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The challenges of a food sovereignty perspective: an analysis of the foodways of the Rama indigenous group, Nicaragua

Andrew Papworth¹ · Mark Maslin² · Samuel Randalls²

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Abstract

Despite its prominence within food security debates, Food Sovereignty is still a developing and contested concept. This article illustrates two of the tensions within the Food Sovereignty literature through an analysis of the foodways of the Rama indigenous group in Nicaragua. Firstly, the results show that there is considerable heterogeneity in how the Rama source their food and that, for most Rama, engagement with the market economy is critical to ensuring their own food security. This presents a further challenge to the idea that Food Sovereignty should only promote a one-size-fits-all “small-scale farming” approach to food security. Secondly, the paper shows there is considerable conflict over resources between the Rama and Pacific Nicaraguans who have encroached on their territory. This finding reinforces the view that Food Sovereignty needs to be further developed to be able to give clear direction in similar instances. This article concludes by arguing that although these tensions need to be resolved in order to boost the utility of Food Sovereignty on the ground, the concept can provide a useful theoretical arena in which to highlight the food security threats that are faced by communities like the Rama.

Keywords Food sovereignty · Food security · Indigenous · Fishing · Farming · Nicaragua

1 Introduction

Food insecurity affects at least two billion people worldwide (Wheeler & von Braun, 2013) and has significant implications for global health (Black et al., 2013; FAO, 2017; Jyoti et al., 2005), poverty and inequality (Hamelin et al., 1999; Olson, 1999), conflicts (De Châtel, 2014; Gleick, 2014) and migration (Rademacher-Schulz et al., 2014; Warner & Affi, 2014).

Solutions to food insecurity need to be sustainable in the face of multiple and interacting future threats including: climate change (Lincoln Lenderking et al., 2021; Milliken, 2017; Siegel, 2021); water insecurity (Hanjra & Qureshi, 2010; Miller et al., 2021; Young et al., 2021); changing tastes and global market shifts (Popkin et al., 2002); land

grabs (Müller et al., 2021; Nally, 2015); and biodiversity loss (Fedotova et al., 2021; Tschardt et al., 2012).

In pursuit of this aim, the concept of Food Sovereignty was developed as a direct challenge to the neoliberal food system, which is the dominant paradigm of global food production (Lang & Barling, 2012; Nally, 2015). This paper uses a case study of the Rama indigenous group, who live on the Caribbean Coast of Nicaragua, to highlight some of the tensions of the Food Sovereignty concept and to test whether it can be useful when considering the food security of this small, vulnerable population.

1.1 Food security and food sovereignty

Food Security can be defined as “a situation that exists when all people, at all times have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (FAO, 2017: 107). This definition encapsulates the four dimensions of food security: availability, access, utilisation and stability (Gregory et al., 2005). This Food Entitlement Decline (FED) conception of food security argues that even if a household is located where there is enough food (availability), they may still

✉ Andrew Papworth
andrew.papworth@york.ac.uk

¹ Department of Health Sciences, University of York, York, UK

² Department of Geography, University College London, London, UK

be food insecure if they cannot afford to buy enough food for their needs, or if they do not have the ability to acquire it through other means (access and stability), or the only food they can consistently access is not appropriate for them (utilisation) (Osmani, 1993; Sen, 1981; Tilly, 1983).

Following the inclusion of agriculture in world trade after the World Trade Organization (WTO) was formed, there was an increased recognition, particularly amongst those in the Global South, that the neoliberal, capital-intensive and corporate-led model of agriculture had led to environmental damage, increased urbanisation and a few food producers wielding great power (Bini, 2018; Lang & Barling, 2012; Wittman et al., 2011). Several scholars argued that because food security is a depoliticised paradigm, at best it does not challenge the dominant models of food production, and at worst it actively promotes them (Clapp, 2014; Jarosz, 2014; Patel, 2009). In 1996, the international movement *La Vía Campesina* launched the concept of Food Sovereignty as a direct challenge to the neoliberal food system (Martínez-Torres & Rosset, 2010).

Food Sovereignty has been defined as “the right of nations and peoples to control their own food systems, including their own markets, production modes, food cultures and environments” (Wittman et al., 2011: 2). Its focus is on ensuring that people continue to have the right to produce, consume and share their own food in a sustainable way (Bini, 2018; Lang & Barling, 2012; Robbins, 2015; Wittman et al., 2011).

The intention of *La Vía Campesina* was to highlight the importance of including power and politics in food security discussions (Springfield, 2012). Thus, whereas food security can be said to be a technical concept, Food Sovereignty can be seen as a political concept or a moral framework (Springfield, 2012), specifically established to challenge the status quo in food security debates (Windfuhr & Jonsen, 2005).

La Vía Campesina states there are seven principles to Food Sovereignty: 1) ensuring food is a right; 2) using agrarian reform to give landless and farming people ownership and control of land; 3) protecting natural resources; 4) ensuring that food is, firstly, a source of nutrition rather than a tradable commodity; 5) ending the globalisation of hunger, including the special interests of multi-national organisations; 6) preventing food being used as a weapon; and 7) food must be democratic—food producers must have the right to formulate food policy (Beuchelt & Virchow, 2012; Clapp, 2014; Windfuhr & Jonsen, 2005).

Food Sovereignty is, however, a developing and contested concept (Agarwal, 2014; McMichael, 2014, 2015); as Borras (2008) states, *La Vía Campesina* is attempting to represent “a plurality of identities and interests”, which means it “constitutes an evolving ‘arena of action’” (p261).

1.2 The contested nature of food sovereignty

Some scholars have criticised Food Sovereignty for lacking clarity and being too ambitious (Clapp, 2014; Edelman et al., 2014). For example, Edelman (2014) states that the concept is “a slogan, a paradigm, a mix of practical policies, a movement and a Utopian aspiration.” (p96). These criticisms are supported by the patchy implementation of Food Sovereignty principles in nations that have officially adopted Food Sovereignty policies (Iles & Montenegro de Wit, 2015), and in the tensions within the concept that have been highlighted by scholars (Agarwal, 2014).

This paper will engage with two of these tensions. Firstly, it will highlight how the case of the Rama contributes towards the debates on Food Sovereignty’s aims of “democratic choice” and “small-scale farming” (Agarwal, 2014).

In seeking to challenge the neoliberal food system, some proponents of Food Sovereignty have argued for the rejection of trade and market-based economies (Li, 2015), and an increased focus on small-scale farming, local production and agroecology (Bini, 2018; Lang & Barling, 2012; Robbins, 2015; Wittman et al., 2011). Collectively, this paper characterises this model as “small-scale farming”.

Many households that would benefit from this approach, however, are already heavily engaged in capitalist market relations or livelihoods (Iles & Montenegro de Wit, 2015; Varese, 1996, 2010). As a result, a focus on “small-scale farming” could risk locking these individuals into livelihoods they do not desire (Wald & Hill, 2016). As seen in its seven principles, *La Vía Campesina* has recognised this tension and has sought to foreground the importance of democratic choice and debate (Agarwal, 2014). It is unclear, however, how this might work in instances where some farmers “make choices [...] that diverge notably from those desired by the food sovereignty movement for presumed common good” (Agarwal, 2014, p. 1256).

Secondly, Food Sovereignty has grown to encompass many vulnerable groups, including rural labourers, farmers and fisherfolk (Nash, 2005). *La Vía Campesina* has focused on the idea of a shared “peasant” identity—peoples with common struggles despite coming from different cultures (Boyer, 2010; Martínez-Torres & Rosset, 2010). The Nyeleni definition of Food Sovereignty states that the concept is for “those who produce, distribute and consume at the heart” (Nyéléni, 2007); detractors believe that this definition means Food Sovereignty could be adopted by almost anyone (Patel, 2009).

Food Sovereignty, therefore, has difficulties explaining instances where there are competing demands on the same resources, and is unable to clear guidance on how such

disputes over the ownership of resources can be addressed (Wittman et al., 2011). If there are two communities that are only able to achieve their own food security by controlling the same resource, this reading of Food Sovereignty is open to the abuse of the concept's principles: the achievement of Food Sovereignty for one group could challenge the Food Sovereignty of another group (Borras, 2008). This criticism is key in the face of future threats such as water and land grabs, population pressure, and climate change (Wittman et al., 2011).

By conducting a fine-grained investigation of the foodways of the Rama—a community that might benefit from a Food Sovereignty approach—this paper will illustrate why these criticisms become important in the context of small, vulnerable communities.

