

# An integrative approach to disseminate research information and training local and foreigner young researchers in tropical areas

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As a graduate student - busy as we all are - I have been frustrated with the increasing expectations that funding agencies had been adding on top of our own research responsibilities. I am specifically referring to the outreach sections so often required for successful proposals. I feel that we have not been properly trained to conduct all these activities and it can be overwhelming to think about them. However, during my time in graduate school, I not only started understanding the importance of outreach in my research but I have also started exploring how I can use my basic scientific knowledge and communication skills to disseminate my work and to promote science and motivate people, especially local communities and undergraduates students.

Motivating people to appreciate nature had been recognized as the most important factor to promote conservation (Schmidly 2005, Brussard and Tull 2007). Furthermore, the fact that most people live in cities has increased the disconnect between humans and nature, thus current generations are losing interest and appreciation for the natural world and this is a growing problem (Turner et al .2004). Tropical areas are an ideal place to inspire people to appreciate nature for two main reasons: 1) they have the highest diversity on the planet, which allow people to encounter new plants and animals daily; and historically this had been the eye-opening experience of so many great naturalist (e. g., Charles Darwin, Alexander von Humboldt, Alfred Russel Wallace and Henry Bates, just to mention a few); 2) most ecosystem degradation is taking place in tropical areas, thus promoting local and international appreciation for tropical ecosystems will contribute to much needed further conservation assessments.

My main objective in this report is to mention the different avenues that I used throughout my research in Southeastern Peru, to build appreciation for nature in future generations of youth and budding scientists as well. I will address three main approaches that I used to promote appreciation for nature. 1) Train young local high school students in conservation and research strategies, with the goal to form an ecological group at the local high school. 2) Train undergraduates in bird nesting field techniques, scientific writing and motivate undergraduates to pursue a graduate career. 3) Use different visual aids to reach the general public: a) a documentary and videos about the project and general conservation about the region, b) a field nests and eggs guide and c) a personal web page with detail information about the project.

## **General aspects about the project**

I have been conducting my research project since 2007 when I conducted an exploratory visit for four months, which was not only helpful to have an accurate picture of the landscape and feasibility of the project but also allowed me to start networking with local communities and NGO's that work in the region. From to 2008 to 2010 I had been recruiting people to work with me as volunteers from August to December in Southeastern Peru, in the Manu National Park. To do so, I had been using different online resources where I post an advertising paragraph (see below) in different list-servers such as the Red Nacional de Observadores de Aves (RNOA), the Neotropical Ornithology Birding List (NEOORN) and post a job announcement on web pages maintained by the Ornithological Societies of North America (OSNA; ornjobs) , the Texas A&M Job Board, and the website of Animal Behavior society. Through this strategy I have been able to

have on average 30 applicants per year, which allows me to select very good candidates. Although this is hard in the beginning through time it got easier, especially as some assistant returned year after year to conduct their undergraduate theses, and this improved the scientific skills and the quality of data collected by the group. Also, the stories and information provided by previous assistants on the webpage encouraged more people to apply for the volunteer position (<http://www.flmnh.ufl.edu/ordwaylab/londono/previousfieldassistants.html>). Finally, the project covers a wide variety of ecosystems from lowland tropical forest (350 m asl.) to puna (3100 m asl.), this factor not only attracted more applicants but also, while in the field, they were exposed to the dynamic nature of tropical landscapes and how it can change rapidly and the consequences of this heterogeneity on species composition and turnover.

