



Assessing Bird Species Richness within Shade-Grown Coffee Farms in Chiapas, Mexico / Project ID: 0251711



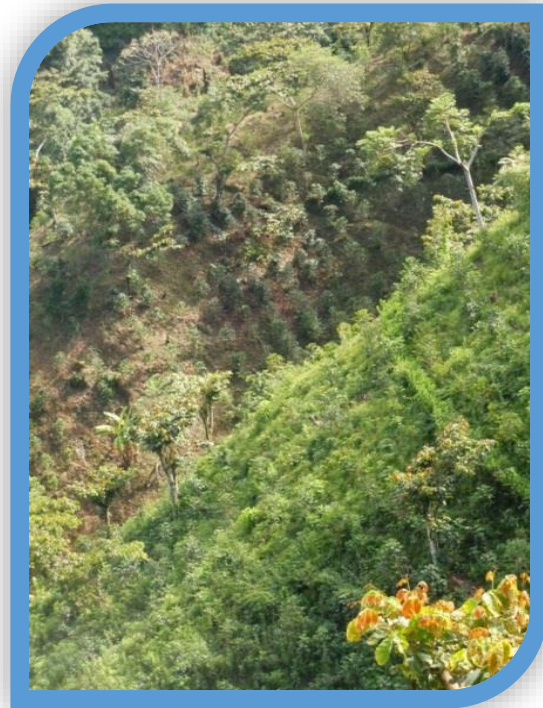
**Daniel Camilo Thompson Poo, Daniela Valle León, Alberto
Martínez Fernández and Jennifer Siobhan Lowry**

San Cristóbal de las Casas, Chiapas, México. C.P. 29200 /
daniel.thompson38@gmail.com

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Overall Aim

The goal of this project was to identify mechanisms and conservation strategies across agro-forestry systems in the El Triunfo Biosphere Reserve in Chiapas, Mexico. In particular we analyzed key biodiversity, economic, and social components that impact land-use change and ecosystem services in coffee production areas, focusing on how to improve sustainable production and conservation of nature.



Section 1

Summary

The agroforestry systems with coffee at the Sierra Madre of Chiapas, as a part of the Mesoamerican Biological Corridor region, are important for bird species.

Agroforestry ecosystems also represent sustainable livelihoods for indigenous groups on the region.

Sustainable coffee farming system represents a less human impact on the ecosystem. However, not all coffee producers on the region produce on the same way. Not all the inhabitants are aware of the importance of birds, as a part of the great natural capital of la Sierra Madre, but they either are prepared for the climate change risks and impacts.

In this sense, this project seeks to understand, generate and communicate information useful for coffee farmers and their families. The goal is to understand social and economic factors to maintain and increase agroforestry systems with sustainable coffee. Also it is achieved better bird conservation practices knowledge for coffee producers and rural monitors.



Introduction

Land-use change is occurring at a fast rate in the Sierra Madre of Chiapas from economic pressure is resulting in deforestation from encroaching coffee operations. Conversion of rustic shade-grown coffee farms to less-stratified shade-grown or sun grown coffee, milpa (corn), citrus, or cattle and sheep operations are also prevalent. The climate change scenarios projected by Soto and colleagues (2009) predicts that there will be an increase in temperatures, droughts and floods from hurricanes, and rainfall will impact coffee yields, leading to abandonment of shade-grown agroforestry coffee operations for more economically feasible livelihoods.

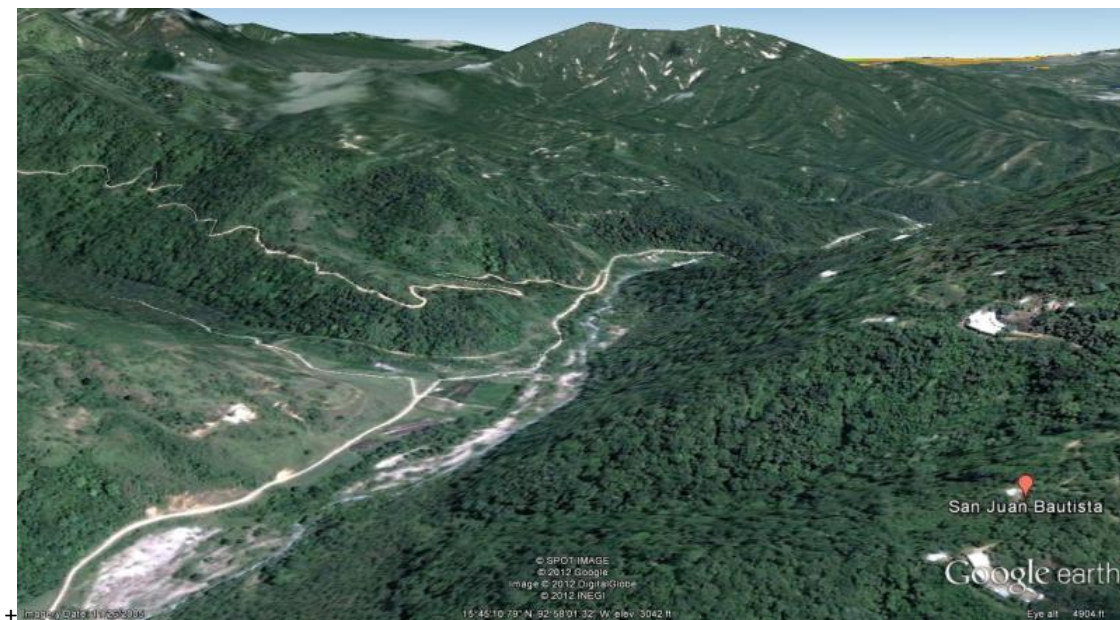
Agroforestry systems provide high-quality habitats in comparison to intensive monoculture systems. The increase in stratification diversity of trees used in agroforestry systems, in particular shade-grown coffee systems are important for the biodiversity conservation. Agroforestry systems are defined as agriculture systems in which trees are cultivated alongside annual crops and may include animal rearing, making it a multiple land-use human ecosystem that is usually compatible with biodiversity. Recent studies have demonstrated that the trees on cattle ranches fulfill an important role in the conservation of wild-bird species in fragmented landscapes, providing a refuge of resting-places, shelter and nourishment (Harvey and Haber, 1999).

The project took place in Chiapas, Mexico, in the Sierra Madre mountain range of the Mesoamerican Biological Corridor of the El Triunfo Biosphere Reserve of the municipality of La Concordia. We spent about 60 days in the field from July 2011 to April 2012. Key stakeholders were Pronatura Sur AC., as well as the coffee cooperatives Unión Ramal Santa Cruz Rural Production Company with Limited Responsibility and Comon Yaj Nop Tic Society of Social Solidarity. Other actors involved in the process were Colorado State University (CSU) and El Colegio de la Frontera Sur (ECOSUR) because the project members developed their Synergistic Project as part of the Master of Science Conservation Leadership through Learning linked to this project.

Regarding to Common Yaj Nap Tic and the Union Ramal Santa Cruz coffee cooperatives sells Certimex, IMO, Fair-trade, US Organic certified coffee and is mainly for export. These coffee communities are in the multi-use conservation buffer zone that surrounds the El Triunfo Biosphere Reserve. Each coffee parcel averages in 1-5 ha of shade-grown coffee established in forested areas that are family owned and harvested and sold as one unite through the coffee cooperative. Experts assume that agroforestry system with sustainable coffee (sustainable practices, no agrochemical use, fair trade, etc.) is supposed to be beneficial for maintain the environmental and agricultural functions. The Mesoamerican Biological Corridor Mexico is promoting citrus operations in coffee producing regions. Pronatura Sur, a Mexican NGO has trained campesinos since 2008 to monitor birds in the Mesoamerican Biological Corridor as one aspect of their multi-faceted long term monitoring program. Coffee is the primary economic activity carried out in this area. Land-use change and climate change in this area is affecting the quality of the Mesoamerican Biological Corridor.

In 2008, through Pronatura Sur's monitoring program, the Community Monitoring Program was implemented in fifteen coffee growers' organizations in the Sierra Madre of Chiapas. Each monitor was trained and equipped with a GPS unit, a pair of binoculars and two bird guidebooks. One guidebook was Howell and Webb's (1995) Guide to Birds of Mexico and North-Central America, and the other was Kaufman's Field Guide to the Birds of North America (2005).

The following report is based on the logical framework that our team submitted to CLP. Project goals were to analyze key biodiversity, economic, and social components that impact land-use change in coffee production areas, focusing on how to improve sustainable shade-grown coffee production and improve the skills and abilities of the agroforestry-system bird monitors.



Map of study area.

Project members

Daniel Camilo Thompson Poo

Lawyer, Public policy analysis, Low Emissions Rural Development, Watershed Management, Financial mechanism for Sustainability and Climate Change. He currently works as Leader of Public Policy Projects at Pronatura Sur and Coordinator of Watershed and Cities Project at Pronatura Sur. He was the project leader.

Daniela Valle León

Experienced in communications and outreach. She currently works for Conservation International Mexico. She worked on the social aspects of the project, education, and outreach.

Alberto Martínez Fernández

Experienced in local bird identification. He currently leads private bird tours. He co-lead the project with Camilo Thompson and analyzed the vegetation.

Jennifer Siobhan Lowry

Experienced in bird and wildlife research projects, wildlife management plans, landscape ecology studies. She is the director of United Corridors AC. She wrote the grant for the project and trained and checked data quality of monitors and collected data on bird species richness.

Section 2

Aim and objectives

Our overall objective was to provide elements to link agroforestry systems with coffee management in order to confront different realities of development and, at the same time, to protect ecosystem services. In this regard, we developed the following specific objectives:

1. Design and implement a bird-monitoring protocol for agro-ecosystems in La Concordia Municipality, Chiapas.
2. Collect baseline data on species bird and vegetation richness in different types of agro-ecosystems.
3. Identify the species of birds that use the agro-ecosystems.
4. Improve the current capacities and skills of bird monitors.
5. Analyze coffee farmers' perceptions of the Bird-Monitoring Program in transect inside or close to coffee crops in the Upper Watershed of the Cuxtepeques River, La Concordia, Chiapas.
6. Develop the bases for the design of a social marketing and environmental education campaign.
7. Analyze the cost and revenue of the technological change from a conventional coffee-production system to a sustainable agroforestry system.
8. Analyze the social networks and perceptions that influence the decision to make the technological change from conventional coffee production to a sustainable agroforestry system.
9. Deliver the results and link the session with key stakeholders.

Methodology

AVIAN COMPONENT

For assessing bird species richness, we used 25-meter radius 10 minute point counts starting 10 minutes after dawn, registering all birds seen or heard on established transects spaced 250 meters apart (Ralph, 1996). Behavioral data, guild, and forest use data was also documented. These transects covered all types of vegetation found in the area in and around shade-grown coffee parcels (Appendix 1A). Vegetation was documented along these parameters as well (See Appendices). Data analysis compared dominant vegetation to bird species richness. Bird guild to forest type were also documented.

We conducted meetings with the community monitors are people who have volunteered to participate in the bird-monitoring project and were trained previously by Pronatura Sur AC. Many of these volunteer monitors have learned to use GPS, binoculars and databases. Likewise, they have learned to record environmental data and biological indicators concerning the birds. These community monitors are key people in the organizations and it is expected that they will help to maintain the database of monitoring activities.

Workshops and field practicums using the double-observer method were used to evaluate data quality. During the monitor training process, the monitors were first instructed on how to implement the method to be used at the bird-count points for identifying different types of vegetation and, second, the protocol for identifying the food groups of birds. Finally, it is necessary to mention that during these workshops the distinct methods for monitoring birds were discussed. Thus the training sessions were primarily theoretical and practical. Questionnaires and surveys were used in order to improve the community monitor's skills and abilities and covered the population of monitors from the two coffee cooperatives (Appendix 9).

ECONOMIC COMPONENT

To evaluate the economic forces driving coffee production in relation to conservation, a cost analysis was done. The methodology to get the cost-revenue analysis of the technological change from conventional coffee production to a sustainable agroforestry coffee-production system was based on the results of a total of 210 surveys (N=210). Surveys were divided as follows: 111 surveys from agroforestry coffee producers in two sustainable shade-grown coffee cooperatives and 99 surveys from conventional coffee producers. All the producers were from the upper watershed of the Cuxtepeques River and from more than 30 small communities and ejidos. The sample was also stratified by altitude, using the same criteria as in the method for the perception analysis of coffee farmers about the bird monitoring program and used the cost and revenue of production per quintal per hectare. Economic variables were based on the 2010-2011 growing season (see Appendix.) The data and its analysis we used SPSS software (SPSS, 2010).

SOCIAL COMPONENT

A perception analysis was also completed in order to evaluate overall viewpoints of coffee cooperative members in regards to how they perceive the community monitors in the bird monitoring program and was based off 112 surveys in different agroforestry stratification systems by altitude, organization and production (Hernandez Sampieri, 2003). Consequently, we got 68 surveys from the high altitude (1200-1700 meters above sea level, 27 surveys from the medium altitude (1000-1200 m.a.s.l.), and 17 surveys from the low altitude (700-1000 m.a.s.l.). The survey was integrated by three variables: 1) knowledge of the monitoring program; 2) degree of empathy; and 3) perception of the utility of the monitoring program (see Appendix). For the implementation of the surveys we trained two monitors. For the management of the data and its analysis we used SPSS software (SPSS, 2010).

To evaluate the social impacts in the shade-grown coffee agroforestry system the method of NetDraw was used from Clark's Social Networks Manual, which is an analysis between the actors we interviewed and the actors mentioned (Clark, 2006).

DISSIMINATION OF RESULTS TO STAKEHOLDERS

To disseminate our results to stakeholders we held 4 informative and educational workshops and gave a final presentation. Two educational videos were produced. Outreach materials were given to community monitors

Outputs and Results

BIRD SPECIES RICHNESS

Data is based off community monitoring data from 2011 and registered 3793 individuals of 185 bird species were registered by the community monitors. Of these 185 bird species, 44 were listed on the Norma Oficial Mexicana-059 [Official Mexican Norm-059], where they were listed as having some status for conservation: PR=Subject to special protection, P=Endangered and A=Threatened, and 39 were listed by Commerce and Traffic of Wild Species, Sp. Abbreviation CITES (i, ii). 149 eat insects and other types of foods such as fruits, arthropods, grains, seeds or small invertebrates – our eaters of invertebrates did so mainly during their reproductive cycle. We also found in the study that only 12 species were 100% insectivores, 11 species ate only fruits and seeds, 6 species ate invertebrates, 3 were scavengers, 2 had a diet based on fish and invertebrates, 2 species ate animals, other birds, insects and reptiles, and the rest of the registered species ate a mix of foods. Exact number of samples are unknown as all data was clumped.

The results indicate that the diet of the majority of species is largely based on insects; basically the important thing about the vegetation is the quantity of insects produced in the foliage of the shade trees of the coffee plantations and the allied ecosystems – the nodes of this cultivation and the ecosystems surround the farms. By means of the database that was developed which tracks basic information for each species, we assigned stratification values of forage for each species. We identified four forage stratifications for this study. The relatively richest and most abundant was the arboreal stratum, while the poorest and least abundant was the Terrestrial.

For more details in results, see the following appendix:

1. Floristic list of bird monitoring sites in the basin of the river Cuxtepec La Concordia, Chiapas;
2. Food groups of the birds registered by the community monitors in agro-forestry systems;
3. Table: floristic richness and vegetation types registered in the basin of the Rio Cuxtepec areas.

COMMUNITY MONITOR DATA QUALITY

This analysis was made from October to December 2011. Several observation comparisons were made with five samples containing three count points among monitors, one sample with four points and one sample with one count point to compare data quality.

