CHAPTER 13

Innovative Food Systems Involving Edible Insects and Climatic Conditions Within Indigenous Knowledge

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LEARNING OBJECTIVES

1. Create awareness of counter-cultural bias that denigrates traditional people's knowledge that, for example, has led to an association of disgust and that all insects are harmful.
2. Recognize that Indigenous ecological knowledge could provide critical insights to create a more sustainable food system.
3. Learn about edible insects' nutritional value and environmental benefits.
4. Understand the relationship between a beetle species (*Rutelinae*) known as *catzos*, climate patterns, and the Kitu-Kara Indigenous culture in Ecuador.

INTRODUCTION

Currently, worldwide, there is a rising interest in edible insect consumption. Insects constitute about 80% of the animal kingdom, and their protein levels range from 20–75%. From a nutritional perspective, insects' protein content is comparatively higher than meat, so consuming them could contribute to reducing malnutrition (Van Huis et al., 2013). According to Tae-Kyung et al. (2019), insect protein content ranges from 35% to 60% dry weight or 10% to 25% fresh weight, which is higher than plant protein sources, meat, and chicken eggs. Edible insects are a good source of protein, fat, vitamins, and minerals, comparable to meat (Baiano, 2020). Insects possess antioxidant compounds that aid in reducing various pathologies and have been used to treat diseases in various parts of the world. Clinical and non-clinical approaches have validated this (Oghenesuvwe & Chinwuba, 2019). For instance, some insects have anti-inflammatory, anticancer, antimicrobial, antiulcer, antidiabetic, hypolipidemic, and cardio protective properties (Oghenesuvwe & Chinwuba, 2019). Such attributes indicate that studying and including edible insects in culinary and therapeutic areas can offer tremendous benefits.

From an environmental and climate change standpoint, insect farms produce considerably fewer greenhouse gas emissions and have a much lower environmental impact than cattle raising (Baiano, 2020). This is because insect-based diets are part of climate change adaptation and mitigation measures. Edible insects could be a solution for water, land, and energy constraints in the food supply chain we currently face (Baiano, 2020). Considering the nutrition and health advantages of edible insects as well as the associated environmental aspects, particularly the low carbon footprint, the theme is directly relevant to planetary health, particularly as world population demands are only expected to keep increasing, with almost 10 billion projected by 2050 (Willett et al., 2019).

Due to potential health and environmental reasons, edible insects are getting more attention as a "novel food." They are also increasingly being seen as a prestigious food, as insects are considered a gourmet item in some countries. However, the consumption of insects is not new. Human consumption of insects is a common practice among Indigenous Peoples worldwide. Edible insects are a traditional food in over 100 countries in Asia, Africa, and Latin America (Tae-Kyung et al., 2019). Over 1,000 identified edible insects help guarantee food security, making the consumption of edible insects common in one-third of the world's population (Raheem et al., 2019). Of edible insects, 92% are obtained through wild harvesting, 6% through semi-domestication, and 2% through farming (Govorushko, 2019). It is estimated that 80% of the world's population has the tradition of eating insects, 31% of the edible insects in the world are beetles (*Coleoptera*), and they represent about 40% of all identified edible insects (Raheem et al., 2019). However, recent literature indicates a worldwide decrease in insect species, mainly due to pesticides but also possibly linked to climate change and other factors (Jactel et al., 2020).

The 2013 Food and Agriculture Organization Report (Van Huis et al., 2013) triggered the development of insect farms and investigations on the acceptance of insect consumption by populations who do not eat them traditionally. But for Latin America, where insects have been consumed by part of the population, information is still missing on the profile of insect consumers, the importance of insects in their diet, traditional knowledge of insect collectors, and the availability and sustainability of the resource. Reviewing the bibliography on insect consumption in Latin America (Katz, 2016), we observed that pioneering research has been conducted in Mexico since the end of the 1970s, at least on identifying the consumed species and their nutritional content (Ramos-Elorduy, 1982; Ramos-Elorduy et al., 1997). There is some data on the Amazon, but there are very few references on the Andes (DeFoliart, 2002).

In our first investigation in the Andes region in 2017, in the capital city of Quito, Ecuador and its surroundings, we found out that an unexpectedly large number of people were engaged in insect consumption, especially present-day and former Mestizo workers of the *haciendas* (large estates, fundamentally for farming) and their descendants who now live in urbanized quarters of the city.