### *Volunteer posting paragraph*

#### **“Neotropical Avian nesting behavior and predator interaction, Manu National Park, Peru**

I am looking for volunteers to participate in my PhD thesis project on the highland of the Manu national park, Peru. The project will cover elevational gradient between 350 and 3100m, and will take place during the avian breeding season between August and December 2011. This work mainly involves behavioral observations, nest searching, and nest monitoring. We work 6 days a week, from 6 am – 5:30 pm, with occasional data entry and organization later in the evenings. This year I am also looking for assistants that feel comfortable catching and handling non-poisonous snakes. After selecting volunteers I will randomly assign them to one of the stations (Wayquecha, San Pedro, Tono), therefore field conditions are variable, please visit the station description to see specific details (<http://www.flmnh.ufl.edu/ordwaylab/londono/studysites.html>). Communication is limited at best, and field assistants can expect to be out of touch with most of the world for 2-3 weeks at a time. Also keep in mind that the study will be conducted in a remote area where we will be camping, cooking for ourselves and would have limited electrical power. Internet communication is poor (once a month). Applicants should be in good physical shape, able to work well in a group setting, and be willing to work long hours under difficult conditions (heat, rain, high humidity and lots of biting and stinging insects) in the field. You should expect to be wet, bitten by insects (especially mosquitoes) and have a limited diet of rice, pasta, legumes, cassava, plantain, and fresh vegetables. This work is most appropriate for people who are interested in pursuing a career in behavior and ecology, and who have previous field experience. Please keep in mind that a large number of people apply for these positions, and due to the remote nature of the field site I strongly prefer applicants with experience in mist netting, reading color bands on small birds, nest searching, catching and handling non-poisonous snakes and living happily under uncomfortable conditions. Finally, the project will be a great opportunity for students wanting to pursue a career in ecology. Opportunities for students to elaborate their thesis are available, and such students are strongly encouraged to apply.

I will accept applications for field assistant positions until May 15 and I will make decisions by June 1: apply via email with (I) a cover letter explaining why you want this (really difficult) job, (II) a CV, and (III) names and email addresses of three people familiar with your field skills.

Unfortunately, I do not have money to pay salaries or transportation to Peru, but I will cover all the stations fees, food during the field season and transportation within the field sites. Please visit my web page (<http://www.flmnh.ufl.edu/ordwaylab/londono/andeanproject.html>) for specific details about the project, field site and previous field assistances experiences

(<http://www.flmnh.ufl.edu/ordwaylab/londono/previousfieldassistants.html>). If you are interested send me all your information to [galondo@ufl.edu](mailto:galondo@ufl.edu).”

### **Training local high school students in conservation and research strategies, with the goal to form an ecological group at the local high school.**

*Reaching local communities.*— Like so many reserves in tropical areas, the Manu National Park is surrounded by communities which are one of the main threats to the integrity of the ecosystem through logging, hunting and fishing. In many cases these extractive activities are the main source of income, economic or food resource. It is hard to tell people to stop or reduce these activities inside and outside the park; therefore, I partner with a local NGO Asociación para la Conservación de la Cuenca Amazonica (ACCA) to create awareness of the importance of conserving natural resources.

*Talks and guided walks.*— My research team and I have provided talks and guided walks along trails in the Wayqecha station to diverse ages of middle and high school students and professors. Throughout my research I gave seven talks to six local communities (Patria, Pilcopata, Challabamba, Chullubamba, Queros, and Chontachaca) focusing on the main topics of research for my thesis project and the importance of science in Latin American countries to acquire basic knowledge about natural environments. During the guided walks on the trails, I and other researchers show the children and professors how to use binoculars, identify plants, animals and how they can collect natural history data in their own backyard. This has been a unique opportunity to attempt integrating science and local communities, which is always a challenge.

*Field course.*— Due to the short time (one day) visit and the large number of kids participating, the quantity and quality of the information we could share was not as much as we intended and I wanted to make a greater impact. Thus in 2009, I designed a theoretical and practical course of avian ecology that took place at Wayqecha Biological Station between October 16-21. All the transportation and field expenses for the participants and myself were covered by ACCA. The best five students from the Patria high school were selected by one of the professors; this is the closest community to the section of the Manu national park where I am working. The five local students that participated in the course were Laura Cristel, Grandez Terrazas, Yuremma Titto Copaja, Lisbeth Huachaco Tejada, Alex Sotelo Aguilar, Yulme Castro Vilca and the professor was Adler Grandez (see photos below). The course lasted six days and five nights, and we conducted different activities in the mornings and afternoons. Each morning we practiced different skills in the field, where the students learned to set up mist-nets, take birds out of the nets, and collect a variety of morphological data from all the bird that we captured. They also learned how to use a GPS to locate bird detections. To teach them how to use the GPS I used a game of geocaching: I hid some candy and marked the point and they had use the GPS to find the “hidden treasure”. We also conducted walks to learn how to use the binoculars to locate the birds, we taught them the names of a few different species and important ecological data to collect during each observation. Finally the students learned how to conduct a bird census and estimate bird density, where they measured the trails with a rope and a compass and then they drew the trail on a piece of paper (to scale) and plot all the bird detections during their census. Additionally, we conducted theoretical classes during the afternoon where the students

