Intern Positions: Research assistant - Native tree growth and survivorship for applied use in local habitat regeneration and reforestation projects as well as educational purposes.

Coordinators: Katie Johnson
Supervisor(s): Carlos Guindon

Academic Supervisor: Fran Lindau

****************************************************************************

Internship Description: There is little data on the growth and survivorship of native tree species in tropical montane systems. At a couple of sites in Monteverde some native species were planted in 1980’s and the 1990’s in areas of abandoned pasture. These plantings have been sporadically monitored since, taking measurements of DBH and determining survivorship. This internship will serve to give continuity to this effort as well as help develop these plantings into an educational resource for the identification of native tree species, with a particular focus on the Lauraceae family. This internship would include locating, re-marking and measuring these trees. The data would be added to existing data sets for further summary and analysis.

Topics that may be covered during this internship:

1. Identification and measurements: Locate, re-mark and measure DBH and height of individuals still alive. Determine the fate of dead or missing plants. Would include data entry building on existing data set.

2. Mapping: use of GPS to map positions for each planted tree as well as remnant trees from previous pasture and representative individuals of species that have colonized the sites on their own.

Requirements: Interest in learning how to identify a few ecologically and economically important local tree species, possible use of GPS for mapping location of marked trees, ability to use DBH tape and clinometer to take measurements of trees, data entry and analysis.

Key areas of internship: Forestry, Reforestation, Native tree identification, Survivorship, GPS, Mapping

Time Frame: January-April

Length of Internship: 4-6 weeks

Background information: In Monteverde and other montane areas in Costa Rica exotic species were used initially in reforestation projects. In 1980 a small source of funding was generated in Monteverde as compensation for the damage to trees by an international group of lichenologists. Some of these funds were used to start a small nursery of native trees species on the Trostle
property, which included much of the land currently owned by the MVI. The trees left over from this project were planted on what is now the MVI campus amongst already established plantings of exotic tree species (mostly Honduran pine) in what was an abandoned pasture. I later tagged and took measurements of these trees and have been sporadically following their growth and survivorship. Subsequent harvesting of the exotic species along with the construction of some buildings has added to the loss of many of the plantings. Many native species have also become established on their own amongst the original plantings.

I also established a Lauraceae “arboretum” on another property in 1994 by planting a sample of local Lauraceae species from seedlings in an abandoned pasture. These plantings were also marked and measured sporadically and a few additional species added over the years. Many native species have subsequently established themselves at this site. A section of the site is under power lines, and has been cleared on occasion, which has eliminated some of the planted seedlings. Some of these plantings at both sites are now well established and are flowering and fruiting. It is hoped that these individuals can be used for educational purposes for species identification as well as their scientific value for determining long-term growth and survivorship of representative montane tree species established from plantings in abandoned pastures.

Intern Responsibilities:

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings
2. Field data collection on no less than 8 internship workdays: e.g., mapping and identifying native trees
3. Literature review
4. Data analysis
5. Statistical analysis, interpretation, and report (only report for Education/Outreach interns)
6. Power point presentation preparation and delivery
7. Participation in academic modules

Final products:

1. For digital information: Data files (raw data and compilations). Include a written list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it’s useful to the MVI when content not obvious. Digital backup of all final files should be given to the director at end of project. Original datasheets should be delivered to the director.
2. Data analysis for reporting results of research topic.
3. Report of the specific topic (e.g., Tropical tree growth: reforestation efforts):

<table>
<thead>
<tr>
<th>Abstract: brief summary of topic and results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction: Tropical tree growth and survivorship over different treatments</td>
</tr>
<tr>
<td>Study area and methods: site information, selected species, methods (samples of different tree species in different plots, data analysis)</td>
</tr>
<tr>
<td>Results: data summary as related to topic</td>
</tr>
<tr>
<td>Discussion: your interpretation and implications of the results</td>
</tr>
<tr>
<td>Acknowledgements</td>
</tr>
<tr>
<td>References</td>
</tr>
</tbody>
</table>

4. Presentation of result
Intern Positions: Field research and landscape design assistant - canopy connectivity and aerial bridge monitoring and establishment

Coordinators: Katie Johnson  
Supervisor(s): Carlos Guindon  
Academic Supervisor: Fran Lindau

**********************************************************************************

Internship Description: As open spaces are created for agriculture, industry, commerce and residential use along with accompanying power lines and roads, the continuity of forest canopies is interrupted making it difficult for arboreal organisms to move between habitats. Some initial efforts have been implemented in the Monteverde region to try to mediate this problem by placing arboreal bridges and strategically planting trees. However these structures have not been monitored to determine if they are being used, and there has been no systematic quantification of the need, placement and design of such structures for the species and habitats found in the Monteverde region or tropical montane systems.

Topics that may be covered during this internship:

1. Arboreal bridge design and placement: monitoring in tropical montane systems, taking into account the types of organisms that could most use canopy connectivity, i.e. need to move up and down the altitudinal gradient to track seasonal resources.

2. Natural and artificial canopy bridges monitoring: This would require the placement of cameras and direct observations (diurnal and nocturnal) as well as data entry and analysis of results. Would require climbing skills with ropes and harness.

3. Mapping: GPS of currently established bridges, natural and artificial, and proposal for potential expansion based on current landscape and wildlife needs. Experience with mapping and GPS would be useful. Could include a photographic record of existing and proposed bridges tied to GPS locations.

Requirements: Interest in issues related to habitat connectivity and in particular canopy connectivity, ability to climb trees with climbing gear to place and monitor cameras, ability to identify organisms using bridges, from camera images, or direct observation, and ability to use GPS and interpret land cover maps.

