Fishing for Success: A review of best practices and benefits offered by cooperatives

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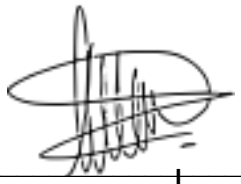

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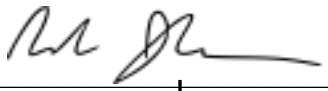

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Abstract

While there has been much research on cooperatives, research focused on the benefits and services that cooperatives provide their members, and how those benefits help strengthen cooperative success, has been sparse. This research aimed to address this gap and identify common types of benefits and services utilized by cooperatives around the world. Findings were generated to inform members of a Fisheries Improvement Project (FIP+) within the Belize spiny lobster fishery. Using a mix of informal interviews and a literature review of cooperative benefits, a pattern finding analysis was conducted. It was found that benefits fell into three main categories: social, economic, and environmental. A total of 32 benefit categories were identified and described. The categories showed varying levels of complexity. Many benefits occurred across sectors, while other benefits appeared to be more common within one or two sectors. The analysis also highlighted the importance of certain enabling conditions as necessary steps to implementing a robust and successful benefits program. Cooperatives are a uniquely positioned business model to address a rapidly changing environment. The variety of benefits found in this research highlight the creativity and adaptability of cooperatives around the world. Future research on cooperative benefits could be an important step in increasing adaptability, but also resiliency in the face of a changing world.

Keywords: Fisheries Cooperatives, Fisheries Improvement Project, FIP, Belize, Benefits, Benefits and Services, Cooperatives

Background

Caribbean Spiny Lobster Fishery Context

Belize hosts an impressive array of marine resources. The country has 1,060 islands and coastal cays, nine marine reserves, and boasts the second largest coral reef in the world.[1,2] Their access to the marine environment translates to a fishing industry that contributes $15.8 million USD to their economy. As of 2018 there were roughly 2,500 registered fishers in the country.[3] These commercial fishers primarily focus on two fisheries, the conch fishery and the Caribbean spiny lobster (*Panulirus argus*) fishery. In 2017, Belize exported 774 tons of spiny lobster, putting it in the top 8 exporters globally.[4]

Primary methods of harvest for lobster include the use of traps, shades (or *casitas*), hook stick, and a noose or *jammo*.[5] Fishers primarily free dive to retrieve the lobsters from the casitas, as use of gill nets, spear guns, and scuba gear in the fishery is prohibited.[6] Due to the selectivity of this dive fishery, bycatch rates are low and impacts on the environment are minimal.

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[1] UNESCO World Heritage, "Belize Barrier Reef Reserve System."

[2] "Belize Fisheries Department."

[3] "Oceans Economy and Trade Strategy, Belize."

[4] *FAO Yearbook. Fishery and Aquaculture Statistics 2018/FAO Annuaire. Statistiques Des Pêches et de l'aquaculture 2018/FAO Anuario. Estadísticas de Pesca y Acuicultura 2018*.

[5] "Oceans Economy and Trade Strategy, Belize."

[6] "Belize Fisheries Department."

In order to ensure the health of the fishery, there are a number of management actions in place. To discourage the harvest of young lobsters there is a minimum carapace length of 3 inches and a tail weight of 4 ounces. Additionally, the take of egg bearing (or "berried") females is prohibited. The fishery is closed during the lobster reproduction season between February 15th and June 14th each year.[7] During this period of closure many fishers augment their income with catch from the conch fishery. [8]

The Belize Fisheries Department under the Ministry of Agriculture, Fisheries, Forestry, the Environment, and Sustainable Development and Immigration, is responsible for the management of fisheries within the country.[9] Prior to 2011, fisheries in Belize were open access, meaning there were no restrictions on the number of fishers or licenses in the country.[10] In 2011, two pilot Marine Access Program (MAP) sites were chosen to test the effectiveness and outcomes of a managed access area. Each area included a committee of local fishers, representatives from the NGO community, and government officials.[11] The sites were considered successful in improving catch and increasing compliance with regulation. As a result, Belize has moved to expand the Managed Access Program to the entire country, which was approved and implemented nationwide in 2016.

While the MAP is an important step forward in managing the coastal resources of Belize, it should be noted that the MAP does not restrict the number of fishers in an area. The MAP creates formalized zones and establishes rights for use within these zones. Under the MAP fishers are still able to access the resource but have no ability to exclude others from the resource or help manage the resource.[12] Another consideration is the lack of documentation regarding the number of traps or casitas that are in use throughout the country of Belize. Without accurate data on the number of casitas being used it is difficult to estimate the pressure on the spiny lobster fishery. Additionally, there is currently no Total Allowable Catch for Caribbean spiny lobster within Belize.[13] The last stock assessment done on spiny lobster was in 2010, leading to uncertainty of the overall stock health and abundance.

Fisheries Cooperatives

The small-scale lobster fishery in Belize started in earnest during the 1950's, and since then the fishery has grown in scale and importance. One notable advancement has been the introduction of fisheries cooperatives. In 1960 the Northern Fishermen Cooperative Society was formed, followed a few years later by National Fishermen's Cooperative Society.[14] For the purposes of

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[7] Belize Fisheries Department, "Regulations."

[8] "Oceans Economy and Trade Strategy, Belize."

[9] "Belize Fisheries Department."

[10] Wade, Spalding, and Biedenweg, "Integrating Property Rights into Fisheries Management."

[11] Wade, Spalding, and Biedenweg.

[12] Wade, Spalding, and Biedenweg.

[13] Monterey Bay Seafood Watch, "Monterey Bay Seafood Watch Report: Caribbean Spiny Lobster. Belize"; Food and Agriculture Organization, "Belize: Fishery and Aquaculture Country Profile."

[14] Huitric, "Lobster and Conch Fisheries of Belize."

this report these two cooperatives will be referred to as "Northern" or "Northern Cooperative" and "National" or "National Cooperative" respectively. There are also two other fisheries cooperatives currently active in the country: Producers Cooperative Society and Rio Grande Fishermen Cooperative. Northern and National are the two largest fisheries cooperatives in the country and together make up ~80% of the fishers in the country.[15] The formation of fisheries cooperatives in Belize was particularly important because in 1965 Belize passed a law that allowed only cooperatives to have export licenses and take advantage of the lucrative international spiny lobster market.[16] Historically, the two cooperatives each have worked with a single buyer, with whom they renegotiate a contract each a year. For example, Northern Fishermen Cooperative has sold their lobster to Red Lobster Hospitality LLC since 1983.[17]

Over the last decade, the government of Belize shifted its stance on limiting export licenses to cooperatives; today, two private companies are licensed to export lobster, in addition to the two cooperatives. This has created significant challenges for the two cooperatives, which struggle to match the prices paid by the private entities. In particular, the cooperatives used to operate on a two-payment system. In this system, fishers would first get a payment when they landed product, and then at the end of the season the cooperative would give them a second, oftentimes larger, payment. In the earlier days of the cooperatives a fisher would receive about one-third of the overall price at landing and receive two-thirds at the end of the season.[18] In recent years, they transitioned to a ½ and ½ payment system. These payment schemes helped give the cooperatives more money at the beginning of the season, which gave them working capital to help with costs associated with the start of fishing season and helped budget for any unforeseen changes later in the season. When the international companies received the ability to export spiny lobster, the coops adjusted their payment system again. These private companies have lower overhead costs and larger capital reserves, which allows them to pay the fishers 100% of the payment for their product upfront once they land their catch.[19] This puts the cooperatives in the difficult financial position of trying to match this new competitive price.