learned concepts about bird evolution, molecular techniques, morphology and physiology of birds and behavior and ecology of birds. The following year (2010) all these students moved to Cusco to get a better high school education and also to continue with their university studies.

The formation of the local ecological group had been a very slow process especially because of the high student turnover and the lack of commitment from the professor mainly due to lack of resources. However, for the 2010 field season I donated five pairs of binoculars that I acquired as a donation from the NGO Optics for the Tropics and also one Spanish version of the Field Guide to the Birds of Peru. Unfortunately because of security reasons in the area I could not work with the kids during the 2010 field season.

Although I expected that the connection of these local communities with their environment was going to be higher than that of people living in cities (i.e., Cusco), I was surprised how little attention the young generation pays to their natural surrounding and the kids were thinking more about cell phones, computers, and television. I feel that the course and talks opened the kids' eyes (see their comments about the course; Appendix 1).

*Park guards.*— Another part of the community who I frequently interacted with were the park guards. Although I worked together with them at both the upper (Wayqecha) and the lower (Tono) stations, most of the close interactions took place at the lower elevation site because there our field camp was inside the park's boundaries. The park guards stopped by every other week to check upon us, and also to learn different aspects about the project. They were curious about the type of data that we were collecting and why we collected this data. They also shared with us all their great stories and local knowledge, and on two occasions they came with kids from the local high school where we gave talks and showed them around.

### **Train undergraduates in field techniques, scientific writing and motivate them to pursue a graduate career.**

One of the greatest challenges about my bird-nesting-project is actually to find the nests themselves, and this is especially hard in tropical areas. Thus for the project to be successful I needed a lot of help from volunteers, which I was able to accomplish. But I felt, that the experience that the assistants will get just by being in a new area, learning new techniques and ideas was not enough, and I needed to give them more. Thus I decided to use two different approaches that although had the same final result (publishing a scientific paper) they took different amount of time and effort. The first one was to offer previous and current data from the project to all the students that were interested on publishing something about a particular bird species that called their attention during the field season. Although we had discussions throughout the field season most of the work was and is being done after the field season. The second approach was to help students who want to conduct an undergraduate thesis with the independent project idea, design, data analysis and publication. With two exceptions, all undergraduate theses were conducted with returning students. We discussed different topics and interests during the first field season and between field seasons they read papers and outlined hypotheses, predictions, questions, and methods. During the second field season we collected the data and polished methodologies and data analyses.

*Undergraduate training.*— Between 2007 and 2010 I had the great opportunity to mentored 50 undergraduate students from several different nationalities, Colombia (21), USA (19), UK (1), Hungary (1), Mexico (1), Canada (3) and Peru (4). Every year I conducted a week of training on the middle elevation station (San Pedro, 1500 m asl), where I trained the field assistants in bird nest searching techniques, how to program and place thermal sensors on bird nests and general data collection. After the training week I started to set up the different groups at their permanent stations where they spent the rest of the field season, Wayquecha (3000 msl), Tono (900 msl) and San Pedro (1500 msl).

The low elevation station (Tono) was the most challenging place but also fascinating; to get to this place we had to walk for two hours, and we also had to create a trail system and build a house (very rudimentary one, just some wooden poles, plastic and mosquito net, see photos) to keep the food, protect our equipment and have a place for cooking. The groups at the middle and higher elevation stations conducted weekly nest searching along the road between 1400 and 3000 msl to look for nest of the Cinnamon Flycatcher (one of my target species); they found and collected data from over 40 nests. In all the station we searched for bird nests from 6:00 to 17:30 with a two hour lunch break, and there was one day off per week. Overall we found more than 2000 nests from more than 230 species, where more than 40 of these nests are new to science.

