



FIVE THREATENED SPECIES IN THE WESTERN ANDES OF COLOMBIA

2008 Future Conservationist Awards

Final Report

ID Project: 070608

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Grant Amount: \$12,000

Project Start Date: 1/4/08

Project End Date: 29/2/09



August 2009. Cali, Colombia

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Summary

The Western Andes of Colombia, including San Antonio-Km18 and Chicoral, have been severely transformed with the original landscape converted into agriculture fields and pasture for cattle raising. The loss of forests has led to the extinction or population decreasing of several species. Our main objectives were a) to determine the population density of five threatened bird species in these two protected areas, and b) to promote conservation actions for the five threatened species and their habitat, involving and raising the awareness of the local communities. By using collected scientific and non-scientific information, we expected to obtain data on the biology and population dynamics of these species in order to develop conservation strategies and management plan of the five threatened bird species. Our target species were *Chlorochrysa nitidissima* (VU), *Glaucidium nubicola* (VU), *Chlorospingus flavovirens* (VU), *Xenopipo flavicapilla* (NT), *Odontophorus hyperythrus* (NT) and *Iridosornis porphyrocephala* (NT).

We recorded a total of 6000 minutes in both areas and gathered in total 6879 birds' records at both Chicoral and San Antonio. We obtained 65 detections of *O. hyperythrus*, 12 of *C. nitidissima* and eight of *I. porphyrocephala*. Only one auditory record for *G. nubicola* in Chicoral and we did not record *X. flavicapilla* or *C. flavovirens* in any of the studied sites. *Odontophorus hyperythrus* was the species with the highest probability of detection, being recorded in all trails during all months. The estimation of densities based in the sampled area was one individual per 7.69 ha for *C. nitidissima*, one individual per 10 ha for *I. porphyrocephala*, one group of *O. hyperythrus* per 7.69 and 5.55 ha in Chicoral and San Antonio, respectively.

Interviews revealed that most of the local people did not identify the endangered birds of the region and some of them did not know that they are living close to or into the protected area. However, the local people did recognize that there are several threats to the forest in both sites, such as wood exploitation, new colonization and building of houses. Bird Month Celebration was held in Chicoral on October 30th, named "Looking for the endangered birds" and had the participation of 128 people.

People played a decision game named “I am a Chestnut Wood-quail” and in this way, *O. hyperythrus* was the symbol of this Celebration.

We published two editions of “La reinita” magazine in July 2008 and January 2009. We involved Asociación Río Cali, a local ornithology group Titiribies and local farmers in some activities related with wooden educational signs for Km18. In this way, we ensured the appropriation of these educational signs and their maintenance in the future. The signs were placed along the road forming an educational path, such as “Open Path” in Chicoral.

We made a strong link with Asociación Río Cali and also strengthened our relationship with teachers and kids of Chicoral School. We also have now a regional network involving farmers, new schools, teachers, kids, Titiribies and others CLP alumni winners of 2008. We published eleven articles on our website and managed to broadcast our project in regional and national channels. The results of our project have the potential to be part of the regional management plan, which will be developed by the regional government, and also they can be included in the second edition of Red Book of Colombian Birds.

We recommend to evaluate the impact of our recent actions in the region through new interviews, support the ideas developed by local leaders or community committees in both sites, broaden our educational strategies along the Western Andes creating a “Natural Reserves Network” and implement a monitoring programme for these endangered bird species in the region.

Key words: endangered birds, education strategies, Colombia, density population, local communities, Western Andes.

Introduction

The Colombian Andes have been severely transformed since pre-Columbian times (Etter and Wyngaarden 2000), with the original landscape converted into agriculture fields and pasture for cattle (Cavelier *et al.* 2001). This fragmentation is affecting animals and plants populations; some of them have become threatened species regional and globally. Birds are not the exception for this situation. In the forests of the Western Andes close to Cali, the third biggest city of Colombia, we can find several endangered birds clasified as Endangered (EN) or Vulnerable (VU) due to loss of suitable habitat mainly (Devenish and Franco 2008).

Our study areas, Chicoral (CO131) and San Antonio-Km18 (CO100), were declared Important Bird Areas (IBA) in Colombia, supported by regional groups which are developing educational activities for the conservation of areas. The forest fragments of San Antonio and Chicoral are connected by the forests around the Km18 and they are part of the Western Andes corridor, which links the Farallones de Cali National Park (CO031), at south, and Tatamá National Park (CO026), at north. These National Parks are big areas (150000 ha and 51900 ha respectively) protected by the national government (Devenish and Franco 2008).

Several scientists have been studying San Antonio-Km18 and Chicoral forests since 1900. The first one was Frank Chapman (1917), who collected birds for American Museum of Natural History. Subsequently, Lehmann (1957) and Miller (1963) studied the bird community in this area. Finally, Kattan and collaborators (1994) determined bird community changes through 80 years in San Antonio region. They reported some bird extinctions among the understory insectivores and the large canopy frugivores, the most vulnerable guilds. The study sites are also the lowest altitudinal points along the West Cordillera.

For the above reasons, San Antonio-Km18 and Chicoral are interesting sites for studying the threatened species, their population density and movements through forest fragments and the eastern-western slopes of the same Cordillera. Although in Colombia some biologists have been carrying out researches on bird population densities, the lack of information for most of the endangered species impedes the correct evaluation about current condition and trends of their populations.

It is important to highlight the role of local communities for the conservation of the forest and animals; finally they are the direct responsables for forest conservation at long term. In the two target localities for some years, biologists and sociologists have been carrying out several activities towards local people, with the aim of raising their awareness and actively involving them in the conservation decisions and actions. However, these communities themselves have been concerning about conservation of forest as source of water and thereby their general welfare. It is important that we take this situation as an opportunity and by supporting their cause and ideas, gain their willingness for our conservation actions in the region in the long term.

We have special interest on five birds: Multicolored Tanager (*Chlorochrysa nitidissima*, VU), Cloud-forest Pygmy-owl (*Glaucidium nubicola*, VU), Yellow-green Bush-tanager (*Chlorospingus flavovirens*, VU), Yellow-headed Manakin (*Xenopipo flavicapilla*, NT) and Chestnut Wood-quail (*Odontophorus hyperythrus*, NT). During the development of this project and in consultation with CLP, we included another endangered bird, the Purplish-mantled Tanager (*Iridosornis porphyrocephala*, NT), due to its occurrence in Chicoral area.

Project aim

To promote conservation actions for five threatened species and their habitat at the Western Colombian Andes, using scientific and no-scientific knowledge.

Objectives

1. To determine the population density of five threatened species at two Important Bird Areas in the Western Colombian Andes.
2. To sensitize the local people and community leaders toward the threatened species of their region using the collected scientific and no-scientific information.
3. To provide a scientific basis to support a regional management plan for each of the five threatened species and their habitat at the region.

Study area

Chicoral or Alto Bitaco has 560 ha under total protection of seven Civil Society Reserves and one Regional Natural Reserve (Figure 1a). It is located at the highest part of Bitaco, municipality of La Cumbre, department of Valle del Cauca, with cloud forests between 1800 and 2100 m. The people of this small town are protecting 60% of forest in the total area; while the other 40% comprises of residential areas, horticultural crops, gardens and tea plantations (Johnston and Estela 2008).

