

Complex Relationships Among Gender and Forest Food Harvesting: Insights from the Bribri Indigenous Territory, Costa Rica

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Complex relationships among gender and forest food harvesting: insights from the Bribri Indigenous Territory, Costa Rica

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SUMMARY

The gendered dimensions of wild food harvesting are often examined at the resource appropriation stage; to build on this literature, we examined gender and wild food harvesting across multiple wild harvesting stages from pre-harvest to food sharing. Using qualitative methods (participation, interviews, and group discussions) informed by Bribri Indigenous teachings, we found that: 1) no single harvesting stage was exclusive to members of one gender, 2) mixed gender harvesting groups were common, 3) women participate in all wild harvesting stages, and 4) men are central to wild plant food harvesting. These findings provide a nuanced picture of gendered harvesting and challenge prevalent biases about women and men's roles in plant harvesting and hunting. Our research further highlights the importance of examining variables such health, opportunities or motivation to harvest, and expertise, to understand intra-gender harvesting. Our research provides a framework to examine gender across multiple stages in a forest food system; this framework can be useful for forest managers interested in gaining a deeper understanding of the diverse contributions women and men make within these systems.

Keywords: cooperation, forest-dwelling people, hunting, La Amistad Biosphere, sharing, traditional food, wild food

Relations complexes entre les sexes et la récolte d'aliments forestiers: points de vue fournis par le Territoire Indigène Bribri en Costa Rica

O. SYLVESTER, A. GARCÍA SEGURA et I. DAVIDSON-HUNT

Les dimensions quant au sexe dans le domaine de la récolte des aliments forestiers sont souvent examinées au niveau de l'appropriation de la ressource. Pour étoffer cette littérature, nous avons examiné le sexe et la récolte des aliments sauvages à travers de multiples stades de la récolte, des moments la précédant à ceux du partage de la nourriture. En utilisant des méthodes qualitatives (participation, interviews et discussions de groupe) informées par les enseignements indigènes Bribri, nous avons trouvé que : 1) aucun stade de la récolte n'était exclusif aux membres d'un sexe, 2) les groupes de récolte mixtes étaient communément présents, 3) les femmes participaient à tous les stades de la récolte sauvage, et, 4) les hommes étaient présents au cœur de la récolte des aliments végétaux sauvages. Ces résultats offrent une image nuancée de la récolte par sexe et lance un défi aux préjugés établis quant aux rôles des hommes et des femmes dans la récolte des plantes et dans la chasse. Notre recherche souligne de plus l'importance de l'examen des variables telles que la santé, les opportunités ou la motivation de récolter, et l'expertise, pour saisir la récolte en sexe mixte. Notre recherche dresse un cadre pour examiner la question du sexe dans les stades multiples d'un système d'alimentation forestière. Ce cadre peut-être utile aux gestionnaires forestiers intéressés d'obtenir une compréhension plus profonde des diverses contributions que hommes et femmes effectuent dans ces systèmes.

Relaciones complejas entre género y alimentos de bosques: aprendizaje del Territorio Indígena Bribri, Costa Rica

O. SYLVESTER, A. GARCÍA SEGURA y I. DAVIDSON-HUNT

Las dimensiones de género en la recolección de alimentos silvestres han sido examinadas principalmente en la etapa de apropiación de recursos; para contribuir a esta literatura, se analizó el género y la recolección de alimentos silvestres en múltiples etapas de recolección, desde antes de la cosecha y hasta el momento cuando se comparte la comida. Utilizando métodos cualitativos (participación, entrevistas y discusiones en grupo) desarrollados con enseñanzas Bribri, encontramos que: 1) ninguna de las etapas de cosecha era exclusiva para miembros de un género en particular, 2) los grupos de recolección mixtos en género eran comunes, 3) las mujeres participan en todas las etapas de la recolección silvestre, y 4) los hombres juegan un papel fundamental en la recolección de plantas silvestres para alimentación. Estos resultados exponen las complejidades de cosecha en cuanto a género, y desafían los prejuicios que prevalecen respecto al rol de mujeres y hombres en cuanto a la

cosecha de plantas silvestres y la cacería. Además, nuestra investigación destaca la importancia de considerar cómo otros factores influyen en las diferencias entre personas del mismo género; factores como la salud, las oportunidades, la experiencia o la motivación para la cosecha. Nuestra investigación proporciona un marco conceptual para examinar género a través de múltiples etapas de cosecha en un sistema alimentario de los bosques; este marco puede ser útil para la gestión forestal, que tiene interés en entender de manera más integral las contribuciones de mujeres y hombres dentro de estos sistemas.

INTRODUCTION

Women and men can be associated with different harvesting activities (Dahlberg 1981, Pfeiffer and Butz 2005). Some of the most commonly discussed differences are those associated with hunting and gathering. Scholars have described how women are commonly associated with wild plant gathering (Mai *et al.* 2011, Price *et al.* 2008) whereas men are commonly associated with hunting, fishing, and gathering animal products (Dahlberg 1981, Peers 1996, Shackleton *et al.* 2011).

Although women and men can be associated with different harvesting activities (Dahlberg 1981, Pfeiffer and Butz 2005), these differences are not always consistent across or within cultural groups (Neumann and Hirsch 2000, Pfeiffer and Butz 2005, Shackleton *et al.* 2011). For instance, although women are associated with gathering in some cultural groups, in others men have been associated with this activity (Dahlberg 1981, Draper 1975). Similarly, although men are commonly associated with hunting, fishing, and gathering animal products, women also engage in these activities (e.g., Goodman *et al.* 1985, Noss and Hewlett 2001, Jarvenpa and Brumbach 2006, Bliege Bird and Bird 2008, Shackleton *et al.* 2011). Additionally, scholars have illustrated that within cultural groups women and men can cooperate when hunting and gathering forest food (Biesel and Barclay 2001, Hill 2002); the extent of cooperation in harvesting among people of different genders can also vary depending upon the resource harvested (Bliege Bird *et al.* 2012, Hill 2002). Furthermore, scholars have illustrated how within cultural groups women and men's harvesting activities can vary depending upon the species being hunted or gathered and the risk associated with harvesting (e.g., Codding *et al.* 2011).

Despite a growing body of literature that supports that women and men's roles are not static across or within cultural groups, this body of literature still has gaps. One key gap relates to the fact that we lack emic or insider perspectives on harvesting systems. The majority of the research on wild harvesting in Indigenous communities is based on outside researchers' interpretations of wild harvesting; thus, we lack information on how Indigenous harvesters themselves view harvesting stages and the role gender plays throughout these stages. A key example of this is hunting. For instance, scholars have argued that outside researchers have defined hunting narrowly, i.e., as the act of killing big game (Gifford-Gonzalez 1993) whereas some Indigenous people view hunting as a more complex activity, i.e., involving tracking, killing, butchering, and processing animals (Jarvenpa and Brumbach 2006). When hunting is understood more broadly from an Indigenous perspective, we can begin to understand

the complexities of how women and men participate across all of these stages.

