

BEYOND PRIVATE AND PUBLIC PROPERTY: EMERGING COMMONS WITHIN ARTISANAL FISHERIES. THE CHILEAN TERRITORIAL USE RIGHTS FOR FISHERIES (TURFS)

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Abstract

Territorial Use Rights for Fisheries (TURFs) have, since the late 1990s, been spreading along the Chilean coast. The institution of the commons has been implemented *de novo* to sustain local common pool resources. While studies suggest that TURFs' coastal resources are doing well ecologically, the economic/organizational aspects seem to lag behind. TURFs are nested in diverse *caletas* (rural/urban) and social embedment (private/state lands), such settings influencing the TURFs' long-term viability. The theory on the commons claims that certain collective action conditions have to be met to become a thriving common institution. How are these conditions influenced when the new commons do not emerge in *tabula rasa* contexts, but in shared and contested spaces? How do TURFs in rural areas differ to those embedded in urban centres?

Rural *Caleta* Huentelauquén and urban *Caleta* Guayacán, Coquimbo Region, were portrayed, using Participatory Rural Approach (PRA) tools triangulated with other qualitative methods. Our study shows that fishers and their sites differ in structural conditions, history, traditions and in their approach to the TURF. Competition for space among key actors seems to affect the process of becoming a TURF. Huentelauquén's fishers experience an unpredictable resource, a remote location and the private embedment of the *caleta*, causing access problems and obstructing infrastructural development. These conditions, while restrictive in nature, also seem to strengthen fishers' cohesion and organization. In contrast, Guayacán has access to infrastructure and enjoys urban facilities, but its urban location constrains them physically; their TURF being tiny, giving scarce incomes. Guayacán fishers, however, seem to be less dependent on their TURF, also showing less collective action attributes. Thus generalisations about the TURFs' benefits and challenges are not easily achieved; the history, tradition and embedment of particular TURFs might be worth consideration at policy level.

Key words:

Artisanal fishers, rural/urban embedment, organization, TURF.

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To the Huentelauquén and Guayacán fishers in Chile for kindly sharing their insight and dreams. Without them, this paper would not have been possible

INTRODUCTION

The shortfalls of traditional rooted approaches to fisheries around the world, based on single species stocks assessment, have led to the conception of more ecosystem based approaches, including diverse types of co-management (Berkes, 1994, 1997; Berkes *et al.*, 1991; Béné & Neiland, 2006) within which we find right-based systems and users' participation like the TURFs (Orensanz & Jamieson, 1998; Gelcich *et al.*, 2006; Gonzalez *et al.*, 2006; Gallardo, 2008). These ecosystem based approaches promote resource users as part of the solution, instead of seeing fishers as the problem. Efforts are made to replace top-down regulation with decentralised forms of governance; delegating management decisions to communities or fisher organizations (Berkes *et al.* 2001). Diverse studies have analysed the factors that drive alternative approaches, listing the ideal conditions for TURFs (Christy, 1992); both for co-management (Berkes *et al.*, 2001; Hersoug *et al.*, 2004; Hauck & Sowman, 2005), as well as for 'successful' common institutions (Schlager & Ostrom, 1992; Ostrom, 2002). There is a high degree of consensus on these criteria³, and also in that these approaches appear on the agenda when resources are already in crisis (Christy, 1992; Berkes *et al.*, 2001; and Schlager & Ostrom, 1992; Ostrom, 2002), as seen in Chile with the high value benthic resource *loco* (the gastropod *Conchopleas concholepas* or "Chilean abalone"). Exported mainly to Asian markets (Stotz, 1997; González *et al.*, 2006), this is one of the most important benthic resources for small scale fisheries in this country. Nonetheless, while usually trying to avoid the 'tragedy of the commons', governments propose simple solutions to this complex problem, such as governance of common pool resources (Ostrom, 2002). Maintaining ecological biodiversity is pursued in favour of institutional diversity on various scales (Ostrom, 2002), dismantling the old order. Thus, existing local traditions and institutions might shrink, be demolished or be replaced with new institutions. This also echoes partially what has happened in Chile, although there are not many studies giving accounts of what these local traditions and institutions were, prior to the disruption surrounding the *loco* fisheries, leading finally to the TURF solution. According to Orensanz *et al.* (2005) perceived overfishing in Chile appears, in retrospective, as a symptom, rather than a structural disease that required treatment. Ostrom's (2002) tenet is that we need to understand and build upon the existent institutional diversity and not assume that a 'one size fits all' solution will work. This is a view that, among others, San Martin *et al.* (2010) share for the Chilean case. However, upon institutional diversity there is also a dominant social and economic structure that influences local conditions; that when examined

³ These are: salience, common understanding, low discount rate, distribution of interests, trust, autonomy and prior organizational experience (Ostrom, 2002). See also Schlager & Ostrom, 1992; Berkes *et al.*, 2001 and Christy, 1992).

more closely, is not that local, nor independent of the reigning material conditions surrounding that which might be understood as local, when fishers in fact are producing for the global market.

BACKGROUND TO THE CHILEAN TURFS SCENARIO

To sustain Chilean small-scale fisheries, an institution of the commons, in the form of 'territorial use rights for fisheries' (TURFs),⁴ has been implemented *de novo* (San Martín *et al.*, 2010) on top of previous 'individual' production.⁵ In the difficult compromise between trying to secure conservation through co-management and the need to secure a lucrative business that both satisfy domestic interests and demand from foreign markets, after the onset of liberal democracy in 1989 the TURFs, (launched in 1991 under the new fishing act) vested fishers' organizations with exclusive common use rights for the exploitation of benthic resources on given coastal stretches.

The TURFs have expanded along the Chilean coast, being popularly known as Management Areas (MA); officially *Áreas de Manejo y Explotación de Recursos Bentónicos* (AMERBs)⁶ (Management and Exploitation Areas for Benthic Resources (MEABRs)). After several failed regulations (1982-1988) and amid attempted bans,⁷ the TURFs were introduced, in order to control the degradation of the resource, on which small scale fishers and their families have historically relied on, up to that time without much involvement from authorities. In fact, the first fishing legislation dates from the 1930s, almost not considering benthic resources and small scale fisheries in general, and it was only during the 1970s, in connection with Pinochet's (1973-1989) neo-liberal economic policy, that the national market was opened for international trade (1974-75) and the government began structuring a fishing administration in the fashion we know it today, under the command of the Economy ministry.

The *loco* came to symbolise a chain of concatenated processes involving small-scale fishers and/or divers exploiting benthic resources. It starts with a *loco* export 'success' (1973-75) or *loco* 'boom' causing a rapid increase in landings from ca 4 000 tonnes in 1974, to 25000 tonnes in 1980. This 'success' is a lucrative business for intermediaries and exporting firms, as well as a promising income source for artisanal fisheries and tax entries for the State. Neo-liberal terms such as 'success' and 'boom', are often used to describe these events and have even been incorporated by fishers in their vocabulary. Only after few years, landings began to fluctuate, declining to 17 400 tonnes, a situation which alerted authorities. Although the reasons for the *loco* decline were not scientifically demonstrated (Castilla, 1995), authorities seem to have taken a precautionary approach from the start; an adaptive management element (Gallardo, 2008) apparently choosing to trust landing statistics and economic effects. Authorities tried diverse limiting regulations to halt probable

⁴ The TURFs imply the right of exclusion of others (the right to limit or control access to the fishery resources within this territory); the right to determine amount and kind of use of resources within the territory; the right to extract benefits from the use of the resources and the right to future returns from the use of those resources within that territory (Christy, 1992); or what Schlager & Ostrom's (1992) call bundles of rights.

⁵ This production was/is not very individual as it is performed from two to more fisher per boat; normally the diver and deckhands: i.e. the fisher manoeuvring the boat and the diver's assistant.

⁶ Reglamento N. 355, Subpesca, 1995.

⁷ 1989-2011 www.sernapesca.cl.

resource degradation.⁸ Nevertheless regulations were readily violated by fishers extracting *locos* 'illegally' (Stotz, 1997). Chasing the resource along the coast, in the so called '*loco* fever' or '*loco* rush' intermediaries began using independent fishers as wage labour, disrupting their traditional migrations and substituting it with an 'organised' migration of divers, fishers and their boats being transported across the country. After seeing that the aforementioned interventions were of little help, authorities not being able to effectively control what happened along the coast or enforce the regulations, benthic resources are finally commoditized through the TURFs.

Some fishers' organisations have, with the help of scientists, begun to experiment with self imposed bans in their fishing grounds with good results (Stotz 1997; Meltzoff *et al.*, 2002; Castilla *et al.*, 2007; Moreno *et al.*, 2007), which was an incentive for the TURF's idea. The management of the *loco* fishery plays a central role in the development of the new system, as it did before with the previous regulations. Although TURFs are launched with the idea of a multi-species approach, the social fervour seems very much centred around one species: the *loco*. High export prices around the year the system was implemented (see Montoya, 2007) perhaps contributed to the euphoria. Today MAs extracting *loco* are performing worse in Region IV than MAs exploiting other species (Zuñiga *et al.*, 2008).

