



El Colegio de la Frontera Sur

Impacto de la implementación de políticas públicas
en el uso de los recursos pesqueros en una reserva de la
biósfera

TESIS

Presentada como requisito parcial para optar al grado de
Maestra en Ciencias en Recursos Naturales y Desarrollo Rural

por:

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2013



El Colegio de la Frontera Sur

Chetumal, Quintana Roo a 15 de noviembre del 2013

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**IMPACTO DE LA IMPLEMENTACIÓN DE POLÍTICAS PÚBLICAS EN EL USO DE
LOS RECURSOS PESQUEROS EN UNA RESERVA DE LA BIÓSFERA**

Para obtener el grado de Maestra en Ciencias en Recursos Naturales y Desarrollo Rural

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*A mi familia que me inyectó el amor por lo que hago
y por ser la guía que da rumbo a mis pasos.*

*A Birgit Schmook que alimenta e impulsa mi curiosidad científica
y cree firmemente en mi trabajo*

A mi familia ecosureña que llena de vida y alegría mis días de academia.

Agradecimientos

Al Biól. Ángel Omar Ortiz, Director de Área en Reserva de la Biósfera Sian Ka'an por proporcionar el permiso para llevar a cabo esta investigación y a la Biól. Yadira Gómez, por todas las facilidades otorgadas para la realización del trabajo de campo. **Al Consejo Nacional de Ciencia y Tecnología (CONACYT)**, por otorgar **la beca con número de registro 270028** para cursar la **Maestría en Ciencias en Recursos Naturales y Desarrollo Rural** y por el apoyo para realizar parte de mi trabajo de campo por medio de su proyecto **Ciencia Básica 129323** Respuestas y experiencias de innovación social ante la crisis estructural del empleo asalariado. Por haberme otorgado una **Beca Mixta para realizar una estancia en la Universidad de McGill**. Al Colegio de la Frontera Sur por colaborar con el Programa de Apoyo a las Tesis de Maestría **(PATM)**. A la comunidad de Punta Allen por su maravillosa hospitalidad y por todas las facilidades otorgadas para que este proyecto pudiera llevarse a cabo. A Holger Weissenberger por realizar el mapa de la zona de estudio. A todo mi comité por haber dedicado tantas horas de trabajo durante el proceso.

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Introducción

Las reservas de la biósfera son un espacio sociopolítico que regula un territorio específico y los recursos naturales delimitados por este espacio. Surgen en contextos determinados, responden a intereses específicos y tienen impactos constatables a nivel local. Para este estudio, retomo la definición que Beltrán et al. (2008:13) hacen sobre las áreas protegidas como instancias sociopolíticas, que “si bien apoyan su legitimación en un discurso de carácter científico y técnico... traducen e instituyen una particular concepción cultural acerca de la naturaleza y de las relaciones que las sociedades humanas deben establecer con ella.”

En la historia de la política ambiental mexicana, los parques nacionales, las áreas protegidas y las reservas de la biósfera se constituyeron bajo influencia del discurso internacional que abogaba por la protección de los recursos naturales. El uso voraz de los recursos naturales en el mundo, profundizado durante la década de los sesenta (Pichardo 2006) y la emergencia de nuevos actores colectivos, de protestas y reclamos sociales frente al escenario político de la década; propician que el movimiento ambientalista de los años setenta lograra que se pusiera mayor interés en estudiar el peligro que representaba la destrucción de los ecosistemas, el crecimiento poblacional y los efectos que esto tendría sobre el ambiente. Así, en 1972 se establece la Declaración de las Naciones Unidas sobre Medio Ambiente Humano en Estocolmo, Suecia. Sin embargo, no fue sino hasta 1992, en la Cumbre de la Tierra de las Naciones Unidas, cuando se hizo una propuesta que implicó un cambio de paradigma, ligado a los efectos de la globalización. En el discurso público ambiental, se integraron

cuatro dimensiones que fueron instituyendo una nueva conceptualización del desarrollo sustentable: respeto a la integridad ecológica, cambios en el paradigma económico, justicia con equidad social y participación de la sociedad en la toma de decisiones (López-Bárcenas 2007).

La delimitación de áreas naturales para la protección estuvo enfocada a controlar la extracción de recursos forestales; sin embargo, a partir del sexenio de Miguel de la Madrid (1982-1988), el término biodiversidad aparece en el discurso político y se crea la Secretaría de Desarrollo Urbano y Ecología (SEDUE) encargada de la administración de las áreas protegidas a través del Sistema Nacional de Áreas Naturales Protegidas en cuyos objetivos ya aparece la conservación de la biodiversidad y de las especies en peligro de extinción (Castañeda 2006).

En materia de legislación ambiental, México ha firmado los convenios y acuerdos internacionales a lo largo del siglo XX. Los primeros instrumentos jurídicos de este tipo en nuestro país, regulaban problemáticas específicas, como la caza de las ballenas o el establecimiento de protecciones fitosanitarias. Así, los temas ambientales que se incluyeron en las preocupaciones internacionales y los acuerdos tomados, se ven reflejados en las políticas públicas del país. El Estado toma una postura frente a las necesidades que se gestan en los discursos internacionales y la traduce en políticas concretas.

Las reservas de la biósfera aparecen en el discurso internacional en 1971, promovidas por el Consejo Internacional de Coordinación (CIC) del Programa “El hombre y la

biosfera” (Programa MAB, por sus siglas en inglés) de la UNESCO reunido en ese momento por vez primera. En dicho programa se establecieron los fundamentos para un nuevo tipo de área de conservación, la “reserva de la biósfera”, la cual surge en respuesta a la necesidad de crear espacios naturales para su protección y estudio en los cuales se pueda explorar nuevas estrategias de uso de los recursos naturales (MAB, 2011). Se partió del supuesto de que el éxito a largo plazo de la conservación de los ecosistemas que comprende la reserva y de las especies se lograría sólo en la medida en que el área representara una fuente de riquezas y bienestar para las poblaciones humanas de la región. Esta estrategia permite experimentar para lograr el objetivo de unir dos concepciones hasta antes reñidas: conservación y desarrollo. (López-Ornat 1993). El establecimiento de zonas protegidas para la conservación y las estrategias de gestión contempladas para ello, se convierte en la instrumentación de un paradigma de desarrollo sustentable.

Área de estudio

La Reserva de la Biósfera de Sian Ka'an (RBSK) en el estado de Quintana Roo, comienza su proceso de delimitación en 1982. Impulsado por el Centro de Investigaciones de Quintana Roo (CIQROO) y con apoyo del Consejo Nacional de Ciencia y Tecnología (CONACyT); se decreta finalmente en 1986¹. En el momento de su conformación, los únicos asentamientos humanos reconocidos dentro de polígono eran Punta Allen y Punta Herrero; ahora se reconoce al campamento María Elena, cuyo asentamiento se ha ido consolidando en los últimos tiempos. La reserva incluye una extensión de 652,193 has. de las cuales aproximadamente 120,000 son marinas. La

porción marina incluye una barrera continua de arrecifes de unos 110 kilómetros de longitud que la convierte en un punto central para la conservación de ecosistemas costeros. Esta posición convierte también, al territorio de Sian Ka'an en un foco de interés prioritario para la industria turística. Así, los intereses de conservación, aprovechamiento y desarrollo, están presentes en la gestión del territorio y en las motivaciones que conforman los intereses de los actores. El marco institucional regula las prácticas sociales de los actores implicados desde estas tres modalidades de uso distintas, lo cual genera conflicto y da vida a formas de organización particulares en torno a los recursos costeros del área.

Durante muchos años, la extracción de chicle fue la actividad socio-productiva principal², junto con la extracción de maderas aprovechables y la copra. Entre 1960 y 1980, estas actividades perdieron auge por la extinción de las especies comerciales madereras y el surgimiento del chicle sintético. La producción de copra fue en picada debido al "amarillamiento letal" de las palmas de coco. En este escenario socioeconómico, las poblaciones comenzaron a explotar los recursos marinos por medio de la actividad pesquera. Para asegurarse sus derechos sobre el uso de los recursos se fundó en 1968 la "Cooperativa de producción pesquera Vigía Chico" y en 1970 se estableció la "Colonia Pesquera Javier Rojo Gómez" (Punta Allen) en Bahía de la Ascensión, el asentamiento humano más importante dentro de la RBSK (Brenner 2010). Punta Allen depende directamente de la extracción de recursos pesqueros (de la langosta principalmente) y de las actividades turísticas. En las Bahías de la Ascensión y del Espíritu Santo (ambas ubicadas dentro del polígono de la RBSK e incluidas en la zona Centro de pesca), predominan actualmente, el uso de casitas o sombras y la

captura con jamo como artes de pesca (Seijo 1993; Sosa-Cordero 2008).

Antecedentes

Para abordar las implicaciones que conlleva la delimitación de las reservas de la biósfera, se han desarrollado diversos trabajos que analizan la relación entre las sociedades humanas y el ambiente, introduciendo el análisis social y de la política en la comprensión de los conflictos que afectan el acceso y control de los recursos naturales. El diseño y la toma de decisiones sobre conservación en las políticas públicas han sido abordados desde diversas perspectivas; entre ellas, se pueden mencionar aquellas que toman en cuenta las luchas que surgen entre los actores implicados, la pugna entre intereses políticos y las visiones locales, las estrategias de resistencia hacia el discurso hegemónico y las implicaciones que esto tiene sobre el proceso de degradación de los recursos naturales.