Monitors appeared to be very capable of locating birds by sight and sound. All were adept at using and focusing binoculars. During conversations and through surveys, 103 monitors mentioned key focal areas on a bird for identification, including silhouette, flight pattern, wing shape and perching behavior, all of which require a trained eye when compared to identifying color, size, presence or absence of markings, and color and shape of feet and beak. Monitors were also trained in the use of Remebird. They learned how to record calls quickly, mastering the recording and playback options within minutes. However there was variation in data between observers and between monitors and an expert.

Graphs of Data quality by double-observer method:

Summed Field Comparison Replicates Among Monitors

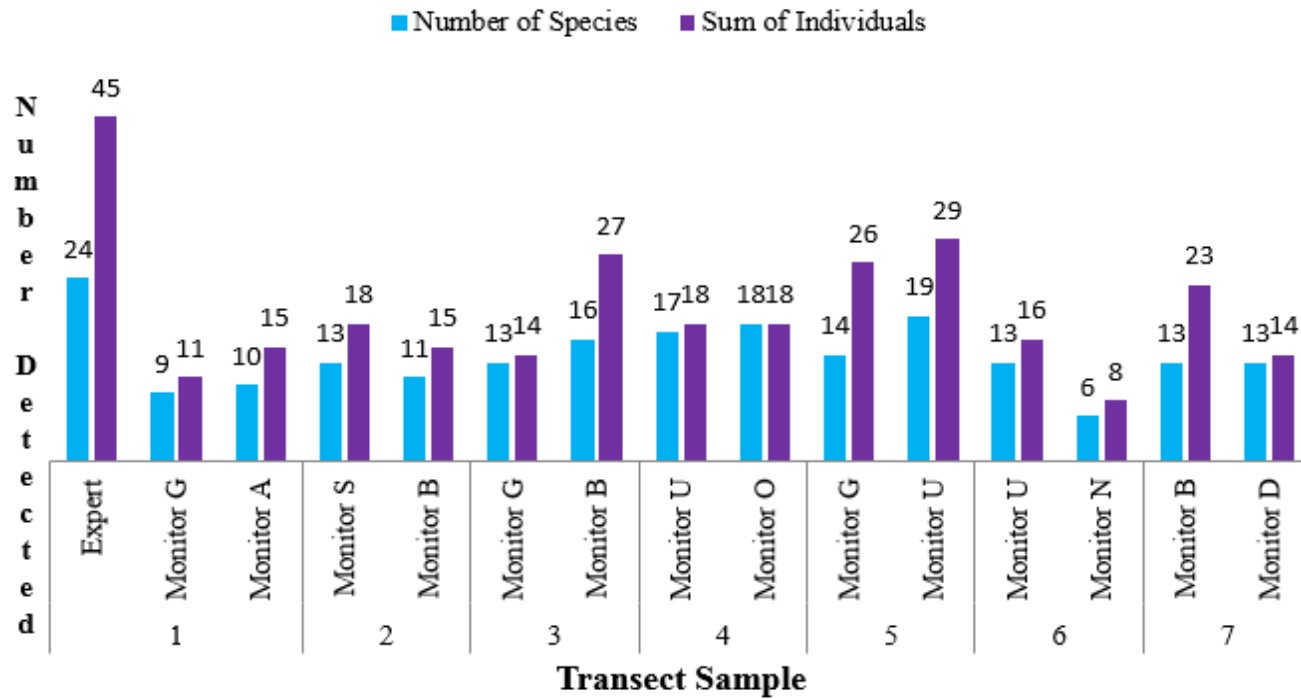


Figure: Number of birds detected audibly and visually between observers per point count sample. Note that some birds were undocumented by detection type and therefore not accounted for

BIRD MONITOR SURVEYS

See appendices for surveys. Open ended questions in Survey 1, titled "Capacity Evaluation," inquired about how data was collected from the field. Question 1 asked, "How many days do you go to the field to observe birds?" All monitors answered three days a month, with one day for each transect.

Question 2 asked, "When you see a bird, what characteristics do you look for when identifying a species?" Eight monitors mentioned color or plumage, six mentioned beak, six mentioned feet, four mentioned the crown or head, and two monitors mentioned for each: size, head, eye, and behavior. Other less common responses were spots, stripes, breast, rump, back, tail, wings, neck, throat, form of standing and form of flying.

Question 3 asked, "Can you tell me the rules of observation when looking for birds in a scientific study with respect to time and climate?" Four monitors answered to look for birds at dawn or dusk because they are more active. Five monitors said not to observe birds in bad, rainy or very windy weather. One inexperienced monitor said not to wear bright-colored clothing. Other answers were to be quiet, to mark a transect with points at 250 meter intervals that make up 11 points with a 10 point minimum and to bring your equipment.

Question 4 asked, "How do you take data in your data book?" Most monitors went into the technical aspects of the Excel data spreadsheet given to them by the director of PRONATURA SUR's monitoring program. This includes height, number of individuals, behavior, bird species, stratum, tree species, time, weather, location, point number, sex, foraging type, habitat, date, monitor's name, transect name, and if the bird was inside or outside 25 meters of the count point. The data columns are extensive, usually taking up two pages.

Question 5 asked, "How is the bird guide book organized?" Three monitors said it was organized taxonomically, four said by species, and two said by family. One inexperienced monitor skipped this question. One monitor said raptors, seabirds, warblers and flycatchers, which is almost the correct order, but flycatchers come before warblers. The Spanish word "mosquero," however, may also mean birds other than flycatchers.

Question 6 asked, "In which season or months is it possible to see more birds and why?" Answers varied suggesting that migration was still not an understood concept.

VEGETATION DATA

The vegetation of the region under study with reference to three altitudinal zones (High, Medium and Low). In each zone we located the coffee farms, and also found several species of shade trees that had some utility, and that are viewed as alternative foods, as well as being economically beneficial for the small coffee producers. These included the Chalum (*Inga* spp.), the orange (*Citrus sinensis*), the mango (*Mangifera indica*), the avocado (*Persea Americana*), the lemon (*Citrus limetta*), the guineo or platano (*Musa sapientum*), the guava (*Psidium guajava*), the loquat (*Eriobotrya japonica*), the peach (*Prunis persica*) and the lime (*Citrus aurantifolia*).

Of the 312 species of vascular plants reported in this region, 128 were found to be in some status of conservation or protected category, according to the national and international ecological norms. According to the Norma Oficial Mexicana NOM-59-SEMARNAT 2010, 16 of the 312 registered species were distributed in the categories: (E) Endangered with 2 species; (T) Threatened with 9 species; and 5 species were (Pr) Protected.

There were 66 species of the 312 registered species on the IUCN's red list, of which 2 were included in the (CR) Critically Threatened category; 10 species were listed as (EN) Endangered; 12 were (VU) Vulnerable; 10 species were listed as (NT) Near Threatened; and 32 species were listed as (LC) at Risk. On the CITES list we found a total of 54 of our registered species. (See Appendix).

EDUCATION AND OUTREACH

The Conservation Leadership Program donated a desktop computer which enabled the systemization of the community monitors' information. This was critical as the old computer broke during the project and without a computer to store the data, there would be no project.

To increase interest in the conservation of birds, the community monitors created and participated in the event called "Conteo Navideño de Aves" (Christmas Bird Count [CBC]) in Tuxtla, Chiapas, Mexico.

Monitors were also given a personalized write in the rain notebook featuring a picture of either the endangered golden-cheeked warbler (*Dendroica chrysoparia*) or the azure-rumped tanager (*Tangara cabanisi*) and a DVD containing photos for use to create additional outreach materials in the future.

An educational video was made for the community monitors in respect to community monitoring and conservation. This video for the monitors can be accessed at:

<http://vimeo.com/33120869> using the password: Eltr1unf0.



Figure. Community Monitors at the Christmas Bird Count in Tuxtla and San Cristóbal de las Casas, Chiapas

ANALYSIS OF COFFEE COOPERATIVE MEMBERS PERCEPTIONS REGARDING THE COMMUNITY BIRD MONITORING PROGRAM

It was found that more than 40% of the coffee producers surveyed did not know about the bird monitoring program. This may be because the majority of production is far from the offices of the cooperative. By contrast, 20% of farmers knew about the monitoring program through cooperative members, and another 20% knew about it through meetings of the organization. Also, more than 45% of producers surveyed expressed their interest in participating in the bird-monitoring program. However, 35% of the producers stated that lack of time could be a barrier.

About the importance of bird-monitoring program for the cooperative, the responses were quite diverse; 24% of producers surveyed responded that it is useful to obtain information about bird conservation. Another 23% replied that it opens opportunities for more certifications and may even allow setting a higher price per quintal of coffee. Another 22% pointed out that monitoring could be linked to productive projects related to bird watching.

Related to bird-monitoring results, 98% of producers surveyed manifested an interest in attracting tourists to visit their coffee crops. A little more than 15% of coffee producers said it could be useful for the coffee agroforestry system.

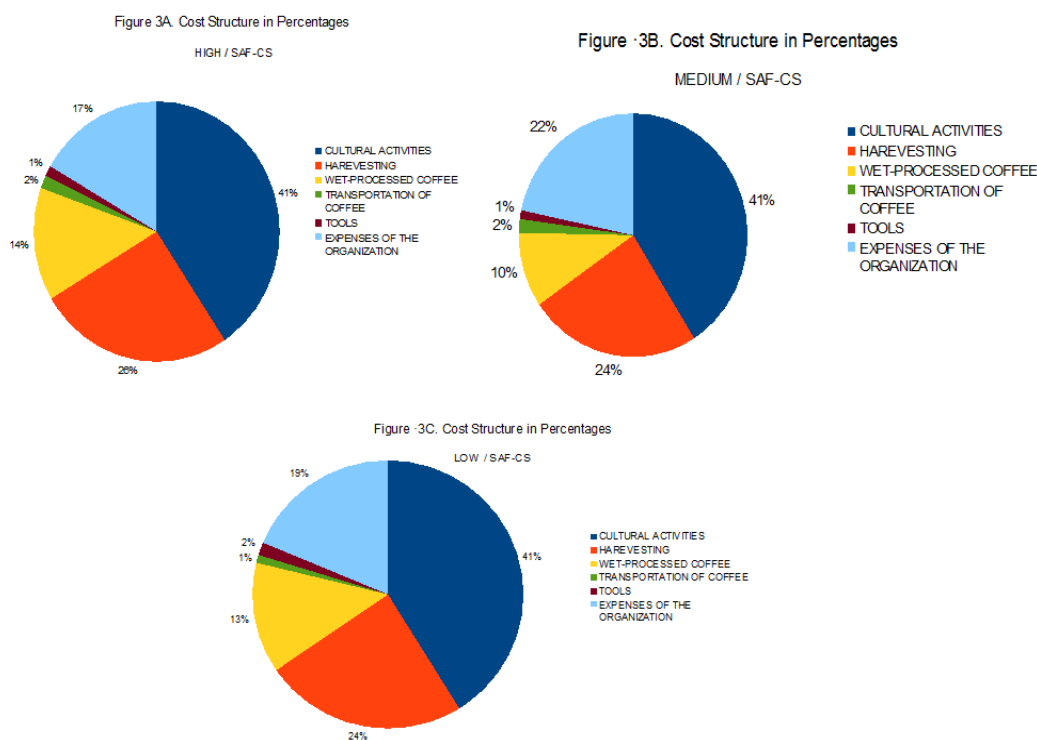
In relation to other types of monitoring producers would like to see done or do: 38% said other animals and flora; 30%, the risk of landslides; 28% said groundwater quality; and only 13% identified carbon monitoring.

COST BENEFIT ANALYSIS

The Cost-Benefit Analysis were based on the analysis of the costs and revenues of the sustainable and conventional coffee-production system in different zones (low, medium and high). Through the comparative analysis, we were able to offer to the coffee producers' economic knowledge about the common costs of their coffee plantations per hectare at different heights.

Results, in the Low Zone, Agroforestry Coffee Producers invest 31% more than the Conventional coffee producers because of higher investments in wages, materials and supplies.

Cost structure analysis of the SAF-CS



With respect to gross income, however, it was higher for Agroforestry Coffee Producers. Regarding the performance of parchment coffee, we found an irrelevant difference between the sustainable agroforestry and conventional systems: 1.15 quintals/hectare more in Agroforestry Coffee Producers.

At the Medium Zone, Agroforestry Coffee Producers' costs were higher by 126% in contrast to those of Conventional Producers. This is due to a larger investment in wages; it was over 58 pesos per worker per day. Thus the gross income was also much higher for Conventional Producers. Regarding the performance of parchment coffee per hectare, the Agroforestry Coffee Producers exceeded the performance of the Conventional Producers by more than 50%.

The data for the High Zone showed results similar to those for the Medium Zone. Compared to the Conventional Producers, however, the Net Benefit was negative for the Agroforestry Coffee Producers. This was because the cost of the economic variables in this zone was higher by 93% for Agroforestry Coffee Producers than for Conventional Producers. Again, the reason was higher wages, and these were over 88 among the Agroforestry Coffee Producers. In relation to gross income, it was higher for Agroforestry Coffee Producers because the performance was relatively higher by two quintals. The fact that there was not a big difference in performance of quintals is due to the lower performance of the Conventional Producers.

Cost and Benefit comparative analysis

Production Systems and stratification heights	COST	GROSS PROFIT	PERFORMANCE	PRICE	NET PROFIT
HIGH (1200 a 1700 m.a.s.l.)					
SAF-CS (NE= 68)	\$ 18.596,94	\$ 23.397,40	7.28 Qq	\$ 2.913,46	\$ 4.800,46
SCC (NE = 53)	\$ 9.627,01	\$ 15.624,96	5.21 Qq	\$ 2.872,83	\$ 5.997,95
MEDIUM (1000 a 1200 m.a.s.l.)					
SAF-CS (NE= 27)	\$ 18.864,64	\$ 30.152,47	9.64 Qq	\$ 2.968,91	\$ 11.287,82
SCC (NE = 24)	\$ 8.326,56	\$ 12.145,18	4.10 Qq	\$2.618,20	\$ 3.818,62
LOW (700 a 1000 m.a.s.l.)					
SAF-CS (NE= 17)	\$ 12.646,28	\$ 16.264,80	5.56 Qq	\$ 2.651,79	\$ 3.618,53
SCC (NE = 22)	\$ 10.124,42	\$ 12.706,01	4.41 Qq	\$ 2.640,66	\$ 2.581,58

DISSIMINATING RESULTS TO STAKEHOLDERS

Four workshops were held as well as numerous reports and materials were given to stakeholders which averaged about 28 people. Overall presentation was given to the stakeholders as well as all data generated. Stakeholders used data to improve the community bird-monitoring program and devise additional projects for protecting the ecosystems in the area. Databases were developed based on bird guilds that provided insight on the importance of insectivores. Coffee cooperatives used the economic and social analysis to plan for better bird friendly coffee production. With the results we obtained we can demonstrate clear grounds to strengthen cooperative relations between institutions and recruit new actors, which will benefit the implementation of production systems friendly with Reserva Biosfera del Triunfo (REBITRI).

Achievements and Impacts

The project has shown that it is necessary to take into consideration the social and economic factors to achieve bird conservation in the region. The ability to sell bird friendly coffee provides a great incentive for conservation by the communities and these practices should be placed in other communities.

Though the community bird monitoring program has been shown to be positive in improving conservation on the ground, for example active sharing of the need for conservation to family and friends by bird monitors and the displaying of conservation signs such as no hunting and conserve the birds. Before the implementation of this bird monitoring project, community people use to kill birds for a variety of reasons. However there still is variable differences in data within observers that could impact management decisions and all data should be reviewed by a trained professional in bird research and include samples from this expert as well. Periodic trainings and double-observer method may help to account for these variations.

