

CULINARY TOURISM IN NATURAL PROTECTED AREAS: THE CASE OF THE CUXTAL ECOLOGICAL RESERVE IN YUCATAN, MEXICO

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Variety of locally produced chilies used in different dishes of the cuisine of the Cuxtal Ecological Reserve.

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Culinary tourism in natural protected areas: The case of the Cuxtal Ecological Reserve in Yucatan, Mexico

ABSTRACT: The Cuxtal Ecological Reserve is located in the urban periphery of Merida. This reserve represents an element of tourist interest due to the diversity of tourist resources, although these have not been recognized yet. In addition, most of the local population has traditional culinary knowledge, which is little explored from a tourist perspective. This article proposes to identify the culinary resources of the reserve to elaborate a culinary map. The study is based on in-depth interviews with residents to assess their culinary knowledge, visitor surveys, and the field's traditional food and agricultural product mapping. The results show that it has the potential to develop culinary tourism. Gastronomy can play an important role in boosting the local economy and conserving culinary identity among the inhabitants under the pressure of ultra-processed food from Merida.

KEYWORDS: culinary tourism, culinary mapping, food mapping, natural protected areas, Yucatan, Cuxtal, Mexico

Kulinarični turizem na naravnih zavarovanih območjih: primer ekološkega rezervata Cuxtal na Jukatanu v Mehiki

POVZETEK: Ekološki rezervat Cuxtal leži na mestnem obrobju Meride. Ta rezervat je turistična zanimivost zaradi raznolikosti turističnih virov, čeprav ti kot takšni še niso bili prepoznani. Poleg tega ima večina lokalnega prebivalstva tradicionalno kulinarično znanje, ki je s turističnega vidika slabo raziskano. V članku predlagamo opredelitev kulinaričnih virov rezervata, da bi izdelali kulinarični zemljevid. Študija temelji na poglobljenih intervjujih s prebivalci, s katerimi smo ocenili njihovo kulinarično znanje in tradicionalne metode. Rezultati kažejo, da ima rezervat potencial za razvoj kulinaričnega turizma. Gastronomija ima lahko pomembno vlogo pri spodbujanju lokalnega gospodarstva in ohranjanju kulinarične identitete prebivalcev pod pritiskom predelane hrane iz Meride.

KLJUČNE BESEDE: kulinarični turizem, kulinarično kartiranje, kartiranje hrane, naravna zavarovana območja, Jukatan, Cuxtal, Mehika

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1 Introduction

Recent studies have shown the importance of gastronomy and food and their relationship with tourism. They revealed that the gastronomic experience could enhance the regional attraction of a tourist destination (Quan and Wang 2004; Andersson, Mossberg and Therkelsen 2017). Other studies affirm that food tourism contributes to the diversification of rural economies through the mobilization of local actors (Bessière 1998), the integration of sustainable supply chains, and the promotion of employment and economic growth for complementary sectors and the supply chain itself (Eastham 2019). In the opposite direction, some research has revealed that globalization and the massification of tourism tend to homogenize the food supply of tourist destinations so that the promotion of traditional gastronomy linked to the host territory can contribute to the rescue of heritage local gastronomy and the reactivation of the value chain associated with it (Kumar 2019) whether they are agricultural, livestock, craft or service activities. From an environmental perspective, implementing agrotourism activities in peri-urban spaces can counteract the negative impacts of urban sprawl (Yang, Cai and Sliuzas 2010). In the last two decades, gastronomic heritage has gained momentum as a trigger for tourism activity (Reyes-May et al. 2019). Mexico, as a holder of a world-renown gastronomic and cultural diversity, has not been immune to this trend. In 2014, the Mexican government recognized the cultural value of traditional gastronomy and created the »National Gastronomy Promotion Policy« to strengthen the gastronomic value chain of traditional Mexican cuisines.

In addition, currently, there is a growing concern for the preservation and conservation of the environment, which has had an impact on new trends in tourism, especially verified through new segments that seek experiences more linked to nature, culture, indigenous communities, and adventure (Salcedo and San Martín 2012). In the case of Mexico, the Protected Natural Areas have positioned themselves as attractive spaces for the development of these alternative tourism segments (Comisión Nacional de Áreas Naturales Protegidas 2018) due not only to their outstanding natural and cultural wealth but also because of the economic benefits they bring to local communities (Briedenhann and Wickens 2004).

In general, the promotion of tourism activities has been subject to various criticisms, mainly due to the inequity in the distribution of benefits that tend to be concentrated in a small number of destinations or tourism service providers (Briedenhann and Wickens 2004). Yucatan and Mérida, in particular, have a strong touristic vocation, placing them as a destination of national tourist importance (Lara and García 2016). Between 2008 and 2018, Yucatan experienced average annual growth rates of up to 4.3% in visitor arrivals, 3.8% in the employed population in the sector, and an average annual growth of 9.4% in the sector's economic output (Paz and Quiñones 2021).

The Cuxtal Ecological Reserve (CER), located to the south of the urban periphery of the city of Mérida in Yucatán, has characteristics of tourist interest that have not been recognized or valued at the local level. On the contrary, it has been under the threat of urban growth in sensitive ecological and cultural conservation areas. The lack of knowledge of the city's population regarding the existence of this reserve contributes to its degradation (Hernández-Cuevas et al. 2019), so tourism planning strategies could contribute to valuing natural and cultural resources available in this critical natural reservoir for its use and preservation (Martorell 2003).

In this context, the objective of this work is to recognize the culinary resources of the CER for the promotion of sustainable tourism in this area of ecological interest for the city of Mérida, Yucatán, through a culinary mapping strategy that allows integrating the tourist and culinary offer of Cuxtal to that of Mérida, the leading tourist destination in the state of Yucatán. This could result in social and economic benefits for the local population and in the rescue and preservation of its natural heritage and culture through its enhancement.