National and international specialists and fishers' leaders participated in the formulation of the legal decree, but there seems to be little systematised knowledge on fishers' former traditions and the reality in which this mayor change is applied; these are unwritten chapters in their history. Fishers have been quite invisible to social science research and they become of interest quite late in the research agenda of natural sciences, very much in connection with the increasing importance of export fisheries and the growth in the number of fishers. In 1999 a group of international scientists was invited by Subpesca to evaluate the implementation process of the TURFs. With the exception of Robert S. Pomeroy, known for his research on CBCRMA (Community-based coastal resource management) and co-management, no social scientists or experts on collective action and the commons were present. It also seems that the TURFs were applied without social assessment of their possible consequences, such as the economic impact, use/access and tenure rights for land.

After bans had been imposed the MAs were implemented and this became the only legal access to the *loco* fisheries, and later also for some other benthic resources, such as surfclams (*Mesodesma donacium*) and brown macroalgae (kelp) in some parts of the country, thus becoming a major incentive to organise and to obtain a MA.

Examining and trying to differentiate the diverse components around the TURFs and fishers' organizations and associated rights made the arrangement of results intricate, if not contradictory. To be organised in a collective is a prerequisite, as the TURFs or MAs are allocated only to organizations. To affiliate to a fishing organization is a voluntary act in the same way as it is for a worker to affiliate to a union. However, unlike wage labourers, artisanal fishers are independent producers. Those fishers, owning their limited means of production, such as the boat and other fishing implements, act as patrons for those not owning; artisanal fishers' labour division and corresponding relations of production are at a low level. The fishing act

⁸ These were first seasonal closures (reproductive seasons or seasonal closing (1981-1984), global or total national quota (1985-1989), and as the tendency could not be reverted, ending with complete bans (from 1989 on, up to present days) (see Castilla *et al.*, 2007).

(LGPA)⁹ does not allow either to own more than two artisanal boats per individual fisher, thus putting limits on accumulation. TURFs operate using the individual fishers' boat and fishing implements, for which owners are sometimes compensated. Agreements between fishers composing the small fishing group when fishing in open access areas are still oral and based in trust. TURFs have come to change this and every particular TURF agrees upon its own, presently written rules, decided according to their own idiosyncrasies

The legal forms in which fishers gather as collective are mainly unions (*sindicato*) and guilds (*asociación gremial*). Fishers re-organise more fully after the return to democracy at the beginning predominating in the form of guild association.¹⁰ The specific decree for the Chilean TURFs comes in 1995,¹¹ some years after the promulgation of the fishing act. The general objective of the MAs are to: 1) Contribute to the conservation of benthic resources, 2) Contribute to sustainability of artisan economic activity, 3) Maintain or increase biological productivity of benthic resources, 4) Increase knowledge of the functioning of benthic ecosystems, generating useful information for management, and 5) Promote participative management (Servicio Nacional de Pesca (Sernapesca), 2005).

Since the late 1990s, the number of TURFs has increased rapidly: from 37 MAs in 1997 (Montoya, 2007), the number of MA with established decrees reached 747 in 1999 (Sernapesca 2009), embracing 30 898 members in total.¹² Approximately 50% of the officially registered artisanal fishers belong to the MA system and, to this day, almost all fishers that work with benthic resources should be subsumed under the MA system.¹³ The implementation of TURFs has had a dramatic impact on thousand of fishers, thus posing mayor challenges not only to the direct resource users, but also for national and regional authorities and the larger society. To contribute (as the objective says) to resource conservation through a novel and large administrative system without tradition in the country is itself a mayor challenge.

Of all the aspects incorporated by the authorities into objectives for the MAs, those farthest from succeeding seem to be the economic ones, halting due to other aspects related to sustainable development within the industry. Many scholars (Payne, & Castilla, 1994; Castilla, 1995; Meltzoff *et al.*, 2002; Orensanz *et al.*, 2005; Gonzalez *et al.*, 2006; Castilla *et al.* 2007; Moreno *et al.* 2007; Gallardo 2008; Gelcich *et al.* 2008; Zúñiga *et al.*, 2008; San Martin *et al.*, 2010) and fishing authorities, such as Fisheries Subsecretary (Subpesca) and Sernapesca, have concluded that the MAs' greatest achievements have been those related to social issues and conservation aspects. With regard to the conservation of the *loco* species

⁹ Ley General de Pesca y Acuicultura, enacted January 21, 2002.

¹⁰ Politically, unions are more associated to a working class ideology; guilds are more associated to professions/patrons; the difference is thus political and related to different political times: unions to both before and after the Pinochet period and guilds to Pinochet's time (Orensanz *et al.*, 2005; Gallardo, 2008).

¹¹ Reglamento N.355, Subpesca, 1995.

¹² Sernapesca, 2009b (Abril-Junio).

¹³ J. Rivera, Subpesca, interviewed by G. Gallardo 2008-11-11. The number of artisanal fishers has increased considerably since the 1970s. From there being 17 182 fishers prior to export in the mid 1970s (Arrizaga *et al.* 1989:295), to the officially inscribed number of fishers and divers in the artisanal fishing register amounted to 69 310 in 2007. Of this total, 13 880 (20%) corresponded to divers (Gallardo 2008:75). The increasing number of fishers before and after the introduction of the MAs does not necessarily mean an increase in the number of divers, or that is automatically due to MAs. Economic recession, especially mining is, in this regard, important to consider (M. Montoya, e-mail 2009-05-11); artisanal fisheries absorbing surplus labour.

- presently still the main target of the MAs - and thus the lead motive behind the implementation of the TURFs (Zuñiga *et al.*, 2008) - the population seems to be secure within the MAs (Castilla, 2000; Defeo & Castilla, 2005). Another likely contribution to their conservation (beyond the MA) comes as, socio-politically, fishers have become strengthened and empowered at various levels (regional and national) and arenas, also pushing forwards the whole artisanal sector (Gallardo, 2008), including legal modifications.

What conditions concur to influence such outcomes? Theories on the commons, co-management and the TURFs, claim that certain ideal conditions have to be met to 'succeed'. Although these claims pay attention to the so called resource attributes and user attributes (collective action) as well as to the institutional conditions in which the TURFs are inserted; the structural and local material conditions are not given the same attention. 'Local' conditions are rooted in, and reflect, the broader historical, political, ecological and economic context. 'Local' conditions go hand in hand with globalization. Rural and apparently marginalised areas are directly producing for international markets in Asia in accordance with the internationalization of food systems and markets' 'laws'. Business, as Bauman (2010:111) says, "has acquired extraterritorial territory".

Artisanal fisheries are land based in "*caletas*" (the term in Chile is used for the place on land from which small-scale fishers operate; see below) and therefore the material embedment of these "*caletas*" plays an important role for the development of localised TURFs. As suggested, TURFs do not emerge from *tabula rasa* contexts, in which there are no social institutions, but rather in spaces that are shared and sometimes also contested. Access to the coast for artisanal fishers varies depending on whether the land where the *caletas* are situated is municipal/state or private property (Gallardo, 2008; Gallardo & Friman, 2010). Often these aspects are not even considered in spite of the constraints these conditions put upon fishers. The power of land property rights and the reigning land tenure structure, cemented in the society since the colonial times, have not disappeared because they are not analysed, nor seen as a limiting constraint. This issue matters, not least for fishers and their TURFs, since it affects them, as we shall see, in different ways.

The re-appropriation and re-occupation of the coast - within which the expansion of the TURFs, in our view, enters - is a process involving economics, ecology, politics and history. Coastal land has been increasingly acquiring value, both for productive and non productive activities. The expansion of the TURFs adds to a long list of viable uses, putting pressure on the coast, hence contributing in changing the coastal landscape. The coastal zone has a variety of uses along the Chilean coast (San Martin *et al.*, 2010). The boundaries of a MA, for example, have to take into consideration other spatial destinations such as other MAs and claims by indigenous people – now protected though a special law that's secures them permanent dominion over traditional territories if designated a MA¹⁴ (Hauck & Gallardo, in prep.). Intensive salmon aquaculture production in the south of Chile is an example of the competition for the space, but aquaculture is also expanding in northern regions. As San Martin *et al.* (2010) suggest, many fishing organizations tactically applied for MAs away from other competing uses.

Many private large unproductive land properties in the studied region are being replaced by summer resorts, camping, hotels, small private airports and golf facilities

¹⁴ Ley 20.249, Crea el espacio costero marino de los pueblos originarios, Ministerio de Planificación Subsecretaría de Planificación, 31 de Enero de 2008.

(Gallardo, 2008). To this can be added ports for big mineral companies, as well as the recent construction by large international consortiums of wind power energy parks and coal-fired power stations, which further increase land value. Within this scenario, fishing activities of the TURFs are necessarily competing for the rights over the control of physical space with other social agents, including large capital intensive fishing activities such as abalone aquaculture. These processes of re-appropriation and re-occupation of land are not friction free, even groups with a similar class background might contest the same space. As power is not static, but varying in its production and reproduction, it might also entail a struggle for coastal resources between groups of the same or similar class position. The case studies analysed by Gallardo and Friman (2010) demonstrate that struggles for access to and control of natural resources on and around the coast are not absent. Since the TURFs seem to be here to stay, becoming, in practice, a long-term solution for the exploitation of coastal benthic resources, fishing in rural areas implies tensions and conflicts with other interests, as fishers, in order to support the long-term viability of their TURF, need at least to develop their own fishery infrastructure (Gallardo, 2008; Gallardo & Friman, 2010).

