Changes and adaptations in village food systems in Solomon Islands

A rapid appraisal during the early stages of the COVID-19 pandemic

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Summary

Although as of June 1, 2020, Solomon Islands had no coronavirus cases, there was a national economic recession plus restrictions on people's movement, gatherings, education and business activities. For rural areas, two of the biggest changes have been increased circulation of people—those who moved out of Honiara and back to the provinces—and reduced cash flow.

This rapid survey included 35 people from 20 villages and was conducted between April 25 and May 28. Thirty-one respondents said that village populations had increased, and about half reported that there were food shortages in their village. The most widespread adaptation was to increase agricultural production, particularly of root vegetables. Food trade is impacted by a lack of cash in circulation, meaning reduced marketing of foods in villages and a rise in bartering of fish for other foods. While most respondents reported extended family and community support to increase production and distribution of foods, some reported theft from gardens. In a small portion of communities (15%), conflicts prior to the current situation had meant management rules were being broken. In most communities, community-based resource management (CBRM[1]) committees had responded by raising awareness about fisheries rules. In a few cases, communities had increased enforcement or organized activities, such as group harvests.

This survey suggests significant capacity for people in provinces to adapt to the situation and feed both usual residents and circular residents. However, because of reduced cash flow and the ongoing situation, there is also growing strain on food systems. This strain is likely to be experienced differently by men and women. The study suggests further research on this, particularly in relation to increased burdens and reduced income. We highlight six ongoing initiatives that can be springboards for further action by government, nongovernment and international actors regarding fisheries to increase resilience and improve the ability of rural communities to respond to the current situation.

Hand picking shells and other invertebrate marine resources is an important source of food and income in Solomon Islands. Hand picking doesn't require expensive equipment and is often done by women and youths.

Introduction

The advent of the COVID-19 pandemic disrupted health, food and economic systems. National and local governments were confronted with difficult choices in management of services, supplies and populations around the world. The Pacific is no stranger to sudden shocks; four of the six nations most at risk from natural hazards and societal vulnerability in the world are Pacific Island nations (World Risk Report 2019). Solomon Islands is number three on the list, and its Melanesian neighbor Vanuatu is number one in the world because of its high exposure to natural hazards in the form of extreme weather events.

Living through shocks and disruptions builds resilience. This resilience can come in the form of social capital (such as extended family networks) and traditional or normative practices (such as sharing resources)—or in the form of preparedness systems in formalized institutions and processes. But the pandemic is different in its nature and impacts than other experienced shocks. Although the pandemic has not yet created a direct health crisis in most of the Pacific, governments and regional institutions have responded by developing mitigation and adaptation measures. In Solomon Islands, the government has instituted shutdowns, closed borders and cut salaries of public servants.

While Pacific Island countries have significant populations engaged in the subsistence agriculture sector, particularly in Melanesia, national economic fortunes are tied to international commodity exports and global industries. Regionally, the interruption to the tourism sector is forecasted to impact the Pacific in a range of USD 1–2 billion (SPC 2020). Losses are realized across many parts of national economies, including unemployment, business failure and changed patterns in the production and distribution of food. In 2018, gross tourism receipts accounted for 12.5% of GDP, and remittances accounted for 1.4% of GDP in Solomon Islands (SPC 2020). Both are predicted to be severely impacted by travel restrictions and job losses. Key exports from Solomon Islands (fish, logs, copra and cocoa) have all taken a downturn, with government revenue being cut by 11% as a result. The Central Bank of Solomon Islands forecast the country to be in recession in the second quarter of the financial year (CBSI 2020).

Under the State of Emergency, declared by the Governor General on March 25 as a response to the crisis spurred by the event of COVID-19, the government encouraged urban dwellers without formal employment to return to their provinces. The suspension of schools and education institutions and the limits on movement and large gatherings of people have also meant many Solomon Islanders have left Honiara. Another key driver behind internal migration is the crackdown on the informal sector. Street side and suburban marketing, which is a source of income for many households, has been banned in Honiara. The informal sector, including subsistence production and sale of goods at the household level, has a significant impact on the fortunes of provinces and the nation. Wages and salaries (cash and in-kind) made up 24% of total income of households in 2013, followed by income from household-based businesses, at 22% (SINSO 2013). Directions by the government and changes in daily lives initiated widespread migration to the provinces and has increased populations in rural towns and villages.

The knock-on effects are many and yet to be fully understood. Still, the government is forecasting a -4.9% GDP figure for 2020 (SIG 2020). The recently announced (May 8, 2020) economic package amounts to SBD 309 million (USD 36.6 million) featuring primary production sectors (agriculture and fisheries). This includes a SBD 5 million (USD 600,000) injection into SolTuna to continue production and sustain employees.

While access to tribal lands and coasts for subsistence agriculture and fishing has always been the "safety net" in Solomon Islands, providing food in times when employment, royalties and other sources of sustenance are lean, there are legitimate concerns about the current state of food and nutrition security. For example, the Solomon Islands Chamber of Commerce and Industries has reported on food supply estimates prompted by food security concerns due to COVID-19 (SICCI 2020b). Stocks of unharvested roots and meats

in storage can last the capital 2–3 months—prompting advice for new planting as preparedness. The added impact of Tropical Cyclone Harold further exacerbated food shortage fears as agricultural land was flooded and crops lost in Guadalcanal (RNZ 2020). Provincial leaders have sought to increase agriculture production to mitigate possible food shortage with the influx of people to villages. In April in Malaita Province, for example, the premier called on villages to have a 100-day planting period, providing 33 wards with seeds and tools to support this endeavor, and in Honiara households have been provided with seedlings by the Ministry of Agriculture and Livestock.

