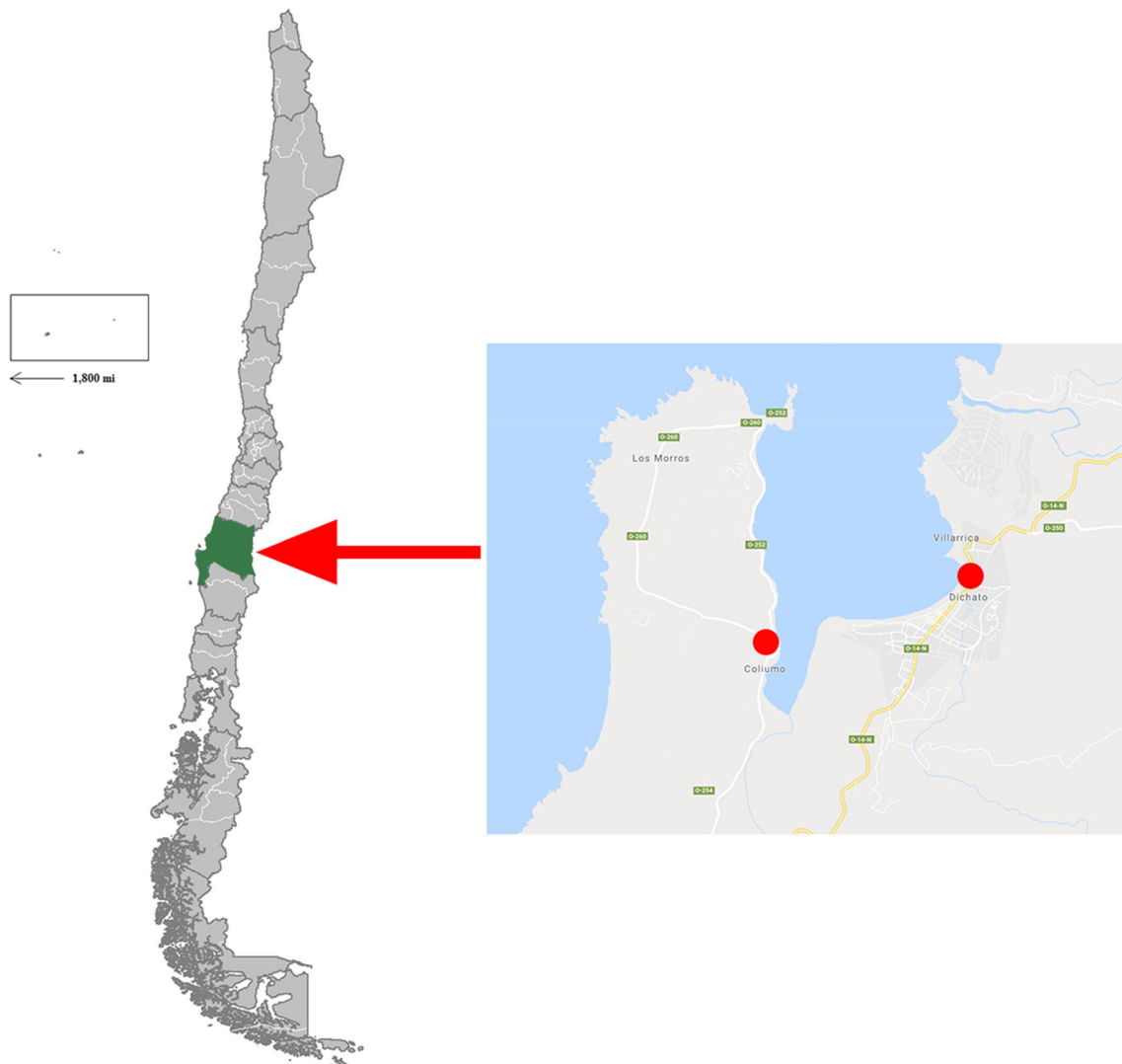
## Methods

This study is underpinned by field work conducted in 2014, 2016 and 2017 in various fishing coves in southern Chile, including Coliumo. Different constellations of researchers participated in the data collection. Figure 1 shows the map of the Coliumo case study area.

Our key focus was to understand fisherwomen's experiences and perspectives, but we also sought views from fishermen and others who have a stake in local fisheries. Our case study centres on the experience of the all-female Coliumo Union 2 in the Bio-Bio region; a region that has the highest percentage of women fishers in the country (34%) (RPA, SERNAPESCA 2016a, b).

Coliumo offers a rich case study setting with an array of study variables that support exploration of our empirical research dimensions including collaboration, competition and conflicts.

