

“Leadership, control mechanisms and networks for sustainable fishing”ⁱ

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INTRODUCTION

Illegal fishing is a public problem that leads to the over-exploitation of fisheries resources.¹ It is estimated that 45 to 90% of domestic production in Mexico comes from illegal fishing (IMCO. Instituto Mexicano de la Competitividad 2013, vii) Over-exploitation of fisheries resources and non-compliance of fishing regulations represent a collective action dilemma in which the individual's interest in exploiting natural resources clashes with the collective interests of conservation and sustainable use.

It is recognized that the state plays a key role in managing fisheries. It designs and implements rules to ensure sustainable fishing. It allocates property rights in the sea in order to limit the number of fishermen, and it is responsible for the inspection, surveillance and enforcement of fishing regulations. Nevertheless, the Mexican State has many flaws that undermine its effectiveness. As just one example, Mexico has poor surveillance capacity, with a coastline length of 11,122km and more than 76,000 vessels navigating in it, but only 154 inspectors²

Despite the poor capacity of the state, there are cases in Mexico where fishing organizations comply with the rules and carry out good resource management. The paper analyses collective action and the management of common goods in weak states. It relies on a co-management perspective incorporating elements from the neo-institutionalism and the social capital theoretical approaches.

Based on the hierarchical organization approach of Williamson (1991), the role of the leader in fisheries organizations is studied, as well as how leadership significantly influences the attitude of fishermen to comply with the rules for sustainable fishing. Williamson argues that a hierarchical organization reduces its transactions costs when a central member takes command decisions with no need to discuss them among all members of the group all the time (Williamson 1991, 71-72). This is visible in fishing cooperatives where the organizational structure focuses on a board of directors headed by a president who is responsible for the strategic planning of the organization.

However, unlike companies that are the subject of Williamson's analysis, cooperatives are governed by the principle of democratic control, so a leader must always maintain the respect and approval of all members. Therefore, compliance also requires additional elements from the social capital approach. Ostrom and Ahn (2003) argues that good leadership must be accompanied by citizen participation, trust, norms of reciprocity, networks and rules in accomplishing good management of the commons (Ostrom and Ahn 2003, 155)

This paper relies on arguments about leadership and social capital. To support this argument, a study was carried out in cooperatives located in the state of Quintana Roo, Mexico. In particular, the study analysed the *leadership* in terms of managerial skills, as well as social capital through the study of *assembly* and *networks*. The outcome indicates that cooperatives that have a leader

¹ The National Fisheries Chart (NFC) from the National Fisheries Institute (INAPESCA) reported in 2012 that 67% of the 477 fishing species were in their maximum capacity and 17% were overexploited.

² Data obtained from the National Commission of Aquaculture and Fishing (CONAPESCA) using freedom of information laws.

with managerial skills, but controlled by a strong assembly, and with a greater diversity and number of connections with external actors are more likely to comply with fishing rules and contribute to the sustainable use of natural resources.

METHODS

The “most similar” comparative method analyses the differences between similar cases.³ Following this method, a first selection of cases consisted in identifying cooperatives with similar features such as location in a natural protected area, type of fishery (the lobster, as it is the most profitable fishery in the zone) and number of members (determined between 30 and 60 persons). These criteria were met by only five cooperatives among the 26 in Quintana Roo State. These are: 1) Isla Holbox, 2) Yalahau, 3) Isla Mujeres, 4) Espiritu Santo, and 5) Banco Chinchorro.

The second phase of selection was based on experts’ opinion⁴ and the findings of a previous field visit.⁵ Three cases were selected among five; those presenting the highest variation in one dimension of the independent variable, the management skills of the leader. These are: Yalahau, Isla Mujeres and Espiritu Santo (See table 1).

Table 1. Comparative chart among case studies

SIMILAR INDEPENDENT VARIABLES				INDEPENDENT VARIABLE OF STUDY
Cooperative name ⁱ	Number of members	Natural protected area in which the cooperative is located	Fishery	Managerial skill of the president
Yalahau	61	Yum Balám / Tiburón Ballena	Flake fishes, shark and lobster	medium
Isla Mujeres	35	Isla Contoy / Isla Mujeres	Flake fishes and lobster	medium
Espiritu Santo	46	Sian Ka’an / Arrecifes de Cozumel	Flake fishes and lobster	very high

i. To safeguard the confidentiality of the information provided, the name of the cooperatives was changed to a fictitious one.

For data collection, a survey was applied to 60 coastal fishermen, six semi-structured interviews were conducted with main actors in cooperatives and secondary sources such as laws, rules, specialized literature, working papers and official related reports were also reviewed.

³ “Most similar method” examines cases that are similar in variables that may have an impact on the dependent variable (compliance with regulations), but different in the dependent variable (leadership).

