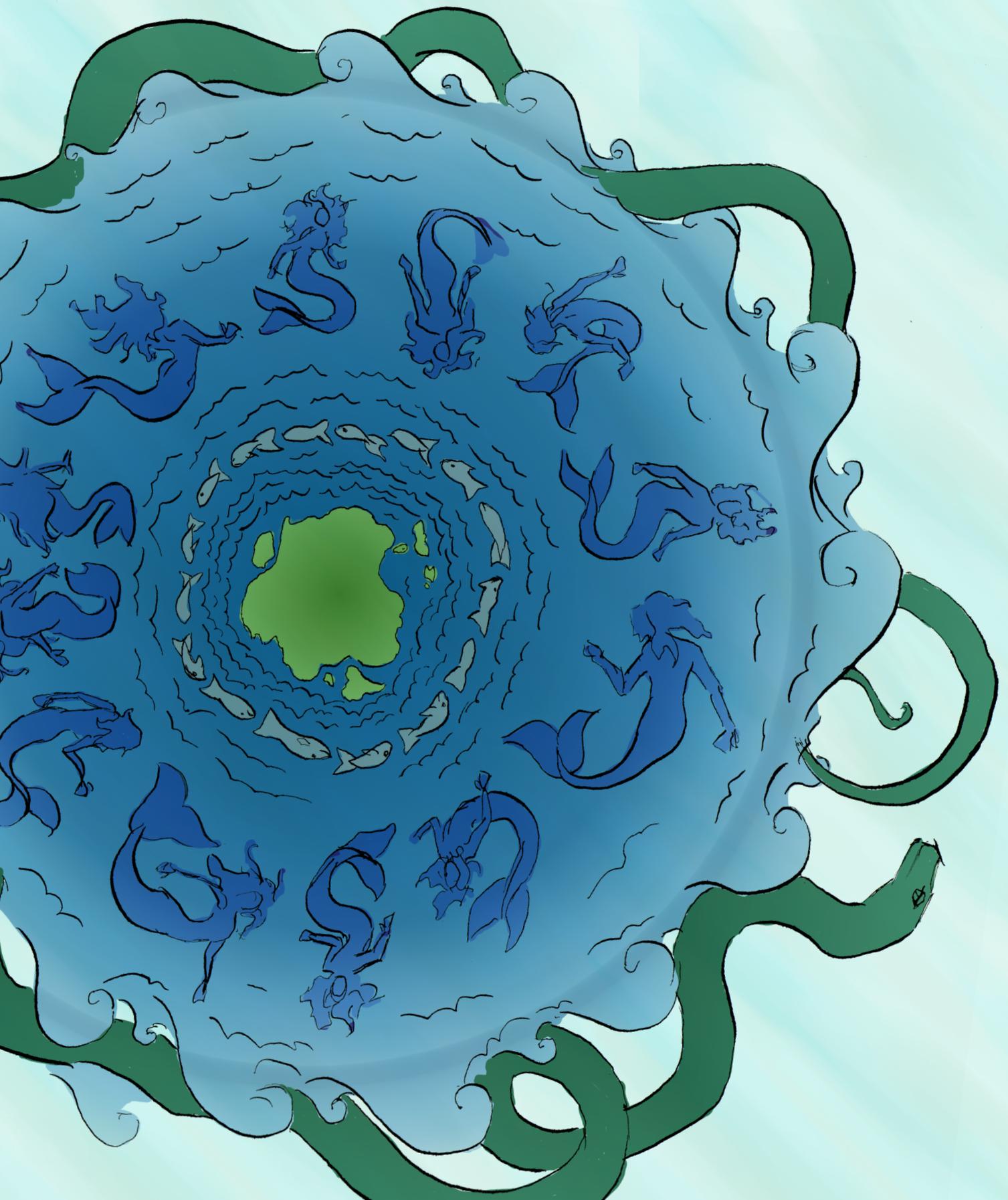


The Heart of Mother Earth

Youth engagement with the sea and marine resources on Chiloé Island, Chile



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*Youth engagement with the sea and marine resources on
Chiloe Island, Chile*

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Institute of Island Studies

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The Research Partners:



Institute of Island Studies (Canada)



Consejo General de Caciques Williche de Chiloé
[The Grand Council of Williche Chiefs]



Mi'kmaq Confederacy of Prince Edward Island

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Introduction

Chiloe Island lies in the 10th Region of southern Chile, also called *Los Lagos* (the Lake Region). The island is the largest in an archipelago that spreads over more than 9000 square km of the South Pacific Ocean. Chiloe is famous for its gorgeous landscapes, rich natural resources and unique cultural identity. In recent decades, owing to the rapid development of industrial aquaculture, the island and the *Los Lagos* Region have experienced a dramatic economic transition.

Public concerns are now being voiced concerning some negative social and environmental consequences of rapid industrial development on Chiloe and in the surrounding waters. A number of local and national organizations are working to protect the interests of the people, culture, and ecosystems of Chiloe. These organizations work with local communities and also attempt to influence regional and national governments to establish or improve laws, regulations, and agreements that can protect the rights of the indigenous Williche people, and allow for the sustainable development of Chiloe's economy.

The impetus for the research reported in this document was the concerns expressed by the Williche Council of Chiefs (*El Consejo de Caciques Williche*) over changes in marine ecosystem health, the encroachment of marine industries on fishing grounds within Williche traditional territory, and the economic future of Williche young people on Chiloe. The project is a collaboration among two tribal councils, one non-governmental community development organization and two universities based either on Chiloe Island, Chile or on Prince Edward Island, Canada.

The study explores the changing relationships of youth with marine resources in the context of the rapidly changing socio-economic conditions on Chiloe Island. We document young peoples' perceptions of the sea — which the Williche refer to as the heart of mother earth — and their future as workers in marine industries. It is a first step towards developing strategies through which local tribal councils and community organizations can prepare and encourage young people to play a significant role in marine resource management and protection, and in the future governance of their communities on Chiloe.

Methodology

The Research Team

The study was designed and led by Dr. Irené Novaczek, Director of the Institute of Island Studies (IIS) at the University of Prince Edward Island, Canada and by Professor Manuel Muñoz Millalongo of ARCIS Patagonia University, Chile. The indigenous partner organizations were the Mi'kmaq Confederacy of PEI in Canada and the Williche Council of Chiefs of Chile (WCC). The non-governmental organization *Fundacion con Todos* also supported the study in Chile. Professor Muñoz Millalongo and several staff of *Fundacion con Todos* (Raul Espoz and Pablo Aranguiz Mesias) are advisors of the WCC.

Field research was performed by Abigail Franco Vazquez, an intern from the Institute of Island Studies. This was the third in a series of internships¹ designed to help meet the research needs of the Williche Council of Chiefs (www.upei.ca/iis).

Research goals and approach

The project explores how young people on Chiloe can be encouraged to become active in the management and protection of the marine resources of Chiloe. A participatory approach using video cameras as research tools was adopted in order to engage young people directly in the data collection process. The intent was not only to gather data but also to promote awareness among participants of the importance of marine resources and of the importance of youth engagement in resource management for community well being. There is a particular, but not exclusive, focus on aboriginal youth on Chiloe Island, Chile.

Through participatory action research young people were invited and enabled to document their needs and aspirations with respect to marine fisheries and aquaculture, and explore their knowledge and perceptions of marine issues. Information provided by young people was augmented and cross-checked using interviews with parents, teachers and community leaders. Additional information was gathered through a process of reviewing published information including academic papers, theses and books, government statistical reports and development plans, and research previously conducted by the partner organizations.

¹ All internships were developed with the assistance of the Atlantic Council for International Cooperation (ACIC) in Canada, and with financial assistance from the Canadian International Development Agency (CIDA). The internships were also supported financially by the Social Economy and Sustainability Research Network based at Mount St Vincent University in Halifax, Nova Scotia, Canada. This network is funded by the Social Sciences and Humanities Council of Canada.

This is a preliminary exploration of youth and the marine environment in Chiloe, which provides some basic information to support further research. Long term objectives of the research partners are

- to build local resource management institutions that include young people;
- to compile indigenous traditional knowledge of marine ecosystems and land-sea connections that can help young people and their communities to build cultural knowledge into local resource management systems; and
- to develop strategies for overcoming obstacles that are experienced by youth who seek marine environmental education and employment in fisheries and aquaculture.

Research instruments were reviewed by the Research Ethics Boards of the University of PEI and of Mount St Vincent University in Canada, who approved all components of the project. A formal information and consent form was designed to gather written consent from all persons interviewed. All instruments used (consent form and interview questions) were translated into Spanish and approved by the Williche Council of Chiefs before being used in Chiloe.

Primary data gathering

The investigation was carried out in various communities in the center and south of Chiloe Island where the Williche population is concentrated. Observations of life in coastal communities, interviews with young people and adults, and literature research were carried out by IIS intern Abigail Franco Vazquez under the supervision of Manuel Muñoz Millalonco, over a six month period from August 2008 to January 2009. Interviews were recorded using either a video camera or a voice recorder. In total there were 29 people interviewed over the course of the study: 20 youth (13 male, 7 female) age 14-18 years, and 9 adults (4 male, 6 female) ranging in age from 36 to 60 years.

The majority of youth participants were members of a high school class from the Agriculture and Aquaculture Lyceum (*Liceo Agropecuario y Acuicola*) in Castro who voluntarily participated in a workshop offered by the research team. The students included both Williche and non-indigenous youth. The workshop, which focused on Williche cosmology and the importance of the marine ecosystem, was led by Manuel Muñoz Millalonco of ARCIS University and Pablo Aranguiz Mesias of *Fundacion con Todos*. During the workshop, young people were invited to interview one another guided by a list of questions provided by the researcher. Participants taped the interviews using a video camera. Interviews explored their knowledge of and feelings toward fishing and aquaculture and the marine environment. Other youths were interviewed by the researcher in their home communities of Quellón and Lelbun.