2 Theoretical background: the concept of culinary tourism

2.1 Food as a central resource in tourism development

The following subchapter introduces central concepts related to culinary tourism and culinary mapping, and the second subchapter to the implementation of culinary tourism in natural protected areas. Together, they provide the theoretical underpinning for the research carried out in this work. Within tourism, food

consumption is so vital that it represents up to a third of the expenditure made by tourists worldwide (Quan and Wang 2004). Despite its obvious importance, for a long time there was little academic interest in the relationship between tourism and food. It was not until 1998 that Lucy M. Long defined, for the first time, the concept of culinary tourism as a way of intentionally experiencing other cultures through food (Long 1998; Kumar 2019). Since then, interest in this perspective has been growing, and today it constitutes a line of research that defines different characteristics of tourism activity linked to food through other concepts and perspectives. Gastronomic tourism (Hjalager and Richards 2002), cooking tourism, culinary tourism, food tourism (Hall and Mitchell 2002), and gourmet tourism are just some concepts that help to study these particularities. Currently, food is considered an integral part of tourist activity and has been considered, by some, as a differentiating element for tourist destinations (Kumar 2019). The growing process of globalization has impacted tourism and gastronomy due to the standardizing and homogenizing effects that threaten traditional food cultures and affect the local population nutritionally (Hall and Mitchell 2002). Tourism, in this case, can play a fundamental role in promoting traditional cuisines and local food production since these strategies help differentiate tourist destinations within a highly competitive market.

Culinary tourism is a subcategory of food tourism analysis. These categories are defined according to the level of interest that tourists have in food. Gourmet tourism is the first level of interest. In this, the visitors to a particular destination state that their main interest is tasting food in restaurants, markets, or routes designed for that purpose. On the contrary, in culinary tourism, visitors consider food an essential part of the experience, but they do not travel exclusively for this purpose. According to Beer, Ottenbacher and Harrington (2012), this type of tourist values the excellent quality of traditional and local food. For Du Rand, Booysen and Atkinson (2016), this type of visitor also appreciates contact with local cultures and learning about the food and customs of certain social groups, which implies a transfer of knowledge concerning the people, culture, traditions, and identity of the place visited.

Recent years have seen an increased interest in studying culinary tourism from a geographical viewpoint, due to its important spatial implications, both considering the influence of geographic aspects of a place or a region that influence culinary tourism, and culinary tourism's impact in local and regional societies and environments. This interest is shown for instance in a growing number of publications in specialized geographical journals, such as *Tourism Geographies* (Hashimoto and Telfer 2006; Spilková and Fialová 2013), *Journal of Cultural Geography* (Nelson 2016), *GeoJournal of Tourism and Geosites* (Marek and Wiśniewska 2021), and *Acta geographica Slovenica* (Razpotnik Visković and Komac 2021; Topole et al. 2021).

Other research has also identified the need for the development of quality tourism that integrates the preservation of natural and cultural resources, as well as the development and improvement of the living conditions of the community through strategies such as branding, certification and labeling (Ledinek Lozej and Razpotnik Visković 2022; Logar 2022; Razpotnik Visković and Logar 2022) to create a competitive identity within the market. Logar (2022) found that while there are market opportunities and promotion of local products, the impacts, in the case of the brand »Babica in Dedek« in Slovenia, were sectorally limited. Other theoretical principles, such as that of neo-endogenous development, could be useful for promoting integration strategies that favor rural development processes within the territories and that give importance to the geographical, productive, cultural and institutional proximities of the spaces that enable local actors to address global challenges through territorial governance processes.

In Mexico, there has also been a growing interest in protecting and promoting traditional and popular culture through patrimonialization. In 2010, Mexican cuisine was distinguished with the registration to the representative list of the Intangible Cultural Heritage of Humanity of UNESCO, which implies the commitment of the State to guarantee the protection of this cultural asset. The theoretical and conceptual approaches concerning gastronomy and tourism in Mexico have focused on the analysis of this heritage narrative, in most cases, and the study of tourist preferences about the gastronomic offer (Acle-Mena, Santos-Díaz and Herrera-López 2020). Contreras and Medina (2021) warned that, although Mexico currently has fifteen food Designations of Origin, they have not been articulated to comprehensive dynamics of tourism and gastronomic development. Along the same lines, Castillo et al. (2018) identified that the strategies for promoting gastronomic heritage in Mexico are insufficient and poorly articulated.

Culinary mapping is a methodology that can be beneficial in this regard for diagnosing, planning, and managing tourism activity related to food. Du Rand, Booysen, and Atkinson (2016) consider places of gastronomic interest, which include factories, shops, markets, restaurants, fields, events, festivals, and other types of facilities used for gastronomic purposes, in addition to the cultural and culinary heritage expressed in routes, books or cookbooks.

As a tourism planning tool, culinary mapping involves collecting, recording, analyzing, synthesizing, and visualizing information to describe the culinary resources, networks, and usage patterns of a specific group in a given area (Booyens and Du Rand 2019). According to Du Rand, Booyens, and Atkinson (2016), areas of gastronomic interest can be considered, which include factories, shops, markets, restaurants, fields, events, festivals, and other types of facilities used for gastronomic purposes, in addition to the cultural and culinary heritage expressed in routes, books or cookbooks. For such purposes, Geographic Information Systems (GIS) are the best way to visualize and analyze geographic information in different categories of food products in a given area. According to the bibliographic search realized for this work, this kind of spatial perspective of food tourism has not yet been explored in Mexico.