Fisheries Improvement Project

In November of 2019, the organization Future of Fish (FoF) teamed up with The Nature Conservancy of Belize (TNC), Northern Cooperative, and National Cooperative to begin a novel, triple impact Fishery Improvement Project (FIP+).[20] A FIP is broadly defined as a "multistakeholder effort to address environmental challenges in a fishery" and uses the power of the "private sector to incentivize positive changes toward sustainability in the fishery".[21] Official FIPs follow a set of guidelines developed by the Conservation Alliance for Seafood Solutions and are registered on the Fishery Progress website (fisheryprogress.org) where they must provide

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[15] Fishery Progress, "Belize Spiny Lobster - Free-Diving and Casitas | Fishery Progress."

[16] Huitric, "Lobster and Conch Fisheries of Belize."

[17] "Oceans Economy and Trade Strategy, Belize."

[18] Belize FIP, "Introduction to the Belize Spiny Lobster FIP+FDM 2020-2024."

[19] Belize FIP.

[20] Future of Fish, "Belize's First FIP Brings a Fresh Approach."

[21] Conservation Alliance for Seafood Solutions, "Guidelines for Supporting Fisheries Improvement Projects."

transparent reporting of progress against certain principles. This structure helps ensure consistency across FIPs globally and ensures a FIP is truly working to advance progress.[22]

Historically FIPs have been seen as steppingstones to larger sustainability certifications with organizations such as the Marine Stewardship Council (MSC). While traditionally FIPs have focused solely on environmental impacts, this Belize FIP+ (also sometimes referred to as a triple impact FIP or 3E FIP) aims to incorporate fisher and community well-being by addressing social and economic gaps within the fishery.[23] A FIP+ differs from a traditional FIP in that it expands the FIP model and incorporates interventions specifically targeted at relieving complex social and economic pain points or obstacles in small scale fisheries.[24] This trend to incorporate social performance and responsibility within FIPs has been increasing, and recently Fishery Progress released new guidelines and a framework for assessing social responsibility.[25]

Research Project

Introduction

One of the major social and economic gaps identified in the FIP+ research phase was the need to improve cooperative benefits and services so as to better serve existing members and attract new members. This need was codified in the FIP workplan under action item 3.1.2 "To develop benefits programs tailored to members need and to communicate and deliver benefits to communities in efficient manner." Under this action item, a specific task to "Research existing programs in other regions, legal options, and evaluate what worked and didn't with past systems" was identified.

The purpose of this research was to identify benefits and services within existing cooperatives around the world, and better understand which benefits seemed to work well, and share the findings with the FIP+ Steering Committee to inform development of benefit programs for the two Belizean lobster cooperatives under the FIP+.

Objectives

The goal of this project was to use a combination of desk research and primary interviews to synthesize information about types of benefits and best practices around benefit program development for cooperatives. Research questions included:

1. What are the most common kinds of benefits and services provided to membership by successful cooperatives?
2. How have cooperatives worked with membership to identify needs and then design benefits programs to meet those needs?
3. Are certain benefits perceived as better than others?

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[22] Travaille et al., "The Market for Sustainable Seafood Drives Transformative Change in Fishery Social-Ecological Systems."

[23] Future of Fish, "Belize's First FIP Brings a Fresh Approach."

[24] Barr, Bruner, and Edwards, "Fisheries Improvement Projects and Small-Scale Fisheries."

[25] Fishery Progress, "FisheryProgress Human Rights and Social Responsibility Policy."

Methods

Literature Review

The first phase of the project was a two-tiered literature review. The first tier included a high-level scan for research on successful cooperatives globally across a range of sectors. The research team was interested in learning from the successes and failures of sectors outside of fisheries to see what lessons could be learned, and if any of these findings could be a good fit for fisheries and the FIP+. The definition of a "success story" is broad but may include elements such as sustainability certification, good leadership, fishery rebuilding, co-management, or successful restructuring of the cooperative. An additional goal of the literature review was to target interesting case studies for further follow up by interview.

Articles for this phase were found by searching the terms "Agricultural Cooperatives", "Cooperative Case Study" and subsequently becoming more specific with searches such as "wine cooperative", "cheese cooperative", "dairy cooperative". The literature search was limited to articles from 2017-2021 and those published in English. Web of Science and EBSCO – All Databases were used to locate articles. Articles were then quickly scanned to check if information pertaining to benefits and services of the cooperative was included in the article. A sample of twelve articles and related cooperatives were found in phase one and chosen for further analysis.

The second phase of the literature review was designed to focus more particularly on fisheries cooperatives within Latin America. These case studies would give more context and potentially be more applicable to the Belize FIP+. Using the methods described above articles were searched using the terms "Fisheries Cooperative", "Fisheries Cooperative Case Study", "Spiny Lobster Cooperative", and "Mexico Fisheries Cooperative". A sampling of eight articles were chosen for further analysis from phase two.

Two additional reports about fisheries cooperatives were found online on the Environmental Defense Fund website and the Equator Initiative Case Study by the United Nations Development Program.[26] These two reports fell out of the 2017-2021 guideline but gave valuable supplementary content to peer reviewed articles on the same cooperatives.

Each article was then shared to a Google Sheet to better track themes and summaries of the articles. The Google Sheet recorded Source, Cooperative Name, Product Type, Location/Country, Trade Function (export, packaging, etc.), Tangible Benefit, Intangible Benefit, Cooperative Services, Leadership, Governance and Communication, and Organization Structure. Several articles included analyses of multiple cooperatives; in this case, each cooperative was entered as its own row in the spreadsheet with the source repeated. The papers were then annotated and uploaded to a shared Google Drive with Future of Fish. A total of 22 articles were reviewed for this study, see Appendix A for a list of literature reviewed for this project.

[26] Equator Initiative, "Fish Production Cooperative Societies of Cozumel and Vigia Chico"; Cunningham et al., "Mexican Vigía Chico Cooperative Spiny Lobster Territorial Use Rights for Fishing Program."

Interviews

In tandem with the literature review, authors of interesting case studies (or practitioners within those systems) were contacted for informal open-ended interviews. In order to conduct interviews an Institutional Review Board Exemption was acquired under Category 2. Additional interviewees were also contacted through their connection with the Belize FIP+, through the Future of Fish network, as well as other experts identified as cooperative professionals. Interviews were done by phone or Zoom through the months of March to May 2021. Responses were transcribed and synthesized for further analysis. See Table 1 for information on interviews.

Number of Interviews	Interview Type or Reason
5	Cooperative researchers, academics, or professionals
4	Further research on specific case studies or areas
2	Belize specific interviews, to give local context and perspectives.

Table 1. Summary of interviews done for research

Information Synthesis and Pattern Finding

After the literature and interviews were conducted, notes were transferred to Mural to begin a pattern-finding analysis. From the Google Sheet, each benefit from the literature review was turned into a virtual sticky note using Mural to facilitate a "clustering" process. The sticky notes allow discrete benefits to be moved into different clusters or categories based on underlying similarities or differences in the type of benefit. Interviews were also synthesized and added to the Mural board. Three broad categories emerged: social benefits, economic benefits, and environmental benefits. From these broad categories more specific sub-categories were identified by looking for more refined commonalities among benefits.

Results

In total, 32 benefit categories were found across the eleven interviews and 22 academic articles. A summary of the specific benefits and where they occurred can be seen in Figure 1. This figure provides a snapshot of the research. Due to the limited scope of the study, the analyses is not comprehensive and thus conclusions regarding presence or absence of benefits within certain sectors remains inconclusive. What can be deduced, however, is that many benefit categories exist across multiple sectors. In particular, the "Access to Training or Education" benefit was found in all types of cooperatives included in this review. Two other benefit categories, "Access to or Provision of Expertise" and "Providing Inputs at Lower Cost or Easier Access" occurred in four out of five different cooperative sectors. Figure 1 also helps emphasize how broad the world of cooperative benefits can be and reflects cooperatives' diversity of unique and adaptive solutions to existing challenges.