⁴ The guidance of Dr. Ma. Amalia Gracia, professor and researcher at Colegio de la Frontera Sur, is highly appreciated as well as that of the researchers from Community and Biodiversity, AC, a civil society organization dedicated to the conservation of marine biodiversity.

⁵ Two field missions were conducted. The first one was conducted in August 2013 to identify differences in the study variables within a preselected group of cooperatives. For example, some dimensions of leadership and internal rules were observed, using direct observation, surveys and semi-structured interviews. Based on the findings of this first visit, case studies were selected and field instruments were improved. The second mission conducted in April 2014, focused on the study of all variables in the three selected cases.

For data analysis, two different tools were used:

STATA program 2012 was used to obtain descriptive data and correlation between variables. Variables were measured based on the following operationalization:

Regulatory compliance was measured through five indicators: a) respect for the ban, b) fishing within a legal area, c) usage of legal fishing arts, d) release of lobsters with eggs or juvenile lobsters and e) delivery of total catch to the cooperative.

Leadership was measured by: a) president's ability to establish long-term goals, b) maintenance of sound finances, c) president's performance, d) obedience to president's directives, and e) duration of presidency.

Strength of assembly was measured by indicators such as: a) frequency of assembly's meetings, b) attendance of fishermen to assembly's meetings, c) active participation of fishermen in the meetings, d) participation of members in the agenda setting and e) accountability in the reports.

Unit of analysis were cooperatives while observation units were fishermen. Each indicator could take a value of 0 or 1. The results were summed up and weighted into an average score for each variable and cooperative. The range of 0-.20 represents a very low score; .21-.40 a low score; .41-.60 a medium score; .61-.80 a high score; and .81-1 a very high score.

UCINET 2014 program was used to analyse networks. Two theoretical visions of social capital were considered for this section. On one hand, relationships among members to solve problems related to fishing were studied based on Coleman's principles of cohesion (Coleman 1988).

On the other hand, the theoretical principles of Burt about 'structural holes' were considered to analyse the links of the cooperatives with other networks (Burt, 2001).

The answers were synthesized in networks measures using UCINET.

RESULTS

Regulatory Compliance

Among the three cooperatives studied, Cooperative Espiritu Santo obtained the highest score in regulatory compliance with .83. Though the three cooperatives obtained a high score regarding the respect for the ban (an average score of .95 for Yalahau and Isla Mujeres, and .94 for Espiritu Santo), other indicators were remarkably different (Table 2).

Table 2. Regulatory compliance (average scores)

Cooperative	Respect for the ban	Respect for fishing areas	Use of permitted fishing arts	Release of lobsters (with eggs or juvenile)	Delivery of total catch to cooperative	Average of compliance
Yalahau	.95	.82	.32	0	.50	0.52
Isla Mujeres	.95	.26	.27	.10	.35	0.39
Espiritu Santo	.94	.94	.84	.72	.70	0.83

Source: Own elaboration based on surveys (n Yalahau=22; n Isla Mujeres=19; n Espiritu Santo=18).

Cooperative Yalahau got an average score of .82 for compliance with the fishing areas limited by the polygons specified in permits or concessions. Some fishermen in Cooperative Yalahau admitted to fishing in the Yalahau Lagoon, part of the Yum Balám Reserve, where fishing and the use of nets is prohibited. This restriction barely reached .26 in Cooperative Isla Mujeres, since most of their fishermen catch lobsters outside the polygons described in their permits. Cooperative Espiritu Santo has two fishing areas; one in Cozumel Island and the other in the Espiritu Santo Bay. There is a high respect for their fishing areas in both areas, which granted an average score of .94 for their compliance with this rule.

Regarding the compliance with permitted fishing arts, Cooperative Espiritu Santo uses only sustainable fishing arts (*'jamo'* and *'lazo'*⁶) at the bay. These fishing arts allow the fishermen to identify lobsters that do not meet minimum standards and release them alive. At Cozumel Island, sustainable fishing arts are not used, as marine currents are stronger in this area, so harpooning remains the main fishing art. This cooperative reached a score of .84 for this indicator. The other two cooperatives still use harpoon and nets as the main fishing art; with nets being the most harmful to the marine environment. None of these are permitted according to Mexican norm NOM-006-PESC-1993,⁷ which regulates handling of all species of lobster. Isla Mujeres had only .27, while Yalahau got .32 for this indicator.

Closely related to the use of sustainable fishing arts is the release of lobsters with eggs and juveniles. According to the rule, the minimum catch size for lobster in the Gulf of Mexico and Caribbean Sea is 135 millimetres of abdominal length. However, unsustainable fishing arts do not permit compliance with this rule because they harm lobsters in such a way that once they are caught, they cannot be returned alive to the sea. Therefore, the score is 0 for Yalahau and just .10 for Isla Mujeres, while in Espiritu Santo it is .72.