2.2 Culinary tourism in natural protected areas and its relationship to sustainability

An aspect that has recently gained increased attention is the relationship of culinary tourism to sustainable development and its application in areas of unique natural and cultural value, such as natural protected areas. In these areas, one of the main objectives of tourism, both in Mexico and the world, is preserving natural and cultural heritage while promoting improvement in the quality of life of the people who inhabit them (Cruz 2008). Many of the natural areas and ecological conservation spaces were created without considering the impacts they would cause on local communities that, by belonging to any of these areas, are prevented from carrying out many of the economic activities that gave them sustenance (Eagles and McCool 2002). For this reason, culinary tourism is positioned as one of the socioeconomic development options for local communities within ecological conservation areas without compromising biodiversity and ecological balance (Eagles and McCool 2002).

In this sense, culinary tourism can be a tool aiding to sustainable development. The notion of sustainable development arose in the late 1980s and early 1990s, in the context of the publication of the World Commission on Environment and Development's report *Our common future* in 1987 and the United Nations Conference for Environment and Development in 1992 (Zimmermann 2016). Sustainable development was defined broadly as a kind of development that meets / ... / »the needs of the present without compromising the ability of future generations to meet their own needs.« (World commission on ... 1987, 11). Later on, more elaborate conceptualizations were established, also more directly related to tourism, trying to obtain social and environmental benefits while avoiding tourism's potential negative outcomes (Hunter and Green 1995). UNEP and WTO (2005) defined twelve specific goals for sustainable tourism: 1) economic viability, 2) local prosperity, 3) employment quality, 4) social equity, 5) visitor fulfillment, 6) local control, 7) community wellbeing, 8) cultural richness, 9) physical integrity, 10) biological diversity, 11) resource efficiency, and 12) environmental purity. These clearly relate to culinary tourism in many ways, for example, by calling for fostering local, small-scale tourism establishments that purchase locally, use ingredients and energy in an efficient manner and reproduce their traditional gastronomic culture as part of their area's cultural heritage. Also the most influential conceptualization of sustainable development, the 17 Sustainable Development Goals of the UN's Agenda 2030 (Sachs et al. 2019), can be related to culinary tourism, for instance, by promoting sustainable consumption and production patterns, as well as sustainable agriculture.

Thus, sustainable development has been a central theme in recent studies regarding sustainable development. Authors like Sims (2009), Beer, Ottenbacher and Harrington (2012), and Jiménez, López-Guzmán and González (2016), affirm that the promotion of culinary tourism also has a positive impact on the sustainability and preservation of local culture. Razpotnik Visković and Komac (2021) even argued that sustainability is one of four elemental aspects that define the triangle food-territory-tourism that characterizes gastronomic tourism and Sorcaru (2019) proposed to include culinary tourism in local sustainable development strategies.

Sims (2009), in a study carried out in two natural parks in the United Kingdom, found that local food and drink contribute to the sustainability of tourism and agricultural activity by promoting sustainable practices to attract visitors. According to the author, buying and consuming local products prevents the food that tourists buy within the natural area from having to be transported from other regions or countries, which ultimately reduces the carbon footprint produced by the activity. Tourism perspectives focused on sustainability, such as Integral Rural Tourism, understand that the best form of tourism is one where benefits are achieved in the protection of the environment without disfavoring economic development and that, in turn, benefits the local economy without harming the communities themselves. This is how culinary tourism can be a strategy that compensates for the reduction in income due to restrictions on other

economic activities (Hjalager and Johansen 2013). A more recent study by Topole et al. (2021) identifies the reduction of transport of food by consuming locally, sustainable transport options to get to destinations, waste management and recycling, and suitability to disadvantaged groups, e.g. persons with disabilities, as important aspects of sustainability in culinary tourism.

According to the Global Adventure Tourism Report (2013, cited in Comisión Nacional de Áreas Naturales Protegidas 2018), the tourism market linked to nature destinations is growing at approximately 20% annually at the international level. In the Mexican case, although the number of tourist visits increases yearly, a lack of diversification of tourist activity has been identified, focusing on sun and beach destinations. The international tourism market, for its part, demands new formats with a greater diversification of experiences with an offer of increasingly personalized services (Lopes 2018).

Stanford (2006; cited in López 2018) warned of the profound changes in the profile of modern tourism, such as greater autonomy in planning trips by tourists, the growing concern for the environment, the appreciation of nature activities, the desire for interaction with the local population and the acquisition of much more authentic experiences linked to the enhancement of local heritage. According to Hjalager and Johansen (2013), surveys applied to visitors to natural parks in the United States found that up to 81% of tourists would have liked to try food of local origin and would have been willing to pay a higher price for this experience. This paper explores the conditions for fostering culinary tourism in the research area of CER where this topic has not been studied so far but that shows a high potential for connecting tourism and activities related to food. The following chapter gives a short overview of the general geographic conditions of this area.

3 Study area

The CER is located in the south of the municipality of Mérida, in Yucatán (Figure 1). It occupies an area of 10,757 km², representing 12% of the total municipal area of Mérida. It was declared a Natural Protected Area in the category of Zone Subject to Ecological Conservation in 1993 due to its strategic importance for the region because of the environmental services it provides, especially its transcendental function as a water collector (Ayuntamiento de Mérida 2017).

The CER contains nine towns belonging to the municipality of Mérida. According to the 2021 population census of the Instituto Nacional de Estadística y Geografía de México, in Yucatán, 525,092 people speak an indigenous language, mainly Mayan; at CER, it is spoken by 7162 inhabitants. The restrictions imposed by the declaration as an Ecological Reserve have prevented the development of productive activities that could transgress land-use regulations. It is estimated that up to 75% of the population that lives in the CER commute outside of it to perform paid work, mainly in the city of Mérida, which puts at risk the rescue and preservation of the knowledge that the local population has regarding the sustainable use of plants, animals and other resources of gastronomic value that exist in the reserve.