In engaging with the fisherwomen collectively, we employed a range of participatory data collection tools (Burns 2018; Pretty et al. 1995), including brain storms about the past, present and future, TURFs mapping, analysis of TURFs' strengths and weaknesses and strategy development workshops for which we invited fishing authorities as well as regional and communal government. To deepen our insights, we also conducted a series of individual semi-structured interviews with nine women (not belonging to the union board) and six men, composed of three active and three retired fishermen. We also interviewed two entrepreneurs engaged in activities with Union 2, as well as representatives from fishing agencies. This methodology was supported by a review of the pertinent academic and grey literature. This diversity of methods enabled the



**Fig. 1** To the right, the map shows both Coliumo and Dichato. To the left, the map of Chile shows the Bio-Bio Region, where Coliumo and Dichato are located

collection of different types of empirical data on organisational processes, changing relations, perceptions and practices.

### Case study: Coliumo community, gender division of labour and organisation

Coliumo village, a small fishing cove with ca 1,000 inhabitants sits adjacent to the picturesque Coliumo Bay (see Fig. 1 below, where the location of Dichato is also indicated) (Donoso et al. 2016). Coliumo is home to two of the five all-female TURFs in Chile. The traditional fishing activities in the Coliumo Bay are the collection of shellfish and algae along the shore, and the artisanal and semi-industrial harvest of sardine, anchovies, jack mackerel and hake, among others. These latter fishing activities from boats have traditionally been the main male economic activities of Coliumo. Within the TURFs, small-scale aquaculture of indigenous seaweeds is currently being introduced with the support of state subsidies in both female-run TURFs (Fig. 2).

As in other Chilean fishing coves, historically the gender division of labour within fisheries in Coliumo was pronounced. Women collected by the shore, whereas, men fished at sea. Prior to 2000, there was one fishermen's union in Coliumo (created in 1950); today there are six. While four

are made up exclusively of men, two are all-female. Only one (the first listed union in Table 1) of the men's union have TURFs, which was established in 1997. It is remarkable that in such a small locality, where there is a high degree of kinship between its inhabitants, that there are so many fishing unions and that two of these are all-female. While our study focuses on Union 2, some of the other unions play a pivotal role in the unfolding story recounted below (see Table 1).

Table 1 summarises some key dates and details of the establishment of the three TURFs in Coliumo, which are connected to the case study. These details are not easy to follow from SERNAPESCA's records, but key for our purpose is that Union 2 formalised its TURFs designation in 2008.

### Results

The TURFs' interventions have stimulated complex, significant and lasting episodes of conflict and cooperation which have in turn resulted in acts of exclusion and inclusion. The experience presented here reflects an ongoing struggle for coastal resources that TURFs, as a policy intervention, inadvertently set in motion. Important to keep in mind when reading the description below is the study focus on the formation of Union 2.



Sourced from: <https://mapas.subpesca.cl/ideviewer/>

**Fig. 2** Google Earth Map adapted by SUBPESCA: Bahía Coliumo, shows the three TURFs designations of Coliumo. Dichato, which also has TURFs entitlement, is on the east side of the Bay. The yellow colour indicates that Dichato's TURFs designation is under review by SUBPESCA

## New social landscapes of cooperation, competition and conflicts around coastal resources

The key prompting factor that initially led Coliumo women to organise and later successfully be designated TURFs (initially Union 1), according to the testimonies of Union 2 members, was a conflict with some fishermen from the adjacent Dichato community (who had secured TURFs in 1998).

According to the interviewees (i.e. we refer only to Union 2 members, if not otherwise specified), fishermen from Dichato<sup>4</sup> came to dive in Coliumo and were extracting seaweed and other benthic resources. This occurred at a transition moment (1997–2000) when due to the implementation of TURFs across Chile, open access to benthic resources along the coast started to come to an end, which left fishers not associated with fisher organisations entitled TURFs excluded from former open access areas.

The men's union that was established in 1950 in Coliumo, was designated TURFs in 1997 (see Table 1). The initial men's TURFs encompassed almost the entire Coliumo Bay (see all dark green parts surrounding the cape, except the parts associated with Union 1's entitlement), which during this time was used by both the men and women of Coliumo. This was considered by the Coliumo local fishers to be their customary fishing grounds.

When we asked members of Union 2 why was it decided to organise and apply for TURFs, we were told:

It was a necessity. Before, Coliumo was free and one worked at the time one wanted, one got what one wanted, until the divers of Dichato invaded us and began to overexploit, because here there were many resources. We started to fight them, to get them out of here. (Fisherwoman 1 - also a former member of Union 1).