Delivery of total catch to the cooperative is also an indicator for this variable. According to directors' estimates, fishermen in Yalahau deliver only 50% of their catch to cooperative, Isla Mujeres 35% and Espiritu Santo 70%. The problem is worse in Isla Mujeres because cooperative's assembly permitted fishermen to sell the fish directly to people. Only lobster is

⁶ These handmade fishing arts do not harm the lobster when caught.

⁷ This rule states "catching the lobster can be accomplished by the use of traps that allow organisms to be extracted alive and return them to their natural environment when they do not meet the minimum size or are organisms with eggs. Other equipment and / or capture methods require permission from the Ministry, except for hooks and harpoons, which can not be used in any circumstances". Mexican official norms are available at: http://www.conapesca.sagarpa.gob.mx/wb/cona/cona_cuadro_de_noms.

sold through cooperative, though not all of it, as a great proportion is diverted to other selling points.

Although these three cooperatives share common features, compliance with sustainable fishing regulations is very dissimilar. What is the reason of these differences? An analysis of leadership and networks may give an answer to this question.

Leadership

Leadership is the condition of being a leader or the exercise of his or her functions. It is often accompanied by human attributes such as managerial skills and the obedience of subordinates (Borja 1997, 877). Thus, a leader has both administrative and mandate qualities.

Table 3. Leadership (average scores)

Cooperative	Setting long-term goals	Sound finances	Performance of president	Obedience to president	Duration of presidency	Average of leadership
Yalahau	0.59	0.30	0.54	0.80	0	0.44
Isla Mujeres	0.36	0.38	0.63	0.89	0	0.45
Espiritu Santo	1	0.63	0.93	0.97	1	0.90

Source: Own elaboration based on surveys (n Yalahau=22; n Isla Mujeres=19; n Espiritu Santo=18).

Most of the fishing cooperatives lack of direction and planning. This is a task that lies primarily on the fishing cooperatives' presidents, but they do not always have the capacity or experience to run an organization. Some of the qualities that fishermen recognize in a good president are: to maintain sound finances, to plan, to manage and implement projects that benefit the cooperative, and to commercialize the product at good price.

The president of Cooperative Yalahau has held this position for nearly three years. During this period he has not yet accomplished its main goals: to build a collection centre and to find alternative markets to diversify the cooperative's sales. His ability to set clear long-term goals was assessed at .59. The cooperative has been carrying over debts from its sole purchaser for many years, so its finances are very poor (.30), and the president's performance is regular (.54) according to members of this cooperative.

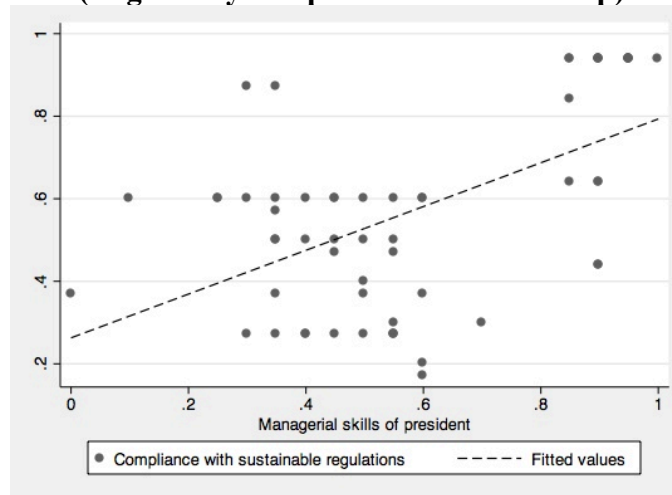
The president of Cooperative Isla Mujeres lacks the ability to set clear long-term goals (.36). He has been struggling to keep the cooperative alive. His main concern is to reduce the cooperative's debts. Despite progress in debt reduction, the finances were poorly assessed (.38), and his performance as a manager was rated in .63.

Scores of Cooperative Espiritu Santo's president are very high. The fishermen of this cooperative recognize a great ability in their president to set clear goals (1). Since he took the presidency in 1991, he established a very effective strategy to address the cooperative's debts, by establishing a commercial relationship with buyers of live lobsters, which brings higher returns to the

cooperative. At the same time, he convinced members to adopt sustainable fishing methods. Hence, his performance has been well evaluated (93), and he has been re-elected several times.

It is notable that Cooperative Espiritu Santo is the cooperative with the highest rate of compliance with the rules (83), and has also the strongest leadership (.90). The slope in Figure 1 shows a positive relationship between compliance and leadership ($R^2=0.30$; $p>|t|=0.000$, $n=59$).