4 Methodology

The present study focuses on a case study to exemplify the application of culinary mapping in the context of studying tourism activities related to food. This was carried out in the CER, presented in the previous chapter, consisting of three field visits during the year 2021 as well as working with online research tools. The following list describes the main methods applied for data acquisition and their subsequent analysis:

- **Mapping in the field:** To identify the main tourist and gastronomic resources in the CER, tours were conducted throughout the entire road network within the reserve. The points of interest were georeferenced in the GPS Gaia mobile application to form a spatial database, which was then processed in ArcGIS to create a culinary map of the area. A protocol was established for each resource identified, which included photographs and a short note. This involved a total tour of 69 km to visit all communities within the reserve, as well as tourism-related attractions throughout the area. In addition to visually registering potential tourism resources and documenting them with photos, shop vendors, food service providers, and other locals present during the visits were contacted to find out more about the tourism and culinary resources present and their potential use by tourists. This provided part of the information added in the notes in the protocol. Furthermore, additional relevant information obtained via these informal talks was noted down in a research diary and was integrated into the interpretation of the results.

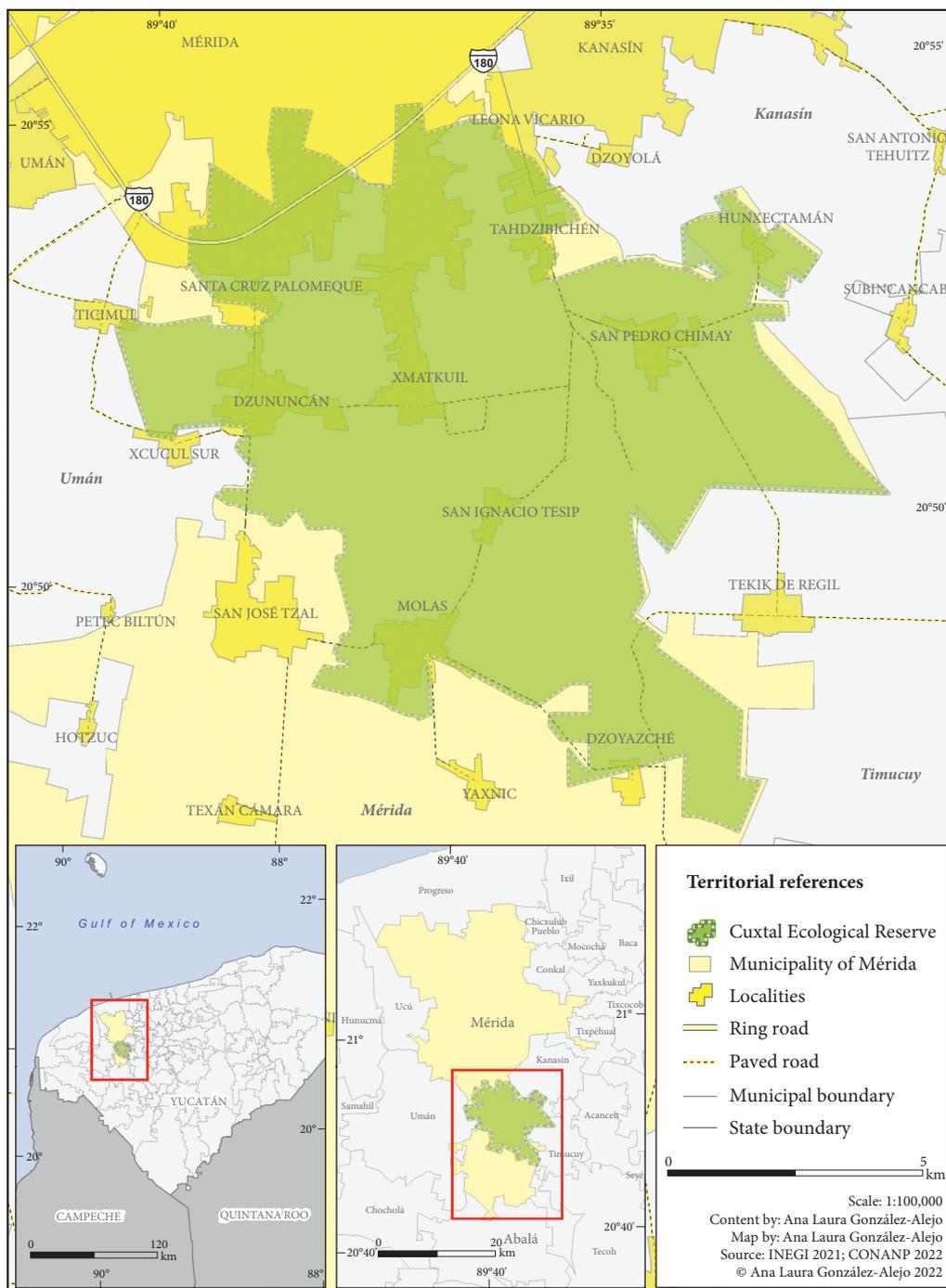


Figure 1: Location of the Cuxtal Ecological Reserve.

- **In-depth interviews:** In order to better analyze and interpret the results, and to avoid overlooking any important tourist and gastronomic resources and related aspects, in-depth interviews with three officials of the Cuxtal reserve, with five tourism service providers located in the inner city of Merida from where most tours to the surrounding tourism areas start, and with ten traditional cooks (nine women and one man) inside the reserve were made. They lasted between half an hour and two hours and were guided by a set of previously defined questions, that was adapted for each kind of interviewee. The results were coded to enable a systematic textual analysis of the main themes and aspects talked about in these interviews.
- **Online survey:** An additional, secondary method to better interpret the results was applying an online survey. Ninety-four tourists who had visited the reserve for tourist purposes were identified and sent an electronic survey (using the Google Forms tool) via Instagram to find out their interest in local cuisine. The questions were related to the respondents' general knowledge of the reserve and its touristic and culinary resources, specific aspects of the stay (such as main motive for visiting, transport mode, spending, etc.), and their satisfaction with the services found within the reserve and their general perception of tourism development in the area. We searched for contacts on Twitter and Facebook, too, but could not find relevant posts dealing specifically with the Cuxtal reserve. In general, the acquisition of information at this point of the research was limited to online sources due to the current state of the COVID-19 pandemic and restrictions for fieldwork. Fifty-eight persons answered the questions. The selection of interviewees via social networks might have been selective to some degree, as these tools are less used by elderly people. However, as confirmed by the interviews with local experts, most visitors coming to the reserve are young people and young adults.

