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MARINHA NO CHILE

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THE CONSTRUCTION OF AN ENVIRONMENTAL ARENA FOR MARINE CONSERVATION IN CHILE¹

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Introduction: The social dimensions of Marine Conservation

In recent years, the conservation of biodiversity has become one of the main linchpins of the environmental debate (HANNIGAN, 2006). Protected areas were initially associated to the protection of pristine and wilderness areas through conservation units. However, with time they started to acquire a new meaning which took into account the existence of human populations living within protected spaces and using their natural resources (BRANDON *et al.*, 1998).

Furthermore, the expansion of the market into regions of high biodiversity generated strong pressure on territories which have traditionally been occupied by local populations, resulting in the emergence of social movements which have been contesting the expansion of economic interests and demanding the recognition of their territorial rights (ESCOBAR, 1998; CUNHA e ALMEIDA, 2000).

The coming together of these two processes led to a revision of preservationist approaches. It allowed for the integration of human dimensions into the debate on biodiversity conservation (FERREIRA, 2004) and encouraged new models which recognized the presence of human groups within these territories and their contributions to the maintenance of biodiversity (WESTLEY *et al.*, 1998).

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In the context of the marine and coastal environment, human aspects of conservation have become more significant during the last decade, in particular due to the failure in implementing many Marine Protected Areas (MPAs) (CHUENPAGDEE *et al.*, 2013).

Despite recognizing the benefits of maintaining and restoring degraded marine ecosystems, protecting emblematic species, increasing fisheries stocks, diversifying income opportunities for local populations and improving their political participation (AGARDY, 1994; HALPERN and WARNER, 2002. TOROPOVA *et al.*, 2010), there are serious deficiencies in the design and implementation of MPAs. These are caused by the fact that both managers and researchers see MPAs as simple technical tools for conservation. They do not take into account the social and ecological complexity involved in implementing them in different regions (FOX *et al.*, 2012; CHUENPAGDEE *et al.*, 2013).

Thus, social scientists have pointed out the need to integrate into the conservation debate issues such as the values and attitudes of the actors involved, the dynamics of decision-making, the objectives and information managed by different actors, the social relations of cooperation and conflict, collective actions for establishing rules and regulations, institutional innovation and dissemination, social justice and the relationship between the different levels of governance (CHRISTIE *et al.*, 2003).

Among the issues highlighted, there is the need to identify the historical background which resulted in the establishment of Marine Protected Areas and take into account the institutional framework for using and conserving natural resources (customary rules and laws) (CHUENPAGDEE *et al.*, 2013).

Within this context, it can be observed that the first experiences of marine protection in the world relate to fishing bans in specific areas in order to maintain fisheries stocks and limit the use of certain areas to religious and ritual purposes (BERKES, 1998).

In relation to global environmental policies, the decline in fish stocks during the 1950s and 1960s put in question the availability of marine resources and led to debates under the aegis of the emerging environmental world conferences, in particular the United Nations Regional Seas Program in 1974 and the United Nations Convention on the Law of the Sea (UNCLOS) in 1982 (TOROPOVA *et al.*, 2010). The activities of the large non-governmental organizations such as the IUCN and WWF have also contributed to marine conservation, especially in the development of management tools for protected areas. These initiatives set up the initial institutional framework for marine conservation and built a favorable international scenario for establishing thousands of Marine Protected Areas in oceans across the world.

In South America marine conservation was initially stimulated by the Permanent Commission for the South East Pacific (CPPS). It was established in 1952, in order to promote the political and economic integration of coastal countries: Chile, Peru, Ecuador and Colombia. In 1981, the CPPS developed its action plan for protecting the marine environment and coastal areas.

During the last twenty years, marine conservation expanded and resulted in the institutionalization of an international policy for the conservation of biodiversity which

was originally promoted by the Global Environment Facility (GEF)ⁱ which has been funding conservation initiatives in order to meet the targets set by CBD in the different countries in the region (FAO, 2012).

Recent reports show that the total number of MPAs in the world is 5,880 covering a total of 4.2 million km² equivalent to 1.17% of the world's marine area (TOROPOVA *et al.*, 2010). In Latin America and the Caribbean there are 683 MPAs covering approximately 700,000 km² (FAO, 2012).

During the Conference of the Parties to the Convention of Biological Diversity (CBD) which took place in Nagoya (COP 10) in 2010, the target to protect and efficiently manage 10% of the world's ocean via MPAs to 2020 was reaffirmed (Target 11, Aichi).