A short video was created using footage collected in Chiloe together with clips from a similar workshop conducted with Mi'kmaq and non-native youth on Prince Edward Island, Canada. This video was

subsequently shared with participating youth groups in Chile and Canada, as a way of encouraging the participants to learn about each others' ways of life.

Adult participants included Williche and Chilote people from the communities of Queilen, Leibun, and Weketrumao in Chadmo, Quellón. They included parents, teachers, fishworkers and community leaders, including one Williche chief. Participants had varying levels of education ranging from elementary to technical and professional.

Observations of people and culture in the coastal communities where interview participants lived formed a fundamental part of the study. These observations enabled the researcher to better identify and understand contextual factors such as how adults and young people interacted on a daily basis; how the general population spoke about the sea and marine industries; what grassroots marine activities were taking place at the community level; and the conditions for workers employed in the fisheries and aquaculture sectors.

Contextual Overview: The Great Island and Archipelago of Chiloe

Climate and Geography

When Charles Darwin explored Chiloe Island in 1834 he described the island's landscape in these terms: "Chiloe Island, which could be an enchanting island if its continuous days of rain did not make it look sad... Even though Chiloe has fertile land, the land does not help those products that require more calories" (Weber S., 1903: 38,70). Chiloe has a long rainy season; indeed, it is one of the most humid places in the world. "During the second semester of 1900 which was considered a normal year, the island presented 77 dry days and 106 with rain" (Weber S., 1903:17).

The name *Chiloe* comes from the indigenous word *chilhue*, (in Spanish, *chillwe*). In the Williche language (*Mapudungun*), *chilhue* means "place of *chelles*". *Los chelles* (Latin name *Larus maculipennis*, also called *cahuiles o gaviones*) are white seabirds with black heads, that frequent the beaches and lagoons.

The name Chiloe is applied to an archipelago of more than 40 islands that constitutes one of the four provinces of the Xth, or *Los Lagos* Region of southern Chile. The other three provinces of the *Los Lagos* Region are Llanquihue, Osorno, and Palena (Fig. 1). The "Great Island" of the archipelago is also named Chiloe. Chiloe Island is 180 km long from north to south, is located 88 kilometres south of the regional capital Puerto Montt, and is separated from the mainland by the Chacao Channel.

To the north of Chiloe Island, facing the Gulf of Ancud, lie the group of islands called the Chauques. To the south and east, close to the center of Chiloe is a second group dominated by the relatively large island Quinchao. South of the Quinchao islands there is a third group, the major island being Lemuy. To the east are the group of islands that include Chauinec and Apiao. Continuing east there is the Desertores group which do not belong to Chiloe province but to Palena.

More islands are found south of Quellén, notably Tranqui. Another group of islands protect the port of Quellón. The provincial archipelago also includes Guafo, Quilan and San Pedro islands to the south of Chiloe. According to the INE (2005), the entire archipelagic province extends over 9,181 km² of the Pacific Ocean, making up 1.2% of the total area of Chile (CASEN, 2006).

Municipal units of Chiloe archipelago

Chiloe archipelago is divided into ten municipal areas of varying size (*comunas*) which are named after their main towns. Castro is the capital. The other *comunas* are Ancud, Quellon, Chonchi, Quinchao, Quemchi, Dalcahue, Queilen, Puqueldon and Curaco de Velez. Quellon is the most extensive *comuna*, covering 35% of the province. Ancud, Chonchi, and Dalcahue cover 19%, 15%, and 13% respectively. Castro, Quemchi and Queilen each cover 4-5%. All together, the smallest *comunas* of Curaco de Velez, Puqueldon and Quinchao make up the last 4% of the archipelago's land area.

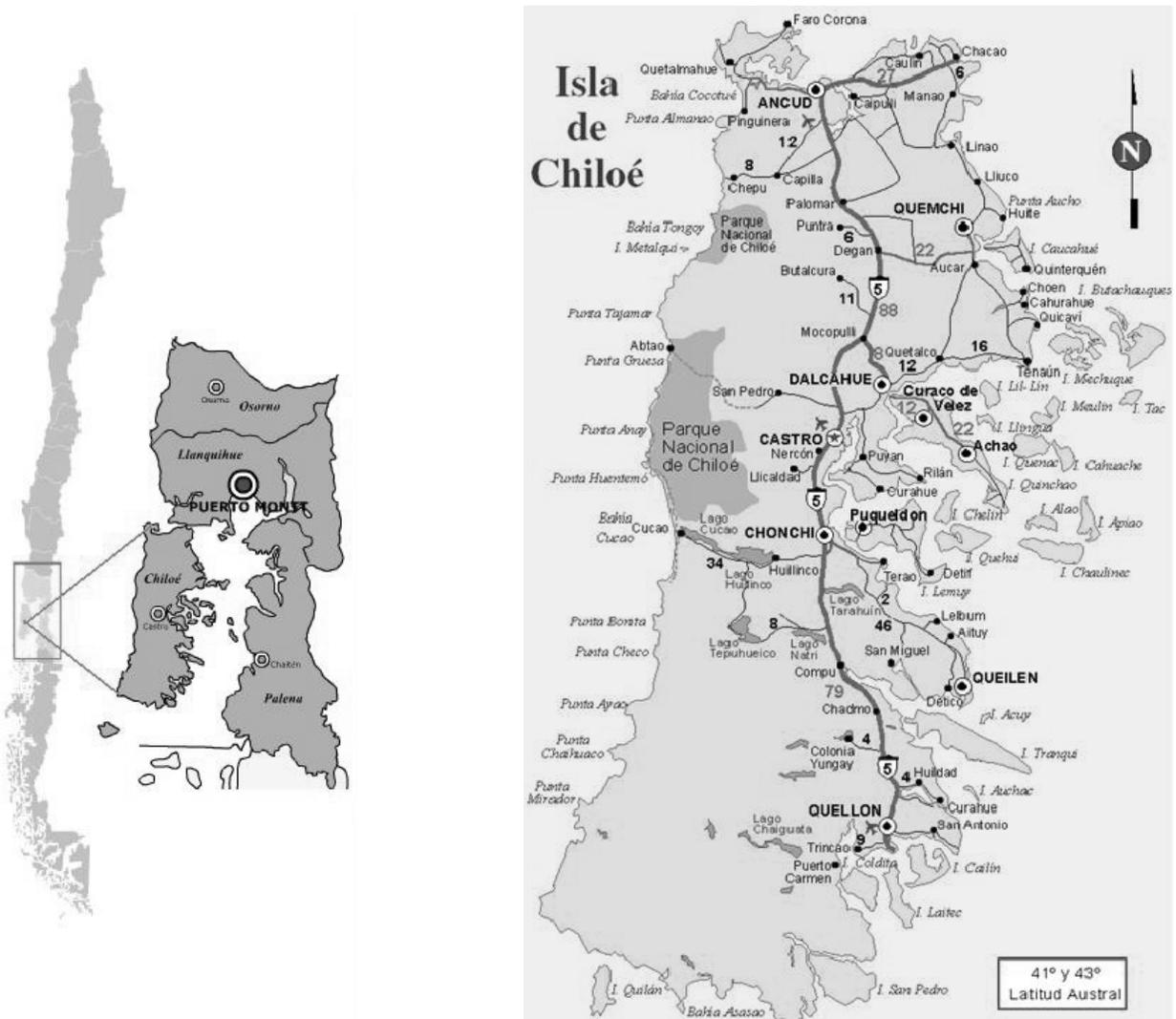


Figure 1. Map of the Xth (*Los Lagos*) Region showing the four provinces: Osorno, Llanquihue, Palena and Chiloe, with a detailed map of Chiloe Island and archipelago.

Sources: <http://www.chiloe.cl/modules.php?name=Content&pa=showpage&pid=59> ; http://www.hightechchile.com/rps_corfo_v57/OpenSite/Investchile/Chile%20Regions/Los%20Lagos/los-lagos01.jpg ; <http://html.rincondelvago.com/regiones-de-chile.html>

Population of Chiloe Island

The total population of Chiloe Island is approximately 170,150 (CASEN, 2006). According to the census of 2002, 12.6% of the people in Chiloe province identify themselves as indigenous, but it is commonly accepted that a much larger proportion of islanders have some degree of Williche ancestry (S. Elmudesi pers. comm.). Of the 8,550 people who claim indigenous status, 99% are Williche — a sub-population of the mainland Mapuche people. The other indigenous peoples present are Alacalufe, Quechua and Yamana.

The community of Quellón, located in the south of Chiloe Island (Fig. 1), has the highest concentration indigenous people (34.64%), followed by Quinchao (16.28%), Dalcahue (4.03%), Curaco de Velez (2.45%) and Ancud (1.94%) (CASEN, 2006). The name that is given to both indigenous and non-native people who live on the island of Chiloe is Chilote. Because the word Chilote is sometimes used as a perjorative term, some people prefer to call themselves Chiloense or *chilhueño* (http://es.wikipedia.org/wiki/Archipi%C3%A9lago_de_Chilo%C3%A9). According to Alfred Weber (1903:132), the term Chilote historically referred to uneducated rural labourers including farmers, fishers and seal harvesters. These constituted the majority of the population of the province in the early 20th century.

Native cosmology, society and land rights

The native Williche people of Chiloe have traditional beliefs that encourage people to find harmony with the universe. For Williche, nothing in the universe is static. The human being is *shauko* (water that is circulating & has been reunited) and people are dependent organisms of *Mapu Ñuke* (Mother Earth), from where comes all their *nawen* (energy). Thus, human beings must help maintain their supporting terrestrial & marine ecosystems. Another feature of the Williche cosmology is the belief that harmonious behavior among humans is fostered when conditions allow *wekimun* (new knowledge) to arise from integration of various forms of knowledge. This is seen to be a means to collective development and also appropriate for responding to situations of crisis. Also important to traditional Williche are the values of balance and equity. In their collective work, they therefore seek to establish horizontal rather than hierarchical frameworks for interaction (Muñoz Millalongo, pers comm). The traditional leaders in the Williche Council of Chiefs are determined to transmit the knowledge of Williche cosmology to new generations, and to preserve it for future generations.