In the second investigation, in 2019, we came across the Kitu-Kara Indigenous people, who are strongly engaged in the consumption of insects. The theme of edible insects serves the twofold purpose of integrating both large and local scales, with a particular emphasis on food sovereignty and Indigenous systems of knowledge. We describe these two important concepts from the Andean experience in the literature review we offer in this chapter.

Background

Insects consumed in the Ecuadorian Andes are mainly adult beetles, locally called ***catzos***. Some people also eat the beetle larvae (***cutzos***) found in the ground. Most articles (Agila Lisintuña et al., 2021; Onore, 1997; Smith & Paucar, 2000) refer to the species most commonly consumed as the *catzo blanco* (white catzo), *Platycoelia lutescens* (Rutelinae), which is collecte during the swarming period at the beginning of the rainy season in October-November (see Figure 13.1). A few decades ago, the city was much smaller and surrounded by cattle-raising farms. Inhabitants of the historical centre and workers of the haciendas had easy access to such pastures. Many of these large properties have been turned into urban quarters, but people still collect beetles on remaining pastures and fields left in urban and peri-urban areas, during the swarming period.

Figure 13.1. White Catzos Sold by a Street Vendor in Quito

Source: Esther Katz, 2017

The Kitu-Kara Indigenous people, whose ancestors occupied Quito Valley at first contact with the Spaniards in the 16th century and whose lands are now integrated with the capital city, prefer the red catzo, probably a Dynastae, *Golofa unicolor* (synonym: *Praogolofa unicolor*) (Onore, 1997), which is larger than the white catzo (see Figure 13.2). Kitu-Kara are keepers of cultural heritage that comes from pre-Columbian times (2000 BCE) (Benavides, 2011; Costales & Costales, 2002). This Indigenous group is showing notable resistance and resilience.

Figure 13.2. Red Catzo

Source: Louis Schwarzwald, 2018

Several Indigenous communities, like the Kitu-Kara, have been consuming insects for centuries, at least cutzos, as described by the *Geographical Relations of the Indies Volume 183* edited by Marcos Jiménez de la Espada (1965). This practice was perceived as inappropriate and primitive by Spanish conquerors, who tried to eradicate it (Batat & Peter, 2020). Presently, it is despised by middle-class Ecuadorian people but otherwise still appreciated.

The ancient method of *catzos* collection was developed through accumulated knowledge and a complex understanding of seasons and the behaviour of these insects. This Indigenous ancestral knowledge has been passed from generation to generation among specific segments of the Ecuadorian population, particularly those with an Indigenous identity or a strong Indigenous cultural background (an important proportion of the population nationwide).

From a nutritional perspective, Velastegui et al. (2020) determined that the white catzos have a protein content of 24%, 13% (unsaturated) fat, and 26% carbohydrates in samples from four locations north of Quito. Jijón Remache (2020) demonstrated that *catzos* are also a good source of mineral water and fatty acids (omega-6 and -9), which are important for human development and the correct functioning of the body.

However, Jijón Remache (2020) found that the present generations are losing their custom of harvesting and consuming *catzos*. The author pointed out that young generations do not feel inclined to introduce them to their diets. Yet, *catzos* are still important for the traditional food of the current Kitu-Kara Indigenous people. In that sense, access to and consumption of *catzos* are relevant to their right to choose foods according to cultural preferences and hence to the Kitu-Kara's food sovereignty. However, in Ecuador, numerous studies have described the drastic changes in land use, agricultural practices, and food, which have occurred in the last decades (see, for instance, Rebaï & Alvarado Vélez, 2018).

As customary practices and Indigenous knowledge are embedded in agri-food systems, food sovereignty represents a force that counters reductionist views that treat food, landscape, and culture as commodities with access limited to privileged groups and industries (Carrasco-Torrontegui et al., 2021; Gallegos-Riofrío et al., 2021). The Ecuadorian experience is particularly relevant to this work as the concept of food sovereignty is defined in the most recent National Constitution, being the outcome of decades of social mobilization and, essentially, of the Indigenous cosmovision (Gallegos-Riofrío et al., 2021). In addition, despite the risks that the term could be co-opted for political or commercial gains, Indigenous communities in Ecuador have their local interpretations of food sovereignty, which are intimately linked to their daily living (Gallegos-Riofrío et al., 2021).