The conservation significance of this region could be highlighted by the presence of eleven endangered species of birds including *Penelope perspicax*, *Dendroica caerulea*, *Chlorochrysa nitidissima*, *Glaucidium nubicola* and *Chlorospingus flavovirens*. In this area, we can find also some mammals as *Aotus* sp., *Potos flavus*, *Dasyopus novencintus*, *Eira barbara*, *Dasyprocta* sp. and *Herpailurus yaguarundi*, and the declining populations of tree species of families Magnoliaceae, Lauraceae and Myrsinaceae. During the last 10 years, non-governmental organizations and the community committee have been supporting scientific researches and conservation efforts in the region (Johnston and Estela 2008).

San Antonio-Km18 with 800 ha, is partially protected by governmental entities belonging to Cali and Dagua municipalities, department of Valle del Cauca. This area has cloud forest fragments between 1700 and 2200 m along a sector of the Cali-Buenaventura road (Figure 1b). The construction of this road during the first decade of the last century was the main cause for deforestation in the area, making available several areas for human settlements and extraction of wood (Wagner and Vidal 2008).

This region is particularly rich in biodiversity. Three new species of frogs of the genus *Eleutherodactylus* have been described recently from here and the first record for Colombia of the genus *Jobinia*, an Apocynaceae plant, was made from here in 2000.

We also can find endangered birds such as *Dendroica caerulea*, *Chlorochrysa nitidissima* and *Glaucidium nubicola* (Wagner and Vidal 2008).



Figure 1. Landscapes of (a) Chicoral with forests and tea plantations and (b) San Antonio-Km18 with forests and vegetables crops.

Objective 1 To determine the population density of five threatened species at two Important Bird Areas in the Western Colombian Andes.

Methods

We started our field work in May 2008 with the identification of trails and stations in the two sites; one local person accompanied us during this stage. Instead of opening new paths to set up the sample points, we walked along paths used previously by hunters or currently by local people.

We marked 10 geo-referenced points along 10 paths for a total of 100 sampled points, 50 in San Antonio and 50 in Chicoral. The sampled points had 50 m of radius each and were separated by 150 m. Surveys were carried out between 05:30 and 09:30. Most of the paths were 30 minutes by foot from the station, but two of them were one hour's walk from there. During our way to the paths, we were on alert for some vocalizations of the *Glaucidium nubicola*.

Using a M-Audio Micro Track II digital recorder and Sennheiser ME66 microphone, we recorded bird's songs and calls during 10 min per point (Figure 2). It was not possible to use call playbacks of *Chlorochysa nitidissima* and *Odontophorus hyperythrus* in none of the two sites due to the proximity among paths. The *O. hyperythrus*' songs can be heard more than 500 m of distance due to the mountainous geography of the region, then one call playback for the person X in the path A could interfere in the song recorded for the person Y in the path B for some of the trails. From June to August the X and Y people were together in the same path as part of the training and methodological adjustments. During September, October and November two people recorded the vocalizations individually in two different paths.

Additionally, we used playbacks of *G. nubicola* at random points in both sites since 17:30 to 18:30 each day. Two songs were played consecutively during 5 min at each

point. These recordings were obtained from www.xeno-canto.org (Recordist: Nick Athanas) and belonged to Ecuatorian individuals.



Figure 2. Using a digital recorder and unidirectional microphone we sampled 50 points at each study area.

Although our proposal included the use of Distance 4.1 for determining the population density of the endangered birds, we did not obtain the minimum number of records for calculating a reliable detection probability through this software. Moreover, Distance 4.1 requires a high level of precision in terms of the distance between the person and the bird; in our case, we had bias associated with distance estimation for auditory records obtained for *O. hyperythrus*. Then, in this report we provided an estimation of density based in the sampled area. Each sampled point had 0.78 ha and our sampled area was 39.27 ha at each site, for a total 78.54 ha. These values are obtained using the formula: Area of circle = $\pi \times \text{radius}^2$; where π is 3.1416 and radius is 50 m. In order to estimate a density value, we used $D = C / A$ where D es density, C is the total number of individuals and A is the area surveyed.

Results

We obtained a total of 6000 minutes of call and song recordings during 10 min in 10 points along the 10 trails over a period of 6 months. We gathered 6879 birds' records in total at both Chicoral and San Antonio; some of these records are still undeterminate due to the difficulty of identification especially for calls. One of the members of the team (CMT) is developing her undergraduate thesis using some of the data collected during our surveys. A preliminar report of her work can be found in the appendix 1. We also added new species to the regional checklists, these are: *Cranioleuca erythropus* and *Phyllomyias cinereiceps* in San Antonio and *Uropsalis lyra* and *Drymophila caudata* in Chicoral.

Regarding our focal species, we identified several groups of *O. hyperythrus*, individuals of *C. nitidissima* and *Iridosornis porphyrocephala*. Only one vocalization for *G. nubicola* was confirmed by us in Chicoral and we did not have any register for this species in San Antonio (Figure 3). That vocalization had the same frequency, note length, internote interval and intranote interval that the averaged measurements reported for this species (Robbins and Stiles 1999). We were unable to record *Xenopipo flavicapilla* or *Chlorospingus flavovirens* in any of the studied sites.

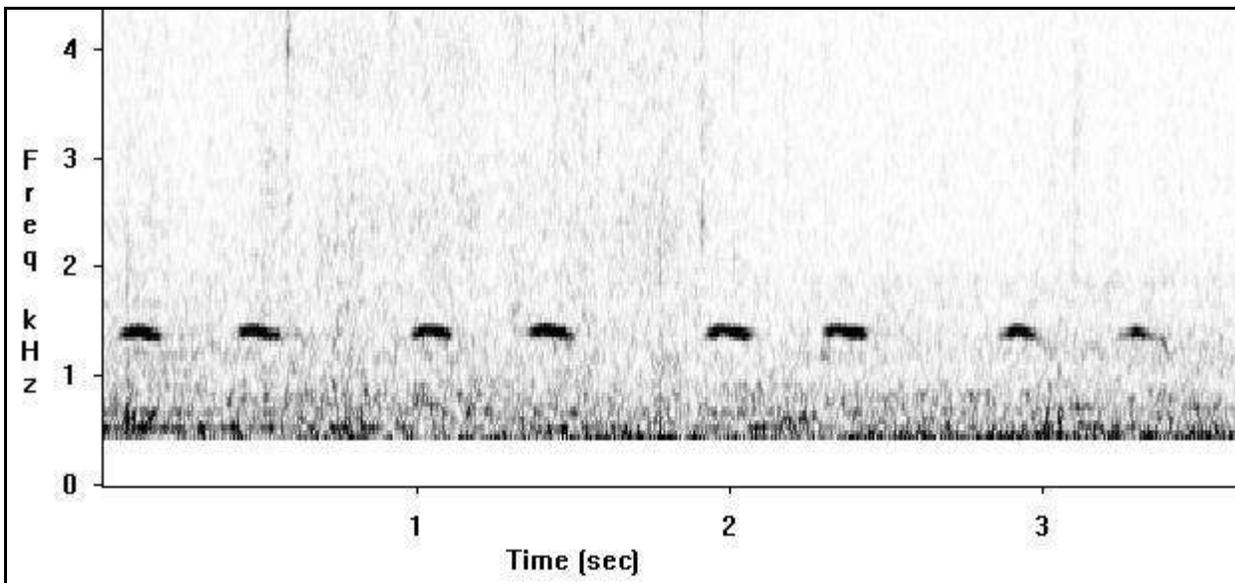


Figure 3. Sonogram of primary song of *Glaucidium nubicola* in Chicoral, August 2008.

We estimated the probability of detection as the number of trails where the species was recorded / total number of trails per 100 (Table 1). For *C. nitidissima*, the probability of detection was higher in Chicoral than in San Antonio. For this species and *I. porphyrocephala* most of the records were visual records and only once for each species, we recorded a song while we were watching them (Figure 4).