This background shows that the conservation of marine biodiversity is a phenomenon that has been established through the combination of global and local processes with different meanings and functions. Its appropriation in different countries depends on the institutional framework which provides the grounding for the environmental issues and the socio-political trajectory relating to the use of natural resources.

In order to analyze the processes mentioned above, a hybrid perspective is proposed combining the institutional analysis of common pool resources (OSTROM 1990, 2005) and social constructivism of environmental issues (HANNIGAN, 2006), focusing on the relations between the establishment of regulations on the exploitation of natural resources and the setting up of arenas for decision-making (FERREIRA, 2004, 2012).

In addition, the notion of social conflicts for natural resources is also employed in order to understand the dynamics of social integration and disintegration amongst the groups involved and their capacity to transform social relations (FERREIRA, 2005).

As Ferreira (2012) argues, arenas are metaphors that describe:

A symbolic place where the political actions of social agents influence collective decision-making about a specific issue. The actors within an arena seek to maximize their chance to influence the result of the collective decision-making process through the mobilization of social (political, financial and human) resources. (p.4)

Therefore, setting up an environmental arena as part of the process for implementing Marine Protected Areas becomes the political synthesis of the social process associated to controlling and using natural resources. It becomes a two-way mirror which reflects both the history which leads to this process and the possibilities for its future development. In other words, we can understand the environmental arena as the product of a historical process of negotiations and strategies, conflicts and cooperation, among various actors in contention for access to and control of natural resources.

Stimulated by the issues noted above, the current article analyzes the development of an environmental arena for marine conservation in the municipality of Navidad, Cardenal Caro Province, on the central coast of Chile. It does so by describing the institutional trajectory for exploiting and managing resources in small-scale fisheries in the area and its relationship with the establishment of a Marine Protected Area. Finally, it

aims to contribute towards understanding the process of emergence and consolidation of marine conservation in Chile.

This article is the result of fieldwork carried out in four different periods: October 2010, September 2011, January 2012 and April 2013. During the fieldwork semi-structured interviews were carried out with key-actors and thick description of action situations. Furthermore, data analysis was conducted in relation to the state of the artisanal fisheries sector in the area of study and in relation to marine conservation at local, national and international levels.

Brief Historical Background of Marine Conservation in Chile

In Chile, marine conservation formally began during the 1970s when the first Natural Sanctuaries were created under the law of National Monuments (Law 17.288/1970ⁱⁱ). The purpose of these sanctuaries, which were established in restricted marine-coastal areas, is to protect zones of special interest for scientific research or for the State, mainly linked to the protection of species and marine habitats (FERNÁNDEZ and CASTILLA, 2005).

An important development in marine conservation was the Fisheries and Aquaculture Law in 1991, which established the first categories exclusively for managing and conserving marine environments: Management and Exploitation Areas for Benthic Resources (MEABR), Reserves and Marine Parks. The MEABRs have been recognized as an important instrument for productive investment based on a co-management system (CASTILLA and GELCICH, 2008), which brought benefits for the conservation of biodiversity (GELCICH *et al.* 2012). Reserves are considered to be protected areas of sustainable use associated to the preservation of genetic and reproductive stocks and Parks are areas of strictly protection (FERNÁNDEZ and CASTILLA, 2005).

These measures allowed for the establishment of specific conservation categories for marine-coastal ecosystems and fisheries resources. However, the emphasis of these protection measures on their productive functions resulted in deficiencies in the ecological representativeness. They were also unable to address the diversity of conservation categories recognized and promoted at international level (SIERRALTA *et al.*, 2011).

In order to address these deficiencies, a project was started in 2004 entitled "Conservation of Globally Significant Biodiversity along the Chilean Coast" (so-called GEF-Marine), funded by the Global Environment Facility and developed by the National Environment Commission (CONAMA - in Spanish) in partnership with the United Nations Development Program (UNDP). The aim of this project was to establish three Multiple Use Marine Protected Areas (MUMPA). This type of protected area allows for the sustainable use of natural resources and promotes a shared management model which recognizes the different uses within the territoryⁱⁱⁱ (CHILE, 2007).

Within the Chilean institutional context of marine conservation, this initiative meant the inclusion of a model of protected area which prioritized social participation in the management, a characteristic which had not been present within the national set up to that moment. Thus, the presence of human groups in territories of high biodiversity was recognized and there were attempts to involve them in the decision-making process.