In the Andes, Indigenous Peoples are revitalizing technologies derived from their ancestral knowledge system. This is the case of pre-Columbian cultivation terraces and of the *waru waru* (an agriculture and hydric technology that consists of swales and raised beds) that are considered among the most effective known strategies for modern agroecology to ensure food sovereignty and for climate change adaptation (Carrasco-Torrontegui

et al., 2021). This prompts reflections on the importance of Indigenous Peoples' knowledge about the world, nature, and the universe, historically rejected, mystified, or minimized by Eurocentric science—as noted by decolonization scholars (e.g., Grosfoguel, 2013; Mignolo, 2009). As described by Gallegos-Riofrío et al. (2022, p. 842), "ancestral knowledge signifies discourses of resistance and resilience, a patent of systems of knowledge and skills that have survived and adapted to historical forms of colonization."

Research Questions and Methods

In our research, we explored the cultural practices around the harvest and consumption of insects and the appropriate environmental conditions for their harvest. To do so, members of the research team conducted fieldwork during the period of harvest, in October and November of 2017, 2019, and 2023, seasons indicated by previous research (Smith & Paucar, 2000).

During the first season, anthropologists Esther Katz, Nicolas Césard, and the Ecuadorian biologist Mayra Colimba, holder of traditional knowledge on *catzos*, looked for markets where *catzos* are sold and interviewed people on the streets of the historical centre and some city surroundings (Lloa and Pintag) to get an idea of the importance of consuming *catzos*. When possible, the team proceeded to participant observations combined with semi-structured interviews to explore the harvest and consumption of *catzos*. In total, they interviewed 17 people.

The second was designed by Katz and Césard and was led in the field by Amaya Carrasco-Torrontegui and Marina Goloubinoff. Geographical and climatic variables (e.g., temperature, altitude, humidity) were collected in four locations during the harvesting period. Carrasco-Torrontegui then conducted 19 interviews in the Metropolitan District of Quito, Ecuador (Figure 13.3). Of the 19 participants, two provided information about places near Quito but not within the Metropolitan District, while the other 17 belong to different areas of the city of Quito; the exact locations of our interviews are presented in Figure 13.4. Among the 19 participants interviewed, 13 collect *catzos* for consumption (9 collect white catzos and 4 collect red catzos), one person collects for self-consumption and to sell (white catzos), four people used to collect them but do not anymore (white catzos), and one person buys and sells *catzos* prepared to eat (white catzos).

In the third season, in 2023, Carrasco-Torrontegui engaged in immersive ethnography with the Kitu-Kara people. She had the opportunity to stay overnight at the house of Indigenous and Mestizo families that traditionally harvest *catzos*, which also provided the space to talk freely about the practice and the tradition. Similarly, after the *catzos* collection, she participated in preparing and sharing the meal with families. She also completed research with Kitu-Kara people on the consumption of red catzos for the Day of the Dead.

Our research has led to a broader area of Mestizo people, but we want to focus on the Kitu-Kara in this chapter. The Kitu-Kara are descendants of the original inhabitants of

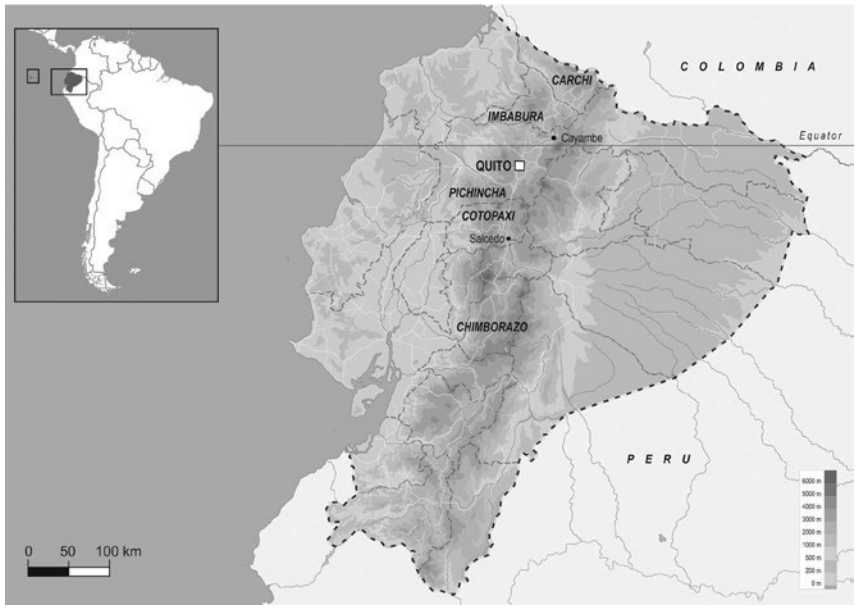

Figure 13.3. Map of Ecuador

Source: Created by Laurence Billault (IRD), modified from a GeoAtlas map (Licence granted to IRD)