According to this informant, from the beginning, Union 1 included many of Coliumo's women fishers, involving around 120 members. It currently has 30 members. What were initially feelings of solidarity and collaboration among all Coliumo women with the designation of TURFs, quickly turned to conflict. A former member of Union 1 and an ex-member of the board of the same union told us that disagreements erupted initially over how income should be shared among members and the board. A position she and others favoured was to

<sup>4</sup> Dichato has its own TURFs. These rights were granted in 1998 and the associated fishing organisation has 87 members. The name indicates that they also practice aquaculture (STI del Mar y Acuicultores de la Pesca Artesanal Caleta Dichato). The accounts given by Coliumo people do not suggest that poachers belong to the Dichato TURFs or that all fishers from Dichato were or are poachers.

divide the organisation's income according to how much work members contributed to extracting algae, whereas, the leadership group at the time favoured additional payment to those working with the board. In the end, we were told the disagreement resulted in her being harassed, which eventually led to her resignation from the union (several interviews with anonymous ex member of the Union 1, 2017–2018). This member, together with a few other women, had also been members of the men's union that secured TURFs in 1997. She told us, during this time that "men paid attention to her voice" because she was pursuing university studies and not afraid to express her opinion. We were also told by the same informant that women, within the men's union, pushed for the integration of more women to better fight against Dichato, but it was the men's support that faded as they grew to believe that the problem was less relevant for them. The result of this schism in the men's union was that several women were expelled for being "unruly" (por revoltosas); a pejorative term.

The situation worsened further as the remaining leadership of Union 1 began to restrict other Coliumo women's access to marine resources, both within and outside of their TURFs:

It was a ... persecution, when women's Union 1, got their management area [TURFs], we had no place from which to extract resources. We later went to a free access area and they threw us from it as well. (Fisherwoman 1).

It is difficult to get a clear picture about how the situation evolved and if the excluded women extracted algae within designated TURFs area or beyond it. What is clear though is, when Union 1 first got its TURFs entitlement there was a great deal of local ambiguity about what it meant, particularly around the exclusivity of rights in relation to who could extract seaweed in the intertidal zone. That is, the algae that ends up in the intertidal zone is still open access, unless the fisher organisation with the TURFs entitlement has explicitly requested exclusive rights to it (this was only possible from 2013 onwards). An argument put by a member of Union 1 related to the costs of managing TURFs. Such expenses include an annual tax payable to the State as well as costs associated with hiring consultants to undertake stocktaking and monitoring studies of the TURFs (these costs are subsidised by the State in the beginning), related to the obligatory exploitation plans of the area. She says: "We could not just let anybody in ... we had to pay [for TURFs]; in the first years we did not have any money, because it was only payments" (Avila et al. 2017:10). However, the conflict rippled through the community, causing division among families and friends as indicated in the following quote: "It was painful that this exclusion came from their own neighbours and relatives." Because of this, those who were discontent with the situation, including some who were Union 1 members at the time, began

to organise for a new union and apply for another TURFs designation. This ended up being a decade-long process that led to the formation of Union 2 and the realisation of its ambition to attain TURFs designation.

The testimonies from those interviewed indicated that the initial establishment of the men's TURF in 1997, which prior to this time had been open access, created competition between Coliumo and Dichato fishers. The struggle with Dichato fishers was clearly a catalyst that mobilised Coliumo men and women to cooperate with each other to secure access to the area. However, the newly formed all-female Union 1, soon generated a new conflict. A conflict among Coliumo women both within and outside the membership of Union 1. This struggle stimulated the motivation to form the new all-female Union 2 and subsequently their TURFs entitlement. The dynamics of these change processes created turmoil among women fishers and their families, but also affected social relations in Coliumo more generally. It was evident when talking to some of the women involved that these wounds cut deep and have not yet fully healed.

### **New gender roles and relations within organisations, communities and households**

The severity of the women-women conflicts disrupted Coliumo's social relations, and extended to the men, who were married or had family or social connections with the women in either Union 1 or 2. According to interviewees' statements, men were able to avoid the conflict spreading into their labour relations. However, the conflict was perceived in the broader community as fermenting a disruptive situation that could adversely affect the viability of Coliumo's entire fishing activity as captured in the comments of a member: "As a community, we had to have peace". (Fisherwoman 8).

We were told that after this time of deep conflict among local women the Coliumo community accepted and supported the formation of a new union (i.e. Union 2). The main support for the formation of Union 2 and its application for TURFs designation in 2006, came from the men's union, which ceded part of its extensive TURFs to them. We were also told that Union 2 received significant support from the leaders of the Bio-Bio Region Federation of Fishers and from the former female Mayor of Tomé Commune.