To better understand how gender shapes wild food harvesting, we worked with our forest-dwelling Bribri Indigenous colleagues in Costa Rica. We used an ethnobiological approach to address this topic. An ethnobiological approach is useful because it advocates for the study people's relationships with their environment from the perspective of the resource users themselves (i.e., an emic perspective; Wolverton 2013, Hunn 2007). Although ethnobiologists recognize the importance of examining how gender shapes resource use (e.g. Pfeiffer and Butz 2005, Turner 2003), ethnobiology lacks a guiding framework to approach gender. Thus, we developed a conceptual approach drawing both on feminist political ecology and ethnobiology literatures.

Our conceptual approach was developed based on the following three elements. First, we did not to make a priori assumptions about gendered differences based on sex-based stereotypes prevalent in the food harvesting literature; this was important to ensure Indigenous understandings of harvesting were documented (e.g., Jarvenpa and Brumbach 2006). Secondly, we acknowledged that harvesting can be divided into multiple stages and we analyzed the gendered dimensions of harvesting across these stages. There are proposed stages of food procurement in the human behavioural ecology (e.g., foraging and production, processing, and distribution; Winterhalder and Smith 2000, Borgerhoff Mulder 2003, Smith and Winterhalder 2003) and the agri-food systems literatures (e.g., production, circulation, consumption; Friedland 1984, Dixon 1999, Friedland 2011, Goodman and DuPuis 2002). Within these literatures, however, there have been different approaches to selecting the stages that comprise a food system (e.g., see Goodman and Dupuis 2002). In our approach we were attentive to these general stages while being open to their modification or renaming when the definitions of these established concepts did not fit with Bribri understandings of their own harvesting process. Prioritizing Indigenous names as well as understandings of harvesting stages was important to ensure that we were representing the resource harvesting system as accurately as possible (Brandt Castellano 2004, Peers 1996). Prioritizing local processes is particularly important to ensure we described all the stages in the food procurement system, such as stages that have been overlooked in conventional production-centered food systems approaches (i.e., transformation and consumption; Dixon 1999). Thirdly, we acknowledge that gender does not act in isolation from other variables. Feminist political ecologists have demonstrated that multiple social and individual factors such as life-stage, clan, ethnicity, and economic status interact with gender to shape resource use (Rocheleau *et al.* 2001,

Rocheleau and Edmunds 1997, Rocheleau *et al.* 1996). For instance, Lisa Frink's (2009) work on the identity division of labor in Native Alaska clearly illustrates that gender interacts with age and expertise to shape resource use; as such she demonstrates that these factors should be studied together. Because factors beyond gender, such as age and expertise, can shape who harvests and when, our aim was to consider how social differences interact with gender to shape who engages in what harvesting activity. This latter point is important because in the harvesting literature men and women have commonly been studied as groups of homogeneous actors without consideration of the differences within groups of females and males (Pfeiffer and Butz 2005, Frink 2009).

We worked with members of the Bajo Coen community in the Talamanca Bribri Indigenous Territory, Costa Rica. Bajo Coen is an interesting site to examine gender and wild food harvesting for different reasons. First, Bajo Coen is one of many forest-dwelling communities in the Talamanca Bribri Territory where wild food is central to food systems. Second, gender and forest food harvesting has not been examined in detail in the published literature for Talamanca Bribri people.

Our approach was a descriptive ethnographic case study. This approach allowed us to evaluate the nuances of gender across harvesting stages and to ensure our data emerged from the practices of Bribri harvesters and not from our pre-conceived notions about gender and harvesting. The main objective of our work was to generate information that: 1) accurately reflects the integrity of Bribri food harvesting

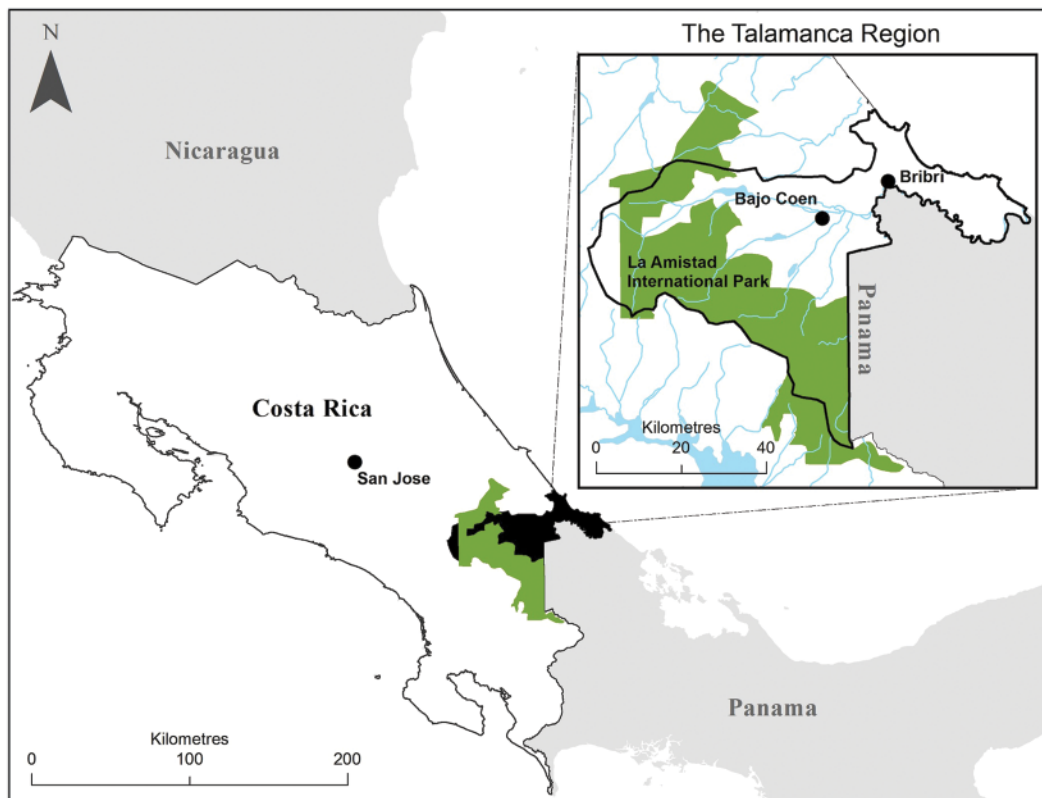
systems, 2) contributes to expanding theory about gender and wild harvesting, and 3) informs policy and programs regarding gender and food harvesting in forests. The latter point is critical because the Food and Agriculture Organization has prioritized mainstreaming gender in their forest management interventions (FAO 2014). We need rich detail as to how forest harvesting systems work, from Indigenous people's perspectives, to ensure such gender interventions are accurately informed.