This experience also resulted in the inclusion of MUMPAs in the draft bill aiming to establish a National System of Protected Areas (SNASP in Spanish) expanding the categories which allow for the sustainable use of natural resources.

The proposal for creating the SNASP is part of a wider process of modernization of Chile's environmental policy which established the Ministry of the Environment and, under its aegis, the Service for Biodiversity and Protected Areas (SBAP in Spanish) (law N.20.417/2010)^{iv}. The new institutional framework for biodiversity conservation is developed around SNASP and SBAP. It is the Chilean State's response to a number of national and international assessments (UN/OECD, 2005), which identified deficiencies in terms of the representativeness of the protected ecosystems and the dispersal of responsibilities in relation to the conservation of biodiversity (CORDERO, 2010).

In the marine-coastal context, for example, the National Fisheries Service (SERNAPESCA)^v is majorly responsible for managing Marine Protected Areas. This governmental body's institutional mission and technical experience relates to monitoring fisheries legislation and stimulating production, tasks that make the effective conservation of marine ecosystems difficult.

At the same time, there have been proposals for establishing municipal models of conservation based on local experiences in establishing and managing Protected Areas (GELCICH *et al.*, 2011). This model is based on the initiative developed in the municipality of Navidad by the unions of artisanal fishermen in partnership with the local government and the Pontificia Universidad Católica de Chile (PUC), creating the Natural Sanctuary "Bosque de Calabacillo de Navidad" and setting up the "Alianza de Municipios Costeros por el Desarrollo Sustentable"^{vi} (AMCODES).

The emergence of marine conservation in the Cardenal Caro Province

The Cardenal Caro Province is located in the western region of Libertador Bernardo O'Higgins, approximately 200 km southwest of Santiago, Chile's capital. It is located between 33°51' and 35°01' covering an area of 3,295.07 km². It has a population of 41,160 (INE, 2002), where 55.21% live in rural areas^{vii}. The Province encompasses the municipalities of Navidad, Litueche, Pichilemu, Paredones, Marchigue and La Estrella.

The coastline is 100 km long, specific features are the presence of the Cordillera de la Costa mountain range reaching an altitude of 1400m, wide oceanic terraces and a number of humid zones.

The fisheries sector is exclusively artisanal; there is no industrial activity and no aquaculture. One of the main activities within artisanal fisheries is the exploration of algae, accounting for 76% of this region's production during the period 1998-2011. This activity includes approximately 80% of artisanal fishermen, described as "algae harvesters" under the National Fisheries Register^{viii} (SERNAPESCA, 2012).

Among the algae species exploited, the following predominate: luga (*Mazzaella laminarioides*), chasca (*Gelidium sp.*) and cochayuyo (*Durvillea antarctica*). The first two are utilized as raw materials in the food, cosmetic and pharmaceuticals industries and the latter is used for food consumption.

This economic activity is based on a long tradition of extracting algae, which has been carried out by family groups in the villages of Navidad, Pichilemu, Bucalemu, Matanzas, La Boca de Rapel and Topocalma. Through generations, these groups have established permanent and semi-permanent settlements throughout the coastal area of the Province. The social group whose work is dedicated to algae harvest are called “mareros” or “algueros”, and their settlements are known as “rucos”, whilst the coastal area where they work is known as “la orilla” (ARAOS, 2006).

The emergence of marine conservation in the municipality of Navidad is the result of a complex historical process of algae extraction and management along the entire coast of the Cardenal Caro Province. The algae harvest fluctuates between periods of threats of production collapse, due to the lack of regulations or the lack of compliance with regulations for exploitation, and periods of development of management systems based on customary rules and national fishing regulations. Fishermen’s trade unions are at the heart of this process. Initially they were the ones who brought together local demands and subsequently they were mediators in the economic development of the artisanal fishing sector.

It can be seen that the process of establishing the Marine Protected Area occurred through a *bottom-up* political process characterized by the appropriation of the objectives of biodiversity conservation by local actors within a historical and institutional trajectory which allowed for its emergence projecting a political platform of national scope.

This social process is built around a number of decision-making arenas linked to natural resources, resulting in different institutional arrangements for their management. “Parcelas de Cochayuyo”, Management and Exploitation Areas for Benthic Resources and the Natural Sanctuary “Bosque de Calabacillo de Navidad”. AMCODES falls within this context and represents an opportunity for expansion beyond the local arena to the regional and national levels.

