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Forest use in Nicaragua

Results of a survey on gendered forest use, benefits and participation

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Key results

- Generalizations about gender and forests are misleading; detailed, comparative studies are needed to understand important contextual differences not only among world regions but also, as demonstrated here, within countries, among different cultures.
- Gender biases lead men to underestimate women's work related to forests and overestimate their benefits and role in decision making, relative to women's own estimates.
- In Nicaragua, forest resources, particularly firewood, are important for the vast majority of rural households studied; indigenous households, as well as indigenous women specifically, use and benefit from a much larger variety of forest resources than non-indigenous communities.
- Of all the forest products mentioned by respondents, men extract more than women, except for craft materials in some locations.
- Indigenous women are much more involved in the sale of forest products than non-indigenous women and are more likely to control the income from the products they sell.

Introduction

There are many assumptions about women's forest use. Forest-based populations tend to be marginalized, and women, in particular, may be the "invisible administrators" of forest products (FAO, 2013). According to FAO (2009), women tend to be responsible for the collection of firewood and wild plants used as food or medicine. Nevertheless, this and other generalizations have been challenged by recent research pointing out important differences by world region (Sunderland et al., 2014). The failure to see women or to understand their role in forests and their "diverse societal context has hindered accountable initiatives in the forest sector" (Aguilar 2016: xxvi).

Many actors depend on forest resources, but what this means in practice, in each context, requires specific research. This research seeks to contribute to filling a demonstrated gap in literature from Latin America on gender and forests (Mae et al. 2011; Schmink and Arteaga Gomez-Garcia 2015).

In Nicaragua, policies and projects addressing sustainable forest management tend to leave out women as actors with knowledge, concerns or interests in forests (Mairena et al. 2012). This is likely due to the excessive emphasis on timber (de Jong 2010; Evans et al. 2016) as the primary contribution of forests to the national economy. This perspective undervalues other products and services, including forest (and tree) contributions to climate change mitigation and adaptation, and the cultural importance of forests in the history of the nation's indigenous communities (Schmink and Arteaga Gomez-Garcia 2015).

This infobrief presents a summary of results from a 2015 intra-household survey of forest use in four forested regions of Nicaragua (Nueva Segovia, Matagalpa, Jinotega and Rio San Juan), referred to below interchangeably, for convenience, as the "national" or "non-indigenous" survey. It first presents an overview of the sample and then a selection of results – some by household and others by gender or by income group. Where possible, key results are used to

Table 1. Location of the respondents

Region	Municipality	Sex of respondent		Total
		Male	Female	
National (non-indigenous) survey				
Nueva Segovia	Jalapa	69	71	140
	El Jicaro	31	33	64
	Mozonte	69	71	140
	Dipilto	70	72	142
Jinotega	El Cua	105	105	210
Matagalpa	Rio Blanco	68	72	140
	El Tuma -La Dalia	71	69	140
Rio San Juan	San Miguelito	51	55	106
	San Carlos	49	57	106
Total (national)		**583**	**605**	**1188**
RACCN (indigenous) survey				
RACCN	Bonanza	24	28	52
	Prinzapolka	7	8	15
	Puerto Cabezas	40	48	88
	Rosita	8	7	15
	Waspan	63	67	130
Total (RACCN)		**142**	**158**	**300**

draw comparisons with a similar survey conducted 4 years earlier in the Northern Caribbean Autonomous Region (RACCN), referred to below as the RACCN or indigenous survey. The national survey was an intra-household survey conducted with 1188 people (583 men and 605 women, in separate, usually simultaneous interviews with both the male and female heads of household) in 594 households in 23 communities in 9 municipalities. The indigenous survey was conducted with men from 142 households and women from 158 households, for a total of 300 surveys in 9 indigenous communities (see Table 1).[1] Both surveys aimed to understand sex-differentiated forest use, perceptions regarding forest resources, decision making and participation in forest-related activities and organizations.

Forest resources are central to the livelihoods of many rural households, with 98% of national survey respondents reporting some kind of resource extraction. The most important product is firewood (as is common in other countries, e.g. Nemarundwe 2005), and this and the vast majority of other forest products are collected mainly by men and, if sold, are sold mainly by men. Nevertheless, there are important differences between non-indigenous and indigenous populations that should be taken into account in the study of forests and of gender.