Key areas of internship: Forestry, Canopy, Bridges (natural and artificial), Connectivity, GPS, Mapping
Time Frame: January-April

Length of Internship: 4-6 weeks

Background information: As habitats have become increasingly fragmented increasing efforts have been made to facilitate the movement of organisms between habitats. Most efforts have involved the establishment of tunnels and bridges for terrestrial organisms in strategically placed locations to both facilitate movement and reduce road kills. These efforts have mostly been in temperate climates where many of the organisms are terrestrial and in countries, which have the resources to implement these expensive structures. An increasing number of projects have been established in tropical countries to facilitate the movement of canopy species like in the baboon sanctuary in Belize. Costa Rica in the last several years has gained the support of the national electric power institute (ICE) to establish canopy bridges mostly in the southwestern part of the country. To my knowledge no studies have been done on arboreal bridges in tropical montane systems. In Monteverde in the 90’s an initial effort was made to re-establish canopy connectivity over the Guacimal River Bridge next to the cheese factory after the wind blew down one of the trees that had temporarily provided canopy connectivity between the wooded areas above and below the bridge after some 50 years of being broken. This effort was primarily for educational purposes involving several local school children in the design and placement of the artificial rope bridge. This bridge has subsequently been replaced several times by different student groups and in 2000 the Guindon family planted a strangler fig on each side of the road with the hopes of eventually re-establishing a natural canopy bridge at this site. Artificial bridges have been established at a couple other sites including a recently placed one by ICE. There are a few natural canopy bridges between forest remnants in the region as well. None of these bridges have been monitored to determine their use by arboreal mammals, many of which would be nocturnal. This internship would be key in starting the collection of data on the current bridges and quantifying and mapping their distribution. It would also be a start for further work to establish and maintain key arboreal bridges in the region and could lead to increased educational opportunities through local schools and ecotourism.

Intern Responsibilities:

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings
2. Field data collection on no less than 8 internship workdays: e.g., mapping, placing, and observing bridges
3. Literature review
4. Data analysis
5. Statistical analysis, interpretation, and report (only report for Education/Outreach interns)
6. Power point presentation preparation and delivery
7. Participation in academic modules

Final products:

1. For digital information: Data files (raw data and compilations). Include a written list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it’s useful to the MVI when content not obvious. Digital backup of all final files should be given to the director at end of project. Original datasheets should be delivered to the director.
2. Data analysis for reporting results of research topic.
3. Report of the specific topic (e.g., canopy connectivity: natural and artificial bridge use):

| Abstract: brief summary of topic and results |
| Introduction: Importance of canopy connectivity |
| Study area and methods: site information, selected bridges, methods (bridge placement at different sites, data analysis) |
| Results: data summary as related to topic |
| Discussion: your interpretation and implications of the results |
| Acknowledgements |
| References |

4. Presentation of results
Intern Positions: Team investigators to research a range of variables affecting tropical reforestation potential (socio-economic factors) and tropical tree seedling mortality and growth.

This team research project will use an in-process data base that includes established research plots with tagged seedlings, planting information (date, height), precipitation data, and reforestation participant data.

Coordinators: Debra Hamilton, Katie Johnson, Victorino Molina Rojas, Claudia Rocha
Supervisor: Debra Hamilton (oversees weekly progress)
Academic Supervisor: Fran Lindau
Team size: 3 to 6 members


****************************************************

Internship Description: For the successful restoration of tropical habitat, appropriate reforestation techniques must be investigated. There is a lack of information on variables that may affect seedling survival and growth, such as soil, slope, optimal planting time, fertilizer use, and minimum seedling maintenance. The socio-economic willingness, abilities, and reasons for reforestation should correspond with research recommendations for efficient and effective habitat restoration. The Monteverde Institute and the Costa Rican Conservation Foundation collaborate in research of various factors affecting reforestation success.

This team internship may assess the survival rates and growth rates of a minimum of 10 tropical tree species by assessing the following variables:

1. Effects of wind exposure on seedling survival and growth:
   Monteverde experiences moderate to high winds from November to March. To what extent does wind exposure desiccate seedlings and reduce survival and growth?

2. Effects of solar exposure on seedling survival and growth:
   How do shade tolerant species fare in pasture plantings and at forest edges as compared to other species?

3. Seedling survivorship within different life zone ranges:
   There are three life zones in Monteverde and tree species tend to be specific to each zone. Is tree survival and growth affected by its location within the life zone (lower edge, middle, upper edge)?

4. Seedling survivorship related to soil characteristics:
   Soils are phosphorous poor ultisols with a varying level of organic layer. What role do the variables such as nutrient levels, compaction, and organic layer depth play in seedling survival and growth?

5. Effects of fertilizer application at time of planting:
   Does the application of fertilizer (10-30-10) aid the survival and growth of seedlings?

6. Minimum maintenance regimes for seedling survival and growth:
There is controversy on the methods of weed management around seedlings. Local farmers believe that grasses provide shade during the dry season which benefits the seedlings. General botanical knowledge suggests otherwise. The on-going research studies 4 different tree species with the differing maintenance regimes (full year, partial year, and no weed removal).

7. Effects of reduced precipitation on seedling survival and growth rates.

Given the predictions of reduced precipitation in Costa Rica due to more frequent El Niño events, what tree species will be more resistant to less precipitation during their initial stages of growth and recuperation from transplant shock? This will provide important information for reforestation efforts which will need to incorporate drought resistant species into their programs.

8. Economic feasibility of enhanced reforestation techniques:

Cost vs benefit analysis of proposed reforestation techniques (e.g., fertilizer applications, seedling maintenance) and a farmer’s willingness to pay as well as ability to implement enhanced reforestation techniques.