Table 1. Endangered bird species registered in 10 trails in Chicoral and San Antonio during six months.

Species	Chicoral	San Antonio	Total number of detections	Probability of detection (per trails)	Dates
<i>Odontophorus hyperythrus</i>	Recorded	Recorded	30 - 35	100 - 100	June to November
<i>Chlorochrysa nitidissima</i>	Recorded	Recorded	5 - 7	80 - 60	June to November
<i>Iridosornis porphyrocephala</i>	Recorded	Not-recorded	8 - 0	60 - 0	Jun, Sep, Oct, Nov
<i>Glaucidium nubicola</i>	Recorded	Not-recorded	1 - 0	10 - 0	August
<i>Chlorospingus flavovirens</i>	Not-recorded	Not-recorded	0	0	--
<i>Xenopipo flavicapilla</i>	Not-recorded	Not-recorded	0	0	--

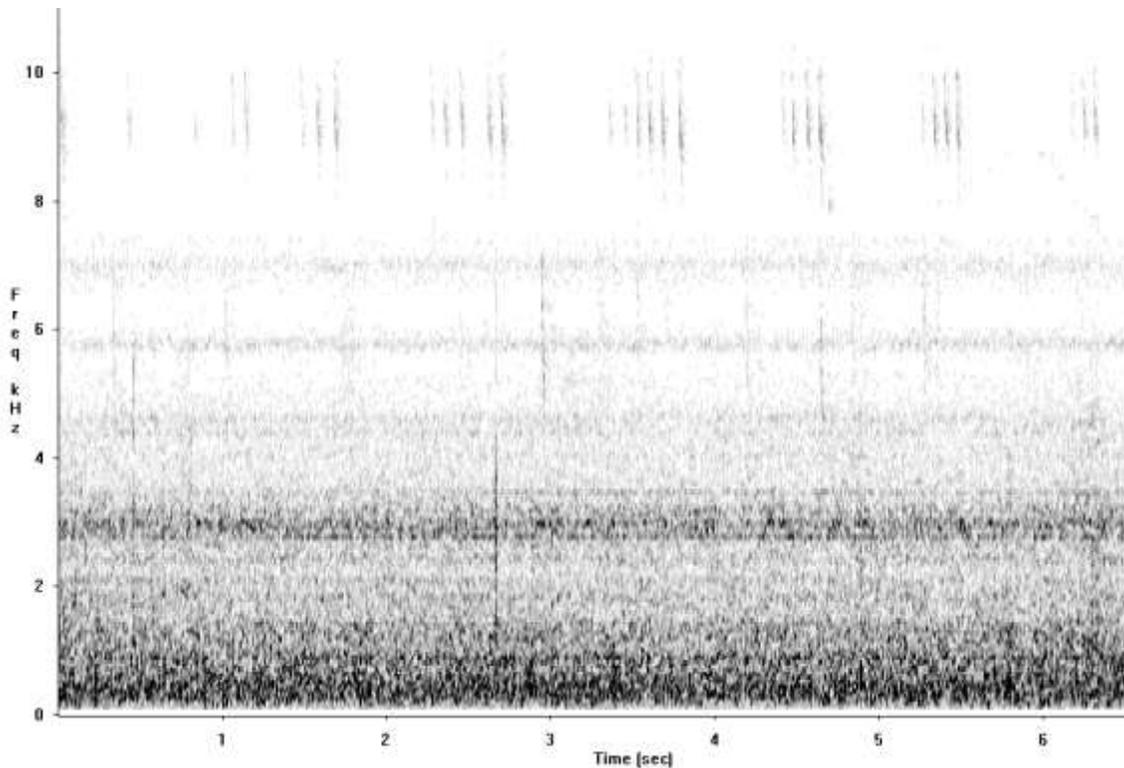


Figure 4. Sonogram of male's song of *Chlorochrysa nitidissima* in Chicoral, October 2008.

Odontophorus hyperythrus was the species with the highest probability of detection, being recorded in all trails during all months. Most of the records for this species were aural records and only twice, we had the opportunity to see it. In San Antonio, on September 9th at 06:06, KFC observed five individual roosted on a branch at 4 m of height; then suddenly, one of them jumped to the ground and the other individuals followed it, disappearing in the forest. It is probably that this tree was a dormitory, as it has been reported by Fierro and Franco (2006).

We estimated an averaged density of one individual in 7.69 ha and 10 ha for *C. nitidissima* and *I. porphyrocephala* respectively, one group of *O. hyperythrus* per 7.69 ha in Chicoral and 5.55 ha in San Antonio, and finally one individual of *G. nubicola* in at least 39.27 ha (Table 2). Chicoral has roughly 336 ha of forest, so we estimated there are approximately 44 individuals of *C. nitidissima*, 34 individuals of *I. porphyrocephala* and 44 groups of *O. hyperythrus*. However, this estimation is not so accurate because we did not consider the habitat requirements for each species. For example, we know that *I. porphyrocephala* prefers wet cloud forest with a lot of moss (Hilty and Brown 1986) and this habitat is only available in one part of the Chicoral area.

Table 2. Averaged density value for four endangered birds in two areas of the Western Andes.

Species	No. max	No. max ind	Density in	
	ind detec. Chicoral	detec. San Antonio	Density in Chicoral (ind/ha)	San Antonio (ind/ha)
<i>Odontophorus hyperythrus</i>	5 groups	6 groups	0.13 ± 0.00	0.18 ± 0.07
<i>Chlorochysa nitidissima</i>	2	3	0.13 ± 0.09	0.13 ± 0.16
<i>Iridosornis porphyrocephala</i>	2	0	0.10 ± 0.11	--
<i>Glaucidium nubicola</i>	1	0	0.02	--

In order to figure out changes in its detectability or local abundance of *C. nitidissima*, we did a graph of number of detections through the sampled months (Figure 5). We found variation of the abundance among sites and months, showing an opposite pattern from June to August; however, it did not apply from September to November.

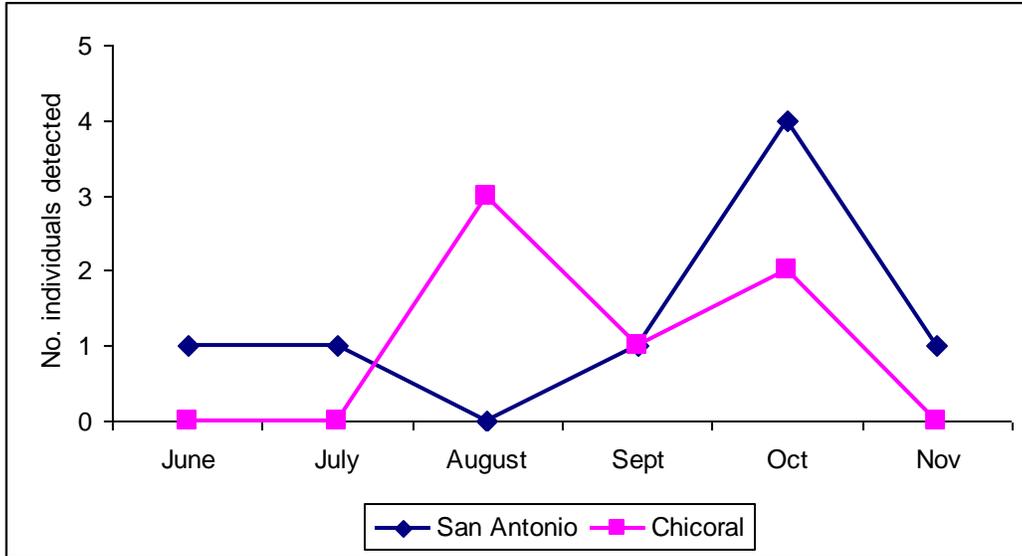


Figure 5. Number of individuals detected of *Chlorochrysa nitidissima* in Chicoral and San Antonio since June to November 2008.