METHODOLOGY

Talamanca Bribri Indigenous Territory and Bajo Coen community

Our work took place in the Talamanca Bribri Indigenous Territory (hereafter the Talamanca Bribri Territory; Figure 1). There are 7,772 Bribri people living in the Talamanca Bribri Territory (INEC 2013) and, Bribri people have lived in the Talamanca region since time immemorial. Within this Territory, we worked with members of the Bajo Coen community. Bajo Coen is a community of approximately 45 households located in Alto Talamanca. Like other communities in Alto Talamanca, Bajo Coen residents work in agriculture and these residents use forests for all aspects of their food systems (e.g., fuel, water, food).

FIGURE 1 Map of the Talamanca region and the town of Bajo Coen where this research was carried out (map created by Justin Geisheimer)



Research partnership and the Sébliwak women's group

The objectives of this research were developed collaboratively among authors and emerged out of a partnership formed between García and Sylvester in 2009. In 2012, Mr. Alf García facilitated Sylvester's collaboration with members of *Grupo de Mujeres Sébliwak* (herein the *Sébliwak* group). This group is composed of nine females (including their male partners and families) and one male. As a group we developed a research partnership based on the Bribri principle, *ulàpeitök*, a Bribri concept related to sharing. This Bribri concept was the guiding concept for sharing regarding: 1) how to work together in a good way and 2) the work needed to complete the project.

Information gathering procedures and research colleagues

Participation was our primary information gathering method. Our Bribri colleagues requested we use participation because 1) it is a traditional Bribri way of teaching about harvesting and 2) it ensured Sylvester experienced harvesting in a sensory way, a way necessary for her to write about these Bribri practices. Using participation as a method involved two main elements. First, Sylvester lived in the Bajo Coen community with a Bribri family for a consecutive period of nine months in 2012 (March–December) and a total of two weeks in 2013 (in May and December). Living with a Bribri family allowed Sylvester to experience the elements of food harvesting that take place before and after people go out on the land to hunt or gather plants (e.g., harvesting preparation or food processing) and the harvesting activities that take place when work on the land is over (e.g., cooking, food sharing). The second element of using participation as a method was harvesting with Bajo Coen community members. Specifically, Sylvester worked with 16 community members in export and local agriculture, wild food harvesting, and hunting (Table 1). When Sylvester worked with the *Sébliwak* group (at least 3–4 times per week), she also: joined people on visits to friends and family, accompanied people to the doctor, worked in community schools preparing food for children, and worked at home feeding animals, cleaning the house, and preparing food in the evening. Because Sylvester was not often invited to go hunting, she went on the land with three hunters and visited some of their hunting routes. To learn during participation, Sylvester recorded field notes daily by hand; the themes and concepts found in field notes were reviewed with research colleagues to verify Sylvester's understanding of Bribri harvesting.

In addition to participation, interviews and group discussions were used. Our interviews were semi-structured and done in using a conversation method, a method that shows respect for story and respects participant's right to control what they wish to share with respect to the research (Kovach 2009). Eighteen conversation type interviews were completed with ten community members (5 females, 5 males) in participants' homes, during field walks, during work on the land, or in locations of our colleagues' choosing. Four of these

interviews took place during family harvesting trips. It should be noted that many visits are associated with these interviews (prior to and after conversations). These visits were part of the methodology we developed using Bribri teachings. Thus, it is important to understand these interviews do not stand alone instead, but are part of frequent visits Sylvester made to each of our colleagues households to: 1) ensure colleagues had the chance to follow up on research themes and 2) Sylvester could review and verify her understanding of people's teachings throughout this project.

Lastly, Sylvester held group discussions during regular *Sébliwak* group meetings on seven occasions to discuss our project and during these meetings Sylvester was given space to follow up with participants' about some of the themes discussed here (Table 1).

The unit of analysis in our research was the individual. As scholars have illustrated, many factors can shape who engages in harvesting, such as gender, age, and expertise (Frink 2009, Rocheleau *et al.* 1996). Thus, we worked with individual harvesters to see how gender as well as other factors shaped what harvesting activities people participated in.

Gender sensitive methodology

We took important steps to ensure our methodology was gender-balanced and gender sensitive; this meant Sylvester worked with both men and women and was sensitive to both genders' social and economic realities (Pfeiffer and Butz 2005). The women Sylvester worked with explained how they were limited for time to participate in my research. These women asked Sylvester to help with their workloads which gave them either more free time to participate in this project and/or gave people a chance to complete interviews while doing other work.

Information analysis

Information and patterns emerging from Sylvester's field notes were reviewed and analyzed with Ms. Sebastiana Segura, Sylvester's main teacher. When Sylvester left Bajo Coen, information (field notes, interview transcripts) was further analyzed using qualitative coding using codes that were selected after leaving Bajo Coen (i.e., a priori coding by topic informed by participation in the local context; Ryan & Bernard 2003). These codes were organized by the following parent codes: 1) "pre-harvest", 2) "yëblök or searching for food", 3) "transformation", and 5) "sharing". These parent codes were used to organize the results section of this paper.

Research ethics

Elders in the Bajo Coen community, the local government (*consejo de vecinos*), and the University of Manitoba Joint-Faculty Research Ethics Board approved of this study. The regional Bribri government (ADITIBRI) was informed of the Bajo Coen community representatives' decisions to participate in this research. All research colleagues provided their ongoing, informed consent and chose to have their names beside the insights they shared.