Access to the coast varies and this has consequences in at least three relevant areas for the fishers: entry, type of social relations between the fishers' organization (entitled the MA) and the land owner (private or municipal/ State) and the existence or absence of fishing and general infra-structure. We expect that these aspects might influence MAs development, their organizational capacity and their expectations and social cohesion. If such variables influence both coastal access and social sustainability, they might also make a difference between the 'tragedy of the commons' and potential long enduring, self-organised and self-governed TURFs. The role of such intersectional local and contextual material conditions or variables, such as the *caleta* being in a rural and urban setting, may be overlooked if we do not pay attention to concrete cases on the ground and connect them with the larger historical, political, ecological and economic context, something fishers certainly do.

Although almost one and a half decade has passed since the TURFs started to be implemented, and the number of studies on the TURFS has increased at the same time as the TURFs themselves, studies are still predominantly of a natural science character, mostly done by marine or fishery biologists. Studies examining the wider context and the importance of the material conditions in which the TURFs are inserted, are scarcer. Looking at the TURFs as not de-contextualised or isolated phenomenon can help us to understand the diverse outcomes the TURF system has for different fisher groups, as is the aim of this paper, giving an account of the main structural factors limiting their endeavour.

Cases, purpose and methodology

Our cases - *Caleta* Guayacán and *Caleta* Huentelauquén, both in central-northern Chile (Fig. 1) - were chosen for their differing characteristics, offering a good scenario in which to compare these two urban-rural settings. A '*caleta*' is a small scale fishing port, mostly associated to a protected coastal site (the cove), which allows fishers to land and/or anchor securely the fishing boats or to haul them up to the beach. It therefore involves the entire setting, including the cove, the pier (when there is one), the boatyard, the huts or sheds in which fisher camp or the associated houses or community in which the fishers live. While *Caleta* Guayacán is a typical urban *caleta*, part of Coquimbo city and located on a well protected bay (La

Herradura de Guayacán Bay) and placed on municipal land, *Caleta* Huentelauquén is rural, far from any town and located within private property.

Our questions are: What are the main differences between *caletas* in rural areas and those embedded in urban centres? Does their setting related history influence their perception of the MAs?

The fieldwork was done in November 2008 and December 2009, the second year being used to revise, complete and complement information. Participatory Rural Approach (PRA) (see Table 1) tools, triangulated with other qualitative methods, were used with the fishers in both cases to gather mainly qualitative data; the kinds of data seen when allowing fishers to narrate their own stories. Among other qualitative methods we used structured, semi-structured and focus group interviews, interview with key informants, e-mail letters and telephone interviews; most of them in order to complement PRA tools.

Table 1: List of main tools and methods used in the field	
PRA tools and methods	Purpose: to get/to understand fishers'
Brainstorm & problem prioritization	Own agenda/concerns to be analyzed in regard to their MA
Landmarks MA	Reasons application of MA
Historical line	History of the Union/fishing and the cove
Cove map	Spatial distribution of the cove and its surroundings
Organizational diagram	Union organization, historical antecedents, committees and their roles within the MA
Institutional or Venn diagram	To obtain an idea of the organization, the committees within the MA and their roles.
Sea transects	Spatial distribution of the species in the sea, harvesting and techniques
Flow diagram	Production and trade systems, complexities and relationships
Impacts	Perception MA impacts
Problem-tree & solution-Tree	Perception about the major problems in regards to their MA Solutions to the problems
Seasonal calendar	Availability of resources, labour distribution and economic assessment of both production spheres, i.e., inside and outside the MAs
Fishers' origin, place of residence & fishers fishing experience (semi-structured questionnaire)	Place of origin and residence
Family ties among fishers (semi-structured questionnaire)	Family ties among fishers
Based on Pretty el al., 1995	

PRA is “an approach and method for learning about rural life and conditions [by, with and from] rural people” (Chambers, 1997). This approach has been used extensively in sustainable development studies, but has been also extended to urban settings. Participatory approach is designed to allow people to define and structure their ideas, problems and solutions, perform the reflection and the analysis (Pretty *et al.*,

1995), with the aim of empowering them and their organization. Facilitators help and intervene if necessary, guiding the process. Considering reluctance among fishers to read and write principally due to lack of formal education, PRA tools were judged to be the best way to obtain fisher perception on their MAs. All PRA tools or exercises were validated by the bigger group of fishers participating in the meetings). An additional strength of PRA for the MAs is that fishers are working collectively and therefore to study and analyze their situation entrusting them with a collective approach such as PRA, was particularly suitable.

The number of fisher participating in the exercises varied very much, depending first of all on the attendance and willingness to participate, which also varied from day to day. Fishers - divided in groups of three or four persons and sometime only two or also one - were assigned different exercises depending on their position and knowledge or skills (for example in writing, drawing and painting). In both cases, a group of 9-13 fishers participated most systematically, although others did it indirectly observing and commenting what the smaller groups did. Our sampling coincides with a convenience non-probability sampling approach (Nachmias & Nachmias, 1996:184), meaning that we as researchers accept the sampling units that were conveniently available in each *caleta* when we worked there. We had no influence on which fishers participated in each exercise. For the aim of this study, this is convenient.

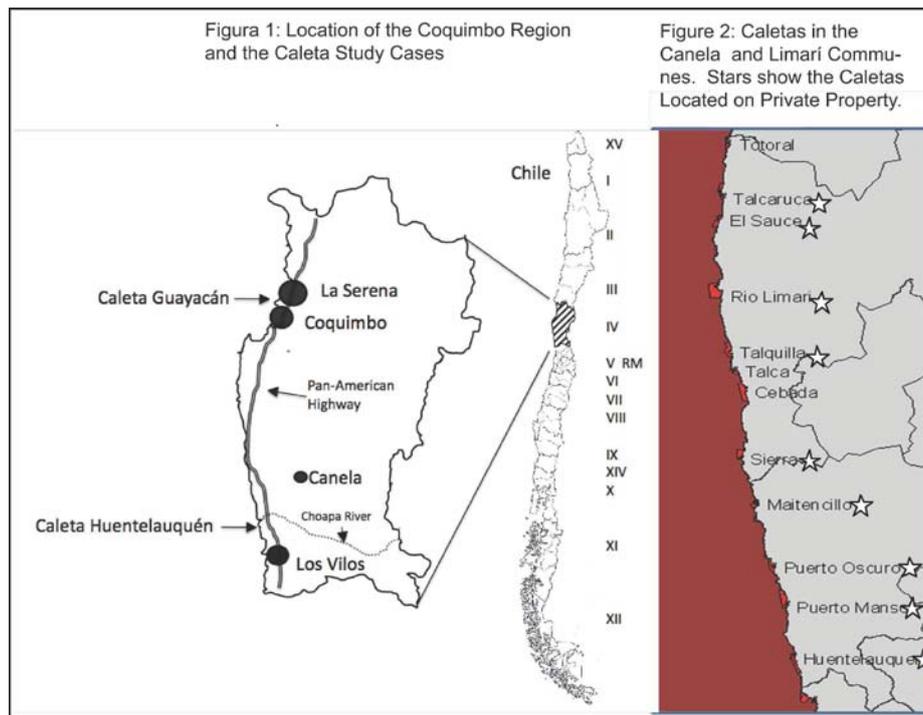
LAND TENURE, PROPERTY RIGHT REGIME AND ITS RELATIONS WITH CALETAS

Private property rights dominate in Chile where land ownership concentration is extreme. In the Coquimbo Region or Region IV, to which our study cases belong, 88% of the land is privately owned. This proportion is even higher in other regions, where most of the country's population live. Also, most of the land along the coast, in rural areas, is private; a situation that certainly poses problems for fishers, as 76% of the permanent *caletas* in Chile are rural (Gallardo, 2008). It is also a problem for the general public who want to access the coast. The Ministry of National Real Estate registered 151 cases of conflicts regarding the access to beaches through private properties for the period 2006-2008 (Gallardo & Friman, 2010).

The beaches are, by law, defined as a public good for the entire nation. By law, a beach is the portion of the coast between tidemarks. Private properties limit with the high tide limit. Within the private property, the owner must allow the eight first meters above high tide mark to be used by fishers. This is so that the fishers can land and keep their boats in that stretch of coast. The latter requires a special resolution.¹⁵ The owner of the property must also allow access to the beach to any person, but not for vehicles. Twelve of the 33 *caletas* (Sernapesca, Coquimbo, 2008) in the region are on privately owned land, with roots tracing back to colonial times (Gallardo, 2008; Gallardo & Friman, 2010);¹⁶ (part of them can be seen in Fig.3).

¹⁵ The resolution includes the intervention of several land planning organs the Judiciary, Treasury, Regional Government and Regional Ministerial Secretaries of Real National Estate (MBN, 2010).