9. Geo-referencing reforestation and factors affecting seedling survival and growth:

Data representation in their geographical formats provides key insights into distributions and patterns that may affect habitat restoration.

The team will be required to perform the following:

1. Team development and function: develop the team charter (defines the purpose of the team and how it will work), define project goals, objectives, operational strategy, credits, and communication.

2. Preliminary assessment of existing data (e.g., survival and growth rates that includes the identification of potential variables affecting these rates).

3. Research design and implementation: (individual research design, team approval and coordination)

4. Data collection (team)

5. Data analysis (individual)

6. Data interpretation – written results (individual)

7. Data analysis and interpretation – combined results (team)

8. Final research paper (individual)

9. Visual/Oral Presentation (team)

Key areas of interest: Forestry, Botany, Conservation, Soil Science, Tropics, Statistics, Research

Time Frame: March, June, September, December

Length of Internship: 6 weeks

Background information:

Based on research of the Three-wattled Bellbird (Procnias tricarunculatus) in Costa Rica, the lack of protection of habitat on the Pacific slope of the country has led to the decline of this species. In 1998, the Fundación Conservacionista Costarricense (FCC) of Monteverde, Costa Rica changed its course from research to conservation through the initiation of native tree reforestation on the Pacific slope. Over 150,000 trees have been distributed to land owners and 10% of these trees have been planted on wildlife refuges owned by the FCC.
As the reforestation effort was established, several questions regarding reforestation techniques have arisen. There is very little information on seedling survival, growth rates of trees, factors affecting survival and growth rates (solar exposure, wind exposure, fertilizer applications, competition (maintenance), range of species, precipitation, soil characteristics, and herbivory (especially leaf cutter ants). These are important considerations for effective restoration of tropical habitats. This information is also important for successful reforestation by land owners who lack the resources necessary to optimal reforestation methods.

Research plots have been established by the FCC to examine the variables that may affect reforestation success. All trees are marked and numbered with genus/species codes and numbered. Most plots have been mapped using ArcInfo GIS.

**About the Organizations:** The Fundación Conservacionista Costarricense ([www.fccmonteverde.org](http://www.fccmonteverde.org)) is dedicated to habitat protection and restoration (in the form of reforestation) on the Pacific slope of Costa Rica. The Foundation was formed in 2002 after investigation of the Three-wattled Bellbird (*Procnias tricarunculatus*) showed that its decline was correlated with loss of habitat on the Pacific slope. The main activities of the foundation are habitat restoration with native tree species, protection of habitat, research, and presentations.

The Monteverde Institute ([www.monteverde-institute.org](http://www.monteverde-institute.org)) partners with the Fundación Conservacionista Costarricense to promote appropriate conservation practices through research of reforestation techniques. This is just one of the programs where the Monteverde Institute combines academic experiences and community partnerships in order to advance the knowledge of sustainability. The MVI teaches and hosts courses from over 25 universities in the fields of Tropical Ecology, Conservation Biology, Sustainability, Landscape Architecture, Environmental Education, Culture, and Community Health. The MVI spearheads various community projects such as Traveler’s Philanthropy, sidewalk development, recycling, and the Bellbird Biological Corridor.

**Intern Responsibilities:**

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings
2. Operate as part of a multi-disciplinary team that will examine various aspects of the research topic in a respectful and participatory manner.
3. Learn basic identification characteristics of a few trees species that will be measured (although trees are temporarily marked and identified)
4. Field data collection on no less than 8 internship workdays: e.g., seedling height and general health factors, interviews, GPS data points;
5. Learn basic tree measurement techniques used by FCC and apply them in the field to measure all trees planted within your assigned plots (if applicable)
6. Literature review.
7. Data collection preparation and entry
8. Data analysis
9. Statistical analysis, interpretation, and report
10. Power point presentation preparation and delivery
11. Participation in the following classes: Spanish (Levels I, II, or II depending upon previous knowledge): Introduction to R statistics, Writing for Presentation, Decision Making Process
Final products:

1. Data files (raw data and compilations). Include a written list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it’s useful to FCC when content not obvious. Digital backup of all final files should be given to the director at end of project. Original datasheets should be delivered to the director.

2. Data analysis for reporting results of research topic.

3. Scientific report of the specific research topic (example: effects of wind exposure on seedling survival and growth):

<table>
<thead>
<tr>
<th>Abstract: brief summary of topic and results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction: detrimental effects of wind on plant survival and growth</td>
</tr>
<tr>
<td>Study area and methods: site information, selected tree species, methods (samples of the same tree species at different wind exposure levels, measurement techniques, data analysis)</td>
</tr>
<tr>
<td>Results: data summary as related to research topic</td>
</tr>
<tr>
<td>Discussion: your interpretation and implications of the results</td>
</tr>
<tr>
<td>Acknowledgements</td>
</tr>
<tr>
<td>References</td>
</tr>
</tbody>
</table>

4. Presentation of results
Intern Position:  Research Assistant – Seed Germination Techniques for Selected Species of Tropical Trees

Coordinators:  Katie Johnson, Lorenzo Vargas, Claudia Rocha
Supervisor:   Debra Hamilton (oversees weekly progress)
Academic Supervisor: Fran Lindau

****************************************************

Internship Description: The successful reforestation program of the Fundación Conservacionista Costarricense relies upon seedling production from seeds gathered from nearby forests. There is a lack of research regarding reforestation in the tropics. No formal investigation has been performed regarding germination techniques and success rates. This internship is designed for a self-motivated individual(s) to conduct formal research on germination success and rates under various seed treatments (dry storage, moisture, temperature, seed soaking (water, alcohol, sulfuric acid, shell damage). Other factors that need study are the success rates and efficiency of direct seeding versus the use of germination beds. Skills include seed identification, nursery techniques, and data collection. This internship will provide basic information regarding germination techniques for several species of tropical trees.