For *I. porphyrocephala* 75% of records came from Cruces trail since June to November (Figure 6). Therefore, we thought that this trail in Chicoral had the suitable habitat for this species and its ecological density must be different than its total density. We estimated an averaged ecological density of 0.13 ± 0.11 individuals per ha, occurring one individual per 7.69 ha in the suitable habitat.

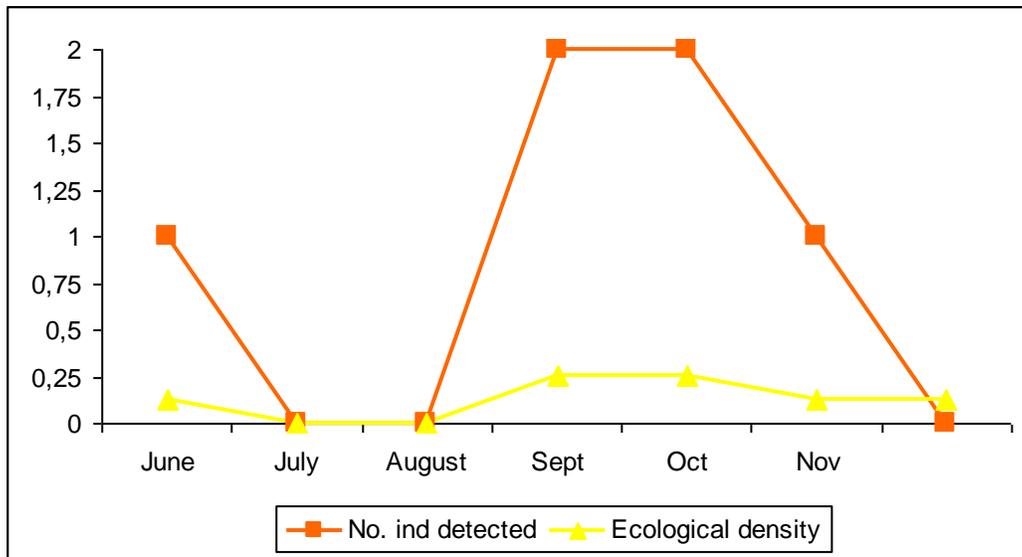


Figure 6. Number of individuals detected and ecological density in Cruces trail of *Iridosornis porphyrocephala* in Chicoral since June to November 2008.

We did not obtain any data of *G. nubicola* by using playbacks at the afternoons. However, we recorded some aggressive response from passeriforms in both sites. In Chicoral, two individuals of *Basileuterus tristriatus*, two individuals of *Attila spadiceus* and one of *Buarremon brunneinucha* had an evident response. The birds made frantic calls and moved around the speakers until the playback of *Glaucidium* was stopped. In San Antonio, *Syndactyla subalaris* and *Troglodytes aedon* showed interest in the *Glaucidium*'s song but their reaction was less evident than the species in Chicoral.

For *O. hyperythrus*, we made distribution maps for Chicoral and San Antonio looking for identifying with precision the groups occurring in both sites (Figure 7 and 8). In San Antonio, we confirmed the presence of one group (named: Odon1) inside a small fragment of forest and we suspected that this group were moving between this small fragment and another bigger fragment separated by bushes.

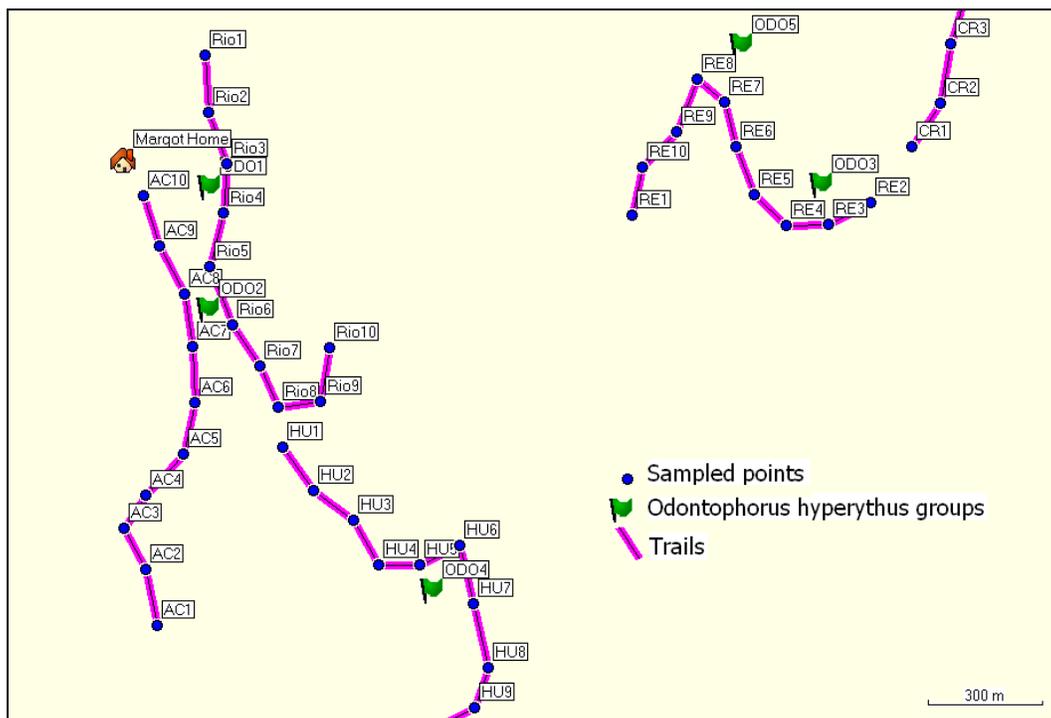


Figure 7. Distribution of *Odontophorus hyperythrus* groups in Chicoral area.

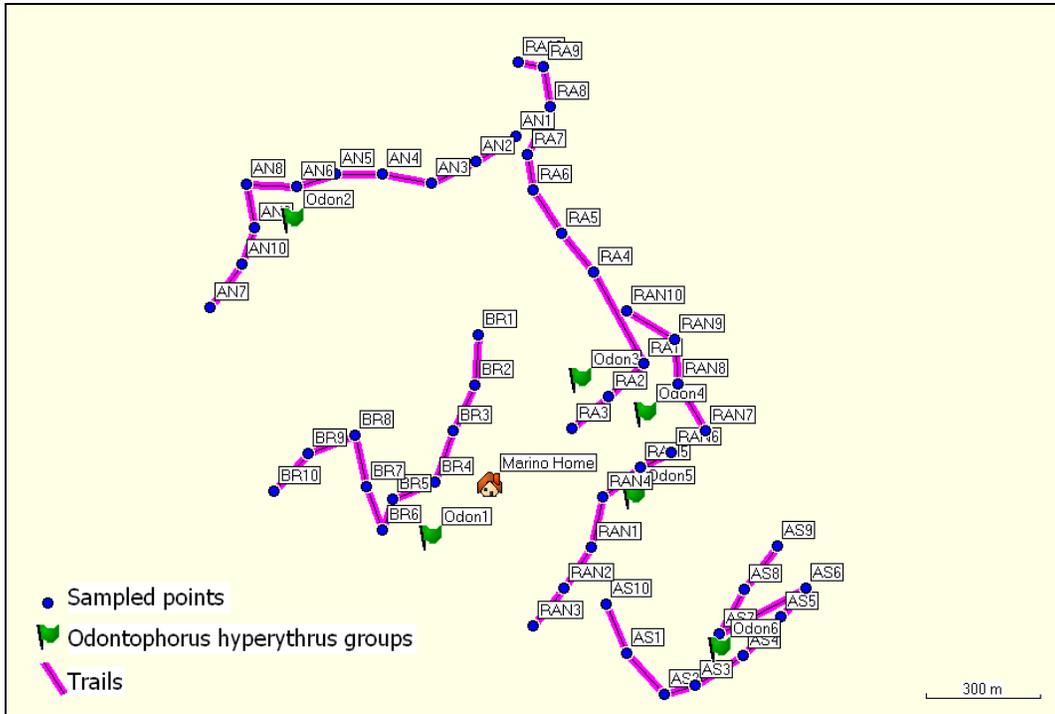


Figure 8. Distribution of *Odontophorus hyperythrus* groups in San Antonio area.