The family unit, within which children's education is closely linked with daily life and work, is vitally important for Williche community development. Young people learn from their parents and grandparents, who are charged with transmitting the *kimvn* (knowledge). This is accomplished through the sharing of *epew* (legends), *tayvl* (songs), *gvbam* (recommendations), and technical knowledge of crafts such as silversmithing, woodwork, weaving, knitting, and blacksmithing. These skills contribute to forming the *ce* (person), and define a person's role in the community. Each member of the Williche has his or her original *tvwvn* (territory) and *kypalme* (extended family). These define a person's identity. All these concepts communicate the importance of *pu fvren ni kimeltun*: the family as the source of knowledge, education, and powerful role models (Neculqueo *et al.*, 2009).

In the pre-colonial era, the Williche *longkos* (chiefs) and their communities held title to their ancestral territory in a form that was recognized by the Spanish invaders, who called them *Titulos Realengos*. These titles were recognized in the Tantauco treaty of 1826 and thereafter formed the legal framework for local land ownership (Muñoz Millalonco, 2004; *Comision Verdad Historia y Nuevo Trato*, 2003). The Tantauco treaty ended the War of Independence for Chile and was a peace agreement signed between Chilean and Spanish authorities. Among the treaty's 13 principal articles, one established that after incorporation of the Chiloe archipelago into Chile, the inhabitants should have the same rights and obligations as any other Chilean. All their assets and properties were to be respected. However, from 1826 the state began to make appropriations of Williche lands in the interior of the Island. These lands were put up for auction through a process in which indigenous communities were treated by the republic as "simple occupants of land" rather than title holders (*Instituto de Estudios Indigenas*, 2003:327). In 1900, the Chilean government established "*La Gran Inscripción Fiscal de 1900*" wherein the greater part of the remaining Williche land was appropriated by the state. This left only small areas of the coast as indigenous property, spaces where indigenous families had homes and orchards (Schulting, 1997; *Comision Verdad Historia y Nuevo Trato*, 2003). The state gave permission to the municipalities to sell and rent Williche lands to the growing European population (Muñoz Millalonco, 2004). So began the industrialization of the landscape and resources of Chiloe, which was to have severe impacts, especially on forests and marine ecosystems.

An indigenous territorial rights movement began in Chile in the mid-1980s, a consequence of the oppression experienced during the authoritarian regime of President Augusto Pinochet. Organizations of indigenous people including the Mapuche, Aymara, and Rapa Nui began to demand legal redress for the expropriation of their lands, and sought to establish a new relationship with the state.

In 1991, after the end of the Pinochet dictatorship, the executive branch of the newly elected government sent three key aboriginal issues to the national congress for consideration. The first project was a law which included, according to CEPI (1991), "the recognition of cultural and ethnic diversity that was, until that time, rejected by the government; a full protection of their water and land; the acquisitions of land expropriated by the state; and the support of economic and cultural development of indigenous communities" (*Instituto de Estudios Indigenas*, 2003:9). A second initiative was a process of constitutional reform to recognize the country's indigenous communities; and the third initiative was a project to ratify Convention 169 of the International Labour Organization which dealt with the rights of indigenous and tribal peoples. The first outcome was Law 19.253, which was approved by the parliament in October 1993. This law was designed to protect, promote and develop the indigenous people of Chile. It was also intended to stop the process of transfer of indigenous territory to private ownership, a process of displacement that had impoverished indigenous communities. However the law did not oblige the CONADI (National Commission of Indigenous Development) to hear from community members before authorizing the annexation of territory from indigenous persons for the purpose of development (*Instituto de Estudios Indigenas*, 2003). The law therefore failed to meet the demands of the indigenous movement.

The second and third initiatives did not find support from parliament and were not approved at that time. However, Convention 169 was finally formalized by parliament in September of 2008. This convention established a set of political, economic, social, cultural and territorial rights of indigenous people. As explained by Shulting (1997):

Convention No. 169 emphasizes the shift in the conceptual approach to Indigenous and tribal peoples towards one based on respect for their specific identity ...and their right to participate in the decision-making process in all questions and programs directly affecting them, that is to say, to participate in the making of decisions and the determination of their own destiny. The Convention has 32 operative articles and is based on two fundamental concepts: consultation and participation.

The full ramifications of the Convention are still being clarified at the time of writing (2010). Although the Williche Council of Chiefs welcome the opportunity to have a say in the development and protection of the Chiloe archipelago, meeting the sudden flood of demands for participation in meetings and consultations is a serious challenge for this small tribal council. The Convention is expected to stimulate and shape the development of management policies and plans related to fisheries and aquaculture, as well as land use.

On Chiloe, the Williche Council of Chiefs began their own fight in the early 1990s to regain lands expropriated by the state for a national park. The park occupies a major proportion of the central west coast of the Island and is a highly significant reserve of forest resources. By the year 1997, the WCC had succeeded in regaining rights of occupation, sustainable use and management of a portion of the park.

Rural livelihoods and migration

In the past, Chiloe was distinguished by a subsistence economy that depended strongly on arable land, forests and marine resources. Even the poorest of Chilote people typically had some agricultural land, animals (usually bees, pigs and horses), and the capacity to produce food crops and harvest shellfish and seaweeds. Small scale production of agricultural, wood and fisheries products lacked technological sophistication, which remains true to some extent today. The family was the economic unit of society, within which jobs were allocated on the basis of abilities and gender. Many of the women worked in horticultural and textile production, among other things, while the older men hunted and worked with farm animals. Young people were destined for high risk activities such as fishing and forestry. All this contributed to the family's food, housing and economic well being (Bengoa, 2000:23-27, 31-32).

Migration has been a characteristic of the Chiloe archipelago for centuries. Many of the small islands have populations of only a few dozen to a few thousand people, and these islanders tended to travel to larger islands and to the mainland seeking work. The most significant pattern was the seasonal migration

of men to Patagonia in Argentina, where they worked as labourers on sheep farms. According to Bengoa (1996; 1997), the pattern of subsistence punctuated by migration to find seasonal work left rural areas of the island as “areas of refuge”, and “territories of temporary residence” (Gundermann *et al.*, 2009).

The Chilote migrant labourers were typically characterized as unschooled and backward but also tough and resilient. “While the Chilotes located in the insular austral area imposed themselves upon the indigenous groups ... Chilotes located in the interior of the southern provinces ... ended up living and sharing with the inhabitants of other origins. But they also subordinated themselves to Chileans and foreigners, usually their bosses and businessmen. The Chilotes advanced in the footsteps of the European colonizers who had capital, ideas, and a sense of entrepreneurship. But because of the European’s lack of ability to survive and work in the climate and conditions of the island, the Chilotes were irreplaceable” (Urbina B., 1988: 42,43).

After the incorporation of Chiloe Island into Chile in 1826, there were new avenues for migration to the mainland in search of work. The process of globalization evident throughout the 20th century brought cheap imported food to Chiloe, forcing the devaluation of staple agricultural products such as wheat and potatoes. This left increasing numbers of people dependent on government subsidies, and on remittances from those who migrated to find paid employment (Venegas, 2006). Migration escalated during the agrarian reform period in Chile (1964-1973). This was followed by a counter-reformation led by the Pinochet government in the period 1974-1980. During these years, many impoverished people were displaced from the countryside (Gundermann *et al.*, 2009).

The limited income from agriculture is still a reason for rural Chilotes to migrate to urban areas to find work in sectors such as mining, forestry, construction, housekeeping, and landscaping (Gundermann *et al.*, 2009). In many cases the migrants trade their rural culture and heritage for an uncertain future. Williche migrants to urban areas often face racial discrimination and risk not finding any work. They can end up poorer than before, with little food security. They also must deal with the erosion of cultural identity that occurs when one is separated from the experience of traditional rural activities, family, and a native territory.

Migration is an important impetus for transformation on many islands worldwide. Globalization, economic changes, politics and technology may all facilitate or promote migration, which has grown in significance and taken new forms in the present century (Connell, 2007:455). Inhabitants of small islands are constantly reminded that their way of life and their identity have much to do with insularity and isolation on the one hand, and with migration and mobility on the other (King & Connell, 1999:1).

Forestry, fishing and aquaculture

Before the expansion of aquaculture in the 1980s, the principal economic activity in *Los Lagos* Region was artisanal fishing and forestry. Today, cutting trees to provide firewood still constitutes part of many family incomes. Wood is the most common source of household heat on Chiloe Island, being far cheaper than

other forms of energy. Of a total of 1.5 million cubic meters of native forest that are cut annually in the *Los Lagos* Region, 80% is designated as firewood for heating (Venegas, 2007). Between 1976 and 1999, Chiloe experienced a dramatic 23% reduction in the geographic area of native forest (Venegas, 2007).

Since the 1980s, marine aquaculture in the *Los Lagos* Region has had profound impacts on the economy of Chiloe. Aquaculture involves the production of Atlantic salmon and various shellfish (mussels, cockles and oysters). For example, in 2006 there were about 200 aquaculture concessions in Quellón and 60% were for the production of shellfish (PLADECO Quellón, 2006).