In Solomon Islands, growing conditions are favorable for a range of crops, and the majority of the population (the 2019 agricultural census estimated 92%) is engaged in agriculture in some way on the 1.1 million ha of agricultural land in use—mostly in the provinces where people now have moved (SIG 2019). Fishing is widespread and productive. In rural areas of Solomon Islands, 68% of households report catching fish or shellfish, and even in urban areas one-third of all households are engaged in this activity (SINSO 2013). Fish and fisheries are an important source of resilience in many coastal areas during periods of hardship in Melanesia (Eriksson et al. 2017). These features of the national food production systems infer that there is potential to buffer COVID-related uncertainty in the food supply through domestic production.

The economic disruptions and population movements in Solomon Islands have not been experienced on this scale since the civil conflict from 1998 to 2003. The impacts of the current situation are difficult to determine based on that experience, given the many changes in the economy, society and politics 17 years later. A better understanding of how daily lives are impacted by national and international responses to the global pandemic can help guide localized responses by governments and the international community more broadly.

Root crops are staple foods grown in family gardens across much of Solomon Islands.

Objective

The objective of this report is to **document changes and adaptations in village food systems** in order to inform the Ministry of Fisheries and Marine Resources (MFMR), other national partners, participating communities, donors and the international community about how the COVID-19 situation is experienced in a selection of villages in Solomon Islands.

We sought to meet the objective by answering three questions:

1. What strategies are villages employing to ensure there is enough **food**?

2. How are **fisheries** and **CBRM** influenced?

3. How are village populations demonstrating adaptations and practices that indicate **resilience**?

Community-led resource management plays an important role in safeguarding coastal resources in Solomon Islands.

Village survey approach and methods

To understand the impacts of the COVID-19 situation on food security and fisheries in provincial villages, we gathered reports on practices in communities through individual phone surveys with community leaders who are currently on active local committees responsible for fisheries and livelihoods. By drawing knowledge and observations from community leaders, and collating these around answering the three questions, the survey sought to update national agencies and partners about how the economic and health crisis brought on by COVID-19 is experienced by rural coastal community members.

Data was collected from 20 communities, where WorldFish has ongoing activities, in Malaita and Western Province between April 25 and May 28, 2020. A total of 35 participants (15 women, 20 men) were interviewed. Each interview was carried out by a WorldFish staff member with previous training and experience in survey data collection and who was known to the interviewee through previous interactions on WorldFish projects. Interviewers carried out the interviews in Pijin, the country's lingua franca, or in local tribal languages, where it was shared between WorldFish staff and interviewees. Interviews were held at times thought to be most convenient for the interviewee, which included the evening or at night when people are not engaged in subsistence activity or employment.

Two survey respondents were sought in each community from a local committee on fisheries and/or livelihoods: one active senior male member and one active senior female member. In some cases, this sampling strategy was not achieved because of difficulty reaching committee leaders over the phone during the sampling period, with telephone service being unreliable or people switching off their phones due to lack of electricity for charging phones. This is common in rural Solomon Islands: usually only a few households will have access to solar power systems that cater for reliable and frequent charging. Phone surveys have become feature methods while face-to-face research is halted due to COVID-19 related restrictions on public gatherings and travel. Our experience with carrying out this survey suggests that the method was challenged by the difficulty in obtaining samples and by respondents being able to provide accurate measures over poor phone reception.

Topics for survey questions included population movement, food production, adequacy of food supply, changes to fish catches and sales, food prices, and changes to fishing rules and management. (See Annex A for a full list of questions and the survey instrument.) This is an early version of a survey template now shared and promoted under the coordination of the locally managed marine area (LMMA) network. (The updated version can be obtained from the LMMA by contacting teri@lmmanetwork.org.) We encourage the use and application of the updated version for enhanced regional amalgamation and comparison.

Activeness of committee members was assessed in terms of their recent involvement in CBRM decision-making, as observed by the community liaison point and WorldFish staff in recent interactions in the communities in 2019 and early 2020. At the outset of the interview, interviewers explained that the purpose was to inform WorldFish, the MFMR, donors and the international community about how the situation has been experienced in a selection of villages in Solomon Islands. Results from the research will also be fed back to participating communities during the next in-person communication of WorldFish staff with communities, dates permitting given current travel restrictions. Respondents were informed that their village or names would not be listed in the report and that comments would be anonymous. Interviewees were also told that participation was voluntary, so they could withdraw at any time.

Although the survey was designed to take less than 10 minutes, oral storytelling styles of communication meant that it often took longer. These longer discussions were summarized as notes in the survey document for further background information to the survey data. Data has been de-identified to ensure anonymity. People are identified by gender but not village or other identifiers. Preliminary indications of whether the situation is experienced differently by men and women is included in this analysis.

Village survey results

What are the strategies of people in villages to ensure there is enough food?

We sought to understand how changes and adaptations are occurring in villages to ensure there is enough food by asking respondents about strategies for food production, distribution and overall supply. Anecdotal reports indicated that villages were growing in population as a result of the government's advice that Honiara residents should return to their home villages, if they were able. Given the resulting increase in demand for food in these villages, we sought to understand the strategies being employed locally for food production, distribution and overall supply.

Thirty-two of the respondents (91%) noted that populations had increased. Five of these respondents noted that the influx was minimal, and two noted that populations had decreased again because some people had returned to Honiara as schools were starting again. Sixteen respondents noted food shortages (46%), while 18 noted that there was enough food in the village (54%). Seven of the respondents that reported enough food had concerns about long-term food security. Women were slightly more likely to be concerned with the quantity of food, but this was attributed to a range of factors. Not all factors related to population changes, and they could also be influenced by the timing of the survey. Surveys conducted later in May tended to be more negative about the food situation than those conducted a few weeks earlier.