5 Results

5.1 Resource mapping

The methodology described in the previous chapter brought about a detailed culinary mapping of the CER, which is presented in the following paragraphs of subchapter 5.1. Additional information obtained through this research is contained in subchapters 5.2 and 5.3, which aid in interpreting this culinary map, including the main tourist activities other than culinary tourism implemented in the reserve and the general tourist profile.

The direct identification of tangible culinary resources was carried out through fieldwork. They were georeferenced with the help of GIS tools and classified and integrated into a spatial database. The identified products include food sales establishments, backyard gardens, cooking workshops, and handicrafts associated with local production (Figure 2). Thirty-four gastronomic products were found in the CER associated with the local culinary culture: street stalls (9), home-style eateries (6), informal food stalls (5), production sites of sauces and jams (3), restaurants (2), honey production (2), a stand to sell tortillas (1), a bakery (1), traditional female cooks (5) and also a Biopark where traditional cooking classes are given to school children.

Due to the number of visits and their promotion on social media, the two restaurants are the most representative food establishments of the CER. They offer local gastronomic food and attract tourists with high purchasing power. The Santa Cruz Palomeque restaurant is located inside a 17th-century henequen hacienda, which currently serves as a hotel spa. The second restaurant, called Tío Charly, offers local and exotic dishes in a country setting inside the CER; they are visited by tourists and day visitors, especially residents from Mérida's urban area. The home-style eateries and the street food stalls offer local gastronomy, such as *panuchos* (deep-fried tortilla stuffed with refried black beans and topped with chopped cabbage), *tortas* (traditional sandwiches), *salbutes* (deep-fried tortilla topped with lettuce, avocado, pulled chicken or turkey, tomato and pickled red onion), and different preparations of pork meat, in addition to the popular *cochinita pibil* (slow-roasted pork dish that is cooked in a ground oven). These establishments are preferentially located in the road corridor leading to the CER.

The local culinary options are distributed in practically all the towns of the CER. They are particularly concentrated in Colonia Plan de Ayala Sur, Dzoyaxché, Dzununcán, San Pedro Chimay, and Molas. Regarding locally prepared products, Molas stands out, where you can buy locally produced sauces and