¹⁶ Fishers in these *caletas* reach almost 1 000 people (Gallardo & Friman, 2010), corresponding to ca. 21% of the total of 4 822 regionally registered fishers for 2008. Of this total, 3 613 fishers (75%) belong to a MA (Sernapesca, Coquimbo 2008). Other *caletas* that have been within private property might be in a different situation such the *caleta* La Herradura that appears is passing to the State, or might had been handed over to the Ministry of Real State (MBN), like Chigualoco (76 fishers), that also is within a private property. Other cases might find



Additionally, some *caletas* on municipal or State property are surrounded by other strong stakeholders, which can also give rise to access problems. What Sernapesca (Coquimbo, 2008) pays attention to in their report is whether fishers have access problems, but obviously this is only part of a bigger and more complex scenario. Problems are not necessarily related to fishers' recognised access to the coast, and there are cases of open hostility; access or right of way does not predicate a good relationship between fishers and landowners, and does not necessarily mean access in a vehicle. Hence, land access to the coast entails latent or manifest seeds of dispute, since right of use granted by law does not involve the development of fishing related infrastructure (such as piers, shelters, etc.). This omission excludes the possibility for fishers to settle in the *caletas*, near their workplaces. Fishers only can construct on those places if the owner of the land allows it and, more importantly, the state cannot invest and construct on those places. Therefore, most rural *caletas* in this situation have either little or no infrastructure.

In those rural *caletas* fishers only camp during the week, or more permanently in summer, forming groups of what Berkes *et al.* (2001) would call 'virtual' communities – the co-location of fishers for working purposes – which, besides their work, share some rudimentary facilities. Their houses are in towns nearby, and the family mostly stay there. Thus, many MAs are organization- and resource-base oriented. These represent the Huentelauquén situation. Fishers are not only dislocated from their families but also, being the MA placed in a rural *caleta*, incur transport costs, worsening the fishers' economy. Those *caletas* we know to be within private properties include Chigualoco, Huentelauquén, Puerto Manso, Puerto Oscuro and Maintencillo (Gallardo, 2008).

themselves in lawsuit like the sector called Apollillado in the *caleta* Los Choros (Sernapesca, Coquimbo 2008). Another such case is Puerto Viejo that also was under a lawsuit (Gallardo, 2008).

RESULTS AND ANALYSIS

CALETA HUENTELAUQUÉN: HISTORICAL OVERVIEW AND SOCIO-GEOGRAPHICAL SETTING

The history of *Caleta* Huentelauquén, as fishers know it, goes back to the beginning of the last century. By 1920 the place was used by people living in Los Vilos, a town located ca 33-km away, (Fig. 1), who came to fish *congrío* (*Genypterus chilensis* or Ling) on this site. The site has a protected beach, on which they could land and keep their boats. Fishing was handline or longline fishing, in shallow waters (up to 25 m depth). This period is remembered by the fishers as the *congrío* ‘boom’, as it was by that time a very rich fishing ground. They were able to capture up to 200 “*sartas de congrío*” per night, equal to 400 fish.¹⁷ Around the 1940s, they started to dive for sea urchins; the first time they mention a benthic resource, which by that time had only a local market. At that time there were about 12 fishers and four boats, diving, as was used by that time, with a diving helmet and dry suit (*buzo escafandra*). The air for the diver was delivered through a pump in the boat, without engine, thus powered by one or two people. For this period they also mention that they used to move along the coast, between the III or Tarapacá Region and the V or Valparaíso Region, covering almost 1000 km.

In the 1960s, the *loco* began to be fished, becoming important as a resource, and mark many parts of the history of *Caleta* Huentelauquén from then on. *Locos* were hand collected, by that time diving with a diving helmet and dry suit. Fishers remember that such a diver could capture up to 2000 *locos* per dive. This increased dramatically in the seventies, as diving was improved by the development of neoprene wetsuits and the Hookah.¹⁸ With these a diver could capture up to 6000 *locos* a day, in only two dives. Diving was done down to 15 – 20 m depth. For this work they used wooden boats, 7-8 meters long, powered by an outboard engine. A diving crew consisted mainly of three people, including the diver, an operator for the compressor and a rower.

This period is identified by the fishers as the beginning of the “*loco* boom” which developed up to the end of the eighties. The increase of landings by that time was in response to an increased demand as a consequence of opening international markets for the species. Before the seventies the resource was only destined to local markets. This made the fishery very profitable, attracting more people, the group of fishers increasing up to 70 people by the eighties through immigrants coming from Quinteros (located about 200 Km south). Migration became a common behaviour during that period, *loco* divers moving along almost the entire coast of the country, between Arica and Chiloé, looking for and exploiting the richer fishing grounds. They remember moving during the sixties to southern Chile (Valdivia, Concepción, 1 000-1 300 Km south) and during the eighties, first to northern Chile (between Taltal and Arica, 600-1 500 Km north), but during the *loco*-boom years (end eighties) again to southern Chile (Puerto Montt and Chiloé 1 500 Km south); the richest fishing grounds for *loco* in the country, attracting thousands of fishers. This massive migration was paralleled to the times of gold rushes in the 19th century in

¹⁷ A ‘*sarta*’ are two fishes tied together passing a line through their mouth and gill, in order to be able to hang them over a stick, one on each side.

¹⁸ A Hookah is a compressor with a gasoline engine in the boat, which delivers air at pressure through a hose to the diver at the bottom.

North America, being reproduced in a film which had as title “*La fiebre del loco*” (the *loco* rush). The migrations remembered by the fishers from Huentelauquén were mainly following the most productive spots for *loco*, but at the beginning also of some other resources, as urchins (*Loxechinus albus*), *locote* (*Thais chocolata*, a smaller snail) and octopus (*Octopus mimus*). Thus, migration is part of their cultural baggage, “following the resources” as the majority said. Our interviews with thirteen (39.4% of total members of the MA) MA fishers show that all had started fishing either in Los Vilos or Huentelauquén and half of them had started being still children, which shows that at least these fishers has a long history and experience as shellfish gatherers/divers and as fishers. In the eighties, during the “*loco* boom” they were literally “hired” and financed by entrepreneurs, not formally employed, thus, just with verbal agreements, without working contract, and precarious conditions, as could be understood from their stories.

It is interesting to note, that after the *loco* “boom”, and the history about their management area (see later), the subjects they remember about their history relate to projects, money, pollution problems, etc. About their fishing activities they mention just few episodes. For the late nineties they mention a decrease of resources, and mainly relate this to pollution problems and ‘natural’ phenomenon (El Niño, La Niña). From year 2000 on, they talk about the algae “boom”. According to their story, the 1997 El Niño brought the algae, which developed into the most important fishery and most of those working today in the *caleta* are dedicated to collect algae cast ashore, drying and selling that. As for algae there exist a ban, and only algae within the MA area are allowed to be exploited, all algae, even collected outside, have to be sold as coming from the MA. Thus, people not belonging to the organization are charged by the organization to allow them to work in the *caleta*. By this, the fact of having a MA has become economically significant for the organization, but also for them individually as they are principally basing their livelihoods on seaweeds. The few fishers which still dive in the *caleta* are catching *congrios* through diving.

Infrastructure and access to the Huentelauquén caleta

The first problem highlighted by the fishers to be analysed is access to the *caleta* for all those who are not fishers. The location of the *caleta* on private land was no problem for the fisher in the past. Nevertheless, from around 1974 on, fishers started to have trouble with access to the place. According to their story this is linked to the change in government and the coup d'état of 1973. Until that time, apparently, the owner did not cause problems. It was the heirs of the estate who begin to regulate entrance to the *caleta*. Seven heirs each shared part of the 26 000 hectare¹⁹ Huentelauquén estate, some forming companies with their properties. At present, *Caleta* Huentelauquén is within the land property Santa Ana.

In 1985 they formally secured access to the *caleta*, from which it followed that they would negotiate the entrance to the coast with the owners of the property. This procedure was done with the intervention of the authorities. But, as one fisher said with humour, the permit did not specify how they are allowed to pass, if by foot, by donkey or truck.²⁰ According to the fishers, they themselves do not ‘own’ the land where the *caleta* is situated which has implications for them as members of the MA,

¹⁹ Los herederos del “afamado” queso Huentelauquén, Carla Sánchez Mutis, 2008-03-28 (http://www.df.cl/portal/content/df/ediciones/20080328/cont_1796.html), 2010-11-03

²⁰ E. Alfaro, collective interview, Union’s House in Los Vilos, 2008-12-10.

their families and also for third parties who, in one way or another, are involved with them as fishers, such as researchers, officials, tourists and merchants; all who see their access obstructed. The land owner restricts entry through a big door that is taking care of by the administrator. Fishers have to notify the administrator in advance if somebody else wants to enter the *caleta*.

Having the *caleta* nested within a private property had other serious implications for the fishers because affiliations of the state, such as the Dirección de Obras Portuarias (DOP), are not able to invest in the area. For this reason the *caleta* is unlike others; lacking an esplanade, a pier, light, freezers, water, and proper shelters, among many other things that are necessary to a properly functioning *caleta*. Besides this, the fishers are isolated within their MA and are subject to entry restrictions. The access issue comes up several times in sessions other than the problem-tree- and solution-tree exercises. This was seen especially among women, who join the fishers during the summer, and were discussing this issue affecting them.²¹ According to Rodríguez, during summer the number of people in the *caleta* reaches around 60, including fishers' families²² and, in spite of obstruction problems, they do not enter through the main access.²³ Thus *Caleta Huentelauquén* has had a very poor development of infrastructure in all his history. Perhaps the greatest improvement was at the beginning of the nineties, in which they got a construction from the municipality of Canela to be used as meeting place for the guild association,²⁴ which they nevertheless do not remember in their Historic Line. But they do remember buying later, with money from the *loco* fishery in their area, a similar building in 1995-96 in Los Vilos. The other important improvement they remember is a new winch, powered by a diesel engine, which now helps them to haul their boats up the beach after every working day. Besides this, the development of the *caleta* has been limited to the addition of more sheds (called *rucos*); some privately owned, and others common.