Characteristics of the people and households interviewed

The national survey asked men and women to describe their economic condition, either as very poor, poor or non-poor. Table 2 presents the self-assessment of economic condition and the average land area by economic group. The forest area owned by households across the sample ranged from 0.1 to 62 hectares. The results were very similar when compared by sex of the respondent, hence the total household averages are presented here.

Very poor households reported unstable incomes and frequent problems meeting food and other family needs. Poor households referred to having to work for others, having limited productive assets (land, money, low yields), not having enough agricultural products to sell and having temporary work or income. The non-poor stated that they lived in more comfortable conditions and had no problems with food or income throughout the year.

Table 2. Economic condition and average land area of the sample households

	Household economic condition		
	Very poor	Poor	Non-poor
Number* (%)	83 (7)	811 (68.3)	263 (22.1)
Average land area (ha)	5.2	9.1	25.2

*31 (2.6%) of the total people interviewed (15 men and 16 women) gave no opinion.

The principal economic activities of the households in the sample were, in descending order of percentage participating: subsistence agriculture (67%), the sale of agricultural products (63%), raising poultry (58%), raising pigs (6%), sale of cattle or cattle products (32%), temporary labor (27%), forest products (19%) and commerce (13%). Men and women largely agreed on their classification of the importance of the activity to household livelihoods, with significant differences[2] found only in fishing ($p < 0.05$) and remittances ($p < 0.10$), which were important only for a small percentage of households (less than 6%). Also, only 17% of women and 21% of men reported forest products as an economic activity, and forest products were ranked as playing a "very important" role only in about 8% of those and an "important" role in about 51% of those households.

1 A more complete discussion of methods of both surveys can be found in Flores et al. (2016) and Evans et al. (2016). The results presented in this Infobrief are taken from Flores et al. (2016).

2 Pearson Chi2

In the RACCN survey, although the questions are not directly comparable, forest products were ranked as the most important household income source in 11% of total households, and in the top three in 28%.

Forests in the national survey are primarily private (as reported by 81% of men and 86% of women), followed by national (18% men, 13% women), and only 3% communal (both men and women), whereas forests in the RACCN communities are almost all communal (98%).

Results

Forest extraction

Table 3 presents the percentage of households that report extracting a series of forest products, in both the national and RACCN surveys. Firewood is the most important product in both cases, but there are other important differences. In general, a higher percentage of indigenous households use forest products, and they use a larger variety.

Table 3. Percentage of households extracting (household averages)

Product	Non-indigenous*	Indigenous**
Firewood	91	83
Wood posts	54	39
Timber	29	52
Wild fruit	12	37
Wild animals/ "bushmeat"	7	43
Honey	3	20
Herbs	2	36
Craft materials	2	11

* For men, the order in decreasing priority is firewood, posts, timber, fruit, animals; for women: firewood, fruit, posts, timber, animals.

** For men, the order in decreasing priority is firewood, timber, animals, posts, fruit, herbs, honey, craft materials; for women: herbs, fruits, wood and firewood, craft materials, posts, animals (none reported extracting honey).

In both surveys respondents reported that women's participation in resource extraction was lower, and generally much lower, in comparison with men.[3] The only exception was that women extracted more materials for crafts in the non-indigenous survey, although this activity was only reported by 10 men and 9 women (about 1% of households). Crafts were also associated with very poor households, and the result is statistically significant. In contrast, timber is extracted by 38% of non poor, 28% of poor and only 12% of very poor households, and the difference is significant ($p < 0.10$).

It is also notable that women in the national survey tended to report slightly greater participation in extraction than men reported on women in every case except wild animals. This is consistent with the idea that women's participation in forest management is more likely to be invisible (FAO 2013).

Forest product sales

Very few households in the national survey sell forest products. Only 14% sell timber, and 2% each, posts, firewood and fruits. In contrast, one-third of households in the RACCN sell timber, 17% sell wild meat, 13%, fruits and 12%, posts. Smaller percentages sell firewood, craft material, herbs and honey.

Even larger differences are found between indigenous and non-indigenous results with regard to gender in relation to sales. In the non-indigenous regions, women participate very little in sales, alone or with men, with a couple exceptions; women are much more involved in the RACCN (see Table 4).