As export income from aquaculture grew, poverty in the *Los Lagos* Region decreased from 21.8% to 11.8% (between 2003 – 2006), unemployment fell to 5.8% and the Gross Domestic Product (GDP) of the *Los Lagos* Region increased from 4% to 5.1% of the national GDP (between 1996 and 2005). By 2005, primary industries contributed 28% of the regional GDP: 18% from fishing and aquaculture, and 10% from agriculture. Secondary industries and the service sector, which contributed over 70% of GDP, also depended significantly on aquaculture activity. Exports from the *Los Lagos* Region in 2005 were dominated by marine products (87%) followed by forest products (7%), agriculture products (5%), and others (1%) (Corvera V., 2005). Chile was at that time one of the largest producers of cultivated salmon in the world, following behind Norway. Pablo Aranguiz of *Fundacion con Todos* sums the situation up: “Chiloe is home to a great diversity of organisms including marine invertebrates, fish, mammals and birds. This is certainly an area of great economic importance, especially for industrial fishing and aquaculture. Ninety percent of the salmon produced in the tenth region is produced on the island of Chiloe.” (P. Aranguiz, 2008)

Aquaculture development brought many beneficial changes to Chiloe Island including improved access to transportation, education, and health services (Vidal, n.d.). An important social change was the virtual elimination of the traditional seasonal migration of young adult males to Argentina in search of employment.

Aquaculture and fishing activities typically employ men in technical positions (Millaquen G. & Nahuelpan O., 2007). and women in the processing plants (Pinto P., 2007). Women also find unskilled work in related service industries and commerce, but the availability of this type of employment fluctuates widely from year to year (Millaquen G. & Nahuelpan O., 2007).

Together with the benefits, the expansion of aquaculture brought challenges and negative impacts. Serving the demands of national and international markets has been problematic for many Chilote people because of their limited access to credit, technology, and training. The industry too often pays low wages and provides poor labor conditions (Pinto P., 2007). The President of the salmon workers’ union, FESTRASAL, has pointed out that many aquaculture workers have been victims of various abuses including anti-union practices, miserable wages, little job security, long and exhausting working hours and as a result, accidents (*Comision de Pesca, Acuicultura e Intereses Maritimos*, 2006:25-27). He argues that this abuse occurs in part due to the industry’s practice of using contract labour, inadequate labour laws and abuse of power by the businessmen.

Aranguiz and Alvarez (2009) noted that the main challenges faced by the community of Coldita included overharvesting of natural shellfish beds by artisanal fishermen and the transformation of the local economy, which led to the abandonment of traditional agricultural practices. The community was increasingly dependent on wage employment and these jobs did not, in their opinion, improve the quality of life for the young people involved.

The explosive growth of aquaculture, especially salmon production, has also impeded the traditional access of the Williche people to coastal areas (*Instituto de Estudios Indigenas*, 2003:221), displacing many independent small-scale fishers, farmers and other small businesses. As a result, many people in rural communities have become more impoverished (*ibid.*:221).

Environmental impacts of aquaculture on marine ecosystems are also evident, and these affect not only the lives of marine species but also the artisanal fisheries² that the Williche have depended upon since ancestral times (*Instituto de Estudios Indigenas*, 2003:221). Increasingly, conflicts over access to marine space and resources have developed among artisanal fishers, aquaculture operations and tourism (PLADECO Quellón, 2006).

Urban drift

The process of migration from rural to urban centers in Chiloe province intensified as aquaculture industries in coastal towns generated employment opportunities. The predominant destinations for migrants were the towns where the salmon aquaculture industry was booming. From 1992 to 2002 the population in Chiloe Province increased by 13.1%, affecting especially Quellón (+45%), Dalcahue (+37.7%), Castro (+31.5%), Chonchi (+18.3%) and Ancud (+6.5%) (CASEN, 2006). However, the infrastructure of some of these towns has not developed at a pace sufficient to comfortably accommodate the influx of migrants (Millaquen G. & Nahuelpan O., 2007). The development of health services, education, housing and infrastructure lagged behind population growth, and the continuing influx of migrants sharpened the competition for employment. As a result, Quellón experienced a sharp increase in the number of homeless persons, from 2.6% of the population to 4.9% (Millaquen G. & Nahuelpan O., 2007).

Among migrants to Quellón were people from the mainland of Chile. Over the decade 1992 - 2002, the demographic mix of coastal towns changed. For example the proportion of Quellón residents who were workers between 25 and 64 years of age reached 72% (Millaquen G. & Nahuelpan O., 2007).

While the trend of urban drift caused problems in the towns, it also caused difficulties in remote rural communities. The percentage urban population of Chiloe increased from 47% to 56% between 1992 and 2002 and by 2009, provincial surveys estimated that 60% of the people lived in urban centers. As workers in rural and small island communities moved to more dynamic economic centers, smallholders'

² According to SERNAPESCA (General Law on Fisheries and Aquaculture) an artisanal fishery is a small scale extractive fishing activity that is carried out on an habitual basis. Fishers are registered in the Artisanal Fisheries Registry whether or not they work on a vessel. Artisanal fishing may be exercised by a craft owner, diver, shore collector or sea plant collector. (http://www.sernapesca.cl/index.php?option=com_content&task=view&id=68&Itemid=160)

agricultural activity declined. Thus there is an inverse relationship between salmon aquaculture and the rural economy (Amtmann *et al.*, 2004). The transfer of the labour force (mostly young people) from rural economies into the aquaculture industry is viewed as one of the principal weaknesses in the economy of the province (Vidal, n.d.). The results are evident in rural areas such as Quemchi on Chiloé Island, where 41% of family farms provided labour to salmon farms and processing plants in the mid-1990s. According to Gonzalez (1996), migratory youth came to play an important role as non-resident supporters of their families (Amtmann *et al.*, 2004). However, the economic gain was offset by the social and cultural costs inherent in the loss of young people from the community.

The collapse of salmon aquaculture

The economic boom from aquaculture proved to be short-lived. Industrial development had happened too rapidly and in the absence of adequate government control, which led to an environmental and financial crisis that began in 2007 with the appearance of the virus ISA (infectious anemia) in the intensive salmon aquaculture operations. The virus infected three quarters of the cultivation centers, led to a financial loss of \$65 million and resulted in the closing of many processing plants. Among salmon farm workers there were six thousand layoffs in the first quarter of 2008 alone (Cosme Caracciolo, 2009). By 2009 many of Chiloé's salmon farms had ceased operations, with serious impacts on workers in both aquaculture and related service industries, including "tension and negative impacts on health, job satisfaction and performance of individuals. Additionally, deteriorating family life, including separation and divorce rates associated with this type of conflict, is growing" (Pinto P., 2007).

Youth on Chiloe Island

Who are youth?

According to the United Nations, “youth” are persons between 15 and 24 years of age. In Chile however, the youth population is defined by the National Youth Institute as those between 15 and 29 years of age. According to the most recent National Youth Enquiry, there are 3.65 million youths in Chile (INJUV, 2007).

Sandoval (2007) discusses how many societies view young people. He asserts that it is essential for young people to incorporate themselves into the world of adults by achieving stable employment and establishing a family. These accomplishments open up the possibilities inherent in adult social roles, and establish one’s status in society. Sandoval also asserts that emotional, sexual, social, intellectual and physical development are all essential to the development of adult identity. Youths come to be adults when they develop in all these areas to the point where they can successfully insert themselves into the adult social world. The adult condition can not be reached simply by reaching some arbitrary “legal” age, nor by reaching some defined stage of biological development. Maturity is achieved when a person is in full possession of their adult rights and duties.

When viewed through such a societal lens, youth is merely a process or a period of time through which people must pass while preparing for their entry into the adult world. This attitude is typical in societies where elders are deemed to be wise and children are to be seen but not heard. In this paradigm, young people are not recognized as persons with unique perspectives and capacities. They are, rather, valued only for what they may become, and what they must become to be acceptable is tightly circumscribed — especially for females who are expected to bear the next generation of children. This has significant implications for projects that seek to recognise, affirm and promote the aspirations of both male and female young people, and to help them find their own place in community decision-making.

According to the Fifth National Youth Enquiry (INJUV, 2007) Chilean youth assert that family, work, and education are important to their personal development and happiness. The older they were when surveyed, the more important they considered family and employment to be to the happiness and success of their adult lives.

At the same time, the youth mentioned that some of the major problems affecting them personally were the lack of employment opportunities (19.3%) and the lack of access to education (14.0%). Economic problems and debt were the most common reasons why young people discontinued their education. Reports of financial stress increased with age and affected young people whether they were combining school with work or had already completed a technical education (INJUV, 2007). As a nation, Chile faces great challenges related to the re-establishment of democracy, integration into global markets, structural unemployment among youth that is triple that of the rest of the population, gaps in access to certain types of education, and socioeconomic inequities (*ibid.*). Therefore, it seems that Chilean young people accept the dominant paradigm but find themselves in a situation where meeting the expectations of society may be difficult or impossible. According to Sandoval (2007), “the great challenge of young Chileans in this new millennium is related to a society and an economic model that appeals to consumers and is associated with modernization and economic successes, but at the same time rejects, excludes, ignores and / or punishes youth for their juvenile status”.

Young labourers in the salmon industry

The labour force for aquaculture is predominantly young and male, while labourers in processing plants are predominantly young and female. A study undertaken in the community of Dalcahue during the boom period revealed that 83% of aquaculture and processing labourers were young rural people with limited education who had been working for an average of 6 years (Amtmann *et al.*, 2004).

Prior to the collapse of salmon aquaculture, the *Los Lagos* Region was the one with the highest rate of employment for youth (INJUV, 2007). However, the employment picture is less rosy when one considers the difficult working conditions and low wages for young people engaged in aquaculture and processing. According to Rodrigo Pizarro, CEO of the Terram Foundation, “of the total revenue generated by the industry, 57 percent goes to material inputs, 31 percent to gross profits and just 12 percent to wages. Moreover, most workers earn minimum wage: less than US \$200 a month” (Pizarro, n.d.). The industries also prefer to contract people on a seasonal basis rather than offer year round employment, so there is no job security.