As reported by fishers, the owner is willing to make some improvements in the *caleta*, with conditions that involve, among other things, the transfer of their *rucos* away from the beach corner; something the fishers would not accept. On our visit, fishers were building a small wooden room in which to hold meetings in shade (with permission from the owner). The landowner required that they build the room on piles of cement and not directly on the ground, possibly in order to maintain a clear ownership, not only of the land, but also of most part of the infrastructure.

Analyzing the causes of this problem, the fishers made reference to a political issue, the power of the landowners; pointing out that political, economic and social power are the same thing, 'it's the same group'. They also claimed, as causes of the problem: government's mismanagement, the lack of interest they show for fishers causes, and finally, that the laws in place are not favourable to them. Seeing the modifications proposed to the fishing act by the national fishing organisations, this means that the MAs are given temporarily (four years), not counting with the same legal protection and status of private property dealing for example with robbery. The Artisanal Fishers National Confederation (CONAPACH), is critical to the TURFs as a use agreement (i.e., a *comodato precario*, precarious *commodatum* (unsecure/unsure) which is subject to caducity, thus being under the tutelage of

²¹ Conversation with women in the *caleta*, 2008-12-11.

²² Interview with L. Rodríguez by G. Gallardo, 2008-12-10.

²³ Conversation with women in the *caleta*, 2008-12-11

²⁴ W. Stotz was invited and attended the reception given on that occasion.

Subpesca.²⁵ This issue taken by the national confederations also relates to a tenure issue and its differences with property.

Besides being embedded within a private property, fishers experience also some difficulties related to the political-administrative belongings of the *caleta*. The fishers' situation was portrayed in a local news paper (October 2009)²⁶ In which the fishers declared that they do not get help since the *caleta* is within the limits of the Canela county whereas they all live in Los Vilos, which is another county. This put them in a difficult position as both counties claim that the fishers' problems in not within their jurisdiction. Enumerating their problems fishers say:

“Our *caleta* has limited access, not everyone can pass, even the direct families can't, we lack water, electricity and were to put the garbage; as toilettes we have a shed put over a hole in the ground (*pozo negro*); our three sheds of 3 x 9 meters get wet every winter when it rains, things get wet since the floor is of earth, we cannot build shelters nor a place where to gather the seaweeds.” (Gallardo & Friman, 2010:55).

In the same article, the Governor of the province was also interviewed. She declared that they are working with the fishers to advance solutions to a series of problems, such as that of regulated access, and have asked the (military-affiliated) Direction of Maritime Interest (Dirección de Intereses Marítimos) for a technical report. This suggests that the right of use is not completely settled.



Organizational structure of Huentelauquén fishers

The organisation of fishers appeared late in *Caleta* Huentelauquén. In 1990 they formed the Guild Association with 80 members, later than most of the *caletas* around Los Vilos, coinciding with the end of the military regime in the country and the return to democracy. It coincides also with the time of the *loco* ban, which led to many problems to fishers along the coast, most resorting to illegal for the resource. An important reason for many fishers in the *caletas* to become organised was to have a voice with which to discuss the ban with authority. The type of organisation was chosen because, as one fishers said "We organised as a guild only because of the military regime". However, 1990 is the return of liberal democracy in the country but guild associations were still the most common form of organization, a legacy from the time when unions under Pinochet were not popular. Later, after a series of problems, the organisation changes its legal form in 1995, becoming a union or "an

²⁵ Informe de la Comisión de Pesca, Acuicultura e Intereses Marítimos, 2009.

²⁶ Diario El Día 12 de Octubre de 2009.

entity of struggle", as they say. This could mean that this change had a political character because unions are, as suggested, traditionally associated more with workers, while the guild associations are more associated to professions/patrons.

The membership decreases in relation to the association and the union is formed with 33 members, according to the Historical line (but in fact there were from the beginning 42 members according to added information during the second visit Dec. 2009). The decreasing number of members was due to the fact that many fishers belonged already to another union, and according to the new regulations, a fisher cannot belong to two organizations of the same kind.²⁷ Another important reason for creating a union, not said by fishers, but observed by one of the authors (W. Stotz), was that as a guild association they participated in a federation of guilds (Fepemach).²⁸ When conflict divided the federation, some of the directives abandoned it creating a new one and, in order to differentiate from the previous, re-structured into a federation of unions (Fedepesca).²⁹ Huentelauquén sympathised with the latter, thus forming a union to be part of Fedepesca. This event also occurred at a National level, resulting in the formation of two national confederations (CONAPACH and CONFEPACH).³⁰

Up to 2008, the union's membership further diminished. From the 42 members that remained when fishers transformed the guild association into a union, only remained 32. Three members have deceased and 7 have disappeared due to other reasons such as withdrawal or expulsion. According to an interview with Tapia – president of the Union and MA member – and Rodriguez – *alcalde de mar*'³¹ and MA member – around 5 members have been expelled from the union.

The union has been quite successful in getting aids from diverse state and private institutions. Among these achievements is highlighted a 2007 agreement with the mining company Los Pelambres, – today, running the world's fifth-largest copper mine, owned partially by a Japanese consortium – to get wetsuits and outboard engines, all for about US\$51 000.³² Fishers said that they sent a letter to the mining company, requesting help. Counting hitherto, fishers have been awarded around 9 different projects, with a total value close to 60 million pesos (US\$111,111). All these achievements show that the organisation is paying off in terms of improving both, social (such as union's social house in Los Vilos) and labour conditions in the *caleta*, and also in terms of looking for new possibilities of production. It particularly highlights the strong subsidiary support that fishers have been able to capture not only from state institutions, but also from private institutions. Thus, both the union and the MA seem to be well organised, purposive, functional and cohesive. The group is not numerous, allowing for face-to-face communication. Family ties might play a role, assisting with common understanding and trust.³³ Common interest and

²⁷ E-mail between L. Rodriguez and G. Gallardo, 2010-07-21

²⁸ Federación de Pescadores Artesanales y Buzos Mariscadores del Choapa.

²⁹ Federación de Sindicatos de Pescadores.

³⁰ Luís Durán, president of Fetramar (Federación de Trabajadores del Mar) and member of the board of CONFEPACH. Interviewed by G. Gallardo 2008-11-23.

³¹ *Alcalde de mar* or sea-Mayor is nominated by the navy in each *caleta* as representative; often a retired fisher, whose duty is to register for safety reasons every day the fisher and boats leaving to the sea, and their landing, controlling that they have the necessary permits to do so.

³² A 3 horses-power motor cost during 2008, ca. 1 800 000 pesos (US\$3 448) and a 4 horses-power about 2 700 000 pesos (US\$5 172), according from information gather in other study (Gallardo & Friman, in prep).

³³ Huentelauquén's fishers are closely related both by blood and political (through marriage) ties, all of which present a complex picture of relationships among fishers. For example,

trust are prerequisite attributes of resource users and heterogeneous interests, reducing the probability of finding shared interests (Ostrom, 2002).

Development of the Huentelauquén MA

In 1989 the *loco* fishery was closed completely, which produced a problem for fishers, as it was their main source of income. As a consequence, significant illegal fishing developed. Concerned about this, the fisher organisation Fepemach organised, in August 1990, a seminar in Los Vilos, to discuss the problem. For this seminar one of the authors of the present paper (W. Stotz) was invited to give a talk. Using examples showing the recovery of *loco* populations within reserves, it was proposed that each *caleta*, in order to aid *loco* recovery, should protect some area from illegal fishing close to themselves (Stotz, 1997). One of the first organisations to do this was that of the fishers from *Caleta* Huentelauquén, which is why they identify themselves as “pioneers”. Within a month, they had agreed not to pick up any *locos* in an area they delimited in front of the *caleta*, and prevent any other fishers from entering that area. The installation of their first “management area” to protect *loco* populations, as they remember, was completed with the assistance of Universidad Católica del Norte (UCN). As described by Stotz (1997), the increase of the *loco* population within the area, due to their protection, had as a consequence, that the *loco*, being a predator, consumed its food and afterward seemed to have abandoned the area. This was supported when, in January 1993, the *loco* fishery was granted an individual, non-transferable quota, for a short period, they had no *locos* in their area (Stotz, 1997). They had to fish in the area of the neighbouring *caleta* Chigualoco. The *loco* population was further decreased in 1997 through the consequences of the big rainstorm, which caused large amounts of sediment come out of the mouth of the Choapa River, close to the *caleta*. This heavy rain was associated to the 1997 El Niño. The sediment covered rocks and killed most benthic species, as the tunicate *piure* (sea squirt *Pyura chilensis*), the *picoroco* (barnacles), the *chocha* (the mollusc *Calyptra trochiformis*) and the *cholga* (the mussel *Aulacomya ater*), all species being directly exploited by the fishers, or prey for the *loco*. So, when in 1998 they finally could legalise their area, they did it in a different place from that they had originally protected. Even within that new area the resources declined, which the fishers now attribute mainly to pollution and the already mentioned phenomenon of El Niño; they say that Huentelauquén has pollution problems, “the water is changing; it’s dirty. Before, it was cold”, but they say that “in general the planet is polluted.” In this context they mention the installation of the Mining Co. Los Pelambres and the polluting waste waters of a nearby dairy farm, which they think ends up in the Choapa River, and thus in the sea. Concurrent to this event was the construction of the Pan-American Highway and, according to fishers, the leftovers of the construction were thrown also into the river and the sea.³⁴ They even mention climate change as an influence, recognizing that “We have our share in the resource depletion problem”. The ‘alcalde de mar’ says in a collective interview “I have always said the same, I said to you that the fishers have to make a *mea culpa* of the system ... they helped that resource disappear”

among the total of 32 MA’s fishers, there are 16 fishers (in five sets of brothers) who were united by brotherhood ties. Beyond that there is a father with his son. Among the 32 members, there are at least eleven fishers that are brothers-in-law among themselves.