*Closing the loop.*— I have been lucky to have accumulated a large data set on nesting behavior of tropical birds, most of which was previously pretty much unknown. For my dissertation I am focusing on community level and large scale questions, thus, although I want to, I do not have the time to publish all these new descriptions and exciting nesting behavior data of tropical birds. Furthermore, from my personal experience I think it is very rewarding to get a publication when you are working as a volunteer (it is better than a salary), it is very gratifying to see your name on a paper, especially when it is your first publication. These are the general words that I use when I first talk to the assistants to motivate them to play with the data and work with it after the field season. Currently I am working with 34 of my field assistants that were enthusiastic and wanted to take their experience one step further and write different manuscripts of these nests' descriptions, which are currently in different stages. For space limitation I am only going to mention the papers that are far along in the process. So far three papers had been accepted for publication: 1) David-R, S. and Londoño, G. A. 2011. First description of the nest of the Silver Antbird (*Sclateria naevia*) with notes on eggs and nestlings. *Ornitología Neotropical*. *In press*. 2) Ocampo, D. and G. A. Londoño. 2011. Nesting of the Fulvous-breasted Flatbill (*Rhynchocyclus fulvipectus*) in Southeastern Perú. *The Wilson Journal of Ornithology*. *In Press*, and 3) Peralta, N. A., G. A. Londoño and C. D. Cadena. 2011. El nido, los huevos y el comportamiento de incubación del Mosquero Pechiocre (*Nephelomyias ochraceiventris*; Tyrannidae). *Ornitología Neotropical* 22: 59-67. Two manuscripts are currently under review 1) Valdez S.O. and G. A. Londoño. Nesting Biology of Pectoral Sparrow (*Arremon taciturnus*) in Southeastern Perú. *In review* *The Wilson journal of Ornithology*, and 2) Sanchez, M. A. and G. A. Londoño. First nesting information for the Orange-eared tanager (*Chlorochrysa calliparea*) *In review* *The Wilson journal of Ornithology*.

*Thesis projects.*— Until now I have had 11 Colombian undergraduate students who returned and will return to the field sites, we discussed and developed their project in the field and between field seasons they search for publications and I help them to get information. Three are currently reading and putting ideas together and will develop their thesis during the 2011

field season. Two students, Nestor Alirio Peralta and Elkin Alexander Tenorio, completed their theses in 2010 and are currently enrolled in Masters programs at Colombian Universities. Other students who have completed independent projects are:

**Nestor Alirio Peralta**, 2008. Influencia de la temperatura ambiental sobre los comportamientos de incubación en una comunidad de aves Passeriformes: retroalimentación al modelo de Conway y Martin (2000).

**Elkin Alexander Tenorio**, 2008. Periodos de incubación en aves tropical: Influencia de temperatura, de huevos, masa y temperatura ambiental.

**Santiago David Rivera**, 2009. Análisis filogenético de la arquitectura de nidos y comportamiento reproductivos de los hormigueros neotropicales (Thamnophilidae).

**David Ocampo Rincón**, 2009. Comparación del éxito reproductivo y depredadores de nidos entre aves que anidan en bordes e islas de rio usando nidos reales y artificiales .

**Jaime Andrés Garizábal**, 2010. Partición de nicho de anidación de *Hylophylax naevius* y *Schistocichla brunneiceps* (aves: Thamnophilidae) en el parque nacional del Manu, Cusco, Peru.

**Giovany Valencia Cortes**, 2010. La depredación como agente de variación de algunas estrategias reproductivas en aves en el parque Nacional del Manu, Peru.

**Mario Agustín Loaiza Muñoz**, 2010. Does males and females invest equally during incubation bouts?: a thermal egg perspective.

**Sebastian Camilo Pérez Peña**, 2010. Project title: Nesting niche partitioning among four species of *Mionectes* (Tyrannidae), Perú.