Key areas of interest: Forestry, Botany, Conservation, Soil Science, Tropics, Statistics, Research

Time Frame:  on-going

Length of Internship:  4 - 6 weeks

About the Organizations: The Fundación Conservacionista Costarricense (www.fccmonteverde.org) is dedicated to habitat protection and restoration (reforestation) on the Pacific slope of Costa Rica. The Foundation was formed in 2002 after investigation of the Three-wattled Bellbird (Procnias tricarunculatus) showed that its decline was correlated with loss of habitat on the Pacific slope. The main activities of the foundation are habitat restoration with native tree species, protection of habitat, research, and presentations.

The Monteverde Institute (www.monteverde-institute.org) partners with the Fundación Conservacionista Costarricense to promote appropriate conservation practices through research of reforestation techniques. This is just one of the programs where the Monteverde Institute combines academic experiences and community partnerships in order to advance the knowledge of sustainability. The MVI teaches and hosts courses from over 25 universities in the fields of Tropical Ecology, Conservation Biology, Sustainability, Landscape Architecture, Environmental Education, Culture, and Community Health. The MVI spearheads various community projects such as Traveler’s Philanthropy, sidewalk development, recycling, and the Bellbird Biological Corridor.
Intern Responsibilities:

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings.
2. Learn basic identification characteristics of trees species that will be studied.
3. Learn basic principles of seed germination: Literature review of general germination techniques with an understanding of seed viability, germination inhibitors, enhanced germination methods, time requirements, and germination rates.
4. Seed collection and identification in the field.
5. Experimental design: Design an experiment with limited variables (either technique or natural conditions) with sufficient sample size per species and selected analysis method.
6. Experimental set up: Create the required environment and site for the experiment as well as equipment list.
7. Data collection including the creation of the data collection format, variables, general factors.
8. Data entry: Accurate recording of data and results.
9. Data analysis: appropriate statistical analysis of results given sample, variables, controls.
10. Data results interpretation and report

Final products:

1. Create written list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it’s useful to FCC when content not obvious. Digital backup of all final files should be given to the director at end of project. Original datasheets should be delivered to the director.
2. Data from all experiments to be provided in a digitized format.
3. Final report with complete background, problem, methods, results, data analysis and germination recommendations.
4. Data calculations and literature citations.
5. Final project presentation to MVI staff, community and visiting students.

Background information:

Based on research of the Three-wattled Bellbird (*Procnias tricarunculatus*) in Costa Rica, the loss of Pacific slope habitat has led to the decline of this species. In 1998, the Fundación Conservacionista Costarricense (FCC) of Monteverde, Costa Rica changed its course from research to conservation and initiated a program of native tree reforestation on the Pacific slope of Costa Rica. Over 150,000 trees have been distributed to land owners and 10% of these trees have been planted on wildlife refuges owned by the FCC.

As the reforestation effort was established, several questions regarding reforestation techniques have arisen. These are important considerations for effective restoration of tropical habitats by land owners who lack resources for the implementation of optimum reforestation methods.
Intern Position: Research Assistant / Bird Census Assistant for BBC and MVI - Assessment of eight life zones in the Bellbird Biological Corridor (BBC)

Coordinators: Ricardo Guindon
Research Supervisor: Debra Hamilton (oversees weekly progress)
Academic Supervisor: Fran Lindau

Internship Description: The Bellbird Biological Corridor is designed to connect habitat within and between 10 different life zones on the Pacific slope of Costa Rica. Baseline data of bird species’ ranges, abundance, and species diversity has not been collected. This information is necessary in order to establish corridor objectives and to identify critical conservation targets.

This internship will assist Ricardo Guindon by recording birds seen and heard on his census transects and pasture counts in 8 different life zones. The census areas range from cloud forest, wet forest, humid forest (and transition zones) to tropical dry forest. This internship position requires an interest in birds, stamina for field work, and data collection skills. Data entry and organization is a requirement as well as correlation of species to their respective habitat preferences, guilds, and life zone ranges.

Key areas of interest: birds, tropics, research, conservation

Time Frame: March, June, September

Length of Internship: 4 weeks

About the Organizations: The Bellbird Biological Corridor (www.cbpc.org) is an ecological connection that spans 10 distinct life zones from the high elevation cloud forests (1850 masml) to the mangroves at the Gulf of Nicoya (0 masml) on the Pacific slope of Costa Rica. The corridor has been created by nine collaborating organizations to protect and enhance biodiversity, promote the sustainable use of natural resources while providing socio-economic benefits to the communities of the corridor. One of the pending decisions is how to identify and prioritize areas in need of habitat protection and restoration.

The Monteverde Institute (www.monteverde-institute.org) combines academic experiences and community partnerships in order to advance the knowledge of sustainability. The MVI teaches and hosts courses from over 25 universities in the fields of Tropical Ecology, Conservation Biology, Sustainability, Landscape Architecture, Environmental Education, Culture, and Community Health. The MVI spearheads various community projects such as Traveler’s Philanthropy, sidewalk development, recycling, and the Bellbird Biological Corridor.
**Intern Responsibilities:**

1. Coordinate with internship supervisors during first days of internship to identify priority
tasks/locations and to schedule weekly update meetings.
2. Literature review of tropical bird distributions, endemism, speciation, habitat connectivity in
relation to birds, and life zone classification system in Costa Rica.
3. Learn basic bird identification techniques including bird calls.
4. Learn field notation of bird species.
5. Field census with Ricky Guindon (8 census routes).
6. Data entry
7. Data analysis – correlation by life zones, guilds, and habitat preferences
8. Analysis, interpretation, and report.