The results in Figure 1 show the findings of the initial literature review, with an emphasis on cooperatives worldwide and from a range of sectors. The more in-depth analyses on fisheries cooperatives revealed that fisheries cooperatives had the same benefits seen in Figure 1, as well

as some additional benefits that are more tailored towards challenges specific to the fisheries context. See the discussion section for more information.

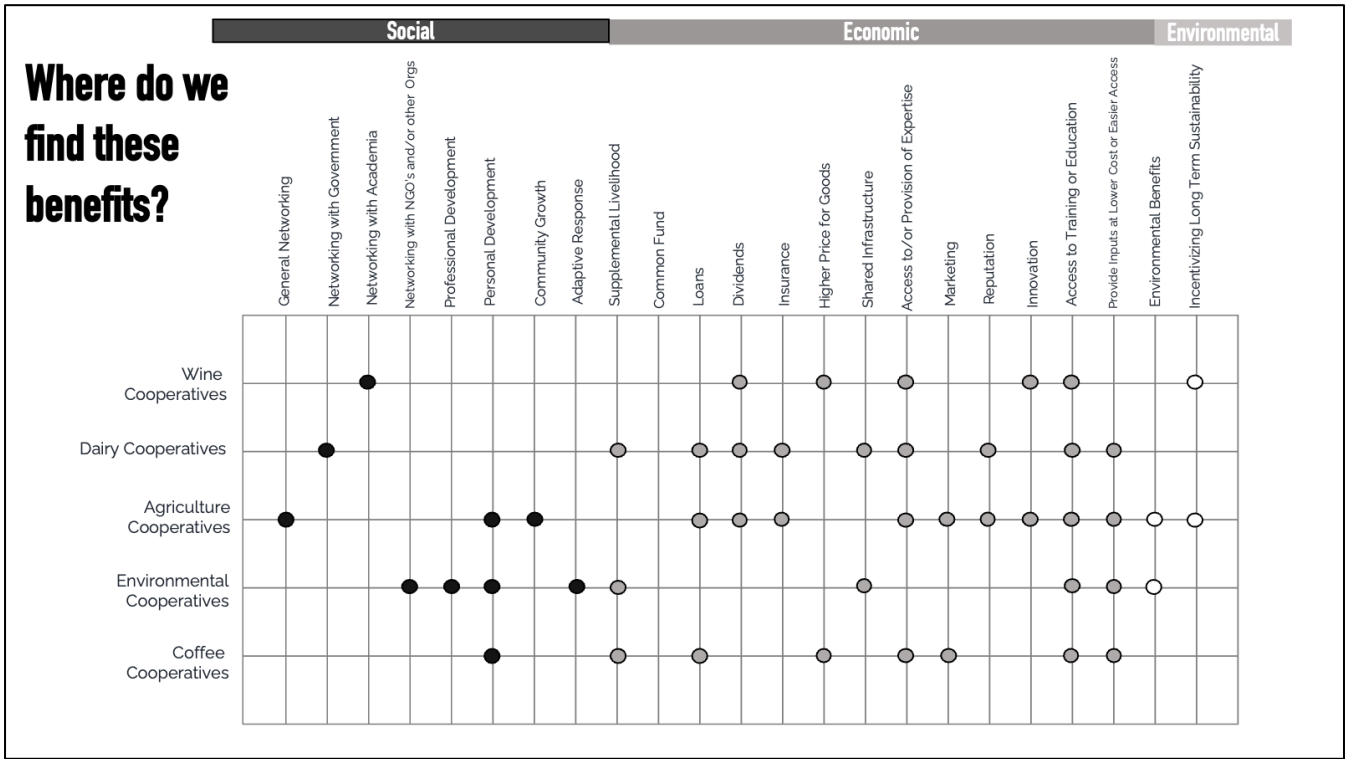

Figure 1. This table shows which benefits were found in the corresponding cooperative categories. This is a summary of the research, and not meant to be comprehensive of the cooperative world as a whole.

The pattern-finding analysis resulted in up to four levels of benefits. The first and largest level includes Social, Economic, and Environmental benefits (Figure 2). The vast majority of benefits are level 2 or 3, with only two benefits falling under level 4. Overall, the pattern-finding analysis is designed to balance need for simplification of complexity into understandable parts (clusters) and need for enough detail to be informative to the question being asked. By default, all clusters must have more than one information point (in this case, a specific benefit example), and most often, have 3 or more.

Each level reflects an increasingly refined benefit category, with the specificity helping to articulate either a diversity of approaches, strategies, or applications within a specific category. An example of this was the level 2 benefit, "Networking," under Social benefit (Level 1). In this case "Networking" showed multiple types of networking that occurred with different entities and thus, likely different objectives. In this example, 5 distinct types of networks were identified, including retirement benefits, insurance benefits, and various types of loans. including relationships with academia, other cooperatives, outside organizations, and relationships with the local government (Figure 2). Another category that was highly detailed and clustered was "Fund." Here, distinct types of funds were evident, which provide different kinds of access to capital. We attempted to capture these differences, when possible, to get a better picture of how different cooperatives were responding to different situations. Some categories such as

“Providing Inputs at Reduced Cost or Easier Access” and “Access to Training or Education” were deemed robust and didn’t have enough variability to be expanded into an additional level.

Economic benefits were the largest category, followed by social benefits and environmental benefits. The most commonly found benefit was “Access to Training or Education”, which showed up 25 times. The second most popular benefit was “Provides Inputs at Reduced Cost or Easier Access” which includes providing items such as animal feed, fertilizer, or fishhooks at a lower or reduced cost. And the third most common benefit was having “Access to or Provision of Outside Expertise,” such as hiring agronomists, vineyard consultants, or fisheries scientists. Individual examples and responses can be found in Appendix B.

Some benefit categories were dominated by certain types of cooperatives. For example, the category “Filling in for Government Regulation or Management” was largely dominated by seafood producing cooperatives. Conversely, the category of “loans” was dominated largely by agriculture producing cooperatives. One of the largest benefit categories, “Access to or Provision of Expertise” represents a roughly 50/50 mix of agriculture and seafood producing cooperatives.