³⁴ The same opinion is exposed in another study by the Chigualoco fishers, whose *caleta* neighbours the Huentelauquén *caleta* in the south (Gallardo & Friman, 2010).

MA impacts in Huentelauquén

Comments on the impacts of the MA came often in the historical line, but were more systematically evaluated in the exercise MA impacts. Participating fishers (thirteen) were clear about which were both the weak and strong items of their MA.

The balance in the variety of opinions expressed (although not representative) is rather loaded on the negative side, since there were nine critical opinions against four positive ones. However, six of the critical views can be reduced to the economic issue and its impact on the morale of the fishers (see table 2). The ninth view point highlights a different theme that also excels in other exercises: that the MA system closed them geographically to a defined area, expressed as a lack of freedom to move. Three fishers directly expressed their discontent with the current MA system that confined them to one place. They said, for example: "It was open before, and then we could move along the coast. With the regionalization one cannot move out of Region IV" (Fishers are allowed to register only in one region). Another fisher stated "I liked the former system, where we could move more. Now we are very restricted by the regionalization and the MAs." A third fisher said "I do not like the MA system because it forces us to be in one place and there is no place where to work on the open coast".

Items	Evaluation (+ or -)	Fishers perceptions on the impacts of the Huentelauquén MA
1	-	The economic problems: compared to before, it was thought that it would be much better
2	-	Also socially got worse because it was supposed that it would generate more money (no desire to work in the management area).
3	-	It was not known that our payment for the MA would be so high.
4	-	It was supposed that what we did was for taking care of the resource but is not longer like that
5	-	Too many costs in taking care (car, food)
6	-	Little security that the resource harvest will be positive (<i>locos, lapas</i>) o economically / Low security on the quantity of resources in the management areas
7	-	Scarce profit in the Management area
8	-	Geographically non apt zone for the surveillance (cliffs in the southern part), bushes and other
9	-	They cannot move to other regions
10	+	Security (meaning exclusivity) to work (algae)
11	+	Security from being dislodged from the <i>caleta</i> (by the owner of the private land)
12	+	Preservation of the benthic species in time (<i>locos, lapas, erizos</i>)
13	+	Unity among members for a common good (care)

Compared with the old system, where they had freedom of movement throughout the country, being able to cover thousands of kilometres from north to south, this lack of freedom cannot help but be perceived by fishers as a major constraint. The positive views show a richer range of issues, being all of different kinds. Important to highlight is the first and second point, The first stresses the security that the MA gives to remove algae that though is not a target species of MA, the lack of access for others

gives them exclusive extraction. The second view emphasises a more important item for fishers; that the MA protects them from being removed from the *caleta* by the landowner. Also important is the fourth positive item; the unity of members around a common good, which is the care of the MA in a collective form.

An analysis of the results of this exercise brings to light negative economic effects of MA, which brings disappointment and loss of motivation, as well as positive side-effects. The MA prevents others from fishing in the area, giving them exclusivity over the algae, which is part of their main survival strategy. This is reinforced by the fact that the property which, as is usual in private properties, is enclosed and monitored. On the other side, the MA functions also as protection; protection from being evicted. The unity of the members for a common good (care about the resources) is probably reinforced with the difficulties they have with the landowner. The fact that the MA is not giving them the expected results seems not to be a reason to give up the MA; on the contrary, one might think that abandoning it would mean to leave the place free to the owner of the land.

Among the views expressed in the historical line, for example one fisher said “we began as divers and became artisanal fishers”, which probably relates to the fact, that as they are not allowed to dive for *locos* outside the MA, and within the MA they do it only once a year, the rest of the time they dedicate to fishing, and not diving. It thus becomes clear that the establishment of the MAs has implied radical changes for benthic fishers. Instead of competing for the resource as they did previously in groups of three or four persons, fishers must harvest and commercialise collectively. Instead of shifting fishing grounds across regions, they are fixed to permanent grounds, in order to survive, shifting between resources and roles: diver, fisher, seaweed collector. This lack of movement can also, because of necessity, induce overexploitation.

CALETA GUAYACÁN: HISTORICAL OVERVIEW AND SOCIO-GEOGRAPHICAL SETTING

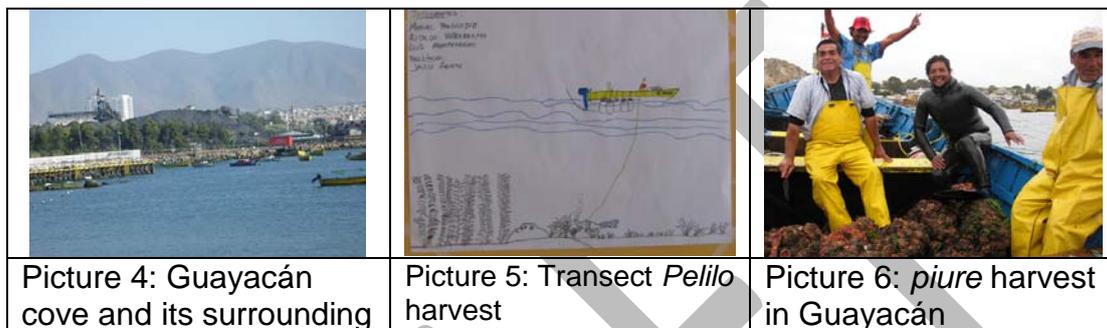
Caleta Guayacán is located at the well protected Herradura bay, close to Coquimbo (Fig. 1). The land on which it is located³⁵ is owned by the City of Coquimbo, having an area of 4 450 m². Coquimbo Municipality gave the place in *commodatum* (right to use the place free of charge), for self administration, to the guild association in 2007.³⁶ Before this, the fishers were occupying the *caleta de facto*. The city bought the land from the ENAMI (National Mining Company) in 1988 for the exclusive use of Guayacán fishers. ENAMI still retains a neighbouring terrain. Fishers waited for 17 years for the city’s government to hand over the document giving them formally the right to use the land of the *caleta*.

The history of Guayacán dates back to 1850, being by that time the first port of Coquimbo, associated to a copper foundry located at the place. Around 1900 the port and pier was abandoned and fishers began to use it. According to the fishers’ narrative, at the beginnings of *caleta* Guayacán (about 1930) there were around 30 fishers and 10, about 6 to 7 meters long wooden row or sailing boats. The daily fishing trips were the farthest away (about 3 miles) from the *caleta*, considering how far they could row or sail around the day. The main exploited resources were finfish such as *congrío* (Red Ling), *caballa* (Chub mackerel), *pejeperro* (common sheephead), *cojinoba* (Palm Ruff), *sierra* (Snoek), *merluza* or *pescada* (Chilean

³⁵ Informant H. Tapia, 2008-11-05, interviewed by G. Gallardo.

³⁶ Gobierno Regional de Coquimbo (<http://www.gorecoquimbo.cl/>).

hake), *lenguado* (Fine flounder), *pejerrey* (Sea silverside), *palometa* (Yellowtail amberjack) and *lisa* (Flathead mullet). Current fishers' perception is that in those times they "had everything", in relation with the resource abundance. To 1960, their perception of "having everything" changed, with (primarily benthic) resources diminishing. According to the fisher, divers from other parts arrived to Guayacán and harvested the shellfishes, as crabs, clams, octopus, barnacles, mussels, limpets and *locos*. In their narration it is interesting to note that since the beginning of its history, Guayacán was always formed by finfish fishers and divers only appear temporarily from others *caletas*. Early in the sixties Guayacán fishers began with the giant squid fishery. The landings were about 1500 kg per boat. They sold the resource to "Coloso" factory, which is still located in the bay, close to the *caleta*.