Figure 1. Scatter plot⁸ and regression line (Regulatory compliance and leadership)



$$C = .26 + .53 L + \varepsilon$$

Source: Own elaboration based on surveys

Strength of assembly

Assembly is the highest authority of the cooperative and is integrated by all members. However, private interests of board's president sometimes prevail above assembly's interest. Thus, there are cases of authoritarian governments, corruption, embezzlement and predominance of private interests over public ones. For a leader to conduct according to public interests, assembly must operate as a superior decision-making organ that controls directives' behaviour.

⁸ The scatter plot shows the values of two variables in a data set. These data are shown as a set of points; each one represents the value of the independent variable at the horizontal axis and the value of the dependent variable at the vertical axis for one observation.

Table 4. Strength of assembly (average scores)

Cooperative	Frequency of assembly's meetings	Assistance to ordinary assemblies	Active participation of fishermen in assemblies	Participation of fishermen in agenda setting	Accountability in reports	Average of assembly's strength
Yalahau	0	0.88	0.59	0.53	0	0.40
Isla Mujeres	0	0.98	0.55	0.61	1	0.63
Espiritu Santo	1	1	0.55	0.50	1	0.81

Source: self-elaboration based on surveys (n Yalahau=22; n Isla Mujeres=19; n Espiritu Santo=18).

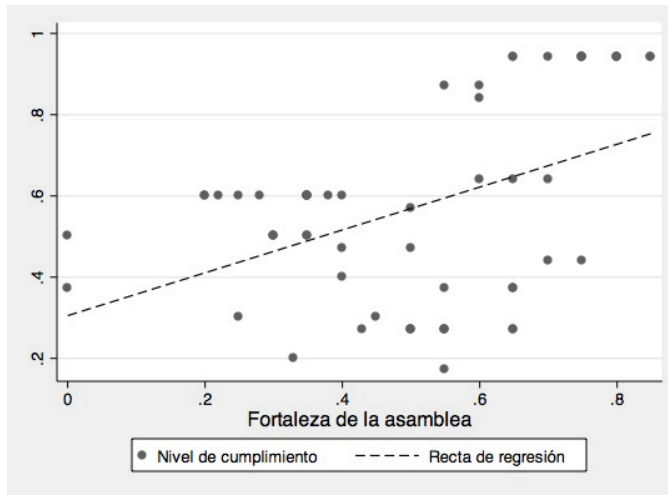
The work of Cooperative Espiritu Santo's president has been important in modifying the behaviour of fishermen. However, this has been possible because assembly, integrated by all members, supports these actions. Ordinary assembly meetings are carried out 3 times a year, but there are also monthly meetings, which increase the opportunity of the board to meet with fishermen to discuss projects they seek to promote. There is a high attendance to these meetings (1), and a regular participation of members in meeting's discussions (.55). According to the results, the members feel well informed based on technical and financial reports (1).

The cooperative Isla Mujeres was the first cooperative established in Quintana Roo State. However, the adoption of new members is frozen since 1981. This strategy was implemented by the cooperative to protect their interests against external influences. However, their members are ageing without support of young people. The attendance of members to meetings is high (.98), however their active participation during the meetings is poor (.55).

Strength of the assembly of Cooperative Yalahau is weak (0.4). The members of this cooperative gather twice a year. There is a very high attendance of members (.88) but a regular participation in debates (.59). Accountability of finance statements is very low (0). According to fishermen, board's president position has been used to satisfy particular interests. There have been cases of corruption and embezzlement, with no penalties for those who have misbehaved.

The cooperative Espiritu Santo holds the highest values. Figure 2 shows a positive relationship between compliance and assembly's strength. This relationship is also statistically significant ($R^2=0.20$; $p>|t|=0.000$, $n=59$).

Figure 2. Scatter plot and regression line (Regulatory compliance and assembly's strength)



$$C = .30 + .53 A + \varepsilon$$

Source: self-elaboration based on surveys

Summing up, the slopes of the lines in Figures 1 and 2 show a positive relationship between compliance and leadership; and between compliance and strength of the assembly. To analyse the causal link between compliance and the two variables, a 2-stage least squares (2SLS) model was developed, using assembly as an instrumental variable of leadership. This is consistent with qualitative findings, which reveal that Assembly not necessarily influence compliance by itself. In Cooperative Isla Mujeres it was found a deliberative assembly with power to control the board, but with no influence in fishermen's behaviour.

The 2SLS analysis indicates that relation between assembly and leadership is positive and significant (Table 5). Likewise, an increment of one unit in leadership leads to an increment of .59 in regulatory compliance (Table 6).