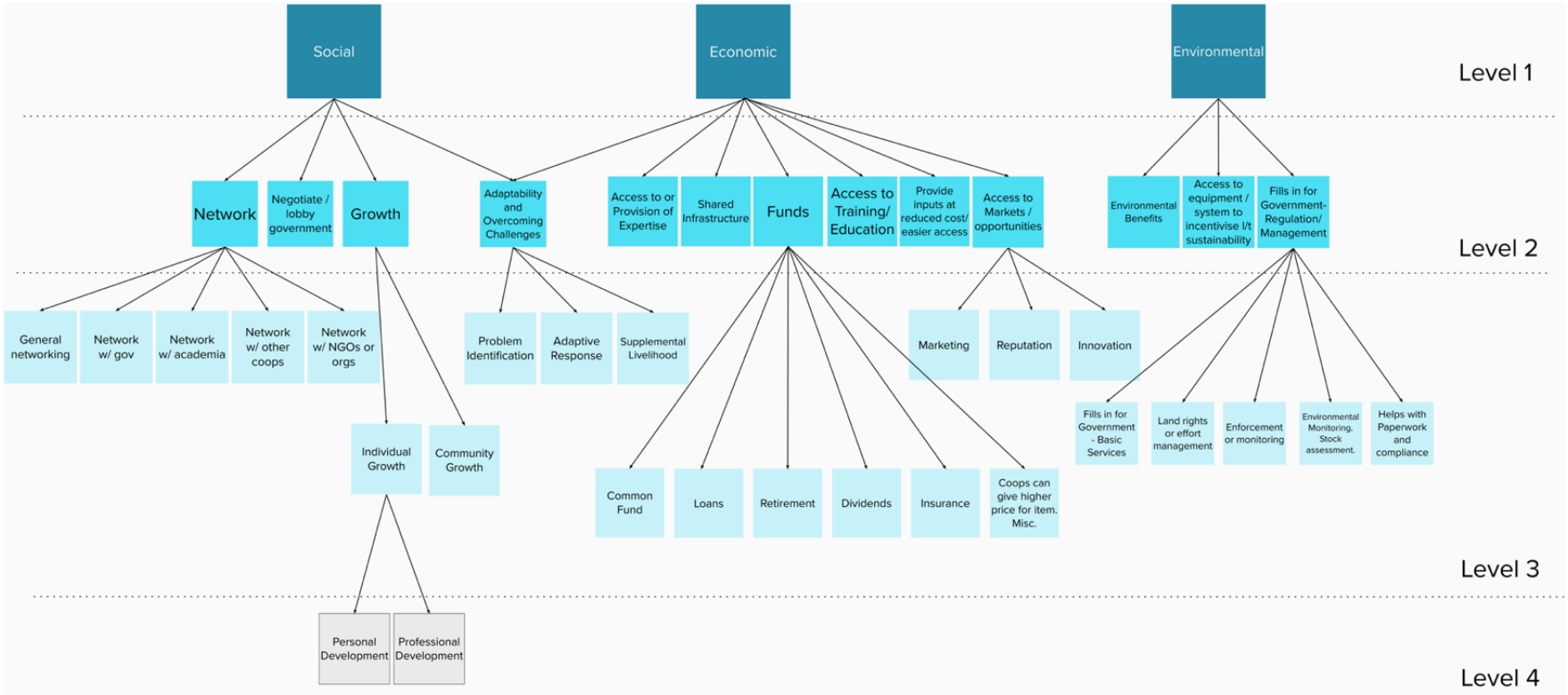

Figure 2. This figure shows the results of the pattern finding analysis using Mural.

Description of Benefit Categories

Outlined below are the 32 different benefit categories found in the research. Further information about what level the benefit can be found in or other closely related benefits, can be found in Figure 2.

- Access to Equipment or System to Incentivize Long Term Sustainability: When a cooperative provides additional help, guidance, trainings, or funds, to incentivize long term sustainability for the sector. Examples include mapping local fishing areas or promoting efficient irrigation technologies.

- Access to Training or Education: When a cooperative provides workshops, trainings or education events. These can happen regularly, or irregularly, but are meant to provide the members with information that will benefit their sector or increase personal or professional development. Examples can vary widely but include food safety training, training on what a cooperative is and how it functions, or training on gender norms.

- Access to or Provision of Expertise: This is when a cooperative brings in an outside expert to address a problem or advise members. The members are not meant to adopt these skills themselves but can benefit greatly from the provision of expertise. For example, in fisheries cooperatives some cooperatives will bring in a fisheries stock scientist, or agricultural cooperatives will provide agronomists to help increase yield of products.

- Adaptive Response: This benefit indicates when a cooperative demonstrated the ability to respond to problems facing their membership. Adaptive response is under the "Adaptability and Overcoming Challenges" cluster (Figure 2). In this benefit, cooperatives have already identified that a problem exists that may be threatening the revenue of the cooperative and have created a response to the problem. See the "Problem Identification" and "Supplemental Livelihood" benefits for additional information. Examples include giving access to PPE during the Coronavirus pandemic or diversifying fisheries for increased revenue during tough financial times.

- Common Fund: A common fund is a pool of money (similar to a "piggy bank") that is accessible to the members of the cooperative. Depending on the cooperative, methods of input into the common fund can vary. Sometimes the fund is fed by annual member fees, a percentage of overall yearly profit, or initially seeded by a donation from an outside organization. Methods of retrieval can also vary by cooperative. Some cooperatives opt to disburse the funds democratically, or other times an individual may request funds individually to be voted upon by the general membership.

- Community Growth: This is when the cooperative encourages growth within the community by improving community common spaces or infrastructure or helping to build social capital and forging bonds between individuals. Examples include encouraging active participation in

the surrounding community by the cooperative, or members of the cooperative having hiring priority for open positions.

- Dividends: A dividend is a sum of money paid on a regular basis to the members of the cooperative. Some cooperatives give out dividends at the end of the fiscal year, while others deliver a dividend when a member delivers a product to the cooperative such as a fish landing or a share of coffee beans.

- Enforcement or Monitoring: This is when the cooperative takes an active role in instating regulations for fishing areas such as area closures or changing the opening and closing dates of fisheries.

- Environmental Benefits: This is when the cooperative takes action to protect the environment or promote conservation measures. This category is broad but includes measures such as partnering with conservation organizations, seeking out sustainability approval with organizations such as the Marine Stewardship Council, proposing marine protected areas, or creating stricter fishery rules than is required by the national government.

- Fills in for Basic Government Services: This benefit was largely seen in rural areas and Fisheries Cooperatives where cooperatives had taken on and supported basic government functions. In the case of the Pacifico Norte cooperatives in Baja California, the cooperatives had taken on the responsibility of running a desalination plant for the area, had built and maintained roads, and runs an electricity generation plant. [27]

- General Networking: This category encompasses all networking that was not detailed enough to be categorized further. Examples include phrases such as “social benefits”, or “collaboration”.

- Helps with Paperwork and Compliance: This benefit is when cooperatives assist members in government paperwork, help them navigate local ordinances or rules, or help members with acquiring necessary permits.

- Higher Price for Goods: Cooperatives with this benefit are able to negotiate or secure a higher price for a member’s good. Examples include wine cooperatives that pay more for “premium” grapes, or cooperatives that can secure higher prices for coffee beans.

- Insurance: Is when a cooperative can provide protection of goods or services.

- Loans: This benefit is when the cooperative has the ability to lend out money to members, with the expectation that the member will eventually pay the cooperative back with added interest. Sometimes the cooperative is able to offer a loan, and other times the cooperative helps facilitate the loan process between the government or local banks and the cooperative member.

[27] McCay et al., “Cooperatives, Concessions, and Co-Management on the Pacific Coast of Mexico.”

- Marketing: This category encompasses marketing of goods. Many times, a cooperative will cover marketing costs of the goods of the members, and sometimes will provide current marketing information to members. Some cooperatives have even taken the initiative to hire managers or workers with knowledge of marketing to gain a competitive edge and earn higher prices.

- Negotiate or Lobby with the Government: Research showed that this benefit largely appeared in fisheries cooperatives. This benefit encompasses cooperatives when they communicate with the local government or fishing authority, discuss sustainability certifications (such as MSC) and the effects on the common pool resource, and lobbying for changes in the sector.

- Networking with Academia: This benefit describes when cooperatives build relationships with academic institutions such as universities. Sometimes cooperatives can be involved in research projects or be connected with other organizations through academic research.

- Networking with Government: This benefit describes when cooperatives forge connections with the local government but are not seeking changes. Examples include site visits to the cooperative by the government or cooperative leadership keeping members up to date on current regulations.

- Personal Development: This benefit describes when a cooperative helps facilitate the development of an individual's capabilities and skills. Research showed that some cooperative members reported having increased self-esteem, an expanded social network, and more confidence from participating in a cooperative.