Section 3

Conclusion

This large data set evaluated many details of the economic, social, and conservation realm and are all related to an extent in every conservation project. Species richness is a way to assess biodiversity and the implications of management schemes on a shade-grown coffee agroforestry system. It is important that communities find creative means to grow biodiversity friendly crops that also make an economic return for their efforts. In this case the biodiversity friendly management scheme and bird friendly coffee also increased coffee quality overall. Coffee yield versus coffee quality should be something to assess when evaluating markets. This data has been used to further promote biodiversity friendly coffee practices and encourage fair market prices.

The database of trophic groups will permit us to know more clearly the different types of birds within the agro-ecosystems. It is important to continue gathering data in order to maintain the database and to be able to have a clearer picture of the changes happening in the ecosystems: for example, the effects of a decrease in, or the complete disappearance of a vegetation stratum on the absence or presence of the avifauna as this is directly related to different coffee

management schemes and different types of shade-grown coffee in different forest types. This data is being used in coffee management schemes by the community monitors and some coffee cooperative members.

Sustainable Agroforestry Coffee Production in the study region was shown to be more profitable than Conventional Coffee Production when we considered the social benefits provided by the cooperative management and the external support. Costs of conservation practices of soil and arboreal strata represent a greater investment in labor for Sustainable Agroforestry Coffee Producers, but these practices are a means of adaptation to and mitigation of climate change, as well as a baseline payment for ecosystem services. Sustainable Agroforestry Coffee Producers have more capacity to cope with coffee-market fluctuations that are sometimes unpredictable coffee prices.

Problems encountered and lessons learned

The project changed its original aims and objectives due to a variety of reasons. Our main problem was time limitation due to the rainy season and coffee harvest, which restricted the community bird monitor's time for the project in the beginning. We learned that a team filled with qualified individuals is not enough; team leadership and interpersonal relations are also key to project success, in which we some disagreements particularly in how changes should be addressed, as there was some cultural confusion on how to address these changes. The monitor computer broke in the middle of the project which further complicated the project and we had to buy a new computer. Lesson's learned include the need for proper communication for effective projects, adaptive and flexible planning for including community needs in conservation projects, and understanding effective means to deal with politics of a project.

The proposal to create a system of payments for environmental services (PES) and conservation campaign based on the cost of conservation practices requires an analysis of public policies at the Local, State and Federal levels, and the Environmental Financial Fund for its development. We found that the feasibility of creating a PES in a short period of time could create false results and expectations for conventional coffee producers.

In the future

To build on this project it is recommended that a PES scheme be developed with reasonable time to further improve the local economics of communities practicing good management by growing shad-grown coffee that includes enough vegetation levels to benefit a wide variety of birds. Continuing the community bird monitoring program and expanding it to include other species monitoring could be another crucial step. Setting up an effective conservation campaign to continue the message of bird conservation is recommended. Implementing an environmental

education program that strengthens community monitoring should be explored. A guide to the birds of the agroforestry systems could be created to promote bird, and more broadly, ecological tourism, which would help the local economy. Reapplying a manner to measure the economic and social values of coffee production should be continued every two years to assess price fluctuations, which is a necessary analysis to establish key policies to facilitate cooperative resource-allocation according to the needs of producers. Partnerships are necessary to achieve a level of equitable balance among producers, and as a way to benefit those who contribute more funding to the sustainable coffee cooperatives. Maintaining or restoring connectivity through forested or vegetated conservation corridors around sun or conventional coffee is recommended to improve the conservation matrix of the landscape.

Section 4

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List of Appendices

Appendix 1. A. Bird Monitoring Protocol.

Appendix 1. B. Graphs and table about the field survey.

Appendix 2. A. Baseline of Trophic Bird Groups In Agro-Forestry Systems

Appendix 2. B. Vegetal Characterization of Cuxtepeques Watershed

Appendix 3. A. Form for recording vegetation data at Bird-Monitoring sites

Appendix 4. A. Community Monitoring Program Evaluation

Appendix 4. B. Improve the current capacities and skills of bird monitors.

Appendix 4. A. 1. Donation of a Desktop computer for Monitors

Appendix 4. C. Christmas Bird Count in Chiapas

Appendix 5. A. Survey: Coffee growers' perceptions.

Chiapas, Mexico / ID: 0251711

Appendix 5.B. Tables, graphs and social-science activities of the Coffee growers' perceptions survey results.

Appendix 6. A. Strategy for communication and diffusion for the "Community Monitoring Program "High Watershed of the Cuxtepeques River

Appendix 6.B Visual identity for the monitoring program.

Appendix 7.A. Relating to Agroforestry Coffee Producers' Cooperatives: Surveys

Appendix 7. B. Relating to Conventional Coffee Producers: Surveys

Appendix 7.C. Comparative Cost-Benefit Analysis by altitude and production system

Appendix 7.D. Cost-Structure Analysis

Appendix 7.E. Maintenance costs of conservation practices

Appendix 8. A. Social analysis of the coffee-plantation sector of the CARC

Appendix 9. Bird monitor surveys

Appendix 1. A. Bird Monitoring Protocol.

- Using GPS to locate the transects

Each monitor received training in the use of GPS, the layout of the routes (through the transects. Trainees practiced tracing the transects in the 3 different vegetation groups (High, Medium and Low). They also practiced identifying the types of vegetation, or better, the dominant vegetation in the various localities. With that, the monitors were asked to trace, using GPS, 10 to 11 points separated by 250 m. between each point. Some monitors traced only two transects, and 7 were the minimum number of count points marked, while 11 were the maximum. All this was done with the goal of having data on the different environments of vegetation and to be able to make comparisons among birds of the same species and to record the diversity of species of birds in the future (Fig. 1).

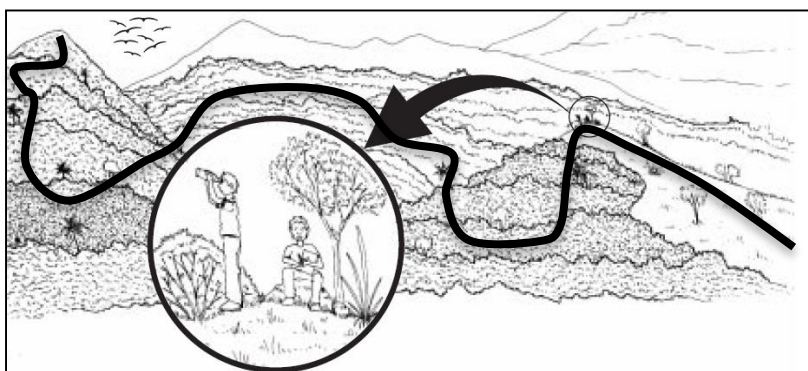


Figure 1. Transects for the location of the Bird-Count Points

- Method for Recording Vegetation at the Bird-Count Points in Transects in the Sierra Madre

During the training process, the monitors were instructed first, on how to implement the method to be used at the bird-count points for identifying different types of vegetation and, second, the protocol for identifying the food groups of birds. Finally, it is necessary to mention that during these workshops the distinct methods for monitoring birds were discussed. Thus the training sessions were primarily theoretical and practical.

- Supervision and Follow-Up of Community Monitors

Follow-up visits to the planned transects were begun for each of the eight community monitors. These visits focused on the inspection of the established transects by the monitors. The monitors were also accompanied while they recorded data in the field. Assistance and instruction were given for field identification, the revision of field data, and monitors were helped to recognize the species of birds that were apt to cause confusion in their identification.

TRAINING OF COMMUNITY MONITORS



During 2011, eight members of the organization COMON YAJ NOP TIC, SOCIEDAD DE SOLIDARIDAD SOCIAL y URSC received the following training for community monitors:

- Basic classroom instruction for community monitors in biological and environmental monitoring, biological indicators and observation of birds; practical training for applying in the field of observation what trainees had learned in the classroom; finally, the method to be used at the count points was discussed and the field forms were introduced.
- Advanced training for community monitors (monitors with more than one year of participation in the Community Monitoring Program), which, for this group of trainees, included a workshop on advanced theory and practice that discussed the identification of the taxonomic complex of bird groups, and auditory identification through birds calls. In the practical part of the training the transects were defined by three types of vegetation (H, M, L) for each monitor.

Parameters for gathering data during the monitoring of birds by Community Monitors

METHODS:	Continuation of the description of the significance of the variables (data), taken in the field, that appear in the database.	REGISTRATION KEY
DATE	Date of the tour of the transection	DD/MM/AÑO
LOCATION	Name of each Community Monitor where the transections are located	
MONITOR	Monitor's Name	Last Name
TRANSECT KEY	Name of Transect or route	Name
POINT NUMBER	Number of the count point where each observation was made	1, 2, 3 o 4....11
TIME OF INITIATION AT THE POINT	Exact initiation-time of the 10-min. observation	0:00
SPECIES OF BIRD	Scientific name of the bird(s) observed, to be encoded in a key with the first three letters of the genus and the first three letters of the species (see the List of Mexican Birds [Lista_aves_México])	Scientific Name
NUMBER OF INDIVIDUALS	Number of individuals observed of the same species, to be used mostly when dealing with birds of gregarious species (those that move in groups of more than 2 birds)	Number
SEX	Male, Female or Young or zero (0) if impossible to determine the sex of the bird(s)	M, F, Y or 0
HABITAT	Type of coffee plantation (cultivation under the sun, mono-cultivation system under shade, commercial poly-cultivation system, traditional cultivation, rustic or mountain), Acahual, type of forest: pine-oak, oak, pine, etc.	See Keys
TYPE OF FOOD	Nectar, insect, seed, fruit, butterfly, maggot/grub, mosquito	Type of Food
SPECIES OF TREE	Species of tree where bird was observed	Common of Scientific Name
STRATUM OF VEGETATION	When there is herbaceous (H), medium (M) or high (L); of the stratum of vegetation	H, M, L
SUBSTRATUM	Where the food was obtained (flower, trunk, branch, ground, air, twig, etc.)	Type of Substratum
ALTITUDE OF THE SITING	Altitude of the siting of the bird: estimated Altitude of the observed bird	Meters
AUDIO/VISUAL	Type of registration: when the bird was seen or heard	A/V
OBSERVATIONS	Any additional data observed during the 10-min. Observations: of, for example, a mammal that was seen, any unusual or rare phenomenon, some strange behavior of the bird	Description

Appendix 3. A.
Form for recording vegetation data at Bird-Monitoring sites

		CLASIFICACIÓN GENERAL DEL HÁBITAT EN PUNTOS DE CONTEO							
Fecha de la toma de datos	Localidad	Monitor	Transecto	# Punto	Coordenadas X	Coordenadas Y	msnm	Tipo de hábitat dentro del radio (a los lados del punto)	Tipo de hábitat fuera del radio de 25 Metros

Assessing Bird Species Richness within Shade-Grown Coffee Farms in
Chiapas, Mexico / ID: 0251711

FOOD GROUPS OF THE BIRDS REGISTERED BY THE COMMUNITY MONITORS IN AGRO-FORESTRY SYSTEMS

<i>Scientific Name (AOU 2010)</i>	English Name	Spanish Name	NOM-059-2010	Distribution	CITES	Red List UICN 2009	ABUNDANCE	Nutrition Habits/Gremios
<i>Ortalis vetula</i>	Plain Chachalaca	Chachalaca vetula					23	Fruits, small invertebrates , vegetable material
<i>Penelopina nigra</i>	Highland Guan	Pajuil	A	Non-endemic		VU	15	Fruits, small invertebrates , vegetable material
<i>Crax rubra</i>	Great Curassow	Hocofaisán	A	Non-endemic		VU	1	Fruits, small invertebrates , vegetable material
<i>Dactylortyx thoracicus</i>	Singing Quail	Codorniz silbadora	Pr	Non-endemic			7	Seeds, blackberries, small invertebrates , small amphibians and reptiles
<i>Mycteria americana</i>	Wood Stork	Cigüeña americana	Pr	Non-endemic			1	Fish, amphibians,

Assessing Bird Species Richness within Shade-Grown Coffee Farms in
Chiapas, Mexico / ID: 0251711

								reptiles, snakes, small mammals and birds
<i>Coragyps atratus</i>	Black Vulture	Zopilote común					117	Carrion
<i>Cathartes aura</i>	Turkey Vulture	Zopilote aura					88	Carrion
<i>Sarcoramphus papa</i>	King Vulture	Zopilote rey	P	Non-endemic			2	Carrion
<i>Circus cyaneus</i>	Northern Harrier	Gavilán rastrero			II		1	Mammals, reptiles, birds, insects, snails
<i>Accipiter striatus</i>	Sharp-shinned Hawk	Gavilán pecho-rufo	Pr	Non-endemic	II		1	Mammals, reptiles, birds, insects, snails
<i>Accipiter cooperii</i>	Cooper's Hawk	Gavilán de Cooper	Pr	Non-endemic	II		1	Mammals, reptiles, birds, insects, snails
<i>Buteogallus anthracinus</i>	Common Black-Hawk	Aguililla-negra menor	Pr	Non-endemic	II		2	Mammals, reptiles, birds, insects, snails
<i>Buteo platypterus</i>	Broad-winged Hawk	Aguililla ala-ancha	Pr	Non-endemic	II		2	Mammals, reptiles, birds, insects, snails
<i>Buteo nitidus</i>	Gray Hawk	Aguililla gris			II		15	Mammals, reptiles, birds,

Assessing Bird Species Richness within Shade-Grown Coffee Farms in
Chiapas, Mexico / ID: 0251711

								insects, snails
<i>Buteo brachyurus</i>	Short-tailed Hawk	Aguililla cola-corta			II		1	Mammals, reptiles, birds, insects, snails
<i>Buteo jamaicensis</i>	Red-tailed Hawk	Aguililla cola-roja			II		11	Mammals, reptiles, birds, insects, snails
<i>Spizaetus tyrannus</i>	Black Hawk-Eagle	Águila tirana	P	Non-endemic	II		7	Mammals, reptiles, birds, insects, snails
<i>Spizaetus ornatus</i>	Ornate Hawk-Eagle	Águila elegante	P	Non-endemic	II		1	Mammals, reptiles, birds, insects, snails
<i>Herpetotheres cachinnans</i>	Laughing Falcon	Halcón guaco			II		6	Mammals, reptiles, birds, insects, snails
<i>Patagioenas flavirostris</i>	Red-billed Pigeon	Paloma morada					38	Fruits, seeds, flowers, tender leaves and invertebrates
<i>Patagioenas fasciata</i>	Band-tailed Pigeon	Paloma de collar					22	Fruits, seeds, flowers, tender leaves and invertebrates

Assessing Bird Species Richness within Shade-Grown Coffee Farms in
Chiapas, Mexico / ID: 0251711

<i>Zenaida asiática</i>	White-winged Dove	Paloma ala-blanca					35	Fruits, seeds, flowers, tender leaves and invertebrates
<i>Columbina inca</i>	Inca Dove	Tórtola colalarga					54	Fruits, seeds, flowers, tender leaves and invertebrates
<i>Columbina passerina</i>	Common Ground-Dove	Tórtola coquita					1	Fruits, seeds, flowers, tender leaves and invertebrates
<i>Columbina talpacoti</i>	Ruddy Ground-Dove	Tórtola rojiza					4	Fruits, seeds, flowers, tender leaves and invertebrates
<i>Leptotila verreauxi</i>	White-tipped Dove	Paloma arroyera					54	Fruits, seeds, flowers, tender leaves and invertebrates
<i>Geotrygon albigacies</i>	White-faced Quail-Dove	Paloma-perdiz carablanca	A	Non-endemic			4	Fruits, seeds, flowers, tender leaves and invertebrates
<i>Aratinga holochlora</i>	Green Parakeet	Perico mexicano	A	Non-endemic	**		93	Seeds and fruits
<i>Pionus senilis</i>	White-crowned Parrot	Loro corona-blanca	A	Non-endemic	II		239	Seeds and fruits
<i>Piaya cayana</i>	Squirrel Cuckoo	Cuclillo canela					58	Insects, reptiles, fruits, small mammals,