1.3 Case study

Nicaragua has a long history of food insecurity (Karfakis et al., 2011), and in 2004 had the highest malnutrition rate in Latin America (HabibMintz, 2004). Government policies targeting improved food access for lower income households, a slowdown in population growth and an increase in grain production levels has led to progress in recent years (Rosen et al., 2014). There is, however, still extensive regional and demographic inequality, including disparities between rural and urban areas (David et al., 2004; Dumazert, 2008; Karfakis et al., 2011), and between the west of the country (the Pacific Coast) and the east of the country (the Caribbean Coast). Land access is a vital consideration for poverty alleviation and food security in the country (Davis & Stampini, 2002; Karfakis et al., 2011), but there is a very unequal distribution of land ownership and high levels of tenure insecurity (Deininger et al., 2003). In response, Nicaragua was one of the first countries of the “pink tide” to attempt to integrate food sovereignty into national legislation (Araújo & Godek, 2014; Enríquez, 2013; Godek, 2015, 2021; McKay et al., 2014).

The Rama indigenous group live on the Caribbean Coast of the country. This region was granted autonomy from the national government in 1987, but its turbulent history and the extraction of its resources by colonial and imperial actors has meant it is significantly poorer than the rest of the country (ECN, 2014; Mitchell et al., 2015). The Rama are particularly at risk of food insecurity because they live in a rural location and are more reliant on natural resources than other populations in the region (Adger, 2000; Coe, 2008b; FAO, 2017; Riverstone, 2004). They are the smallest indigenous group in Nicaragua with an estimated population of about 1,500 (Barclay, 2007).

Successive Nicaraguan governments have granted small holdings on the Caribbean Coast to Pacific Nicaraguans (which the Rama call Mestizos or Spaniards) in return for

political support (Morris, 2016). The agricultural frontier continues to advance eastwards into the autonomous regions of the Caribbean Coast, and large areas of indigenous territory have been settled by force (Finley-Brook, 2016; Morris, 2016).

After a landmark ruling by the Inter-American Court on Human Rights on the Nicaraguan government's sale of ancestral lands in the (non-Rama) indigenous community of Awás Tingni, the Nicaraguan government were required to “demarcate and title indigenous lands” (Grossman, 2001: 13). Nicaragua's Law 445 was intended to meet this requirement by guaranteeing indigenous groups the exclusive right to manage and exploit the land and resources in their territory (Anaya, 2005). However, the process of *sanaamiento*—the actual delimitation, demarcation and titling of land—has not been completed for the Rama territory and it is not officially enforced.

1.4 The field sites

There are nine Rama communities and fieldwork was conducted in three of them: Rama Cay, Tik Tik Kaanu and Sumu Kaat. The vast majority of the Rama population live in these communities and logistical constraints rendered other communities less accessible (Barclay, 2007; Papworth, 2019). Figure 1 shows the study location.

Rama Cay is a small island, approximately 0.11 square miles in size, located in the Bluefields Lagoon, 10 miles to the south of the town of Bluefields (Baldi, 2013; Baldi et al., 2014). There are approximately 90 households on the island, constituting approximately 80 percent of the entire Rama population (Coe, 2008a, 2008b; Papworth, 2019; Riverstone, 2004).

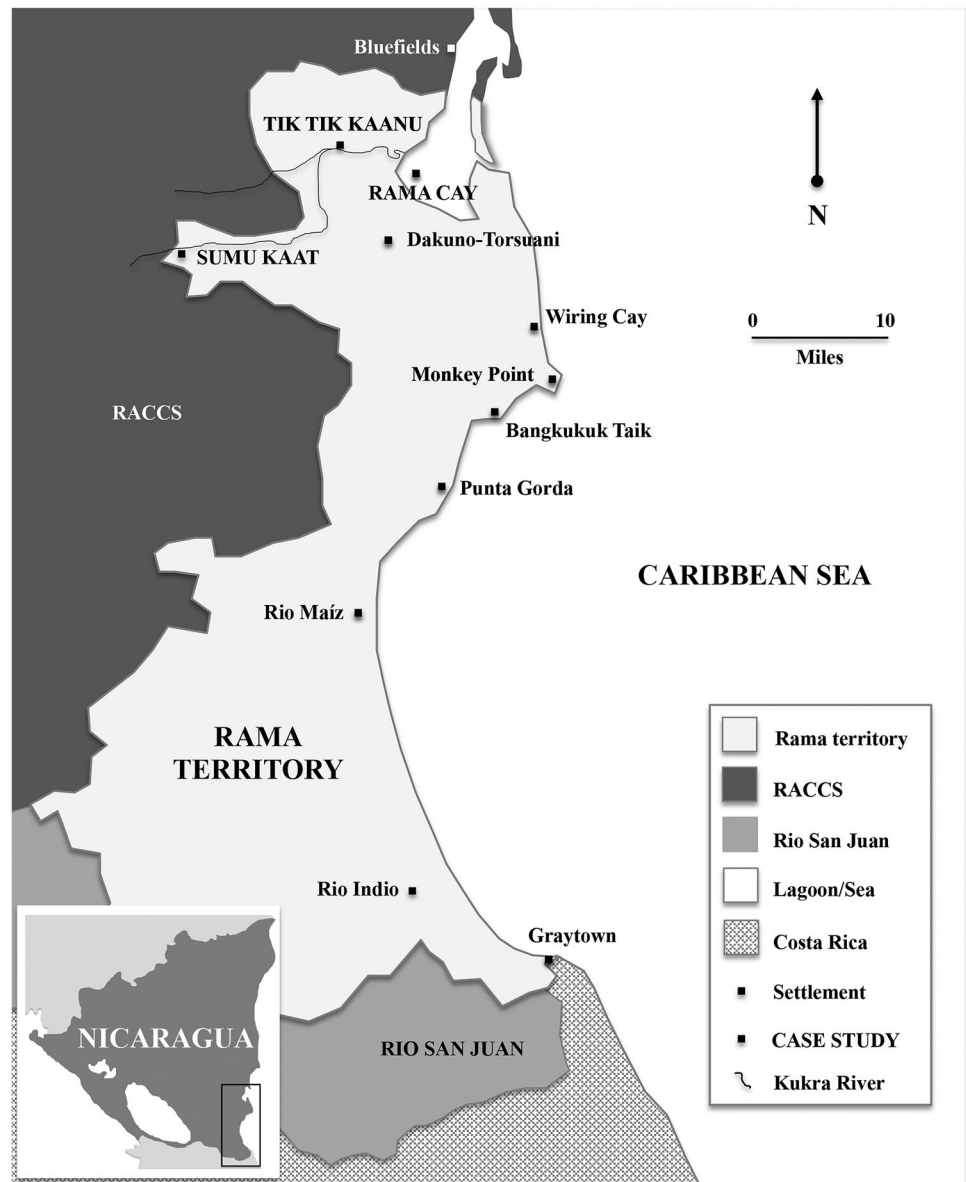
Tik Tik Kaanu is laid out along both banks of the Kukra River, approximately seven miles from Rama Cay. The community is approximately half a square mile in size and is more sparsely populated than Rama Cay (Papworth, 2019; Riverstone, 2004).

Sumu Kaat is also located along the Kukra River, close to the western extremity of the Rama-Kriol territory. It is about 24 miles from Rama Cay. The river is not deep enough to be navigable by motor-powered boats during the dry season. The community consists largely of individual houses connected by tracks running through the plantations farmed by the residents (Papworth, 2019; Riverstone, 2004).