> *Most families skipped breakfast and lunch. Only dinner is usually served. But during worst cases, even families go without food for a whole day. This situation is getting worse. Children went to school without even having breakfast. Some even survive on dry coconut. This is due to unfavorable weather (rain) experienced during the month of April.*
>
> ***— Female respondent, Malaita Province***

Some of the strategies to make food last (other than producing more) included minimizing consumption, skipping meals, reducing sales and bartering different types of food.

> *Meetings were held to discuss issues of concern, one of which is to advise families to minimize the harvest of food gardens and food consumption. Currently, families are harvesting just enough to satisfy their main meals.*
>
> ***— Male respondent, Malaita Province***

All but one respondent reported some form of adjustment in their food production, with 30 specifically mentioning increased production of food through gardening. Increased production in home gardens was the most common practice; however, group gardens, where clusters of families or a locale would work together to plant and

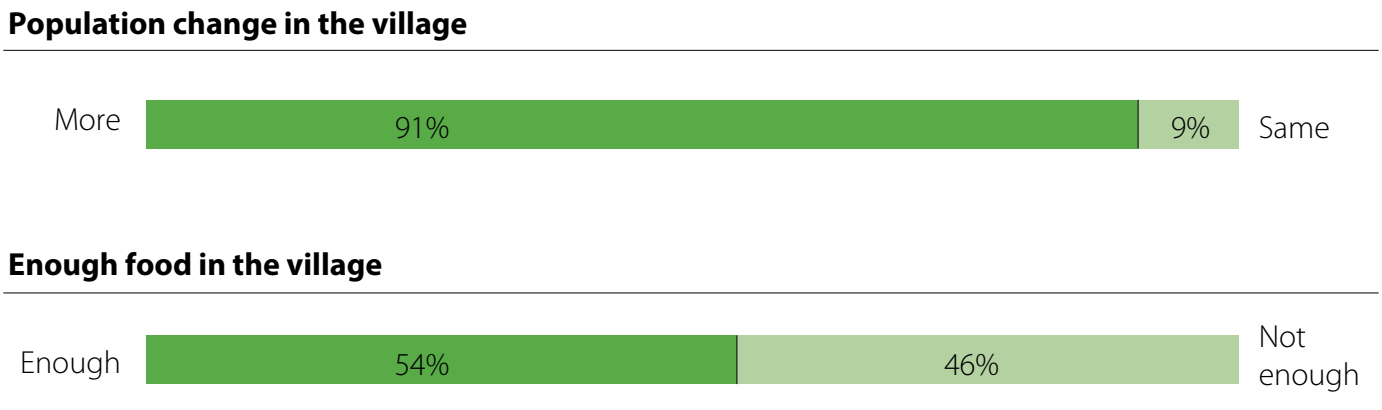

Figure 1. Responses on population changes and pressure on food in villages.

harvest, were highlighted as a strategy by four respondents. Several respondents mentioned that people from town have arrived in the village without tools for gardening. Communal gardening can be a strategy to pool resources for food production. The themes highlighted in Figure 2 are not standardized and there is interaction between the themes; family gardening and community cooperation are ways to increase gardening. The emphasis on village agriculture for increasing food supply is unambiguous.

> *Everyone focuses on putting more effort into maintaining or extending food gardens. Families plan to increase garden production to ensure food is available in the coming months, not only for household consumption, but also for marketing.*
>
> ***— Male respondent, Malaita Province***

In some locations, those who arrived from Honiara brought supplies with them; however these supplies were now depleted and so food shortage concerns were raised in this context by three respondents.

> *People did bring food supplies back home, while some unfortunate ones lost most of their food supplies during the MV Taimareho incident (a shipping accident resulting in people overboard and deaths from drowning). As people already spend about 1 to 2 months at home, they exhausted all supplies, and to make things worse they did not have food gardens, so they rely on relatives for survival.*
>
> ***— Male respondent, Malaita Province***

Strategies for producing more food (% response frequency, n=35)

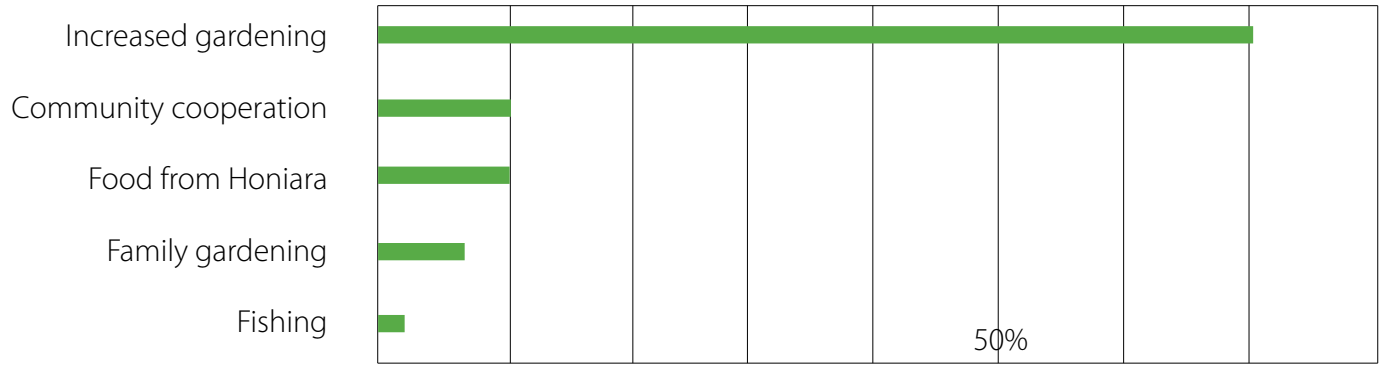

Figure 2. Broad themes for strategies to produce enough food in villages.