Assessing Bird Species Richness within Shade-Grown Coffee Farms in
Chiapas, Mexico / ID: 0251711

								eggs and chicks of other birds
<i>Geococcyx velox</i>	Lesser Roadrunner	Correcaminos tropical					1	Insects, reptiles, fruits, small mammals, eggs and chicks of other birds
<i>Crotophaga sulcirostris</i>	Groove-billed Ani	Garrapatero común					12	Insects, reptiles, fruits, small mammals, eggs and chicks of other birds
<i>Glaucidium brasilianum</i>	Ferruginous Pygmy-Owl	Tecolote bajoño			II		3	Mammals, birds, insectos, reptiles
<i>Strix fulvescens</i>	Fulvous Owl	Búho leonado	A	Non-endemic	II		1	Mammals, birds, insects, reptiles
<i>Panyptila cayennensis</i>	Lesser Swallow-tailed Swift	Vencejo-tijereta menor	Pr	Non-endemic			1	Insects and invertebrates
<i>Campylopterus rufus</i>	Rufous Sabrewing	Fandanguero rojizo	Pr	Non-endemic	II		23	Nectar and insects
<i>Campylopterus hemileucurus</i>	Violet Sabrewing	Fandanguero morado			II		12	Nectar and insects
<i>Abeillia abeillei</i>	Emerald-chinned Hummingbird	Colibrí pico corto	Pr	Non-endemic	II		10	Nectar and insects
<i>Chlorostilbon canivetii</i>	Canivet's Emerald	Esmeralda de Canivet			II		1	Nectar and insects

Assessing Bird Species Richness within Shade-Grown Coffee Farms in
Chiapas, Mexico / ID: 0251711

<i>Amazilia cyanocephala</i>	Azure-crowned Hummingbird	Colibrí corona azul			II		11	Nectar and insects
<i>Amazilia beryllina</i>	Berylline Hummingbird	Colibrí berilo			II		37	Nectar and insects
<i>Lampornis viridipallens</i>	Green-throated Mountain-gem	Colibrí garganta verde	Pr	Non-endemic	II		8	Nectar and insects
<i>Eugenes fulgens</i>	Magnificent Hummingbird	Colibrí magnífico			II		2	Nectar and insects
<i>Heliomaster longirostris</i>	Long-billed Starthroat	Colibrí picolargo	Pr	Non-endemic	II		1	Nectar and insects
<i>Archilochus colubris</i>	Ruby-throated Hummingbird	Colibrí garganta rubí			II		6	Nectar and insects
<i>Atthis ellioti</i>	Wine-throated Hummingbird	Zumbador magenta	A	Non-endemic	II		1	Nectar and insects
<i>Trogon violaceus</i>	Violaceous Trogon	Trogón violacep					49	Fruits and insects
<i>Trogon collaris</i>	Collared Trogon	Trogón de collar	Pr	Non-endemic			19	Fruits and insects
<i>Aspatha gularis</i>	Blue-throated Motmot	Momoto garganta azul	A	Non-endemic			1	Invertebrates, small vertebrates and fruits
<i>Momotus momota</i>	Blue-crowned Motmot	Comoto corona azul					123	Invertebrates, small vertebrates and fruits
<i>Megaceryle torquata</i>	Ringed Kingfisher	Martín-pescador de collar					1	Fish, invertebrates and small reptiles
<i>Chloroceryle americana</i>	Green Kingfisher	Martín-pescador verde					1	Fish, invertebrates and small reptiles
<i>Aulacorhynchus prasinus</i>	Emerald Toucanet	Tucaneta verde	Pr	Non-endemic			46	Fruits, invertebrates and small vertebrates

Assessing Bird Species Richness within Shade-Grown Coffee Farms in
Chiapas, Mexico / ID: 0251711

<i>Pteroglossus torquatus</i>	Collared Aracari	Arasari de collar	Pr	Non-endemic			9	Fruits, invertebrates and small vertebrates
<i>Melanerpes formicivorus</i>	Acorn Woodpecker	Carpintero bellotero					1	Insects, larvae of insects and fruits
<i>Melanerpes aurifrons</i>	Golden-fronted Woodpecker	Carpintero cheje					9	Insects, larvae of insects and fruits
<i>Picoides villosus</i>	Hairy Woodpecker	Carpintero velloso mayor					1	Insects, larvae of insects and fruits
<i>Veniliornis fumigatus</i>	Smoky-brown Woodpecker	Carpintero café					13	Insects, larvae of insects and fruits
<i>Colaptes rubiginosus</i>	Golden-olive Woodpecker	Carpintero oliváceo					39	Insects, larvae of insects and fruits
<i>Dryocopus lineatus</i>	Lineated Woodpecker	Carpintero lineado					18	Insects, larvae of insects and fruits
<i>Campephilus guatemalensis</i>	Pale-billed Woodpecker	Carpintero pico plata	Pr	Non-endemic			2	Insects, larvae of insects and fruits
<i>Sclerurus mexicanus</i>	Tawny-throated Leaf-tosser	Hojarasquero pecho rufo	Pr	Non-endemic			1	Insects
<i>Anabacerthia variegaticeps</i>	Scaly-throated Foliage-gleaner	Breñero cejudo					1	Insects
<i>Automolus ochrolaemus</i>	Buff-throated Foliage-gleaner	Breñero garganta pálida	Pr	Non-endemic			3	Insects

Assessing Bird Species Richness within Shade-Grown Coffee Farms in
Chiapas, Mexico / ID: 0251711

<i>Automolus rubiginosus</i>	Ruddy Foliage-gleaner	Breñero rojizo	A	Non-endemic			14	Insects
<i>Dendrocicla anabatina</i>	Tawny-winged Woodcreeper	Trepatroncos sepia	Pr	Non-endemic			8	Invertebrates
<i>Dendrocicla homochroa</i>	Ruddy Woodcreeper	Trepatroncos rojizo					6	Invertebrates
<i>Sittasomus griseicapillus</i>	Olivaceous Woodcreeper	Trepatroncos oliváceo					14	Invertebrates
<i>Dendrocolaptes picumnus</i>	Black-banded Woodcreeper	Trepatroncos vientre barrado	A	Non-endemic			1	Invertebrates
<i>Xiphorhynchus flavigaster</i>	Ivory-billed Woodcreeper	Trepatroncos bigotudo					16	Invertebrates
<i>Lepidocolaptes affinis</i>	Spot-crowned Woodcreeper	Trepatroncos corona punteada					1	Invertebrates
<i>Thamnophilus doliatus</i>	Barred Antshrike	Batará barrado					27	Insects and other artrópodos
<i>Camptostoma imberbe</i>	Northern Beardless-Tyrannulet	mosquero lampiño					1	Insects and fruits
<i>Tolmomyias sulphurescens</i>	Yellow-olive Flycatcher	mosquero ojos blancos					33	Insects and fruits
<i>Contopus pertinax</i>	Greater Pewee	pibí tengo frío					6	Insects and fruits
<i>Contopus sordidulus</i>	Western Wood-Pewee	pibí occidental					2	Insects and fruits
<i>Contopus virens</i>	Eastern Wood-Pewee	pibí oriental					9	Insects and fruits
<i>Empidonax flaviventris</i>	Yellow-bellied Flycatcher	mosquero vientre amarillo					2	Insects and fruits
<i>Empidonax virescens</i>	Acadian Flycatcher	mosquero verdoso					3	Insects and fruits
<i>Empidonax minimus</i>	Least Flycatcher	mosquero mínimo					1	Insects and fruits
<i>Empidonax hammondi</i>	Hammond's Flycatcher	mosquero de Hammond					1	Insects and fruits

Assessing Bird Species Richness within Shade-Grown Coffee Farms in
Chiapas, Mexico / ID: 0251711

<i>Empidonax flavescens</i>	Yellowish Flycatcher	mosquero amarillento					1	Insects and fruits
<i>Sayornis nigricans</i>	Black Phoebe	papamoscas negro					1	Insects and fruits
<i>Sayornis phoebe</i>	Eastern Phoebe	papamoscas fibí					2	Insects and fruits
<i>Pyrocephalus rubinus</i>	Vermilion Flycatcher	mosquero cardenal					1	Insects and fruits
<i>Myiarchus tuberculifer</i>	Dusky-capped Flycatcher	papamoscas triste					74	Insects and fruits
<i>Pitangus sulphuratus</i>	Great Kiskadee	luis bienteveo					5	Insects and fruits
<i>Megarynchus pitangua</i>	Boat-billed Flycatcher	luis pico grueso					57	Insects and fruits
<i>Myiozetetes similis</i>	Social Flycatcher	luis gregario					60	Insects and fruits
<i>Myiodynastes luteiventris</i>	Sulphur-bellied Flycatcher	papamoscas atigrado					1	Insects and fruits
<i>Tyrannus melancholicus</i>	Tropical Kingbird	tirano tropical					1	Insects and fruits
<i>Pachyramphus major</i>	Gray-collared Becard	mosquero-cabezón mexicano					5	Insects and fruits
<i>Tityra semifasciata</i>	Masked Tityra	titira enmascarada					84	Insects and fruits
<i>Chiroxiphia linearis</i>	Long-tailed Manakin	manaquín cola larga	Pr	Non-endemic			10	Fruits and insects
<i>Vireo flavifrons</i>	Yellow-throated Vireo	vireo garganta amarilla					1	Insects and fruits
<i>Vireo plumbeus</i>	Plumbeous Vireo	vireo plumizo					1	Insects and fruits
<i>Vireo solitarius</i>	Blue-headed Vireo	vireo cabeza azul					6	Insects and fruits
<i>Vireo gilvus</i>	Warbling Vireo	vireo gorgeador					1	Insects and fruits
<i>Vireolanius pulchellus</i>	Green Shrike-Vireo	vireón esmeralda					3	Insects and fruits

Assessing Bird Species Richness within Shade-Grown Coffee Farms in
Chiapas, Mexico / ID: 0251711

<i>Cyclarhis gujanensis</i>	Rufous-browed Peppershrike	vireón ceja rufa					57	Insects and fruits
<i>Cyanocorax yncas</i>	Green Jay	chara verde					212	Insects, fruits, seeds, chicks of other birds, reptiles, amphibians and carrion
<i>Cyanocorax morio</i>	Brown Jay	chara papán					1	Insects, fruits, seeds, chicks of other birds, reptiles, amphibians and carrion
<i>Thryothorus maculipectus</i>	Spot-breasted Wren	chivirín moteado					69	Insects
<i>Thryothorus modestus</i>	Plain Wren	chivirín modesto					35	Insects
<i>Troglodytes aedon</i>	House Wren	chivirín saltapared					105	Insects
<i>Troglodytes rufociliatus</i>	Rufous-browed Wren	chivirín ceja rufa					12	Insects
<i>Henicorhina leucophrys</i>	Gray-breasted Wood-Wren	chivirín pecho gris					8	Insects
<i>Polioptila caerulea</i>	Blue-gray Gnatcatcher	perlita azul-gris					4	Insects
<i>Myadestes occidentalis</i>	Brown-backed Solitaire	clarín jilguero	Pr	Non-endemic			74	Insects and fruits
<i>Catharus aurantiirostris</i>	Orange-billed Nightingale-Thrush	zorzal pico anaranjado					71	Insects and fruits
<i>Catharus frantzii</i>	Ruddy-capped Nightingale-Thrush	zorzal de Frantzius	A	Non-endemic			1	Insects and fruits
<i>Catharus minimus</i>	Gray-cheeked Thrush	zorzal cara gris					1	Insects and fruits

Assessing Bird Species Richness within Shade-Grown Coffee Farms in
Chiapas, Mexico / ID: 0251711

<i>Catharus ustulatus</i>	Swainson's Thrush	zorzal de Swainson					1	Insects and fruits
<i>Turdus infuscatus</i>	Black Thrush	mirlo negro	A	Non-endemic			2	Insects and fruits
<i>Turdus plebejus</i>	Mountain Thrush	mirlo plebeyo	Pr	Non-endemic			26	Insects and fruits
<i>Turdus grayi</i>	Clay-colored Thrush	mirlo pardo					77	Insects and fruits
<i>Turdus assimilis</i>	White-throated Thrush	mirlo garganta blanca					26	Insects and fruits
<i>Melanotis hypoleucus</i>	Blue-and-white Mockingbird	mulato pecho blanco					8	Insects and fruits
<i>Vermivora peregrina</i>	Tennessee Warbler	chipe peregrino					10	Insects, fruits and nectar
<i>Vermivora ruficapilla</i>	Nashville Warbler	chipe de coronilla					4	Insects, fruits and nectar
<i>Parula superciliosa</i>	Crescent-chested Warbler	parula ceja blanca					2	Insects, fruits and nectar
<i>Dendroica magnolia</i>	Magnolia Warbler	chipe de magnolia					2	Insects and fruits
<i>Dendroica chrysoparia</i>	Golden-cheeked Warbler	chipe mejilla dorada	A	Non-endemic		EN	1	Insects and fruits
<i>Dendroica virens</i>	Black-throated Green Warbler	chipe dorso verde					18	Insects and fruits
<i>Dendroica fusca</i>	Blackburnian Warbler	chipe garganta naranja					1	Insects and fruits
<i>Dendroica dominica</i>	Yellow-throated Warbler	chipe garganta-amarilla					6	Insects and fruits
<i>Mniotilta varia</i>	Black-and-white Warbler	chipe trepador					14	Insects and fruits
<i>Oporornis philadelphia</i>	Mourning Warbler	chipe enlutado					6	Insects and fruits
<i>Oporornis tolmiei</i>	MacGillivray's Warbler	chipe de Tolmie	A	Non-endemic			2	Insects and fruits
<i>Geothlypis trichas</i>	Common Yellowthroat	mascarita común					1	Insects and fruits
<i>Wilsonia pusilla</i>	Wilson's Warbler	chipe corona negra					29	Insects and fruits

Assessing Bird Species Richness within Shade-Grown Coffee Farms in
Chiapas, Mexico / ID: 0251711

<i>Myioborus pictus</i>	Painted Redstart	chipe ala blanca					2	Insects and fruits
<i>Myioborus miniatus</i>	Slate-throated Redstart	chipe de montaña					14	Insects and fruits
<i>Euthlypis lachrymosa</i>	Fan-tailed Warbler	chipe roquero					1	Insects and fruits
<i>Basileuterus culicivorus</i>	Golden-crowned Warbler	chipe corona dorada					21	Insects and fruits
<i>Basileuterus rufifrons</i>	Rufous-capped Warbler	chipe gorra rufa					54	Insects and fruits
<i>Chlorospingus ophthalmicus</i>	Common Bush-Tanager	chinchinero común					14	Fruits, seeds and insects
<i>Thraupis episcopus</i>	Blue-gray Tanager	tángara azul-gris					2	Fruits, seeds and insects
<i>Thraupis abbas</i>	Yellow-winged Tanager	tángara alamarilla					116	Fruits, seeds and insects
<i>Tangara cabanisi</i>	Azure-rumped Tanager	tángara chiapaneca	P	Non-endemic		EN	14	Fruits, seeds and insects
<i>Cyanerpes cyaneus</i>	Red-legged Honeycreeper	mielero pata-roja					81	Nectar, fruits, seeds and insects
<i>Saltator atriceps</i>	Black-headed Saltator	picuero cabeza negra					149	Seeds and fruits
<i>Volatinia jacarina</i>	Blue-black Grassquit	semillero brincador					16	Seeds and insects
<i>Sporophila torqueola</i>	White-collared Seedeater	semillero de collar					4	Seeds and insects
<i>Sporophila minuta</i>	Ruddy-breasted Seedeater	semillero pecho canela					1	Seeds and insects
<i>Diglossa baritula</i>	Cinnamon-bellied Flowerpiercer	picaflor canelo					3	Nectar and insects
<i>Atlapetes albinucha</i>	White-naped Brush-Finch	atlapetes nuca blanca					1	Seeds and insects
<i>Arremon brunneinucha</i>	Chestnut-capped Brush-Finch	atlapetes gorra castaña					10	Seeds and insects