### Use of different visual avenues to reach the general public

I had used three main visual outlets to reach the general public 1) a documentary and videos about the project and general conservation in the region, 2) a field guide of nests and eggs and 3) a personal web page with detailed information about the project.

During the 2008 and 2010 field seasons I participated in promoting videos about the ongoing research on the region, especially at the biological station Wayqecha. Two videos from 2008 are currently published (<http://www.youtube.com/watch?v=cuyoZVfAHx8> and <http://www.youtube.com/watch?v=RKTfFfgHD0Y&feature=related>) and the 2010 is currently under final edits.

During the previous field season I had an enthusiastic field assistant (Dave Giordano) who wanted to make a documentary about the project. Although he is currently working on the editing process, it is taking longer than predicted and the film may not be ready before the end of the semester. Once the film is ready the idea is to distribute it to the park managers, local NGO's and universities to promote local field studies.

For the 2009 field season I created the first field guide for the Neotropics about bird nests and eggs with more than 90 species. This guide can be downloaded for free from my web page (<http://www.flmnh.ufl.edu/ordwaylab/londono>) and it has been updated every year. I also send digital copies to the field stations and to anyone that is interested.

Finally, through my dissertation fieldwork the main source for outreach and dissemination of information had been my personal web site (<http://www.flmnh.ufl.edu/ordwaylab/londono/andeanproject.html>), which already has 4337 visits. On the web page I have a diverse amount of information about the project which are: Theoretical Frame Work, Study Site, Methods, Recommended Equipment, First Aid Kit Supplies, Frequent Asked Questions, Andean Photo Gallery, People Photo Gallery, Incubation Videos, Previous Field Assistants, Contact and Nest and Eggs Field Guide Manu, Peru/ Guia de Campo de Nidos y Huevos del Manu, Peru.

In summary, there is not a unique way to disseminate research information and training local and foreigner young researchers in tropical areas, and I don't think it will ever be. By using different avenues to disseminate research information to promote conservation one can have a bigger impact on different public.

### **Literature Cited**

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# Appendix 1

Theoretical and practical course on avian ecology, October 16-21, 2009. Wayqecha Biological Station



**LAURA CRISTEL GRANDEZ**



**LISBETH HUACHACO TEJADA**



**YUREMMA TITTO COPAJA**



**YULME CASTRO VILCA**





**ALEX SOTELO AGUILAR**



**EL PROFE ADLER**



**Theoretical and practical course on avian ecology, October 16-21, 2009. Wayqecha Biological Station**

## Course evaluation by the students

### **TRABAJO DE CAMPO DE ESCOLARES DE PATRIA - KCOSÑIPATA INSTITUCION EDUCATIVA No. 50429 “MARIA NATIVIDAD HONOR ORTIZ DE AQUISE”**

Del 30 de octubre al 04 de noviembre, se llevó a cabo en Wayqecha, un curso de campo con asistencia de alumnos de la IE 50429, a continuación los comentarios textuales de los participantes:

**1) LAURA CRISTEL GRANDEZ TERRAZAS**

e-mail: [Lauracris-15@hotmail.com](mailto:Lauracris-15@hotmail.com)

“Yo quisiera agradecer mucho a todas las personas que estuvieron conmigo durante estos 5 días que estuve en el Centro de Investigación Wayqecha

A: Gustavo, muy carismático (nuestro guía)

A mi tocalla: Laura, muy alegre (la persona que nos cuidaba)

A Steven: por ser generoso y bueno, aunque toca la guitarra y canta muy bonito

A Adriana: la que me enseña a cantar en inglés.

A Maycol, el más alto y carismático (le encantaba comer)

A Claudio, la persona alegre que me preparaba la comida (muy deliciosa en sí)

Y también a todas las personas que conocimos durante este tiempo

Gracias.