“Parcelas de Cochayuyo”: a traditional system for managing algae harvest

In the coastal zone of the Cardenal Caro Province there are fifteen settlements of “algueros” working in algae extraction. Between the 1970s and 1980s the communities of Puertecillo, El Chorrillo and Topocalma, located in the northern part of the province, developed a traditional system for managing algae known as “parcelas de cochayuyo”, in order to prevent the over-exploitation and reduce conflicts between users. This system provides user rights and individual ownership of cochayuyo to members of the artisanal fishermen’s union by distributing sites of extraction known as “parcelas” (GELCICH *et al.*, 2006).

The “parcelas system” can be considered a communal property regime (FEENY *et al.*, 1990), where local ecological knowledge has a central role in the management of resources (BERKES, 1999). This management system addresses the reciprocity of relationships geared towards conviviality, through complementary mechanisms, solidarity and redistribution, whose objectives go beyond subsistence and exchange (ARAOS, 2006).

The role of the fishermen's union becomes central to the compliance and legitimacy of the regulations drawn up, setting up mechanisms to identify users and establish access to resources. The "parcelas" are divided among the members of the union through an annual lottery, allowing for individual management of cochayuyo harvest.

Thus, the "parcelas de cochayuyo" can be seen as a customary system of establishing territorial fisheries rights, representing an important part of the social memory of the "algueros" groups relating to the management and governance of fisheries resources (ARAOS, 2011).

These regulations are not officially recognized by the State. The Self-organization process demonstrates the capacity of actors to establish and maintain institutional arrangements to manage natural resources and collective action strategies based on cooperation and trust (GELCICH *et al.*, 2006).

The introduction of a co-management system: social and political implications of the Management and Exploitation Areas for Benthic Resources

In 1991, the Fisheries and Aquaculture Law was passed in order to regulate fisheries activity in Chile and to establish measures to ensure the sustainability of resources. This law established directives for the conservation, zoning, attribution of access rights for both artisanal and industrial fisheries and new management instruments (CASTILLA, 2010). With specific regard to artisanal fisheries it established: 1) an exclusive access zone of five nautical miles; ii) regionalization, so that artisanal fishermen only work within their area of residence; iii) the allocation of exclusive rights of exploitation of benthic resources to artisanal fishermen associations through the Management and Exploitation Areas for Benthic Resources (MEABR) (CASTILLA and GELCICH, 2008).

The MEABR system grants Territorial User Rights for Fisheries (TURF) to associations of artisanal fishermen which are officially registered. This means the allocation of specific areas for artisanal fisheries and, consequently, the sharing with the State of a number of responsibilities which relate to the management of resources, such as: "the number and type of species included in the MEABR, permissible times for harvesting (...), the total allowable catch (...), the size of the MEABR, and the way the resulting income is distributed within the unions" (GELCICH *et al.*, 2006:953).

Territorial rights and the new organizational culture promoted by the Fisheries legislation transformed the artisanal productive system and fishermen organizations. In addition to their original political function, fishermen's unions now have the role of economic mediator of fiscal benefits and incentives. Union leaders started to play a central role in obtaining economic resources and local governmental agencies defined their distribution. A dynamic of incentives and sanctions was developed, determining the artisanal fisheries production policy which has had a strong impact on the organizational dynamics of fishermen.

MEABRs began to be implemented in the Cardenal Caro Province in 2002. Thirty-five sectors had been legally established by 2011: sixteen show some level of implementation and eighteen no longer exist. Only three are currently in force (SERNAPESCA, 2012).

As a result of the implementation of the fisheries policy, local organizations went through an intensive process of political reorganization. The Artisanal Fishermen Federation (FEDEPESCA VI Región), established during the 1990s and which included all the trade unions in the province broke up into three federations: the “Cardenal Caro Artisanal Fishermen Unions Federation” (FEDEPESCA VI REGIÓN, encompassing six unions and one hundred and seventy members), the “Comuna de Pichilemu Artisanal Fishermen Unions Federation” (four unions and one hundred and twenty members) and the “Navidad Artisanal Fishermen Federation” (FEPANAV, encompassing six unions and two hundred and sixteen members).