Assessing Bird Species Richness within Shade-Grown Coffee Farms in
Chiapas, Mexico / ID: 0251711

<i>Melozone biarcuata</i>	Prevost's Ground-Sparrow	rascador patilludo	Pr	Non-endemic			2	Seeds and insects
<i>Melozone leucotis</i>	White-eared Ground-Sparrow	rascador orejas blancas	Pr	Non-endemic			66	Seeds and insects
<i>Aimophila rufescens</i>	Rusty Sparrow	zacatonero rojizo					44	Seeds and insects
<i>Zonotrichia capensis</i>	Rufous-collared Sparrow	gorrión chingolo					4	Seeds and insects
<i>Piranga flava</i>	Hepatic Tanager	tángara encinera					8	Fruits, seeds and insects
<i>Piranga olivacea</i>	Scarlet Tanager	tángara escarlata					1	Fruits, seeds and insects
<i>Piranga ludoviciana</i>	Western Tanager	tángara capucha roja					3	Fruits, seeds and insects
<i>Piranga bidentata</i>	Flame-colored Tanager	tángara dorso rayado					40	Fruits, seeds and insects
<i>Piranga leucoptera</i>	White-winged Tanager	tángara ala blanca					98	Fruits, seeds and insects
<i>Habia rubica</i>	Red-crowned Ant-Tanager	tángara-hormiguero corona roja					8	Fruits, seeds and insects
<i>Pheucticus chrysopheplus</i>	Yellow Grosbeak	picogordo amarillo					2	Seeds and fruits
<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak	picogordo pecho rosa					3	Seeds and fruits
<i>Passerina caerulea</i>	Blue Grosbeak	picogordo azul					6	Seeds and fruits
<i>Dives dives</i>	Melodious Blackbird	tordo cantor					90	Grains and insects
<i>Quiscalus mexicanus</i>	Great-tailed Grackle	zanate mexicano					3	Grains and insects
<i>Molothrus aeneus</i>	Bronzed Cowbird	tordo ojo rojo					3	Grains and insects
<i>Icterus wagleri</i>	Black-vented Oriole	bolsero de Wagler					1	Fruits and nectar
<i>Icterus cucullatus</i>	Hooded Oriole	bolsero encapuchado					2	Fruits and nectar

Assessing Bird Species Richness within Shade-Grown Coffee Farms in
Chiapas, Mexico / ID: 0251711

<i>Icterus chrysater</i>	Yellow-backed Oriole	bolsero dorso dorado					53	Fruits and nectar
<i>Icterus pectoralis</i>	Spot-breasted Oriole	bolsero pecho manchado					1	Fruits and nectar
<i>Icterus gularis</i>	Altamira Oriole	bolsero de Altamira					1	Fruits and nectar
<i>Euphonia affinis</i>	Scrub Euphonia	eufonia garganta negra					40	Seeds, insects and fruits
<i>Euphonia elegantissima</i>	Elegant Euphonia	eufonia capucha-azul					30	Seeds, insects and fruits
<i>Chlorophonia occipitalis</i>	Blue-crowned Chlorophonia	clorofonia corona-azul					7	Seeds, insects and fruits
<i>Spinus notatus</i>	Black-headed Siskin	jilguero encapuchado					20	Seeds, insects and fruits

Cuadro: Riqueza florística y tipos de vegetación de las zonas registradas en la subcuenca del Río Cuxtepec.

Zona	Tipos de vegetación	Familias	Géneros	Especies	% con respecto al total de spp.
Baja	BTSC, Cafetales	30	52	56	17.9
Media	BTSC, BQ, BCQ, Cafetales	60	132	170	54.5
Alta	BTP, BMM, Cafetales	52	106	142	45.5

* Abreviaturas

HABITAT: **BTSC:** Bosque Tropical Subcaducifolio; **BMM:** Bosque Mesófilo de Montaña; **BTP:** Bosque Tropical Perennifolio; **BCQ:** Bosque de Coníferas y *Quercus*; **BQ:** Bosque de *Quercus*.

Cuadro: Número de familias, géneros y especies que contiene cada tipo de vegetación registrada para la subcuenca del Río Cuxtepec.

Comunidad vegetal	Familias	Géneros	Especies
Bosque Tropical Subcaducifolio	39	78	93
Bosque Mesófilo de Montaña	26	50	64
Bosque Tropical Perennifolio	35	55	62
Bosque de <i>Quercus</i>	24	49	56
Cafetal con sombra	22	38	53
Bosque de Coníferas y <i>Quercus</i>	18	22	29

Bosque Tropical Subcaducifolio

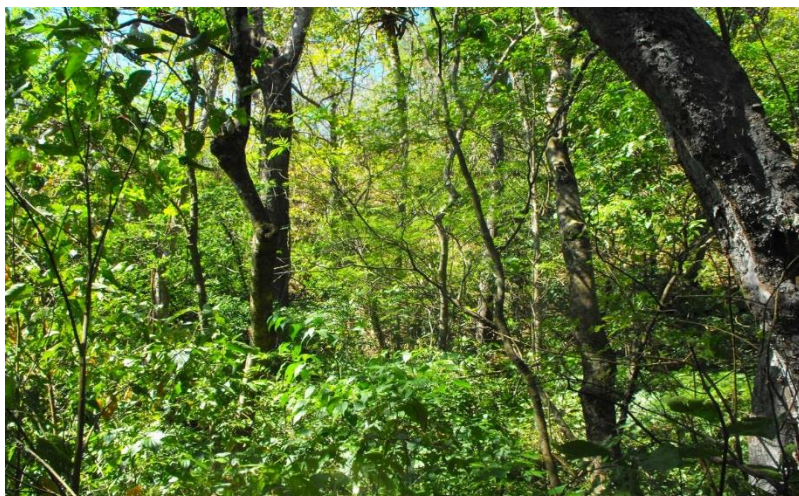


Figura 2. Vista del Bosque tropical subcaducifolio registrado en las zonas bajas de la subcuenca del río Custepec, La Concordia, Chiapas.



Figura 3. Vista del Bosque tropical subcaducifolio en la comunidad Berlín, ubicado en la zona media de la subcuenca del río Custepec, La Concordia, Chiapas.

Bosque de Quercus



Figura 4. Vista del Bosque de Quercus cercano al puente cabañas, en la zona media de la subcuenca del río Custepec, La Concordia, Chiapas.

Bosque de Coníferas y Quercus



Figura 5. Vista del Bosque de Coníferas y Quercus en el paraje la Cumbre, ubicado en la zona media de la subcuenca del río Custepec, La Concordia, Chiapas.

Bosque Tropical Perennifolio



Figura 6. Vista del Bosque tropical perennifolio en la comunidad San Francisco, ubicado en la zona alta de la subcuenca del río Custepec, La Concordia, Chiapas.

Bosque Mesófilo de Montaña



Figura 7. Vista del Bosque tropical subcaducifolio en la comunidad Berlín, ubicado en la zona media de la subcuenca del río Custepec, La Concordia, Chiapas.

Cafetales con sombra



Figura 8. Vista de lo Cafetales con sombra en la comunidad Las Violetas, ubicado en la zona baja de la subcuenca del río Custepec, La Concordia, Chiapas.



Figura 9. Vista de lo Cafetales con Sombra en la comunidad Berlín, ubicado en la zona media de la subcuenca del rio Custepec, La Concordia, Chiapas.



Figura 10. Vista de los Cafetales con Sombra en la comunidad San Francisco, ubicado en la zona alta de la subcuenca del rio Custepec, La Concordia, Chiapas.

**Floristic list of bird monitoring sites in the basin of the river Custepec La Concordia,
Chiapas.**

Familia	Especie	NOM-059 (2010)	CITES (2010)	IUCN (2012)	Hábitat
Acanthaceae	<i>Aphelandra scabra</i>				CFT
Acanthaceae	<i>Barleria oenotheroides</i>				BTSC
Acanthaceae	<i>Acanthocarpus nigricans</i>				CFT
Actinidaceae	<i>Saurauia kegeliana</i>			VU	BMM
Actinidaceae	<i>Saurauia scabrída</i>			NT	BMM, CFT
Adiantaceae	<i>Adiantum</i> sp.				BTSC
Agavaceae	<i>Furcraea guatemalensis</i>				BQ
Agavaceae	<i>Yucca elephantipes</i>				BTP
Amaranthaceae	<i>Alternanthera microcephala</i>				BCQ
Anacardiaceae	<i>Mangifera indica</i>				CFT
Anacardiaceae	<i>Mosquitoxylum jamaicense</i>				BTP
Anacardiaceae	<i>Spondias mombin</i>				CFT
Anacardiaceae	<i>Tapirira mexicana</i>			VU	BTP, CFT
Apocynaceae	<i>Stemmadenia donnell-smithii</i>				BTSC
Apocynaceae	<i>Stemmadenia mollis</i>				CFT
Apocynaceae	<i>Stemmadenia obovata</i>				CFT
Aquifoliaceae	<i>Ilex beliziensis</i>				BMM
Araceae	<i>Anthurium andicola</i>				BMM
Araceae	<i>Anthurium chiapasense</i>				BCQ, BTP, BMM
Araceae	<i>Anthurium scandens</i>				BTP
Araceae	<i>Monstera acuminata</i>				CFT
Araceae	<i>Monstera deliciosa</i>				BTP
Araceae	<i>Monstera siltepecana</i>				BTP
Araceae	<i>Philodendron tripartitum</i>				BTSC
Araceae	<i>Spathiphyllum matudae</i>				BTSC
Araceae	<i>Syngonium podophyllum</i>				BTP, BTSC
Araceae	<i>Xanthosoma hoffmannii</i>				BTP
Araceae	<i>Xanthosoma robusta</i>				BTP, BTSC
Araliaceae	<i>Aralia humilis</i>				BMM
Araliaceae	<i>Dendropanax arboreus</i>			LC	BTP, BTSC, CFT
Araliaceae	<i>Oreopanax arcanus</i>			CR	BQ
Araliaceae	<i>Oreopanax peltatus</i>			NT	BTP
Araliaceae	<i>Oreopanax sanderianus</i>			EN	BMM
Arecaceae	<i>Acrocomia aculeata</i>				BTSC, CFT
Arecaceae	<i>Chamaedorea nubium</i>	A			BMM
Arecaceae	<i>Chamaedorea pinnatifrons</i>	A			BTP
Arecaceae	<i>Chamaedorea quezalteca</i>	A			BTP
Arecaceae	<i>Chamaedorea tepejilote</i>				BTP, BTSC, CFT
Arecaceae	<i>Geonoma membranacea</i>	A			BTP

Assessing Bird Species Richness within Shade-Grown Coffee Farms in
Chiapas, Mexico / ID: 0251711

Asclepiadaceae	<i>Gonolobus</i> sp.				BQ
Asteraceae	<i>Ageratum houstonianum</i>				BQ
Asteraceae	<i>Baccharis conferta</i>				BQ
Asteraceae	<i>Bidens aurea</i>				BQ
Asteraceae	<i>Bidens chiapensis</i>				BCQ
Asteraceae	<i>Cirsium mexicanum</i>				BQ
Asteraceae	<i>Cosmos sulphureus</i>				BQ
Asteraceae	<i>Eupatorium</i> sp.				BQ
Asteraceae	<i>Montanoa frutescens</i>				BQ
Asteraceae	<i>Onoseris stoloniferus</i>				BQ
Asteraceae	<i>Senecio cobanensis</i>				BTSC, CFT
Asteraceae	<i>Senecio</i> sp.				BQ
Asteraceae	<i>Tithonia diversifolia</i>				BQ
Asteraceae	<i>Tithonia tubeaformis</i>				BQ
Asteraceae	<i>Verbesina mexicana</i>				BTSC
Asteraceae	<i>Verbesina</i> sp.				CFT
Balanophoraceae	<i>Helosis mexicana</i>				BTP
Begoniaceae	<i>Begonia chiapensis</i>				BMM
Begoniaceae	<i>Begonia heracleifolia</i>				BQ, BTP
Begoniaceae	<i>Begonia nelumbifolia</i>				BTP
Begoniaceae	<i>Begonia sartorii</i>				BTP
Betulaceae	<i>Carpinus caroliniana</i>	A		NT	BCQ
Betulaceae	<i>Ostrya virginiana</i>	Pr		NT	BQ
Bignoniaceae	<i>Amphitecna apiculata</i>				BTSC
Bignoniaceae	<i>Amphitecna montana</i>			EN	BTP
Bignoniaceae	<i>Tabebuia chrysantha</i>	A			BTSC
Bignoniaceae	<i>Tabebuia rosea</i>				BTSC, CFT
Bixaceae	<i>Bixa orellana</i>				CFT
Blechnaceae	<i>Blechnum polypodioides</i>				BTP
Boraginaceae	<i>Cordia alliodora</i>				BTSC
Boraginaceae	<i>Cordia eleagnoides</i>				BTSC, CFT
Boraginaceae	<i>Ehretia tinifolia</i>				BTSC
Bromeliaceae	<i>Catopsis nutans</i>				BTP, CFT
Bromeliaceae	<i>Pitcairnia heterophylla</i>				CFT
Bromeliaceae	<i>Tillandsia butzii</i>				BMM, BCQ
Bromeliaceae	<i>Tillandsia caput-medusae</i>				BCQ
Bromeliaceae	<i>Tillandsia flabellata</i>				BTP, CFT
Bromeliaceae	<i>Tillandsia guatemalensis</i>				BMM
Bromeliaceae	<i>Tillandsia seleriana</i>	A			BCQ
Bromeliaceae	<i>Werauhia werckleana</i>				BMM
Burseraceae	<i>Bursera bipinnata</i>				BTSC, BQ, CFT
Burseraceae	<i>Bursera simaruba</i>				BTSC, CFT
Cactaceae	<i>Heliocereus elegantissimus</i>		Apéndice II		BMM

Assessing Bird Species Richness within Shade-Grown Coffee Farms in
Chiapas, Mexico / ID: 0251711

Caprifoliaceae	<i>Sambucus mexicana</i>				CFT
Cecropiaceae	<i>Cecropia obtusifolia</i>				BTSC, CFT
Clethraceae	<i>Clethra macrophylla</i>			LC	BCQ
Clethraceae	<i>Clethra matudae</i>				BMM
Clusiaceae	<i>Calophyllum brasiliense</i>	A			CFT
Clusiaceae	<i>Clusia guatemalensis</i>			EN	BMM
Clusiaceae	<i>Garcinia intermedia</i>			LC	BTSC
Cochlospermaceae	<i>Cochlospermum vitifolium</i>				BTSC
Commelinaceae	<i>Commelina diffusa</i>				BTP
Commelinaceae	<i>Tradescantia zanoniana</i>				BTP, BTSC
Convolvulaceae	<i>Ipomoea purpurea</i>				BTSC
Cornaceae	<i>Cornus disciflora</i>			VU	CFT
Costaceae	<i>Costus pictus</i>				BTSC
Costaceae	<i>Costus ruber</i>				BTSC
Cyatheaceae	<i>Cyathea fulva</i>	Pr	Apéndice II		BTP
Cyatheaceae	<i>Nephelea mexicana</i>	P			BMM
Dioscoreaceae	<i>Dioscorea bartlettii</i>				BTP
Dryopteridaceae	<i>Elaphoglossum peltatum</i>				BMM
Dryopteridaceae	<i>Tectaria mexicana</i>				BTP
Elaeocarpaceae	<i>Sloanea terniflora</i>	Pr			BTP
Ericaceae	<i>Arbutus xalapensis</i>			LC	CFT
Ericaceae	<i>Chimaphila maculata</i>				BQ
Ericaceae	<i>Leucothoe mexicana</i>			NT	CFT
Euphorbiaceae	<i>Acalypha leptopoda</i>				BTSC
Euphorbiaceae	<i>Alchornea latifolia</i>			LC	BTSC
Euphorbiaceae	<i>Cnidoscolus aconitifolius</i>				BTSC
Euphorbiaceae	<i>Croton draco</i>			LC	BTSC
Euphorbiaceae	<i>Croton guatemalensis</i>	Pr		LC	BTP, BTSC, CFT
Euphorbiaceae	<i>Croton sp.</i>				CFT
Euphorbiaceae	<i>Phyllanthus acuminatus</i>				BQ
Euphorbiaceae	<i>Ricinus communis</i>				CFT
Fabaceae	<i>Acacia cornigera</i>				BTSC
Fabaceae	<i>Calliandra houstoniana</i>				BQ
Fabaceae	<i>Cassia sp.</i>				BQ
Fabaceae	<i>Cojoba arborea</i>			NT	BTP
Fabaceae	<i>Diphysa robinoides</i>				BQ
Fabaceae	<i>Enterolobium cyclocarpum</i>				BTSC
Fabaceae	<i>Erythrina chiapasana</i>				BTP
Fabaceae	<i>Erythrina mexicana</i>				BQ, CFT
Fabaceae	<i>Eysenhardtia adenostylis</i>				BQ
Fabaceae	<i>Hymenaea courbaril</i>				CFT
Fabaceae	<i>Inga laurina</i>			LC	BTP, CFT
Fabaceae	<i>Inga micheliana</i>			NT	CFT