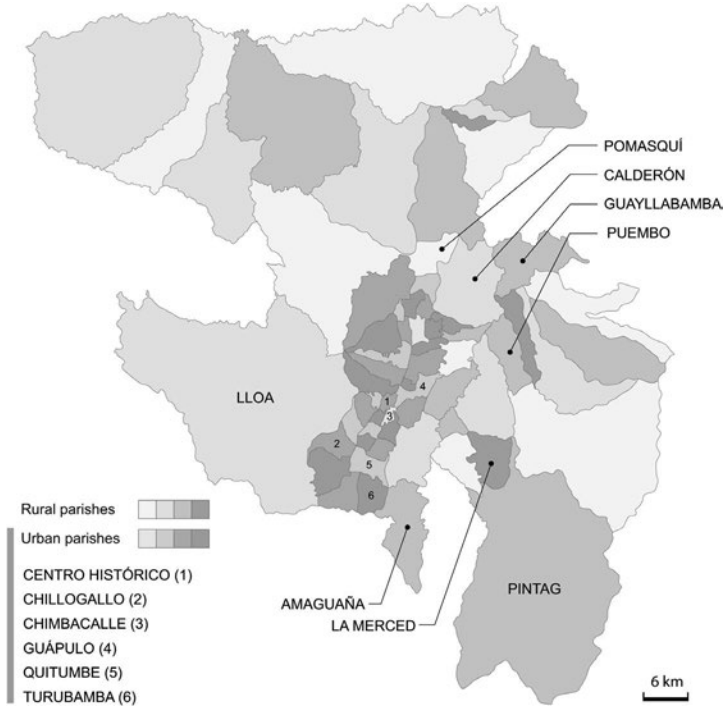

Figure 13.4. Places Where Research Was Led in the Metropolitan District of Quito

Source: Created by Laurence Billault (IRD), modified from a map by IRD/MDMQ (Municipio del Distrito Metropolitano de Quito) (owned by IRD)

the current city of Quito; their civilization founded a pre-Columbian complex of settlements that now sits as a modern metropolis (Costales & Costales, 2002). This research was about the harvest and consumption of beetle species (*Rutelinae* and *Dynastae*) or *catzos*, but we focus here on the red catzo (*Dynastae*).

The present contribution is informed by the food sovereignty paradigm, which entails participatory research traditions, such as Participatory Action Research (PAR) (Carrasco-Torrontegui, 2021) or community-based research (Gallegos-Riofrío et al., 2022), that intentionally elicits participants' reflections, pursues real-world impact, and tries to create a safe space where people can express their views in their terms. The research process prompted important reflections about community empowerment, particularly over culinary traditions and about challenges and opportunities to exercise control over local food systems currently threatened by urbanization and changes in land management practices. For the Kitu-Kara, particularly, the *catzo* represents both a symbolic element of their culture and a part of their traditional landscape and diets; researchers considered both dimensions. Finally, the present contribution involves Indigenous coauthor Adela Caranqui-Pintag during data collection, analysis, and the preparation of this chapter.

FINDINGS AND DISCUSSION

Through the investigation, it was possible to be acquainted with the red catzo, consumed in the northern zone of Quito (Calderon, Pomasqui, Puembo, and Guayllabamba). Four people who consume this type of *catzo* were interviewed, and two places were visited at dawn to collect red catzos. This type of *catzo* is larger than the white catzo, is crispier when cooked, and has a different flavour (Figure 13.5).