- Problem Identification: This benefit falls under the "Adaptability and Overcoming Challenges" level. Problem identification is when a cooperative has the ability to recognize there is a problem is currently, or may in the future, affect the cooperative, and is ready to create solutions. An example of problem identification is when a cooperative conducted a survey to see what kind of training the members were interested in, before choosing a workshop topic.

- Professional Development: This benefit is when a cooperative encourages members to participate in continuing education, career training, or informal learning opportunities that can benefit cooperative members. While it may benefit the cooperative, professional development does not always need to be related to increasing the productivity or success of the cooperative. Some cooperatives have offered professional development opportunities such as first aid workshops for members, training on local species identification for members, and divemaster training.

- Provides Inputs at Reduced Cost or Easier Access: Many times, cooperatives will provide "inputs" or goods, at a reduced cost or easier access to their members. Depending on the cooperative this can be quite broad but includes things such as fishhooks, bait, and ice for fisheries cooperatives and farm tools, fertilizer, or seeds for agricultural cooperatives.

- Reputation: Sometimes being part of a successful cooperative can increase the prices or reputation on the goods produced by the cooperative. For example, some fisheries cooperatives have worked to get their product certified by MSC, which leads to increased reputation and price.

- Retirement: Some cooperatives are able to offer retirement benefits to their members.

- Shared Infrastructure: Research found that some cooperatives can offer access to shared areas to their members. In some cases, this shared area was an office building, or storage shed. Other times the cooperative offered access to a unified rearing area for newborn calves, a seafood market or storefront to sell fish, or a place to store boats or engines when not in use.

- Stock Assessment: This was a benefit that was uniquely found in Fisheries Cooperatives. Some cooperatives would take on the responsibility of performing stock assessment analysis including tracking landing data, catch monitoring, and fishing locations. Presumably this is a result of the cooperatives taking on an active role in helping to manage a common pool resource.

- Supplemental Livelihood: Some cooperatives were seen to take a proactive approach and help members diversify or augment their revenue stream. This benefit falls under the "Adaptability and Overcoming Challenges" (Figure 2) category. Examples of supplemental livelihood include compensating members to conduct environmental monitoring duties, cooperatives providing a vegetable seedling nursery, and cooperatives looking to monetize their waste products.

Discussion

Cooperatives and "cooperativism" is a large field of study, and numerous papers and reports exist that provide analysis of cooperative case studies, studies of cooperative life cycles, and cooperative responses to challenges or adversity.[28] However cooperative benefits and services can often be an overlooked aspect of cooperative research. Our research only returned one paper that examined cooperative services, which stated that "to the best of our knowledge, (this is) the first paper to explore the diversity of services (offered by cooperatives)".[29] The hope is that the information in this report can add to the Sebhatu et al. 2020 study and provide a jumping off point for future research.

One challenge of this research was distinguishing between a cooperative benefit and a cooperative service. For the purposes of this study, we defined a cooperative benefit as something additional that the cooperative can offer outside of the basic activities the cooperative performs as a node in the supply chain. For example, when examining wine cooperatives in the

[28] McCay, "Territorial Use Rights in Fisheries of the Northern Pacific Coast of Mexico"; Rivera et al., "Institutions and Collective Action in a Costa Rican Small-Scale Fisheries Cooperative"; Gutiérrez, Hilborn, and Defeo, "Leadership, Social Capital and Incentives Promote Successful Fisheries"; Cook, "A Life Cycle Explanation of Cooperative Longevity."

[29] Sebhatu et al., "Beyond Focus."

Aiassa et al. study (2020), many cooperatives will bottle and sell wine for their members.[30] This is considered a cooperative service that is part of the core function of the cooperative, which implies that it is one of their main revenue streams. However, actions such as hiring vineyard consultants or organizing grape deliveries based on the personal calendar of each member represent cooperative *benefits* because they are an additional positive asset or experience provided to the members of the cooperative beyond the cooperative's core business function. This also implies deviation of funds to subsidize or support the cost of the benefit or looking for partnerships to cover this additional cost. Many times, it was difficult to discern from the academic literature alone whether or not the benefit being described was part of the core functioning of the cooperative, or an added benefit. For example, the Vigía Chico cooperative is said to designate fishing territory to their members. Without further explanation or background information it is difficult to discern whether or not cooperative members get additional benefits from being a member.[31] If a fisher was not a member of a cooperative, do they still have access to the resource? Do cooperative members get more access than non-members? The extent of the analysis was limited due to the fact that many articles do not focus expressly on benefit types or how to administer various types of benefits. Further research on cooperative benefits would help to advance this understanding, and the approach should include conversations with the cooperatives or study authors when possible to gain more information and clarification.

Enabling Conditions

When speaking to various cooperative professionals it quickly became clear that while a cooperative benefits program is a positive step, other factors need to be in place before a successful benefits program can be implemented. Many benefits identified in this report have certain enabling conditions that must be met first. While not an exhaustive list, the following enabling conditions were identified in this research.

Transparency  Created by Wichai Wi from Noun Project	Transparency within a cooperative can be particularly important, especially when disbursing funds or dividends. Cooperatives should work towards increasing transparency between leadership and members, which will in turn aide in communication and trust. Lack of transparency within a cooperative can lead to favoritism or corruption, and potentially erode trust of the cooperative members.

[30] Aiassa et al., "Successful Wine Cooperatives."

[31] Equator Initiative, "Fish Production Cooperative Societies of Cozumel and Vigia Chico."

Leadership 	In many cases strong and effective leadership must come before the implementation of benefit programs. Strong leaders have an understanding of the role of the cooperative, the cooperative model, and how the cooperative functions.[32] These factors all contribute to a greater knowledge base from which to design and implement benefits programs that suit the cooperative. Strong leadership also stems from a robust governance structure including guiding bylaws or founding principles.
Understanding of the Cooperative Model 	It is important that cooperative members and leadership understand how a cooperative business functions and what benefits come from being part of a cooperative. Interviews indicated that some cooperatives, particularly older ones, may have lost sight of what the core function of a cooperative is and how it differs from other business models. Azadi (2010) found that an important determinant of cooperative success was a leader's understanding about the concept of a cooperative.[33] This re-education can be a crucial first step to building trust and communication.
Communication 	Having strong communication within a cooperative can be a key quality of a successful cooperative. Efficient, regular, and consistent communication is imperative to ensure that members are aware of the current events happening at the cooperative, potential problems that may be affecting the cooperative, and ways that leaders and members can work together to problem solve. Communication can take the form of regular newsletters, scheduled meetings, or access to an online platform to share ideas and information.
Trust 	Trust can also greatly affect the success of a cooperative. Members should have confidence that the cooperative is acting in the best interest of the members. Conversely, cooperative leadership should have confidence that members are abiding by the general guidelines of the cooperative and acting in ways that benefit the cooperative as a whole.

[32] McCay et al., "Cooperatives, Concessions, and Co-Management on the Pacific Coast of Mexico"; Azadi et al., "Factors Influencing the Success of Animal Husbandry Cooperatives."

[33] Azadi et al., "Factors Influencing the Success of Animal Husbandry Cooperatives."

Design Matters

In addition to cooperatives meeting certain enabling conditions, the success of cooperative benefits can also depend on how well the benefits program was designed or implemented. This requires a few steps. First, the cooperative must have the financial ability to produce the benefit that they are interested in implementing. Second, the cooperative should engage with the membership to see what benefits are desired from individuals. And third, the cooperative should begin a co-design process with the members to ensure that the benefit can be applied in the way that best suits the membership. Without adequate planning and foresight, some benefit programs may fall flat and potentially erode trust within the cooperative and its members if repeated failures occur.