Assessing Bird Species Richness within Shade-Grown Coffee Farms in
Chiapas, Mexico / ID: 0251711

Fabaceae	<i>Inga oerstediana</i>			LC	BTP, CFT
Fabaceae	<i>Inga paterno</i>			LC	CFT
Fabaceae	<i>Inga punctata</i>			LC	BMM
Fabaceae	<i>Inga vera</i>			LC	CFT
Fabaceae	<i>Leucaena esculenta</i>				CFT
Fabaceae	<i>Leucaena leucocephala</i>				BTSC
Fabaceae	<i>Lonchocarpus cruentus</i>				BTSC
Fabaceae	<i>Lonchocarpus guatemalensis</i>				BTSC
Fabaceae	<i>Lonchocarpus</i> sp.				CFT
Fabaceae	<i>Lysiloma acapulcensis</i>				CFT
Fabaceae	<i>Pithecellobium arboreum</i>				BTP
Fabaceae	<i>Pterocarpus acapulcensis</i>				BTSC
Fagaceae	<i>Quercus acutifolia</i>				BCQ, BTP
Fagaceae	<i>Quercus elliptica</i>			VU	BCQ
Fagaceae	<i>Quercus laurina</i>			LC	BCQ
Fagaceae	<i>Quercus magnoliifolia</i>				BMM, BCQ, BQ
Fagaceae	<i>Quercus sapotifolia</i>			VU	BCQ, BQ
Fagaceae	<i>Quercus skinneri</i>			CR	BMM
Gesneriaceae	<i>Achimenes candida</i>				BTSC
Gesneriaceae	<i>Achimenes longiflora</i>				BTSC
Gesneriaceae	<i>Achimenes pedunculata</i>				BTP
Gesneriaceae	<i>Drymonia serrulata</i>				BMM
Haemodoraceae	<i>Xiphidium coeruleum</i>				BTP, BTSC
Heliconiaceae	<i>Heliconia adflexa</i>				BTSC
Heliconiaceae	<i>Heliconia latispatha</i>				BTSC, CFT
Heliconiaceae	<i>Heliconia schiedeana</i>				BTP
Hernandiaceae	<i>Gyrocarpus jatrophifolius</i>				CFT
Hydrophyllaceae	<i>Wigandia urens</i>				BQ
Lamiaceae	<i>Salvia Shannonii</i>				BQ
Lauraceae	<i>Beilschmiedia mexicana</i>			EN	CFT
Lauraceae	<i>Licaria excelsa</i>			VU	CFT
Lauraceae	<i>Licaria velutina</i>				BMM
Lauraceae	<i>Nectandra ambigens</i>				BTSC
Lauraceae	<i>Nectandra sinuata</i>			VU	CFT
Lauraceae	<i>Persea americana</i>			EN	CFT
Liliaceae	<i>Maianthemum flexuosum</i>				BTP
Liliaceae	<i>Maianthemum paniculatum</i>				BMM
Lycopodiaceae	<i>Huperzia cuernavacensis</i>				BMM
Malpighiaceae	<i>Byrsonima crassifolia</i>				BQ
Malvaceae	<i>Ceiba pentandra</i>				BTSC
Malvaceae	<i>Guazuma ulmifolia</i>				BTSC, CFT
Malvaceae	<i>Heliocarpus appendiculatus</i>			LC	BQ, BTSC, CFT
Malvaceae	<i>Heliocarpus donnell-smithii</i>			LC	BTSC, CFT

Assessing Bird Species Richness within Shade-Grown Coffee Farms in
Chiapas, Mexico / ID: 0251711

Malvaceae	<i>Heliocarpus reticulatus</i>				CFT
Malvaceae	<i>Hibiscus</i> sp.				BQ
Malvaceae	<i>Malvaviscus arboreus</i>				BCQ
Malvaceae	<i>Pseudobombax ellipticum</i>				BTSC
Malvaceae	<i>Trichospermum mexicanum</i>			LC	BTSC, BTP, CFT
Malvaceae	<i>Triumfetta semitriloba</i>				BQ
Maranthaceae	<i>Calathea coccinea</i>				BQ
Maranthaceae	<i>Calathea lutea</i>				BTP
Melastomaceae	<i>Conostegia plumosa</i>				BCQ
Melastomaceae	<i>Miconia albicans</i>				BCQ
Melastomataceae	<i>Miconia argentea</i>				BTSC
Meliaceae	<i>Cedrela odorata</i>	Pr	Apéndice III		BCQ
Meliaceae	<i>Cedrela tonduzii</i>				BCQ
Meliaceae	<i>Guarea glabra</i>			NT	BTSC, CFT
Meliaceae	<i>Swietenia humilis</i>		Apéndice II		BCQ
Meliaceae	<i>Trichilia havanensis</i>			LC	BTSC
Meliaceae	<i>Trichilia hirta</i>				BCQ
Meliaceae	<i>Trichilia</i> sp.				BCQ
Moraceae	<i>Brosimum alicastrum</i>				BTSC
Moraceae	<i>Ficus cookii</i>				BTP, BTSC
Moraceae	<i>Ficus cotinifolia</i>				BCQ
Moraceae	<i>Ficus insipida</i>				BTSC
Moraceae	<i>Pseudolmedia oxyphyllaria</i>			LC	BTSC
Musaceae	<i>Musa sapientum</i>				BCQ
Myrsinaceae	<i>Ardisia compressa</i>			LC	BTP, BTSC
Myrsinaceae	<i>Ardisia escallonioides</i>				BTSC
Myrsinaceae	<i>Parathesis chiapensis</i>			VU	BTP
Myrsinaceae	<i>Parathesis serrulata</i>				BQ
Myrtaceae	<i>Eugenia acapulcensis</i>			LC	BCQ
Myrtaceae	<i>Eugenia capuli</i>			LC	BTSC, CFT
Myrtaceae	<i>Psidium guajava</i>				BCQ
Orchidaceae	<i>Acianthera circumplexa</i>		Apéndice II		BMM
Orchidaceae	<i>Arpophyllum giganteum</i>		Apéndice II		BMM
Orchidaceae	<i>Beloglottis costaricensis</i>		Apéndice II		BTP
Orchidaceae	<i>Brassia verrucosa</i>		Apéndice II		BMM
Orchidaceae	<i>Catasetum integerrimum</i>		Apéndice II		BCQ
Orchidaceae	<i>Corymborkis forcipigera</i>		Apéndice II		BTP
Orchidaceae	<i>Cycnoches ventricosum</i>	A	Apéndice II		BTSC, CFT
Orchidaceae	<i>Dichaea glauca</i>		Apéndice II		BMM
Orchidaceae	<i>Dichaea muricatoides</i>		Apéndice II		BMM
Orchidaceae	<i>Dichaea neglecta</i>		Apéndice II		BMM
Orchidaceae	<i>Domingoa purpurea</i>		Apéndice II		BQ
Orchidaceae	<i>Encyclia cordigera</i>		Apéndice II		CFT

Assessing Bird Species Richness within Shade-Grown Coffee Farms in
Chiapas, Mexico / ID: 0251711

Orchidaceae	<i>Epidendrum melistagum</i>		Apéndice II		BMM
Orchidaceae	<i>Epidendrum parkinsonianum</i>		Apéndice II		BMM
Orchidaceae	<i>Epidendrum polyanthum</i>		Apéndice II		BTP
Orchidaceae	<i>Goodyera striata</i>		Apéndice II		BMM
Orchidaceae	<i>Govenia alba</i>		Apéndice II		BTP
Orchidaceae	<i>Isochilus carnosiflorus</i>		Apéndice II		BMM
Orchidaceae	<i>Maxillaria anceps</i>		Apéndice II		BMM
Orchidaceae	<i>Maxillaria cucullata</i>		Apéndice II		BMM
Orchidaceae	<i>Maxillaria hagsateriana</i>		Apéndice II		BMM
Orchidaceae	<i>Maxillaria sp.</i>		Apéndice II		BQ
Orchidaceae	<i>Maxillaria variabilis</i>		Apéndice II		BQ, BTP
Orchidaceae	<i>Mormodes nagelii</i>		Apéndice II		BMM
Orchidaceae	<i>Nemaconia striata</i>		Apéndice II		BQ
Orchidaceae	<i>Nidema boothii</i>		Apéndice II		BTP
Orchidaceae	<i>Notylia barkeri</i>		Apéndice II		BTP
Orchidaceae	<i>Oncidium sotoanum</i>		Apéndice II		BMM
Orchidaceae	<i>Oncidium sphacelatum</i>		Apéndice II		BQ
Orchidaceae	<i>Pleurothallis leucantha</i>		Apéndice II		BMM
Orchidaceae	<i>Pleurothallis matudana</i>		Apéndice II		BMM
Orchidaceae	<i>Prescottia stachyodes</i>		Apéndice II		BMM
Orchidaceae	<i>Prosthechea baculus</i>		Apéndice II		BQ
Orchidaceae	<i>Prosthechea cochleata</i>		Apéndice II		BTSC
Orchidaceae	<i>Prosthechea ochracea</i>		Apéndice II		BMM
Orchidaceae	<i>Prosthechea pygmaea</i>		Apéndice II		BMM
Orchidaceae	<i>Prosthechea radiata</i>		Apéndice II		BQ
Orchidaceae	<i>Restrepiella ophiocephala</i>		Apéndice II		BCQ
Orchidaceae	<i>Rhyncholaelia glauca</i>		Apéndice II		BQ
Orchidaceae	<i>Scaphyglottis fasciculata</i>		Apéndice II		BTSC
Orchidaceae	<i>Sobralia decora</i>		Apéndice II		BTSC, BCQ
Orchidaceae	<i>Sobralia macrantha</i>		Apéndice II		BMM
Orchidaceae	<i>Specklinia marginata</i>		Apéndice II		BTP, CFT
Orchidaceae	<i>Specklinia tribuloides</i>		Apéndice II		BTSC
Orchidaceae	<i>Stelis megalamys</i>		Apéndice II		BMM
Orchidaceae	<i>Stenorrhynchos speciosum</i>		Apéndice II		BMM
Orchidaceae	<i>Trichocentrum bicallosum</i>		Apéndice II		BMM
Orchidaceae	<i>Trichocentrum cosymbephorum</i>		Apéndice II		CFT
Orchidaceae	<i>Trichopilia tortilis</i>		Apéndice II		BMM
Papaveraceae	<i>Bocconia arborea</i>			LC	BTP, CFT
Passifloraceae	<i>Passiflora biflora</i>				BTP
Pinaceae	<i>Pinus devoniana</i>				BCQ
Pinaceae	<i>Pinus maximinoi</i>			LC	BCQ
Pinaceae	<i>Pinus oocarpa</i>				BQ
Piperaceae	<i>Peperomia campylotropa</i>				BMM

Assessing Bird Species Richness within Shade-Grown Coffee Farms in
Chiapas, Mexico / ID: 0251711

Piperaceae	<i>Peperomia floribunda</i>				BMM
Piperaceae	<i>Peperomia quadrifolia</i>				BMM
Piperaceae	<i>Peperomia rotundifolia</i>				BMM
Piperaceae	<i>Piper aduncum</i>			LC	BTP, BTSC
Piperaceae	<i>Piper pansamalatum</i>				BTSC
Plantaginaceae	<i>Plantago major</i>				CFT
Platanaceae	<i>Platanus mexicana</i>			NT	BTSC
Poaceae	<i>Chusquea sulcata</i>				BMM
Polygonaceae	<i>Coccoloba montana</i>			EN	BTP
Polypodiaceae	<i>Campyloneurum xalapense</i>				BMM
Polypodiaceae	<i>Niphidium crassifolium</i>				BMM
Polypodiaceae	<i>Pecluma ferruginea</i>				BMM
Polypodiaceae	<i>Phlebodium areolatum</i>				BMM
Polypodiaceae	<i>Phlebodium aureum</i>				BMM
Polypodiaceae	<i>Polypodium puberulum</i>				BTP
Pteridaceae	<i>Pteridium aquilinum</i>				BCQ, BQ
Pteridaceae	<i>Pteris altissima</i>				BCQ
Pyrolaceae	<i>Monotropa uniflora</i>				BMM
Rosaceae	<i>Eriobotrya japonica</i>				CFT
Rosaceae	<i>Prunus pérsica</i>				CFT
Rubiaceae	<i>Alibertia edulis</i>				BTSC
Rubiaceae	<i>Crusea calocephala</i>				BCQ
Rubiaceae	<i>Glossostipula concinna</i>			EN	BMM
Rubiaceae	<i>Gonzalagunia chiapasensis</i>			EN	BCQ
Rubiaceae	<i>Guettarda combsii</i>				CFT
Rubiaceae	<i>Hamelia patens</i>			LC	BTSC
Rubiaceae	<i>Hoffmania Psychotriifolia</i>				BTSC
Rubiaceae	<i>Palicourea padifolia</i>			LC	BTP
Rubiaceae	<i>Psychotria galeottiana</i>			VU	BMM
Rubiaceae	<i>Psychotria sp.</i>				BTP
Rubiaceae	<i>Rondeletia amoena</i>			VU	BCQ
Rutaceae	<i>Citrus aurantifolia</i>				CFT
Rutaceae	<i>Citrus aurantium</i>				CFT
Rutaceae	<i>Citrus limetta</i>				CFT
Rutaceae	<i>Citrus maxima</i>				CFT
Rutaceae	<i>Citrus sinensis</i>				CFT
Rutaceae	<i>Zanthoxylum microcarpum</i>			LC	CFT
Rutaceae	<i>Zanthoxylum procerum</i>				BTP
Salicaceae	<i>Olmediella betschleriana</i>			EN	BMM
Salicaceae	<i>Xylosma flexuosa</i>			LC	BMM
Sapindaceae	<i>Cupania dentata</i>			LC	CFT
Sapotaceae	<i>Casimiroa sapota</i>				BTP
Sapotaceae	<i>Chrysophyllum mexicanum</i>				BTSC

Assessing Bird Species Richness within Shade-Grown Coffee Farms in
Chiapas, Mexico / ID: 0251711

Scrophulariaceae	<i>Russelia equisetiformis</i>				BCQ
Smilacaceae	<i>Smilax lanceolata</i>				BQ
Solanaceae	<i>Juanulloa mexicana</i>				BQ
Solanaceae	<i>Solandra maxima</i>				BMM
Solanaceae	<i>Solanum lanceolatum</i>			LC	CFT
Solanaceae	<i>Solanum ochraceo-ferrugineum</i>				BQ
Solanaceae	<i>Solanum torvum</i>				BQ
Theaceae	<i>Symplocarpon flavifolium</i>			VU	CFT
Theaceae	<i>Ternstroemia tepezapote</i>			NT	BQ
Ulmaceae	<i>Trema micrantha</i>			LC	BTSC, CFT
Ulmaceae	<i>Ulmus mexicana</i>			EN	BTP, BTSC, CFT
Urticaceae	<i>Urera baccifera</i>				CFT
Verbenaceae	<i>Citharexylum caudatum</i>			LC	BCQ
Vitaceae	<i>Vitis diversifolia</i>				BTSC
Zamiaceae	<i>Ceratozamia vovidesii</i>	P	Apéndice I	VU	BQ

***Categorías según la NOM-059-SEMARNAT-2010:** P: en Peligro; A: Amenazada; Pr: Sujeta a Protección especial.

***Categorías según la lista roja de la UICN:** CR: Críticamente amenazado (*critically endangered*); EN: En peligro de extinción (*endangered*); VU: Vulnerable (*vulnerable*); NT: Casi amenazado (*near threatened*); LC: Preocupación menor (*least concern*).