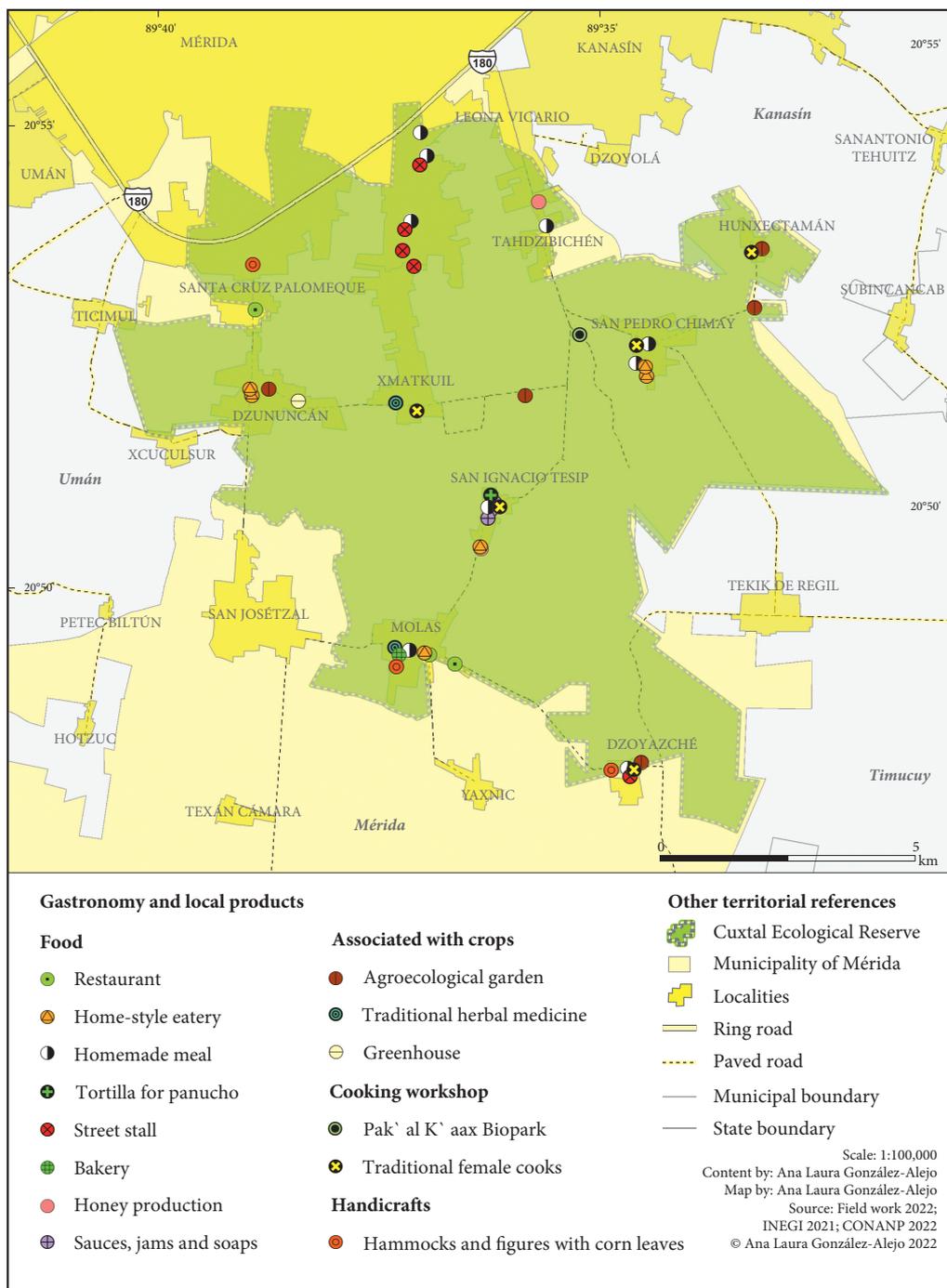


Figure 2: Cuxtal Ecological Reserve: culinary resources.

jams, as well as honey from the *Melipona* bees, a genus native to the Yucatan Peninsula and which comes from apiaries that are found inside the reserve.

In San Pedro Chimay, within the Biopark, in addition to visits and environmental education workshops, traditional cooking courses of the region are offered, which also constitutes a vital tourist resource for the reserve. Hunuxectamán, the smallest in terms of population and the furthest away in terms of accessibility, stands out for its agroecological production of regional varieties of tomato and pumpkin, essential ingredients of Yucatecan gastronomy. The presence of a traditional female cook also stands out. Likewise, other towns have family gardens, known in Yucatan as *solares mayas*, which are traditional backyard production systems where families grow a variety of trees, shrubs, and herbaceous species for different purposes, be they food, ornamental, medicinal, agroforestry, and even fodder. These family production spaces are also used for raising chickens and the Mexican creole hairless pig, that is traditional of the Yucatan Peninsula. The recovery of the Rosapa'ak tomato crop, or kidney tomato, stands out, which was identified in a backyard garden of Dzoyaxché. This type of tomato has a great cultural value for the inhabitants of the Yucatan Peninsula since it is the raw material for representative recipes of regional gastronomy, such as *pan de cazón* (dogfish shark, refried black beans and spiced tomato sauce with *habanero* using layered tortillas), *pibipollos* (seasoned chicken covered in corn dough and wrapped in banana leaves and baked in an underground oven), and some varieties of *tamales* (corn dough with a filling that can be either savory or sweet, wrapped in a banana leaf or corn husk and steamed). Currently, it is considered that this tomato is in danger because other commercial varieties of tomato have monopolized the market.

In the CER, the production of fruit trees, vegetables, and animal husbandry was identified for self-consumption and commercialization through the *Círculo 47* government program (Figure 3). The program intends to promote agricultural activity under agroecological precepts that help improve the economic conditions of the rural populations of Mérida. The participating reserve producers produce chili, corn, pumpkin, tomato, orange, guava, papaya, eggs, pork, lamb, goat, rabbit, chicken, and turkey, and elaborate products such as honey, propolis, and *tortilla*.

The production inside the reserve is used for preparing traditional foods, from drinks such as *pozole* (corn-based drink cooked with calcium hydroxide; note: it is very different from the dish called *pozole* in central Mexico), *atole de masa* (corn-based drink cooked with calcium hydroxide to which different flavors are added, which can be fruits or seeds), and *atole de pinole* (drink made from ground corn, cocoa, cinnamon, and sugar); to foods that come from farming and hunting, such as local preparations of iguana, deer, and rabbit (the latter is usually prepared in a *pipian sauce* made from ground pumpkin seeds). A traditional element of the local cuisine that comes from backyard gardens is the herb *chaya* (*Cnidoscolus chayamansa*). It is used to prepare *empanadas* (fried pastries from corn dough with a savory filling), *panuchos*, broths, and even cakes. Sweet dishes are made from locally grown fruits and vegetables such as papaya, pumpkin, and cucumber.

In addition to the essential traditional culinary knowledge that the population possesses, the CER also has agricultural activities linked to local gastronomic activity. The preparation of *tortas de lechón* (a piece of bread cut in half similar to a sandwich filled with a sucking pig) in Molas stands out, where the Mexican creole hairless pig is raised in backyard gardens and cooked in a traditional oven outside the house. It is sold on weekends on the patio of a private place where people from other locations and Mérida go. In the same way, in San Ignacio Tesip, the traditional preparation of *cochinilla pibil* is carried out in a ground oven, which is also marketed among the local population and those from the city of Mérida who come intending to taste it on weekends.

5.2 Tourism activities in the reserve

Incipient tourist activity was documented in the protected area. In the first place, bird watching can be indicated, a practice the residents carry out in Dzoyaxché; the celebration of *Pok ta pok* matches (traditional Mayan ball game) in the town of San Pedro Chimay where young people practice this sport and make exhibitions for tourists in San Pedro Chimay. This sport has a world championship in which teams from Yucatan and other locations in Mexico, Belize, and Guatemala participate. Many of the players of the Yucatan team that engages in these world games are from the CER.