Brenner (2010) identificó los actores sociales involucrados, sus intereses, estrategias, poder relativo y acciones dentro de la zona de la Reserva de la Biósfera de Sian Ka'an. Abordó el problema desde la perspectiva de la gobernanza ambiental y encontró que el mayor problema que enfrenta ésta, resulta de los intereses y acciones contradictorias que llevan a cabo los diferentes actores sociales. El autor propone que las ciencias sociales profundicen en la identificación de actores, intereses contrapuestos y conflictos socio-ambientales y que se dedique más esfuerzo en analizar debidamente los múltiples intentos llevados a cabo para conciliar y mitigar dichos conflictos.

Vaccaro y Beltrán (2009) analizaron la dicotomía entre los intereses locales y los intereses gubernamentales, en particular el papel del Estado sobre las políticas de conservación (monopolio de gestión) y lo que éste entiende por recuperación ambiental y el conflicto que se puede generar entre las visiones locales y las prácticas sociales. Es importante tener en cuenta esta dicotomía entre intereses en el momento de analizar la influencia que el marco institucional y las prácticas de los actores tienen sobre la implementación de las políticas públicas en el área de la RBSK.

Los actores sociales manifiestan distintas formas de respuesta frente al conflicto de intereses suscitado por los marcos institucionales que regulan el aprovechamiento de los recursos pesqueros. En un escenario de relaciones de poder asimétricas, la forma en que los actores implicados se resisten o responden a las formas institucionales de aplicación del poder, varía en función de la posición que ocupan en el juego. Sivaramakrishnan (2005) desde el enfoque de la economía moral, introduce en su análisis el concepto de transcritos ocultos, refiriéndose a las formas que tienen los campesinos para resistir la hegemonía. Desde este mismo enfoque, Edelman (2005) utiliza el concepto de pluralismo legal para entender la conexión de los campesinos con las instituciones y los mercados regionales. A partir de dicho concepto, se puede explicar cómo los diferentes tipos de normas que imperan a veces conviven pacíficamente y otras se enfrentan.

Estas distintas formas de abordar el problema del acceso desigual a los recursos, constituyen una parte importante de la propuesta teórica de la ecología política. Esta perspectiva me permitirá entender cómo los recursos pesqueros pueden estarse viendo

afectados, con énfasis en el análisis de las estructuras sociopolíticas que ponen en marcha este proceso y determinan sus resultados (Blaikie 1985; 1995; 1999; Blaikie y Brookfield 1987; Bryant 1992; 1997 y 1998; Bryant y Bailey 1997 citados en Brenner 2010).

Acercamiento teórico

En este trabajo se entienden las políticas públicas como las actividades materiales o simbólicas que gestionan las autoridades públicas (Kauffer 2002). Que una demanda devenga prioritaria en la agenda gubernamental constituye un proceso complejo en el cual una serie de actores con distinto grado de poder y acceso a los recursos toma posición y ejerce su influencia en la arena política (Horbath y Gracia 2010).

Para acercarnos a la problemática de la implementación de la política pública y la forma de acceso a los recursos, partimos del marco de análisis neo institucional que conceptualiza a las instituciones como las definiciones compartidas que los humanos usan en situaciones que se repiten y se organizan por reglas, normas y estrategias (Ostrom 2007). El neo institucionalismo reúne una serie de acercamientos que comparten la idea de que el comportamiento humano está condicionado por las instituciones formales e informales, independientemente de si éstas están o no relacionadas con el nivel gubernamental. Desde esta perspectiva, los intereses de los actores, se entienden como las motivaciones racionales que los llevan a tomar decisiones sobre cómo hacer uso de los recursos. Complementamos este enfoque introduciendo el análisis del campo político pues nos permite entender los conflictos

entre intereses materiales, las conexiones simbólicas entre recursos naturales y políticas públicas y los conflictos que surgen en estas relaciones (Poteete 2010). Este tipo de análisis examina las interacciones entre intereses materiales, organización política, competencia, uso y manejo de los recursos naturales.

Desde esta perspectiva entendemos los derechos de propiedad como una variedad de derechos y asignaciones a actores particulares o categorías de actores (Poteete 2010). A partir de este enfoque se puede entender la emergencia y el desarrollo de los derechos de propiedad y cómo los distintos niveles de asignación de los mismos influyen en la eficiencia y sustentabilidad del uso de los recursos naturales. En este trabajo delimitamos la objetivación de los derechos de propiedad en la forma de acceso a los recursos pesqueros definidos por la legislación mexicana; es decir, los permisos y concesiones de pesca formas que, a su vez, se insertan en el tipo de delimitación de uso de recursos bajo el objetivo de conservación, esto es, las áreas protegidas y las reservas de la biósfera.

El estudio de las políticas públicas se construye a partir de la diferenciación de lo público y lo privado, entendiendo que lo público, siguiendo a Parsons (2007 citado por Horbath y Gracia 2010), comprende aquella dimensión de la actividad humana que se cree que requiere la regulación o intervención gubernamental o social, o por lo menos la adopción de medidas comunes. Los recursos enmarcados en el perímetro de una reserva de la biósfera corresponden a una forma de tenencia colectiva, patrimonio de la nación, los cuales deben ser regulados públicamente por diversas instancias de tal forma que se garantice el correcto aprovechamiento y se promueva la conservación. El

análisis de las políticas públicas bajo la perspectiva analítica elegida nos permite entender la posición que adopta el Estado frente al discurso internacional que promueve la creación de áreas protegidas, así como la manera en que esta posición se traduce en instrumentos concretos de regulación del uso de los recursos enmarcados por las figuras políticas de las reservas de la biósfera. En este proceso, una serie de actores, con diferente grado de influencia y acceso a recursos de poder, toman posición y ejercen su influencia sobre la arena política (Horbath y Gracia 2010).

Para poder observar cómo se ponen en juego las relaciones de poder entre los diferentes actores, se requiere incorporar en el análisis la noción de territorialidad, que implica una serie de estrategias sobre el control de los recursos inmersos en un área geográfica determinada (Acheson 1974; Vandergeest y Peluso 1995; Natter y Zierhofer 2002). Así, definimos el estudio de la territorialidad como el análisis de las variaciones que tienen las instituciones políticas en los distintos espacios (Vandergeest y Peluso 1995).

De acuerdo con Sack (1986) la territorialidad implica una serie de intentos de un grupo o de un actor individual, para influir, afectar o controlar a los actores y los tipos de relaciones insertos en un área geográfica. Este proceso, implica delimitar o prescribir el tipo de actividades específicas que pueden permitirse dentro de ciertos límites espaciales. Este proceso que corresponde a un espacio bien definido va cambiando a lo largo del tiempo, de allí la relevancia de efectuar un análisis histórico de los procesos implicados en el territorio bajo estudio. Hablar de territorialidad, es hablar de prácticas de inclusión y exclusión dentro de un área geográfica y de una serie de regulaciones

sobre el acceso a los recursos allí enmarcados (Vandergeest y Peluso 1995). Es por esto que el estudio de la territorialidad nos ha permitido dar cuenta de la forma en que la política pública se implementa.

Objetivo general:

Comprender el proceso de implementación de la política pesquera en un área de conservación y el impacto que tienen los diferentes intereses de los actores implicados en dicho proceso.

Objetivos específicos

Explicar de qué manera la regulación pesquera afecta los patrones socioeconómicos y de uso de los recursos de las comunidades que habitan en un área de conservación.

Analizar las formas en que los pescadores locales se apropian de las políticas públicas y los mecanismos de reproducción de estas apropiaciones.

Pregunta de investigación

¿Qué impacto tiene la implementación de la política pública en el aprovechamiento de los recursos pesqueros por parte de una comunidad que habita en un área de conservación?

Justificación

Comprender el comportamiento de los actores implicados en las pesquerías, es la clave para tomar mejores decisiones de manejo de los recursos pesqueros. Las diferentes disciplinas que han abordado el tema, tienen distintos puntos de vista sobre cuáles serían las soluciones adecuadas para un manejo exitoso. Los ecólogos argumentan que es necesario crear redes de áreas marinas protegidas, los economistas neoclásicos, proponen crear mejores condiciones de mercado, y los sociólogos consideran que es mejor basar las estrategias de manejo en aspectos comunitarios. Sin embargo, hay pocos estudios que logren integrar las implicaciones socio-ambientales del ejercicio de las prácticas pesqueras y que profundicen en la estructura institucional de las pesquerías, el impacto que tiene la relación entre las normas locales, los instrumentos de regulación estatales y las recomendaciones científicas sobre el uso correcto del recurso en el éxito de las pesquerías artesanales. Cuando se buscan mecanismos para propiciar el éxito de las mismas, se pone mucha atención en encontrar artes de pesca que permitan realizar prácticas sustentables (desde el enfoque biológico) y en mejorar la organización social de las pesquerías (desde el análisis social).

Sin embargo, no se ha profundizado en el grado de conocimiento que los actores tienen de los mecanismos de la política pública, sobre los cuales pueden hacer uso en la organización de la pesquería. Elegí Punta Allen por ser la comunidad mejor establecida dentro del polígono de la RBSK, que cuenta con infraestructura turística y constituye un ejemplo, aparentemente exitoso, de aprovechamiento de sus recursos pesqueros y en

cuestiones vinculadas a la organización social. Me interesa abordar el marco de las negociaciones que surgen entre diversos grupos dentro de la comunidad; la forma en que se está implementando la política ambiental, mediante de los distintos instrumentos que regulan el aprovechamiento de los recursos pesqueros y cómo entra en juego el objetivo de conservación implícito en la figura de la reserva.