Discussion

Our estimation of population density for *I. porphyrocephala* is the first one reported for this species. Unfortunately for *G. nubicola*, it does not exist data about its population density in Colombia or Ecuador and we could not estimate this value with only one record in Chicoral. Our sampled methods were not effective to detect *X. flavicapilla* and *C. flavovirens* in San Antonio and Chicoral's forests. For *C. nitidissima* and *O. hyperythrus*, there is information on their population density in our country, and in this way, our results could contribute to the understanding of population dynamics for different kinds of habitat.

Glaucidium nubicola has been reported in four localities for Colombia: Alto Pisones, Ñambi Natural Reserve, La Planada Natural Reserve and San Antonio (Robbins and Stiles 1999). The absence of records of this species in our field work in San Antonio, could be related with the intense deforestation and human impact that it has been suffer this region the last decades, since the collected specimen and others observed by Miller (1963). Some researchers have reported local extinctions of birds in the past decades (Kattan *et al.* 1994); additionally, local biologists have not recorded this species during their field work in the last years (R. Sedano and C. Wagner *com. pers.*). Then, it is probable that *G. nubicola* had disappeared of San Antonio some years ago.

The habitat described for *G. nubicola* is a primary wet cloud forest with steep slopes in the Western Andes of Colombia and Ecuador (Robbins and Stiles 1999). This description is similar to the habitat along the path called Cruces in Chicoral, where we recorded the species on August 18th at 09:08. On the other hand, two individuals of *G. nubicola* were reported along a trail of 2.5 km in Alto Pisones (Stiles *et al.* 2002). For two congeneric species, *G. brasilianum* and *G. minutissimum*, have been reported densities of 0.02 and 0.10 ind/ha respectively, in the Amazon forests (Terborgh *et al.* 1990). We thought that Chicoral and its surrounding areas could be maintaining a population of *G. nubicola* considering the availability of suitable habitat, and the

projection for this population is less than 0.02 ind/ha. However, we would need to keep the monitoring programme in the region to determine with accuracy the population density for this species.

For *X. flavicapilla*, we have confirmed its presence in San Antonio and Chicoral areas using mist nets in previous studies. Definitely, recording songs in sampled points is not an efficient method to detect this species. We do not know about its breeding behaviour but it is believed that as other manakins, this species could have leks (Diego Calderón *comp. pers.*). We need to continue studying this endemic and endangered species in Colombia, but concentrating our sampling efforts in a mist netting method.

During 2007, Wildlife Conservation Society (WCS) Colombia Programme carried out a project to evaluate the populations status for several endangered species in the region, included *C. nitidissima* (Kattan and Franco 2008). They obtained a density value of 0.15 ind/ha with two individuals recorded in Chicoral in February 2007 and five individuals in San Antonio in March 2007. Our estimation was very close to that value (0.13 ind/ha). The small variations among estimations could be the result of the differences of detectability or variation in the abundance of the species along the year, probably related to breeding season and fruit availability.

Our estimations of densities for *C. nitidissima* since June to August, hinted some local migration between San Antonio and Chicoral as other researchers in the area have suspected (Johnston and Eusse *com. pers.*). However, the data since September to November did not show that pattern. We must continue evaluating those changes along the time and determining some local or altitudinal movements by marked and banded individuals of this species, as other biologists in Chicoral have done before.

Odontophorus hyperythrus has been studied in a national protected area in the Central Andes of Colombia (Fierro and Franco 2006, Franco *et al.* 2006). They found densities that varied from 0.3 to 0.4 groups per hectare, which are higher than our estimation (0.13-0.18 groups/ha). These differences could be associated to

differences in habitat quality and structure among sites. San Antonio and Chicoral are areas with high human intervention by wood extraction and settlements; whereas the Santuario de Flora y Fauna Otún Quimbaya has been maintained relatively without human impact for several decades. These could benefit the number of groups that can be maintained by the area due to available food and quality of habitat for breeding and foraging.

For this kind of species with restricted distribution or low population densities, it is difficult to gather enough amount of information for developing an extensive study. However, our work contributes filling some empties of knowledge on endangered bird species in Colombia, and generating new ideas of researching with this species. We can conclude that these sites, San Antonio and Chicoral, are maintained some populations of endangered and endemic species that must be protected and conserved in our country.

Objective 2 To sensitize the local people and community leaders toward the threatened species of their region using the collected scientific and no-scientific information.

Results

The introductory meetings about the project were carried out in May and June 2008. We held one meeting with the regional NGO, Asociación Río Cali, and confirmed the implementation of this project with their logistic support in San Antonio-Km18 area. From May to August, we tried to arrange several appointments with the San Antonio's community but they never replied our requests. However, the local ornithology group Titiribies in San Antonio supported by Asociación Río Cali and the decision-makers in Chicoral paid attention to our project, and each group participated in one introductory meeting in June. Finally in October 2008, we visited El Saladito School in San Antonio and presented a talk about our project in the "III Seminario local Biodiversidad y Conservación en Ecosistemas Andinos Tropicales" to the local community.

With this foregoing, we started and finished the interviews with the local people in Chicoral and San Antonio-Km18 in June 2008. Some results of this work are presented in table 3; however the completed document can be found in Spanish in the appendix 2. We used two criteria for the selection of respondents. First, people that had lived in the areas for more than 20 years, and second, people that were concerned about the welfare of their natural resource. An important aspect was that these people's opinion was considered for selecting the other respondents for the interview.

Based on the results from the interviews, we found out that most of the people did not identified the endangered birds of the region and for this reason, we were not able to compile data on reproduction, habitat use and vocalizations from our targeted species. Some of the respondents were not aware that they are living close to or into

the protected area in Chicoral (41%) and San Antonio-Km18 (18%). However the local people did recognize that there are several threats to the forest in Chicoral (77%) and San Antonio-Km18 (79%), for instance, wood exploitation, new colonization and building of houses. Other perceived but less significant threats are tea plantation and trails opening in Chicoral, and tourism in San Antonio-Km18 (Figure 9).