2 Methods

The data used in this paper were collected using an explanatory sequential mixed-methods approach (Creswell & Plano Clark, 2011), in two stages (see Fig. 2 below). Stage one consisted of household surveys conducted with 110 Rama families (83 on Rama Cay, 16 in Tik Tik Kaanu, and

Fig. 1 The location of the study sites in Nicaragua. Source: Authors



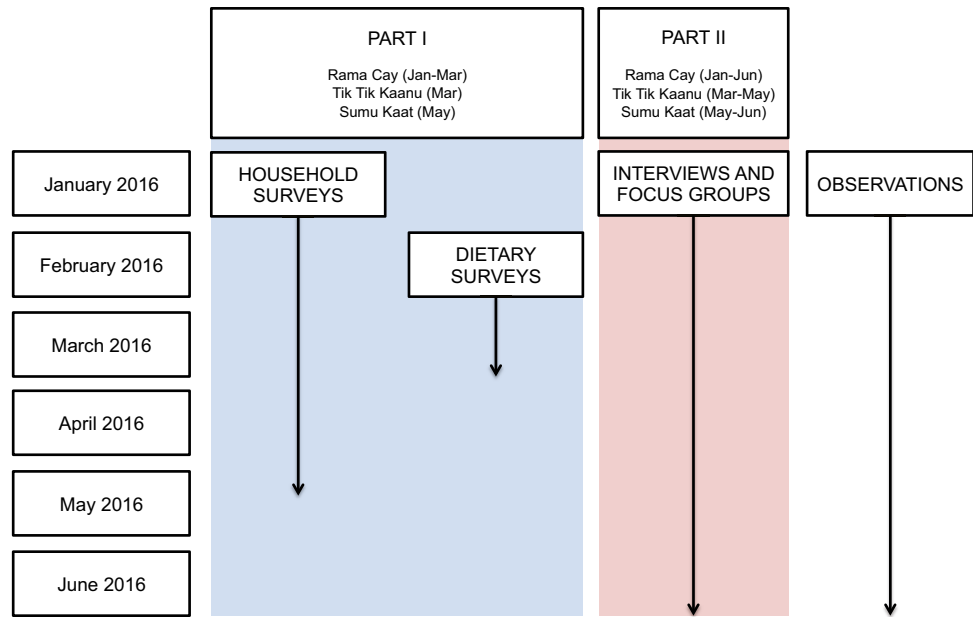
11 in Sumu Kaat) between January and March 2016. Families were asked what food items they ate, how much they ate, and where these food items were sourced, based on four categories (Bought, Wild, Produced, Gifted). This followed the approach taken during research conducted with the Mayangna in northern Nicaragua (Koster & Leckie, 2014; Perri et al., 2019). These data were designed to determine the Rama's foodways, which are defined as the "cultural and social practices that affect food consumption, including how and what communities eat, where and how they shop, and what motivates their food preferences" (Alkon et al., 2013, p. 127).

Households were recruited directly by the research team following project information meetings on Rama Cay and in Tik Tik Kaanu, and with the aid of the community

leader in Sumu Kaat. In total, 70 people attended the two project information meetings, which each consisted of a short presentation about the study by the lead author and an extended Q + A session. Attempts were made to sample every household in the three chosen communities. Three households declined to participate in the surveys; the other households that did not participate were unavailable during the study period.

Stage two consisted of 41 in-depth, semi-structured interviews (signified by "#"), 91 informal conversations that took place during survey data collection (signified by "S#"), observations, and local archive research conducted between February and June 2016. These were designed to determine what threats the Rama perceive to their food security and augment understandings of the Rama's foodways.

Fig. 2 Data collection procedural diagram. Source: Authors



The results from the surveys informed the interview schedule and sampling strategy for stage two. Households for stage two were chosen purposively to ensure the interviews included a representative sample of household characteristics including family size, wealth, and the livelihood strategies they used. Convenience sampling was also used, with opportunities taken to speak to respondents who wanted to have an input into the study. The study’s sample size and its representivity of the total Rama population are presented in Table 1. Interview data were analysed using Applied Thematic Analysis, which is designed to complement

mixed-methods research and answer research questions of a practical nature (Guest et al., 2012). Quantitative data were analysed in SPSS Version 22 with significance set at the five percent level for regression analyses.

The Rama speak Rama Creole—which is similar to Standard English—as their first language, and some speak Rama and/or Spanish as a second language. Indicative quotes included in this paper are either in Rama Creole or translated from Spanish into Standard English in accordance with best practice for research in this region (Mitchell et al., 2015)

Table 1 Study sample size and representivity of the total Rama population

		Rama Cay	Tik Tik Kaanu	Sumu Kaat	Totals	% of c. 1,500 population
Project Information Meeting Attendees		47	N/A	23	70	4.7
Household Surveys	Households (Average family size)	83 (6.6)	16 (5.8)	11 (6)	110 (6.4)	47.1
	Individuals ¹	548	93	66	707	47.1
Dietary Surveys	Households (Average family size)	9 (9.6)	N/A	N/A	9 (9.6)	5.7
	Individuals ¹	86	N/A	N/A	86	5.7
Informal conversations (% of Female participants)		65 (57)	15 (67)	11 (82)	91 (62)	6.1
Semi-structured Interviews (% of Female participants)		34 (71)	4 (50)	3 (33)	41 (66)	2.4

¹Indication of individuals represented by the surveys in total (based on the size of the household to which the surveyed respondents belonged)

3 Results

The results are presented in two parts. The first will detail the heterogeneity of the Rama's foodways and the way they use different livelihood strategies at different times during the year. It will argue that Food Sovereignty needs to allow space for the possibility of multiple, differentiated sovereignties. The second part will detail the encroachment of Pacific Nicaraguan colonisers into the Rama territory. It will show the difficulties that resource conflicts such as these present to the Food Sovereignty concept and argue for contextual factors to be considered when defining communities as "peasant" or "non peasant".

3.1 Foodways and livelihood strategies

Figure 3 shows the number of families in the survey who said they ate particular items of food. The qualitative interviews and observations suggested that breadfruit, tortillas and bread are eaten by more families than are suggested here. In terms of common dishes, fish is often fried and served with Gallo Pinto (rice and beans) or root vegetables such as cassava and plantain, which are known locally as 'breadkind' (Papworth, 2019). Fish is sometimes eaten in a soup or in a dish called Rundown, which is a stew made with coconut milk that originated in the Caribbean. Other

common protein sources include chicken, oysters, beef, cockles and prawns.

The interviews revealed that the Rama source their food through a number of different livelihood strategies (see Table 2).

These livelihood strategies were separated into the four categories used in the household surveys: Bought (categories 2, 3 and 4 in Table 2), Produced (category 1; growing produce), Wild (category 1; fishing and hunting) and Gifted (category 5). Respondents were asked to specify the way they normally sourced each food item in these categories. The results are shown in Fig. 4 below.

These data show there are differences between the three communities. Families who live on Rama Cay (Families 1–83) tend to source a higher percentage of their food by buying it than the other two communities (Families 84–110). The average amount of bought calories (as a percentage of all consumed calories) is 67% for Rama Cay, 24% for Tik Tik Kaanu and 18% for Sumu Kaat. A Kruskal–Wallis test shows the difference between the communities is statistically significant (at the $p < 0.05$ level), $\chi^2(2) = 41$, $p = > 0.001$.

Several factors contribute to this, but the most important is arguably the different access to resources and markets these communities have (Papworth, 2019). Rama Cay has the best access to the fishing grounds and oyster and cockle banks in the Bluefields Lagoon and the sea, and to local markets and job opportunities due to its proximity to Bluefields.