Para este trabajo, estamos considerando el éxito de una práctica extractiva según la capacidad organizativa que tiene el grupo para incorporar a su sistema productivo artes de pesca que tienen un menor impacto en el ambiente y de qué manera el grupo ha logrado mantener la productividad a lo largo del tiempo. Otro factor importante que tomamos en cuenta al hablar del éxito de esta cooperativa, es la capacidad de resiliencia³ que han tenido frente a las perturbaciones. Después del impacto del huracán Gilberto fueron capaces de enfrentar una deuda millonaria que los había dejado en la bancarrota, de levantar su producción y han logrado mantenerse como la cooperativa número uno en producción langostera del estado en los últimos 30 años (Sosa-Cordero et al. 2008). También es importante considerar el nivel de conocimiento que tienen sobre los mecanismos que la política pública les ofrece y que han logrado incorporarlos en su estructura institucional, construyendo así una serie de normas que aplican eficazmente en la producción.

ARTÍCULO SOMETIDO

El artículo fue sometido a Human Ecology

Research article

Territory, property rights and state regulations as factors of a successful fishery: a case study of Punta Allen in the Sian Ka'an Reserve, Mexico.

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Abstract

We conducted a case study of the success of the Vigía Chico lobster cooperative, in the community of Punta Allen located within the Sian Ka'an Biosphere Reserve. The fisheries concession, which is a right-of-use bounded by a protected area, has provided a series of tools to the cooperative that translates to proper management of fisheries resources in the area. Using an institutional analysis approach, we study the system of rights that allows the sustainable use of resources. In this article, we use the concept of territoriality, understood as strategies for territorial control over invested resources within a geographic area, thus implying a series of codes and regulations over the uses of resources within this territory. Territoriality revealed how relationships of power and control between the State and local stakeholders are built and contributed to the success of lobster fisheries for both the cooperative and the State.

Keywords

Artisanal fisheries, territoriality, property rights, fishing concession, protected areas

Introduction

The Vigía Chico lobster cooperative (SCPPVCh in Spanish), in the community of Punta Allen, has become one of the most successful lobster cooperatives in Mexico. To understand its success, we will employ the concept of territoriality, to analyze how the lobster cooperative, which is located in the Sian Ka'an Biosphere Reserve (SKBR), in 1993, received an exclusive concession to fish the spiny lobster *Panulirus argus* in the Bay of Ascension. While concessions, as a type of right-to-use, are regulated under Mexican law, its application is not an everyday practice in Mexican fisheries. The particularity of the fishing concession as a right-of-use in Punta Allen is a response to its common access. This concession was granted during a historic moment (1990s) when public policy in Mexico displayed a marked tendency towards deregulating access to extractive resources and support for private initiatives; however, in the State of Quintana Roo, cooperative fisheries remain the major players in the fishing scene.

We measure the success of the Punta Allen cooperative taking into consideration social organization, specifically what the ability to incorporate practices with minor environmental impacts, and the fact that it has been the number one lobster production cooperative in the State during the past 30 years (Sosa-Cordero et al. 2008). It is also important to consider the knowledge the cooperative acquired regarding the functioning and mechanisms of Mexican public policy and its ability to translate this knowledge in ways beneficial for the cooperative by building a set of rules that can be effectively applied to production.

Vandergeest and Peluso (1995) approach territoriality as a strategy for controlling resources. These authors focus on how given power relations between the State and local stakeholders within geographical boundaries are translated into rights of access to resources. From this approach, we focus on the form in which public policy is implemented from the official institutions that regulate access to resources within a defined territory and in which manner local stakeholders, through their everyday practices and institutions, participate in the appropriation of resources. According to Vandergeest and Peluso (1995), territoriality refers to communication between the boundaries that form a territory and the activities within that territory; thus, property rights serve as mediators in this communication process. In the case of Punta Allen, rights over

the use of a common resource are conferred upon a particular group of fishermen that extract the lobsters. In this community, we can observe a system of rights that have allowed the sustainable use of resources. These rights are regulated by state institutions, which structure the environmental and the fisheries policies in Mexico. The concession as a right-to-use, through the fishery cooperative, includes a set of official and local use regulations, how resource users are admitted or rejected and on the sale or non-sale of the resource (Kadekodi 2004).

Fisheries exemplify the implications that communal access rights can produce. Gallardo et al. (2011), in an analysis based on the theory of collective action, found that in the communities of Huentelauquén and Guayacán, Chile, the communal fisheries rights usage resulted in a socio-environmental success. The same authors argue that both the level of social connectedness and geographic location influence the differences in resource access for different territorial use rights (whether private or state). Likewise, Hilborn et al. (2005) compared the institutional structures of biologically and economically successful fisheries. They found that the main determinants of success were related to the institutional structure and the incentives that the participants receive from governmental authorities. These authors argue that the establishment of proper institutions for governance is a key factor for success, including a system of compensation, such that the welfares of the individual fishermen, managers and scientists are maximized through actions that contribute towards a socially desirable outcome.

Several studies have addressed access to fishing resources via concessions (Begossi 1995, Berkes 1985, Ramírez and Manzo 2004; Hilborn et al. 2005; Gallardo et al. 2011; Basurto et al. 2012) and found that groups granted with a concession over marine space or other extractible and renewable resources develop a sense of ownership that results in improved environmental management. Yamazaki et al. (2012) analyzed the impact of concessions on the state of the resource. These authors found that unlike a short-term right of permit, the long-term concession would allow fish stocks to recover and be maintained with low management costs, which would contribute to the success of a fishery.

Another important aspect to consider is that fisheries in Punta Allen developed within a conservation area, thus adding a series of regulations regarding resource use within the area's

borders. The idea of the biosphere reserve is role in the analysis of territoriality, as it is understood as a governmental strategy that allows experimentation and control over the use and conservation of natural resources. Biosphere reserves have become a mechanism of State power provoking conflicts and struggles as local communities are restricted in their access to the now protected natural resources (Zimmerer and Basset 2003; Vaccaro and Beltrán 2009). In the State of Quintana Roo, the creation of areas for conservation has influenced fisheries in beneficial ways. Hidalgo and Méndez (2007) found that the existence of councils and sub-advisory councils to assess natural protected areas—including the participation of fishermen's groups—have supported fishery co-management and represent strength with regard the control and monitoring of the extractive practices.

When analyzing the success of a common use resource, it is important to consider the influence of exogenous variables. These include the biophysical characteristics of the common-use resource (Ostrom 1990). The principal resource of the Punta Allen fishery is lobster, a benthic organism that permits low-cost capture techniques, easy access and a high commercial value and therefore grants security for its fishing efforts to the cooperative. The lobster fishery is of great economic importance for Quintana Roo. From 2000 to 2008, 165.1 tons of lobster were produced (tails and live lobsters), representing 40% of the total economic value of fisheries in the State (Sosa 2011). Lobster was the decisive factor and principal driver behind the formation of the first cooperatives in the State in the 1950s (Dachary and Arnaiz 1986). When these cooperatives formed, lobster fishing had a strong economic impact on the State. Another important aspect is that the community of Punta Allen has been geographically isolated from the State, which has helped the community's independent search for an organization scheme that suits their production mechanisms. Likewise, the geographic conditions of the Bay of Ascension have contributed positively to the management of the fishery resource. The Bay is surrounded by coral reefs that reduce waves and provide favorable conditions for lobster fishing (Cochran 1998).

Theoretical approach

For our reference point, we have chosen the institutional analysis of territorially, defining institutions as the shared conceptions that humans use in situations that repeat and that organize

by rules, norms and strategies (Ostrom 2007). In territoriality, property rights play a primary role in analyses and are understood as the variety of rights and their allocations to particular stakeholders or categories of stakeholders (Poteete 2010). In this article, we view property rights along the lines fisheries are treated in Mexican law: permits and concessions. Property rights are subsequently incorporated as a way to limit the use of resources as a conservation measure, and protected areas and biosphere reserves, for which the property rights lie with the State. The fishing concession is an example of a common property rights system characterized by well-designated access and use and managed by a defined user group. These rights include a set of rules that pertain to the resource involved, the user group, how group members are supported or rejected and whether the possession of these common property rights allows or prohibits the sale of the resource. This institutional framework allows us to determine how the groups or collectives can appropriate and exercise these rules. The “how” emerges from a common property right and is one of the key questions in this approach (Kadekodi 2004). In this article, we approach territoriality to study strategies of control for the resources within a geographic area (Acheson 1974; Vandergeest and Peluso 1995; Natter and Zierhofer 2002), codes and regulations over the use of resources within a given territory are indicators of how these relations of unequal power evolved and how mechanisms of control between the State and local stakeholders are solidified over time. What happens in the area before property rights are regulated? The land is legalized, the State legalizes property rights against the “others” and the community adopts the official institutions by incorporating them into everyday practices. In this case study, we show how the process of common property rights emerged, as it applies to a specific territory, and how a series of attributes developed that have influenced the success of the common property rights system in Punta Allen (Cole and Ostrom 2012). Of the proposed attributes by Cole and Ostrom the following ones can be observed in Punta Allen:

1. The group is accountable for relevant information about the status of the common use resource (CUR).
2. There is shared knowledge within the group regarding the benefits and risks of maintaining the *status quo* versus the implementation of a change in rules.
3. The group has generalized norms of trust and reciprocity.
4. There is stability in the user group structure.

5. The group does not discount the future because its members wish to live and work in the same area over a long-term period.
6. The group has rules regarding collective decisions that are considered legitimate by the same group.
7. Rules for monitoring and sanctions are available to the user group at a low cost.