It was evident from talking to those involved, that the struggle for a second women's TURFs designation, which included street protests that cut local road access, was painful and required collective grit and persistence. As women started to play a more substantial role in this previous male-dominated sector, it became evident that the struggle for recognition and respect was not just within the local community. At public events for fishers, fishermen from other localities tended to ignore or disrespect their newly

formalised status as artisanal fishers, through remarks at a fishing seminar like: "What are YOU [women] doing here?" (Fisherwoman 1).

A local member of the men's union (active fisherman 1) advised us that opinion was divided among fishermen "because there has always been a macho culture". However, he went on to remind us that women's TURFs (Union 2) was ceded from the Coliumo fishermen's TURFs with the men's active consent.

Finally, Union 2's designated TURFs, ended up being much larger than Union 1's. We were told that the successful outcome of the struggle had profound effects on Union 2 members in terms of gaining pride, the way in which they thought of themselves and, above all, the way that they related to their families and to the community. As one interviewee put it: "We had been brought up to become nannies and housewives, but now we dream about becoming entrepreneurs." (Fisherwoman 4). A retired 92-year-old fisherman remarked on how beneficial the experience has been for the women involved:

It is nice that the women have organized and obtained a management area [TURFs] ... it is an advancement, because with a union you can get many things. It is legal ... the same ladies who were even embarrassed to go to a meeting ... (Retired fisherman 3)

The women became part of a union, which gave their lives different meaning. They were now responsible for taking care of a considerable part of the Coliumo community's coastline. This also promised increased income, more independence within relationships, additional economic support for their families and higher status within the community. Several fisherwomen emphasised the feelings of tranquillity and the security of having something of "their own" that they could nurture. Also, important was the need to organise work through collective efforts and resultant experience and learning that comes from managing TURFs as indicated in the following quote:

We learned to work together... in group; because this work was always done individually; we learned to manage; we learned to find nexus networks, in which to support us to continue the struggle. (Fisherwoman 1).

### **Gender differences in managing and operating TURFs designated areas**

The interviewees raised several differences in the way that men and women go about their work in managing TURFs.



When referring specifically to the conflicts with Dichato's fishers, a member (fisherwoman 6) mentioned that while they used rakes to gather the algae, men dived. Another fisherwoman thought the diving method of collecting seaweed was unsustainable:

In an hour, we loaded a boat; divers, they load two or three boats in an hour; they raked with what was there. Not us, because [when we extracted] in a fortnight, the meadow was full, again. But as they [Dichato's fishers] began to draw and draw, resources declined. (Fisherwoman 1).

In relation to how the fishermen manage their TURFs, several Union 2 fisherwomen described how men do not manage it at all. That they were pre-occupied with fishing offshore in boats and they paid little attention to their TURFs. It was reasoned by the informants that the men's TURFs designation was too unproductive to care about (relative to the traditional artisanal and semi-industrial harvest of sardine, anchovies, jack mackerel and hake, among others) and therefore it was not given priority. Another member, when referring to the different engagement that men and women have towards their respective TURFs, echoed this view: "We are concerned about our area, men are not." (Fisherwoman 7).

Referring to the gender differences, a fisherman suggested that among the most important management tasks were taking care of the TURFs and stopping poaching. Both of these tasks require competency with boats:

In the care aspects, women have difficulties because they do not know how to handle a boat, they do not drive the engines. This would be the difference. Men handle the technical part of the boats. (Active fisherman 1)

He continued to describe how local fishermen admire the women's work, especially their capacity for administration. This view was also supported by the other interviewed fishermen, both retired and active. It was thus clear from these views, that women are widely considered to be more competent and adopt more transparent and accountable governance practices than men, but lack what might be generalised as technical fishing competencies, such as boat handling and diving. Such strengths in women are conventionally ascribed to the gender construction of women (Westberg and Powell 2015).

A fisherman noted that the division of labour continues as before: "men in the sea and women in the management areas [TURFs]" (fisherman 1). Despite women's formal inclusion in fisheries, the spatial segregation between women and men persists. This can be seen in the functioning of the TURFs both regarding its exploitation and management activities such as

monitoring, which may need to be performed by boat to be effective, especially when most of the poaching occurs at night. This points to a significant difference in the way women have traditionally exploited benthic marine resources. Men dive and cut algae, while women rake the surface of the water to gather it when they use a boat. The Coliumo women do not have the required diving licence to dive for algae although they could become licenced. To provide context on this issue, it is not uncommon even for male unions not to have divers. When fisher organisations do not have qualified divers among their members, they must hire divers (Gallardo et al. 2011), which means more costs and relatedly, diminishing incomes for the organisation.