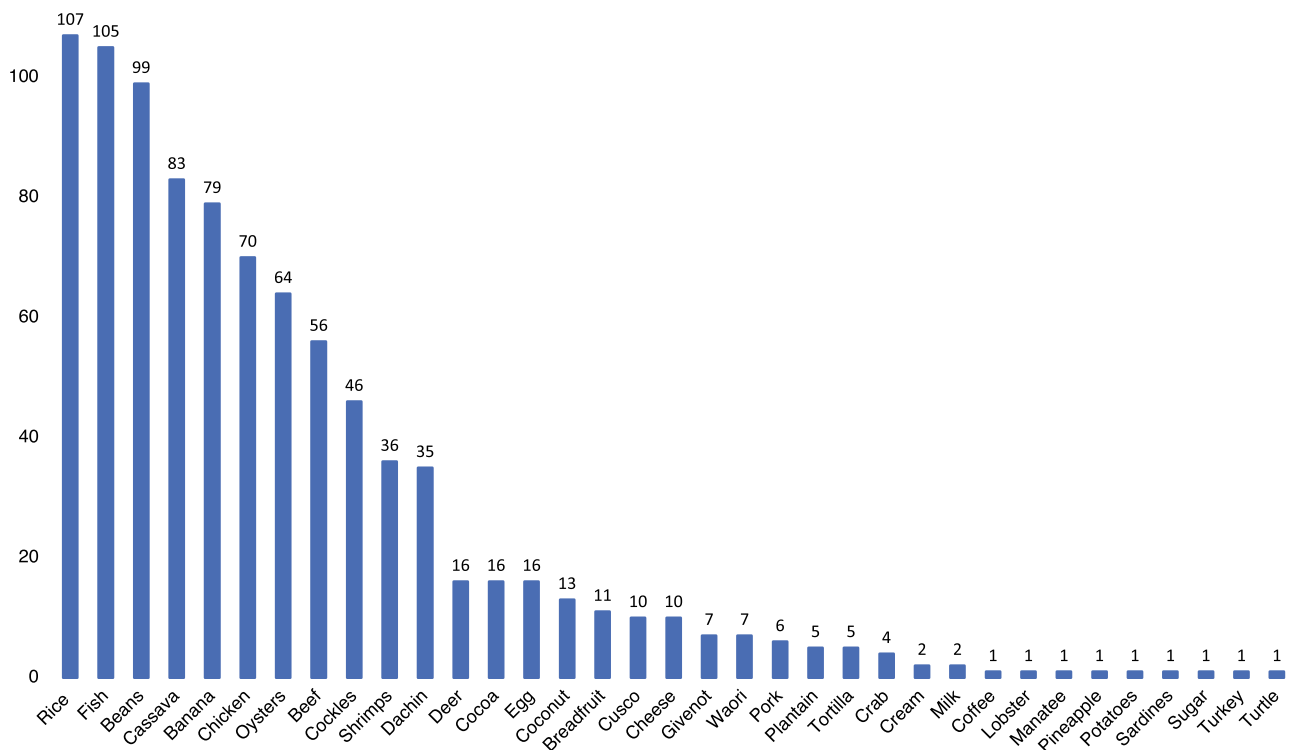


Fig. 3 Food eaten by each household. Source: Authors

Table 2 Livelihoods of the Rama indigenous group

Category	Food sourcing strategy
1. Traditional activity	Catching fish, hunting, or growing produce
2. Monetised traditional activity	Catching fish, hunting, or growing produce to sell for cash (either locally or at national markets) Selling food and drink items that require additional labour to produce—for example, baking bread or making up refrescos (soft drinks) Producing and selling household items including hand nets, dories, cutlery, furniture
3. Buying and selling	Running a shop that stocks products bought in local markets and sold on at a mark-up—items include beans, rice, sweets, biscuits, crisps, spices, flour, oil, batteries, and tobacco Buying produce from other Rama households and selling on at other local and national markets
4. Employment	Salaried teachers, nurses and local government officials who live and work in the local communities Working for NGOs or local businesses Remittance income from family members who work abroad (often Costa Rica or the USA), or in other parts of Nicaragua
5. Gifted food	Informal and short-term ‘chambas’—including farm work, construction work, cooking and cleaning Received from family members, friends, the church or NGOs (may be reciprocal or be required to be repaid in the future)

Sumu Kaat has the best access to farmland, but the worst access to markets and job activities; its residents must rely partly on the small, nearby community of San Pancho. Tik Tik Kaanu has better fishing grounds than Sumu Kaat, but worse market and job access than Rama Cay.

This difference is neatly, though perhaps too simplistically, summarised by Respondent #36: “What can we fish here [in Sumu Kaat]? What can they grow there [on Rama Cay]?” The answer that he gave to both questions was

“nothing”. The surveys also showed that Rama Cay households were more likely to buy meat products and processed foods. Figure 5, which shows a generalised flow of foodstuffs in the local region (based on qualitative interviews), summarises the varied access each community has to markets and natural resources. It will be very difficult to design policies that are able to achieve food security for all these communities simultaneously, which supports the view that food sovereignty must be sensitive to local heterogeneity.