TABLE 1 List of people who participated in this research

Name	Affiliation	Interviews	Participation in group discussions (frequency and dates)
Ms. Ana Grisel Díaz	<i>Sébliwak</i> women's group	05/11/12	5 occasions (25/03/12, 16/04/12, 01/05/12, 07/11/12, 29/05/13)
Mr. Gabriel Díaz		07/08/12	
Mr. Sabino Díaz	<i>Sébliwak</i> women's group	group interviews on 26/03/12 and 01/05/12	5 occasions (25/03/12, 16/04/12, 01/05/12, 01/08/12, 07/11/12)
Mr. Adenil García	<i>Sébliwak</i> women's group	-	4 occasions (25/03/12, 16/04/12, 01/05/12, 07/11/12)
Mr. Hernan García	<i>Sébliwak</i> women's group	group interview on 14/07/12	5 occasions (25/03/12, 16/04/12, 01/05/12, 01/08/12, 07/11/12)
Ms. Alejandra Hernández	<i>Sébliwak</i> women's group	-	4 occasions (25/03/2012, 16/04/2012, 01/05/2012, 07/11/2012)
Ms. Karen Hernández	<i>Sébliwak</i> women's group	20/7/12	3 occasions (25/03/2012, 16/04/2012, 01/05/2012)
Ms. Nimfa Hernández	<i>Sébliwak</i> women's group	21/04/2012	6 occasions (25/03/2012, 16/04/2012, 01/05/2012, 07/11/2012, 29/05/13, 16/12/13)
Mr. Saul Lek	<i>Sébliwak</i> women's group	-	
Ms. Ana Yorleni Morales	<i>Sébliwak</i> women's group	09/11/12 and group interview 20/06/12	4 occasions (25/03/2012, 16/04/2012, 07/11/2012, 29/05/2013)
Ms. Vicenta Morales	<i>Sébliwak</i> women's group	-	4 occasions (25/03/2012, 16/04/2012, 01/05/2012, 07/11/2012)
Mr. Bernardo Sánchez	<i>Sébliwak</i> women's group	06/05/12 and group interview 20/06/12	2 occasions (25/03/2012, 01/05/2012)
Mr. Rudy Sánchez		28/08/12	
Ms. Anastasia Segura		-	
Ms. Sebastiana Segura	<i>Sébliwak</i> women's group	29/04/12, 03/05/12, 31/08/12, a follow-up interview on 14/12/13, and group interviews on 26/03/12, 01/05/12, 14/07/12, 07/08/12, and 31/08/12	7 occasions (25/03/12, 16/04/12, 01/05/12, 01/08/12, 07/11/12, 29/05/13, 16/12/13)
Mr. Juradir Villanueva	Resource guard, member of the Bajo Coen community council	01/11/12	

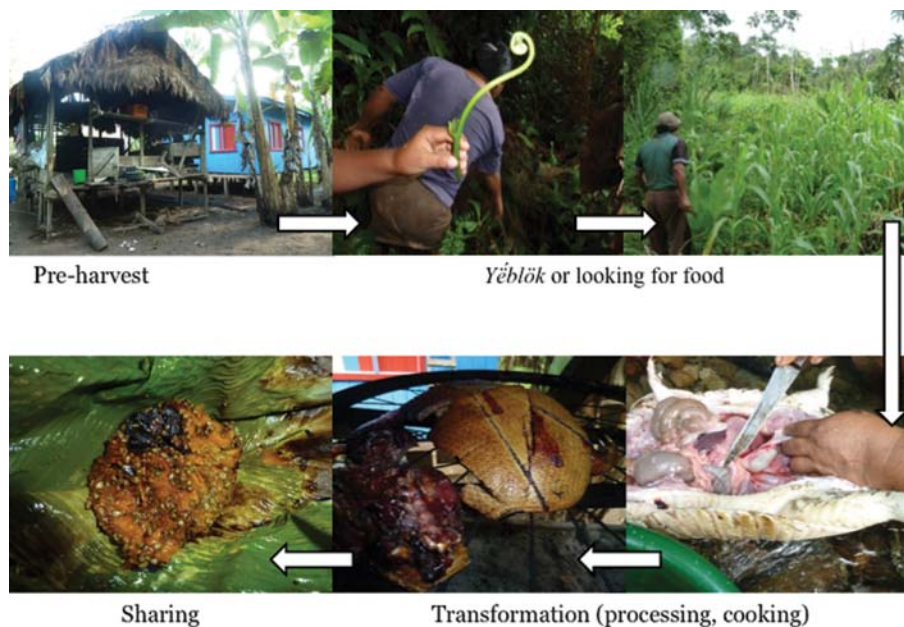
FINDINGS

In the first part of this section we present a background on Bribri forest food harvesting system from our ethnographic research as well as other published sources. Second, we present our analysis harvesting divided by harvesting stage

including: 1) pre-harvest, 2) yéblök or searching for food, 3) transformation, and 4) sharing (Figure 2). While we were mindful of making links in our analysis to harvesting stages found in the behavioral ecology (e.g., foraging and production, processing, and distribution; Winterhalder and Smith 2000, Smith and Winterhalder 2003) and the agri-food

TABLE 2 *The gendered dimensions of wild food harvesting*

Harvesting stages	Specific activities	Trends observed in gendered participation
Pre-harvest	Encourage people to harvest wild food	Women and men
	Preparation for harvest trip	Women and men
Yéblök [looking for food]	Harvesting wild plants in near spaces	Women and men
	Harvesting wild plants in far spaces	Women and men
	Tracking and capturing wild animals in near spaces	Women and men; men's participation more common
	Tracking and capturing wild animals in far spaces	Women and men; men's participation more common
Transformation Processing	Peeling fruits, processing leaves and other plant parts	Women and men; women's participation more common
	Skinning and butchering animals	Women and men; women's participation more common
Cooking	Smoking and/or cooking meat	Women and men; women's participation more common
	Cooking wild plants	Women and men; women's participation more common
Sharing	Sharing unprocessed meat	Commonly men
	Sharing unprocessed wild plants	Women and men
	Sharing prepared wild recipes	Commonly women

FIGURE 2 *Graphic representation of Bribri harvesting stages; photographs taken by Olivia Sylvester. Ms. Sebastiana Segura appears in the middle picture on the top row. Mr. Hernan García appears in the top right picture*

systems literatures (e.g. production, circulation, consumption, and distribution; Friedland 1984, Dixon 1999, Friedland 2011, Goodman and Dupuis 2002), we chose to use the categories that best reflected Bribri harvesting stages. To make the links among our work and the human behavioural ecology and agri-food systems literatures, our stage *yéblök* or searching for food is similar to the foraging or pursuit harvesting

stage, transformation relates to the food processing stages, and sharing relates to distribution. Pre-harvest is not to our knowledge described in the behavioural ecology or agri-food systems literatures, but was important for our colleagues.

Within the Bribri harvesting stages, we described the activities our colleagues engaged in and that were taught to Sylvester (Table 2). We occasionally refer to the terms near

and far spaces; these are distinctions expressed by our Bribri colleagues and other scholars (García-Serrano and del Monte 2004). Near spaces are those close to people's dwellings and can include home gardens, fields, forest margins. Far spaces are those that take the greater part of the day to travel to and back; these spaces can include some forest and agricultural land patches.

Background on Bribri forest food harvesting

Scholars have described how Bribri forest food harvesting is linked to a life on the land; harvesting is not only a subsistence activity, it is a way to engage in social and cultural relationships with human and non-human beings and it is a way to connect with Sibö, the Bribri creator, and with Bribri history (Sylvester and García Segura 2016, Borge 2011, Orcherton 2005, Jara Murillo and García Segura 2003). For an in-depth description of the landscape ethnecology of forest food harvesting including a description of subsistence activities and details on the forest food species people harvest, see Sylvester and García Segura 2016. Although scholars have examined some elements of Bribri forest food harvesting in different communities (Borge 2011, Altrichter 2011, Orcherton 2005, García-Serrano and del Monte 2004), these studies have not examined how gender and other social differences shape who engages in harvesting. Thus our remaining description of forest food harvesting comes from our lived-experience in the Bajo Coen community.