MI COMPROMISO: Tener en cuenta todo lo que aprendí en Wayqecha y buscar más especies de aves. Voy a extrañar mucho Wayqecha

#### QUE APRENDÍ:

- Aprendí a reconocer que especies de aves existen
- Que animales existen
- Aprendí lo mucho que importan las aves y animales
- Aprendí a reconocer las plantas y orquídeas
- Aprendí muchas cosas que no conocía y que antes no les tomaba importancia
- Aprendí a caminar en grupo
- Aprendí a ser alegre

#### QUE ME GUSTO:

- En si, me gusto todo, todo de todo
- Me gusta el canto de las aves
- Las aves
- El sacar cada ave de la malla
- Caminar por las trochas
- Pasear un poco por todo lado
- Buscar nidos
- El comerme los frutos de las plantas
- Mirar los huecos que habían en el camino
- La música que cantaban
- La alegría que todos tenían
- Hasta el dolor de cabeza que me hizo llorar
- El trato que nos daban
- Servirnos te o comer pan con mantequilla
- Lo divertido que eran mis compañeros
- Bañarme en la ducha de agua caliente
- Me divertía el no poder caminar
- Todo lo que había en allí (Wayqecha)
- Me gustaban los cuartos
- El baño
- Las cabañas
- La sala
- El dormitorio
- Los frutos
- Lavar los servicios

#### QUE NO ME GUSTABA

Bueno, en si todo me gustaba, me creo que haya algo que no me gusta, todo me gusta. Hasta perdi el miedo a las alturas.

#### QUE QUIERO QUE CAMBIE

Bueno casi nada, ...pero quiero que cambien las gradas por un ascensor

#### 2) YUREMMA TITTO COPAJA

e-mail: [Bhianka\\_picis15@hotmail.com](mailto:Bhianka_picis15@hotmail.com)

#### QUE APRENDI?

- Aprendí muchas cosas, tantas que no podría acabar, por ejemplo:
- Conocí plantas como las ericacias, melostomataceas, musgos, líquenes, clusias y variedad de plantas.
- En las aves: las plumas pueden ser de dos tipos: las estructurales, aquellas que cambian con la luz del sol y las pigmentas son aquellas que cambian de acuerdo a la dieta.
- Cuando tienen cañoncitos es que están mudando plumas, cuando están incubando, tienen en la parte del estomago venitas y no tienen plumas en esta parte, se llaman parches de incubación.

- Los nidos que están en construcción no tienen líquenes. ¿Qué es un líquen? Pues un líquen es una composición en hongo y alga llamada simbiosis.
- Para saber si un nido está siendo utilizado se deja una hojita y regresas al día siguiente. Si la hoja no está quiere decir que el ave que lo está usando lo quita. En cambio, un nido abandonado es más plano, ya tiene líquenes y generalmente está cubierto por basura.
- También aprendí a reconocer aves, a describirlas y a tomar datos sobre su peso, tamaño de ala, cola, pico, torso, etc.
- Ahora se cómo desenredar y enredar redes, realizamos censos a las aves, hicimos mapas con la brújula.
- Buscamos tesoros con el GPS. Todos fuimos a conocer las trochas y aprender a medir las curvas.

#### A QUIENES CONOCI?

- A personas muy agradables como el señor Gustavo...
- A la señorita Laura quien junto a su enamorado el señor Steven hacen una linda pareja y también un dúo perfecto, ambos tienen lindas voces y son talentosos.
- Conocí también al señor Claudio quien se encargaba de lo más importante y delicioso, la comida.
- La señora Adriana, y su esposo el señor Maicol, que son muy agradables, aunque no tuve la oportunidad de pasar mucho tiempo con ellos.
- El señor Panchito y otros.

#### QUE QUIERO QUE CAMBIE?

- No quiero que cambie nada, porque Wayqecha es hermosa tal como es, con las personas que conviven allí, entre el ambiente y las aves.

#### QUE ME GUSTO

- Me gustó mucho las cabañas, los caminos, debo decir que me gustó hasta el baño, fue muy lindo pasar estos días con personas muy profesionales en su trabajo y amigables con las personas entre sí.
- Siendo sincera, quisiera volver, pero estoy de PROMO y debo ir al Cusco a estudiar, pero guardo la esperanza de volver muy pronto y encontrarme nuevamente con todos y conocer más personas.