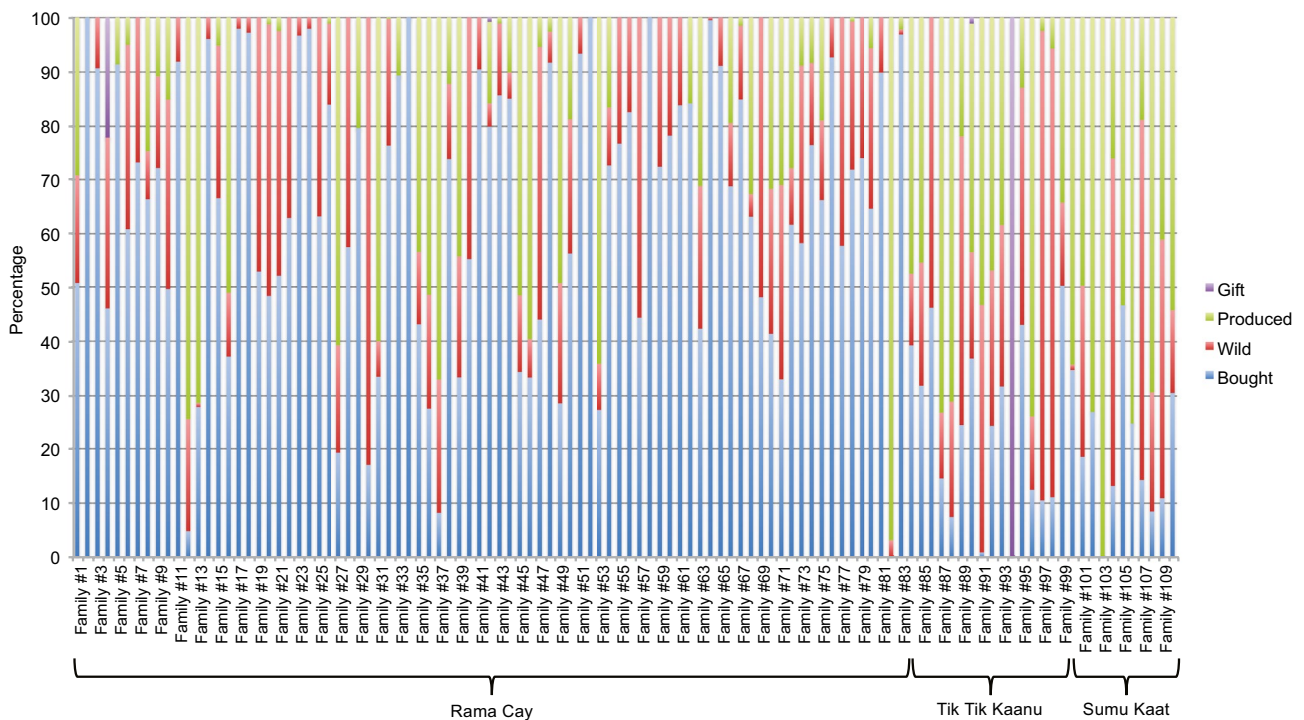


Fig. 4 How the Rama households source their food. Source: Authors

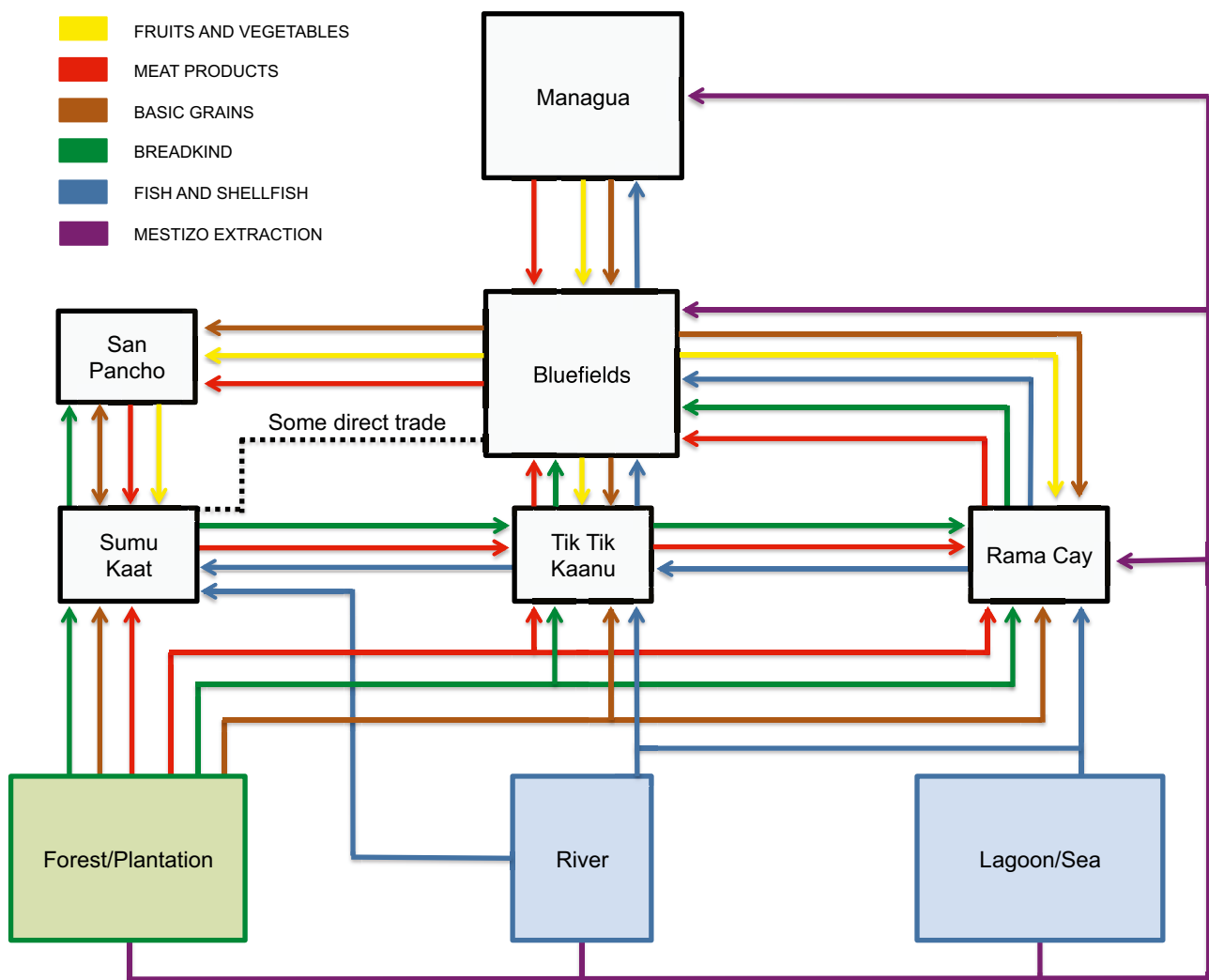


Fig. 5 Food flow diagram. Source: Authors

As seen in Fig. 4, there are also differences between families within communities. This is likely because each Rama family uses subtly different combinations of livelihood strategies, which is in line with other research in similar communities (Martin, 2015; Yuliani et al., 2018). This is outlined in Table 3 (below), which shows examples of three families that live on Rama Cay.

Some Rama households inhabit different realms and draw on their access to resources and markets, and their own identities and abilities, at different times of the year. As highlighted by Respondent #15 in Table 3, Rama households may experience significant fluctuations in income by season. This can be the case even for salaried individuals: Respondent #30 added that she cannot afford food out of

Table 3 The varied livelihood strategies of three Rama Cay households

Respondent	Livelihood strategy
Respondent #8	Runs a shop on the island; Buys fish from artisanal Rama fishermen and sells them (and the fish that he has caught himself) to a multi-national seafood company; Involved in other market activities in Bluefields; Has access to significant capital and resources
Respondent #30	Teacher in a school in the Rama community; Other family members catch fish and run the household's plantation; One family member works abroad and remits income
Respondent #15	Largely relies on fishing, particularly prawn fishing, which is seasonally limited; When yields are poor, family members do part-time construction or farm work

school term-times when she is not paid, and so relies on different livelihood strategies during the holidays. Each of these families are reliant on a combination of market and non-market activities to secure their foodways. This has been seen in similar populations, such as the Miskito of Honduras and Nicaragua who engage in what has been termed the “purchase society” where indigenously-derived subsistence is stabilised or augmented by participation in the market economy (Dodds, 1998; Helms, 1969; Nietschmann, 1973).

The balance of how the Rama source their food has been changing towards market activities over time (Riverstone, 2004), and the fieldwork data suggested many families are choosing to shift their focus to waged employment. Respondent #S47 stated that his family used to hunt for game, but the animal population in the Rama territory dropped to the point where there was “little hunting left” and he and his family moved to Rama Cay so that he could look for a job. Respondent #4 states that as the risk of traditional livelihood strategies has increased—due to reduced yields and increased threats such as being forced off their land by Pacific Nicaraguans (see following section)—many Rama have been faced with a choice:

“Some of [them] say [...] I am going to make a business instead [...] or get a job because it’s much easier than to [farm]. Now when I go to Bluefields, my son say he want [to have] a piece of chicken, fried chicken from [a fast-food restaurant]. It’s very different.” Respondent #4

For the Rama, therefore, there exists a tension between focusing on traditional livelihoods versus engaging with the market economy. Many families have to choose between maintaining their land or furthering their education in order to access the job market. Respondent #25 works as a teacher in the primary school on Rama Cay. She explained that when she was younger, her family owned a farm, but her father insisted that she and her brother go to school to further their education and the farm was taken over by a relative.

In the face of increased threats to the Rama’s resources and shifts in food culture, it is likely that individuals will choose to change their food systems in a way that impinges on the rights of others. This can be seen in research on the fishing activities of the Rama where commercial fisherfolk have depleted the fisheries yield for non-commercial fisherfolk (Papworth, 2017a, 2019).

These tensions for the Rama reflect the tensions in the Food Sovereignty literature between privileging “small-scale farming” and ensuring that peoples have the right to choose their livelihoods. The Rama, and similar groups, have been engaging in the “purchase society” for a long time and this has led to inequalities between the different communities and between households within each community (Papworth, 2017b, 2019). Even within this relatively small community,

the promotion of a single, “small-scale farming” response to the neoliberal food system is inappropriate.

3.2 Resource conflict

Scholars have highlighted the issue of resource conflict as being one that challenges the Food Sovereignty concept (Borras, 2008; Wittman et al., 2011). In this study, several respondents identified the increase in Pacific Nicaraguans exploiting resources within the Rama territory as a key threat to their food security. Overall, the Rama stated this resource conflict was the second most important issue affecting their food security (after the weather).

Respondent #5 said she could remember when there were no Pacific Nicaraguans in the Rama territory, but she said, “now wherever turn, where you turn you find them.” More than 20 respondents described the way some Pacific Nicaraguans had taken over the farms of Rama people through force, often with the use of guns.

“In the woodland [...] people coming in, taking your land without consultation and they do whatsoever they wanting to [...] We see that a lot. The whole territory is invade by [Pacific Nicaraguans].” Respondent #7

This colonisation reduces the amount of land and natural resources that the Rama themselves can use. One Sumu Kaat resident (Respondent #36) said the community will be a fraction of its current size if the present pace of Pacific Nicaraguan settlement continues. Respondent #19 said the Rama aim to rotate the land they use to maintain its productivity, but some are now forced by the reduced size of their holdings into using the same plots continuously, which exhausts the nutrients from the soil.

Equally, poaching and the destruction of habitat have meant animals have been forced into areas that are a long way away from Rama settlements, making them more difficult to hunt regularly. Respondent #10 adds that the Pacific Nicaraguans use pesticide to combat this problem, and this damages the Rama’s crop.

The encroachment of Pacific Nicaraguans also impacts on the Rama’s decision making. Respondent #19 explained how, for her, the competing interests of land ownership and furthering her education are rationalised as opposing opportunities because of the Pacific Nicaraguans’ presence.

“Well for me, first [ambition is to] go school [but] I think [focusing on] the farm be better [...] because if we leave that land [the Pacific Nicaraguans are] going to take it over.” Respondent #19

Several respondents blamed the recent reduction in fish stocks exclusively on the fishing practices of the Pacific Nicaraguans. Respondents #3 and #30 said the Rama only catch prawns during the day and only take what they need,

whereas Pacific Nicaraguans fish throughout the day and night. Respondents #S43, #4 and #7 said this is also the case with other seafood.

Respondent #3 said the Pacific Nicaraguans introduced gill nets to the region and these catch smaller and younger fish, which causes fish stocks to collapse because they are caught before they can breed. Respondent #12 said the Pacific Nicaraguans put nets across the Kukra River which reduces the number of fish able to swim to the parts of the river nearest the inland Rama communities.

Respondent #37 said that because there is a lower price for smaller prawns, the Pacific Nicaraguans often throw them back into the lagoon after they have died. He believes the impact of these dead prawns being returned to the water has dramatically reduced yields. He says that he used to go fishing and catch 60–100 pounds in one day, whereas now he can only catch 5–6 pounds on a good day, and none at all if he is unfortunate.

Four respondents claimed the Pacific Nicaraguans use poison and dynamite to catch large quantities of fish at once. Respondent #19 asserted, “They just [...] poison the river. They couldn’t care. [They take] 2–3 quintile [and] leave behind [the] spoil[ed] fish.”

This conflict clearly has a large impact on the Rama’s food security. The broadening of the definition of a “peasant identity” within Food Sovereignty scholarship creates an uneasy tension in this instance. The ruling by the Inter-American Court on Human Rights and Nicaragua’s Law 445 set a clear precedence: Pacific Nicaraguans have no right to exploit the resources in the Rama territory. Nevertheless, most Pacific Nicaraguans in the Rama territory are smallholders and small-scale fishermen who have moved to the Caribbean Coast due to the lack of opportunities elsewhere in Nicaragua. Although it would be inappropriate given the legal and historical context, the tension within the Food Sovereignty concept means Pacific Nicaraguans could arguably invoke the “peasant identity” in a similar way that powerful farming groups have done so in other countries (Borras, 2008). This view is reinforced by the fact that the Nicaraguan government, which has been lauded for including Food Sovereignty in its national framework (Enríquez, 2013; McKay et al., 2014), is partly responsible for allowing Pacific Nicaraguans to colonise the Rama territory.