The social composition of harvesting groups

In Bajo Coen, although the social dimensions of harvesting can vary from household to household (Sylvester unpublished data), most commonly people harvest in family groups including members of youth and elder life-stages; family groups may include family members from different households. On occasion, people harvest with their life partners or alone. The gender dimensions of these groups can vary depending upon the expertise of individual harvesters, the goal of a harvesting trip, the opportunities people have to harvest, the latter can vary based on people's other responsibilities and health.

During 2012 while Sylvester lived in Bajo Coen, mixed gender harvesting groups were most common (an observation that was also supported through household surveys; Sylvester unpublished data). Some males reported harvesting alone or with other males for different reasons. Some males preferred to go alone or reported going alone if there was no one to harvest with. Some males described scenarios where they would travel on occasion with other males to the forest either for work or personal interest and on these occasions engage in hunting. None of these males, however, described hunting exclusively with men on all hunting ventures. None of the females we worked with reported hunting alone but instead reported hunting with their male partner or in larger mixed harvesting groups. Females described harvesting other forest items alone (e.g., plant foods and medicines), either by choice or because there was no one to join them. The general trends Sylvester observed regarding the gender dimensions of

harvesting across harvesting stages and activities is presented in Table 2.

It is important to note that none of people we worked with described the social composition of harvesting groups as dynamic. For instance one female colleague, Ms. Nimfa Hernández, described how she is a single mother and this meant she often has to travel to the forest alone if she needs a food or a medicine. At the same time, she described how when family or friend groups are going out on the land and time permits she will harvest with these groups. Similarly, in the household where Sylvester lived, the composition of harvesting and hunting groups would shift based on many factors including the time of day harvesting, the main purpose of the harvesting trip (work, recreation), the availability and disposition of other people to join, the distance a person planned to travel to harvest and the length of the harvesting trip. For example, in the household where Sylvester lived, Mr. Sabino Díaz, if the main hunter in the household was harvesting in the night, he would often travel alone. If he was on the land to work or to harvest in the day, he would go either alone, with his female life partner and/or in a family group.

Pre-harvest

There are a few activities that can occur before a person sets out to harvest a wild species; these activities include: communicating with non-human beings, reading the weather and/or the moon, preparing machetes, acquiring a rifle, and preparing food for a harvesting trip. Members of either gender carry out many of these activities. There were a few activities that were predominantly done by members of one gender. For instance, men would often acquire or prepare rifles and women would often prepare the food for a harvesting trip. Overall, however, preparatory activities for a harvesting trip are cooperative among family groups and/or groups of harvesters.

One aspect of the pre-harvest that does not receive much attention is the conversations that take place to motivate people to harvest wild species; and scholars have illustrated how women's participation in these conversations can be important to ensure household access to wild meat (Lowassa *et al.* 2012). In Bajo Coen Sylvester was more often privy to women's pre-harvest conversations. Specifically, four of the women she worked with described motivating their male partners or relatives to hunt and/or harvest forest foods; in all of these cases, these women described either not hunting themselves or having limited time to hunt or join a hunting trip. Other women described asking male partners or male relatives to gather wild plant foods for them when their time was limited; examples of these wild plant foods were either those harvested either from near spaces (e.g., peach palm, *Bactris gasipaes* Kunth, fruits harvested from home gardens) or far spaces (e.g., wild greens harvested from forests or swidden fields). For instance, colleague Ms. Sebastiana Segura explained how she enjoys preparing wild meat and plants for her children because these foods are nutritious and important for young people to learn about their culture. To ensure she has access to wild species, Ms. Segura explained

how she encourages her male partner to hunt and, while hunting, to search for wild greens. She told Sylvester that it is not always necessary for her partner to bring her a lot of meat, but rather to bring her something Bribri that she could share with her family (interview 29 April 2012).

Some of the men Sylvester worked with confirmed women's participation in motivating wild harvesting. One hunter, Mr. Rudy Sánchez, explained how his grandmother encourages him to hunt wild animals when she wants to prepare a Bribri recipe or when other meat was scarce (interview 28 August 2012). Even the young male children that were learning to hunt in spaces near dwellings told Sylvester they were motivated to hunt to bring Bribri food to their mothers or grandmothers. For instance, people from ages seven to 18 years old described attempting to catch wild animals such as small fish or mammals (e.g., squirrels or small birds) to make their mothers and/or grandmothers happy.

Yéblök or searching for food

Yéblök is a Bribri word that refers to looking for something that is not near someone. Often *yéblök* is translated to hunting; however, it can refer to looking for other things such as plant foods and medicines. We have focused on two wild food procurement activities that are part of this stage of harvesting: gathering plant food and hunting.

Gathering plants

In the published literature, gathering wild plants is primarily associated with women and occasionally with children (Dahlberg 1981, Neumann and Hirsch 2000, Wan *et al.* 2011). Our findings illustrate, however, that gathering is a mixed gender and cooperative activity. Sylvester's experience harvesting with women and men corroborates these trends revealed in our household surveys. Most commonly, when she was invited to go out on the land, it was in family groups (either male and female partners and/or these partners with their children).

Although collaborative harvesting was common, it was not always the case. Some women explained how they would harvest some wild food alone. This was the case, for instance, for two single mothers Sylvester worked with. Some women also explained how they would occasionally ask their male partners or relatives to gather wild plants for them. Two female colleagues discussed scenarios when they requested their male partners to gather wild plants for them:

I gather wild plants but sometimes I can not go and I ask my partner to bring me some...if he goes to the forest or he goes to work I ask him to look for fiddle heads or *balòko* [leaves; *Phytolacca rivinoides* Kunth & C.D.Bouché] so that we can eat them here (interview with Ms. Sebastiana Segura 03 May 2012).

I have to go and plant beans or corn, take care of my pigs, and look for firewood to cook and I do it all...but how can I leave my kids or my animals, I do not always have time to go to the forest; therefore, I ask one of my family

members, like my uncle, to go to the forest for me to look for food or medicines (Ms. Nimfa Hernández, interview 21 April 2012)

Because of the strong associations between women and gathering in the published literature, Sylvester was curious if men had always participated in gathering or if men's gathering was something more recent in Bajo Coen. She thought that men's gathering could be related to a women's lack of time due to their participation in wage labour agriculture (Budowski and Borge Carvajal 1998), an activity that women reported is more common for women to engage in now as compared to the past. When Sylvester brought up this topic with her colleagues, they explained that although wage labour does further limit women's time, men have always gathered wild plants either alone or cooperatively with women.