Table 3. Short description of the results from the interviews in Chicoral and San Antonio-Km18

	Chicoral	San Antonio-Km18
Time recorded	14 hours and 38 minutes	10 hours and 15 minutes
No. of people	22	33
No. women	12	13
No. men	10	20
No. of people that identified threats to the forests and the birds	17 (77%)	26 (79%)
No. of people that knew about the IBA, Reserve or protected area	13 (59%) but 8 of those people did not identify its importance	27 (82%) 17 people did not identify its importance
No. of people that identified the threatened birds of the region, which one?	1, Multicolored Tanager (<i>Chlorochrysa nitidissima</i>)	3, Multicolored Tanager, Cloud-forest Pygmy-owl (<i>Glaucidium nubicola</i>) and Andean Cock of the Rocks (<i>Rupicola peruviana</i>)
No. of people that identified the concept “threatened birds”	5 (23%)	17 (51%)
No. of people that have used or used a bird	7, hunting of guans and wood-quails for food, and Toucan Barbets (<i>Semnornis ramphastinus</i>) for sale	N.A.

In Chicoral most of the people interviewed was housewives (36%) and unemployers (23%), whereas in San Antonio-Km18 most of the people was majordomos (43%). Other occupations were farmers, tea harvesters, one teacher and those hired for a variety of works. This suggests that most of Chicoral’s people are owner of their lands and houses, and they do not have a stable economy; whereas most of the San Antonio-Km18’s people are employers of a family that lives in Cali, the closest city, receiving

a monthly salary for their work and hence, having a regular income. In Chicoral, the people have to seek other sources for livelihood, a situation that potentially puts the forest and its fauna at risk due to extracion of wood and/or hunting.

Local people recognized that some birds and animals have been disappearing due to changing climate and fragmentation of forests. In both sites, Chicoral and San Antonio-Km18, parrots (undetermined species) were common birds in those forests in the past. People also mentioned that parrots, owls, Collared Trogon (*Trogon collaris*), Sickle-winged Guan (*Chamaepetes goudotii*), Toucan Barbet (*Semnornis ramphastinus*) and Chestnut Wood-quail (*Odontophorus hyperythrus*) have disappered or gradually becoming rare, whereas several years ago they were common species in the areas.



Figure 9. Local people were interviewed using a digital recorder and cards that depicted common and endangered birds of the region.

We also realized the importance of spreading our conservation messages not only among the kids from the schools, but also to the community in general; a strategy

similar to the one followed by the Asociación Río Cali, which also works hardly with adults. Specifically in Chicoral, five years of our community work had been focused on kids and for some cultural reasons the messages have not been transferred from the children to the parents. We believed that the parents in this community do not pay much attention to their children and the family lives as a group of workers.

For future interviews, we suggest a) to involve hunters or people whose livelihood is directly linked to the forests, in order to obtain information about natural history of the birds; b) to include a wide range of age group (for instance kids from schools or ornithology groups) and professions (for instance owners of farms in San Antonio or owners of tea plantations in Chicoral), in order to have a complete idea what is happening with the landscape and conservation processes in the region. One of the weaknesses in this process was the difficulty to reach people in their houses; some of them do not have mobile phones or land phones to fix an appointment, or they were working when we visited them. For this reason, we feel that public spaces or social events would be ideal for the interviews in order to get a more representative sample.

One of the most important educational activities was the Bird Month Celebration. It was held in Chicoral on October 30th, named “Looking for the endangered birds” and had the participation of 128 people. La Libertad School of Chicoral and Asociación Calidris invited several people from both governmental and non-governmental institutions such as Corporación Autónoma Regional del Valle del Cauca-CVC, Instituto Colombiano de Bienestar Familiar, Alcaldía de La Cumbre, Fundación Té Hindú, WCS Colombia and Asociación Río Cali (Figure 10). Invitations were also extended to two public libraries and 15 schools, among them one school from San Antonio area for the first time.



Figure 10. This invitation for the Bird Month Celebration was made by hand for the kids of “La Libertad” school in Chicoral.

Five schools participated with poetry, plays, songs, drawings and stories about birds in the first activity of the day. People also played a decision game named “I am a Chestnut Wood-quail”; each decision could or couldn’t permit to continue through the Wood-quail’s life from a chick to an adult. In this way the endangered species *O. hyperythrus* was the symbol of this Celebration (Figure 11). After the game, all participants discussed the treats in the Wood-quail’s life caused by humans or natural factors and participated in a forum. Then, kids, young people and adults painted their hands on the mural, as a symbol of commitment with the protection of endangered birds. At the end of the day, we made an evaluation of the event with the participants and gave to each person a ruler and a poster about endangered species as souvenirs (Figure 12).

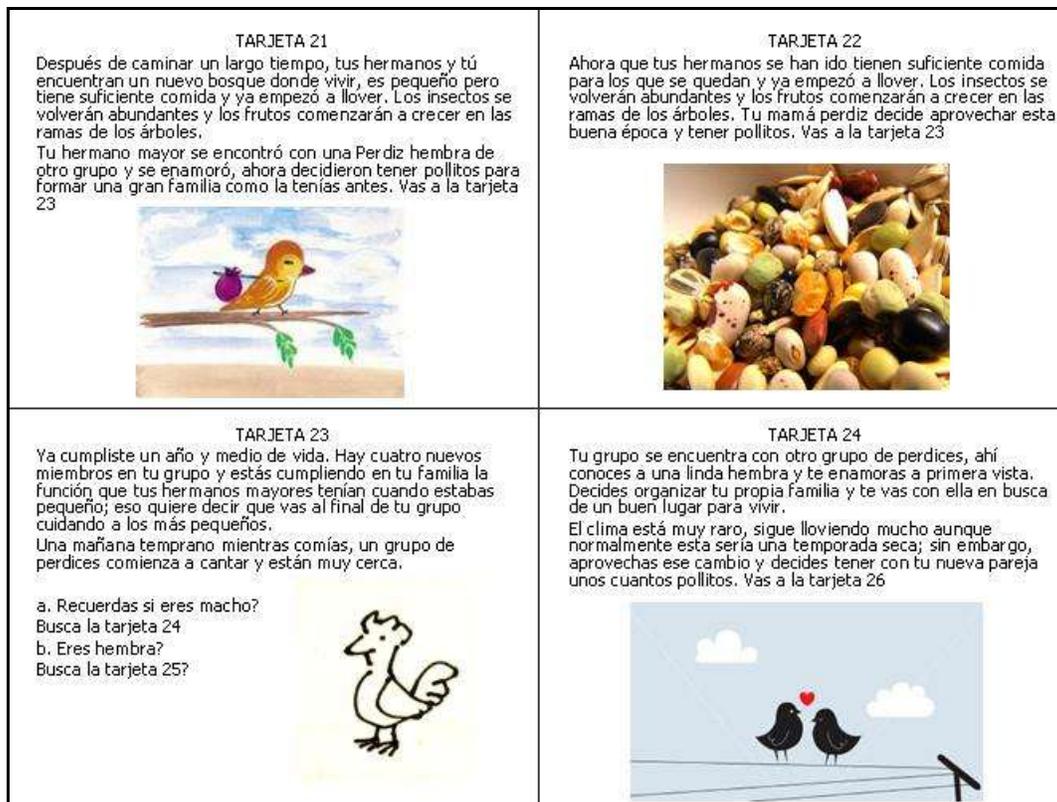


Figure 11. These are some of the cards of the game “I am a Chestnut Wood-quail”. The five schools that brought some artistic activities received one game.

After the event, an evaluation meeting was held with one of the teachers of La Libertad School and members of Asociación Calidris. We decided to send one “I am a Chestnut Wood-quail” game and extra posters to some schools; especially those that prepared artistic activities for the Bird Month Celebration in its third year.

We published the first of two editions of “La reinita”, the local magazine supported this year by Conservation Leadership Programme in July 2008 (Figure 13). “La reinita” and the Asociación Calidris’ brochure were delivered to the audience in the Third Contest of Folklore Music of Colombia “Solitario Andino 2008”. This is a contest for kids between 5 and 18 years who are singers and/or composers; their parents and families participating in the event, and many people from the city of Cali and several small towns.