Information sources

We conducted a case study on the Javier Rojo Gómez fishing colony (official name of Punta Allen), within the perimeter of the Sian Ka'an Biosphere Reserve, Quintana Roo, Mexico (Figure 1). To understand the territorial strategies that have structured the organization of the Vigía Chico Fisheries Cooperative, we combined a historical analysis of the national and local fishery policies and how these policies shaped socio-environmental relations with ethnographic fieldwork.

We reviewed 100 years of historical literature on public policy in Mexico, to which we will refer throughout the analysis. The objective is to understand the sociopolitical settings in which the fisheries of the State of Quintana Roo and, in particular, Punta Allen emerged, as well as the ways in which resource appropriation in a natural protected area takes place.

Ethnographic fieldwork was conducted from February to May and in July 2013. We conducted in-depth interviews with 30 members of the cooperative, using snowball sampling (Biernacki and Waldorf 1981). The total number of interviews corresponds to the number indicated by saturation according to Guest et al. (2006), who recommend a total of 30 to 50 interviews for ethnographic work, after having systematically documented the degree of saturation and variability in the course of thematic analysis. We interviewed leaders of the Cooperative Society of Fish Production (SCPP in Spanish) Vigía Chico and founding members and accompanied some of them during their working hours (off-season and the fishing season). During the ethnographic fieldwork, we not only spoke with leaders of the cooperative but also with some families who were opposed to the current Board of Directors in order to observe the degree of legitimacy of the shared rules. The ethnographic fieldwork included testimonies of local people who are not current cooperative members. Four semi-structured interviews were conducted with officials of

the National Commission of Natural Protected Areas (CONANP in Spanish), as well as an informal anonymous interview with an official of the National Committee of Fisheries and Aquaculture (CONAPESCA in Spanish). Members of non-governmental organizations that worked in the study area were also interviewed). Additionally we interviewed stakeholders who do not live in the community.

A review of the cooperative's historical documents was conducted and included records of the assemblies and meetings of the Board of Directors during the first 20 years of the cooperative in order to understand the way in which non-official institutions and relationships between the group and a variety of stakeholders of the state were consolidated, as well as the process of decision-making over time.

Analytical matrices were used to systematize the data, (Mariscal 2001) with the following categories: territory, property rights, institutions, governance and power. The time line technique was used (Nielsen and Reenberg 2010) to analyze at different historical periods over time, the appropriation public policy by local stakeholders.

Territory, property rights and state regulations

Settlement of the coast

The coastal territory initially drew the presence of the first lighthouse keepers in the area. The coasts of Quintana Roo were scarcely appreciated by foreign companies during the first decades of the previous century, and there were only a few attempts to extract sea sponges at the end of the 1800s (Dachary and Arnaiz 1992). The initial strategies of the state to manifest its presence in the territory focused on the protection of its sovereignty. At the beginning of the 20th century, the Mexican Navy was established in the coastal zone; the Marine Corps was formed mainly of fishermen from the Isla Mujeres (Dachary and Arnaiz 1992) who took advantage of the local resources (sea turtles and small-scale fishing) while simultaneously fulfilling the task of defending the borders against foreign nations. The establishment of lighthouses was included in this same public policy and was of great importance for the construction of this territory. Those

in charge of the lighthouses became the first settlers and were responsible for copra extraction. These first settlers were mainly farmers, fishermen and hunters; and their extractive practices created the first form of social organization in the territory (Dachary and Arnaiz 1986; 1992).

The beginning of fisheries in Quintana Roo

At a national level, fisheries consolidated during the 1930s and 1940s; however, in Quintana Roo, fisheries did not gain economic importance until after Hurricane Janet (1955) (Dachary and Arnaiz 1992). When Hurricane Janet hit the coasts, copra extraction was not an economic option anymore, given the destruction of most of the coconut palms and the territory became redefined. The first cooperatives of Quintana Roo consolidated after Janet. Although first efforts to encourage the creation of productive groups were made during the government of Lázaro Cárdenas (1934-1940)¹, it was not until the mid-1950s to the late 1960s that extractive practices were organized² around Fish Production Cooperative Societies inside the Territory of Quintana Roo (Dachary and Arnaiz 1986). The 1950s were of great importance for the development of the fisheries industry at the national level. For Mexico, the Second World War represented a new boost for the industry, due to the strong demand for these products by the United States for its domestic markets (Cruz-Ayala and Irgatúa-Calderón 2006). War technologies, which were subsequently applied in the industry, allowed the introduction of diesel engines to fishing practices. Migration from urban centers to coastal areas was promoted at a national level, and strong investments in port infrastructure were made within a territorial reorganization plan (Soberanes 1994; Cifuentes-Lemus and Cupul-Magaña 2002).

In Quintana Roo, at that time, settled population at the coast was isolated from the rest of the country. Socio-productive exchanges occurred through contacts with Cuban and Belizean fishermen who arrived by sea, and the populations obtained fishery products in exchange for goods that were lacking in fishermen's population of. Then Punta Allen was a small settlement

¹ The tenure of this president called the *Cardenismo*, is characterized by its policy of support for the working class, land distribution, the promotion of the cooperative movement and the nationalization of property (see León and Marván 1999; Semo 1993).

² The State of Quintana Roo, created from the free municipalities of Cozumel, Isla Mujeres and Payo Obispo, was a Territory from 1902–1917. In 1924, the Territory was dissolved and established anew as a subsidiary of the Federation until 1974, when Quintana Roo emerged as a free and sovereign State (see Dachary and Arnaiz 1984; 1990;1992).

within a copra plantation and was completely isolated from the national fishing industry, which was already industrialized. The Cubans suggested that the families living in Punta Allen should exchange lobster for products, thereby transforming a local product that was previously rarely used even for self-consumption, into a product with high commercial value. At that time everybody could fish lobster, there were no restrictions at all; extraction was performed mainly in areas close to the coast and the reefs and great efforts were not required to obtain the resource. As the exchange progressed, the Cubans explained to one of the fishermen how to use "shadows"³ to catch lobster.

Consolidation of extractive practices

From the 1960s to the end of the 1970s, national policies were focused on creating mechanisms that allowed local stakeholders to participate in the fishing industry, in turn creating state-affiliated bodies to support the extractive practices (Soberanes, 1996; Dachary and Arnaiz 1986). State owned banks such as Banfoco and Banpesca were consolidated, giving fishermen organized in cooperatives the necessary funds to consolidate fishing as an important commercial activity and allow the fishermen to buy tools necessary for fishing (Cruz-Ayala and Irgatúa-Calderón 2006). Fishermen living in the fishing areas become priority regarding the State policy of fishing industrialization (Soberanes 1994). In this scenario, the Fish Production Cooperative Society of Vigía Chico emerged in 1968. The Punta Allen cooperative arose at the precise moment at which the development of fishing as a commercial activity in the State began. Quintana Roo broke the isolation and integrated its territories. The consolidation process of the Punta Allen cooperative was sheltered by a national policy that favored the strengthening of production cooperatives; this policy sought to strengthen the domestic economy by creating solid productive groups that allowed for the integration of rural areas into national production. National legislation established resources of greater commercial value for cooperatives to use as a measure of protection against foreign companies (Soberanes 1994).

³ The shelters or shadows are made with concrete and represent an artificial refuge for lobsters. This fishing gear allows the selective capture of live lobster, decreasing damage to juveniles and egg-bearing lobsters, which are returned to the sea during fishing season (Seijo 1993).

At this time, local fishermen used the technique of “shadows” introduced by the Cuban into local lobster production, which involved investments of materials, manpower and time during the "harvest", and disputes over resource ownership emerged. A fisherman placed his “shadows” in the sea, and others followed him to see where to place and subsequently "harvest" their own “shadows”. To resolve this internal conflict, a fisherman (former farmer) who comes from the municipality of Felipe Carrillo Puerto decided to establish a fishing zone as a "parcel" in the sea. The others decided to imitate him and established that each would have an assigned area in the sea for lobster fishing. In the following years, the Punta Allen community was able to enjoy the national fishing boom that exploded in the 1980s. During this decade, the cooperative movement in Quintana Roo had its greatest boom. Community modernization was strengthened by the Federation of Cooperatives in the State, with Banpesca in charge of the investments. Lobster extraction yielded impressive volumes. At the federal level, the intent was that fishing would be practiced by a greater number of people, and the first regulations appeared that included private initiatives in the granting of extraction concessions, although the agricultural core, where the activity was centered, was in charge of granting conformity (Dachary and Arnaiz 1986).