An important consideration in implementing benefits programs is the acknowledgment that bad actors will exist in the system. While most cooperative members will follow the rules and act accordingly, some members may attempt to take advantage of the benefits program. In the case of the spiny lobster fishery and the Belize cooperatives, member loyalty and transgressions against member policies are known to occur. For example, an individual that is part of a cooperative (thereby getting access to the cooperative benefits) often still sells their catch to another company for a higher price, undermining the cooperatives' business model.

Cooperatives need to look into creating policies that address removing membership privilege or status in their bylaws or governing documents. Our research showed that some cooperatives have member policies that address bad actors and include consequences that culminate in expulsion from the cooperative. When building out benefits, cooperative leadership need to consider how best to respond when members take advantage of the system. Our research focused on the "carrots" or incentives in the system, but it is also important to think about the "sticks" or deterrents to irresponsible behavior.

Highlights from Research

Once cooperatives have addressed the presence of enabling conditions and the potential for bad actors within the system, it can clear the way for an intriguing array of benefits. One particularly interesting benefit category unearthed by this research was the "Adaptability and Overcoming Challenges" category seen in Level 2 (Figure 2). This category was divided into three smaller categories in Level 3 including Problem Identification, Adaptive Response, and Supplemental Livelihood. This category demonstrates how proactive cooperatives can be in the face of challenges and change and suggests adaptability may be an important role that cooperatives help to facilitate among their membership. This category is shared between Social and Economic (Level 1) because cooperatives responded to problems both in social ways, such as consulting their members about their wants and needs following a crisis or change, and financial ways, such as encouraging supplemental livelihood training or providing funds to offset lost fishing days. By studying how cooperatives have support their membership to respond to changing conditions in the past, insight can be gained regarding how current day cooperatives can provide support for adaptability moving forward. Given the far reaching and rapidly changing effects of global issues such as the Covid19 pandemic and climate change, it is likely more important than ever for cooperatives to consider how they can help increase adaptability of their members and their own business.

Given the looming challenges due to climate change, consideration of environmental benefits associated with cooperatives may be particularly relevant. Environmental benefits were found overall to be more delayed than those in the Social and Economic category. This is to say that the implementation of conservation measures or more stringent harvest control rules may not have an immediately noticeable effect, but in the long run, have the potential to ripple out and produce great benefits to cooperatives and individual members. Conducting stock assessments, for example, may not have an immediate monetary benefit. However, over time stock assessments can provide a valuable tool for fisheries management and decision making. In the long run, those benefits have the potential to generate economic gains, such as through increased stock abundance or more stable and predictable harvest.

This research showed that environmental benefits presented differently in Fisheries Cooperatives than agricultural or terrestrial cooperatives. This is likely due to the fact that fisheries cooperatives are working within a common pool resource, which is a resource that is open access to all.[34] Common pool resources are prone to both the tragedy of the commons, where an open access resource is over exploited by individuals, and "free riders" that will take advantage of the benefits of the resource without adding to the resource themselves. [35] Being part of a fisheries cooperative can positively affect change of the fishing resource by increasing the number of fishers who are working to better the resource as a whole. In this way a cooperative that encourages positive environmental changes or benefits may have a larger impact on the environment than a single individual fisher.

Environmental benefits were also found to be linked to other benefits, and sometimes implied the presence of other benefits. In many cases to implement an environmental benefit, other social and economic systems need to be in place first. For example, using more efficient technologies for irrigation in the face of climate change implies that first, the cooperative has identified a problem ("Problem Identification", see Figure 2). Second, it implies (and is often dependent on) having access to outside experts to advise members on the benefits of using better irrigation technology ("Access to or Provision of Expertise", Figure 2). And finally, fully realizing the benefit requires that have the cooperatives has funds and access to better irrigation technology; this may be provided by cooperatives that provide the technology at a reduced rate, fully subsidized, or partially subsidized through a credit program. The final benefit would be increased crop yield through more efficient irrigation, but there are many steps and processes necessary to get there. In summary, many environmental benefits imply that other benefits were in place first or a process is in place to implement successful environmental benefits.

Next Steps

As noted earlier, studies focused on cooperative benefits and benefit programs are scarce. Future research could focus not only on the amount and type of benefits, as this study did, but also incorporate how benefit programs are formed, which benefits are seen as more critical than others, or if certain benefits should be in place before introducing others. Due to time constraints, only 11 interviews were secured for this research. In the future it would be beneficial to gain more interviews to add depth, but also to clarify questions found in the literature review to help

[34] "Common-Pool Resource | Natural Resources."

[35] Keohane and Olmstead, *Markets and the Environment*.

discern the differences between cooperative services and cooperative benefits. Additionally, future research could broaden the scope of articles reviewed to incorporate a longer time frame (not just 2017-2021). This research was intended to be a critical first step, but future research could greatly benefit the knowledge learned regarding cooperative benefits and services.

Conclusion

While the topic of cooperatives has been studied thoroughly, the literature remains sparse when it comes to the benefits and services that cooperatives provide. The world of cooperative benefits is varied and wide. This variation lends itself to creativity and innovation where cooperatives can look to create a benefits program that is uniquely tailored towards its own membership. However, prior to implementing a benefits program, a cooperative should look to strengthen aspects such as communication, transparency, leadership, trust, and general understanding of the cooperative business model. Additionally, care should be taken when implementing benefits to think of the effect not only on the members, but also to the environment. Environmental benefits were found to be some of the more difficult to implement but had far reaching ripple effects that may positively affect the cooperative. As the world continues to be affected by the Coronavirus pandemic and long-term climatic changes, it is more important than ever that cooperatives learn to be adaptive and responsive to the changing landscape. Our research showed that cooperatives in particular are uniquely positioned to take advantage of the creative world of cooperative benefits to create positive long-lasting change within their communities. Hopefully this research provides a solid starting point from which future research could continue to explore the variety of ways that cooperatives can benefit their members.

210521XX

UNIVERSITY OF CALIFORNIA, SAN DIEGO
HUMAN RESEARCH PROTECTIONS PROGRAM

TO: Ms. Allegra La Ferr
RE: Project #210521XX Fishing for Success: A review of best practices and benefits offered by cooperatives

Dear Ms. La Ferr:

Your project has been reviewed by an IRB Chair and/or the IRB Chair's designee and certified as exempt from IRB review under 45 CFR 46.104(d), category 2: Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:

(i) The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects;

(ii) Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation; or

(iii) The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by §46.111(a)(7).

Please note: When a study has been certified as exempt from IRB review, continuing review and approval is not required. Certification of Exemption is effective for the life of the study. However, all modifications to a study that has been certified exempt must be submitted to the IRB for prospective review and certification of exemption prior to implementation. In some circumstances, changes to the protocol may disqualify the project from exempt status.

The research activities described in the application have been determined to meet the criteria for exemption from IRB review. The PI should ensure that the research activities are conducted in compliance with applicable UCSD and Rady Children's Hospital – San Diego policies and ethical standards as well as local, state, and federal regulations.