To an urban geographical setting belongs to share the space with other stakeholders. In the exercise *Caleta* Map and Environmental preoccupations among fishers at *Caleta* Guayacán, it becomes clear the constraints this location means for the organization in regard to their MA. The area of the MA is the smallest in Chile (at 2.5 ha.). On the northern side, they have the Universidad Católica del Norte (UCN) campus as a neighbour, and to the east, the *caleta* borders ENAMI, the National Mining Corporation mentioned above. According to Tapia, the solid dividing wall that separates the *caleta* from ENAMI belongs to the latter. They have no problems with ENAMI. The place which the company used before is now a shipyard. To the south-east, the *caleta* is flanked by a pier, much larger than the one of the *caleta*, owned by Compañía Minera del Pacífico (CMP), which ships iron to the rest of the world (although mainly to Japan). With regard to CMP, the organization has a small "problem" related to a dispute over a strip of land of (around 100 square meters), which the fishers claim belongs to the *caleta*. Despite this, relationships among them are good. It separates this company from the *caleta* a tall metal mesh. On the north side of the CMP' dock, is the smaller pier for boats for the fishers of the association. This entire setting means that the *caleta* has no space to growth.

The infrastructure of the Caleta Guayacán

The *caleta* has a good infrastructure. The pier was recently (2001) improved by the DOP.³⁷ The fishing sales boards and surrounding store-rooms were put together by fishers of the guild association but, as they point out, without previously formalising the issue of the property of the land. There are also smaller store-rooms, which were built by the fishers. Fishers keep their fishing gears in 5 storage-rooms and in boxes in a roofed area. In front of the storage-rooms are the tables, with a roof on top, equipped with fresh water, where fishers fillet the fishes they sell to the public. The

³⁷ Dirección de Obras Portuarias.

construction of these tables was financed by the FFPA. Here fishers sell their fish, caught the night before in the open-access area. There are sellers who are not fishers, who strip and fillet the fish brought back. This small market is open to the public every day, providing individual incomes. Near the market is the 'huinche' (winch) that allows fishers to haul their boats from the water up a ramp. This was bought by the guild association, as stated by the members. Within the *caleta* are three restaurants that pay the guild association of Guayacán rent for the right to be inside the *caleta*.

The fact that the land is owned by the municipality has allowed the guild association to apply for a wide variety of subsidies and funds to improve the facilities of the *caleta*. Also the urban character of the *caleta* has allowed development a wide range of business activities, allowing economic entries for the guild association. Compared to other *caletas* in rural areas, for example Huentelauquén, Guayacán has a relatively privileged position, something common to most of the urban *caletas*. Fishers also live very close to the *caleta* and it does not take them more than a few minutes to get from home to their workplace, saving them time and transportation costs. The vast majority of the members of the MA live in the town Guayacán, just above the *caleta*.

Organizational structure of Guayacán fishers

Guayacán's fishers were early in organizing themselves, forming, in 1950, a Union of about forty people. This organization allowed the fisher access to diverse types of benefits. In 1967 (within Eduardo Frei's Government) fishers got support from government for the construction of houses, something done as collective work. This support, we believe, is attributed to the union and its negotiation power. However, in the end only thirty houses were built (close to the *caleta*) and the rest of the material had to be returned, since not all fishers wanted to participate due to an atmosphere of distrust, as one fisher said. According to the fishers narration, political pressure (under Pinochet's regime) changed their traditional organizational from a union into a guild association. In 1988 the guild association was formed with seventy members possessing thirty boats among them. Since 2008 they have been trying to re-organise again as a union, as the house they have for their meetings and social activities is registered under the title of the union, otherwise they would lose it.³⁸

Development of the MA in Caleta Guayacán.

Guayacán fishers began their application for their MA in 2001 and received it in 2004. It is the Guild Association ('*Asociación gremial*' - AG) who sought and obtained the MA. The application was done in order to manage scallops, clams, crabs, *pelillo* (an algae, *Gracilaria chilensis*) and chicoria (*Chondracanthus chamissoi*). Although, in this area, there was only a small population of scallops and *pelillo*, these became the target species according to the new management plan. In contrast to other fishers' organizations, when the AG Guayacán obtained the MA, they do not get financial support from any government institution, instead asking for a loan of 1 200 000 pesos (US\$1 969)³⁹ from its own AG. The members contributed 11 000 pesos

³⁸ The union formed with twenty members, i.e., only a part of the 55 member of the AG, unionised. The role of the union is instrumental and seems to exist only on paper. The members of the AG were originally more, but during 2009 a new registration is done and 55 members remained (Telephone interview with R. López by G. Gallardo, 2009-12-16).

³⁹ This is 609,5 pesos per US\$ for year 2004, Banco Central de Chile.

(US\$18) from their own pockets. These funds fishers invest in order to buy 230 000 scallops seeds from the Scallop Farm of San Jose Company, with the aim to develop aquaculture activities in their MA. To initiate the scallop culture fishers also bought a drill, a pump and materials to install the scallop culture with the loopcord system. They also bought a Hookah equipment, 2 wetsuits and 2 pairs of fins in order to be able to dive in their MA. But the Scallops did not develop due to a series of problems. Fishers were able to pay back this loan with the sale of *pelillo* - main resource of the MA - and of other resources.

Aquacultures activities in the MA have been legally allowed since 2004 (DS N° 314, Subpesca), nevertheless up to the present none of the application for aquaculture in MA in Chile has been approved. So, aquaculture activities developed by Guayacán fishers in their MA, such as the sea squirt culture, were and still are 'illegal', excepting *pelillo* that can be planted and harvested in the natural beds.

During the first year of the MA (2004), the initial committee of the AM was established but, due to bad initial administration, there were resource losses (oysters, *pelillo*, *piure* or sea squirt) and the loss of work materials, leading to the paralysis of the MA during 2005 and part of 2006. This leads to economic losses which, according to the findings of the Historical line exercise, were not insignificant.

In 2006, a smaller group of 30 members from the guild association gathered, reactivating the MA and a new management area commission is created that starts from scratch. The improvements that have been observed since then include better administration (discipline/order) as well as extra income and future earnings prospects since they are also culturing the sea squirt. The organisation has been buying again of the materials that were lost.⁴⁰ They have also provided social benefit support for families, principally when a fisher die or cannot continue to work due to illness, in the form of a small pension and/or food baskets. Presently, the MA has a working commission consisting of a president, secretary and treasurer. The president leads and controls the MA. The secretary is in charge of announcing the gatherings and meeting, as well as keeping lists of those who are working or absent. The treasurer alone is authorised to receive money, also being in charge of the sales and costs. There is also a committee of vigilance. The vigilance is performed by two persons only during the weekends and all members participate.

Pelillo harvest is performed throughout the year, although the highest yields are obtained between August to October (spring) and from January to April (summer). There are now 32 fishers in total working with *pelillo*. Each day just one boat, with four or five fishermen, works with fishers taking turns to extract. The organization has only four divers, so they work more often. The income they get from the *pelillo* harvests, which fluctuates greatly during the year, is kept by the MA, and distributed just once a year, on a pre-arranged date.

Fishers also want to diversify the production of their MA. For this reason they are trying to incorporate more species by the way of aquaculture activities in the MA. At present, as already mentioned, they are cultivating the red sea squirt (*Pyura chilensis*). For this they installed an entire culture system, with longlines, buoys, etc. The sea squirt settles naturally on the ropes, the fisher only having to take care to maintain the system in order for the animals to grow. Nevertheless, this aquaculture system still requires permits for it to take place. The *pelillo* harvest, when it corresponds, is done with one boat. The income is thus divided by 32, the boat

⁴⁰ For example, three diving suits, two hoses, three compressors, two regulators, two masks, two belts, weights, 2 pairs of wings, 200 *chinguillos* for *pelillo*, 200 buoys, etc.

owner getting 0.5 parts extra. Fishers are also trying to incorporate other species (oysters, abalone, crabs, limpet, snails), and also requesting an extension of their area, something that remains to be seen. According to Sernapesca Coquimbo,⁴¹ the region no longer has room for more MAs. The official rules allow each MA an increase of 50% of the surface they already cover.

MA impacts in Guayacán

An analysis of the items suggested by the fishers in the 'brainstorming', or fishers' agenda exercise, depicts one central, economic problem that relates to their dependence on a few products, and an organizational problem that seems to have seriously affected them in the early stages of their MA. The latter was characterised by a lack of order and training and the existence of theft. It also includes issues relating to job security, lack of capital funding, the supervision and operation of both *pelillo* and *piure* fishing and export prospects.

The fishers also added that the problem of order had to do with laziness, shyness, a lack of responsibility and insufficient will or motivation. The lack of order causes division and fighting within the group, limiting their productivity and fulfilment. These effects are consistent with the causes. When comparing the different exercises, we realise that the lack of order has been a feature present since the formation of the MA. They recognise that there is among them what is known as a free-rider problem, and that it is not easy to get rid of 'free riders'. This is a 'human problem' they say, and the same people who do not cooperate also claim that they are poor and have children to support. For the rest of group, the alternative of leaving the MA does not seem likely since they feel they have at least something.

Summarising, one can say that Guayacán shows two situations: first the failure of the first MA, and second, its revival with a new leadership, showing some early positive results. A symptom of this recovery is that fishers associate the new and better management to the order and discipline that emerges while, in other exercises, this same factor is seen as one of the biggest problems to have plagued the MA. The expectation of future earnings is based in their *Puire* (sea squirt) culture, which is already yielding some reduced benefits.