Important foods (% response frequency, n=35)

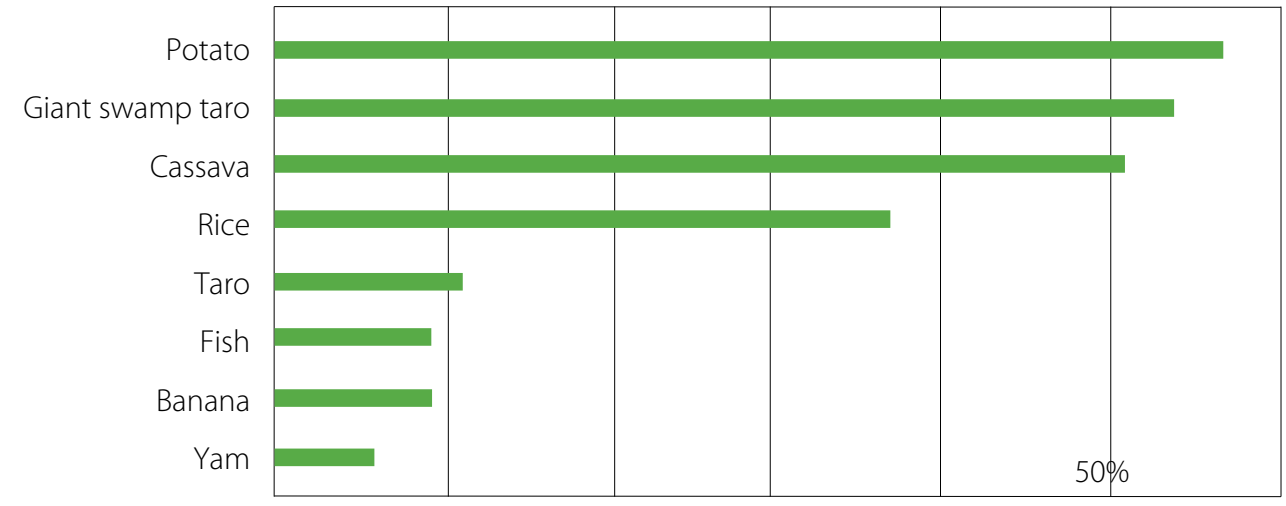

Figure 3. Most important foods for local food and nutrition security in villages.

All respondents emphasized staple root crops (potato, giant swamp taro and cassava) as most important for food supply. This is expected given the prominent feature of roots in Melanesian diets and local knowledge and skills for production of these crops. The frequent emphasis on giant swamp taro is important, as it is commonly seen as a "back stop" for slipping into greater food insecurity. Respondents pointed to increased production and/or consumption of locally grown root crops as a result of potential shortages in imported rice. In some instances, rice was viewed as a supplement so as to not deplete food storage in gardens.

> *We are going back to local food, like bananas, potatoes and cassava. We were already doing that, but more and more people are eating more local food apart from rice. This is so our body will be healthy and be able to fight against COVID-19 (information from awareness carried out in the villages). Each family is organized with making their own gardens.*
>
> ***— Male respondent, Western Province***

For other food crop production, there were differences between villages and geographies—likely to do with growing conditions and existing village gardening practices. Banana was mentioned by two respondents as part of the prioritized crops. There was no mentioning of popular and common cash crop varieties, like watermelon, tomato, capsicum, spring onion or papaya, indicating that in periods of uncertainty root vegetables are a primary source of food security.

The coincidence of the COVID-19 pandemic with the cyclone season has conflated pressures to create a period of hardship in certain areas. The influx of people has coincided with the period where food production is low because of seasonal changes.

> *[Families] must plant pana and yam for the months of March to April during which people always experience food shortages.*
>
> ***— Female respondent, Malaita Province***

In April, the government released a directive that prices of staple foods, particularly rice and canned fish, were not to be increased so as not to take financial advantage of potential shortages and as a social protection mechanism. However, almost half of the respondents noted increases in the price of rice and canned tuna. The survey was carried out approximately 1 month after the rules on price hikes were given by the government. It is possible that this directive has not made it to villages, and awareness on the right price and price control are lacking in rural areas.

As a whole, the information on food production and supply infers that rural people have high adaptive capacity and that local food system practices are acting as an important safety net; however, how long this situation can persist is unknown.

How are fisheries and CBRM influenced?

We sought to gather information about changes in fishing practices and how CBRM committees were responding to such changes. Based on research on the role of fish and fisheries when recovering from natural hazards (Eriksson et al. 2017), we had expected to find that respondents would report that fishing efforts had increased to ensure food production for household consumption and sale for cash.

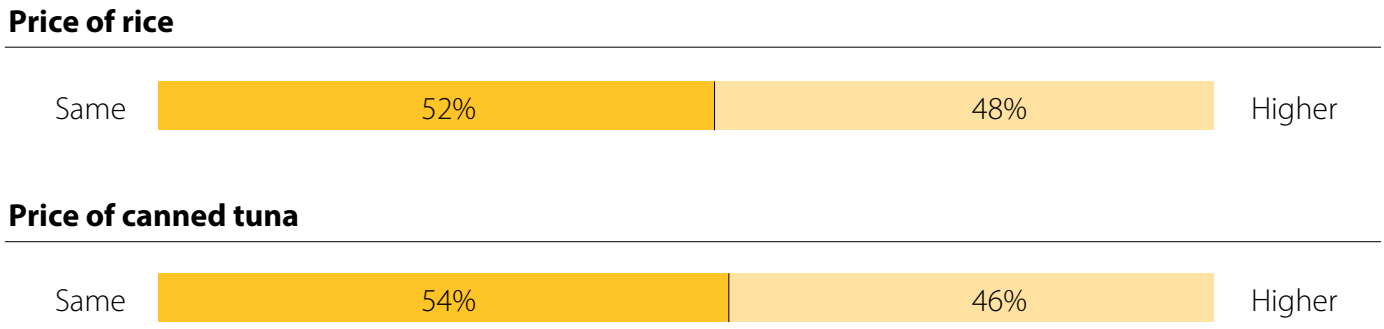

Figure 4. Responses on changes in the price of rice and canned tuna.