## Discussion and conclusions

If we are to move closer to achieving the cross-cutting UN Sustainable Development Goal of gender equality and women's empowerment, the generation of knowledge that provides insights into how women are succeeding in gaining a more equal role in the management of coastal resources becomes crucial. The Coliumo experience recounted here provides one such account, which is metaphorically captured in the following quote from a fisherwoman about how they notified their husbands when leaving the family home: "Before we asked for permission, now we only give notice".

Arguably, Roman's (1994) view that women enter jobs, because men have vacated them as they (men) move into higher status roles is supported here, as the Coliumo men actively chose not to use their TURFs entitlement because it was not seen to be lucrative enough compared to traditional offshore pelagic fishing. Rather than men vacating a role to move into a higher status position, men declined to assume the less lucrative option in the first place, which then opened-up opportunities for women.

However, this study showed how Coliumo women through the formation of unions and designation of TURFs acted in concert to take advantage of favourable export conditions and an emerging, more gender inclusive institutional fisheries context to formally enter a relatively new socio-economic sector, which reflects a pattern that has been recognised in other parts of Chile (Gallardo and Friman 2010). Furthermore, in the light of the increasing interest in aquaculture worldwide, women through their TURFs entitlements may well play a key role in building a more prosperous (and sustainable) future for their families and communities. While there were episodes of difficult conflicts, it appears to be unequivocal that women in both Unions (1 and 2) were empowered through the process of union formation and TURFs designation. Conflict and cooperation are closely juxtaposed here, with one stimulating the other. Ultimately, despite the ferment

that erupted at times during the TURFs formations, this experience has enhanced women's capacities to act and influence decisions over coastal resource access and use. It has also given many of the women involved, confidence to advocate their interests within community and institutional governance arrangements, enhanced standing in the general community, increased capacity to earn income and support their families, and more independence within families. The formation of both Union 1 and Union 2 has also been beneficial for the Coliumo community more generally, as TURFs have become an effective means to protect and reinforce the village customary rights over nearshore territory and therefore marine resources.

Both all-female unions at Coliumo should be seen as pioneers in how women can forge futures in fishing. These relatively favourable outcomes came through significant struggle, not least among the women themselves. However, these gains in Chile do not mean that gender roles in fishing will change automatically or dramatically. It remains to be seen how much potential TURFs have to usurp deeply entrenched gender norms in fisheries or deliver substantial development opportunities for women.

While we focussed on women's interaction with each other through the TURFs institutional setting, our findings also showed changing relations with men in their roles that affect women as freshly minted fishers with formalised fishing rights. These roles variously include husbands, members of shared communities, and institutional fisheries actors. The study showed that while there was evidence of some men resisting the new gender roles of women as fishers, gender relations are not fixed, but dynamically constituted in and through changing institutional arrangements and socio-economic relations (Ramachandran 2012; Bavington et al. 2004; Rocheleau 1995). Somewhat paradoxically, the results indicate the stickiness and dynamism of gender relations as a constitutive element of broader social relations. Furthermore, it also highlights the paramount role that community-based institutions such as TURFs can play in changing access and use of these coastal resources. A process we see as heavily influenced by the internationalisation of fisheries both in terms of the concerns of overexploitation because of the resource boom (which was a factor in the instigation of TURFs, but still an ongoing concern) and because export-orientated benthic markets may in some instances offer opportunities for women to enhance their economic power in social relations (Rocheleau 1995).

While it is too early to tell whether small-scale aquaculture within designated TURFs can resolve concerns about overexploitation, it is clear that TURFs have significant potential to not only support more equity in gender relations, but to enhance opportunities for sustainable development among communities in coastal regions.

Lessons from our case study include the importance of supporting formation initiatives as well as creating community awareness on the rights and obligations of TURFs entitlements. These two aspects seem to have been lacking among women in Coliumo. What was previously considered as a right under customary law i.e. extracting resources from the sea in accord with local understandings (norms), no longer held if that portion of the sea was part of TURFs. Without this awareness (and relatedly acceptance of the legitimacy of the TURFs), it is understandable that those who were excluded from membership of the fishing unions and their TURFs in Coliumo remonstrated and clashed with TURFs members. Perhaps conflict could have been avoided or at least mitigated if fishing authorities had worked more in an outreach role to create more community awareness before implementing TURFs.

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## Compliance with ethical standards

**Availability of data and material** The data underpinning the findings of this article are spread over several bouts of field-work are not yet publicly available in any consolidated form.

**Competing interests** The authors declare that they have no competing interests.

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