Table 5. First stage regression analysis

Leadership	Coefficient	Standard error	p> t
Strength of assembly	.89	.11	0.000
Constant	.13	.06	0.030
R ² = 0.53			Prob > F=0.0000

Source: Own elaboration based on surveys

Table 6. Second stage regression analysis

Compliance	Coefficient	Standard error	p> t
Leadership	.59	.14	0.000
Constant	.23	.09	0.015
R ² = 0.29			Prob > F=0.0002

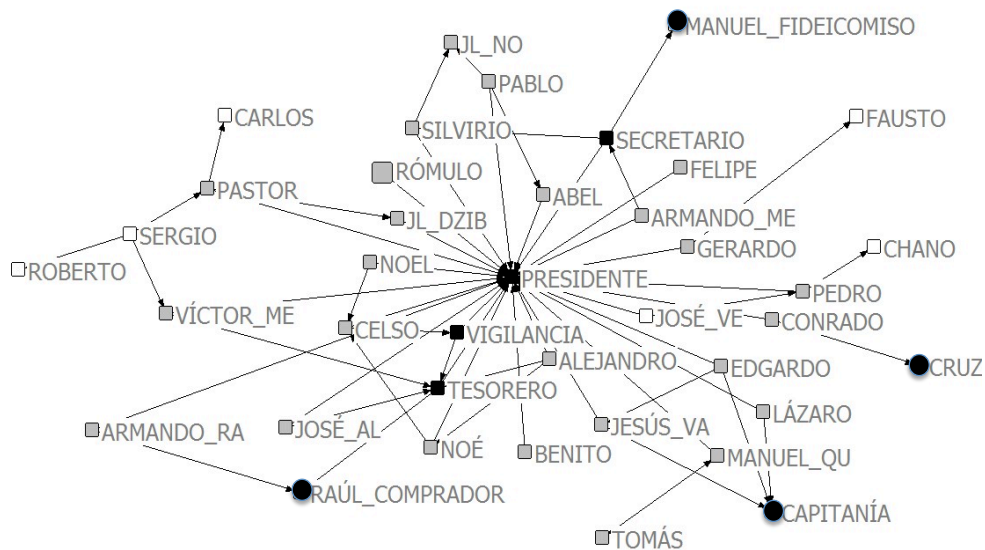
Source: Own elaboration based on surveys

Networks

Internal networks

Coleman states that relationships between individuals are a kind of social capital that facilitates collective action. This virtue increases when the links between nodes or actors are close (cohesion). This means that a greater number of connections within a network help its members to overcome self-interest and act for the benefit of the community (Coleman 1988). To analyse the levels of cohesion in the three cooperatives, fishermen were asked three questions about the name of the person(s) they rely upon when they need: a) new equipment (motor or fishing arts); b) guidance in their work (where or how to fish); and c) to solve an economic difficulty (related to the job), and if this person(s) is a member of the cooperative (manager of the cooperative, member of the general assembly, assistant) or if it is an external actor.

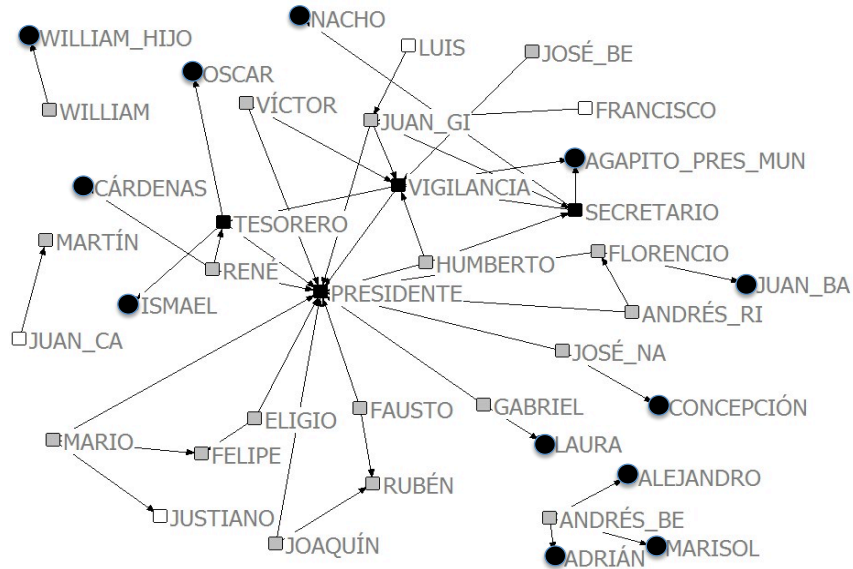
Figure 3. Network of Cooperative Yalahau