Redefinition of local institutions

When Hurricane Gilbert hit the coast of Quintana Roo in 1988, the direction of local fisheries unexpectedly changed course. At the federal level, the conceptualization of fishing shifted, and the Exploration and Assessment of Fisheries Resources of the Exclusive Economic Zone and Territorial Waters⁴ program began. The intent was to estimate the resources that Mexico could extract from exclusive economic zones and territorial waters. With this measure, the State changed the discourse from resource protection and regulation to opening and deregulation. Among the resource inventory, trade values were assigned and changes were introduced to fisheries legislation to permit the participation of the private sector, as well as foreign companies (Soberanes 1994). The State also conducted an inventory of the state-owned assets and

⁴ In 1983, during the presidential tenure of Miguel de la Madrid, the "Program of Exploration and Assessment of Fisheries Resources of the Exclusive Economic Zone and the Territorial Waters" began with the participation of the Secretary of the Navy, the National Council of Science and Technology, the National Cooperative Conference of the Mexican Republic, the National Chamber of the Fishing Industry, the state-owned company Mexican Fishery Products, the National Autonomous University of Mexico and the National Polytechnic and other universities in the province to estimate fishery resources (Soberanes 1994).

commenced their sale. Until this time, the state-owned companies Mexican Fishery Products and Ocean Garden⁵ had harbored small fishery production in Quintana Roo and were responsible for most of the production and distribution to packing companies (Soberanes 1994). Therefore, this new state deregulation policy forced local fisheries to identify mechanisms with which to sustain themselves in the international market. The Punta Allen cooperative was faced with one of its worst financial crises in the 1980s. A few years before the impact of Hurricane Gilbert (1988), the cooperative lived in the boom of its productivity. According to the fishermen, the financial waste was excessive, and people in the community were not concerned with investing their capital or consolidating family savings. The cooperative was also not worried about good money management and therefore its expenses were incommensurable. The cooperative directors decided to build a packing plant in Tulum to receive, package and market all products from the fishing cooperatives in the State. It was to be built in two stages: an ice factory and baler at first, followed by the marketing offices.

When the first stage was completed, managers at the banks provided credit for the second part all at once in accordance with advisers. Construction began, after which the hurricane hit. Lobster extraction plummeted, the debt became unsustainable and the partners learned the financial situation of the cooperative, which had been kept secret by the accountant and the directors. Given this background, no one wanted to take charge of the bankrupt cooperative, and its responsibility was offered to the current president of the cooperative. The cooperative's debt exceeded its productive capacity, and many members began to leave the community. Others, who despaired their low incomes, sold lobsters outside of the cooperative. This clandestine selling became a problem that would lead to the ruin of the cooperative.

Board of Directors began to apply a very firm policy and initiated a wave of mass expulsions of all members who violated the internal laws. The list of partners decreased from approximately 120 partners to 70. After five years, the cooperative managed to pay off their debt to the state-owned company Ocean Garden, as well as to the Bank of Mexico, and decide to freeze new member registration. This meant that all members who left the cooperative during the crisis lost

⁵A large proportion of the informants spoke about the importance of state-owned company in the development of the fisheries in the State.

their right to return, and their children also lost the right to aspire to partnership. After the debt, only the children of active members were allowed to become partners. The lobster fields could only be sold between members of the cooperative, and the cooperative regulated all transactions. The selling of the "lobster field" did not refer to the marine parcel, but to the "shadows" that were invested in the spaces assigned to each partner. The cooperative managed to emerge again, thanks to this process of restructuring the internal rules of operation. This work reorganization had implications with regard to the way that fishery resource property rights were protected and subsequently allowed the owner to fulfill the necessary requirements to obtain a fishing concession, despite the national policy changes that were occurring.

The biosphere reserve and local practices: redefinition of territory

In the 1980s, the national environmental policy underwent substantial changes. At the international level, a new definition of the relationship between the environment and society appeared in the public discourse after the United Nations Earth Summit (1992). The following four dimensions were integrated: respect for ecological integrity, changes in the economic paradigm, justice with social equity and the participation of society in decision-making (López 2007). Within this framework of public policies, the Sian Ka'an Biosphere Reserve was established in 1986 (DOF, 1986) A process of territorial re-signification broke out and gave life to one of the most successful fisheries in the country, which resulted from the systems of property rights over resources and the conceptualization of space. Punta Allen remains within the perimeter of this protected area. The relationship between the community and governmental bodies, who were working on the reserve implementation at that time, is conflicted. The local stakeholders, who built the territory with the tools offered by public policy for extractive material, could not accept this new conceptualization of space, which they interpreted as restrictive and taxing. The new environmental regulations had a strong impact on property rights. These regulations dictated that the area where the community was settled comprised federal land. From the State's point of view, the fishermen never completed the full process to obtain ownership of the land where they settled their homes. From the local perspective, they had won the space, which was rightly theirs. The governor, Javier Rojo Gómez (1967-1970), had legitimized this ownership by granting land to establish the colony of fishermen. More than 25

years after the establishment of the reserve, local villagers cannot understand that the land they owned, which was initially granted to them, is now held on the basis of an "occupation permit", rather than full possession of the land.

In the 1950s, 1960s and 1970s, turtle, shark and caiman fishing were practiced, as well as scaly fish extraction; although these were not the main activities, they represented a significant portion of the revenues generated during the off-season for lobster. However, once the reserve was established in the 90's, government efforts focused on the diversification of activities. The intention was for extractive fishing to cease as the main commercial activity, to be replaced by other activities with lesser environmental impacts. Therefore, during that decade, the National Commission of Natural Protected Areas (CONANP in Spanish) began a constant effort to convince the fishermen to stop fishing for turtle and caiman and abandon their fishing nets by promoting alternative tourism. This initiative promotes tourist cooperatives that run observational tours, and some of the fishermen constituted the first tourist cooperatives in Punta Allen and Vigía Grande. Next came the Gaytanes and Las Boyas cooperatives. More recently, the Nativos de la Bahía and the women's Orquídeas de Sian Ka'an cooperatives were formed (the latter is not yet operating tours). After a long process of negotiations and exploration into tourist activities, the fishermen decided to withdraw the use of fishing nets because of their impacts on the populations high commercial-value sport-fishing species like ladyfish (*Elops saurus*), snook (*Centropomus spp.*), permit (*Trachinotus falcatus*), and dolphinfish (*Coriphaena hippurus*). In the 1990s, tourism was already complementing family incomes, but did not emerge as the activity with the most significant economic benefits for the community until the year 2000. Some fishermen combined both activities, while other members simply left fishing activities.

Academics have been an important factor in the process of property rights delimitation. At the beginning of this century, the cooperative requested the support of some of the universities and research centers that had worked in the area. Using new technologies, a map of all the lobster fields was finalized. Previously, the local fishermen had delimited the boundaries of their lobster fields with buoys or sticks. Their profound knowledge of the marine space allowed them to locate the exact locations of their traps; however, they had never understood the form of each field or the actual dimensions. Academics taught them how to use global-positioning systems (GPS),

allowing the fishermen to improve their surveillance systems and resource usage. Academics systematized the knowledge about the behaviors of lobster populations and performed bathymetries⁶ that were subsequently incorporated into a database. The fishermen continued to expand their capacity of knowledge regarding the use of the primary resource and the environment in which fishing developed; this gave them greater negotiating power and control against the other stakeholders involved in territory management.

“...through SISIERRA⁷, a map was made using GPS, and it was from that point that we learned the forms of our fields... if you were my neighbor in my limit, I knew you were my neighbor and where you were, but I didn't know about the others; when we did the mapping in 2001, each of us saw, this is something that we had always wanted, that information could be provided to us (by the academics)... so when this young man showed us the GPS, boom! Our eyes opened...the objective was to map, but now we use the GPS to locate the lobster shadows...”

(Ramiro, Member of the Board of Directors, personal interview, March 6, 2013)

Under the influence of the external stakeholders, the fishermen decided to change their fishing gear by leaving the hook behind and using the *jamo* instead⁸. This was due to an observed increase in the commercial value of the product when they made these changes. All of these processes resulted in a very particular form of territory conceptualization. The Reserve came to establish a type of invisible lock that protected the local organization and their property rights over the fishery resources. Over time, a series of tourism cooperatives emerged to regulate the area's resources, and these are strengthened by the decision-making capacities acquired by the local community regarding their uses.

The fishing concession and its impact on access to resources

⁶ The bathymetry is the relief of the seabed, its depth contours.

⁷ SISIERRA was the name of a research program founded by the National Council of Science and Technology (2001)

⁸ The *jamo* is a net that is used to collect lobsters without injury. It resembles a butterfly net, but it is woven from very strong fishing line.

After nearly a decade of influence by the work of the Sian Ka'an Biosphere Reserve (through ongoing workshops and talks with fishermen), along with the internal processes of restructuring property rights regulations, the training provided by NGOs and exchanges with several academic institutions who saw an opportunity for scientific experimentation in Punta Allen, extractive production acquired great recognition at the national level for the sustainability of its practices. As we mentioned at the beginning, the Fisheries Act of 1999 recognized two types of usage rights for fishery resources, permits and concessions (DOF 1999). The radical differences are the temporality of rights and forms of access. Concessions are granted based on an evaluation of the results according to technical and economic studies, as well as the amount and recovery of the investment, and can be granted for up to 50 years. These are generally for benthic resources (such as lobster) in defined geographic areas (Ramírez and Manzo 2004). Permits are granted for smaller investments and do not require technical and economic studies. In this case, only the nature of the activities is evaluated, and the property or legal provision of the required fishing gear and vessels must be shown (1999 Fisheries Act regulations). While the policy at the federal level showed a trend towards the deregulation of resources and the inclusion of private capital in extractive practices, the fishermen's cooperative in the Punta Allen community received an exclusive 20-year concession for lobster fishing in the Bay of Ascension. The Vigía Chico cooperative received this right because of their internal organization and trading capacity and the support offered by various non-governmental and academic organizations. The fact that this cooperative received this right is highly significant, as it provides the local fishermen with tenured security of its fishery resources and the ability to develop future strategies to perpetuate fishing in the area.