On behalf of the UCSD Institutional Review Boards,

/la

Kip Kantelo
Director
UCSD Human Research Protections Program
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Release date: 4/14/2021

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Appendix A: Literature Review

Source	Cooperative	Product	Location
Aiassa et al. 2018	Various	Wine	Europe (Various Countries)
Azadi 2010	Animal Husbandry Cooperatives	Agriculture	Iran
Balgah 2019	North West Cooperative Association Limited (NWCA)	Coffee	Cameroon
Billfield et al 2020.	Various	Coffee	Guatemala
Calvo-Ugarteburu et al. 2017	Coffee Bay Mussel Rehabilitation Project	Mussels	South Africa
Dias 2018	Cotribá	Agriculture	Brazil
EDF 2012	Vigía Chico	Seafood	Mexico, Yucatan Peninsula
Equator Initiative Case Study, United Nations Development Program 2012	Cozumel Cooperative and Vigía Chico	Seafood	Mexico, Yucatan Peninsula
Jitmun et al. 2020	Various	Dairy	Thailand
McCay 2014	Pacifico Norte Coops/FEDECOOP	Seafood	Mexico, Baja California
McConney 2017	Barbados National Union of Fisherfolk Organisations (BARNUFO)	Seafood	Barbados
Méndez-Medina 2015	Vigía Chico	Seafood	Mexico, Yucatan Peninsula
Morgan and Winkler 2020	Orquideas de Sian Ka'an	Ecotourism	Mexico, Yucatan Peninsula
Ofori et al. 2019	Battambang Province and Siem Reap Cooperatives	Vegetables	Cambodia
Ortega et al. 2019	Various	Coffee	Rwanda
Pérez-Ramírez 2012	FEDECOOP and ind. cooperatives	Seafood	Mexico, Baja California
Quintana 2020	Buzos Monitores	Ecological Monitoring	Mexico, Baja California
Rivera 2017	CoopeTárcoles R.L.	Seafood	Costa Rica
Sabau 2017	CoopeTárcoles R.L.	Seafood	Costa Rica
Sebhatu et al. 2020	Various	Agriculture	Ethiopia
Smith 2017	South Sound Prairies	Agriculture	WA, USA
Zhong	Various	Dairy	China

Appendix B: Complete List of Benefits from Mural

Benefit Name	Results from Literature and Interviews
Access to Equipment or System to Incentivize Long Term Sustainability	• Coop provides buoys equipped with GPS to map lobster fishing areas • Cooperative members are more likely to use efficient irrigation technologies (drip nozzle) vs. nonmembers • Data from GPS buoys is inputted and generates data to improve efficiency, productivity, and accountability of the fishery • Members are given access to nursery plants in the face of a disease that is affecting grape vines
Access to Training or Education	• Access to educational programs on nutrition, gender equity, and financial management • Access to government trainings on management • BARNUFO consults with fisherfolk to find out what type of training they require or desire • BARNUFO offers an annual fisherfolk training course, and other opportunistic courses • Community members were trained to become environmental trainers, drillers (to help with environmental rehabilitation process), monitors, agricultural trainers, agricultural monitors, and field managers • Coop held initial workshops and trainings prior to start of project • Coop members less likely to view access to credit as problematic compared to non-members • Coop offers continuing education events twice a year • Coop offers seminars to members • Coop provides educational activities • Coop provides food safety training • Coop puts on workshops and trainings (financial planning, resource management, etc.) • Coop secured funding to pay for Tour Guide training • Coops sometimes offer training on coffee production • Held workshops on gender norms within the coffee sector • Holds regular trainings • Monitors were given training on sustainable natural resource management • Organizes trainings on fertilizer and food safety • Outreach and training to local youth • Project held environmental education training at local schools • Regular trainings • Strategic communication course • Training • Trainings about coop 101 (what is a cooperative, how does it function, etc.) • Youth Trainings (to encourage continued interest in the sector)
Access to/or Provision of Expertise	• Coop hires vineyard consultants for members • Coop organizes agricultural technology assistance • Cow feeding guidance provided upon request • Disease treatment monitoring provided upon request

	● Federation (FEDECOOP) provides technical expertise ● Gives access to agronomists ● Information from research with local universities is shared with growers/members ● Knowledge from academic projects resulted in better negotiating power ● Makes veterinarians available to members ● Members have access to animal health services on credit (cost is taken out of payments from coop) ● Participation in academic projects ● Provides coop members updated information (on nutrition, management, genetics) ● Technical advice ● Technical assistance ● The federation employs a fisheries scientist ● Trainings about cooperatives (what they are, etc.) ● Upon request will provide technical assistance (disease identification, feeding consultation) ● Will hire agronomists or experts to help with coffee
Adaptive Response	● Access to PPE ● After a debt crisis the coop restricted access to the coop (thereby limiting the common pool resource and potentially increasing profits) ● After involvement in program, fishers employed new sustainable fishing practices ● Coops diversified fisheries during El Nino (hard times) ● Noted that only when various human dimensions were addressed by the project did the fishers begin to buy into the mussel rehabilitation as a whole
Area or Effort Restrictions	● Cooperatives conduct assessments of lobster stocks to maintain exclusive access rights (concessions) ● Coops have ability to shape norms and make stricter fishery rules to benefit themselves and the MSC certification long term ● Coop has decision making power on how to access resources within their area ● Designates fishing grounds/territory to members ● Have property rights to fishing area (concession) ● The coops control processes and enforce internal rules to regulate fishing effort
Common Fund	● Coop members pay into a community trust with membership dues for fishermen to upgrade equipment, provide social services, and provide a financial buffer for hard times ● Cooperatives take on debt and give credit to members in tough times ● Coops gave credit to members to help them get through tough times ● Coops have fund/piggy bank accessible to members ● Has a rainy-day fund paid for by membership fees ● Mutual fund available to members ● Scholarships ● Scholarships for school fees
Community Growth	● Active participation in the surrounding community ● After MSC certification, FEDECOOP got support from Mexican government to develop social programs in the area

	● Both coops (Tarcoles and SoliDar) created an ecotourism venture to provide an additional source of income for the coop ● Members of the coop get hiring priority for open positions ● There is social resistance to large scale development in the area which helps maintain local identity
Dividends	● Coop pays added dividend to fisher at time of fish delivery (landing) ● Coop pays members for grapes on an installment plan, 4x a year ● Coop provides dividends and/or patronage refunds ● Dividend ● Dividends at the end of the year ● If coop has "extra cash" will pay dividends on previous wine vintages ● If the coop makes a profit, it is fairly distributed to all members of the cooperative
Enforcement or Monitoring	● Coop decides closing and opening dates for local fisheries ● Coop members take part in enforcement patrols (or hire employees to do so) ● Cooperatives can choose fishing start dates and closure dates
Environmental Benefits	● After involvement in program, fishers employed new sustainable fishing practices ● Coop decides closing and opening dates for local fisheries ● Coop keep track of fisheries data (landing, location, etc.,) and is used for decision making purposes ● Coop works with partner orgs to assist in stock assessments to determine status of lobster population ● Cooperative members more likely to use efficient irrigation technologies (drip nozzle) vs. nonmembers ● Cooperatives conduct assessments of lobster stocks to maintain exclusive access rights ● Coops diversified fisheries during El Nino (hard times) ● Coops have ability to shape norms and make stricter fishery rules to benefit themselves and the MSC cert long term ● Coops have benefitted from partnerships with WWF, which helped lead to the MSC certification ● Data from GPS buoys is inputted and generates data to improve efficiency, productivity, and accountability ● Having MSC certification increases the likelihood of fishing concession being renewed ● In conjunction w/another coop started a participatory research project to track fish catches, gear, and site locations ● In cooperation w/another coop proposed a community managed marine area ● Lobster cooperatives fun scientific and technical fisheries research with education institutions, gov, and NGOs ● Monitors were given training on sustainable natural resource management ● Most coops hire trained biologists to help understand the fish stocks ● Overall production increased due to implementation of closed seasons ● Project conducted fishery-independent mussel stock assessment ● Promote research ● Research funded by coops gives new info for how to manage fishery sustainably ● Stock assessments of mussel coverage were conducted periodically ● The coops control processes and enforce internal rules to regulate fishing effort ● The federation employs a fisheries scientist