Source: Own elaboration based on surveys

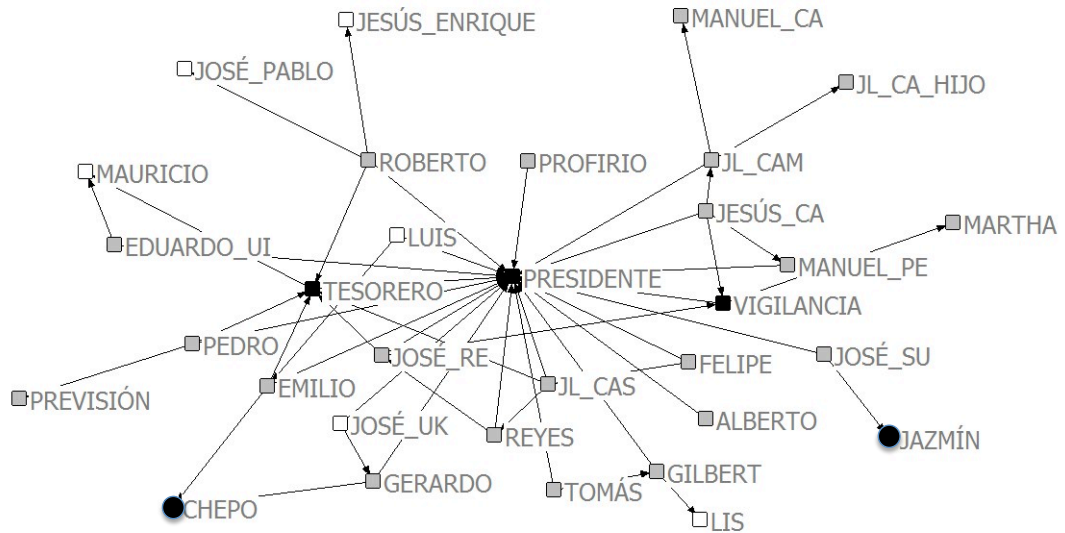
Nodes: black square (directive); grey square (fisherman member of assembly); white square (fisherman not member of the assembly); black circle (external actor).

Figure 4. Network of Cooperative Isla Mujeres



Source: Own elaboration based on surveys
Nodes: black square (directive); grey square (fisherman member of assembly); white square (fisherman not member of the assembly); black circle (external actor).

Figure 5. Network of Cooperative Espiritu Santo



Source: Own elaboration based on surveys
Nodes: black square (directive); grey square (fisherman member of assembly); white square (fisherman not member of the assembly); black circle (external actor).

Figures 3 and 5 show that Cooperative Yalahau and Espiritu Santo have a high degree of centralization, which is noted mainly in the concentration of the president's power. Cooperative Yalahau centralization is of 82.20% and Espiritu Santo is of 83.25% (Table 7). This means that president is the first person to whom fishermen of these cooperatives turn to solve a problem related to equipment, information and finances, with other members of the board (treasurer, secretary and president of surveillance) in second place.

In contrast, Cooperative Isla Mujeres has a centralization of 26%. It is a dispersed network, where disconnected nodes can be appreciated as in the case of Martin, William and Andres Be (Figure 4). These fishermen are members of the cooperative, but they do not receive support from it, so they rely on their family networks. This network also shows a large number of external actors (12 actors) as sources of support.⁹ This means that cooperative has a weak internal capacity to support its members.

Table 7. Structural characteristics of Espiritu Santo, Isla Mujeres and Yalahau networks

Measures	Espiritu Santo	Isla Mujeres	Yalahau
Number of nodes	33	38	35
Density ¹⁰	4.5%	3.2%	4.1%
Centralization (<i>Indegree</i>)	83.25%	26%	82.20%

Source: Own elaboration based on surveys

Table 7 shows that the Cooperative Espiritu Santo has the highest centralization (83.25%), but it is also the one with the highest density (4.5%) or degree of cohesion. Cooperative Isla Mujeres holds the lowest centralization (26%) and it is also the cooperative with less cohesion with a density of 3.2%. Finally, Cooperative Yalahau holds a high centralization (82.20%) and a density of 4.1%.

This analysis shows that fishing cooperatives have high levels of centralization when solving routine issues. Following Williamson's theory (1991) based on the efficiency of hierarchical organizational structures, it is found that these structures can be very efficient when a person with exceptional abilities is in charge of the organization (Williamson 1991, 71-72).