QUIERO AGRADECER A TODOS POR LOS DIAS MARAVILLOSOS QUE PASE EN WAYQECHA Y EN EL PUENTE!

### 3) LISBETH HUACHACO TEJADA

e-mail: [lisbeth-N11@hotmail.com](mailto:lisbeth-N11@hotmail.com)

#### PRIMERO

Conocí a personas maravillosas (Gustavo) y a la señorita Laura, Adri, Maicol, Steven y al cocinero Claudio. Son unas personas muy buenas y que Dios los acompañe siempre estén donde estén.

#### SEGUNDO

Fuimos a las trochas a poner mallas para poder cogerlos y poderlas pesar y medirlas y reconocer si es hembra o macho y a la especie que pertenece y al genero; y también si eran juveniles o viejos. Habian dos colores una era estructural y otro de pigmentación.

#### TERCERO

Conocimos las plantas como las orquídeas, las melastomatáceas, etc.

#### CUARTO

Aprendí a censar aves y a poner sensores a los nidos de las aves y también de donde es que probablemente venían las aves.

#### QUINTO

Conocimos todas las trochas e incluso el puente colgante que pasamos. Era muy hermoso.

A dibujar mapas.

Por ultimo a enredar y desenredar redes y como sacarlos a las aves de las redes.

#### SEXTO

Aprendi a hallar el tesoro que el Señor Gustavo lo escondió. .. y lo hallé con el GPS.

Conocí las cabañas y que es lo que habían dentro de ellas.

#### LO QUE QUIERO QUE CAMBIE

Que el Centro de Investigación Wayqecha crezca mas grande, osea que halla más cabañas para que vengan mucho más turistas y que vengan muchas más aves hermosas y que los biólogos tengan todas las comunidades para que hagan su trabajo mejor.

#### DESPEDIDA

Los quiero mucho a todos los que están en el Centro de Investigación Wayqecha, y estos cinco días que estuve fueron maravillosos, los más hermosos de mi vida. Vine a otro ambiente que era muy hermoso ¿cómo regresar?

#### **4) ALEX SOTELO AGUILAR (el gato)**

e-mail: [krima.x@hotmail.com](mailto:krima.x@hotmail.com), [Lx-fito@hotmail.com](mailto:Lx-fito@hotmail.com)

Para el próximo año si regresamos quisiera ver estudios de muchos animales, de caunto en lo que tenemos, poderlos cuidar y estudiarlos así como ustedes me enseñaron. Esperamos que Wayqecha crezca para poder acumular información y poder saber más de los animales.

#### **QUE ES LO QUE APRENDI?**

Todo sobre las aves:

- Las plumas
- Cantos
- Tipos de apareamiento
- Huevos
- Polluelos

- Manejar brújula
- Censarlas
- Medir la temperatura del nido
- Clasificación
- Nombres específicos
- Nidos
- Como reconocer un ave
- Como medirlas, su peso, que es lo que comen
- Donde se encuentran
- Su estructura

### **QUE ME GUSTO**

Me gustó todo, en realidad fue una gran experiencia que nos dan ustedes a nosotros de cómo es el hábitat de un ave, muchas enseñanzas sobre otros animales. Nosotros esperamos regresar muy pronto, es difícil desprendernos de este lugar, tanta información que falta descubrir, cuanto quisiera pertenecer a ustedes y así formar parte de todo esto, ya que nosotros tenemos grandes influencias. Agradezco a todos, al señor Gustavo quien nos enseñó varias cosas, espero encontrarlo allá donde yo estoy; a la señorita Laura, al señor Steven, a la señora Adri y al señor Michael y al señor Claudio, gracias por su acogida, esperamos volver a encontrarnos.