**Final products:**

1. Create written list of digital files (with accurate file names included) that were created during the
internship. List should include brief information on contents and how it’s useful to the BBC
when content not obvious. Digital backup of all final files should be given to the research
supervisor at end of project. Original datasheets should be delivered to the director.
2. Final report with complete data analysis and germination recommendations
3. Data calculations and literature citations
4. Presentation of results

**Background information:**

There are over 400 species of birds in the Bellbird Biological Corridor. Of these birds, 133 are
neotropical migrants, 35 endemics, and 17 species on lists of concern. High species turnover accounts for
much of the diversity and the ranges of the bird species by life zones are not clearly delineated. Ranges
of endemics and threatened species are speculated. To identify critical areas for conservation efforts,
birds are useful indicators. The Bellbird Biological Corridor started a comprehensive two-year avian
census in December of 2011. Every three months, a census is performed in the eight different life zones
on two separate 1-km transects and 3 pasture points. At the gulf zone, shore birds are assessed as well a
general ocean bird census. Results of this work will be used to develop a conservation plan and provide
baseline data to measure corridor progress.
Intern Position:  Research Assistant

Coordinators: Debra Hamilton
Research Supervisor: Debra Hamilton (oversees weekly progress)
Academic Supervisor: Fran Lindau

***************************************************************
Internship Description: The Three-wattled Bellbird (*Procnias tricarunculata*) is a Central American endemic bird species in decline (listed as vulnerable on the IUCN Red List). The breeding and post-breeding region for this bird is the Monteverde zone of Costa Rica. The Bellbird has been studied in this area by Barbara Snow, George Powell, Debra Hamilton, Julio Sanchez, and Donald Kroodsma (see literature citations at the end of this description). A census of the bird has been performed since 1997 indicating a decline of the species in this area.

In-depth analysis of a Bellbird’s territory, which males defend from specific calling perches, has not been updated since Barbara Snow’s study completed in the early 1970’s. Comparison of 2013 territory positions, quantity, and descriptions will lend further insight into the natural history of the bellbird, as well as its status.

Requirements: This internship requires a general knowledge of ornithology and observation skills. Background reading is important (see list of articles).

Key areas of interest: Birds, Tropics, Research, Conservation

Time Frame: April, May, June

Length of Internship: 4 weeks

About the Organizations: The Bellbird Project began investigative work regarding the migration of the Three-wattled Bellbird (Monteverde population) in 1992 by George Powell and Robin Bjork. This project expanded its focus to all aspects of bellbird natural history with a specific interest in the causes of the decline of this species (led by Debra Hamilton). Once it was determined that one cause of decline was the lack of habitat on the Pacific slope, the project formed the Fundación Conservacionista Costarricense to protect and restore Pacific slope habitat. Since 2001, the FCC has provided over 150,000 native tree seedlings to the region and has protected over 90 ha of habitat. Continued investigation of the bellbird, in the form of census work, banding, phenology, and observations, has revealed information regarding molt patterns, diet, habitat use, and vocalizations.
The Monteverde Institute (www.monteverde-institute.org) combines academic experiences and community partnerships in order to advance the knowledge of sustainability. The MVI teaches and hosts courses from over 25 universities in the fields of Tropical Ecology, Conservation Biology, Sustainability, Landscape Architecture, Environmental Education, Culture, and Community Health. The MVI spearheads various community projects such as Traveler’s Philanthropy, sidewalk development, recycling, and the Bellbird Biological Corridor. Through its executive director, Debra Hamilton, the MVI has an interest in avian projects and protection of birds such as the Three-wattled Bellbird.

Intern Responsibilities:

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings.
2. Literature review of the Three-wattled Bellbird with specific focus on territories and Snow’s study in the 1970’s.
3. Learn basic bird identification techniques including bellbird dialects and ages by plumage.
4. Learn field observation techniques and note taking.
5. Write methodology.
6. Field census and observations
7. Data entry
8. Data summary
9. Territory mapping.
10. Analysis, interpretation, and report.

Final products:

1. Create written list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it’s useful to the BBC when content not obvious. Digital backup of all final files should be given to the research supervisor at end of project. Original datasheets should be delivered to the director.
2. Final report with complete data analysis and germination recommendations to include:
   a) Territory census data: date inhabited, date abandoned, frequency, visits, behaviors, food availability (collect seeds)
   b) Territory descriptions: size, preferred perches, elevation, tree species
   c) Bellbird time budget: times and duration in territory and at specific perches
   d) Territory locations on a map of the region.
3. Data calculations (abundance, time budget analysis, territory distribution) and literature citations
4. Presentation of results

Background information: See article (Snow, 1977).

LITERATURE


Intern Position:  Research Assistant – Tropical Reforestation Methods for the Fundación Conservacionista Costarricense and the Monteverde Institute

Coordinators:  Katie Johnson, Victorino Molina Rojas, Claudia Rocha
Supervisor:  Debra Hamilton (oversees weekly progress)
Academic Supervisor:  Fran Lindau

**********************************************************
Internship Description: For the successful restoration of tropical habitat, appropriate reforestation techniques must be investigated. There is a lack of information on variables that may affect seedling survival and growth, such as soil, slope, optimal planting time, fertilizer use, and minimum seedling maintenance. The Monteverde Institute and the Costa Rican Conservation Foundation collaborate in research of various factors affecting reforestation success. This internship assists on-going research of the following factors:

1. Effects of wind exposure on seedling survival and growth:
   Monteverde experiences moderate to high winds from November to March. To what extent does wind exposure desiccate seedlings and reduce survival and growth?