“...there is a lot of private initiative behind these concessions, so even if you've had it, it could happen. Although I have lived here for years, I will go into tourism, but if I lost my concession...it could happen even if I have the concession I could lost it, if I didn't care for it; it has a life, it expires...it's not as simply like I want it and it is given to me. You have to fill certain requisites...but there are some interested people...the director (of the Reserve) already mentioned to us that there are people behind them (for concession)...then anything we fail to do...” (Ramiro, Member of the Board of Directors, personal interview, april 13, 2013)

The concession allows local fishermen to reinforce their surveillance systems and constantly pressures State authorities to accompany them in this process. Local stakeholders acquire the ability to participate in the defense of national sovereignty over the local territory, thus obtaining security over the organization of extractive practices. The maritime space (the Bay of Ascension), which was concessioned as a common property to a productive social organization, then becomes the point of interaction between the various local stakeholders (tourism cooperatives, fishing cooperatives, non-governmental organizations, academia) that harbor a conceptualization of the resource, resulting in sustainable management practices.

"...we cannot detain a person because we are civilians, so when we go about our operation, we bring the military, as clearly we are civilians...[the military] are entitled to detain you; we cannot put anyone in jail and much less detain them, such as a pirate...By boat, we operate, dragging and towing the boat, and bring them up here...with the Marines... since we left operations, we have to climb three elements. We are going to go prepared, because we can't go find them and then later bring the Marines; all at once, three marines or four to go..." (Rodrigo, founder, Member of the Board of Directors)

The territoriality timeline presented in Fig. 2 use general information from the fieldwork and historical literature reviewed and it serves to summarize the main events and trends involved.

Governance and power

While the fish stocks in the rest of the country were taken as free access, the geographical condition of the fishing area (a difficult-to-access bay in a sparsely populated territory), bestowed a sense of collective ownership of the resources, which was divided internally (based on reinterpreted peasant traditions in the lobster fields), thus facilitating resource extraction from the very beginning. This form of territory organization has been maintained over the years, despite the changes to public policy, thanks to a complex institutional structure that has managed to include a variety of state regulations in the local practices. When the first settlers of the fishing

community settled in the area, the control of resource access was organized in three production groups. There were three local leaders with different views about how fishing should be organized; however, because of the isolated conditions in which they lived, the integration of the three groups was forced in order to market the product and acquire the necessary subsistence food for the settled families. Families were formed in that area and currently remain powerful in the community. The first leader and founder of the community came from a Spanish family and had little education, but a great ability for organizing economic resources. The second leader came from a tradition of fishing that was formed by the cooperative movement. He had participated in the formation of the Cozumel cooperative and because of conflicts with this same cooperative, decided to separate and go to Punta Allen. This second leader was the main driver in the formation of the local cooperative as a type of work organization. The third leader came from the peasant tradition and was recognized in the community for his conciliatory abilities; therefore, he managed the more diplomatic efforts with the governmental organizations.

Once this cooperative was formed, the extractive practices were organizing themselves into working groups. While delimiting the lobster fields, fishermen who belonged to one of the three major groups managed to defend their chosen marine territories and consolidate their ownership.

“When we began to divide the sea...it was terrible, there were fights in the cantina; so that it wouldn't happen for too long, I made groups...you know, don't grab this plot just for yourself, divide it among four; so, when they fight with you, you are going to fight as a foursome...but if you were alone, they would plaster you in the cantina. They made groups...you are talking about how you are going to fight six people, and I do not know if you understand how the strategy works...” (Rodrigo, Member of the Board of Directors, personal interview, April 20, 2013)

This mixed system of private-common property laid the foundations for the exercise of power in the community. Although they comprised a group under the legal title of a cooperative, the internal organization responded to the logic of small investors. Each group leader provided input and made investments so that his team could work. Little by little, the leaders began to invest in the fishermen's boats lobster shadows by integrating the production costs and the proportion of

the costs generated by the construction of the lobster shadows. In the early years of the consolidation of the cooperative, the group leader decided how much the workers were paid per kilo obtained and the payment of the total obtained by his group, which was given to him by the cooperative, and was then responsible for paying wages to his workers.

As the years passed and the cooperative was consolidated, the families of these three leaders became the area leaders. They were responsible for negotiations with governmental institutions, participation in academic projects and decision-making regarding the manner in which access to resources in the zone is allocated. The same leaders that formed the fishing cooperative are those who have created and managed the tourism cooperatives that now carry greater weight in the local economy. The cooperative, even though it has been invalidated by State policy⁹, continues to be the only way in which the community can conceptualize the social work organization. Given the isolated conditions in which the community lived for many years, the fishing cooperative was the main stakeholder that organized the social life of the community. Therefore, the cooperative laid the groundwork for the form of social organization that surrounds work. Tourism cooperatives have even formed an alliance of cooperatives, representing the greatest form of negotiation between the Reserve and the local community. This entity was able to maintain itself and consolidate its power because, in the beginning of cooperative fishing, the founding leaders decision-making abilities were legitimized by support from State regulations. The community, which mainly comprised fishermen and remained isolated, knew no other type of exercise of power for many years. The community managed to obtain the concession of the Bay, lending security to their extractive work, in addition to securing tourism activity and defending against the invasion of private tourist operators. Concurrently, the settlers do not possess title deeds for the land in which their homes are settled, a fact that has allowed the continuing governance of the community by the founding families, as the only way of holding a resource rests on the marine parcel and not on the land where the house sits. The community “harvest the sea”, not the land, and as such the productive activities, which are based on social organization, depend on this holding. The founding families are the major owners of the lobster

⁹ In 1992, during the Salinas de Gortari government (1988–1994), the Fisheries Act included active private sector participation in fishing extractive activities. The species reserved for the use of cooperatives disappeared from the legislation and a new regime was designed to grant concessions, permissions and authorizations, whereby these rights of use could be transferred to private investors. Additionally, early bids began for the sale of the state-owned Ocean Garden and Mexican Fishery Products (Soberanes 1994; Cifuentes-Lemus y Cupul-Magaña, 2002).

fields, and those who manage the fields are the most consolidated productive groups; this is why their voices carry greater weight during decision-making. The Sian Ka'an Biosphere Reserve has implemented a protection policy over the possession of the property rights in the urban area and relies on monitoring conducted by the locals to protect its territory from invaders (in both the maritime and terrestrial spaces).

At one time, the Federal Cooperative Law (1938) served as a basis for regulating practices within the community. However, this was not an easy task. The low education level of the majority of the fishermen in the cooperative and the isolated conditions required constant trips to the State capital (Chetumal) to ask governmental authorities to serve as arbitrators in many of the discussions. The State began to grant these leaders, who held administrative positions on the Board of Directors, legitimate power.

“before, no, we did not carry out our responsibilities because we didn't know about the performance of our activities, our responsibility...we always went and were told ‘that's what conciliation and arbitration are for, conflicts...the surveillance guy, that's his job to see that all the committees work well, and those that don't, those are your duties’...” (Rodrigo, founder, Member of the Board of Directors, personal interview, april 20, 2013)

This double legitimation of authority figures ensured that interpretations of the Cooperatives Act would become instrumental to the regulatory practices of the community¹⁰. In this way, this form of social work organization became "the way" of organization. Tourism, which later became the more important economic practice in the community, is regulated by this set of rules. The original leaders of the fishing cooperative continue to hold power elsewhere in public life, and the descendants of these leaders sustain this system of power transference. Governmental organizations collaborate with the cooperative because it has managed to implement sustainable extractive work and help with the task of surveillance at a lower cost to the State. Local fishermen have firmly supported the surveillance system because the concession of the Bay, which was granted by the State, provides them with security regarding the resource and protects

¹⁰ For example, the law states that any member of the cooperative that violates the interests of the group can be expelled from the group. Federal Cooperative Societies Act, 1994. Art. 38.

their internal regulations.

“...we send people with jurisdiction to do so, because we have no jurisdiction and the laws say that we can't stop anyone who is not inside our house, we have to snitch...we have the habit of taking care of our interests...the police do not come to take care of my house, why don't they come?...you're not going to wait for the police to come and take care of your home, you have to do your part, you have to have your screen...” (Javier, founder, Member of the Board of Directors, personal interview, may 29, 2013)

A successful fishery resulting from the process of territoriality

At a policy level, it is interesting when the State grants a concession for the extraction of a resource within a perimeter reserved for conservation. Since its first conceptualization, the Reserves were designed as laboratories for sustainable living in which academics and the government could test theories and conduct sustainability projects (Lopez 1993). Originally, the idea emerged as a response to the infeasibility of natural parks administration. The discursive intent was to integrate areas designated for conservation and economic activities that involved the original communities to enable these communities to remain on their land. However, in reality, these experiments have failed in many cases (Vaccaro et al. 2013). In contrast, the Sian Ka'an Biosphere Reserve is strategically located in the Mesoamerican corridor and partakes of many international funds; it is also located aside of the most important tourism corridors in the country, the Maya Riviera, which allows alternative tourism activities and thus an influx of goods that are important to local communities. Additionally, the settlement process prior to the delimitation was not very rapid, given the socio-environmental conditions of the area. These conditions led to a scenario in which the three following policy configurations of space and resource access could be woven: the biosphere reserve as a territorial strategy, the fishing concession as a community right and the Cooperative as a form of social organization. In Punta Allen, we can observe an example of how a local community manages to obtain a few public policy tools, translates them into the language of local practices and thus ensures its perpetuity, despite the discursive changes at the national level. We have analyzed how the configuration of this territory gave life to a particular area in which public policies are integrated with local practices. It is also important also for us to

consider how this group was able to confer perpetuity upon the social order and how these social processes sustain the success of the fishery.