DISCUSSION

Our results suggest that the history of each *caleta* had a great influence on how they got into the MA system, how it is currently used, and how satisfied they are with its performance. Both *caletas* began approximately at the same time and both focused only on finfish extraction. While later *caleta* Huentelauquén switched to diving for shellfishes, Guayacán up to the present has maintained the same fishing activities. For some periods fishers in Guayacán remember diving for shellfishes, but it was done by migrant divers coming from elsewhere.

In 1974, the first fishing settlement was established in Huentelauquén as a temporary camp, mirroring the nature of many other sites (Aburto *et al.*, 2009). Some of the fisher camped in the *caleta* during the week, avoiding the daily trip, but the facilities in Huentelauquén are very basic. In contrast, fishers from Guayacán came from a village close to the *caleta*. Compared to Huentelauquén, fishers there have all the facilities associated with an urban location and the differences in land tenure. The "camp" situation of *caleta* Huentelauquén may have greatly conditioned their migration behaviour before they got their MA. Guayacán fishers did not mention any

⁴¹ Interview with G. Cerda by G. Gallardo, 2009-12-15.

migration in their Historic Line, and only two of the MA's divers said that they still migrate among other places, for example to work as divers in the industrial salmon aquaculture in the south of Chile.

Migrations and the wealth of specific resources are counted by fishers in Huentelauquén in 'booms' or waves and sometimes these events are nearly connected to each other. If there is a boom of certain species in another place, fishers migrate after the resource. Even the contamination of the river is connected to the 'boom' of the cheese firm. The 'booms' related to species deals first with *congrío* in the 1920s, followed by the (second) *loco* boom which apparently sustain itself from the 1960s up to 1989; i.e., after the formal MA implementation, there is any direct *loco* 'boom'. The boom seems to be central for the petition of the MA. However, within the mentioned *loco* 'boom' period (1960-1989), fishers place three migrations, including the last one to the south of Chile (Puerto Montt and Chiloé) to capitalise on *locos*, when major migrations were organised by buyers (Meltzoff *et al.* 2002). The third 'boom' related to a single species is the Algae boom that started in year 2000, several years after some fishers got their MA, though the algae itself are not a target specie of the TURF programme.

The two settlement waves of Huentelauquén (in 1974 and 1985) both took place within the second species boom of *loco*, which is quite late compared to the fishing history in the *caleta*. This allows us to also see the probable connection between the *loco* 'boom', first settlements, and the problems with the landowners. From this history, the attention is drawn to the relatively late formation of the organization which seems instrumental to the *loco* fishery and to the MA application. Despite their apparently short previous organizational experience, the present union (and former guild association) shows a clear capacity for the task as well as definable group cohesion when needed (issues to which we shall return). From fishers accounts also draw the attention their political and environmental awareness and knowledge of the bigger context, both regional and national

For both groups of fishers, in Huentelauquén and Guayacán, it is interesting to note their origin and fishing background. It has been said that often members of the MAs do not have a fishing background, but have been attracted by the system (San Martín *et al.*, 2010). It is clearly show that, in these cases, this is not accurate, as both have a long tradition of fishing in the (equally established) culture of the *caletas*.

In Guayacán, the union was created early in 1950 as a way to group and organise local fishers, but for the improvement of their infrastructure. Nevertheless when the MA process began they took the opportunity and applied. One reason given for this decision was that they "were the only ones without a management area"⁴² Their objectives were different to the spirit of this administrative tool, which was for the management of natural beds of benthic resources. Guayacán fishers had, from the start, the objective to develop aquaculture, first with scallops and later with seasquirt, although fishers in Guayacán still do not formally request the permit, it remains an asset of their livelihood that contributes with a meagre, but for them meaningful, income. This is also done with a very little effort, because the only work they need to do is the harvest. In this context they are satisfied with their management area performance, a situation which is not a common feature in IV region (Stotz *et al.*, 2008).

⁴² The other reasons were: "as time passes, there is less products in the sea" (ecological aspect); "extra incomes" (economic aspect); "security for their future and senior hood"; "for better organization" (social aspect).

Despite this, and perhaps due to the low expectations around their MA, Guayacán seems to have less collective action attributes at the MA level. While good practices and results contribute to better management (increasing collective action), they also function as limiting factors. For example, when it comes to the physical boundaries of their MA, and fishers seem to have little awareness of this aspect when trying to incorporate more resources to exploit. Apart from the algae *pelillo*, the collection of *piure* is the specie that seems to be more real in terms of income-projection, although giving very reduced incomes.

Differently, Huentelauquén had, as an objective of their MA, access to the loco fishery: their main and traditional resource. The MA was their way to get back the legal right to fish this resource. Despite the limited organisational experience of Huentelauquén's fishers, they have been quite 'successful' in increasing the organisation's patrimony and production aspects through the numerous cases of financial aid. In monetary terms, the economic value of these projects is equal to eight years of loco production. To develop these projects, they have had to define, formulate and justify objectives and reach out to a series of state, regional, provincial and municipal institutions, as well as private stakeholders, such as the powerful mining company. The fulfilment derived from these projects is likely to be a cohesion factor as their management gave positive results. These projects have partially compensated for the fact that the MA Huentelauquén, as a production unit for their main target species, does not perform well economically. The principal reasons seem to be insufficient quantity and quality of production. A resource attribute associated to successful self-organization is that "The flow of resource units is relatively predictable; unpredictability make difficult effective management" (Ostrom, 2002:2).

CONCLUSIONS: THE IMPORTANCE OF THE LOCATION AND SOCIAL EMBEDMENT

This study shows that both social embedment (being within a private/state property), and location (being rural/urban) matters, determining the differences between both *caletas* also in visions and expectations. Being a rural *caleta* matters, as it involves access problems, isolation, lack of diversification possibilities, it dislocate fishers from families and/or families from fishing activities. It also increases production and monitoring costs. Worse are the infrastructure limitations determined by their specific 'local' context, with all the limitation that these imply For Huentelauquén fishers, to get a *commodatum* like Guayacán fishers obtained, seem far. Although at a high price, the material conditions surrounding the fishers probably also concur in defining or moulding the types of 'soft' collective action conditions positively in this case. The problems fishers are constantly experiencing in the confrontation with the landowner, and that also affects their families, should acts positively pulling together the group. To negotiate and discuss these problems, fishers have to act as a collective, beyond the intricate process of obtain a TURF and managing it (agree on statutes, rules, sanctions, division of labour, income distribution, etc.). In other words, this situation further conditions unity. In contrast, Guayacán, not having these "incentives" for collective action, has been able, with diverse problems, to organise and run a MA, which given its size and productive possibilities, they are taking advantage of.

In consequence, security of coastal land tenure in rural areas seems crucial for the development of many TURFs if these have come to stay.

Despite that MAs are perceived by some fishers as enclosure and in spite of the meagre economic outcomes from the MA, the factum remain that they will not

give up their MA. This 'not giving up' may be connected or being part of the ongoing processes of appropriation of space in the sea and is aiding the re-appropriation or re-occupation of land for the location of their *caletas*. It seems as well that also those fisher organizations, which do not work with benthic resources, but fish mobile species, also are examining the possibilities to join the system, an issue that deserve to be revised. Fishers seem to foresee future economic interest associated to MAs. And even the MAs were not intended for finfish fisher, but only for benthic fisheries, they are applying for them. Having or keeping control over a TURF, despite low productivity, opens other possibilities such as small-scale aquaculture, or also constitute a security against the expansion of capital intensive aquaculture prospects, opens access to loans, diverse projects and financial aids. This view is supported by San Martin *et al.* (2010) suggesting that the reasons to apply and be satisfied with a MA are very diverse; many MAs being supported for other reasons than those intended when the policy was created (San Martin *et al.*, 2010). Fisher, not explicitly, but through their use of the MAs, are defining new objectives for them.

Although the establishment of the MA system had the purpose of preventing the disappearance of threatened species and to sustain artisanal fisheries; the putting in practice of the MAs in Chile posed fishers in front of two alternatives: to jump into the process or be left behind. Those that decided to be part of the process could have reasons like the one discussed above for Guayacán, and if they did, one could think that this happen independently of whether the fishers understood or not the system, convinced or not, and also independently of whether they were prepared or not to administer a MA.

In this context, to evaluate the success or failure of this administrative tool needs a differentiated analysis, generalizations not being allowable. Although adopting the TURF system may occur at expenses of existing local traditions, and in spite of all the challenges still associated with the TURFs, for fisher traditionally seen as a vulnerable social group, their TURFs is an achievement without precedents.

Although the TURFs refer to a parcel of sea-shore – part of a common good – TURFs entrust de facto the fishing organisations with the *caleta*; this being at the same time a mayor challenge to the bigger social system. While TURFs grant the seabed territoriality, the territoriality of land is not paid the same attention. Providing for fishers' livelihoods within this new system that exclusively guarantee artisanal fishers their traditional fishing sites thus mean that the system does not allow them to move as they did before, limiting their physical movement along the coast, at the same time that in some cases fishers are not given land tenure security. As González, *et al.* (2006:523) suggest, the TURF system has to be re-thought because of important problems, one of them being "The need to integrate MAs into a coherent policy for the management of the coastal zone that aims to compromise between often conflicting diverse social values and priorities".

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