More generally, there has been a lack of capacity and willingness for the Nicaraguan state to implement Food Sovereignty policies; most government apparatus is tethered to agreements that are antithetical to its implementation (Araújo & Godek, 2014; Godek, 2015, 2021). This shows that driving the shift to Food Sovereignty through national governments may not always be effective. This is a known issue within the literature, which has led to the definition of Food Sovereignty shifting from including the “right of

nations” to the “right of peoples” (Agarwal, 2014). Despite this, these debates have been slow to influence policy, and conflicts like the one highlighted here threaten many marginalised groups (Agarwal, 2014; Borras, 2008; Finley-Brook, 2016; Morris, 2012, 2016).

4 Discussion

Through an investigation of the foodways of the Rama indigenous group in Nicaragua, this paper has highlighted why two tensions that exist within the Food Sovereignty concept have important implications for communities that are vulnerable to food insecurity.

Firstly, there is considerable heterogeneity of foodways even within this small population. This is partly due to the growth of the “purchase society” with Rama households engaging in a constant renegotiation of their identities across market and subsistence activities—there is no clear distinction when profits and resources are traded and reinvested. This can be seen in other populations (Dodds, 1998), and as argued by Iles and de Wit (2015), sovereignty is a living process shaped by relationships and change. This suggests that approaches that focus on “small-scale farming” could hinder the aspirations of some Rama households.

If Food Sovereignty is to succeed in challenging the current uneven power distribution caused by neoliberal food systems, it needs to foreground democratic choice and allow space for the possibility of multiple, differentiated sovereignties (Schiavoni, 2015). The challenge will be how this can be achieved without further broadening the concept so much that it is unable to present clear responses to food security threats, and in such a way that it is able to provide a resolution when the sovereignty of one group impinges on the sovereignty of another.

Secondly, this research supports the view that the concept of Food Sovereignty is problematic in instances where there is resource conflict between two or more groups (Borras, 2008; Wittman et al., 2011). A Food Sovereignty perspective that enshrines the rights of certain populations uncritically could allow Pacific Nicaraguans to draw upon their identity to justify their colonisation of the Rama territory even though this would not be appropriate as the rights of the Rama outstrip those of Pacific Nicaraguans because of the Rama’s status as an indigenous group (Gobierno de Nicaragua, 2002; Grossman, 2001).

In each instance where resource conflict is present, therefore, it is important that contextual factors are included in the definition of who can invoke the “peasant” identity to ensure that local hierarchies become explicit. To achieve a more granular definition like this, it will be necessary to improve understandings about where these

conflicts exist and will also require careful work to ensure the rights of certain stakeholders are fairly represented in Food Sovereignty-based solutions.

Finally, this research has also supported a challenge to the view, currently extant in the literature (Enríquez, 2013; McKay et al., 2014), that the incorporation of Food Sovereignty in the national framework in Nicaragua has been a positive step towards protecting the most vulnerable groups in the country from the impact of globalisation. The Rama's food system is challenged because of the exploitation of the Rama's resources by Pacific Nicaraguans—an act that has been specifically aided and promoted by successive Nicaraguan governments (Morris, 2012, 2016). This reinforces the importance of Food Sovereignty's shift from the "right of nations" to the "right of peoples" (Agarwal, 2014).

Despite Food Sovereignty being a contested concept (Agarwal, 2014; McMichael, 2014, 2015; Wald & Hill, 2016), with due care it can be used to highlight problems that might not have been revealed through a food security perspective (Patel, 2009). In the case of the Rama this was seen with how it has highlighted the community's vulnerability to land and resource conflict, and the fact that their food comes from varied sources—from farming and fishing with hand nets to buying fast food in Bluefields. The "arena of debate" provided by the Food Sovereignty concept can be an effective site of resistance against global and national policies that do not serve the most vulnerable peoples.

Neoliberalism operates at multiple scales, from the global to the individual, and this needs to be matched by movements that can both challenge its impact wherever it is felt as well as also refocusing attention on those populations that are the most likely to be food insecure (Iles & Montenegro de Wit, 2015; Wald & Hill, 2016). The concept of Food Sovereignty is well placed to be able to do this, particularly if it can respond to its internal challenges in the way argued in this paper. Further, fine-grained research aimed at understanding local-level heterogeneity, conflict, and the relationship between the local and the global market will enable a further development of the Food Sovereignty concept, and in so doing improve its utility for other vulnerable communities.

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Availability of data and material Research data is available upon receipt of a reasonable request.

Declarations

Ethics approval Ethics approval was granted by the UCL Research Ethics Committee on 18/11/15. The Rama-Kriol Government (GTR-K) gave its permission on 21/01/16.

Consent to participate Informed consent was obtained from all individual participants included in the study.

Consent for publication All three authors consent for this article to be published.

Conflicts of interest The authors declare they have no conflicting interests.

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References

- Adger, W. N. (2000). Social and ecological resilience: Are they related? *Progress in Human Geography*, 24(3), 347–364. <https://doi.org/10.1191/030913200701540465>
- Agarwal, B. (2014). Food sovereignty, food security and democratic choice: Critical contradictions, difficult conciliations. *The Journal of Peasant Studies*, 41(6), 1247–1268. <https://doi.org/10.1080/03066150.2013.876996>
- Alkon, A. H., Block, D., Moore, K., Gillis, C., DiNuccio, N., & Chavez, N. (2013). Foodways of the urban poor. *Geoforum*, 48, 126–135. <https://doi.org/10.1016/j.geoforum.2013.04.021>
- Anaya, J. (2005). *Nicaragua Issues Title to Awastingni's Lands: Case Summary*. Retrieved 2 November 2017 from <https://law2.arizona.edu/iplp/outreach/pdf/AwasTingni.pdf>
- Araújo, S., & Godek, W. (2014). Opportunities and challenges for food sovereignty policies in Latin America: the case of Nicaragua. In N. C. S. Lambek, P. Claeys, A. Wong, & L. Brilmayer (Eds.), *Rethinking food systems: structural challenges, new strategies and the law* (1st Edition ed.). Springer.
- Baldi, N. F. (2013). *Genetic structure and biodemography of the Rama Amerindians from the southern Caribbean Coast of Nicaragua* [PhD Thesis]. University of Kansas.
- Baldi, N. F., Melton, P. E., & Crawford, M. H. (2014). Effect of recent historical events on migration and isonymic stratification among the Rama Amerindians from Nicaragua. *Human Biology*, 86(1), 37–50.
- Barclay, F. (2007). *Diagnóstico Del Territorio Rama y Kriol*.
- Beuchelt, T. D., & Virchow, D. (2012). Food sovereignty or the human right to adequate food: Which concept serves better as international development policy for global hunger and poverty reduction? *Agriculture and Human Values*, 29(2), 259–273. <https://doi.org/10.1007/s10460-012-9355-0>
- Bini, V. (2018). Food security and food sovereignty in West Africa. *African Geographical Review*, 37(1), 1–13. <https://doi.org/10.1080/19376812.2016.1140586>
- Black, R. E., Victora, C. G., Walker, S. P., Bhutta, Z. A., Christian, P., de Onis, M., Ezzati, M., Grantham-McGregor, S., Katz, J., Martorell, R., & Uauy, R. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries.