***Categorías de CITES:** Apéndice I: Especies en peligro de extinción, se prohíbe su comercio internacional; Apéndice II: Se incluyen las especies que no están necesariamente amenazadas de extinción pero que podrían llegar a estarlo sino se controla estrictamente su comercio; Apéndice III: Se incluyen todas las especies que cualquiera de las Partes manifieste que se hallan sometidas a reglamentación dentro de su jurisdicción con el objeto de prevenir o restringir su explotación ilegal mediante la cooperación de otros países.

HABITAT: BTSC: Bosque Tropical Subcaducifolio; BMM: Bosque Mesófilo de Montaña; BTP: Bosque Tropical Perennifolio; BCQ: Bosque de Coníferas y *Quercus*; BQ: Bosque de *Quercus*; CFT: Cafetal con sombra.

Appendix 9:

**Community Monitoring Program Evaluation
Improve the current capacities and skills of bird monitors**

***Note: English translation is in parenthesis not on original forms and forms
spanned 1 page, using a different format. ***

**Formato para evaluar las percepciones de la naturaleza de los monitores
comunitarios
(Form to evaluate the perceptions of the nature of the community monitors)**

Nombre _____
(Name)

Fecha _____
(Date)

Nombre de observador _____
(Observer name)

Monitor
Edad (Age) _____
Ingresos medios (median income) _____ por mes o año
Ocupación (Occupation) _____
Nivel de educación (Level of education) _____
Soltero o casado (circule una) Sexo: H o M
(Single or married) Sex M or F
Número de hijos _____ Número en el hogar _____
(Number of kids) (Number in household)
Número de años en programa de monitoreo _____
(Number of years in the monitoring program)

Actitud acerca de la naturaleza
(Attitude on nature)

	totalmente en acuerdo <i>(In total agreement)</i>	acuerdo <i>(Agree)</i>	No sé <i>(Don't know)</i>	Desacuerdo <i>(Disagree- ment)</i>	totalmente en Desacuerdo <i>(In total disagree- ment)</i>
1. ¿La naturaleza provee alimentos y servicios para ayudarnos con nuestra vida? <i>(Nature provides food and services to help us with our lives?)</i>	1	2	3	4	5
2. ¿Las aves y otros animales pueden proveer servicios ambientales como control de las plagas, polinización, dispersión de las semillas, entre otros? <i>(Birds and other animals can provide environmental services, such as control of pests, polarization, seed dispersal, among others?)</i>	1	2	3	4	5
3. ¿Los humanos pueden proveer estos servicios ambientales sin ayuda de las aves y animales? <i>(Humans can provide these environmental services without the help of birds and animals?)</i>	1	2	3	4	5
4. ¿Nos estamos enfocando mucho más en la naturaleza cuando deberíamos enfocarnos más en la religión y la fe? <i>(We focus much more in the nature when we should be focusing more in the religion and the faith?)</i>	1	2	3	4	5
5. ¿Nos estamos enfocando mucho más en la naturaleza cuando deberíamos enfocarnos más en la familia y amigos? <i>(We focus much more in the nature when we should be focusing more in family and friends?)</i>	1	2	3	4	5
6. ¿Nos estamos enfocando mucho más en la naturaleza cuando deberíamos enfocarnos más en la economía local? <i>(We focus much more in the nature when we should be focusing more in the local economy?)</i>	1	2	3	4	5

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Nuevo paradigma ambiental: Humanos con la naturaleza
(New Environmental Paradigm: Humans with nature)

Assessing Bird Species Richness within Shade-Grown Coffee Farms in
Chiapas, Mexico / ID: 0251711

	totalmente en acuerdo <i>(In total agreement)</i>	acuer do <i>(Agree e)</i>	No sé <i>(Don't know)</i>	Desacuerdo <i>(Disagree ment)</i>	totalmente en Desacuerdo <i>(In total disagree ment)</i>
1. ¿Los humanos son creados para el dominio total sobre la naturaleza? <i>(Humans were created for the total dominion over nature?)</i>	1	2	3	4	5
2. ¿La gente tiene el derecho para modificar la naturaleza en todos modos para satisfacer nuestras necesidades? <i>(The people have the right to modify nature in all forms to satisfy our needs?)</i>	1	2	3	4	5
3. ¿Las plantas y los animalitos existen solo para el uso del humano? <i>(The plants and animals exist only for the use of humans?)</i>	1	2	3	4	5
4. ¿La gente no necesita adaptarse al medio ambiente porque podemos cambiar el medio ambiente para satisfacer nuestras necesidades? <i>(People do not need to adapt to the environment because we can change the environment to satisfy our needs?)</i>	1	2	3	4	5

Formato para evaluar los sentimientos y motivos de los monitores comunitarios

(Form to evaluate the feelings and motives of community monitors)

Nombre _____
(Name)

Fecha _____
(Date)

Nombre de observador _____
(Observer name)

Monitor Edad (*Age*) _____
 Ingresos medios (*median income*) _____ por mes o año
 Ocupación (*Occupation*) _____
 Nivel de educación (*Level of education*) _____
 Soltero o casado (circule una) Sexo: H o M
(Single or married) Sex M or F
 Número de hijos _____ Número en el hogar _____
(Number of kids) (Number in household)
 Número de años en programa de monitoreo _____
(Number of years in the monitoring program)

Preguntas abiertas
(Open questions)

1. ¿Por qué entró en este programa? (*Why did you enter the program?*)
2. ¿Qué incentivos existen para entrar en este programa? (*What incentives exist to enter this program?*)
3. ¿Qué pensabas y cuáles eran sus conocimientos acerca de las aves antes de entrar en este programa? (*What were your thoughts and understanding of birds before entrance into the program?*)
4. ¿Qué piensas y cuáles son sus conocimientos acerca de aves ahora? (*What do you think now and what are your understanding of birds now?*)
5. ¿Crees que las aves se contribuyen o benefician en la cosecha de café? (*Do you believe that birds contribute or benefit the coffee crop?*)

(La vuelta a la página siguiente)

6. ¿Has observado aves raras dentro de los sistemas agroforestales? ¿Dónde y que hacen esas aves? (*Have you observed rare birds inside agroforestry systems; if so, where and what where these birds doing?*)
7. ¿Piensas de qué entrenamientos, son suficientes, tienes recomendaciones, cuales entrenamientos o equipos te ayudaron y te ayudan más? (*Do you think that your trainings were sufficient, do you have recommendations, what trainings or equipment helped you and which helped the most?*)
8. ¿Cómo podrías invitar a más gente a participar en el programa de monitoreo? (*How can you invite more people to participate in the monitoring program?*)
9. ¿Durante este programa de monitoreo has cambiado tus pensamientos y emociones acerca de la naturaleza y aves, sí, como? (*Have your thoughts and feelings changed regarding nature and birds; if so, how?*)
10. ¿Puedes decirme acerca de tus experiencias dentro del programa y que cosas has aprendido? (*Can you tell me about your experiences in the monitoring program and what you have learned?*)

Evaluación de las capacidades **(Capacity evaluations)**

Formato para evaluar las capacidades de los monitores comunitarios **(Form to evaluate capacities of community monitors)**

Nombre _____
(Name)

Fecha _____
(Date)

Nombre de observador _____
(Observer name)

Monitor Edad (Age) _____
Ingresos medios (<i>median income</i>) _____ por mes o año
Ocupación (<i>Occupation</i>) _____
Nivel de educación (<i>Level of education</i>) _____
Soltero o casado (circule una) Sexo: H o M (<i>Single or married</i>) Sex M or F
Número de hijos _____ Número en el hogar _____ (<i>Number of kids</i>) (Number in household)
Número de años en programa de monitoreo _____

(Number of years in the monitoring program)

Los conocimientos acerca de las aves

(Knowledge on birds)

	totalmente en acuerdo <i>(In total agreement)</i>	acuerdo <i>(Agree)</i>	No sé <i>(Don't know)</i>	Desacuerdo <i>(Disagree- ment)</i>	totalmente en Desacuerdo <i>(In total disagree- ment)</i>
1. ¿Hay mas especies de aves en las estaciones diferentes del año? <i>(There are more bird species in different seasons of the year?)</i>	1	2	3	4	5
2. ¿Las aves de la misma especie son siempre aves del mismo color? <i>(Birds of the same species are always the same color?)</i>	1	2	3	4	5
3. ¿Cuándo las aves obtienen sus plumas, nunca las pierden de nuevo? <i>(When birds obtain their feathers, they never lose them)</i>	1	2	3	4	5
4. ¿A veces, las aves son de colores diferentes a cuando eran jovencitas? <i>(Sometimes, birds are different colors when they are young?)</i>	1	2	3	4	5
5. ¿Todas las aves puede vivir en el bosque y en la granja? <i>(All birds can live in the forest and the farmland)</i>	1	2	3	4	5
6. ¿Desde que las aves pueden volar, las aves pueden mudarse a hogares nuevos, y por eso nuestra acciones en la tierra no tienen un impacto significado? <i>(Since birds can fly, they can move to new homes, and because of that, our actions on the land have no significant impact)</i>	1	2	3	4	5
7. ¿Las aves son muy importantes en las cosechas de café por sus los servicios ambientales que pueden proveer? <i>(Birds are very important for the coffee crop because of the environmental services they can provide?)</i>	1	2	3	4	5
8. ¿Las aves tienen un valor religioso? <i>(Birds have a religous value?)</i>	1	2	3	4	5
9. ¿Las aves tienen un valor estético? <i>(Birds have a esthetic value?)</i>					
10. ¿Todas las aves hacen nidos en las ramas de árboles? <i>(All birds make nests in the branches of trees?)</i>					

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Preguntas abiertos (*Open questions*)

1. ¿Cuántos días sales al campo cada mes para observar las aves? (*What days do you leave for the field to observe birds?*)
2. ¿Cuándo ves un ave, en qué te debes fijar para lograr identificarla especie? (*When you see a bird, what characteristics do you look at to identify the specie?*)
3. ¿Puedes decirme las reglas de observación cuando buscas aves en un estudio científico en respeto a tiempo y clima?
(*Can you tell me the rules of observation when looking for birds in a scientific study in respect to time and climate?*)
4. ¿Qué datos debes tomar en tu libreta de campo? (*What data should you take in your notebook in the field?*)
5. ¿Cómo está organizada la guía de campo de las aves? (*How is the bird guide book organized?*)
6. ¿Cuál es estación o meses en que es posible hay mas aves y porque? (*What season or month is it possible to view more birds and why?*)
7. ¿Cuándo tomas tus datos, con cuales elementos empiezas? (*When taking data, what are the elements you start with?*)

Economic Valuation Survey. Sustainable Agro-Forestry Coffee-Production System. Cooperatives of the Upper Watershed of Cuxtepeques River, La Concordia Municipally, Chiapas México						
General Data			Nomenclature			
Producer Name			Coffee Area (has)	Total	Certified	Transition
Partner / Position in the cooperative			Corn Area (has)	Total	Certified	Transition
Application Date			Cattle Area (has)	Total	Certified	Transition
Name of Cooperative			Other agricultural activities Area (has)	Total	Certified	Transition
Community of production			Conservation Area (has)	Total	Environmental Easement	Free
Wages Cost			Platation Age			
Number of Kg per Quintal			If the crop is divided explain (Quantity and Age per each classification)	Classification 1		
Type of Coffee	Mundo novó X	Bourbon X	Caturra X	Arábiga X	Classification 2	
Type of Producer				Classification 3		
Zone/Altitude	Low	Medium	High	Classification 4		
Time within the cooperative				Name of pollster		

1. SHADE MANAGEMENT, PRODUCTION ACTIVITIES ANS CONSERVATION PRACTICES (Anual Cost 2010 - 2011)						
1.0. Do you have <u>production of coffee seeds (beans)</u> ?	YES	NO	1.1. Where you get the coffee seed?	_____		
1.2. What is the materials cost?	_____		1.3. How many wages do you expend?	_____		
1.4. Do you have a <u>nursery</u> in your coffee crop?	YES	NO (If NO go to question 19.)	1.5. How many wages do you expend?	_____		
1.6. Type of nursery?	Fruit Trees		Shade Trees	Coffee Plants		
1.7. What is the materials cost for nursery production?	_____		1.8. How many plant do you produce?	_____		
1.9. Where you get the plan if you do not make the nursery practice ?	_____		1.10. What is the price for a coffee plant?	_____		
1.7. How many wages do you need for:			1.7.1. Shade tree planting?			
1.7.2. Cutting of native trees ?			_____	1.7.9. Maintenance of shade trees and canopy?		
1.7.3. Harvest Roads Maintenance?			_____	1.7.10. Pruning?		
1.7.4. Weed cutting (chaporros)?			_____	1.7.11. Replanting of coffee?		
1.7.5. Live and dead soil barriers/fences?			_____	1.7.12. Desuckering?		
1.7.6. Maintenance of leguminous trees?			_____	1.7.13. Are there lianas or orchids?		
1.7.7. Soil embankments ?			_____	1.7.14. Agricultural contour lines?		
1.7.8. Repopulation of coffee?			_____	1.7.15. Renovation of coffee plantations?		