Access to education on Chiloe

In Chiloé currently there are various institutions of education. Vidal (n.d.) reports the existence of 11 educational institutions at the high school level that focus on science and humanities (not counting the schools in Puqueldon and Queilen), and 7 professional/technical educational institutions (in Castro, Ancud and Quinchao). Ojeda (2008) assessed the demand for technical degrees in the province of Chiloe and pointed to 16 high schools offering education in sciences and

humanities, technical skills, professional training or some combination of these. There were also four institutions of higher education present: University of ARCIS Patagonia, University of *Los Lagos* Technology Unit of Chiloe, Arturo Prat University, and Aconcagua University.

During field work in Chiloe the researcher (A. Franco Vazquez) noted that many high schools offer technical training to prepare students to work in agricultural and marine industries. There are also private schools that offer an education that prepares young people for university and professional training. However, the majority of middle class Chilote families can only afford to send their children to the technical schools. Families living in remote rural areas on the great island of Chiloe and those on the 35 smaller inhabited islands in the archipelago must send their school age children to live in the urban centers where the technical schools are situated.

Ojeda (2008) reported that there is a strong interest among young people in continuing education after high school. However more than half (58%) of the 1155 Chilote high school students interviewed did not want to study in Castro, saying that there are not a wide variety of educational institutions and they doubt the quality of education offered. Students often leave the island in search of access to particular programs not available locally. Those remaining on Chiloe may continue their education in one of the local institutions, but many cannot afford to do so. This is a problem because young people who are raised in poverty and have limited educational opportunities often experience low self-esteem and develop social difficulties (Finley, 2007:75).

Vidal (n.d.) critiqued the local universities on Chiloe, saying that they lack integration with the community. In her opinion, they fail to provide innovative and diverse educational options such as skills training, workshops, research, and other programs that could address the economic weaknesses of Chiloe, and promote development.

Field Research Findings, August 2008-January 2009

*Interview participants*³

Four of the nine adults interviewed were from the community of Queilen. These included a young married couple (Marisol and Jaime), a female leader in the Williche community (Norma) and an artisanal fisherman (Edgardo).

Marisol has a university degree in education, and she is a teacher in an elementary school. Jaime is a construction worker who builds houses. In the past, he worked as an artisanal fisherman for about 14 years. Marisol and Jaime have three children, all of whom attend school. In the summer the children help their parents harvesting various seafoods, including seaweeds.

Norma is an entrepreneur who makes a living from market gardening and handcrafts. She is a very active woman who recently won recognition at the Chiloe Biodiversity Fair for her efforts in developing a cultural microenterprise. Marisol, Jaime, and Norma all belong to an indigenous organization call WENUMAPU which tries to preserve the traditional culture of their community. Although neither Marisol nor Jaime are indigenous, they feel an appreciation for and interest in the Williche culture.

Edgardo moved with his wife from central Chile to Chiloe Island and became the first member of his family to work on the sea. An artisanal fisherman, he works as a diver (*buzo*). During the summer his entire family works with him to harvest fish and seaweed. His son attends a technical school that teaches courses in fishing and aquaculture. During his spare time, the son works with his father as a deck hand on the family's fishing boat.

One adult interviewee, Luis, was from Lelbun, a rural village near Queilen. Luis is a Williche chief and community leader who works in the salmon industry located in Quellón. In his spare time he works and spends time with his family in Lelbun.

Four adult interviewees - Julia, Jobita, Martha, and Hilda - belong to the rural indigenous community of Weketrumao, in the sector of Chadmo, Quellón. Weketrumao is notable for its strong indigenous identity and local traditional celebrations. Hilda teaches elementary school children the language and traditional knowledge of the Williche. She considers this to be of utmost importance in maintaining the childrens' indigenous identity.

3 Names of some interviewees have been changed to conceal their identities.

All four women interviewed in Weketrumao are members of the organization *Rayen Kvyen* (Moon flower) which works with WENUMAPU to establish and coordinate Williche language classes. They are housewives and at times, workers in aquaculture or agriculture. All of the women have at least one family member working in the sea, either in the salmon industries or as artisanal fishers.

Among the 20 young people interviewed, sixteen (10 male, 6 female) attended a high school offering training for Agriculture and Aquaculture, located in Castro. In this school the majority of students are male. Two of the youths interviewed attended the school called *Kumeruca*, which means beautiful house in the Williche language and is located in the sector of Chadmo, Quellón. Two interviews were with indigenous youth from the rural community of Lelbun. These youths had dropped out of school.

Youths' attachment to the Island of Chiloe and its marine resources

The majority (80%) of the young people interviewed declared a strong connection to Chiloe Island and stated that they would like to continue living on the island in the future. For these youth, Chiloe Island represents joy and tranquility. They like to be surrounded by the sea, and by green space and vegetation. They feel as if they are a part of the island and they consider it an honour and a privilege to live in a place with unique customs and where people breathe clean air. Some said that they love the island because it is the place where they were born, and where the majority of their relatives and friends live. These young people hold the island in a positive light, and feel that their future holds promise without the need for migration to the mainland.

Some (20%) of the surveyed youth do not want to remain on the island because, for them, it represents confinement and isolation, and a place with few alternatives for education.

Only one of the youths interviewed did not like seafood. The majority of adolescents consumed seafood at least once a week, while most of the others ate seafood at least once a month (Figure 2).

A list of some of their favourite dishes reveals the rich cuisine and food culture of Chiloe. Young people said they enjoyed fried and smoked salmon, mussel chowder (*chorito en cazuela*), clams

Figure 2.

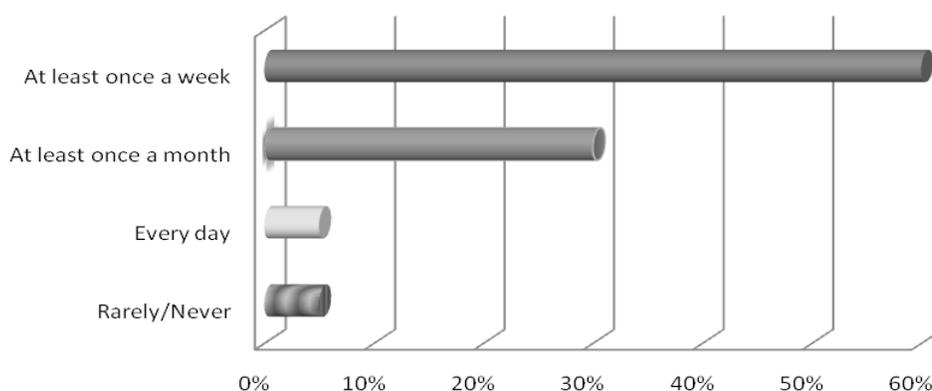


Figure 2. Frequency with which young people consume marine foods.

(*almeja*), shellfish pastries (*empanada de mariscos*), shellfish with potatoes, various species of crab (*cangrejo*, *jaiba* and *centollas*), sea urchins (*erizo*), abalone (*loco*), octopus (*pulpo*), seaweed soup made with *luche* (Latin name *Porphyra*), smoked *luche* and other seaweeds, and a popular traditional dish called *curanto* which is cooked on heated rocks in a hole dug in the earth. This dish includes chicken, pork, vegetables, shellfish, and bread made from potato flour. They also listed one marine mammal, the sea lion (*lova*, Latin name *Otaria flavescens*) as a favorite food.

Youths' interest in marine-related training and employment

Most of the young people interviewed were attending a school where the curriculum focused on agriculture and aquaculture. It was therefore not surprising to find that most (90%) had a strong interest in learning about the sea, pursuing a technical education and finding employment in marine industries. A recent study by Ojeda (2008) showed that the employment aspirations of students are generally consistent with the type of high school they are attending. Thus, half of all students in high schools offering an academic program focused on science and the humanities were most interested in careers in health (33%), administration and humanities (25%). Few were interested in fisheries and aquaculture (2%). Students in high schools offering a mix of academic and technical training (the *polivalentes*) also showed the most interest in health (26%), humanities and administration (23%), with 7% of students being interested in entering fisheries/aquaculture. In contrast, the greatest proportions of students from the technical high schools were interested in technological fields (17%), humanities and administration (16%) and a relatively large number (13%) favoured careers in fisheries and aquaculture.

Young people who were interviewed felt that Chiloe Island was a rich source of employment opportunities in both fisheries and aquaculture, despite the collapse of aquaculture that was happening at the time of the interviews. It was noted that many of the young people seemed unaware of the crisis that was unfolding. Unlike the adults, they rarely expressed concerns about negative impacts of aquaculture on the marine environment. Their desire to work in fisheries and aquaculture reflected their appreciation for the sea. They said that working on the sea was an interesting way to make a living, and many expressed a strong interest in boats and sailing.

Youths' knowledge of fishing

Adults interviewed noted that the typical Chilote family is very attached to the island and its natural resources. The sea provides an important component of income for many families. Every interviewee had at least one family member engaged in marine harvesting either for employment or subsistence.

The Chilote family is very diversified, and because of that we don't change with the market, thank god! We are an island and a culture that is very different from the rest of the country. The Chilote people are not large scale producers. What is more, through the conquest of the sea they have achieved an economy of subsistence. (Jaime, 2008)

People are familiar with working on the sea because they live near the sea ... We go to collect shellfish, but only for private use and not as permanent employment. I believe there are whole families that are dedicated to working on the sea, and continue to do that. (Norma, 2008)

Marisol and Jaime do not presently have any family member working in marine activities as a permanent job. But even though they have land-based professions, they go to the sea from time to time during the summer for harvesting and fishing. Other interviewees pointed out that many professionals engage in marine extraction of one kind or another. Some harvest marine plants or animals for food. Others sell their catch for extra income. This connection to marine harvesting has made a significant impression on at least one of Marisol's children:

We have a son who is very involved with activities related to the sea. He loves the sea, and the only thing that he wants when he grows up is to have a small boat and to be on the water. He has helped me a few times to collect sea plants. (Marisol, 2008)

More than half of the adolescents interviewed (65%) had been fishing at least once. All of the youth interviewed were able to list marine harvesting techniques currently in use in their communities, for example the use of fishing nets (redes), fishing rods with hook and line (cana de pescar), and hand harvesting. Hand harvesting is standard practice in the seaweed fishery.