In Punta Allen, we can see how a series of attributes were configured, which Ostrom (2007) defines as indispensable for the successful management of common-use assets. For example, the constant presence of academia exists to legitimize the governmental strategy for conservation and also to act as a mediator of the community's interests in front of governmental agencies. The acceptance of a smaller lobster size exclusively for the Sian Ka'an Biosphere Reserve (13.5 mm) into the National Charter of Fishing resulted from the legitimacy of the local practices and the fishermen's knowledge about their resource, which was backed by scientific knowledge. We can see that the interactions between local fishermen and academics regarding the common use resource count as valid and reliable indicators that allow monitoring of the resource status, yielding a greater management ability and a better position for negotiations with other involved stakeholders. At the same time, the group's knowledge about the characteristics of the resource makes them aware of which practices might affect both the resource and the group's existence over the long term. The concession and the protection exercised by the Reserve over the area foster a sense of attachment and belonging to the fishing community (see Ramirez and Manzo 2004; Gallardo et al. 2011). This fact, together with the long-term and renewable status of the fishing concession, allows the group to conduct prospective evaluations and make lower discounts towards the future because the group members aim to live and work in the same area for the long term (Cole and Ostrom 2012).

"...there are clauses that we should never violate. If we have properly captured during the 20-year period, I believe that, yes, it is certain that the government will reauthorize us, mostly because we are respecting the size limits; I think that the concession being renewable speaks for itself..." (Javier, founder, Member of the Board of Directors, personal interview, May 29, 2013)

We can also see that the group contains mechanisms of reciprocity and trust that are considered legitimate (Cole and Ostrom, 2012). The delimitation of the lobster fields and the creation of working groups allowed them to create a basis for exchanging work and knowledge, which rotate

during fishing practices. On a given fishing day, the group works in one lobster field, while on another day they work in another field, and the agreements made internally with each working group are validated by the cooperative during the assemblies. On the other hand, the current Board of Directors, which has worked within the same structure for 25 years, has managed to create an administrative system for the resources, most of which are trusted by the fishermen. This is important because it reflects the effectiveness of the operational activities and the health of the cooperative's finances. Therefore, there is a common understanding within the group with regard the benefits and risks of maintaining the *status quo*, in contrast to the implementation of a change in rules.

Concurrently, a code of penalties and rewards (Cole and Ostrom 2012) was created as a result of the negotiations and reconfigurations suffered by the cooperative after the collective debt. After the wave of member expulsions, effective internal security mechanisms were created by the cooperative as a result of merging the tools offered by government institutions. When the internal regulation of 12 basic points was established and the mass expulsion of members who did not meet the regulations commenced, the Board of Directors used the Federal Law of Cooperatives in order to win against demands made by the expelled members. Thus, by combining the internal rules validated by the law with the use of public institutions, the cooperative managed to introduce an order that works to this day. These rules were not only imposed by the Board of Directors, but were grounded on practices that were built throughout the long history of the group and accounts for the legitimacy of the rules of collective choice. The cost of breaching the rules is much higher than that of following them for the common good. If a partner does not follow the code, he is expelled, and his children also lose the right to continue fishing. Currently, no aspiring fishermen are allowed entry, unless their fathers are active partners or partners who retired legitimately from the group. This provides stability to the structure of the user group.

"...we do not wait for security to go and take care of our land, we cannot do that. Security might be lazy, or doesn't work; he is not God. You have to take care of it, you have to accuse. The problem that others have is that they don't accuse, and they say 'I don't want to make enemies, etc., etc.'... you can't do anything like that... so then we made a culture of accusers..." "I saw you, you were there in my trap and another's trap", there is no lone ranger

defending alone and doing justice. Yes, it is true, he has a family, but he should have thought of that first...this would have helped, there were like 200 rules and we followed 12; none of the 200 were followed. Now all of them are." (Javier, founder, Member of the Board of Directors, personal interview, May 29, 2013)

Conclusions

We observed that Punta Allen is an example of changes in territoriality over time and variability in the conception of space and permitted activities, as well as the regulations that arise over access to resources. In the 1980s, a number of regulatory models emerged that concerned the use and conservation of natural resources. For example, in Brazil, the idea of "extractive reserve" emerged (Fernsald 1989; Brown 2000; Hall 2004) to regulate the participation of local groups in forestry activities and land use activities, both overall and when logging were not inscribed in everyday practices. The result of combining a territory designated for conservation with the granting of rights for long-term extractive use gave way to a similar model in our study area. Although the idea of extractive reserve does not exist as such in Mexican legislation, the everyday practices, combined with the existing public policy mechanisms, came to define the relationship between the community and the resource.

Today, fishing in Mexico presents many challenges. The granted fishing permits are applied to the entire Mexican coast. The government's monitoring efforts are insufficient. We have an institutional apparatus that has been unable to meet the challenges involved with fishing activities. However, despite the deregulatory policy, the undoing of the cooperative model and the pressure exerted by private initiatives regarding access high commercial-value resources, we are faced with a clear example of how legislation can create mechanisms to support successful management; however, the implementation of these mechanisms does not always translate into successful cases. The key here is the way in which the community has managed to use these mechanisms and how the different stakeholders play their roles in a territory of high economic importance on the national level. The Punta Allen fishing cooperative is a living example of how access to common use assets might be used in such a way that is successful and, in turn, how extractive practices can exert relatively minor impacts on commercially important resources.

Currently, we face the challenge of extrapolating this methodology to assess the statuses of other fisheries with these conditions. It is necessary to analyze whether this reality is present throughout the State and to ask ourselves whether the allocation of fishing concessions and protection, granted by the Reserves to the territory, is the key to better marine resources management.

Acknowledgement

To Biol. Angel Omar Ortiz, Director of Uaymil Wildlife Protected Area, and Sian Ka'an Biosphere Reserve for providing permission to conduct this research, and to Biol. Yadira G, for all the facilities provided to complete fieldwork. To The National Council for Science and Technology (CONACYT), for partially finance fieldwork through a grant provided by its Basic Science Project 129323: Answers and experiences of social innovation to the structural crisis of wage employment. To Holger Weissenberger for making the map of the study area.