2. Effects of solar exposure on seedling survival and growth:
   How do shade tolerant species fare in pasture plantings and at forest edges as compared to other species?

3. Seedling survivorship within different life zone ranges:
   There are three life zones in Monteverde and tree species tend to be specific to each zone. Is tree survival and growth affected by its location within the life zone (lower edge, middle, upper edge)?

4. Seedling survivorship related to soil characteristics:
   Soils are phosphorous poor ultisols with a varying level of organic layer. What role do the variables such as nutrient levels, compaction, and organic layer depth play in seedling survival and growth?

5. Effects of fertilizer application at time of planting:
   Does the application of fertilizer (10-30-10) aid the survival and growth of seedlings?

6. Minimum maintenance regimes for seedling survival and growth:
   There is controversy on the methods of weed management around seedlings. Local farmers believe that grasses provide shade during the dry season which benefits the seedlings. General botanical knowledge suggests otherwise. The on-going research studies 4 different tree species with the differing maintenance regimes (full year, partial year, and no weed removal).

Key areas of interest:  Forestry, Botany, Conservation, Soil Science, Tropics, Statistics, Research

Time Frame:  March, June, September, December

Length of Internship:  4-6 weeks
Background information:

Based on research of the Three-wattled Bellbird (*Procnias tricarunculatus*) in Costa Rica, the lack of protection of habitat on the Pacific slope of the country has led to the decline of this species. In 1998, the Fundación Conservacionista Costarricense (FCC) of Monteverde, Costa Rica changed its course from research to conservation through the initiation of native tree reforestation on the Pacific slope. Over 150,000 trees have been distributed to landowners and 10% of these trees have been planted on wildlife refuges owned by the FCC.

As the reforestation effort was established, several questions regarding reforestation techniques have arisen. There is very little information on seedling survival, growth rates of trees, factors affecting survival and growth rates (solar exposure, wind exposure, fertilizer applications, competition (maintenance), range of species, precipitation, soil characteristics, and herbivory (especially leaf cutter ants). These are important considerations for effective restoration of tropical habitats. This information is also important for successful reforestation by landowners who lack the resources necessary to optimal reforestation methods.

Research plots have been established by the FCC to examine the variables that may affect reforestation success. All trees are marked with genus/species codes and numbered. Most plots have been mapped using ArcInfo GIS.

**About the Organizations:** The Fundación Conservacionista Costarricense ([www.fccmonteverde.org](http://www.fccmonteverde.org)) is dedicated to habitat protection and restoration (in the form of reforestation) on the Pacific slope of Costa Rica. The Foundation was formed in 2002 after investigation of the Three-wattled Bellbird (*Procnias tricarunculatus*) showed that its decline was correlated with loss of habitat on the Pacific slope. The main activities of the foundation are habitat restoration with native tree species, protection of habitat, research, and presentations.

The Monteverde Institute ([www.monteverde-institute.org](http://www.monteverde-institute.org)) partners with the Fundación Conservacionista Costarricense to promote appropriate conservation practices through research of reforestation techniques. This is just one of the programs where the Monteverde Institute combines academic experiences and community partnerships in order to advance the knowledge of sustainability. The MVI teaches and hosts courses from over 25 universities in the fields of Tropical Ecology, Conservation Biology, Sustainability, Landscape Architecture, Environmental Education, Culture, and Community Health. The MVI spearheads various community projects such as Traveler’s Philanthropy, sidewalk development, recycling, and the Bellbird Biological Corridor.

**Intern Responsibilities:**

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings
2. Learn basic identification characteristics of a few trees species that will be measured (although trees are temporarily marked and identified)
3. Field data collection on no less than 8 internship workdays: seedling height and general health factors;
4. Learn basic tree measurement techniques used by FCC and apply them in the field to measure all trees planted within your assigned plots
5. Literature review.
6. Data entry
7. Data analysis – correlation of survivorship, height, general health to reforestation variables
8. Analysis, interpretation, and report

**Final products:**

1. Data files (raw data and compilations). Include a written list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it’s useful to FCC when content not obvious. Digital backup of all final files should be given to the director at end of project. Original datasheets should be delivered to the director.
2. Data analysis for reporting results of research topic.
3. Scientific report of the specific research topic (example: effects of wind exposure on seedling survival and growth):
   
   | Abstract: brief summary of topic and results |
   | Introduction: detrimental effects of wind on plant survival and growth |
   | Study area and methods: site information, selected tree species, methods (samples of the same tree species at different wind exposure levels, measurement techniques, data analysis) |
   | Results: data summary as related to research topic |
   | Discussion: your interpretation and implications of the results |
   | Acknowledgements |
   | References |
4. Presentation of results
Position: Habitat Restoration Technician *(Requires at least 2 interns)*

**Coordinators:** Victorino Molina Rojas, Evelyn Casares, Claudia Rocha, Lorenzo Vargas (Spanish)

**Project Supervisor:** Debra Hamilton (oversees weekly progress)

**Internship Description:** The Fundación Conservacionista Costarricense’s (FCC) reforestation effort has been active for several years and now needs to reorganize so it can more efficiently move forward with restoration activities. The organization has planted thousands of individuals of several tree species but has lacked the resources to adequately map and tag planted trees. Together with the Monteverde Institute, it has on-going growth and survivorship studies that require technicians to annually revisit and re-measure a subset of the planted trees. This semester’s internship period coincides with the re-measurement period, therefore these two organizations are calling on interns to help retag and measure planted trees and create maps of where the trees are planted so they are easier to find by future volunteers. Students must be motivated to learn how to use these tools and be able to efficiently, accurately, and safely collect data in rugged conditions. Patience, flexibility, teamwork, and an appetite for adventure will ensure a rewarding internship experience.