SE BUSCAN

AVES EN PELIGRO DE EXTINCIÓN PARA SER PROTEGIDAS

Estas cinco aves en peligro de extinción están presentes en los bosques nublados de la cordillera Occidental de Colombia. La Perdiz Colorada, la Tángara Multicolor y el Saltarín Dorado sólo pueden encontrarse en los bosques colombianos y son llamadas especies endémicas.



TÁNGARA MULTICOLOR
(*Chlorochrysa nitidissima*)

Es considerada una tángara en peligro de extinción, ya que es muy susceptible a la fragmentación de los bosques. Para alimentarse forma bandadas o grupos con otras especies de aves y tóriganos, generalmente moviéndose en el bosque medio y alto. Come frutos maduros y busca insectos en el envés de las hojas.



MUSGUERO GARGANTILLA
(*Iridosornis porphyrocephala*)

Suele estar acompañada de otras tóriganas buscando frutos e insectos en la copa de los árboles. A veces visita los bosques de la vertiente oriental de la cordillera Occidental en el Valle del Cauca. La deforestación de los bosques le quita al Musguero la posibilidad de visitar nuestros bosques y machos más.



BUHÍO NUBÍCOLA
(*Glaucidium nubicola*)

Como otros búhos en nuestro país, se sabe muy poco sobre su historia de vida. Es uno de los más pequeños de su grupo. Se alimenta de insectos y lagartos. Aunque el impacto ambiental ha sido lento en la cordillera Occidental, la deforestación ha incrementado en los últimos años. Ésta es la principal causa que pone en peligro de extinción al Buhío Nubícola.



SALTARÍN DORADO
(*Xenopipo flavicapilla*)

Es silencioso y para desapercibido, por esta razón no se sabe si ha desaparecido de ciertas regiones por la pérdida de su hábitat o si nunca ha estado ahí. Es posible que el Saltarín Dorado, al igual que otros saltarines machos, forme grupos ruidosos pero que las hembras se ocupan y esconden dentro del grupo al macho que más les guste.



PERDIZ COLORADA
(*Odontophorus hyperythrus*)

Son tímidas pero de vez en cuando pueden verse en los bordes de los bosques o los cultivos de café. Caminan por el suelo del bosque en grupos de 3 a 9 perdices, buscando semillas, gusanos o insectos para comer. Su canto es muy potente y casi siempre se escucha en las mañanas después del amanecer. La Perdiz Colorada está en peligro de extinción por la pérdida de su hábitat y la cacería.



CALDERIS



BirdLife



PNUM



WCS



Conservation Leadership Programme

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Figure 12. This poster was given to all the participants of the Bird Month Celebration in Chicoral. Some organizations as CVC, Asociación Río Cali and WCS received more than 20 posters for their contacts.

Los textos de esta entrega fueron escritos por los estudiantes de la Escuela La Libertad, estudiantes de Tesis de Calidris, Estudiantes del SAT. Algunos fueron corregidos y editados por los docentes y el equipo técnico de la Asociación Calidris.

Las fotografías son de Alex González, Vianey Ramírez, Richard Johnston, Yanira Cifuentes, Carlos J. Ruiz, Patricia Falk, Olga Adriana Oviedo, WCS, Asoricali y Diana Eusse.

La diagramación, montaje e impresión estuvo a cargo de Diana Eusse.

La reinita se realizó gracias al apoyo de las siguientes organizaciones:



Muñicoral

Fundación Música de Chicoral




Figure 13. The July 2008 edition of “La reinita” magazine was supported by Asociación Calidris, Fundación Música de Chicoral-Musicoral, Finland Embassy and Conservation Leadership Programme.

Boletín del proyecto Monitoreo de Aves en Chicoral

Enero 2009
Volumen 3, Número 6

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La reinita

Se buscan aves en Peligro

Octubre mes de las aves, tercera edición.

El jueves 30 de octubre celebramos la tercera versión de Octubre Mes de las Aves en la Institución Educativa La Libertad sede Chicoral (Valle del Cauca, Colombia). Este año el tema fue “Se buscan Aves en Peligro”, en honor a estas especies de aves que están en problemas por la reducción del bosque donde viven, por la cacería de la que son objeto, o por enfermedades o plagas que las atacan. Este evento fue considerado todo un éxito para los cerca de 128 invitados y el comité organizador.

También nos enseñaron que está en manos de todos cuidar y defender los recursos naturales de nuestro grandioso bosque de niebla.

Luego jugamos “Soy una Perdiz Colorada”. Este juego nos enseñó los diferentes peligros que enfrentan las perdices durante su vida. Con esta actividad, los niños reflexionaron sobre la vida de las aves, y proyectaron las enseñanzas del juego hasta sus propias vidas. Por ejemplo, nos hablaron de la importancia de comer bien, obedecer a los padres y tomar siempre buenas decisiones.

Figure 14. The second edition of “La reinita” magazine had the participation of students from Chicoral School, CLP team and participants of the Bird Month Celebration in October 2008.

In January 2009, we published the second edition of “La reinita” (Figure 14). Some kids from Chicoral school wrote several notes about their participation in the Bird Month Celebration in October 2008. We published the best notes written by Dayra A. Echeverry, Fabian Fajardo and David Garavito. We also showed in this edition the results of the interviews carried out by Erika Hurtado and the biology student in this project, Carolina Montealegre, who wrote about her experience working in Chicoral and San Antonio areas. We also reported about the “Strategic planning and biological monitoring for conservation management” course carried out in Chicoral in November 2008 supported by Conservation Leadership Programme, WSC and Asociación Calidris.

We established an agreement with Asociación Río Cali and Titiribies for placing the educational signs in Km18, with the following characteristics: a) Asociación Río Cali selected seven farm owners who were interested in the signs and the educational processes in this area, b) Asociación Calidris hired a local person who was the responsible for making six signs with the names of each farm (Alexander González has enough experience with this work), c) He taught some members of Asociación Río Cali, Titiribies and Asociación Calidris how to make the seventh sign, and d) the farmers should make a small roof over the signs and take care of them. In this way, we ensured the participation of all stakeholders during the process, the appropriation of these educational signs and their maintenance in the future.

The local ornithology group Titiribies participated in several meetings during August 2008. In one of these meetings, we coordinated the texts and decided on the bird species that were to be included in the wooden education signs. To complete the activity, we waited for the end of the vacation season, and in this way we got the participation of the whole group. In December 2008 and January 2009, we carried out two important activities with Asociación Río Cali, Titiribies and Asociación Calidris.

In the first meeting we spent the whole day with polishing, drawing, carving and painting the seventh wooden signs. It was very exciting to see ten people interested and enthusiastically involved in this activity; even the owner’s farm, Eduardo

Carvajal, participated in carving the name of his farm, “Finca Yarumo” on the sign. In the second meeting, we officially handed over the seven signs to the farmers who were very glad about their beautiful signs and two of them set them up immediately beside the road, in front of their farms. Two weeks after there were distributed, all the signs were placed along the road forming an educational path, such as “Open Path” in Chicoral (Figure 15).



Figure 15. This is the first of the seven signs set up on the road in Km18 forming an educational path for local people and visitors.

Stakeholders: We made a strong link with Asociación Río Cali. Carlos Wagner, the executive director, and other members participated in field trips, meetings and courses organized by Asociación Calidris (i.e. Advance techniques on banding - MoSI programme). We also strengthened our relationship with the teachers and kids for

Chicoral School, by organizing the Bird Month Celebration and two capacity building course about birds in September 2008. Also we have now a regional network involving farmers, new schools, teachers, kids, Titiribies and others CLP alumni winners of 2008.