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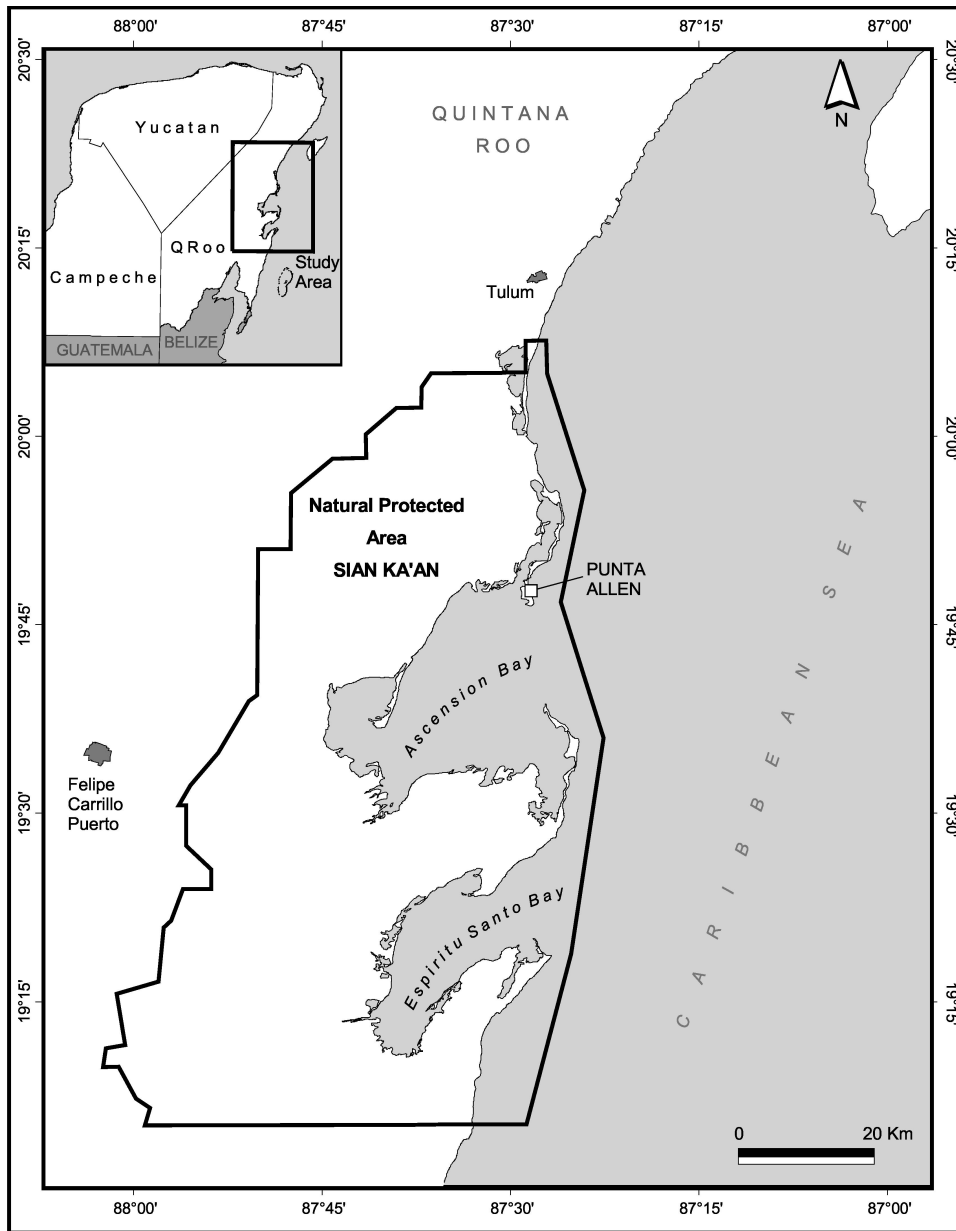
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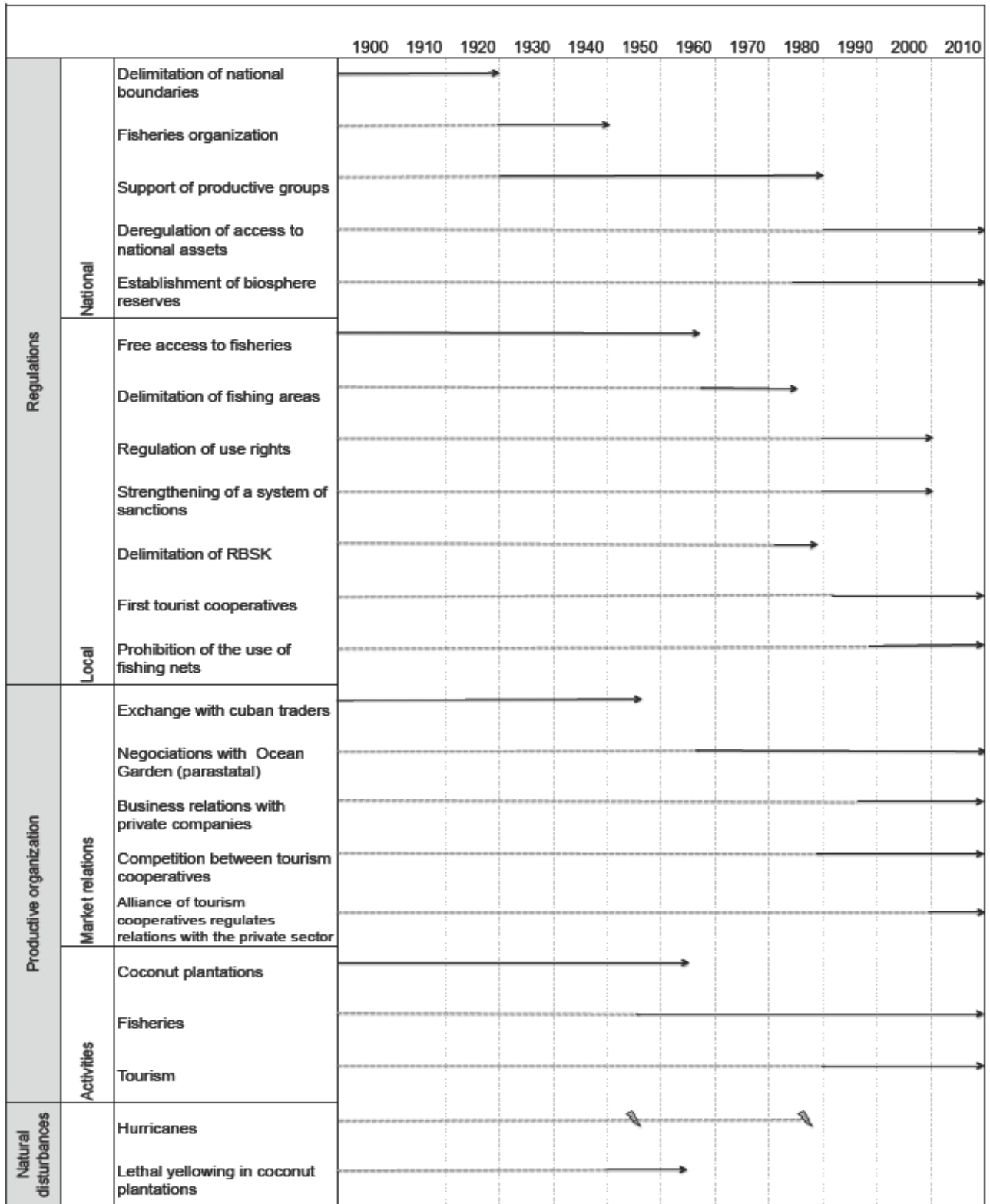
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Figure 1 Location of the study area



Holger Weissenberger. November, 2013

Figure 2 Territoriality time line



Conclusiones generales

Los recursos enmarcados en el perímetro de la Reserva de la Biósfera corresponden a una forma de tenencia colectiva, como patrimonio de la nación; deben ser regulados públicamente por diversas instancias de tal forma que se garantice el correcto aprovechamiento y se promueva la conservación, protegiendo el interés colectivo nacional. Sin embargo, el control de los recursos ubicados dentro de los perímetros de las áreas protegidas del país se ejerce de manera diversa, según la posición geopolítica de cada reserva. La Reserva de la Biósfera de Sian Ka'an está ubicada en un área estratégica para el desarrollo económico del país. El Estado adopta una posición de manejo de un territorio frente al discurso internacional que promueve la creación de áreas protegidas y esta posición se traduce en instrumentos que regulan el uso de los recursos enmarcados por estas figuras políticas: las reservas de la biósfera.

En este trabajo, a partir del análisis de la territorialidad, logramos comprender cómo se instrumentalizan y el impacto que han tenido en la forma de concebir y utilizar los recursos por parte de los actores implicados en un área de conservación. Punta Allen es un ejemplo de cómo el Estado adopta una posición de manejo de un territorio, haciendo uso de la política internacional ambiental y crea estrategias de territorialidad que van cambiando a través del tiempo. Aquí podemos ver cómo varía la concepción del espacio y las actividades permitidas dentro de los límites de la Reserva; así como las regulaciones que surgen sobre el acceso a los recursos. En la década de los ochenta surgieron de figuras políticas de regulación del uso y conservación de los recursos naturales. Por ejemplo, en Brasil, surgió la figura de "reserva extractiva"

(Fernsald 1989; Brown 2000; Hall 2004) para regular la participación de los grupos locales, en tareas de aprovechamiento forestal, siempre y cuando no hubiera tala . El resultado de combinar un territorio designado para la conservación con el otorgamiento de un derecho de uso extractivo a largo plazo da forma a un modelo similar en nuestra zona de estudio. Si bien esta figura de reserva extractiva no existe como tal en la legislación mexicana, las prácticas cotidianas, combinadas con los mecanismos existentes de la política pública, fueron delimitando las relaciones de la comunidad con el recurso.

Hoy la pesca en México presenta muchos retos. Los permisos de pesca que se otorgan tienen aplicación en toda la extensión del litoral mexicano. Las acciones de vigilancia que realiza el gobierno, son insuficientes. Tenemos un aparato institucional que no ha podido dar frente a los retos que la actividad pesquera implica. Sin embargo, a pesar de la política desregulatoria, la desvirtualización de la figura de la cooperativa y la presión que la iniciativa privada ejerce sobre el acceso a los recursos de más alto valor comercial; tenemos frente a nosotros un ejemplo claro de cómo, la legislación ha creado mecanismos que pueden dar sustento a un manejo exitoso; sin embargo, la puesta en marcha de estos mecanismos no siempre se traduce en casos exitosos. La clave aquí es la forma en que la comunidad ha logrado hacer uso de ellos y el cómo los diversos actores implicados han desempeñado su papel en un territorio de alta importancia económica para el país. A su vez, la cooperativa pesquera de Punta Allen es un ejemplo vivo de cómo el acceso a bienes de uso común, puede darse de manera exitosa y a su vez, cómo las prácticas extractivas pueden tener un impacto relativamente menor, sobre un recurso de importancia comercial.

El reto consiste en comprender que las mismas reglas institucionales pueden tener diferentes efectos sobre la gobernanza de los recursos en función de las variaciones en los contextos biofísicos, sociales, económicos y culturales y encontrar la forma de sistematizar los elementos que permiten el éxito de las pesquerías, a pesar de estas variaciones. Uno de las líneas que podría seguirse para el abordaje académico del problema sería analizar en qué medida el establecimiento de zonas para la conservación y el otorgamiento de concesiones a las cooperativas puede influir en el éxito de las pesquerías de una región.

Aspectos Éticos en la investigación

El proyecto no requiere colecta o manejo de organismos. No se contemplan conflictos de interés; sin embargo, se han considerado las implicaciones relativas a la propiedad intelectual, autoría y créditos, por lo que se hace referencia a los autores que desarrollaron la metodología en la cual se basa este proyecto.

Para la realización del proyecto se contó con el conocimiento y aprobación de las autoridades de la comunidad de Punta Allen, así como el permiso de trabajo y extracción de datos por parte de la Comisión Nacional de Áreas Naturales Protegidas. Se han utilizado seudónimos al referirnos a los informantes clave, para mantener su anonimato.

Notas

¹Tomado de CONABIO, www.biodiversidad.gob.mx/publicaciones/.../reservasBiosfera3.pdf Consulta: 12 de marzo del 2012 y Entrevista de trabajo de campo preliminar a informante clave, agosto 2011, Punta Herrero.

² Entrevista a informante clave en trabajo exploratorio, agosto 2011, Ejido Andrés Quintana Roo

³ La resiliencia socio-ecológica se puede entender como la capacidad de un socioecosistema sujeto a algún tipo de estrés —en el sentido más básico del término— o de cambio profundo —no necesariamente negativo— para regenerarse a sí mismo sin alterar sustancialmente su forma y funciones, en una especie de “conservación creativa” (Escalera-Reyes y Ruiz-Ballesteros 2011).

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