The intensive nature of the field and computer work mandates that there be a pair of interns willing and able to work together in both arenas. Nevertheless, each intern will be responsible for somewhat distinctive aspects of the collective product.

Option 1: Tree plot maintenance of seedlings planted from 2006 to 2012: Tags in place, tubes marked, perimeters established, maps of locations, measurements (height, leaf cover, general health, herbivory).

Option 2: Phenology tree plots of mature trees: retag and map, measure DBH, basal diameter, and height

Option 3: Revisit historical tree plot to tag trees planted 20 years ago and mesure DBH, basal diameter, and height.

**Time Frame:** March, June, September, December

**Length of Internship:** 2 - 6 weeks

**About the organizations:** The Fundación Conservacionista Costarricense is dedicated to habitat restoration (in the form of reforestation) and habitat protection on the Pacific slope of Monteverde with a special emphasis on the protection of the Three-wattled Bellbird (*Procnias tricarunculatus*). The Foundation was formed in 2002 after investigation of the Three-wattled Bellbird showed that its decline was correlated with loss of habitat on the Pacific slope. The main activities of the foundation are habitat restoration with native tree species, protection of habitat, research, and presentations.
The Monteverde Institute partners with the Fundación Conservacionista Costarricense to promote appropriate conservation practices through research of reforestation techniques. The MVI has 26 years of experience connecting students and community initiatives with the objective of advancing the knowledge of sustainability throughout the community and academic world.

**Intern Responsibilities**

1. Coordinate with internship supervisor and MVI/FCC director during first days of internship to identify priority tasks/locations and to schedule weekly update meetings.
2. Conduct thorough peer-reviewed literature search on the following topics: specific tree species information (species list to be provided on the first day of the internship), factors that may affect seedling survival and growth rates, growth rates in the tropics, reforestation studies in the tropics. Articles will be summarized and placed in a joint drop box for general use and access.
3. Field data collection.
4. Learn basic identification characteristics of a few trees species that will be measured.
5. Learn basic tree measurement techniques used by MVI/FCC and apply them in the field to measure all trees planted within your assigned plots.
6. Learn methods on how to enter data on tree size and survival and apply them to update the database.
7. Learn methods on how to re-tag trees and apply them to all trees in the study plots.
8. Co-ordinate with partner interns and supervisors in any way needed to make the partnership run smoothly.
9. Provide finished datasheet to director so she can make field visits to untagged trees while interns are on second field trip; update database to include trees verified by FCC Director.
10. Write a list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it’s useful to FCC when content not obvious. Digital backup of all final files should be given to the Director at end of project. Original datasheets should be delivered to the FCC Director.

   Note: All interns will also be required to deliver a final product to their supervisor and to evaluate the internship program

**Final Products:**

1. A series of databases that provide accurate data on growth and survival of individual trees in study plots
2. A copy of a written summary of files created during the internship, delivered to the FCC Director
3. A hard CD/DVD copy of all files created, delivered to the MVI/FCC Director
Intern Position: Research Assistant – The Effect of Herbivory on Tropical Tree Seedlings Planted in Reforestation Efforts in Monteverde, Costa Rica

Coordinators: Katie Johnson, Claudia Rocha
Supervisor: Debra Hamilton (oversees weekly progress)
Academic Supervisor: Fran Lindau

Internship Description: Very little information is available regarding tropical forest restoration. Herbivory occurs at a significant rate on newly planted seedlings, sometimes resulting in complete defoliation. In addition to leaf cutter ants, there are numerous other insects feeding on young growth. The FCC and MVI have many tree plots of planted seedlings. This internship is designed for a self-motivated individual(s) to conduct formal research on the effects of herbivory on plant survival, growth and general health. Skills include tree identification, insect identification, and data collection.

Option 1: Identification of herbivorous insects, levels of damage, and correlation to growth and survival by tree species.

Option 2: Identification of tree species selection by leaf cutter ants of a minimum of 12 planted tree species and the level of herbivory in relation to the proximity of ant nests.

Key areas of interest: Entomology, Forestry, Botany, Conservation, Tropics, Statistics, Research

Time Frame: on-going

Length of Internship: 4 - 6 weeks

About the Organizations: The Fundación Conservacionista Costarricense (www.fccmonteverde.org) is dedicated to habitat protection and restoration (in the form of reforestation) on the Pacific slope of Costa Rica. The Foundation was formed in 2002 after investigation of the Three-wattled Bellbird (Procnias tricarunculatus) showed that its decline was correlated with loss of habitat on the Pacific slope. The main activities of the foundation are habitat restoration with native tree species, protection of habitat, research, and presentations.

The Monteverde Institute (www.monteverde-institute.org) partners with the Fundación Conservacionista Costarricense to promote appropriate conservation practices through research of reforestation techniques. This is just one of the programs where the Monteverde Institute combines academic experiences and community partnerships in order to advance the knowledge of sustainability. The MVI teaches and hosts
courses from over 25 universities in the fields of Tropical Ecology, Conservation Biology, Sustainability, Landscape Architecture, Environmental Education, Culture, and Community Health. The MVI spearheads various community projects such as Traveler’s Philanthropy, sidewalk development, recycling, and the Bellbird Biological Corridor.