- Lancet*, 382(9890), 427–451. [https://doi.org/10.1016/s0140-6736\(13\)60937-x](https://doi.org/10.1016/s0140-6736(13)60937-x)
- Borras, S. (2008). La Vía Campesina and its Global Campaign for Agrarian Reform. *Journal of Agrarian Change*, 8(2–3), 258–289. <https://doi.org/10.1111/j.1471-0366.2008.00170.x>
- Boyer, J. (2010). Food security, food sovereignty, and local challenges for transnational agrarian movements: The Honduras case. *The Journal of Peasant Studies*, 37(2), 319–351. <https://doi.org/10.1080/03066151003594997>
- Clapp, J. (2014). Food security and food sovereignty: Getting past the binary. *Dialogues in Human Geography*, 4(2), 206–211. <https://doi.org/10.1177/2043820614537159>
- Coe, F. (2008a). Ethnomedicine Of The Rama Of Southeastern Nicaragua. *Journal of Ethnobiology*, 28(1), 1–38, 38. [https://doi.org/10.2993/0278-0771\(2008\)28\[1:EOTROS\]2.0.CO;2](https://doi.org/10.2993/0278-0771(2008)28[1:EOTROS]2.0.CO;2)
- Coe, F. (2008b). Rama midwifery in eastern Nicaragua. *Journal of Ethnopharmacology*, 117(1), 136–157. <https://doi.org/10.1016/j.jep.2008.01.027>
- Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and Conducting Mixed Methods Research*. Sage.
- David, V., Moncada, M., & Ordonez, F. (2004). Private and public determinants of child nutrition in Nicaragua and Western Honduras. *Economics & Human Biology*, 2(3), 457–488. <https://doi.org/10.1016/j.ehb.2004.10.006>
- Davis, B., & Stampini, M. (2002). *Pathways towards Prosperity in Rural Nicaragua: Why Households Drop in and out of Poverty, and Some Policy Suggestions on How to Keep Them Out*. ESA Working Paper No. 02-12 (FAO).
- De Châtel, F. (2014). The Role of Drought and Climate Change in the Syrian Uprising: Untangling the Triggers of the Revolution. *Middle Eastern Studies*, 50(4), 521–535. <https://doi.org/10.1080/00263206.2013.850076>
- Deininger, K., Zegarra, E., & Lavadenz, I. (2003). Determinants and Impacts of Rural Land Market Activity: Evidence from Nicaragua. *World Development*, 31(8), 1385–1404. [https://doi.org/10.1016/S0305-750X\(03\)00101-3](https://doi.org/10.1016/S0305-750X(03)00101-3)
- Dodds, D. (1998). Lobster in the rain forest: The political ecology of Miskito wage labor and agricultural deforestation. *Journal of Political Ecology*, 5(1), 83–108.
- Dumazert, P. (2008). *Análisis y Cartografía de La Vulnerabilidad a La Inseguridad Alimentaria y Nutricional En Nicaragua. Actualización del VAM en base a datos del periodo 2005 - 2008 (INFORME FINAL)*. World Food Programme.
- ECN. (2014). In Search of New Horizons for a Better Nicaragua. *Envio Magazine*.
- Edelman, M., Weis, T., Baviskar, A., Borras, S. M., Holt-Giménez, E., Kandiyoti, D., & Wolford, W. (2014). Introduction: Critical perspectives on food sovereignty. *The Journal of Peasant Studies*, 41(6), 911–931. <https://doi.org/10.1080/03066150.2014.963568>
- Enríquez, L. (2013). The paradoxes of Latin America's 'Pink Tide': Venezuela and the project of agrarian reform. *The Journal of Peasant Studies*, 40, 611–638.
- FAO, I., UNICEF, WFP, WHO. (2017). *The State of Food Security and Nutrition in the World*.
- Fedotova, G. V., Sotnikova, L. F., Orlova, E. R., Baranova, A. F., & Goncharova, A. V. (2021). Global problems of biodiversity and food security. *IOP Conference Series: Earth and Environmental Science*, 677(3), 032010. <https://doi.org/10.1088/1755-1315/677/3/032010>
- Finley-Brook, M. (2016). "Territorial fix?" Tenure insecurity in titled indigenous territories. *Bulletin of Latin American Research*, 35(3), 338–354.
- Gleick, P. H. (2014). Water, Drought, Climate Change, and Conflict in Syria. *Weather, Climate, and Society*, 6(3), 331–340. <https://doi.org/10.1175/wcas-d-13-00059.1>
- Gobierno de Nicaragua. (2002). *Ley núm. 445 de Régimen de propiedad comunal de los pueblos indígenas y comunidades étnicas de las regiones autónomas de la Costa Atlántica de Nicaragua y de los ríos Bocay, Coco, Indio y Maiz*. Retrieved 18 September 2020 from <https://bit.ly/33CBQm0>
- Godek, W. (2015). Challenges for food sovereignty policy making: The case of Nicaragua's Law 693. *Third World Quarterly*, 36(3), 526–543. <https://doi.org/10.1080/01436597.2015.1005437>
- Godek, W. (2021). Food sovereignty policies and the quest to democratize food system governance in Nicaragua. *Agriculture and Human Values*, 38(1), 91–105. <https://doi.org/10.1007/s10460-020-10136-3>
- Gregory, P. J., Ingram, J. S., & Brklacich, M. (2005). Climate change and food security. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences*, 360(1463), 2139–2148. <https://doi.org/10.1098/rstb.2005.1745>
- Grossman, C. (2001). *Awat Tingni v. Nicaragua: A Landmark Case for the Inter-American System*. *Human Rights Brief*, 8(3), 2–4.
- Guest, G., MacQueen, K. M., & Namey, E. E. (2012). *Applied thematic analysis*. Sage.
- HabibMintz, N. (2004). *Food insecurity in Nicaragua* [Unpublished PhD Thesis]. State University of New York.
- Hamelin, A. M., Habicht, J. P., & Beaudry, M. (1999). Food insecurity: Consequences for the household and broader social implications. *Journal of Nutrition*, 129(2S Suppl), 525s–528s. <https://doi.org/10.1093/jn/129.2.525S>
- Hanjra, M. A., & Qureshi, M. E. (2010). Global water crisis and future food security in an era of climate change. *Food Policy*, 35(5), 365–377. <https://doi.org/10.1016/j.foodpol.2010.05.006>
- Helms, M. W. (1969). The Purchase Society: Adaptation to economic frontiers. *Anthropological Quarterly*, 42(4), 325–342.
- Iles, A., & Montenegro de Wit, M. (2015). Sovereignty at What Scale? An Inquiry into Multiple Dimensions of Food Sovereignty. *Globalizations*, 12(4), 481–497. <https://doi.org/10.1080/14747731.2014.957587>
- Jarosz, L. (2014). Comparing food security and food sovereignty discourses. *Dialogues in Human Geography*, 4(2), 168–181. <https://doi.org/10.1177/2043820614537161>
- Jyoti, D. F., Frongillo, E. A., & Jones, S. J. (2005). Food Insecurity Affects School Children's Academic Performance, Weight Gain, and Social Skills. *The Journal of Nutrition*, 135(12), 2831–2839. <https://doi.org/10.1093/jn/135.12.2831>
- Karfakis, P., Knowles, M., Smulders, M., & Capaldo, J. (2011). *Effects of global warming on vulnerability to food insecurity in rural Nicaragua*. ESA Working Paper No. 11-18 (FAO).
- Koster, J., & Leckie, G. (2014). Food sharing networks in lowland Nicaragua: An application of the social relations model to count data. *Social Networks*, 38, 100–110. <https://doi.org/10.1016/j.socnet.2014.02.002>
- Lang, T. I. M., & Barling, D. (2012). Food security and food sustainability: reformulating the debate. *The Geographical Journal*, 178(4), 313–326. <http://www.jstor.org/stable/23360870>
- Li, T. M. (2015). Can there be food sovereignty here? *The Journal of Peasant Studies*, 42(1), 205–211. <https://doi.org/10.1080/03066150.2014.938058>
- Lincoln Lenderking, H., Robinson, S.-A., & Carlson, G. (2021). Climate change and food security in Caribbean small island developing states: Challenges and strategies. *International Journal of Sustainable Development & World Ecology*, 28(3), 238–245. <https://doi.org/10.1080/13504509.2020.1804477>
- Martin, S. (2015). Indigenous social and economic adaptations in northern Alaska as measures of resilience. *Ecology and Society*, 20(4), 8. <https://doi.org/10.5751/ES-07586-200408>
- Martínez-Torres, M. E., & Rosset, P. M. (2010). La Vía Campesina: The birth and evolution of a transnational social movement. *The*