Overall, there seems to have been limited increases in fishing efforts, with 46% of respondents reporting an increase in fishing. In villages where fishing had increased, this was explained by the growing need for food and cash.

> *Most who came back from Honiara, the only livelihood that sustains them is fishing. If they are to wait for their gardens to ready, they will starve to death. Therefore, most of them resort to fishing as the immediate means to tackle shortage of food. Catches were sold, and the money earned is spent on local food or other imported basic food items.*
>
> ***— Male respondent, Malaita Province***

> *At the moment, there is still enough food. But if this situation gets worse and the number of people returning to the village continues to increase, food will not be enough. The supply of food from existing gardens now is at maximum. If harvesting increases further, overharvesting will occur, meaning families will go hungry in the weeks to come.*
>
> ***— Female respondent, Malaita Province***

Sixteen respondents (47%) noted that more fish was caught in the village, while 17 (50%) reported no difference. One respondent noted lower fish availability. This was because the disrupted cash flow had reduced the demand for buying fish in the village. The catch patterns appear to vary according to local fishing practices. One village reported that more shells were being collected, while another reported an overall estimate of a 50% increase in catches. The motivation for increasing fishing efforts was to ensure food supply for own consumption in a period of disrupted cash flow.

> *People tend to fish when they do not earn enough money to buy tinned fish due to the cash flow problem… Increase in fish caught is estimated in the range of 10 to 25 percent.*
>
> ***— Male respondent, Malaita Province***

Changes in the marketing of fish varied between villages. Reduced volumes of fish for sale were reported by 26% of respondents, while 31% reported more fish for sale. Similarly, fish seems to have become cheaper in some places (26% of responses) and more expensive in others (21% of responses). Respondents reported that people from town were either inexperienced fishers or did not have fishing gear, so the influx of people did not necessarily lead to more fishing but to more demand for fish and agricultural crops. However, disruptions in cash flow had also led to reduced demand in some villages.

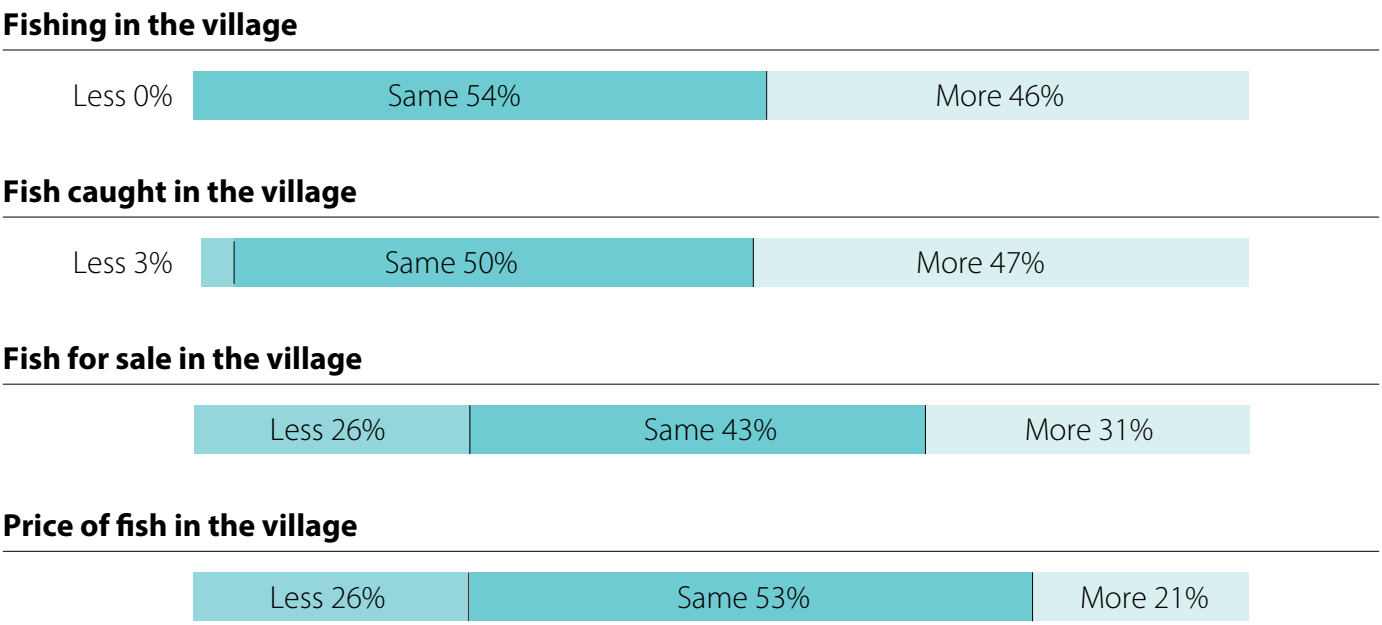

Figure 5. Responses about fishing and distribution of fish in villages.