Table 4. Sex differentiated sales of forest products

Resource	Of those who sell, who sells?					
	Non-indigenous (%)			Indigenous (%)		
	Men	Women	Both	Men	Women	Both
Firewood	80	7	13	35	23	41
Posts	85	15	0	58	39	3
Timber	78	0	22	56	37	7
Fruit	56	12	31	24	37	39
Wild animals	33	33	33	41	26	33
Craft material	0	100	0	25	62	12
Herbs	0	0	0	36	45	18
Honey	100	0	0	44	44	11

Women are also less likely to control the income from sales, in comparison to the indigenous community results (see Table 5). It is also notable, in the indigenous community data, that the products for which women are more involved in sales are also the products for which they are more likely to control the income. This is true for fruit, crafts, herbs and honey, although relatively few households extract these products (the highest percentage

3 The highest result for women (combining "women" and "both") in the national survey was for firewood, with 2% of men (and 4% of women) reporting that women did the extracting, 11% of men and 14% of women reporting that both men and women extracted, and 72% of both men and women reporting that men extracted firewood. In the indigenous survey, the highest result was 8% for women extracting herbs (and 28% men; both was not a response option in that survey).

is fruit at 13%, followed by craft material (5%), herbs (4%) and honey (3%)). This is also true for craft materials in the non-indigenous survey (only women sell these and only women control the income); it is also notable, however, that this activity is carried out by only a very small number of households and the relation with very poor households was statistically significant. Wild animals or bushmeat in the indigenous survey are the only products that women sell less than men but are equally or slightly more involved than men in controlling the income.

Table 5. Sex differentiated control over income from sales

Resource	Of those who sell, who decides how to use the income?					
	Non-indigenous			Indigenous		
	Men	Women	Both	Men	Women	Both
Firewood	53	0	47	18	12	71
Posts	69	8	23	39	17	44
Timber	59	4	37	28	20	52
Fruit	44	6	50	13	40	47
Wild animals	67	0	33	20	22	57
Craft material	0	100	0	6	59	38
Herbs	0	0	0	18	55	27
Honey	100	0	0	22	56	22

In the national survey, men report considerably greater control of men over both sales and income, and a considerably lesser role for women than women report. In fact, *no* male respondents report that women alone are responsible for sales of any product or that women alone control the income, with only one exception (4% report that women control the income from timber); "both" is more commonly selected, after men alone. Women also most frequently choose men alone, but they also frequently choose both and sometimes women alone (percentages for the latter range from 0 to 33%).

Respondents in both surveys were also asked if women benefited from the use or sale of forest products, and if women's income from product sales had increased in the past 3 years. The difference in results between the two surveys is remarkable. In the non-indigenous survey, an average of 39% said that women benefited, compared to 90% from the indigenous survey; only 19% believed women's income had increased, compared to 36% in the indigenous regions. Also, in the indigenous survey, 6% more men reported income improvements for women than women did.

Resource condition and conservation efforts

Men and women in both surveys were concerned about forest degradation, responding overwhelmingly in agreement with the statement that "Forests should be protected" (97–99%). Similarly, in the national survey more than 99% of women and men responded that they were in agreement with the statements "improving local forest conditions is necessary because it contributes to family wellbeing"; "improving local forest conditions is necessary for clean air and to conserve soil and water"; and "my family and I would be willing to reduce forest product consumption to improve local forest conditions". In the indigenous survey, 94% of men and 87% of women agreed with the latter statement – this may be lower than in the national survey because of the importance of forests to livelihoods in the RACCN.

With regard to resource abundance, 95% of the respondents in the non-indigenous survey and 72% in the indigenous survey reported that resources are less abundant than a decade earlier. This problem is blamed on overexploitation by both community members and outsiders in the former, and on natural disasters in the latter, in relation to the damage caused by Hurricane Felix in the RACCN in 2007. Women were more likely to say they would participate in tree planting or patrolling to protect forests in the non-indigenous regions (98%), compared to 84% in the RACCN. The lower percentage could be due to the facility of natural regeneration, the lesser perception of their being a problem, or, perhaps due to the danger of patrolling in the RACCN because of land conflicts (Finley-Brook 2016; Larson et al. 2016).