Fills in for Basic Government Services	● After MSC certification, FEDECOOP got support from Mexican government for investment grants for electrical service ● Cooperative runs a desalination plant ● Cooperative runs an electricity-generation plant ● Cooperatives have built and maintained roads in the area ● Project staff assisted with health issues of community members
General Networking	● Collaboration ● External relations ● Social benefits ● Social resistance to large scale development in the area, helps maintain local identity ● The ability to lobby as a group
Helps with Paperwork and Compliance	● Coop acquires fishing permits ● Coop has agreement with government social security department to give pensions to all members when they retire ● Coop helps fishers apply for fishing licenses ● Coop provides food safety training ● Fishers get social security benefits ● Keeps members updated on recent laws that have passed that are relevant ● Members have access to pension system ● Project staff assisted community members with challenges such as filling out government paperwork (identity docs)
Higher Price for Goods	● Typically, the coop can pay twice the average market price for grapes ● If grapes are certified by coop to be "premium" grower will get a higher price ● Coop pays by quality of grapes, not quantity ● Coops help add value to coffee products ● Obtaining better prices
Innovation	● Both coops (Tarcoles and SoliDar) created an ecotourism venture to provide an additional source of income for the coop ● Coop sells directly to an exporter or local businesses, cutting out middlemen ● Cooperative is developing wine tourism project ● Cooperative is looking into ways to monetize waste from coop (odd cuts of meat, etc.) ● Coops help add value to coffee products ● Eliminating the middleman ● Members more likely to be interested in agricultural experimentation than non-members ● Youth Trainings (to encourage continued interest in the sector)
Insurance	● Insurance ● Purchase of insurance
Loans	● Access to government loans ● Cash loans ● Coop provides access to credit and agricultural inputs (seeds and fertilizer at a subsidized cost) ● Coops offer financial credit

	● In-kind credit ● Loans ● Loans ● Loans ● Loans fertilizer to farmers up-front at no cost ● Provides lending and pledge/mortgage services to members
Marketing	● Coop (in coordination with 6 other coops) covers marketing costs ● Coop hired managers that specialize in marketing to market catch from the coop ● Coops provide grading for coffee ● Market information ● Marketing catches from the coop as a whole rather than individuals result in lower competition between members ● Marketing of fishing products ● Products are marketed through the cooperative to purchasers
Negotiate or Lobby with the Government	● Having MSC certification increases the likelihood of fishing concession being renewed ● Knowledge from academic projects resulted in better negotiating power ● MSC certification enhanced FEDECOOP's image and capacity to negotiate with government ● Negotiations with governmental institutions ● The ability to lobby as a group ● The coop reports strong and positive communication with the fishing authority ● Through voluntary fisheries research fishers have learned to network and lobby for certain fishing practices
Networking with Academia	● Cooperative success has led to more relation building between other coops in the area and nearby universities ● Information from research with local universities is shared with growers/members ● Knowledge from academic projects resulted in better negotiating power ● Map of lobster fields created. GPS training (as a result of academic connections) ● Participation in academic projects
Networking with Government	● Federation is a liaison to Mexican government agencies ● Has been visited by senior gov. officials, increasing legitimacy and reputation ● Keeps members updated on recent laws that have passed that are relevant ● Negotiations with governmental institutions ● The coop reports strong and positive communication w/ the fishing authority
Networking with Other Cooperatives	● Cooperative success has led to more relation building between other coops in the area and nearby universities ● Creating an "education department" to enhance communication with other fishermen in the Caribbean ● Fisher exchanges ● Held fisher exchanges ● In conjunction with another coop started a participatory research project to track fish catches, gear, and site locations ● In cooperation with another coop proposed a community managed marine area ● Linked cooperatives provide for better coordination

	• Linked cooperatives provide for better enforcement and monitoring
Networking with other NGO's or Other Organizations	• BARNUFO is reasonably well known and connected with other orgs nationally and regionally • Coop facilitated connections and funding from UNDP, TNC, WWF and others • Coop works with partner orgs to assist in stock assessments to determine status of lobster pop. • Coops have benefitted from partnerships with WWF, which helped lead to the MSC certification • Equator Initiative Case Study, United Nations Development Program 2012
Personal Development	• Became more confident public speakers • Coop members less likely to view access to credit as problematic compared to non-members • Cooperative has strengthened fishers' self-esteem, leading to higher trust of the coop and the ability to make management decisions • Fisherfolk have unanimously seen positive impacts on individual livelihoods over the years by building human and social capital • Increased pride • Members experienced an expanded social network • Members gained a sense of pride • Members noted a sense of independence and accomplishment • Members noted improved self esteem • Social benefits • The creation of the marine restricted area led to fisher's empowerment by making informed management decisions • Women members were more empowered to participate in the cooperative
Problem Identification	• BARNUFO consults with fisherfolk to find out what type of training the require or desire • During the second phase of the project a needs assessment was done, and informed future change of the project • The project leadership conducted meetings and open days, especially in the beginning
Professional Development	• Community members were employed as monitors • Community members were trained to become environmental trainers, drillers (to help with rehab process), monitors, agricultural trainers, agricultural monitors, and field managers • Divemaster training • Learned species identification and underwater monitoring • Members learned first aid • Members learned how to use kayaks and bikes • Members learned the names of local plants and animals • Monitors were given training on sustainable natural resource management
Provides Inputs at Reduced Cost or Easier Access	• Access to inputs (ice, gear, etc.) • Animal feed • Being a member unlocks gov. incentives (gov gas subsidy) • Coop owns gear (kayaks, a truck, two motorized boats, helmets, uniforms, radios)

	● Coop pays for boats (fuel, upkeep, etc.) ● Coop provides access to credit and agricultural inputs (seeds and fertilizer at a subsidized cost) ● Coop provides ice and bait ● Cooperatives own the boats and gear ● Farm equipment (fertilizers, pesticides, seeds, etc.) ● Farm tools (dairy equipment, beekeeping equipment) ● Fishing inputs are discounted (hooks, gear, etc.) ● Free water and subsidized ice ● Grass ● Ice ● Loans fertilizer to farmers up-front at no cost ● Members of coops can receive "farm inputs" ● Provide inputs (fertilizers, pesticides) ● Provides dairy inputs ● Provides feed procurement for cows ● Provides milking services for cows
Reputation	● Has been visited by senior gov. officials, increasing legitimacy and reputation ● Higher access to the marketplace increased cooperative success ● MSC certification enhanced FEDECOOP's image and capacity to negotiate with government
Retirement	● Majority of cooperatives offer retirement benefits ● Retirement funds
Shared Infrastructure	● BARNUFO has an office space, a meeting space, and a training room within the Fisheries Division building. ● Coop has a local restaurant to sell fish ● Coop has a storefront to sell fish ● Coop pays for an office/house/storage space ● Coop would house boats or engines ● Cooperative organizes a fish market ● Provides a unified rearing area for calves
Stock Assessment	● Coop covers costs related to monitoring and catch accounting ● Coop helps track landing data ● Coop keep track of fisheries data (landing, location, etc.,) and is used for decision making purposes ● Coop works with partner orgs to assist in stock assessments to determine status of lobster population ● In conjunction w/another coop started a participatory research project to track fish catches, gear, and site locations ● Map of lobster fields created GPS training ● Project conducted fishery-independent mussel stock assessment ● Research funded by coops gives new info for how to manage fishery sustainably ● Stock assessments of mussel coverage were conducted periodically
Supplemental Livelihood	● Coop increases profits by selling manure and vegetables ● Coop members are less likely to have food security concerns than non-members ● Increased financial independence of coop members

	● Members are compensated for their monitoring days to offset loss in fishing income ● Members participated in food sovereignty projects to increase personal food security (raising chickens, goats, bees, etc.) ● Members used extra earnings from coop and reinvested to diversify their income in other ways ● Project created a vegetable seedling nursery