> *Fishing at the moment still remains the same. This is because most people who came back to the village do not own a canoe or even basic fishing gear, so they cannot fish. They are yet to fully adapt to village life.*
>
> ***— Male respondent, Malaita Province***

Two villages reported more fishing efforts and catches at a nearshore fish aggregating device (FAD). This is a relatively simple technology already in use across many villages to attract pelagic fish closer to shore in reach of dugout canoes. National and provincial government response initiatives are already deploying more FADs to support such fishing practices.

Twenty of the respondents resided in villages with CBRM committees. Out of these, nine reported proactive responses: awareness and information (five respondents), increased enforcement (two), including in some cases by-laws with police backing and organized harvests for community needs (two). One village reported introducing its own rules around social movement in order to minimize risk and health awareness as important related activities. Seven respondents reported committees being "inactive" or doing nothing, and in three sites (15% of communities) active conflict situations meant management was not happening.

> *So far, reports of continuous poaching reach the committee. Most reported cases occur during the night. It has been a practice since the management plan was launched. But the good news is so far there are no reports of increased poaching related to the increase in numbers of people coming back to the communities. Most of the people who came back from Honiara are not fishermen.*
>
> ***— Male respondent, Malaita Province***

All respondents from villages with CBRM plans stated that people were aware of local rules. However, breaking of fishing rules was widespread and reported in eight of the 12 villages that were practicing CBRM. The infringements related to undersized catches, poaching, disagreements and disobeying fishing rules. It is important to note that local, rather than national, situations often impacted increases in fishing efforts and breaking

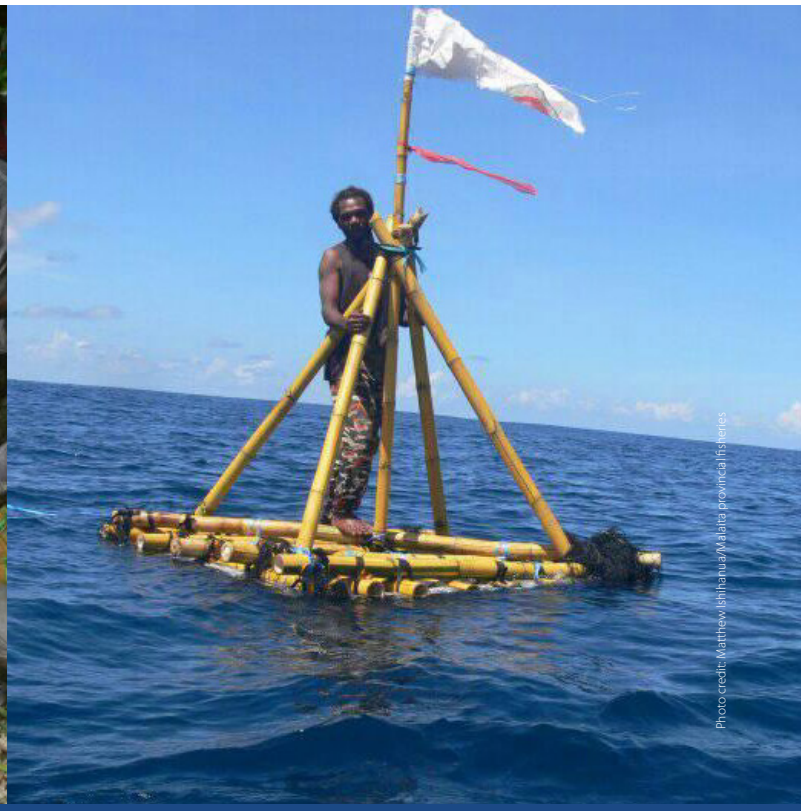

Photo credit: Matthew Ishihanua/Malaita provincial fisheries

Construction and deployment of fish aggregating devices (FADs) in Malaita during May 2020.

of rules. In some communities, for example, local fisheries management had "broken down" because of tribal conflicts prior to the COVID-19 situation. Fishers' conduct toward local fisheries management was not evidently directly linked to recent changes in villages because of COVID-19, as illustrated in several examples.

> *Unfortunately, due to conflicts that arose during the national general election, opposing parties take advantage of the situation and disobeyed the rules that were agreed upon by the community. Since then, the management committee is yet to meet and revisit their plans.*
>
> ***— Male respondent, Malaita Province***

> *Unfortunately, just two weeks ago, there was a dispute between two of the several tribes that live here. Attempts to resolve the issue by neutral tribes fall on deaf ears, so the managed area was forced to open. Knowing that the area was under management for years attracted lots of fishermen from distant communities as well as neighboring communities.*
>
> ***— Male respondent, Malaita Province***

How are village populations mobilizing practices that indicate resilience?

We were interested in what changes had occurred to village practices and the types of responses that infer adaptive capacity. Respondents made comments that population influx has exceeded that experienced during usual national occasions for gatherings in rural areas, such as Christmas. However, while this influx of people was noted, the population increase in villages was not at scales that appear to prompt widescale food shortages. Across most villages, respondents noted that communities are falling back on, and are supported by, traditional practices like bartering and extended family systems to meet extra demands for fish and garden produce.

> *There is enough food for everyone because we are organized in the community, and we still use cultural practices where families look after each other, especially when someone returns to the village.*
>
> ***— Male respondent, Western Province***

While in most communities, food supply was a family concern, in a few of the communities group gardening across several families and group fish harvests to support community activities and services were reported. One woman said a group harvest was organized to buy supplies for the local clinic last month.

> *Our CBRM committee often meets to discuss matters related to how benefits can be shared or given to other important community groups—for example, clinic, church and school.*
>
> ***— Female respondent, Malaita Province***

Despite evident leadership and social capital as sources of resilience, strain was also apparent in some places. For example, concerns about how long food supplies can last were fueled by theft and conflicts.