Also, efforts are made to attract the attention of tourists so that they can carry out participatory observation in activities such as beekeeping Abeja Planet, in San Ignacio Tesip, a company that shows the process

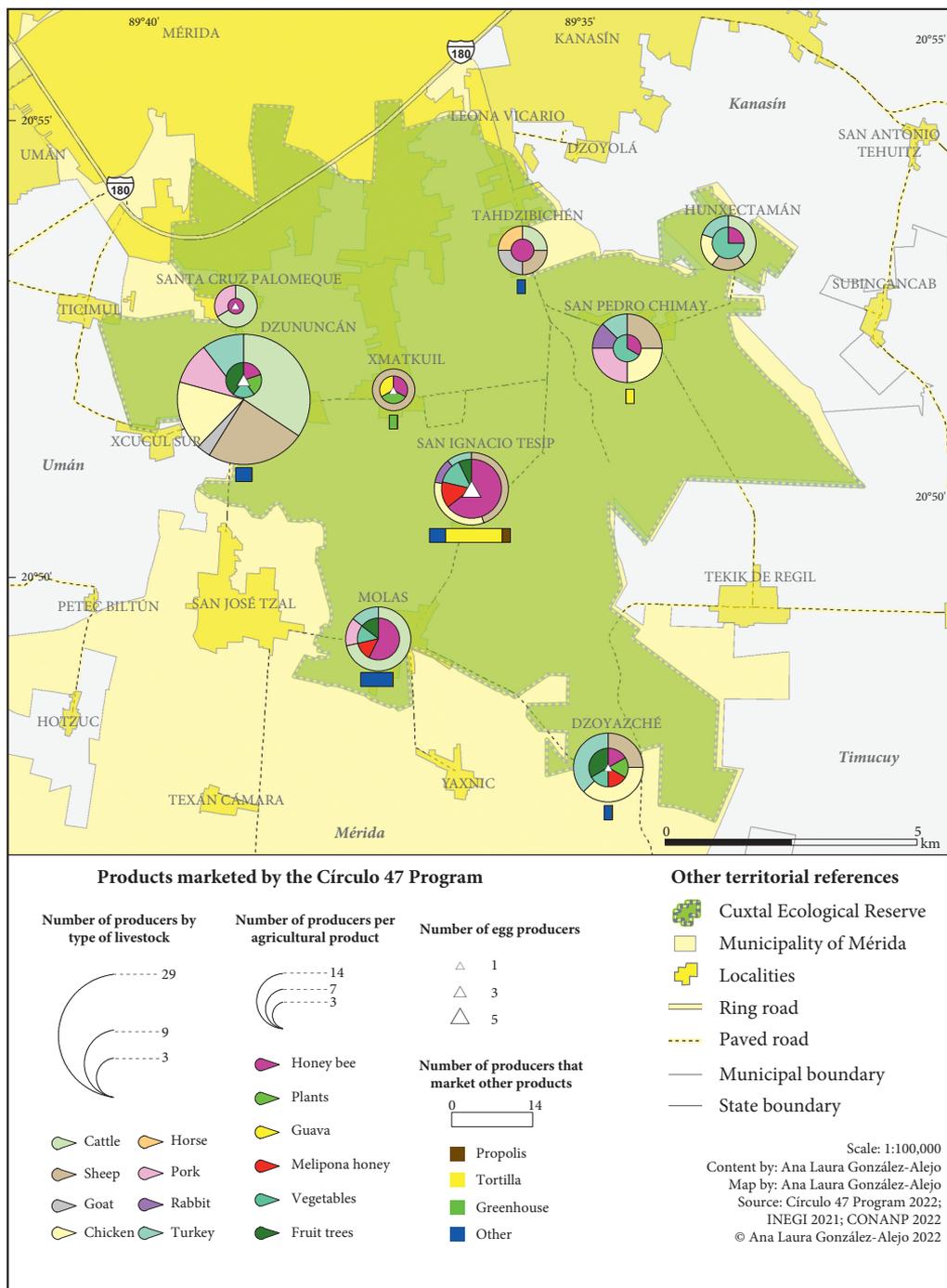


Figure 3: Agroecological products marketed by the Circle 47 Program.

of collecting, processing, and packaging honey whose origin comes from bees that visit different native plants. There is also the possibility of observing and participating in the weaving of hammocks carried out in the homes of Dzoyaxché.

Weddings are also held in old haciendas that prospered around the henequen industry in the 19th century. The sites that register the highest number of events are Santa Cruz Palomeque, San Antonio Tahdzibinchén, and San Pedro Chimay. The offers of these places are aimed at a sector of the regional and national population with very high purchasing power. Despite this diversity of options for putting tourist activity into practice, the most frequent reason for traveling to the CER is to visit the Dzoyaxché hacienda, where swimming pools are open to the general public.

5.3 Tourist profile

A survey was conducted on 58 tourists who registered their visit on the Instagram application through the hashtags #cuxtal #dzoyaché #reservaecológica#cuxtaleando. An electronic form was sent to 94 people, of which 58 sent their answers. Of the total responses, a little more than half were people whose ages ranged between 30 and 44 years, followed by visitors between 18 and 29 years (40%); based on this evidence, it can be affirmed that the majority of those who arrive at the CER are relatively young people.

The geographical origin of the interviewees indicates a majority whose point of origin is the municipality of Mérida (75%), with a relatively minor component of visitors who live in Mexico City. The means of transport used to get to Cuxtal were predominantly private cars (71% of the total); a smaller proportion (19%) used public transportation, and only 7% arrived through a tourist tour purchased in Mérida.

Tourists expressed interest in experiencing locally sourced food (58.1%) when asked what types of food they would like to see offered within the ecological reserve. As to the reasons why they choose to consume certain types of food during their visit to the CER, 22.6% indicated the taste, while 22.6% mentioned that the experimentation of local products and recipes is a motivation to food consumption during the visit to the reserve.

During the time of stay in the CER, it stands out that the tourists generally visited the reserve for a short time. 60.7% spent only between 1 and 3 hours, while 21.4% of those surveyed stayed between 4 and 6 hours. Only 17.9 % of those who responded to this survey made it at least on an overnight stay in the reserve. Among the reasons for returning to the reserve, tourists mentioned proximity to Mérida (13.8%), nature (13.8%), recreational activities, and the beauty of the place with 10.3% of the opinions, respectively.