Furthermore, this fragmentation process is also reflected by the accelerated increase in the number of unions and the reduction in the number of artisanal fishermen associated to these organizations. Therefore, in 2012 there were eighteen unions in the region which represented 47.5% of all the fishermen registered in the National Fisheries Register (SERNAPESCA, 2012). This new organization model seems to be mainly linked to the recognition of fisheries territories and to the political trajectories of their leaders. The representation of unions within a larger organization ceased to occur at the regional level, both in relation to problems and the implementation of solutions. They were now divided around the acquired fisheries rights. In face of this new regulation mechanism, unions started to identify their traditional fishing territories, demanding the legal establishment of MEABRs in order to restrict fishermen from other organizations from accessing fisheries resources.

In addition to the political re-organization and territorialisation new leaders emerged in the organizations, due to the emergence of new stakeholders, the transformation of technology, the circulation of new types of discourses and the availability of new economic resources. This therefore can be considered a historical milestone of increased complexity of the governance system of artisanal fisheries. This is also the moment in which biodiversity conservation comes into play.

The creation of the Marine Sanctuary “Bosque de Calabacillo de Navidad”

In 2005, a group of researchers from the “Estación Costera de Investigaciones Marinas” of Pontificia Universidad Católica de Chile, in partnership with the artisanal fishermen and municipal staff, started the first biological studies to provide a diagnosis of the state of kelp forest of the *Macrocystis pyrifera*, a species known as huiro calabacillo. Research was conducted in the south of a small bay in the Municipality of Navidad, known as Las Brisas de Navidad. The situation photographed on the cover of the technical report for decreeing the area a Natural Sanctuary shows artisanal fishermen and marine biologists working together in research tasks (NAVIDAD, 2009).

This image is an important example of the social scenario in which the idea of protecting natural resources within a fisheries exploitation area emerges. The coming together of a group of researchers, artisanal fishing union leaders and municipal staff resulted in discussions to establish measures to protect a marine species that is under serious threat^{ix}.

During the initial stage, researchers mobilized financial and technical resources for the data-gathering exercise in order to identify the biological, economic and social value of the area to be protected. At the same time, the work of disseminating information and engaging members of the artisanal fishermen's union, who were directly involved with the area of exploitation, was started.

Images and the recognition of values associated to marine conservation became important during this stage. Researchers employed an approach to conservation associated to the sustainable use of natural resources and highlighted the benefits of creating a no-take area situated between the two MEABRs so as to promote the propagation and the re-population of species in the areas.

The existence of a kelp forest of huiro calabacillo was identified together with its function as an engineer species within the marine ecosystem (JONES *et al.*, 1994), capable of creating and maintaining habitats which allow other species to reproduce. Following the same argument, the presence of a mussel bed (*choro zapato* - *Choromytilus chorus*) was highlighted. This species is intensively exploited in the region and assists in the reproduction of other commercial species.

Furthermore, the artisanal fishermen saw the protection of the marine area as an economic alternative for complementing incomes associated to artisanal fisheries, an element of which is a seed bank for the reproduction of products which are traditionally exploited in the region.

Finally, the municipality of Navidad saw in the project of creating a Marine Protected Area an alternative means of local economic development to the artisanal fisheries sector and the possibility of establishing multiple territorial use zoning of the municipal coastline area.

Thus, the idea of combining biodiversity conservation and the sustainable use of natural resources through the establishment of a Marine Protected Area was fostered among the different actors involved. In 2009, the municipality of Navidad decided to submit the technical report produced by the researchers to the National Monuments Council with the approval of the artisanal fishermen's unions of Matanzas and La Boca de Rapel. The purpose of the report was to support the legal application to turn an area of eleven hectares in the southern part of the Las Brisas de Navidad into a Natural Sanctuary.

Similarly, the researchers built alliances with national and international biodiversity conservation institutions* in order to secure resources for the sanctuary and publicize the initiative in various forums and the media^{xi}.

After its approval by the Council of National Monuments and the Ministry of the Environment, the decree instituting the creation of the Natural Sanctuary "Bosque de Calabacillo de Navidad" was published on 26 February 2013.

The expansion of the municipal arena as a national policy platform

In January 2011, nine mayors from the coastal area of Chile met in the Municipality of Navidad: Navidad, Pichilemu, Paredones, Santo Domingo, Purranque, Ancud, Caldera and El Quisco. Their objective was to establish "Alianza de Municipios Costeros por el

Desarrollo Sustentable” (AMCODES). This initiative emerged in order to draw on the experiences of marine conservation at municipal level and to build a strategic alliance among the municipalities to develop joint territorial management activities.