> *People are uncertain about how long their food gardens can last them…Last week, some students from [village name] mentioned their food from gardens were being stolen.*
>
> ***— Female respondent, Malaita Province***

Overall, village practices infer that there is resilience in the form of social capital and normative practices around sharing foods in extended family networks. However, there is strain and difficulty, which appear to be felt differently by different people depending on their access to productive assets and social relations. Previous environmental, social, conflict and economic factors continue to influence local situations in the current crisis.

Implications

Markets, women and youths

With the increasing restrictions on informal marketing, we had expected respondents to note impacts on household economies. However, most respondents had not been affected by closures of informal markets in and around Honiara and were more reliant on markets within their village or province.

The closing of informal marketing is a severe measure in the Solomon Islands context. The most recent national survey indicated 76% of households had most of their income from selling subsistence-based products for cash (SINSO 2013). Women are less likely than men to hold positions in industry and government, so they are more reliant on informal marketing for livelihoods and comprise the majority of informal market sellers.

Restrictions on betel nut sales had more of an impact on respondents in Malaita, in particular. A recent study found that young women were less likely than adult married women to engage in marketing fresh produce, but those who did in urban areas were often selling betel nut (World Bank 2019). The production and sale of this stimulant is a major economic activity and one which the authorities attempted to limit and stop during the shutdowns and state of emergency period, particularly in Auki and Honiara. In 2012–2013, local trade of betel nut was estimated at over SBD 100 million (SINSO 2013).

Disruptions to household economies were noted, particularly in Malaita:

> *Most people depend on the sales of betel nut to pay for imported goods. But due to the state of emergency situation, most betel nut vendors lost their means of earning an income and therefore cannot afford to pay for imported food items, which they normally depend on. But with the reopening of the new site for betel nut sales, they should be able pay for basic food items.*
>
> ***— Male respondent, Malaita Province***

> *Most families here depend on the sales of betel nut for income; however, betel nut production is also low at the moment, thus affecting the purchasing power of local villagers. This is evident during local market days. Almost every food item (including fish) brought to markets during market days are not sold. Before COVID-19, people still have at least money to spend. Now it seems as if nobody is selling or buying.*
>
> ***— Male respondent, Malaita Province***

There is a lack of data on the contribution of informal marketing to household income, to the national economy and to economies in villages and rural areas. This makes it difficult to measure the impact of shocks to the informal sector. Although it is known that marketing also is a factor in internal circulation of people from one province to another to sell goods, there is little data to measure this in terms of the number of people involved, income made and other factors. Data available indicates that some areas of Solomon Islands have more experience with internal migration. Data from 2009 indicates Malaita had relatively small in-migration compared to other provinces, at just 1%–10% in most parts of the province except Auki (11%–15%). Western Province had higher in-migration, at 11%–25% in most of the province, particularly around Gizo and Noro (site of the tuna processing plant and base for fishing operations) where it was over 25% (SINSO 2009a).

Similar to the marketing situation, the national cessation of schools meant that a shift in daily lives and practices among youths was reported. One respondent reported that more youths are engaging with coastal marine resource collection by gleaning the mangroves and reefs. This is a common method for low-input harvesting, making it important for community members who do not have access to fishing gear, such as youths.

Research indicates that young people rarely participate in decision-making about local fisheries and are also less likely to be involved in decisions around marketing (World Bank 2019). This means

young people are likely taking up roles in the margins of village economies, and without active inclusion they may struggle to raise individual incomes needed, for example, to support their technical and tertiary studies. The government initiative to recruit youths and women to monitor price control measures in local areas is a welcome employment boost for youths, and there are likely other schemes that could make use of the abundant supply of youth labor in rural areas and transition intermittent activities into more productive livelihoods.

As in many other contexts, women are more likely to be caring for children and the elderly, and more likely to be financially dependent on others, such as husbands or parents with salaries. If the economic hardship caused by the COVID-19 situation continues, an important subject of research will be the effects of job and income losses on dependants, particularly in Malaita, which has the second-highest dependency ratio (96 dependents to every 100 working people) and fertility rate (5.6 children to each woman). The highest rate for each of these is the small population of Rennell and Bellona Province (SINSO 2009a). The impact of the internal circulation of people and on reduced household income on women's and children's health and economic well-being will be important to monitor in areas of high dependency and vulnerability.

The coastal fisheries sector

Fisheries will continue to play an important role for food and nutrition security, being a major source of protein in island diets, income through sales and of other foods through bartering and sharing among families. People returning to villages seem, for the most part, not to engage in fishing. But initial indications are that fishing that does not require gear will increase (collecting shellfish and crabs, for instance) and that demand for fish caught by regular fishers residing in rural areas permanently will increase as more people need food. However, respondents indicated that disruption to village economies had limited people's ability to buy fish, so fishers are less inclined to go out to sea. Our study included two provinces, but the findings broadly mirror those of Wale and the LMMA network (2020) at the Russell Islands in Central Province. The role of fish, marketing and bartering in local food systems will be an important research agenda over the coming year(s) as the pandemic continues to cause disruption. These patterns of fishing and selling are also gendered, with men generally being catchers of fish using gear and women being sellers of fish in village locations. Because of their lack of control and ownership over assets, youths can be sidelined from these activities, but they are an important source of labor in villages where they are included in productive activities.

In some instances, CBRM committees had enabled whole communities to better respond to the current situation by sustaining harvests to feed larger populations, contributing money to health centers, and continuing fish sales in local villages and major towns of Auki and Gizo. Good governance in regards to fisheries is a key factor in the resilience of coastal communities and the ability of provincial town markets to maintain their trade.