In the literature, gendered gathering has been differentiated by space. Women's gathering is often described in spaces close to dwellings such as home gardens (e.g., Howard 2003, Wilson 2003, Price and Ogle 2008). And, harvesting in far spaces, such as forests can be more strongly associated with men (Goebel 2003, Howard 2003). In Bajo Coen, although some women described harvesting plants closer to dwellings more frequently because of barriers to travel to far spaces (e.g., responsibilities near dwellings), other women, described how they find time to travel to far spaces despite responsibilities. When Ms. Sebastiana Segura would travel to the forest with Sylvester to harvest, for example, she would occasionally request that someone come to her house to look after her responsibilities such as attending to any visitors and to prepare food for the family. Ms. Ana Yorleni Morales explained that although she has to balance childcare, work in banana agriculture, her high school studies, and other household responsibilities, she enjoys making time to harvest in forests. Ms. Morales explained how she enjoys going to the forest, to harvest food, for work tasks such as palm leaf harvesting (i.e., *cargar bultos*), and for leisure (interview 09 November 2012).

Who gathers food plants can also depend upon a person's knowledge on how to harvest a plant species. Three of our young colleagues (Mr. Gabriel Díaz, Ms. Ana Grisel Díaz, Ms. Ana Yorleni Morales) explained to Sylvester how they gather some, but not all, wild plant foods. On 03 August 2012, Ms. Ana Grisel Díaz brought Sylvester an inflorescence of *tchámàwö* (*Carludovica* sp.) so she could try this species; this sharing of food led to a conversation about the different wild species Ms. Díaz harvests. Ms. Díaz described how her male partner harvested the *tchámàwö* inflorescence while out working clearing the walking path (*limpiando camino*) that connects communities. She explained this is one example of wild food that she does not have experience finding, harvesting, and preparing; and, she told Sylvester how there are other species like *tchámàwö* that she has not learned to harvest.

Tracking and capturing animals

In the published literature, scholars have described how tracking and capturing animals are activities that are often associated with men (Brightman 1996, Dahlberg 1981, Myers

1988, Pfeiffer and Butz 2005). In Bajo Coen, our colleagues described tracking and catching animals as mainly male activities, activities that can be done alone or in small groups (e.g., with another hunter or with a younger male learning to hunt). Although males were mainly associated with tracking and capturing, women were also involved in these activities. For instance, all the Bribri women Sylvester worked with described joining hunting trips in an activity they called *acompañar*, a term that translates as walking with or accompanying.

The term *acompañar*, however, does not adequately describe women's contribution to tracking animals. When Sylvester joined hunters along with other Bribri women, she observed women scrutinizing animal tracks to predict an animal's path based on these tracks. And, she listened as women talked about what animals had been through an area based on which vegetation these women observed had been eaten. On 14 July 2012, Sylvester traveled with a mixed gender group to the forest. On this trip, Ms. Sebastiana Segura called the group's attention to the marks on young wild ferns (*köchi àr* or *Cyathea* sp.) that looked like they were recently disturbed; she explained this was an area recently visited by a group of *kásir* (collard peccaries or *Pecari tajacu* L.). While talking to Sylvester and her son, she explained:

Look, look over here how peccaries have left the vegetation, here in *arroz ttö* [the footprint of rice] where Elders cultivated rice. They [the peccaries] were here recently because look at the young parts of these fiddleheads, they have been eaten... Elders call this plant *köchi àr* because peccaries like to eat it.

Women tracked animals and/or accompanied a male relative on hunting trips to different extents. The extent to which different women reported participating in this activity depended upon a series of factors including: their health, opportunities get out on the land, where the tracking animals occurred (e.g., near or far spaces), the species people were tracking, and a person's interest in hunting. For instance, two colleagues, Ms. Anastasia Segura and Ms. Ana Grisel Díaz, explained how they can not travel to forests to join hunting trips because of health conditions but that they do enjoy this activity and have done it in the past. Other women, such as Ms. Sebastiana Segura and Ms. Nimfa Hernández, described going on hunting trips when their schedules permitted. Other women, such as Ms. Ana Grisel Díaz and Ms. Ana Yorleni Morales, described making time for tracking and capturing animals with their male partners if it were a specific hunting activity they enjoyed; for instance, Ms. Díaz described preferences for fishing whereas Ms. Morales explained how she does not fish but she enjoys tracking some forest mammals. Furthermore, Ms. Ana Yorleni Morales described that her involvement in hunting depended upon the species hunted. She explained how she has more experience tracking some mammals (e.g., *tsawì*, armadillo, *Dasyopus novemcinctus*) versus others; this depends, she explained, on her experience as well as the experience of her hunting dog.

Transformation

Processing

Food transformation refers to the suite of activities done to wild species after they are procured (i.e., after a plant is picked or animal is captured). For most wild food plants harvested in Bajo Coen, there is little processing before cooking. Examples of these activities are removing leaves from a plant stem (e.g., *balòkò*) or removing casings and/or hairs of an inflorescence (e.g., *tchámàwö*). These processing activities occur both at the site of harvesting and in and around dwellings by people of both genders.

Wild meat requires more laborious processing as compared to wild plants; this includes requires skinning and butchering animals to prepare animal parts both for food and for *stë*, an part of an animal used for healing (e.g., the underside of a turtle shell). Wild animal processing can occur en route during a hunting trip and/or it may occur near dwellings after a hunting journey. Sylvester only worked with people that reported going on short hunting trips (one day or less) and thus, did not analyze food processing on extended hunting trips. While living in Bajo Coen, Sylvester observed wild animal processing done mainly near dwellings after a hunting trip, both for wild meat and for *stë*; and it was mainly females that guided animal processing. Often, females processed wild animals with the help of other females and/or with young children in a diversity of spaces including: kitchens (indoor and outdoor), river edges, and forest margins.

Cooking

Cooking is another technique of food transformation used to get foods ready for storage and consumption. Although kitchenspaces (Christie 2008) are important sites of gathering of people of all genders, female household heads mainly guided this activity often with the help of others in the household. Although our colleagues described females as those who led and engaged in cooking, participants reported exceptions to this pattern. Ms. Sebastiana Segura described, for instance, how she knew and continues to know some male Elders that cook and prepare wild food. Specifically, when Ms. Segura was teaching Sylvester how to prepare *skòkichö* (*Jacaratia dolichaula* (Donn. Sm.) Woodson), a form of wild papaya, she explained how she learned to cook this food from a male Elder Don Francisco García, a highly respected *awá* (Bribri doctor).

Similar to food appropriation, a person's involvement in transformation can depend upon a person's experience or know-how about a given food species. Two young women, Ms. Ana Yorleni Morales and Ms. Ana Grisel Díaz explained how they know how to prepare some wild plant species (e.g., *rpò*, fiddlehead ferns, *Cyathea* sp.) but not others. While conversing with Ms. Ana Yorleni Morales over a meal of wild palm inflorescence, (*túslàk*, *Cryosophila warscewiczii* (H.Wendl.) Bartlett) she explained to Sylvester how this is an example of a wild plant that her Elders cook but that she does not know how to prepare.