Conservation Leadership Programme

1.8. Do you have a System of Water Uptake or Storage ?	YES	NO	1.9. What is the materials cost?	_____
1.10. How many wages do you expend?	_____		1.20. Do you have a deposit of garbage ?	YES NO
1.22. What is the materials cost?	_____		How often renews the deposit of garbage?	_____
3.3. How many wages do you expend in the construction of the garbage deposit?	_____		3.4. How many wages do you expend during the garbage recolection?	_____
3.5. What is the total tool cost for the activities in your crop?	_____		Limas _____ Quantity _____ Duration _____	
Serrote curvo _____ Quantity _____ Duration _____			Machetes _____ Quantity _____ Duration _____	
Barreta _____ Quantity _____ Duration _____			Pala _____ Quantity _____ Duration _____	
Hacha _____ Quantity _____ Duration _____			Azadón _____ Quantity _____ Duration _____	
Tijera de podar _____ Quantity _____ Duration _____			Mecapales _____ Quantity _____ Duration _____	
2. WATER USE (Anual Cost 2010 - 2011)				
2.1. Do you have a Deposit of waste pulping coffee (Agua Miel) ?	YES	NO	2.2. How often renews the deposit?	_____
2.3. What is the materials cost?	_____		2.4. ¿Do you have a Biodigestor ?	YES NO
2.5. What is the materials cost?	_____		2.6. How many wages do you expend?	_____
2.7. Works the biodigester?	YES	NO	2.8. How often recieve mantenace?	_____
3. PEST CONTROL, COMPOST AND OTHER PRACTICES (Anual Cost 2010 - 2011)				
3.1. ¿What type of pest costrol do you use?	_____			
3.2. ¿Which material do you use?	_____			
3.3. What is the materials cost?	_____		3.4. How many wages do you expend?	_____
3.5. Do you make any kind of production of organic herbicide or fertilizer ?	YES	NO	3.6. Which?	_____
3.7. What is the materials cost?	_____		3.8. What is the materials cost during the aplicacion?	_____
3.9. Do you have organic compost ?	YES	NO	3.10. How many kilograms do you produce?	_____
3.11. How many wages do you expend in production?	_____		3.12. How many wages do you expend during the application?	_____
3.14. What is the materials cost?	_____		3.15. How many plants do you apply the organic compost?	_____
4. HARVESTING				
4.1. How many wages do you expend in during the recolection of coffee beans?	Wages _____	Boxes _____	4.2. What is the price of the recolection wages?	_____
4.3. What is the price of workers transportation for the harvesting process?	_____		4.5. How many workers do you use in this process?	_____
4.4. How much you expend in food and health for the workers during the harvesting process?	_____		4.6. What is the materials cost?	_____
5. WET COFFEE BEANS PROCESS				
5.1. Type	Private	Colective	5.2. How many wages do you expend in during the wet process?	_____
Reception _____	Ferment _____	Washing _____	Pulping beans _____	
5.3. How much you expend for the wet equiptmeent mantenace?	_____		5.4. How much you invest for the construction of the wet equiptment?	_____
5.5. What is the method of dry coffee?	Patio de concreto		Camas Africanas/ torres de secado	Mallas o zarandas
5.6. When you build the wet system?	_____		5.7. How many wages do you expend?	_____

5. WET COFFEE BEANS PROCESS							
5.10. How much you expend in materials as sacks, tying, thread, and needle?	_____	5.11. How much you expend in the maintenance coffee storage boulding ?	_____				
5.12. How much you expend in electricity?	_____						
5.13. How do you transport your coffee sacks to the cooperative?	Own car	_____	Rental Car				
transportation of coffee sacks to the cooperative?	Gasoline	_____	Tranportation Cost per coffee sack				
6. ORGANIZATION or COOPERATIVE COST							
5.1. How much you expend for keeping the coffee in the cooperative per quintal?	_____	6.3. How much you expend in finaltia activities per quintal?			_____		
6.2. How much you expend in administrative expenses per quintal?	_____	6.4. How much you expend in trade activities per quintal?			_____		
6.5. ¿Cuento gasta en total por las actividades de la organización?				_____			
7. SAVING AND CAPITALIZATION SYSTEM OF THE COOPERATIVE							
7.1. Admission fee?	_____	7.2. 10 10 kg fee peor hectare, anual saving?			_____		

INCOMES SURVEY							
8. PRODUCTION							
Type of Coffee	Quintal	Kilograms	Unit Price	Type of Coffee	Quintal	Kilograms	Unit Price
Coffee				Perchat Coffee			
Cherry Coffee				Green Gold Coffee			
9. Colective Benefits				Answers			
9.1. In addition to the sale of coffee, which other benefits derived from their coffee plantation?				_____			
9.2. How often: you, your family or employees have attended medical visits occurring in the cooperative?					_____		
9.3. How often: you, your family or employees have attended training courses given by the cooperative?					_____		
9.4. How often do your relatives or children have attended OR COMPUTER EDUCATION COURSES given by the cooperative?					_____		
10. GOVERNMENT SUPPORT PROGRAMS				Cooperative		Outside the cooperative	
10.1. How much subsidies do you got in 2010-2011 by CONAFOR?							
10.2. How much subsidies do you got in 2010-2011 by CORREDOR BIOLÓGICO MESOAMERICANO (PROCAFES)?							
10.3. How much subsidies do you got in 2010-2011 by ASERCA – PROCAFES?							
10.4. How much subsidies do you got in 2010-2011 by SAGARPA (COOPCAFE)?							
10.5. How much subsidies do you got in 2010-2011 by SAGARPA (FINDECH)?							
10.6. How much subsidies do you got in 2010-2011 by CONANP?							



Conservation Leadership Programme

10.7. How much subsidies do you got in 2010-2011 by SECRETARIA DEL CAMPO?		
10.8. How much subsidies do you got in 2010-2011 by COMCAFE?		
10.9. How much subsidies do you got in 2010-2011 by SEDESOL (Oportunidades program)?		
10.10. ¿Cuanto recibe por la BANCHIAPAS (FINDECA)?		
10.11. How much subsidies do you got in 2010-2011 by FINDECH ?		
10.12. How much subsidies do you got in 2010-2011 by FIRA (Trópico Húmedo program)?		
10.13. ¿Cuanto recibe por la FIRCO (Innovación de Cafetales)?		
11. OTHER INCOMES		
11.1. Did you, your family get incomes from money remittances in this cycle 2010 - 2011?	YES <input type="checkbox"/> NO <input type="checkbox"/>	How much? _____
11.2. Did you, your family get incomes from salaries?	YES <input type="checkbox"/> NO <input type="checkbox"/>	How much? _____
11.3. Did you, your family get incomes from other economic activities?	YES <input type="checkbox"/> NO <input type="checkbox"/>	How much? _____
11.4. ¿Did you, your family get incomes from Pronatura Sur Programs?	YES <input type="checkbox"/> NO <input type="checkbox"/>	How much? _____
11.5. ¿Did you, your family get incomes from Conservation Internacional Programs?	YES <input type="checkbox"/> NO <input type="checkbox"/>	How much? _____
11.6. ¿Did you, your family get incomes from Tecnológico de Monterrey Programs?	YES <input type="checkbox"/> NO <input type="checkbox"/>	How much? _____
11.7. ¿Did you, your family get incomes from The Nature Conservancy Programs?	YES <input type="checkbox"/> NO <input type="checkbox"/>	How much? _____
11.8. ¿Did you, your family get incomes from Starbucks?	YES <input type="checkbox"/> NO <input type="checkbox"/>	How much? _____
12. LOANS AND FINANCING		
12.1. Did you, your family get loans during the cycle 2010 - 2011?	YES <input type="checkbox"/> NO <input type="checkbox"/>	How much? _____
12.2. Where do you get financing?	<input type="checkbox"/> FIRCO	<input type="checkbox"/> FIRA
<input type="checkbox"/> FONAES	<input type="checkbox"/> BANCHIAPAS	<input type="checkbox"/> Other: _____
	<input type="checkbox"/> Other: _____	

Economic Valuation Survey. Sustainable Agro-Forestry Coffee-Production System. Conventional Producers of the Upper Watershed of Cuxtepeques River, La Concordia Municipally, Chiapas México					
General Data			Nomenclatura		
Name of Producer			Coffee Area (has)	Total	
Date			Corn Area (has)	Total	
Community of production			Cattle Area (has)	Total	
Type of producer			Other agricultural activities Area (has)	Total	
Kilos por Quintal			Conservation Area (has)	Total	Environmental Easment Free
Poller Name			Platation Age		
Zone/Altitude	Low	Medium	High	If the crop is divided explain (Quantity and Age per each classification)	Classification 1
Wages Cost					Classification 2
Type of Coffee	Mundo novó X	Bourbon X	Caturra X	Arábiga X	Classification 3
					Classification 4

1. SHADE MANAGEMENT, PRODUCTION ACTIVITIES ANS CONSERVATION PRACTICES (Anual Cost 2010 - 2011)			
1.1. Do you have a nursery in your coffee crop?	YES	NO (Si NO pase a la pregunta 16.)	1.3. How many wages do you expend? _____
1.2. Type of nursery?	Fruit Trees		Shade Trees
			Coffee Plants
1.4. What is the materials cost?	_____		1.5. How many plant do you produce? _____
1.6. Where you get the coffe plant?	_____		1.5. What is the price of the Plant? _____
1.7. How many wages do you need for:	1.7.1. Shade tree planting?		_____
1.7.2. Cutting of native trees?	_____		1.7.9. Maintenance of shade trees and canopy? _____
1.7.3. Harvest Roads Maintenance?	_____		1.7.10. Pruning? _____
1.7.4. Weed cutting (chaporros)?	_____		1.7.11. Replanting of coffee? _____
1.7.5. Live and dead soil barriers/fences?	_____		1.7.12. Desuckering? _____
1.7.6. Maintenace of leguminous trees?	_____		1.7.13. Are there lianas or orchids? YES NO
1.7.7. Soil embankments ?	_____		1.7.14. Agricultural contour lines? _____
1.7.8. Repopulation of coffee?	_____		1.7.15. Renovation of coffee plantations? _____
1.8. Do you have a System of Water Uptake or Storage?	YES	NO	1.9. What is the materials cost? _____
1.10. How many wages do you expend?	_____		1.20. Do you have a deposit of garbage? YES NO
1.22. What is the materials cost?	_____		1.21. How often renews the deposit of garbage? _____
3.3. How many wages do you expend building the deposit?	_____		3.4. How many wages do you expend recollecting the garbage? _____



Conservation Leadership Programme

3.5. What is the total tool cost for the activities in your crop?	_____	Limas ____	Quantity____	Duration _____
Serrote curvo _____	Quantity____	Duration _____	Machetes _____	Quantity____
Barreta _____	Quantity____	Duration _____	Pala _____	Quantity____
Hacha _____	Quantity____	Duration _____	Azadón _____	Quantity____
Tijera de podar _____	Quantity____	Duration _____	Mecapales _____	Quantity____
2. WATER USE (Anual Cost 2010 - 2011)				
2.1. Do you have a Deposit of waste pulping coffee (Agua Miel)?	YES	NO	2.2. How often renews the deposit?	_____
2.3. What is the materials cost?	_____	2.4. Do you have a Biodigestor?	YES	NO
2.5. What is the materials cost of the biodigestor?	_____	2.6. How many wages do you expend?	_____	
2.7. Works the biodigestor?	YES	NO	2.8. How often receive maintenance?	_____
3. PEST CONTROL, COMPOST AND OTHER PRACTICES (Anual Cost 2010 - 2011)				
3.1. What type of pest control do you use?	No Agroquímicos		Agroquímicos (Agroquímico name)	_____
3.2. What type of herbicide do you use in coffee plantations?	_____	3.3. How many liters of herbicide pesticide do you use?	_____	
3.4. What type of pesticide do you use in coffee plantations?	_____	3.5. How many liters of herbicide do you use?	_____	
3.6. How many liters of pesticide do you use?	_____	3.7. How much do you invest in total?	_____	
3.8. What type of materials do you use in pest control?	_____			
3.9. What is the materials cost?	_____	3.10. How many wages do you expend for the application?	_____	
3.11. Do you produce the organic herbicide or fertilizer?	YES	NO	3.12. Which?	_____
3.13. What is the materials cost?	_____	3.14. How many wages do you expend for the application?	_____	
3.15. ¿Cuenta con composta orgánica en su parcela de producción?	YES	NO	3.16. ¿cuánta composta produce (kilos)?	_____
3.17. How many wages do you expend for the made the compost?	_____	3.18. How many wages do you expend for the application	_____	
3.19. What is the materials cost during the production of organic compost?	_____	3.20. How many plants do you apply the organic compost?	_____	
4. HARVESTING				
4.1. How many wages do you expend for the application?	Wages _____	Boxes _____	4.2. How many boxes of coffee do you expend for the application?	_____
4.3. What is the price of workers transportation for the harvesting process?	_____	4.5. How many workers do you use in this process?	_____	
4.4. How much you expend in food and health for the workers during the harvesting process?	_____	4.6. What is the materials cost?	_____	



Conservation Leadership Programme

5. WET COFFEE BEANS PROCESS								
5.1. Type:		Private	Colective	5.2. ¿cuántos jornales utiliza en el proceso total de beneficio húmedo ?		_____		
Reception	_____	Washing _____		Ferment _____	Pulping beans _____			
5.3. How much you expend for the wet equipment maintenance?			_____	5.4. How much you invest for the construction of the wet equipment?			_____	
5.5. What is the method for drying coffee?			Patio de concreto	Camas Africanas/ torres de secado		Mallas o zarandas		
5.6. When you build the wet system?			_____	5.7. How many wages do you expend?				_____
5.8. ¿cuánto gasta en materiales del beneficio húmedo?			_____	5.9. How much you expend in the construction of the wet system?			_____	
5.10. How much you expend annually for the maintenance of the wet system?			_____	5.11. How much you expend in the maintenance coffee storage building ?				_____
5.12. How much you expend in electricity?			_____	_____	_____	_____	_____	
5.13. How do you transport your coffee sacks to the cooperative?				The buyer or coyote make the transportation		Own Car	Rental transportation	
5.14. How much you expend in the transportation of coffee sacks to the cooperative?				Price per quintal _____		Gasoline _____		
INCOMES SURVEY								
PRODUCTION								
Type of Coffe	Quintal	Kilograms	Unit Price	Type of Coffe	Quintal	Kilograms	Unit Price	
Cereza Coffee				Perchant Coffee				
Cherry Coffee				Golden green Coffee				
COLECTIVE BENEFITS				ANSWERS				
10.1. In addition to the sale of coffee, which other benefits derived from their coffee plantation?				_____				
10.2. How often: you, your family or employees have attended medical visits occurring in the cooperative?				_____				
10.3. How often: you, your family or employees have attended training courses given by the cooperative?				_____				
10.4. How often do your relatives or children have attended OR COMPUTER EDUCATION COURSES given by the cooperative?				_____				
GOVERNMENT SUPPORT PROGRAMS				Cooperative		Outside the cooperative		
11.1. How much subsidies do you got in 2010-2011 by CONAFOR?								
11.2. How much subsidies do you got in 2010-2011 by CORREDOR BIOLÓGICO MESOAMERICANO (PROCAFES)?								
11.3. How much subsidies do you got in 2010-2011 by ASERCA – PROCAFES?								
10.4. How much subsidies do you got in 2010-2011 by SAGARPA (COOPCAFE)?								
11.5. How much subsidies do you got in 2010-2011 by SAGARPA (FINDECH)?								
10.6. How much subsidies do you got in 2010-2011 by CONANP?								
11.7. How much subsidies do you got in 2010-2011 by SECRETARIA DEL CAMPO?								
11.8. How much subsidies do you got in 2010-2011 by COMCAFE?								
11.9. How much subsidies do you got in 2010-2011 by SEDESOL (Oportunidades program)?								
11.10. ¿Cuanto recibe por la BANCHIAPAS (FINDECA)?								
11.11. How much subsidies do you got in 2010-2011 by FINDECH ?								
11.12. How much subsidies do you got in 2010-2011 by FIRA (Trópico Húmedo program)?								
11.13. ¿Cuanto recibe por la FIRCO (Innovación de Cafetales)?								

OTHER INCOMES			
12.1. Did you, your family get incomes from money remittances in this cycle 2010 - 2011?	YES	NO	How much? _____
12.2. Did you, your family get incomes from salaries?	YES	NO	How much? _____
12.3. Did you, your family get incomes from other economic activities?	YES	NO	How much? _____
12.4. ¿Did you, your family get incomes from Pronatura Sur Programs?	YES	NO	How much? _____
12.5. ¿Did you, your family get incomes from Conservation Internacional Programs?	YES	NO	How much? _____
12.6. ¿Did you, your family get incomes from Tecnológico de Monterrey Programs?	YES	NO	How much? _____
12.7. ¿Did you, your family get incomes from The Nature Conservancy Programs?	YES	NO	How much? _____
12.8. ¿Did you, your family get incomes from Starbucks?	YES	NO	How much? _____
LOANS AND FINANCING			
13.1. Did you, your family get loans during the cycle 2010 - 2011?	YES NO		How Much? _____
13.2. Where do you get financing?	FIRCO		FIRA
FONAES	BANCHIAPAS	Other:	Other: _____