Six ongoing initiatives with respect to coastal fisheries are highlighted based on the services that are provided by the national government through the responsible ministry, the MFMR:

1. Promote the use of fish species that have high nutritional value and are relatively resilient to heavy fishing pressure. These include small pelagic species like the popular *gato-gato* (*Ambyglaster sirm*), the spotted sardinella, which is in season January–August (Roeger et al. 2016). This is an appropriate nutrition-sensitive approach to fishing.

2. Another approach is supporting the MFMR's national FAD program and other provincial-level initiatives through deployment of low-cost and low-tech FADs to augment nearshore fishing practices and help take pressure off other fishing grounds which may more commonly be targeted. A recent manual is available for download that describes uses and designs: https://coastfish.spc.int/en/publications/technical-manuals/fads.

3. Other options are available for seeking to enhance fish-based livelihoods and their contribution to food and nutrition security. There are several "fisheries center" facilities for supporting fish storage and distribution constructed around the country under various

national and provincial government and community arrangements. Some of the facilities are resourced with solar freezer capacity and so offer an opportunity to store perishable foods for village supply and marketing. Resources are freely available for improving food safety when handling fish and marketing fish: https://coastfish.spc.int/en/component/content/article/485-handling-seafood-in-the-pacific-islands.

4. Small-scale solar freezers have recently been delivered to some localities by nongovernmental organizations so as to provide cold storage for foods and improve living standards. Since 2016, WorldFish has pioneered a structured initiative with solar freezers in partnership with the West Are'are Rokotanikeni women's associations and the Malaita Provincial Fisheries Office. Our findings so far are that it is possible for women's associations to operate small "solar enterprises" at their own pace and scale. This has generated savings for the women's groups and provided cold storage of perishable foods for many people from within and in adjacent communities. However, we also found that the technology is still very vulnerable, with three out of 12 freezers breaking down within 1 year of operation. In addition, committees need to have arrangements in place for transparent and planned use for the community. Tools are available for agencies and organizations to support implementation: https://coastfish.spc.int/en/component/content/article/509.

5. The focus in the international community has been on understanding first the short-term impacts on livelihoods and food and nutrition security; however, maintaining a view of the long-term sustainability of fisheries also needs to be part of the conversation. CBRM is a preferred strategy to managing local fish supply and, in places where it is working well, increases the ability of communities to respond to shocks and disasters. We know from research in Malaita that CBRM adapts, and people are willing to overlook people breaking rules if there is livelihood hardship (Sulu et al. 2015). Management committees and government services that support them have an opportunity to engage in constructive conversation with communities about balancing immediate needs and the long-term sustainability of fishing. We found evidence that CBRM is continuously supported in some places and that sustainability messaging is occurring through announcements in the village. Information should continue to be disseminated on coastal fisheries management and related dimensions such as safety at sea, for example, through the MFMR's weekly radio show. (The MFMR Facebook page provides updates and schedules for the radio show.) WorldFish is responding to the increased frequency of shocks and disasters by preparing a facilitation tool for communities to analyze themselves how CBRM can respond to shocks and increase resilience of food systems. Resources are also currently available to facilitate conversations about sustainable use and CBRM: http://pubs.iclarm.net/resource_centre/AAS-2013-17.pdf.

6. There is an increasing body of evidence that local resource management inclusive of women and youths is more robust. In the Solomon Islands context, it is important to balance the different needs of women and men, different tribal or ethnic groups and to give a voice and a productive role to the majority of the population, which are youths. It was observed that in CBRM sites with a proactive response to the COVID-19 situation, these were often also places with active representation of women in the committees. However, further research is needed to track the different experiences of men, women and youths in community management and the use of fish and marine resources. Resources are available on how to consider gender and facilitate activities to be more inclusive in interventions to promote local fisheries management: www.worldfishcenter.org/content/considering-gender-practical-guidance-rural-development-initiatives-solomon-islands

www.worldfishcenter.org/content/gender-inclusive-facilitation-community-based-marine-resource-management-addendum-'community.

Note

[1] In Solomon Islands, CBRM is commonly referred to for community-based fisheries management (CBFM).

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Annex A - Phone call to village leaders – COVID-19

Please fill in the following sheet when you call your contacts (men and women).

Village name	
Contact name	
Date	
Prompt: We are just calling to check in with you how life is in your village now that people seem to be moving back from Honiara and other places. Can you explain a bit about what is happening in your village now?	
Notes:	
If populations have increased, by how much do you estimate? (*highlight if it is the same or estimate how much more*)	Same/More: 25% 50% 75% 100%
How are people making food last for everyone?	Notes:
What are the main ways people are producing more food?	Notes:
What kind of food is most important?	Notes:
Do you think there is enough food in the village for everyone?	Notes:
What about fishing? Are more people fishing?	Notes:
Is everyone that fishes aware of the customary practices and rules around fishing?	Notes:
Are people breaking any fishing rules?	Notes:
Has the CBRM committee improved information about rules or made other decisions?	Notes:
Is more fish being caught in total? (*highlight if it is the same or estimate how much more*)	Same/More: 25% 50% 75% 100%
Have there been any changes in the sales of fish?	Highlight: More Less
Have there been any changes to the price of fish?	Highlight: Cheaper More expensive
Have there been any changes to the price of rice?	Price (for example $ per kg):
Have there been any changes to the price of canned tuna?	Price for a medium-sized can

WorldFish

About WorldFish

WorldFish is an international, not-for-profit research organization that works to reduce hunger and poverty by improving fisheries and aquaculture. It collaborates with numerous international, regional and national partners to deliver transformational impacts to millions of people who depend on fish for food, nutrition and income in the developing world. Headquartered in Penang, Malaysia and with regional offices across Africa, Asia and the Pacific, WorldFish is a member of CGIAR, the world's largest global partnership on agriculture research and innovation for a food secure future.

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