### **5) YULME CASTRO VILCA**

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### **APRENDI**

- En los recorridos la diferenciación y variedad de plantas, tales como las melastomatáceas, licopodio, ericacias, moras; entre otras. También algunas plantas conocidas pero a veces no apreciadas.
- Asimismo, pude apreciar, distinguir acerca de las aves; algunos de sus caracteres peculiares: hábitat, tipo de alimentación, género, especie, entre otros.
- Pude, o mejor intenté dibujar mapas con las brújulas; medir en qué punto se encuentra un ave; pero esto lo hicimos al censar a las aves; tomando en cuenta sus caracteres.
- También aprendí a poner sensores a los nidos; claro que al realizar esto debemos prevenir que las aves no los vean y que puedan regresar a los sitios.
- Aprendí a instalar mallas y capturar aves pero para ver las cualidades que tienen: peso, tamaño de pico, tamaño de ala, tamaño de patas, entre otros.
- En las aves claro, buscar nidos; teniendo en cuenta si la ave está llevando en el pico comida, o se encuentra en un comportamiento inusual; para esto siempre debemos portar binoculares.
- Aprendí a buscar lo que quiero con el GPS, por ejemplo, pude hallar el tesoro escondido.



## **A QUIENES CONOCI?**

Conocí a personas muy nobles, comprensivas, amables, muy cariñosas.

Sr Gustavo, creo yo nos trató como un padre para mí, aparte de ser muy comprensivo y amable.

Srta. Laura y su enamorado Steven, aparte de ser la pareja más linda y perfecta, fueron amables y comprensivos.

Sra Adriana y Maicol, los esposos perfectos, cariñosos, comprensivos y amables.

Sr. Claudio, una deliciosa preparación de los alimentos, y comprensivo y amable.

Todas estas personas muy amables, cariñosas, comprensivas; con cualidades difíciles de explicar y que nunca podría olvidarlos.

Para mi sobre todo, fue el mejor año de mi vida y se que Dios los guiará, brindará toda la felicidad, ya que personas como ellas no se pueden hallar fácilmente. Doy gracias a Dios por haberme brindado la oportunidad de conocerlos y que estas personas nos hayan brindado un ambiente muy acogedor.

## **COMO PUEDO VOLVER?**

Ya que voy culminando mis estudios, pienso y voy a estudiar biología y tratar y hacer los modos posibles para regresar a este Centro de Investigación.

AH! Y sobre todo gracias por las ericacias y moras!

### **6) Profe Adler???**

## **QUE APRENDI?**

A reconocer que la naturaleza es muy completa en las zonas naturales. Asi, en Wayqecha existen muchas plantas con flores y frutos que alimentan una variedad muy grande de aves.

- Reconozco, a partir de esta experiencia varios tipos de aves y varias plantas que les sirven de alimento como las ericáceas, las melastomatáceas, otras como los alisos, oreocalis, moráceas, cari kari, y otras muy similares.
- Como identificar aves, qué partes del ave son las que uno debe distinguir, para reconocerlas y clasificarlas, asimismo, como se debe colocar una red, como se debe guardar, como manipular la aves capturadas por la red, como medirlas y describir sus características.
- Graficar el recorrido de una trocha en un plano, utilizando una brújula y una unidad de medida.
- Realizar un censo de aves en una línea de recorrido, en un tiempo determinado.
- Relacionar las actitud de las aves con su actividad: portando alimento, portando material, alimentándose, etc.

## **QUE ME GUSTO**

- Me agradó mucho Wayqechas, la belleza natural, las aves, las plantas.
- El modo de trabajo, las caminatas, las actividades, las tareas, la bibliografía, la explicación y orientación de los procesos de aprendizaje.
- La atención, la comodidad, la comida y sobre todo las personas de Wayqechas, muy atentas, amables, y siempre con ganas de apoyar y colaborar en nuestro aprendizaje.
- Wayqechas es un lugar muy agradable.

#### QUE QUISIERA?

- Tener la oportunidad de visitar Wayqechas, aprender algo más, me gustaría que ACCA siga promocionando este tipo de visitas en las que aprendemos muchas cosas nuevas, realizar una experiencia mayor que afiance lo que ahora aprendimos.
- Que ACCA, visite nuestra IE para concertar acciones de trabajo a favor de los jóvenes en el marco de conservar nuestro medio ambiente, y la valoración de nuestro ecosistema como una alternativa de mejorar la calidad de vida de las futuras generaciones.
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