External networks

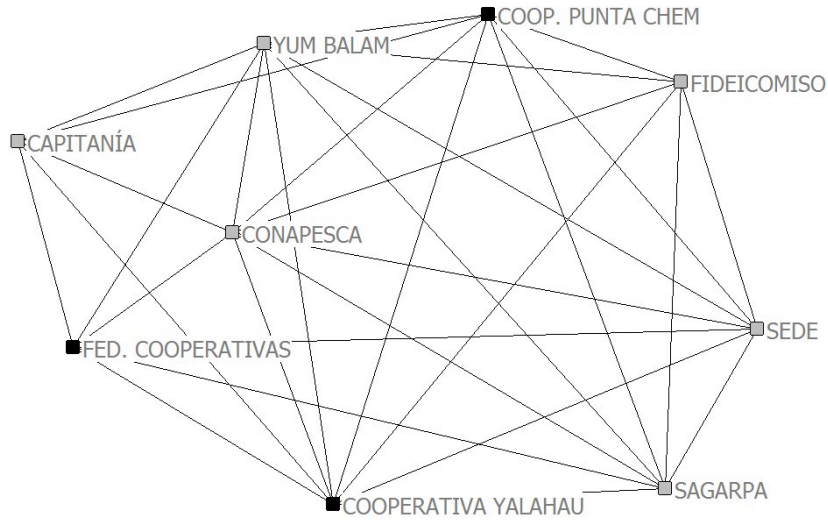
External links are also an important source of social capital. Information, technology and physical and monetary resources may permeate into a certain network through the so-called 'structural holes.' To analyse cooperatives' networks the presidents were asked about the number of and type of actors they relate while doing their job.

Figures 6, 7 and 8 represent actors (nodes) linked with the cooperative through board's president.

⁹ Fishermen of Cooperative Yalahau mentioned 4 external actors, and Espiritu Santo mentioned 2.

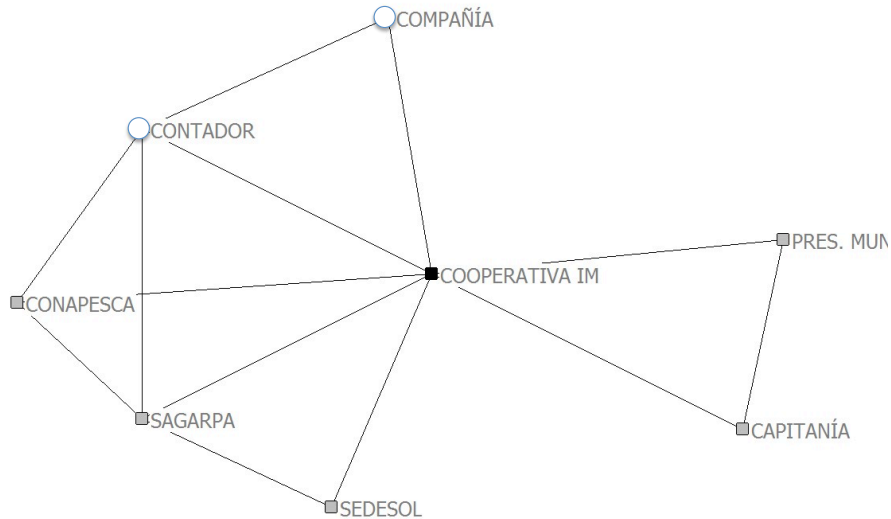
¹⁰ Density is calculated by dividing the number of relations between the possible ones in a network and multiplied by 100.

Figure 6. Links of Cooperative Yalahau president



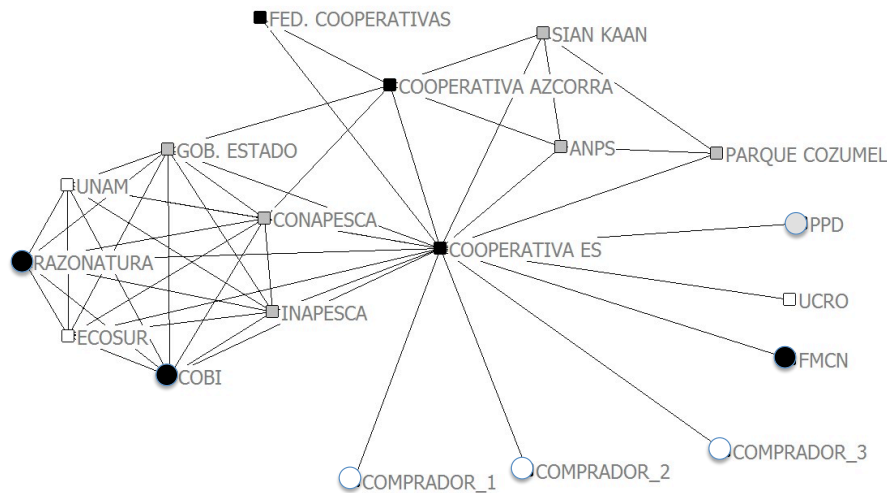
Source: Own elaboration based on surveys
 Nodes: black square (cooperative); grey square (governmental institute).
 Number of nodes: 9.