This study found that the consumption of *catzos* is deeply ingrained in the culture of people living in urban and peri-urban areas in Quito. According to our study, *catzos* are especially important for the traditional food of the current Kitu-Kara Indigenous community, which is located in the area of Llano Grande, where it is still possible to eat food prepared with traditional techniques and flavours of the Kitu-Kara Indigenous ancestors (Chichaiza & Vicente, 2018). For this Indigenous group, the *catzos* are the main ingredient of a traditional dish called ***Uchucota***, which is typically consumed on November 2 every year, during the

Figure 13.5. Amaya Carrasco-Torrontegui Interviewing a Kitu-Kara Elder

Source: Louis Schwarzwald, 2018

Pan-American festivity of the Day of the Dead. In the Indigenous tradition, as indicated by people participating in this research, families take the *Uchucota* to the cemeteries to share with their ancestors. According to Kitu-Kara Elder, *Uchucota* is made of onions, cilantro, peas, potatoes, meat (beef or chicken), ground *catzo*, and toasted corn.

> My mother-in-law told me that the catzos come out a lot the night before the Day of the Dead because they are the souls that leave the soil to visit their loved ones on Earth. (Female, Urban Farmer)

> The catzos have a relationship with the Day of the Dead because they are available in November. We have the tradition of cooking and taking to the cemetery the favourite food of the deceased. For that reason, we often take Uchucota (soup made with catzos) to the cemetery, because they come at night to collect the food and offerings that we leave for them. (Female, Indigenous Elder)

A Kitu-Kara Elder pointed out that, unlike the white catzos, the red catzos grow on flat land where the land has not been plowed and where there are no cows or sheep. The red catzos seem to like stubble, which is the remains of plants that were previously planted in one place. Regarding changes in the climate, the person interviewed indicated that the Calderón has always been an arid area, but now it is hotter than before, and it rains less than it used to.

The consumption of *catzos* is seasonal and occurs according to their reproductive cycles and correlated abundance on the surface. Understanding environmental factors and insect behaviour is part of traditional ecological knowledge. There was consistency in the narratives about the relationship between *catzos* and the environment: all 19 interviewees indicated that the emergence of *catzos* requires specific weather conditions. Research participants pointed out this knowledge has been transmitted from generation to generation and has allowed communities dedicated to this practice to identify the best locations and times in which the *catzos* appear.

Interviewees indicated that for the *catzos* to appear, there must be rain the previous afternoon, and at dawn, the temperature must be mild. Both conditions are necessary for the insects to come out. In the interviews, various testimonials referred to the rain on the previous day as important for a good harvest and the absence of thunder or lightning. If those conditions are absent, *catzos* may not appear. Both red catzos and white catzos seem to share the same relation with the weather in terms of the patterns described here.

When the interviewees were asked about climate change, the majority indicated that they were experiencing several changes. For example, people mentioned that in the past, the season that met the weather patterns described above was clearer in their agrarian calendars, but nowadays, it is more complicated to identify the good time for the *catzos*. Many interviewed people work in agriculture and indicated that they recall that *catzos* came out when the planting season began. With climate changes, it is even difficult to

identify when it is time to plant and harvest: "For us, the catzos indicate the time when we should sow our seeds" (Female, Indigenous Elder).

Several people interviewed were older adults, which allowed us to learn about their perceptions of climate change. One of the people interviewed mentioned that in Quito, they used to talk about the *Cordonazo de San Francisco*, which is a legend that says that Saint Francis of Assisi takes off his cord or belt, fills it with thunder and lightning, and punishes and slashes the city inhabitants who misbehave to clean them from their sins. The interviewees indicated that previously the *Cordonazo de San Francisco* was a rule; during that season, it used to rain for at least one continuous week, then it rained moderately, and that was when the *catzo* season began. It was mentioned that the *Cordonazo de San Francisco* is no longer fulfilled and that the rain tends to fall harder and at different times, which they believe is affecting the *catzos*.

> Catzos and the moon are part of the signs that we follow within our agricultural calendar. Now we understand that it is ancestral wisdom, it has a logic, the catzos, and the moon are signals that help us to grow better our food. (Males, Urban Technicians)

In addition, some research participants explain that they have noted a relationship between land use and the presence of *catzos*. There is a greater number of white catzos on land where there is a presence of cattle or where there had previously been cattle. Participants reflected that urban areas have grown in Quito, which is displacing cattle, and that this could be affecting the population of *catzos* in the city of Quito. For instance, interviewees reported that in several areas where white catzos used to be collected, it is no longer possible to find them.

CONCLUSIONS/LESSONS AND RECOMMENDATIONS

The consumption of *catzos*, like many other edible insects, occurs by their seasonal abundance, which is part of the traditional ecological knowledge of insect life histories and environment-insect interactions. This traditional knowledge should be protected, and science should collaborate with ancestral knowledge. It is important to preserve traditional food habits such as edible insect consumption, and it is essential to connect modern scientific approaches to Elders' traditional knowledge. Indigenous knowledge is vital for understanding edible insect rearing and harvesting methods, including processing, preservation, storage, and packaging.