Sharing

Sharing food is important for Bribri people. One of the authors of this paper, García Segura, explains, however, that the terms sharing or exchange [compartir or intercambio in Spanish] do not fully convey the Bribri principle related to food sharing because for Bribri people food sharing is part of a large Bribri concept, *i tchabé tók*, not related to exchange. *I tchabé tók* translates to: “to kill the snake of”; and for Bribri people a snake is one being that can do harm, thus, this concept loosely means to avoid harm. To avoid harm, this teaching says people need to ensure they are generous and not stingy with any resource; this is, as García explains one of the most important teachings for Bribri people. By being generous harm is avoided to 1) the person doing the sharing, 2) to the food being shared, and 3) to the beings in the other world associated with the person and the food. Thus, regarding wild and other food, sharing is always central to harvesting because it ensures a person will not experience harm. For this reasons, for instance, food is always shared, and importantly should always be accepted.

Wild food sharing can involve unprocessed food and/or sharing of a meal prepared from wild foods. In Sylvester’s experience living in Bajo Coen, both females and males shared wild foods; this is not surprising because, as we illustrated in the previous chapter, for many people sharing food is part and parcel of their identity as Bribri. Although all women and men Sylvester worked with engaged in wild food sharing, she observed that women were more commonly those who shared wild food. Mr. Rudy Sánchez explained how in his family hunters will bring wild meat to his grandmother and she takes care of preparing and sharing this meat with the family: “...here we always share meat, especially when someone goes to hunt then they bring it to my grandmother and she is in charge of distributing it” (interview 28 August 2012). Sylvester learned that women often shared wild food in its prepared form. And, if women were not free to travel to share a wild food recipe, they would often send youth to do it on their behalf. Our male colleagues also shared wild plants and meat; Sylvester observed this when these foods were in their unprocessed forms (e.g., part of an animal after hunting such as the leg of collard peccary). For instance, both Mr. Juradir Villanueva and Mr. Rudy Sánchez two hunters we worked with, explained how when they borrow a rifle from another hunter, they will share part of unprocessed meat with the owner of the rifle if they came home with an animal.

DISCUSSION

Within the forest food harvesting literature, gender is examined mainly at the food appropriation stage of harvesting, i.e., tracking and capturing plants and animals. This narrow definition of harvesting, as scholars have importantly noted (Lowassa et al. 2012, Dobres 2006, Gifford-Gonzalez 1993), does not always reflect how Indigenous people define their harvesting systems. For instance, hunting in many Indigenous cultures is not only the act of killing an animal instead it is a

suite of activities including: tracking, trapping, butchering, transporting, processing, drying, cooking, and storing animals (Jarvenpa and Brumbach 2006). Research that has not considered the full suite of activities related to wild food harvesting, thus runs the risk of not fully representing women’s and men’s contributions to food systems. When harvesting is understood more broadly from an Indigenous perspective, we can begin to understand the complexities of how women and men participate across all of these stages.

Our research illustrates that the Bribri understanding of harvesting goes beyond resource appropriation and includes multiple stages from pre-harvest to food sharing (Figure 2, Table 2). By describing harvesting as a process, we were able to examine the gendered complexities along each stage; this is especially important because production-centered food models have overlooked processing and consumption phases of food harvesting, phases that are commonly associated with women (Dixon 1999, Goodman and DuPuis 2002).

Specifically, we found that no harvesting stage was gender exclusive. Although some harvesting activities were done more commonly by members of one gender (e.g., cooking, tracking animals), participation in activities depended upon more than gender, but rather on a series of variables related to the species harvested, Bribri culture, and individual context (e.g., the importance of collaboration in Bribri harvesting, a person’s knowledge about a food, and/or personal interest in harvesting). Other scholars have found similar findings. For instance, Bliege Bird et al. 2012 have illustrated how participation in a harvesting activity depended on more than gender but on the species harvested.

Mixed gender harvesting groups were the norm rather than the exception in Bajo Coen; this was a teaching that co-author García Segura explained to Sylvester before she moved to Bajo Coen and this finding was corroborated both in our unpublished household surveys and in Sylvester’s participation in harvesting. In this sense, our work corroborates the description of gender and food harvesting in the Talamanca Bribri Territory provided by Monica Budowski and Carlos Borge (1998). These scholars described how there are no labor distinctions in the Bribri traditional food production system and how many food harvesting activities are collaborative. Specifically, these authors describe how swidden agriculture is a collaborative project and how hunting groups can be mixed, i.e., women round up animals, men kills animals, men divide up wild meat, and women butcher, and prepare animals.

There is a small body of literature that illustrates how women and men work together to track animals (Romanoff 1983, Hurtado et al. 1985, Biesele and Barcaly 2011 Bliege Bird et al. 2012) and harvest some wild foods (Shackleton et al. 2011, Parlee et al. 2006). These descriptions of gendered cooperation in wild harvesting, however, have focused on the resource appropriation stage of wild harvesting. Our work builds on the existing literature on gendered cooperation in harvesting to illustrate how members of different genders work together across multiple harvesting stages.

Understanding people’s full contributions to forest harvesting as well as gendered cooperation in harvesting is

critical to design programs that support rather than hinder women. The Food and Agriculture Organization of the United Nations has declared that by 2015 women will be specifically targeted in all their forestry programs and interventions (FAO 2014). Often, forest management interventions are designed to work with women and men in different groups because of widespread generalizations about gendered harvesting differences and because women have described feeling more comfortable to express themselves in all women groups (Rocheleau *et al.* 2001, Shackleton *et al.* 2011). However, without considering that mixed gender harvesting groups may be the norm for some people, forest managers could run the risk of designing interventions that either do not work or, that can increase women's workloads. Shackleton *et al.* (2011) described how a forest management program in Zambia that targeted all women groups ignored the dynamics of cooperative harvesting in bee keeping. As a consequence, this intervention was predicted to restrict women's success of marketing and selling honey; this was because if women were to work alone, as suggested by the project, it could increase their workloads and eliminate assistance men provided women for activities such as heavy labour. In Bajo Coen our colleagues reported problems with forestry interventions targeted only at women groups, intervention reported as common. Our colleagues explained that women's groups are not something organic in their community or in Bribri culture. Colleagues explained how food harvesting has always been done cooperatively within mixed gender groups. As a result programs that are proposed for all women's groups have created challenges for our colleagues. Specifically, women reported challenges attending project meetings, something that some male partners do on women's behalf when women's responsibilities are high; however, intervention leaders were reported to only support projects if women were present at project meetings.