Participation in forest decision-making

For efforts to protect the forest, such as decisions on forest management and deciding who can and cannot enter the forest, in both the surveys women reported less participation in comparison to men, by a margin of 7–10% in the national survey and about 15% in the RACCN.

In the national survey, among male householders, the non-poor, followed by the poor and then the very poor, were more likely to report engaging in activities such as establishing or managing a tree nursery (37%, 28% and 24%, respectively) and planting trees on their farm (55%, 50% and 41%). All groups, though far fewer respondents, were equally likely (17–18%) to plant trees on community lands. Female householders, in contrast, participated very little (<13%), and the highest percentages were found among the poor and very poor for tree planting activities. This deserves further research but may suggest a bias on the part of some better-off, non-indigenous men, against seeing "their women" engaged in such activities (unpublished author data). Work in a nursery, however, followed the same pattern as the men (decreasing with decreasing wealth).

Finally, we asked about women's participation in forest-related decisions in four arenas: in the household, as a community member, in meetings with the local government and in meetings with other actors such as NGOs. There are interesting similarities and differences between the two surveys (see Table 6). First, outside of the household, women have very low participation in forest decisions in the non-indigenous regions, relative to the indigenous regions. Second, in both surveys, women's participation declines as the decision arena moves to a more public or external set of actors (for similar findings on women's role in the public arena, see Bandiaky-Badji 2011; Bose 2011; Colfer et al. 2015a, b). Although men and women provide similar responses in the non-indigenous survey, in the indigenous survey, the men estimate substantially higher levels of participation for women than women do themselves (from 5% to 14% higher).

Table 6. Women's participation in decisions over trees and forests

Women's participation in forest decisions	National survey		Indigenous survey	
	Men	Women	Men	Women
In the household	78	78	89	81
As a member of a community group	29	31	81	76
In meetings with local government	24	24	79	74
In other meetings e.g. NGOs, research, etc.	17	17	77	63

Inheritance rights

In the national survey, when asked who had land inheritance rights (multiple responses were permitted), 78% of respondents said husbands, 56% said wives, 14% sons and 9% daughters. Women's responses differed from men's: 6% less said "husbands", while slightly higher proportions selected the other three categories.

Summary and conclusions

The two surveys discussed here focused on forested regions of Nicaragua in order to study forest use and decision-making from a gender perspective. The results demonstrate important contributions of forests to rural households, as well as some differentiation based on economic level and gender. There are also important differences between the two surveys, including gendered differences, likely due to the different type and extent of forests, as well as their historical, cultural and economic importance as communal resources in indigenous communities.

More products are extracted by more households in the RACCN, and women are involved far more in product sales there. Women are equally concerned about forest conditions as men in both regions but play a smaller role in tree planting and forest protection activities, which is partially due to women's household work burden (Colfer et al. 2016). They play little role in forest decisions outside the household outside of the RACCN. This may be in part because forests outside indigenous communities are much more often private property; however, it also suggests the low importance of forest policy and programs coming from government or NGOs, or, at least, little involvement of women in such initiatives. In both regions women's participation decreases as the arena becomes more "public".

Men underreported, relative to women, women's role in extraction, forest product sales and control over income; in contrast, they overreported, relative to women, women's income improvement from forest products over the past 3 years, women's participation in decisions and activities related to forest management, and in decision making arenas from the household to community to more external arenas. One possible explanation is that the first set of issues refers to specific household activities where women's work may suffer from "invisibility"; the second set represents more general questions for which the alternative responses could more likely be interpreted as "excluding women". In effect, women's actual work is underestimated, while women's benefits and decision making are overestimated, relative to women's own assessment, reflecting gender biases.

Recommendations

- Detailed, comparative studies on gender and forests are needed, particularly in Latin America, to deepen our understanding and move beyond broad regional generalizations.
- Greater attention needs to be given in Nicaragua's forests, in all regions, to gender-responsive government and NGO programs and policies. These are needed to address more effectively trade-offs and synergies between efforts to facilitate conservation and sustainable forest use and gender equity.
- Multiple gender-sensitive strategies are needed to fight gender bias, support women's participation not only in private but also in community and more public arenas, and promote the sharing of household burdens to make this participation more feasible (see also Colfer et al. 2015b).

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