The study found that there were differences in spending habits and food preferences based on age and gender. The results showed that people between the ages of 18 and 29 spent less money than those between the ages of 45 and 60. Additionally, younger women tended to prefer healthy foods, while the older group preferred local cuisine. Age and gender are important factors to consider when classifying tourists based on their food interests. It has been observed that different age groups prefer different types of food. By taking this into account, it would be possible to create targeted offers and marketing strategies to attract the right audience for various food options available in the CER.

6 Discussion

The main contribution of this article is the advancement of culinary tourism and of developing a culinary mapping approach that is suitable for a protected natural area. This is the first application of this type of culinary mapping study in Mexico. The approach helps identify spatial differences within the study area and highlights places that are particularly suitable for culinary tourism. It also identifies areas that have potential in terms of their resources but have not yet incorporated culinary tourism activities. The study combines mapping with in-depth interviews with local actors and a survey with tourists, which provides additional progress to this type of research. This study adds to previous work on culinary tourism and expands the scope of this type of research. The spatial identification of culinary resources allows the integration of gastronomy into regional economic and tourist circuits. It also helps with territorial management and planning for economic and tourist diversification strategies. This is achieved through the mobilization of local actors and promotion of employment, which promotes the cultivation of traditional ingredients and preserves local culture.

The research findings indicate that tourists are interested in traditional gastronomy and the local origin of food. This trend is consistent with other studies conducted in natural areas (Sims 2009; Beer, Ottenbacher and Harrington 2012; Hjalager and Johansen 2013; Fernandes and Richards 2021), where tourists have identified deficiencies in the provision and quality of food services within their reserves. In the case of natural areas with established tourist activity, such as the Mols Bjerger and Skjern Aadal reserves in Denmark, Hjalager and Johansen (2013) found that tourists demand higher quality food, beverages, and culinary experiences, particularly with regard to the origin of the ingredients. The experience gained in such areas highlights the need to integrate the gastronomic and productive offerings with other tourist attractions and actors (Du Rand, Booysen and Atkinson 2016).

Due to the current climate emergency, new trends around gastronomic tourism and sustainability have emerged. Authors such as Sims (2009) and Bertella (2020) point out that tourism activity should not continue to depend on food imports and an unsustainable industrial food system. On the contrary, tourism should be more linked to its local environment to stimulate tourism destinations' sustainable economic and environmental development (Zhang, Chen and Hu 2019). Other perspectives on rural development, such as neo-endogenous development, allow us to glimpse territorial linkage strategies that integrate multi-level actors who intend to build collective decision-making processes for the benefit of spaces. This perspective is especially relevant when applied to goods with great historical and sociocultural value, such as traditional foods (Martínez 2023).

In the case of the CER, the identification of small producers of traditional crops of local gastronomy and of cooks who know the culinary use of these ingredients allows the revitalization of agricultural activity and the preservation of agrobiodiversity and the food culture in the CER. In addition to the above, tourists are offered an authentic and sustainable gastronomic experience that differentiates it from other tourist destinations where the conditions to link local production, sustainability, culture, and traditional gastronomy do not exist. In this sense, other studies highlight the importance of incorporating local gastronomy as a way of differentiating the tourist destination (Karim and Chi 2010), especially among a growing number of tourists who travel for gastronomic reasons (López-Guzmán and Sánchez 2012; Contreras and Medina 2021).

The analysis in the CER allows us to recognize a series of advantages for other tourist destinations where this type of proposal has been implemented: The existence of many natural and cultural tourist attractions within the reserve, extensive gastronomic knowledge of the people who live there, and a group of agroecological producers currently integrated under the name of *Círculo 47* that sell fresh food within the reserve. The scarcity of producers and the little connection between them has been one of the main disadvantages that other gastronomic and culinary tourist destinations have faced, where this problem has been identified as a limitation to be faced (Fernandes and Richards 2021).

According to Zhang, Chen, and Hu (2019), tourists' consuming locally sourced food also reduces the carbon footprint generated by transporting goods to tourist destinations. However, for Rinaldi (2017), tourists exert significant pressure on ecosystems, water, and natural resources. Contreras and Medina (2021) suggest that globalization and food homogenization are the main threats to cultural and food identity in various tourist destinations in Mexico and the world. As experienced in the fieldwork, the communities within the CER are affected, in an increasingly visible way, by a diet that depends more and more on ultra-processed products and less on natural and traditional foods. From a social perspective, excluded local communities, as in the case of the inhabitants of the CER, also threaten the culture and preservation of priority crops and knowledge for the Mayan culture in the face of food homogenization.

7 Conclusions

The culinary mapping applied to a territory such as the CER allows it to glimpse the potential for the development of alternative tourist activities that complement the regional offer, in addition to promoting the diversification of the benefits of tourism to other social and economic actors that inhabit this reserve. As verified, local gastronomy can play a fundamental role in integrating tourism with the agroecological practice that contributes to economic reactivation and the recovery and preservation of knowledge by the local population.

The urban expansion of Mérida, which permanently threatens the territory of the reserve, also represents a risk for the local population who see their lifestyles modified, particularly due to the influence

that urban eating patterns may have on the people of the CER that, as it was found in fieldwork, have traditional knowledge of gastronomic value. In this sense, planning the tourist activity can contribute to preserving the resources and culinary practices among the population and valorizing the natural, ecological and cultural resources that sustain it.

The mapping of culinary resources allows planning and managing alternative tourism strategies that integrate the CER within the state and regional tourism offers. Food tourism associated with the gastronomic and agroecological offer represents a viable option within an ecological preservation area with severe degradation problems due to the urban growth of the city of Mérida on this critical natural reservoir. With these strategies, local supply chains are also strengthened, which favors the local population.

8 References

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