We do not use any special equipment to collect the marine plants, just a bag and our hands. This occupation is carried out during the summer months. The sea plants are dried on the beach, they dry on the sand, and we collect with our hands what washes up with the tide. (Norma, 2008)

According to adults interviewed, the family is a critical source of fishing information and skills. The youth concurred, reporting that they learned to fish and collect seaweed from their parents, relatives and friends, and in a few cases, by observing other fishers. Many (57%), including all those who had no fishing experience, stated that they would like to continue to learn fishing skills.

When one asks where children learn, and where are they taught? It is transmitted from generation to generation. The women also transmit the food, culture, and artisanal crafts in the same way. (Norma, 2008)

All of the economic activities of the Chilote family are not learned in school. There isn't a manual to learn this, and in general it is transmitted from generation to generation. All of the skills you learn with practice in the moment. This is how you learn to work on the sea or on the land. The children, for example, always ask questions as they watch adults plant and harvest potatoes. (Jaime, 2008)

I believe that my son is getting involved because he sees me, and because it attracts him, because he sees me working in the sea, and so far I'm glad he likes it. (Edgardo, 2008)

The father teaches various skills to children, such as how to collect a certain product. This is good. It is a job with a lot of sacrifice, but if the family works consistently, they will gain money. (Norma, 2008)

The skills learned in schools were contrasted with what was imparted by the family:

In the schools ... they teach diving, but they do not teach them the skills to actually collect a given product. To dive is just about jumping and submerging to great depths. For example, to collect clams you dive to a certain depth, then you have to rake, lifting your hands and hitting the sand so that the clams move. One presumes that you learn this from someone with more experience. (Jaime, 2008)

Elders pointed to new fishing-related skills that have been introduced to Chiloe by the aquaculture industry. Youth who are enrolled in technical schools learn these new techniques, and this is seen by some adults to contribute to the displacement and loss of traditional fishing skills and cultural knowledge.

It is true that today we find ourselves with a different reality, with the arrival of the large foreign enterprises to Chiloe. They have taught us different techniques. For example, the skills required for the salmon industry are skills like filleting salmon, which were not traditional skills. In reality, we are losing things that are our essential traditions. We are seeing this as we produce more, as we have a desire for more money, and in the end that is the result. Lamentably, we live with a society that is very distant and different from our culture. (Jaime, 2008)

Only half (55%) of the young people were able to name fishing techniques used by their ancestors. They listed the spearing of fish using lances (*lanzas*), harpoons (*harpones*) and arrows (*flechas*), and the use of fishing rods. One noted that in the past, fishing was conducted near the sand bars. None mentioned the ancient stone fish corrals of the Williche people, for which Chiloe is famous (Alvarez et al., 2008 ; Aranguiz and Alvarez, 2009).

The changing role of families in education

The family is the basis of Chilean society. Family is also central to Williche cosmology because of the cultural values that are transmitted from generation to generation. Adults noted that many families that still live in small rural communities continue to transmit fishing and farming and forest-related skills to young children, as well as stories or legends from the ancestral people. But according to the

youth and community leaders interviewed, most knowledge imparted to young people these days comes from schools rather than from the family. When Chilote families were part of a subsistence economy, parents would spend more time with their children. Now, many more rural young people migrate to urban centers to attend high school and to find paid work. Families spend less time together and children therefore rely more on schools for their education.

The different type and pattern of work for parents living in urban centres can also have a profound effect on family dynamics and the opportunities for intergenerational learning. In the modern urban home where parents work in aquaculture, it is common for women to do processing work at night while men work on salmon farms during the day. Time when the whole family can share an activity is rare. We were told that sometimes single mothers must take their children to work. This may involve waking their children at 3 or 4 o'clock in the morning to walk home because the company does not provide transportation.

Problems in aquaculture and artisanal fisheries

Community leaders reported that many indigenous people work in artisanal fisheries and other small-scale businesses that exploit natural resources. Various methods for harvesting fish and seaweed are used, depending on the type of technology locally available. Even though artisanal harvests are often small in quantity, people noted that some artisanal harvesting practices can cause damage to the marine environment. However, even when people are conscious of the damage, they feel forced to continue in order to feed their families.

In addition to financial stresses, indigenous harvesters feel the stress of competing for marine space. This competition results from the encroachment of salmon farms, mussel aquaculture and tourism into traditional fishing grounds. Finally, there is stress related to the marine pollution from aquaculture operations.

People are working in aquaculture because of economic necessity. People are working in this area knowing the risks involved. If on one hand it provides an income for the family, on the other hand there is contamination created on the island by the salmon farms. This is because there has not been adequate regulation of the salmon industries, nor proper supervision. Industries could throw out their waste and make a disaster and nobody did anything about it. Now when it is too late they have created rules that companies have to follow, rules that nobody followed before. (Hilda, 2008)

Elders remarked that although marine activities are still very important to Chiloe's economy, unsustainable practices and the overexploitation of marine resources have resulted in a difficult situation. Although there are technical schools oriented toward fisheries, young people who graduate and then look for work discover that the marine resources are not plentiful enough to support the demand for employment in fisheries. Some of the elders suggested that young people should be urged into alternative forms of employment such as agriculture, forestry or tourism.

Several adults suggested that there should also be more diverse learning opportunities provided

by schools that would help to enhance the resilience of rural youth. For example, they could be encouraged and trained to establish their own businesses rather than only being guided toward poorly paid jobs with large companies.

There are marine education programs for youth in marine activities that were created principally because of the many salmon industries on the island. The programs were created so that youth would have better skills in this area, so they would be able to work and offer better services to the industries. But until now, youths have not created their own enterprises, they are not working on developing their own systems. All those attending the educational programs are attending them so they can offer their services to the industries. (Hilda, 2008)

Awareness of the marine environment and conservation

When asked where they picked up information about how the marine environment functions, most young people said they learned this only at school (Fig. 4a). A few indicated that they also learned at home, from the radio, or at work. When parents were asked where young people learn about the marine environment, they also identified schools as the key source of technical information.

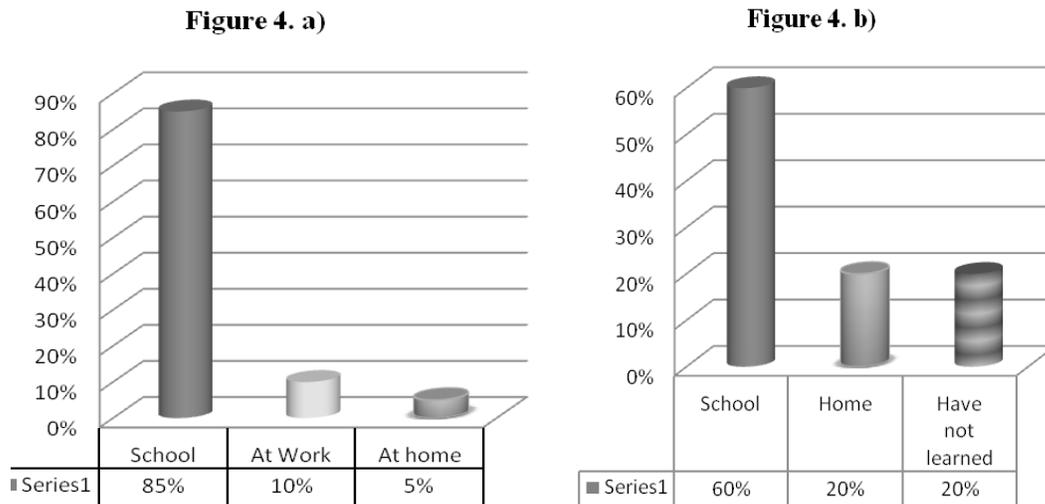


Figure 4 a) Where young people learn general information about the marine environment and b) where they learn about protecting the marine environment.

Most of the adolescents declared that information on how to preserve the environment was learned only in the schools, from teachers (Fig. 4b). A few learned this from their parents, and the rest said that nobody has ever taught them about how to preserve the environment. Adults shared the perception that schools were delivering environmental education.

I think that they teach them how to really work on the sea, but also how to take care of it. I

think or hope that in all the schools they talk about protecting what we have and how they have to watch the sea and care for the environment. (Jaime, 2008)

Schools teach them about how to work in the sea, how to go fishing on a big ship. The teaching that they give them is more mechanical than theoretical, but in schools they prepare them well. (Ulises, 2008)

A teacher noted that even in the elementary school years, children may be taught about how to take care of the environment. However, her comments suggest that this may be the exception rather than a general rule. It depends on whether the teacher has the knowledge and is committed to environmental education.

We talk about the deforestation, about the logging, but also we tell them about the need to reforest. The same idea works for the sea.... At least at the school where I work, we are talking about caring for what resources we have, because if you do not they will be extinguished. I met a teacher about a year ago who was very involved in this. For her, the environment is everything. We have to be involved in it, and we should develop a consciousness about it and transmit it to the children. (Marisol, 2008)

Very few adults thought that environmental education was taught at home. Parents teach their children is how to work in the sea and how to harvest resources but do not explicitly discuss marine conservation. Several adults expressed the hope that young people were learning about conservation because they had not had this opportunity to learn when they were young, and their own practices are therefore unsustainable.

I think if youth are only taught about how to work the sea and not about how to care about that environment, it will damage the ecosystem. However, if they are taught how to work and protect the ecosystem they will be working and earning well, but insuring the future of the ecosystem for future generations. It would be good to tell young people, and people in general, to participate in a program like this, and not as we had been taught. Because we dive into the water and instead of protecting it, we only destroy it.” (Ulises, 2008)

Some adults expressed concerns that youth are increasingly growing up in an environment where the economic situation is considered to be more important than the protection of the sea. They also recognized that they had lost touch with the teachings of their ancestors because of the attractions of modern consumer society.