By challenging prevalent biases about what women do and by prioritizing working with women in their daily activities, we can begin to accurately portray the diversity of ways women contribute to forest food harvesting. Our work demonstrates that women participated in all harvesting stages. Specifically, some women can be involved in: motivating others to hunt and harvest, gathering wild foods and tracking animals in near and far spaces, processing and cooking products derived from wild species, teaching youth about wild food harvesting, and sharing wild food. These findings are important considering women's contributions to wild food systems are widely underrepresented and oversimplified (Brightman 1996, Momsen 2007, Peers 1996, Pfeiffer and Butz 2005). Women are often associated with gathering but many of women's other wild harvesting activities can be invisible to outside researchers; this is due, in part, to erroneous preconceived notions about what women do which can result in a failure to ask women about their involvement in these activities (Brightman 1996, Peers 1996, Pfeiffer and Butz 2005, Shackleton *et al.* 2011). Women's invisibility is also due to the failure of researchers to incorporate domestic spaces in their harvesting research (Christie 2008).

Men's involvement in plant harvesting is an activity underrepresented in the published literature. There are only a handful of studies that report on men's contributions to wild food gathering (Draper 1975, Dahlberg 1981). Consequently, the benefits of plant gathering, such as the contributions gathering makes to household diets and nutrition, are commonly associated with women (e.g., Mai *et al.* 2011, Powell *et al.* 2012). In Bajo Coen men are highly involved in plant harvesting; men harvest cooperatively with women; and, men harvest plants on their own both because of their own interest and to assist females that do not have the opportunity to harvest. Our findings suggest we need to better examine men's roles in plant gathering to ensure we do not ignore their key contributions to plant access and to household nutrition.

Finally, our work begins to illustrate the dynamics of intra-gender diversity in harvesting. When women's wild harvesting is discussed in the literature, women are often described as quasi-homogenous groups (e.g., Codding *et al.* 2011, Bliege Bird *et al.* 2012). We demonstrate, however, that all members of a gendered group did not necessarily experience harvesting in the same way. Instead, other factors were important to understand who engages in a harvesting activity. For instance, the harvesting activities a woman engages in, and what wild plant or animal species a woman harvests, depends upon their personal context related to: health, motivation to harvest, opportunities to get out on the land, knowledge about a wild species, personal relationships (e.g., engaging in multi versus single parenting), and work responsibilities. Lisa Frink's (2009) work on Yup'ik herring processing in Alaska illustrates how age and expertise can interact with gender to shape who engages in a specific harvesting activity; our work builds on this point and reveals other variables that scholars should consider (e.g., motivation to harvest, opportunities to get out on the land).

Understanding intra-gender diversity is important to challenge generalizations that simplify our understanding about women's wild harvesting practices. Based on the published literature and on scholarly discourses in ethnobiology, Sylvester went into this research with the bias that women's spaces were mainly in and around dwellings. Before Sylvester moved to Bajo Coen, she was told by scholars in her field that she would likely spend most of her time in home gardens because she was going to be working with women. These generalizations come from an ethnobiology literature that is ripe with generalizations about women's space being near dwellings (e.g., home gardens) because of their work responsibilities, childcare, and because of the danger forests can present for some women (Goebel 2003, Howard 2003, Shackleton *et al.* 2011). When Sylvester learned that her female Bribri colleagues travel to forests for leisure, to hunt, and to harvest plants, her biases were challenged. Still slightly tied to the idea that forests were not women's spaces, Sylvester sought Ms. Sebastiana Segura guidance on this topic. Ms. Segura explained things to her in a simple and profound way. She said, there are no rules on who can travel to forests and where or what a person harvests varies from person to person; some people like going to the forest, she explained, others do not, and others have health or personal impediments to doing so.

In their feminist political ecology framework, Dianne Rocheleau and others (1996) highlight the importance of intra-gender diversity regarding people's relationship with the environment; these authors explain how gender interacts with other variables such as an individual's life-stage, clan, socio-economic status to shape environmental processes. Although in the ethnobiology literature scholars have made the case that women and men's roles are not fixed across cultural groups (e.g., Pfeiffer and Butz 2005), intra-gender harvesting diversity has been poorly examined. Obtaining a better understanding of intra-gender diversity in the ethnobiology and forestry literatures would benefit from a dialogue with feminist scholars such as those working in feminist political ecology (e.g., Rocheleau *et al.* 1996). This cross-fertilization could ensure ethnobiology and forestry researchers benefit from detailed studies on gender that illustrates its complexities. This cross-fertilization could also help counter research that uses generalizations about sex-based roles in harvesting as a starting point for inquiry, generalizations that may hold true in some, but not all cases.

Limitations of this research

Although we worked and harvested with women and men, Sylvester spent more time with women. Spending more time with women gave Sylvester more opportunities to observe the diversity of their harvesting activities. Spending more time with women also meant she was more privy to their conversations about harvesting. This reality results in an article that has more detail regarding women's versus men's experiences. At the same time, because Sylvester also worked and harvested with men, we were able to report on men's experiences as well, only with not as much detail.

CONCLUSIONS

Our research responds to the need to generate a more nuanced understanding of gender and wild food harvesting (Pfeiffer and Butz 2005) across the full suite of food harvesting activities (Gifford-Gonzalez 1993, Dobres 2006, Jarvenpa and Brumbach 2006, Lowassa *et al.* 2012). Our work is unique because it examined how gender shapes wild plant and animal food harvesting across a number of harvesting stages (i.e., from pre-harvest to food sharing). Breaking down gendered contributions by stage is important because wild harvesting research has focused mainly on resource appropriation and this has resulted in: 1) the underrepresentation and oversimplification of women's contributions to wild food systems (Brightman 1996, Peers 1996, Pfeiffer and Butz 2005, Jarvenpa and Brumbach 2006) and 2) the failure to report on the integrity of Indigenous food systems (Peers 1996, Jarvenpa and Brumbach 2006).

Through our nuanced analysis our work illustrates how there are not clear-cut divisions in Bribri women and men's harvesting activities in Bajo Coen, cooperative harvesting is the norm rather than the exception, and an individual's participation in harvesting is due to social factors beyond gender including: health, motivation to harvest, opportunities

to harvest, knowledge about a species, personal relationships, and work responsibilities. Although other scholars have illustrated how species, harvest load, and harvest risk interact with gender to shape who harvests and when (Coddling *et al.* 2011, Bliege Bird *et al.* 2012), the literature on wild food harvesting is void of intra-gender analyses. Our work reveals that scholars should consider intra-gender differences to better understand the differences among men and women in wild harvesting.

Lastly, our findings have important implications for forest management. Internationally, the Food and Agriculture Organization of the United Nations has prioritized gender equality in their post-2015 development agenda for the sustainable management of forests (FAO 2016). Similarly, the International Union for the Conservation of Nature has prioritized gender as a key component of their forest management programs, and one of these programs involves Bribri people (IUCN 2013). Our research provides a framework to examine gender across multiple stages in a forest food system; this framework can be useful for forest managers interested in understanding the integrity of Indigenous people's food systems and the diverse contributions women and men make within these systems.

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