Edible insects should be considered an innovation in food systems that could help meet food security/health/well-being needs and mitigate climate change impacts by avoiding factory farming meat consumption. In the future, further research will be necessary for our study (i.e., nutritional and entomological studies). The nutritional content of white catzo has been already analyzed. It is possible to anticipate that *catzos* represent an important source of protein based on studies that have compared different protein sources

(Velastegui et al., 2020). However, the nutritional effects in the population that consume *catzos* seasonally have not yet been studied. Particularly, it is important to unpack the role of micronutrients as a potential pathway to tackle minerals and vitamin deficiencies from the year-round regular diet and similarly, the bioactive properties that may help to prevent chronic diseases. Moreover, participants' testimonials about land use represent another element that new research would need to address, particularly the relationship between soil contents and organic matter in the *catzos* collection sites.

Edible insect collection and consumption are ancient methods developed through accumulated knowledge and awareness of insects' seasonal and diurnal availability for harvesting. This Indigenous cumulative knowledge has been passed from generation to generation among Ecuadorians. Unfortunately, many Indigenous groups worldwide are losing their ancestral knowledge, cultures, and traditional foods due to urbanization, industrialization, and Westernization (Ghosh et al., 2018). It is fundamental to preserve this practice since this Indigenous knowledge is key for understanding *catzos* harvesting, preservation, and processing methods necessary to develop a sustainable food system, especially considering the call for an estimated 70% more food production globally by 2025. In conclusion, edible insects could be an alternative, producing new employment and feeding the world (Gallegos & Cortéz, 2019).

In addition, it is necessary to counter cultural bias that denigrates traditional knowledge, which has led to an association of disgust and that all insects are harmful. To overcome this challenge, some strategies have been documented that suggest that it is important to increase consumers' familiarity and create awareness of the benefits of eating edible insects, especially among children. This awareness process should be accompanied by teaching how to prepare the insects and highlighting the similarity between insects and crustaceans. Another effort to overcome that challenge could be improving the taste and appeal of edible insects by incorporating insects into familiar food items and recipes.

On the other hand, the gentrification of the consumption should also be prevented. When insects become a luxury product, as is the case with some species, such as *escamoles* (eggs and pupas of *Liometopum* ants) in Mexico or *hormigas culonas* (*Atta laevigata* ants) in Colombia, prices increase, and collectors prefer to sell this nutritious resource instead of eating it and tend to collect the insects in an unsustainable way (Aguilera-Espinosa et al., 2024; Lazos-Chavero et al., 2025; Ramos-Elorduy, 2006).

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GLOSSARY

Catzo: This is a type of insect (beetle) that lives mostly underground. For centuries, adult beetles emerge for their annual mating flight and are harvested and eaten by Andean communities in Ecuador (Agila Lisintuña et al., 2021).

Cutzo: This is the larva of the *catzo* (beetle), which feeds on plant roots, improving soil oxygen and fertility in Andean grassland (Agila Lisintuña et al., 2021).

Uchucota: A traditional soup consumed during the Day of the Dead and wakes in Ecuador by the Kitu-Kara. People offer this soup as a token of appreciation by placing food on the graves for the spirits of the deceased. It typically includes potatoes, corn, onion, and *catzos* as key ingredients (Elizalde Chamba & Molina Satizabal, 2019).

CHAPTER QUESTIONS

1. After reading this chapter, how did your appreciation of the Indigenous Peoples of Ecuador, such as the Kitu-Kara, change? In what way? How does this change inform your practice?
2. Thinking about the challenge of sustainably feeding a growing world population, what is your appreciation of edible insects?
3. In the same logic, is it feasible to change the habits and preferences of millions of people worldwide?
    a. How does the massive consumption of edible insects influence actions to adapt to and mitigate climate change?
    b. What adverse or positive effects could be derived from the massive consumption of *catzos* and other edible insects? For example, could this put ecosystems at risk or rather help to conserve them?