We should teach our own children a different mentality, so they do not have the same mentality we adults, parents, and grandparents have. A long time ago when grandparents were talking about protecting the environment and the natural resources, they were not

talking about going to work with 50 sets of bulls or 10 chainsaws; they were thinking of going to get the necessary food to eat. Now, we are not thinking as we used to think. If we are harvesting seaweed or shellfish do we get what we need, or will we get more to sell? And how much money would we get? Today we have a very different mentality, which is very consumerist. (Hilda, 2008)

Most students declared an interest in preserving the marine environment (Fig. 3a) because the sea gives them life and livelihood. Several pointed out that diseases in salmon farms could affect the marine ecosystem, which was a concern because they viewed the sea as a source of food. Young people also said that it is important to protect the beauty of the sea, because this is essential to the beauty of the island. It was important to them to live in a clean environment with pure air to breathe.

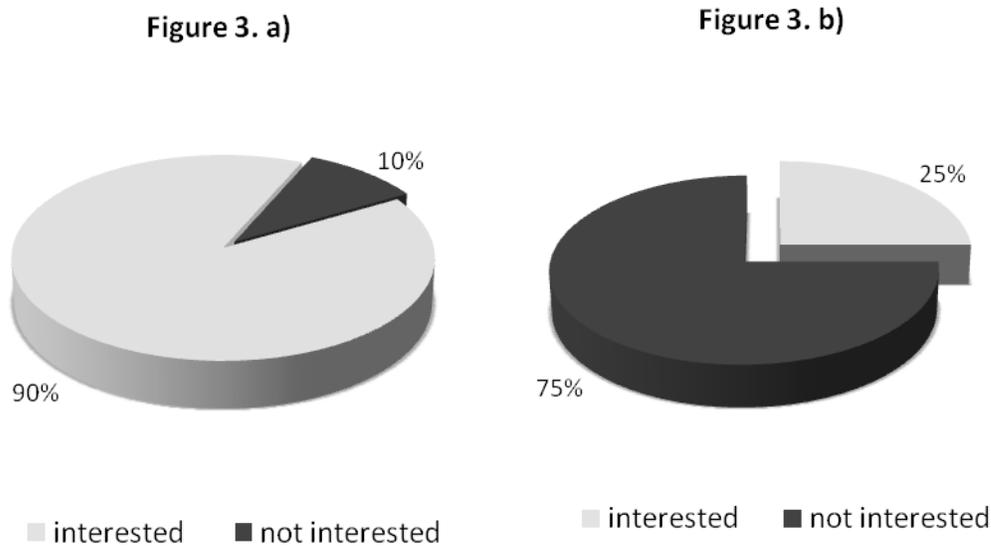


Figure 3. a) Proportion of youths interested in marine conservation. b) Perception of whether other young people are interested in marine conservation.

Most of these young people believed that, unlike themselves, other young people in their age group are not interested in the marine ecosystem (Fig. 3b), mainly because schools lack marine environmental education programs. They reported that young people are more preoccupied with financial matters rather than the environment. They also noted that parents do not teach them how to take care of the environment. The adolescents held the opinion that few people really worry about the marine ecosystem and if they do, it is not a strong enough concern to make them take action. This scepticism could result in youth feeling that even though they are interested preserving the marine environment, they will fall out of the social norm if they do something to protect it.

When asked what tools they thought would be most effective for raising awareness of marine issues among young people, most (80%) responded that videos are an effective tool for sending a message. Others suggested music, letter writing, and art. With respect to what they consider the appropriate

medium to achieve a better connection between youths and their environment, they responded: TV (40%), internet (15%), radio (10%), workshops (9%), or a mixture of TV, workshops, posters and radio messages (15%).

Youth engagement with marine resources management

Williche indigenous communities are heavily engaged in artisanal fisheries and the harvesting of seaweed and shellfish from their traditional territorial waters. Many also work in aquaculture. However, unlike indigenous people on many other small islands of the Pacific, the Williche have no traditional organizations devoted to marine resources management. Commercial and artisanal fish harvesters learn about fisheries rules and regulations only after they start formal employment in the fishery.

In my case, I worked from the age of 14 until the age of 25 as an artisanal diver. As artisanal divers, we worked with SERNA PESCA (National Service of Fisheries, which is a Chilean Department of Fisheries). They gave us licences to be able to collect different sea animals. For example, No 9 would allow us to collect clams, and so on. Everything that has to do with the maritime area is regulated, so today, divers are trained to collect clams, octopus and so on — everything that has to do with marine resources. (Jaime, 2008)

In terms of knowledge of laws that protect the marine ecosystem, the majority (65%) of youths interviewed did not know of any law that controls fishing or aquaculture, or protects marine resources and the marine environment. The remaining young people identified SERNAPESCA as the national government institution that regulates fisheries and aquaculture.

The majority of youths interviewed (85%) also did not know of any local rules established at the community level to govern who can fish and how much they are permitted to fish. Those who thought there were local rules in place could not say whether or not people respected the rules, or if young people participated in the development of such rules. Clearly, these young people lack any connection to a community level organisation that could engage them in resource management. An adult participant confirmed this, saying:

Today we realize that there really exists no organizations that are preoccupied with the care of the environment... As a member of GUENUMAPU and what I know as an elder, I realize that there are no programs that involve the youth with the subject of the environment. (Jaime, 2008)

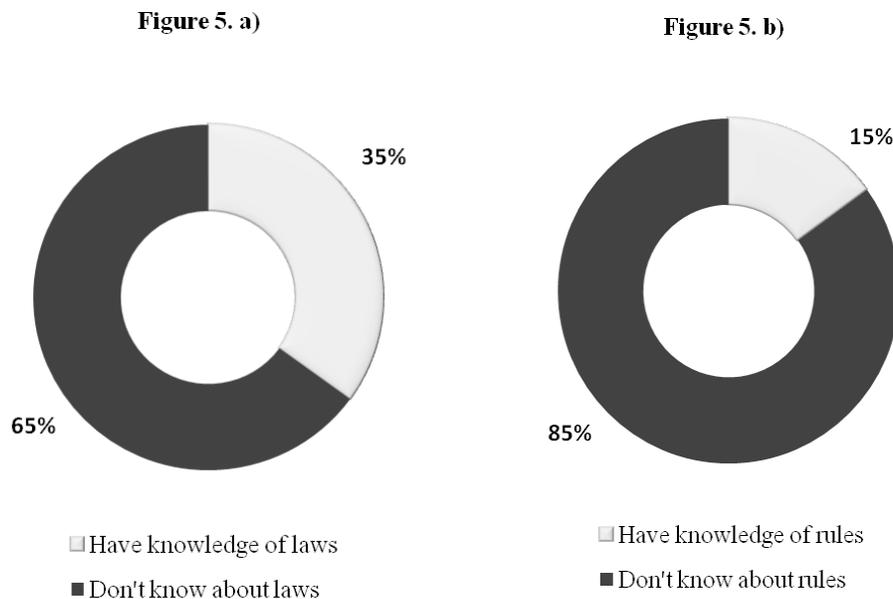


Figure 5. Awareness of youth regarding a) fisheries management laws and regulations generally and b) the existence of local management rules.

Community leaders agreed that there is a need for a program that effectively teaches the youth how to develop fisheries and aquaculture in a sustainable manner, so as to protect the marine ecosystem for future generations. However, this is a challenge because historically, there has been no participation by Williche communities in governmental decision making regarding fisheries and aquaculture. According to community leaders interviewed, all decisions regarding fisheries, aquaculture programs and related development policies come directly from the government, without any process of consultation with indigenous peoples. There has therefore been no opportunity for young people to be involved in decision-making regarding marine activities. This marginalization sparks concern.

Today we find ourselves in a position like that of the region of Chile where they are going to flood a large quantity of land to create a hydroelectric power dam. In the city of Aisen they constructed four hydroelectric facilities and flooded 10,000 hectares of land, and they did not consult us [indigenous people] to see if we really need it or not. So today, we see that privileges are given to large transnationals, but for the people who live here, there is no concern. Therefore this type of thing occurs, and lamentably we see that there is no interest on the part of the state to teach the youth, to prepare the youth to care for the environment. (Marisol, 2008)

Situations such as that related above should soon change. Chile has adopted the ILO Indigenous and Tribal Peoples Convention 169, a legally binding instrument that provides a set of articles to protect the rights of the indigenous peoples (<http://www.ilo.org/indigenous/lang--en/index.htm>). Convention 169 guarantees respect for indigenous people's integrity (article 2), and rights to natural resources including the right to participate in the use, management and conservation

of such resources (article 14). Article 6.1 of the convention dictates that before any major economic development proceeds in their territories, indigenous communities must be consulted:

Consult the peoples concerned, through appropriate procedures and in particular through their representative institutions, whenever consideration is being given to legislative or administrative measures which may affect them directly. (ILO, 2003:15)

The community has to approve the development, and if the community has to be relocated to allow the development to proceed, their new location should offer (at least) the same conditions that they had before being displaced. The resources that are part of the subsistence and culture of indigenous peoples also are protected under the convention. However, many indigenous communities and organisations still lack the resources and expertise to be able to effectively engage in negotiations related to development and protection of their territorial resources.

Whereas community leaders expressed a willingness to include youth in any future management arrangement, they also felt that young people would not be interested in participating, in part because there are no resources, programs or governance structures to promote youth engagement in this area. Programs that tried to engage youth in the past were described as rare, poorly promoted and therefore ineffective. Elders want to see future programs implemented through schools and families, which are the principal places where youth learn not only knowledge, but also, if the program is a good one, wisdom and resilience. They pointed out that the government has the resources and powers, and therefore the responsibility to implement education policies, to develop programs concerning fishing and aquaculture, and to ensure the sustainable use of natural resources.