Communications: We published eleven articles on our website (<http://calidris.org.co/categoria/noticias/>). We have also broadcast our project in regional and national channels. In May 2008, Diana Eusse and Karolina Fierro participated in one TV programme for the regional channel “Telepacífico” (Figure 16). Karolina Fierro also held in two interviews, one for a regional radio station “Javeriana Stereo 107.5” about birdwatching in Colombia, where she had the opportunity to talk about the endangered birds of the Western Andes. The other one was in April 2009 for a national TV channel “Señal Colombia” and she talked about the objectives of this project, the strengths and weaknesses of the team, social and educational activities, Conservation Leadership Programme and her future as conservation biologist.



Figure 16. Interview for “Telepacífico”, the regional channel, talking about endangered birds.

Objective 3 To provide a scientific basis to support a regional management plan for each of the five threatened species and their habitat in the region.

Results

As we mentioned in the project proposal, a regional management plan for the endangered species in the Western Andes depends on local organizations as the Corporación Autónoma Regional del Valle del Cauca-CVC. We have informed to this institution about our project and its objectives; they were invited to participate in the Bird Month Celebration in Chicoral and we also have sent them posters and “La reinita” magazine.

Because of our interest on the regional endangered birds, the last semester CVC invited the Asociación Calidris to participate in the preparation of a proposal for developing some management plans for several birds species, among them *G. nubicola*, *O. hyperythrus*, *I. porphyrocephala* and *X. flavicapilla*. The species *C. nitidissima* already has a management plan; however, our work will be to implement some conservation actions mentioned in the plan. This proposal will be leaded by Wildlife Conservation Society-WCS in Colombia.

The results of our project have the potential to be part of the regional management plan mentioned above, and they could also be included in the second edition of Red Book of Colombian Birds. During the SCB annual meeting in July 2008, Karolina Fierro had the opportunity to talk with one of the people in charge of the Red Books in Colombia. This person, Luis Miguel Renjifo of Universidad Javeriana in Bogotá, mentioned the importance of our project for the ornithologists community and was very keen on receiving a copy of the final report or a scientific publication.

Conclusions

- After six months of field work we have some estimations of density for *Odontophorus hyperythrus*, *Chlorochrysa nitidissima* and *Iridosornis porphyrocephala* in the Western Andes of Colombia. For the last species, our work is the first one to estimate its population density. Unfortunately, we did not obtain any records for *Chlorospingus flavovirens* and *Xenopipo flavicapilla*.
- We confirmed the presence of *Glaucidium nubicola* in Chicoral, being the fifth locality reported for this species in Colombia; however, we could estimate its population density based on one auditory record. Our results and other previous studies indicate that this species have disappeared of San Antonio due to the high human impact in the area.
- The methods used in this project, a combination between auditory and visual records, were effective for most of the target bird species. However, a better method such as the use of mist nets could be the solution for obtaining some records of *X. flavicapilla*, which we know is present in Chicoral and San Antonio-Km18 areas.
- We know the population density of *O. hyperythrus* in other well-conserved area in the Central Andes of Colombia. And although our estimations were lower than that value, we believed that San Antonio and Chicoral forests are maintaining a good population for this species given that it is using scrublands to move among forest fragments.
- Our relation with local communities, regional organizations, kids and school teachers, local ornithology groups and governmental institutions became stronger, and it will be fundamental for continuing developing biological research and conservation actions in the region.

- We have gotten to maintain the annual Bird Month Celebration, including new schools which actively participated in 2008. A teacher from El Saladito School in San Antonio expressed to us her motivation to carry out a similar celebration in their region and she wanted to make a mural such as we made in Chicoral School.
- We broadened the impact of a good communication strategy such as the “Open Path” from Chicoral to San Antonio-Km18, covering now three different municipalities. We also realized that this strategy is well received by local people, especially by farm owners who are strongly committed for educational processes in these areas.
- We feel very satisfied with all the things that we have achieved without planning, such as the national TV programme, the motivation of farm owners about educational signs on the Km18 road and the recognition of the project in the regional context. We hope to continue working towards the conservation of these cloud forests in the Western Andes of Colombia, involving other local communities and improving our conservation strategies.

Financial report

Itemized expenses in US\$	CLP requested	CLP inverted	Calidris
PREPARATION			
Communication (telephone, Internet, postage)	600	600	750
Printing journal	210	283	
Insurance	200		200
Visas	400		
Team training (English courses)	300	300	300
Reconnaissance			
Medical supplies			200
Equipment and supplies (+speakers +batteries +maintaining of equipment +fieldbooks, pencils, pens, rubberboots, flagging, permanent markers)	600	693	3000
Photographic equipment (+camera +memory stick +batteries)			500
Camping equipment (+backpacks +sleeping bags +headlights +portable gas stove)			1000
Field guides			200
Maps			700
Satellite image			
Boat			
Fuel			
Other			
PROJECT IMPLEMENTATION			
Insurance		588	
Accommodation (US\$ 25 x 15 days x 7 months x 2 person, plus additional person invited sometimes)	3150	2919	2500
Food for team (US\$ 15 x 15 days x 7 months x 2 person, plus additional person invited sometimes)	2240	2184	1200
Transportation (approximately US\$ 200 x 9 months)	700	1113	700
Customs			
Workshops	500	500	400
Outreach/education activities (+La reinita magazine)	2500	2420	500

+educational signs and local person hired
 +posters and design
 +mural and design
 +games production and design
 +didactic materials: colors, pencils, pens,
 markers, paper, cartoon, adhesive tape)

Other

POSTPROJECT EXPENSES			
Administration	300	400	300
Report production	300		
Other (laptop, printer and software)			1400
TOTAL	12.000	12.000	13.950
TOTAL BUDGET (CLP and Calidris)			US\$ 25.950

Current exchange rate (May 2008) 1 US\$ = 1.785 Colombian pesos

Recommendations

- To evaluate the impact of our recent actions in the region through new interviews. To determine whether or not local people have received the conservation messages given them through posters, the mural, “La reinita” magazine and educational signs.
- To support the actions or ideas developed by local leaders or community committees. For example, to celebrate a Bird Month with a big mural in El Saladito School in San Antonio or to organize a community pot in Chicoral involving the whole families. In the second activity, we would strengthen our relation with the adults of Chicoral, one of the weak points revealed by the interviews.
- To broaden these educational strategies along the Western Andes creating a “Natural Reserves Network” among several governmental and non-governmental institutions. To develop a plan for dissemination of the information from conservation actions toward endangered species to the department of Valle del Cauca, and even considering to reach other departments of Colombia.
- To publish a book with a compilation of educational activities looking for raising the awareness of local communities toward conservation of birds, developed over the years by Asociación Calidris. Moreover, inviting some organizations to collaborate in the preparation of this book enriched with their experiences.
- To implement a monitoring programme over one year for these endangered species in the region in order to obtain records of *G. nubicola* and *I. porpyrocephala* in San Antonio and *X. flavicapilla* in both sites. For *X. flavicapilla*, we must use new methods of capture and analysis such as

PRESENCE. To identify changes over time in the number of records and preferences of habitat for these species in the region.

- To identify community leaders or organizations along the Western Andes to build their capacity through courses on biological monitoring. To carry out a monitoring programme in some regions depending of the commitment of the leaders or organizations, and to share information on the endangered species through the “Natural Reserve Network”.

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