SUGGESTED READINGS AND RESOURCES

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AUTHOR BIOGRAPHIES

Amaya Carrasco-Torrontegui was born and raised in Ecuador. She has been actively involved in co-creating a fairer society. This purpose has led her to work with non-governmental organizations, grassroots, governments, and academia for the last 15 years at the intersection of agroecology, climate change, and food justice. Among her relevant career milestones, she was the founding director of the International Cooperation at the Consortium of Provincial Governments of Ecuador. Also, as part of the National Secretariat of Climate Change of the Ministry of Environment, she promoted and evaluated the National Plan of Climate Change in Ecuador. She has collaborated on research projects and coauthored several non-academic and academic articles. For her work supporting the Latin immigrants during the food shortages produced by the COVID-19 pandemic, she received the Woman Food Agriculture Network's Award as an Extraordinary Community Builder in Farm and Food Justice and the Graduate Student Award for Outstanding MS Research and Scholarship at the University of Vermont (UVM). She has a PhD in food systems with a specialization in agroecology from UVM. Her dissertation examined collective action in the context of agroecology in two Indigenous communities in Ecuador and Bolivia. She is part of the executive team of SACNAS-UVM, which aims to advance Chicanos/Hispanics and Native Americans in science. Also, she is the director of the operation of the Caliata Initiative, which works in food justice, specifically reimagining rural worlds.

Esther Katz, PhD, is a French anthropologist and emerita research director at the French Institute of Research for Development (IRD), in the joint research unit PALOC "Local heritage, environment, and globalization" IRD/CNRS/MNHN, based at the National Museum of Natural History (MNHN) in Paris, France. She is a guest researcher at the Instituto de Investigaciones Sociales of the Universidad Nacional Autónoma de México in Mexico City. She has been a lead author for the Intergovernmental Platform on Biodiversity and Ecosystem Services assessment on the Sustainable Use of Wild Species (2018–2022). She is a member of the editorial board of *Anthropology of Food*. Her main research topics deal with the anthropology of food, ethnobiology/ethnoclimatology, and cultural identity. She has been doing fieldwork with Indigenous Peoples and local communities in Mexico, Brazil, and for shorter periods in Ecuador and Colombia. She has also conducted fieldwork in Central America, Southeast Asia, Central Africa, and Europe. Over the last few years, she has been involved in food heritage, agrobiodiversity, and environmental change projects in Latin America. She is presently coordinating two projects on edible insects on the same continent.

Dr. Carlos Andres Gallegos-Riofrío is an interdisciplinary academic in planetary health, supporting Indigenous Peoples. With more than 15 years of experience in applied research, he combines behavioural, social, and life sciences, arts, and communications.

Carlos Andres is a postdoctoral associate in the Institute for Agroecology at the University of Vermont. He is also a faculty associate at the Kathryn M. Buder Center for American Indian Studies at Washington University in St. Louis (WUSTL) and the research coordinator of the Caliata Initiative, an international partnership promoting community-based initiatives in the rural Andes. Carlos Andres has coauthored numerous scientific articles, a book, a chapter, two social marketing manuals, and several technical reports. He was named a 2019 Emerging Leader in "Climate, Environment, Health, Agriculture, and Improving Nutrition," by the American Society for Nutrition. Carlos Andres has a PhD in social work from the Brown School in WUSTL; his dissertation is titled *Sustainable diets for planetary health: A study of Indigenous-based agri-food systems in a community of the central highlands of Ecuador*. He also has a Master of Applied Anthropology and Participatory Development specializing in society and environment from the Australian National University. Carlos Andres has a BA in psychology from Universidad San Francisco de Quito.

Adela Caranqui-Pintag is an Indigenous woman from the Caliata Commune, Chimborazo Province. When she was 16 years old, she joined the community leadership as a secretary, later supporting the Parish Council in elaborating the Territorial Development Plan. She presided over the formation of an organization of young peasants, "Mushuc Huiñai," to promote sources of work in our community to reduce the migration of people to the big cities who suffer discrimination, inequality, inequity, etc. At the same time, she completed her university studies. She uses her training in law, gender, and production to continue work related to community development. She continued strengthening her knowledge and experience as a project technician to prevent and eradicate child labour in the decentralized autonomous government of the Province of Chimborazo. Currently, she is an instructor of a group of older adults in the San José Municipal Board Unit of the Metropolitan District of Quito. She just finished her studies in law. Throughout her whole life, she has been linked to community work, and as an Indigenous woman, her motivations and desires are to strengthen, claim, and enforce Indigenous Peoples' rights.

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