CONAMA (the National Commission of the Environment) is the organization that has to do with the protection of the environment, but this organization should also be linked or connected with schools. To better educate youth, they should provide training and workshops because in the youth is the future of our island. If we do not prepare youth today to be able to protect ... the resources that we have today like the forest and the sea, what can we expect for the future? (Hilda, 2008)

Conclusions and Recommendations

Since the middle of the 20th century, the economy of Chiloe has increasingly shifted away from one of subsistence based on agriculture, wood-cutting and artisanal fishing, and towards a globalized economy dominated by salmon farming. This process has considerably modified the socio-economic structure of the region to which Chiloe belongs. Many argue that it also poses a threat to the environment and the cultural identity of Chilote people, and in particular, the indigenous Williche.

Intensive salmon farming has involved unsustainable practices affecting the marine environment and the health of the salmon (Pinto P., 2007). Aquaculture has also affected the traditional use of marine spaces, displacing artisanal fishing and gathering activities.

From the perspective of Williche people whose traditional beliefs involve a deep respect for the sea and an ethic of taking only what is needed for ones survival, the industrialization of the sea has been traumatic. Also, development has proceeded without consultation with or the consent of indigenous people. The expansion of aquaculture has not only affected the economic position of Williche families (for better or worse), but has reshaped the relations between young people and their families and eroded the connections that youth have with their culture and resources. This is a common cause for concern:

If local knowledge continues to be lost, and we give less importance to what we had, that loss that is passed from generation to generation. Young people consider it [local knowledge] to be less and less important. Then the general population also give less importance to the environment. (Pablo Aranguiz, pers comm, 2008)

In rural communities, much of the fishing knowledge and skills that children gained in the past was transmitted from generation to generation. Through working with their families, young people learned how to work in the sea and on the land. These modes of skill development still exist but to a lesser extent. Family based education is very valuable, but the extent and type of knowledge transmitted through families is poorly documented. Our observations suggest that what is considered environmental education, which could convey practical advice on protection and management of marine resources, is assumed to be part of what teachers convey in schools. Yet, the schools actually focus on transmitting vocational skills and pay scant attention to environmental education.

Statistics on youth suggest that students have a high level of trust in their school teachers (INJUV, 2007). Schools are increasingly important sources of knowledge, and many rural children of Chiloe must leave the family home to attend school in an urban center. If schools provide only technical and

academic information, the question that arises is: how will students learn the life skills and ancestral values that family interaction used to provide? Research shows that juveniles who are positively attached to parents with pro-social attitudes are less likely to be antisocial, violent, or delinquent. Positive attachments to parents also insulates juveniles from the temptations presented by their peers (Finley, 2007:77).

The potential risk to children is especially acute when their families are poor and their opportunities for higher education are relatively limited. In this case they may not have the opportunity to gain important information and values either from the home or from school. Durkheim (in Finley, 2007:75) maintains that education is the vehicle through which youth learn about societal values and culture. The opportunity to gain a high quality education that fosters social cohesion mitigates problems of youth violence. Durkheim argues that a lack of social cohesion and social solidarity is correlated with increased rates of problems such as alcoholism, drug use, suicide, and violent behaviour. This is important for both families and school boards to recognise so that in this period of urbanization and socio-economic upheaval, school teachers are assisted to develop programs that foster social cohesion among youth and between young people and their elders.

Given the high dependence on schools for environmental education, it is important for policymakers to ensure that teachers have appropriate curricular and other resources for instilling in students the ethics and knowledge needed for good environmental practice and resource management. It seems that although schools may be doing a good job of transmitting general information about the marine environment, more attention to tools for sustainable use and management of marine resources is required. Enhancing the curriculum is an important step in creating a generation of workers that will be more conscious of the limits of the environment than the preceding generation.

One potential strategy for community organisations is to lobby government to enhance school curricula concerning the sustainable use or preservation of natural resources and their supporting ecosystems. An approach gaining momentum in Canada is to develop environmental education resources for inclusion within core classes such as math, social studies, science and language (Environmental Education Ontario, n.d.). Any such school program on Chiloe should also incorporate Williche cosmology, as a way to inspire young people to live in harmony with nature.

From a review of available literature it was evident that in recent years, because of rising concerns over the implications of industrial aquaculture, Chiloe has been a site for research into the social and environmental impacts of aquaculture development. Research has been conducted by international non-governmental organizations including TERRAM, ECOCEANOS, OXFAM, OLACH, and OCEANIA, as well as by local organisations such as the Williche Council of Chiefs and WENUPAMU. As a result, schools and community organisations are increasingly conscious of the need for environmental education for young people. However, there are few local organizations with the capacity to develop and implement such environmental education programs.

There also appears to be a need for more focused efforts to transmit to young people the history of Chiloe's rich fishing tradition that extends back at least 12,000 years. For example, archeological excavations have unearthed ancient seaweeds used for food and medicine (Dillehay et al., 2008), and there is ongoing work to document coastal artifacts such as the ancient pathways to intertidal gathering sites, and the stone walls or corrals used to concentrate fish for harvesting (Alvarez et al., 2008).

A key finding of this preliminary exploration of the attitudes of youth and community leaders on Chiloe Island is that young people and their elders share a common love and concern for the island's marine environment and resources. Many of the youth interviewed were students at a technical school focused on agriculture, fisheries and aquaculture. These young people had a very strong emotional connection to their island and to the sea. For most of them, the island represents freedom, tranquility, happiness, beauty and a healthy environment, all of which are very important to them. The majority aspire to live and work on Chiloe in future. They are keen to acquire fishing skills and greater knowledge of marine ecology, conservation and management.

Youths such as these, who show an interest in learning about the sea, provide teachers and community leaders with a willing audience for information on how to manage marine resource harvesting so that it is sustainable and can continue to support coastal communities. The formal transmission of such information through schools, local governments and community-based organisations would augment the valuable lessons typically transmitted through families.

While expressing concern for the marine environment, young people also expressed scepticism about the willingness of other young people and adults to act to protect marine ecosystems. Parents and community leaders expressed similar concerns, rooted in the perception that the process of industrialisation and modernisation taking place in Chiloe has eroded not only the resource base but also the culture and environmental ethics of the people. There is a commonly expressed fear that the younger generations are growing up in an imposed, foreign culture that values money more than the environment.

Community leaders confirmed that, as of 2009, Williche people have had no opportunity to influence marine policy or regulations, nor do they have community-based mechanisms for self governance of fisheries or aquaculture. Although some general marine and environmental education is provided in the school system, and parents transmit important marine harvesting skills to their children, there is a general lack of programs that could educate young people or their parents about marine resource management and conservation. Given Chile's recent sign-on to the ILO Convention 169, guaranteeing indigenous peoples a say in development planning, it is critically important to build community capacity in resource management. This can be done through public education programs and enhancement of local governance structures and processes. In all such efforts, youth should be explicitly targeted for inclusion so that they are prepared to assume leadership positions in future.

It is also important to create mechanisms at the community level for environmental education for adults as well as children. Our data suggest that environmental education in schools and communities would be welcomed by students, teachers, parents and community leaders. Community based sources of education would improve the potential for fishing and farming methods to be sustainable and not damaging to the ecosystems in which they are practiced.

In this research project, video documentation was used as an interactive tool that young people used to explore their relationship with the sea, marine resources and marine sector employment. This proved to be a popular and effective way to engage young people. The video that was subsequently developed for use on Chiloe sends a message from young people to their communities about the importance of the marine ecosystem.

Young people in Chiloe suggested that various media including videos, the internet, radio, TV, workshops, art and music might catch the attention of their peers and be effective tools for education and engagement of youth in marine issues. Creative approaches to educating youth, which give them access to tools such as video cameras, will help them construct knowledge around the protection and management of marine resources, and voice their opinions. Such an initiative would be supported by Williche community leaders, who recognize the importance of engaging young people in resource governance.

Given the urgent need and unique opportunity for indigenous community development that exists as a result of Chile's signing of ILO Convention 169, it is essential that education reach beyond the schools, into the urban and rural communities of Chiloe. Indigenous leaders, when taking their place at government decision-making tables, would be well advised to reserve a significant proportion of available resources for youth engagement. New programs at the community level that encourage both youth and their parents to learn about how they can protect the environment and its resources in their everyday lives, would help redress the apparent negative impacts of Chiloe's rapid economic development. Both male and female young people need to be actively involved in the development of the policies that will govern their adult lives. This could be accomplished through youth councils attached to the traditional community councils that usually involve only clan leaders and chiefs.

Initiatives to engage youth in governance have already borne positive fruit in indigenous communities on other small islands. For example on Haruku Island in eastern Indonesia there is a youth organisation dedicated to environmental projects that is attached to the council of elders who develop local rules for fisheries, forestry and agriculture (Novaczek et al., 2001). On the Cook Islands also, children attend sessions led by elders concerning the value of respect, patience, and tolerance. They come to appreciate at a very early age the concepts of tribal, village, and island politics (IPS, 1979:108). Because of their early introduction to politics, Cook Island youth started to take a more active role in the affairs of the islands in the 1960s. They recognized that they would have better opportunities to control their futures if they promoted improved

access to education and employment. They explained that it was very important to understand the past, because “if you do not know what happened before you were born, you are forever a child”. From the ranks of these young people came community leaders and politicians dedicated to better governance (IPS 1979). Pacific Island experience also clearly warns against the perils of excluding youth from fisheries management processes (Tarisesei & Novaczek, 2005) and the positive benefits of engaging girls and women in marine resource management (Siamomua-Momoemausu, 2005). It would therefore be beneficial for Williche youth and elders to connect with other small island indigenous societies for the purpose of exchanging experiences and wisdom.

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