Figure 7. Links of Cooperative Isla Mujeres



Source: Own elaboration based on surveys
 Nodes: black square (cooperative); grey square (governmental institute); white circle (private sector)
 Number of nodes: 8.

Figure 8. Links of Cooperative Espiritu Santo president



Source: Own elaboration based on surveys

Nodes: black square (cooperative); grey square (governmental institute); white square (academia); black circle (NGO); grey circle (international organism); white circle (private sector)

Number of nodes: 19.

In the above figures there are apparent differences in the number and type of relations the cooperatives have with external actors or organizations. Yalahau Cooperative is formed in a very closed network (Figure 6). Almost all actors of this network (from the president's perspective) know each other. This formation has brought benefits to the Cooperative Yalahau in easily carrying out governmental procedures. However, the diversity of its connections is limited. This cooperative does not interact with other organizations such as NGOs and academia.

Cooperative Isla Mujeres has poor relationship capital, both in numbers and diversity. The cooperative interacts little with other actors or organizations. The accountant performs tasks that are supposed to be carried out by the president, such as processing permits and marketing. Thus, the president rarely connects with governmental officials except when ordinary assemblies meetings take place. In this network, the president appears as a central actor who appears as the only connection (from his perspective) with some nodes such as the mayor and the harbour's captain (Figure 7).

Cooperative Espiritu Santo is clearly associated with a great diversity of actors (Figure 8). This has brought advantages to the cooperative, such as becoming involved in various projects, which brings in new knowledge, infrastructure and other resources related to conservation and the sustainable management of resources. It is a network with structural holes, where the president is clearly a bridge between different networks. If we remove the node of the president some nodes in the graph would be lost. This means that the president has an intermediary role that places him in a highly strategic position, allowing the president to interact with other actors with some authority for the cooperative's benefit.

DISCUSSION

The role of the state in the management of common goods is essential. With regard to fishery resources, it is responsible for the design and implementation of regulations in accordance with minimum environmental standards that ensure sustainability of resources. It is also responsible for issuing permits and concessions that limit the number of fishermen in the sea. However, its capacity to monitor and enforce fishing regulations is insufficient.

Co-management is an alternative that involves the users of the resources in tasks that have traditionally been responsibility of the State such as surveillance, design of rules and sanctions. Several studies show that these forms of self-management have been effective in achieving collaboration. This research is consistent with self-management approaches, but differs from Ostrom's view in privileging dense and horizontal structures over vertical ones to solve collective action problems (Ostrom 2011) The findings of this research show that fishing cooperatives in Mexico operate vertically, and within centralized internal networks. The president and other members of the board are key players in solving problems faced by fishermen on a day to day basis, such as the procurement of equipment, information and financial resources. Strategic planning of projects and activities are in hands of a few actors within a cooperative.

Thus, support for a given leadership is a cornerstone in the cooperative's evolution and affects its member's behaviour. The relationship between compliance and leadership is statistically significant. Gutiérrez et al also agrees with the importance of a leader possessing entrepreneurial and managerial skills, who is highly motivated and with legitimacy in their community, in the enforcement of rules (Gutiérrez, Hilborn and Defeo 2011, 388).

External networks are determinant in achieving compliance. The richness of relationships in Cooperative Espiritu Santo points to a form of environmental governance, where resource management is shared between several actors from government, academia and civil society. A strong intermediation by the president, as a connector between networks, is also observed.

CONCLUSION

This study demonstrates that strong leadership is a key factor in strengthening compliance with sustainability rules. In this respect, public policies must support actions aiming to strengthen the capacity of leaders in fishing organizations. This means also encouraging managerial skills in the handling of finances, marketing and value-added production, as well as other business skills.

Resources allocated to improve compliance should promote greater knowledge among fishing leaders and other members of fishing cooperatives, of both the economic and ecological issues entailed in respect for the rules while promoting sustainable fishing.

Developing strategies to encourage the formation of multiple stakeholder must be also studied. Governance of commons requires the active participation of both public and private actors in managing resources. Encouraging networking among diverse actors in fishing organizations enhances the vision of fishermen towards a sustainable management of fisheries.

One consideration must be pointed out from this conclusion. This is that successful co-management as stated in this paper could be highly dependent upon a single leader. This includes having managerial skills and established networks with external actors deposited in one person. Thus, collaboration with hierarchical structures is possible but can be limited over the long term if new leaders are not developed in order to keep the social capital strong within an organization.

Some cooperatives in the Pacific Ocean are more likely to rotate positions and generate counterweights to the president and disperse leadership widely within the group (McCay, et al. 2013, 54). Further analysis should examine how this rotation and balance of power may enhance strong leaderships. This may expand our knowledge about the relationship between leadership, democratic culture and the success of collective organizations in decision-making spaces such as the common fisheries.

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