During this first meeting a public declaration was signed establishing the creation of AMCODES and identifying the objectives of the incipient organization. The document recognized the importance of biodiversity and its ecosystem services for the development of local communities, and the right of municipalities to be recognized as environmental managers of their territories.

From this initiative, a political platform on a national scale was drafted. It foresees the involvement of the municipalities in the processes of drafting and implementing public policies for territorial management which have been developed in the coastal areas of Chile in the last ten years: the process of Coastal Management and the creation of the National System of Protected Areas.

AMCODES brought together different actors who already played a central role in the local and national arenas. Thus, for example, the researchers from Catholic University, who had been linked to the creation of the Natural Sanctuary of Navidad, secured funding to pay for the coordination of the organization's activities.

The NGO, “Centro de Desarrollo Sustentable de Pichilemu”^{xii} (CEDESUS) became involved during the process of the implementation of the initiative. Given its previous experience in working with artisanal fishermen's organizations in the Province of Cardinal Caro, members of this NGO who became involved in AMCODES facilitated the communication between the municipalities' administrators, researchers and the State.

In January 2012, many informal meetings were held between the Navidad municipality staff, representatives of CEDESUS and some technical staff from other municipalities. In these meetings the legal structure of the organization was discussed, as well as planning for the 2nd meeting of AMCODES members. The importance of these two points lies in the need to formalize the alliance and to secure funding to make the initiative sustainable.

Finally in July 2012, the second meeting took place in the city of Purranque in the South of Chile. On this occasion the organization was formally recognized through an agreement between the municipalities which had already secured the approval of their respective municipal councils. They agreed to provide funds to maintain a Technical Department based in the municipality of Navidad. In addition, there were discussions regarding a project of international cooperation in order to develop management and governance tools for coastal regions.

During informal and formal meetings new issues and demands arose which went beyond the initial objectives of the organization, related to marine conservation. These issues revealed the multiple problems and challenges faced by coastal municipalities and the need to create technical solutions specific to these territories.

Based on this experience, we believe that when public policies which directly affect coastal areas are implemented and debated, such as the National Policy of Coastal Management and the National System of Protected Areas, the platform of municipal policies acquires new meanings at a national level and is able to provide answers to the

demands of local actors who participate in the process of drawing up and implementing these regulations.

Final Considerations: Institutional trajectories toward sustainability of marine resources

The experiences described in this article reveal a long process of institutional creation and experimentation in the search for sustainability of natural resources (HOLLING, 2001). Within this historical trajectory we observe that the dynamics of social aggregation and disaggregation are both the result of struggles for natural resources (FERREIRA, 2005). They produce new political set ups in the organizations of artisanal fishermen and environmental arenas in Chile.

In the Cardenal Caro Province, a number of different institutional arrangements to manage fisheries resources were identified. They point towards some elements of analysis of the environmental arena from which the marine conservation emerges in the area: i) the ability of artisanal fishermen to establish and maintain traditional rules for managing and extracting algae; ii) the recognition of territorial rights and the introduction of new actors within the system of governance of fisheries as a result of the national legislation; iii) the introduction of conservation ideas and models focusing on the sustainable use of natural resources, via researchers from Catholic University and the municipality of Navidad; and iv) the ways in which local governments have acted politically in the process of drawing up and implementing coastal conservation public policies and management through AMCODES. This institutional trajectory shows the path taken by local actors in the search for securing the sustainability of natural resources.

In this way, a historical description of institutions at a local level was prioritized allowing for the identification of the main linchpins which characterized the emergence of marine conservation in Chile: a context of institutional transformation which allowed for innovative practices, discussions around models of conservation which take into account the sustainable use of natural resources and a search by local actors for new forms of political action related to decentralization and participation in decision-making. Therefore, we believe that these issues cross different levels of temporal, spatial and administrative scales, creating multiple arenas which are inter-linked.

From a broader perspective, it is possible to observe that the development of a marine conservation policy in South America can imply the transformation of property rights regimes of small-scale fisheries and promote the emergence of new struggles within coastal societies. This fact opens the way to a wider debate within different countries, linking both the democratic processes experienced in the region and the social objectives of biodiversity conservation.