- Journal of Peasant Studies*, 37(1), 149–175. <https://doi.org/10.1080/03066150903498804>
- McKay, B., Nehring, R., & Walsh-Dilley, M. (2014). The 'state' of food sovereignty in Latin America: Political projects and alternative pathways in Venezuela, Ecuador and Bolivia. *The Journal of Peasant Studies*, 41, 1175–1200.
- McMichael, P. (2014). Historicizing food sovereignty. *The Journal of Peasant Studies*, 41(6), 933–957. <https://doi.org/10.1080/03066150.2013.876999>
- McMichael, P. (2015). The Land Question in the Food Sovereignty Project. *Globalizations*, 12(4), 434–451. <https://doi.org/10.1080/14747731.2014.971615>
- Miller, J. D., Workman, C. L., Panchang, S. V., Sneegas, G., Adams, E. A., Young, S. L., & Thompson, A. L. (2021). Water Security and Nutrition: Current Knowledge and Research Opportunities. *Advances in Nutrition*. <https://doi.org/10.1093/advances/nmab075>
- Milliken, K. (2017). *How climate drives hunger: Food security climate analyses, methodologies & lessons 2010–2016*. World Food Programme.
- Mitchell, E., Steeves, R., & Hauck Perez, K. (2015). Exploring Creole women's health using ethnography and photovoice in Bluefields. *Nicaragua. Global Health Promotion*, 22(4), 29–38.
- Morris, C. (2012). *To defend this sunrise: race, places, and Creole women's political subjectivity on the Caribbean Coast of Nicaragua* [Unpublished PhD Thesis]. University of Texas.
- Morris, C. (2016). Toward a Geography of Solidarity: Afro-Nicaraguan Women's Land Activism and Autonomy in the South Caribbean Coast Autonomous Region. *Bulletin of Latin American Research*, 35(3), 355–369. <https://doi.org/10.1111/blar.12490>
- Müller, M. F., Penny, G., Niles, M. T., Ricciardi, V., Chiarelli, D. D., Davis, K. F., Dell'Angelo, J., D'Odorico, P., Rosa, L., Rulli, M. C., & Mueller, N. D. (2021). Impact of transnational land acquisitions on local food security and dietary diversity. *Proceedings of the National Academy of Sciences*, 118(4), e2020535118. <https://doi.org/10.1073/pnas.2020535118>
- Nally, D. (2015). Governing precarious lives: Land grabs, geopolitics, and 'food security.' *The Geographical Journal*, 181(4), 340–349. <https://doi.org/10.1111/geoj.12063>
- Nash, J. (2005). Introduction: Social movements and global processes. In J. Nash (Ed.), *Social movements: An anthropological reader*. Blackwell.
- Nietschmann, B. (1973). *Between land and water: The subsistence ecology of the Miskito Indians*. Seminar Press.
- Nyeléni. (2007). *Declaration of Nyéléni*. https://www.nyeleni.org/DOWNLOADS/Nyeleni_EN.pdf
- Olson, C. M. (1999). Nutrition and health outcomes associated with food insecurity and hunger. *Journal of Nutrition*, 129(2S Suppl), 521s–524s. <https://doi.org/10.1093/jn/129.2.521S>
- Osmani, S. R. (1993). *The entitlement approach to famine: An assessment*. Working Papers No. 107; UNU WIDER.
- Papworth, A. (2017a). *Can your wealth change your perception of 'bad' weather? A case study of the Rama indigenous group, Nicaragua* Society for Latin American Studies (SLAS) Conference 2017, Glasgow, UK.
- Papworth, A. (2017b). *The erosion of traditional food-sharing practices amongst the Rama indigenous group of Nicaragua* Seventh International Conference on Food Studies, Rome, Italy.
- Papworth, A. (2019). *An analysis of the food security of the Rama indigenous group, Nicaragua* [Unpublished PhD Thesis]. University College London.
- Patel, R. (2009). Food sovereignty. *The Journal of Peasant Studies*, 36(3), 663–706. <https://doi.org/10.1080/03066150903143079>
- Perri, A. R., Koster, J., Otárola-Castillo, E., Burns, J. L., Cooper, C. G. (2019). Dietary variation among indigenous Nicaraguan horticulturalists and their dogs: An ethnoarchaeological application of the Canine Surrogacy Approach *Journal of Anthropological Archaeology* 55. <https://doi.org/10.1016/j.jaa.2019.05.002>
- Popkin, B. M., Lu, B., & Zhai, F. (2002). Understanding the nutrition transition: Measuring rapid dietary changes in transitional countries. *Public Health Nutrition*, 5(6a), 947–953. <https://doi.org/10.1079/phn2002370>
- Rademacher-Schulz, C., Schraven, B., & Mahama, E. S. (2014). Time matters: Shifting seasonal migration in Northern Ghana in response to rainfall variability and food insecurity. *Climate and Development*, 6(1), 46–52. <https://doi.org/10.1080/17565529.2013.830955>
- Riverstone, G. (2004). *Living in the Land of Our Ancestors: Rama Indian and Creole Territory in Caribbean Nicaragua*. ASDI.
- Robbins, M. J. (2015). Exploring the 'localisation' dimension of food sovereignty. *Third World Quarterly*, 36(3), 449–468. <https://doi.org/10.1080/01436597.2015.1024966>
- Rosen, S., Meade, B., Fuglie, K., & Rada, N. (2014). *International food security assessment, 2014–2024*. US Department of Agriculture, Economic Research Service.
- Schiavoni, C. M. (2015). Competing Sovereignties, Contested Processes: Insights from the Venezuelan Food Sovereignty Experiment. *Globalizations*, 12(4), 466–480. <https://doi.org/10.1080/14747731.2015.1005967>
- Sen, A. (1981). *Poverty and famines: An essay on entitlement and deprivation*. Clarendon Press.
- Siegel, F. R. (2021). Impact of Global Warming/Climate Change on Food Security 2020. In *The Earth's Human Carrying Capacity: Limitations Assessed, Solutions Proposed* (pp. 39–48). Springer International Publishing. https://doi.org/10.1007/978-3-030-73476-3_4
- Springfield, M. (2012). *Food insecurity: the prospects for food sovereignty in contemporary East Africa* [Unpublished PhD Thesis]. University of Sussex.
- Tilly, L. A. (1983). Food Entitlement, Famine, and Conflict. *The Journal of Interdisciplinary History*, 14(2), 333–349. <https://doi.org/10.2307/203708>
- Tscharntke, T., Clough, Y., Wanger, T. C., Jackson, L., Motzke, I., Perfecto, I., Vandermeer, J., & Whitbread, A. (2012). Global food security, biodiversity conservation and the future of agricultural intensification. *Biological Conservation*, 151(1), 53–59. <https://doi.org/10.1016/j.biocon.2012.01.068>
- Varese, S. (1996). The Ethnopolitics of Indian Resistance in Latin America. *Latin American Perspectives*, 23(2), 58–71. <http://www.jstor.org/stable/2634246>
- Varese, S. (2010). Indigenous peoples contesting state nationalism and corporate globalism. In L. Meyer & B. M. Alvarado (Eds.), *New world of Indigenous resistance: Noam Chomsky and voices from North, South, and Central America*. Orient Black Swan.
- Wald, N., & Hill, D. P. (2016). 'Rescaling' alternative food systems: From food security to food sovereignty. *Agriculture and Human Values*, 33(1), 203–213. <https://doi.org/10.1007/s10460-015-9623-x>
- Warner, K., & Afifi, T. (2014). Where the rain falls: Evidence from 8 countries on how vulnerable households use migration to manage the risk of rainfall variability and food insecurity. *Climate and Development*, 6(1), 1–17. <https://doi.org/10.1080/17565529.2013.835707>
- Wheeler, T., & von Braun, J. (2013). Climate Change Impacts on Global Food Security. *Science*, 341(6145), 508–513.

- Windfuhr, M., & Jonsen, J. (2005). *Food Sovereignty: Towards Democracy in Localised Food Systems*. ITDG Working Papers. <https://agris.fao.org/agris-search/search.do?recordID=GB2013202621>
- Wittman, H., Desmarais, A. A., & Wiebe, N. (Eds.). (2011). *Food sovereignty: Reconnecting food*. Pambazuka Press.
- Young, S. L., Frongillo, E. A., Jamaluddine, Z., Melgar-Quiñonez, H., Pérez-Escamilla, R., Ringler, C., & Rosinger, A. Y. (2021). Perspective: The Importance of Water Security for Ensuring Food Security, Good Nutrition, and Well-being. *Advances in Nutrition*, 12(4), 1058–1073. <https://doi.org/10.1093/advances/nmab003>
- Yuliani, E. L., de Jong, E. B. P., Knippenberg, L., Bakara, D. O., Salim, M. A., & Sunderland, T. (2018). Keeping the land: indigenous communities' struggle over land use and sustainable forest management in Kalimantan, Indonesia. *Ecology and Society*, 23(4). <https://doi.org/10.5751/ES-10640-230449>



Mark Maslin Is a Professor of Earth System Science at University College London. He is a leading scientist with particular expertise in past global and regional climatic change, and has published over 175 papers in journals such as *Science*, *Nature*, and *The Lancet*. He has been PI or Co-I on grants, projects and consultancy worth over £65 million.



Andrew Papworth Is a Research Fellow in the Department of Health Sciences at the University of York. Andrew completed his PhD at University College London (UCL) in 2018, which was funded by an ESRC/NERC Doctoral Studentship. In 2017, he was a Visiting Scholar in the School of Nursing at the University of Virginia.



Samuel Randalls Is an Associate Professor of Geography at University College London. His research focuses on the historical, contemporary and future relationships between environments, businesses/economics and science, with a particular focus on weather and climate.