Notes

- i Global Environment Facility.
- ii This legislation was amended by law 20.417/2010 establishing the Ministry of the Environment.
- iii There are three other MPAs associated to research and the recovery of fishery stocks. However, they do not share the institutional arrangement highlighted in this article and therefore they will not be discussed here.
- iv The draft bill creating the SBAP and SNASP was still under discussion in the Chilean parliament in May 2013.
- v The National Fisheries Service is a public institution under the aegis of the Ministry for the Economy. In addition to monitoring and investment activities, this body is responsible for managing Marine Parks, Marine Reserves and MEABRs.
- vi Alliance of Coastal Municipalities for Sustainable Development.
- vii Preliminary results from the 2012 Census show that the total population of the province is 40,892 (www.ine.cl).
- viii Until March 2013, there were a total of 1,219 people registered in the National Fisheries Service as artisanal fishermen, with 1,007 under the category "algae harvesters" (SERNAPESCA, 2013).
- ix The specie *Macrocystis pyrifera* is used to feed abalones (*Haliotis sp.*). Its intense exploitation has led to the disappearance of this alga in part of the northern and central coastline of Chile.
- x The initiative took part in the "*Solution Search: Turning the Tide for Coastal Fisheries*" competition, developed by the NGO RARE and *National Geographic*. It was one of ten finalists.
- xi Jaque, J. El Santuario Marino que busca conservar un bosque de algas [the Marine Sanctuary which seeks to conserve a seaweed forest]. La Tercera, Santiago. 22 Sept. 2012. *Tendencias*, p.33.
- xii Center for Sustainable Development.

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THE CONSTRUCTION OF AN ENVIRONMENTAL ARENA FOR MARINE CONSERVATION IN CHILE

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Resumo: A implementação de Áreas Marinhas Protegidas intensificou-se nos últimos anos. Na América do Sul este fenômeno tem evidenciado a tensão entre o aumento da exploração pesqueira e a conservação da biodiversidade. No entanto, experiências recentes mostram alternativas locais de conservação que conseguem conciliar uso e proteção dos recursos naturais. O artigo tem como objetivo analisar o desenvolvimento de uma arena ambiental para a conservação marinha no Chile através da análise da trajetória institucional de exploração e manejo de recursos pesqueiros de pequena escala na Província de Cardenal Caro. Os resultados mostram que a implementação de uma Área Marinha Protegida na região insere-se em um contexto institucional baseado no uso sustentável dos recursos pesqueiros, em relações sociais de cooperação e conflito e na conformação de uma arena ambiental municipal.

Palavras-chave: Áreas marinhas protegidas; Pesca artesanal; Dimensões sociais; Arena ambiental; Chile.

Abstract: In recent years there has been a growth in Marine Protected Areas worldwide. In South America this phenomenon has highlighted the tension between the expansion of fishery production and the conservation of biodiversity. However, recent experiences have shown some local alternatives for conservation which are able to conciliate the use and protection of natural resources. Drawing on empirical research this paper seeks to analyze the development of an environmental arena for marine conservation in Chile, and discusses the institutional trajectory of the exploration and management of small-scale fisheries in the Cardenal Caro Province. Results show that the implementation of a Marine Protected Area in the studied region is part of an institutional framework based on sustainable use of fisheries, social relations of conflict and cooperation, and the development of a municipal environmental arena.

Keywords: Marine protected areas; Artisanal fishery; Social dimensions; Environmental arena; Chile.

Resumen: La implementación de Áreas Marinas Protegidas se ha intensificado en los últimos años. En América del Sur este fenómeno ha evidenciado la tensión entre el aumento de la producción pesquera y la conservación de la biodiversidad. Sin embargo, experiencias recientes muestran alternativas locales de conservación que logran conciliar uso y protección de los recursos naturales. De esta forma, el artículo busca analizar el desarrollo de una arena ambiental para la conservación marina en Chile, a través del análisis de la trayectoria institucional de explotación y manejo de recursos pesqueros de pequeña escala en la Provincia de Cardenal Caro. Los resultados muestran que la implementación de una Área Marina Protegida en la región se inserta en un marco institucional basado en el uso sustentable de los recursos pesqueros, en relaciones sociales de cooperación y conflicto, y en la conformación de una arena ambiental municipal.

Palabras clave: Áreas marinas protegidas; Pesca artesanal; Dimensiones sociales; Arena ambiental; Chile.