**Intern Responsibilities:**

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings.
2. Learn basic identification characteristics of trees species and insects that will be studied.
3. Data collection in the field: herbivory level, type, seedling growth, survivorship, general health.
4. Literature review of tree seedling survival factors, growth rates and patterns, herbivory in the tropics and its effect on reforestation efforts.
5. Research design: Design a study with limited variables with sufficient sample size per species and selected analysis method.
6. Data collection including the creation of data collection format, variables, general factors.
7. Data entry: Accurate recording of data and results.
8. Data analysis: appropriate statistical analysis of results given sample, variables, controls.
9. Data results interpretation and report

| Abstract: brief summary of topic and results |
| Introduction: detrimental effects of herbivory on plant survival and growth |
| Study area and methods: site information, selected tree species, methods including analysis methodology |
| Results: data summary as related to research topic |
| Discussion: your interpretation and implications of the results |
| Acknowledgements |
| References |

10. Presentation to the Monteverde Institute staff, students, and community (English or Spanish)

**Final products:**

1. Create written list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it’s useful to FCC when content not obvious. Digital backup of all final files should be given to the director at end of project. Original datasheets should be delivered to the director.
2. Final report with complete background, problem, methods, results, data analysis and germination recommendations.
3. Data calculations and literature citations.
4. Final project presentation to MVI staff, community and visiting students.

**Background information:**

Based on research of the Three-wattled Bellbird (*Procnias tricarunculatus*) in Costa Rica, the asymmetry in protection of habitat on the Caribbean and Pacific slopes has led to the decline of this species since they rely on habitat on both sides of the continental divide. In 1998, the Fundación Conservacionista Costarricense (FCC) of Monteverde, Costa Rica changed its course from research to conservation and initiated a program of native tree reforestation on the Pacific slope of Costa Rica. Over 150,000 trees
have been distributed to land owners and 10% of these trees have been planted on wildlife refuges owned by the FCC.

As the reforestation effort was established, several questions regarding reforestation techniques have arisen. These are important considerations for effective restoration of tropical habitats by land owners who lack resources for the implementation of optimum reforestation methods.
Intern Position: Organic garden design and implementation for production of vegetables and herbs (in conjunction with a native tree nursery, native plant nursery, and possible medicinal herb garden)

Coordinators: Rigoberto Alvarado Mendez
Supervisor: Cath Murray (oversees weekly progress)
Academic Supervisor: Fran Lindau

******************************************************

Internship Description: This internship involves reviewing the values and objectives for the Monteverde Institute’s permaculture or organic garden, which incorporates both education and vegetable production. Once the needs and objectives have been identified, interns will be expected to design and implement a greenhouse and plant at least one garden with the help of other students. Final products include interpretive/educational material for students and the community.

Key areas of interest: Organic Gardening, Permaculture, Botany, Agroecology

Time Frame: on-going

Length of Internship: 4 - 6 weeks

About the Organizations:
The Monteverde Institute (www.monteverde-institute.org) combines academic experiences and community partnerships in order to advance the knowledge of sustainability. The MVI also teaches and hosts courses from over 25 universities in the fields of Tropical Ecology, Conservation Biology, Sustainability, Landscape Architecture, Environmental Education, Culture, and Community Health. Various community projects such as Traveler’s Philanthropy, sidewalk development, recycling, and the Bellbird Biological Corridor are spearheaded by the MVI.

Intern Responsibilities:

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings.
2. Review background information and previous design options for the MVI organic garden.
3. Conduct review of staff opinions regarding the objectives, design, and end results of the garden.
4. Design the greenhouse in conjunction with the programs for native trees and plants.
5. Design the various gardens keeping in mind growing conditions, seasonality, ease of access, visibility, crop needs of the MVI, and educational components.
6. Present the design and background information for at least one garden and greenhouse.
7. Revise plan according to the review process by staff and board.
8. Organize the planting of one garden (or section of one garden) with student groups.
9. Provide informative material on the process and design to be posted near the garden and for the web page.
10. Presentation to the Monteverde Institute staff, students, and community (English or Spanish)

Final products:

1. Illustrative design for the greenhouse (interior and exterior)
2. Illustrative design for at least one garden area.
3. At least one garden planted (season/rainfall permitting).
4. Educational materials and signage.
5. Final project presentation to MVI staff, community and visiting students.

Background information:

For several years, the Monteverde Institute has planned to have its own organic garden that will provide vegetables for the MVI kitchen, as well as incorporate permaculture philosophy and principles as a productive and educational component of the MVI. Funds have been designated for the design and implementation of this garden.

At this time, the exact use and desired components of the garden have not been identified. The MVI needs someone to lead the process of assessing the values, objectives, and needs of a vegetable/herb garden on the MVI premises that include production, use, and education regarding sustainable gardening practices and maintenance.

It has been decided that the garden should be an integral part of other sustainable forestry and garden programs. Therefore, the vegetable garden will be done in conjunction with a native tree nursery, by the Fundación Conservacionista Costarricense, and a native plant nursery by ProNativas (Willow Zuchowski).
Intern Positions: Research Assistant- greywater treatment system improvement

Coordinators: Sarah Burbank
Supervisor(s): Andrea Albertin
Academic Supervisor: Fran Lindau

********************************************************************************

Internship Description: The reed bed greywater treatment system installed at the Monteverde Institute in 2005 and later renovated in 2009 is not currently working, although it was effective in the past. This internship involves conducting research to understand why the system is not functioning and providing recommendations for its improvement or replacement. Depending on the duration of internship, interns will also be involved in the reconstruction of the system.

Specifically, interns will:

1. Conduct a literature review about small-scale greywater treatment systems and what is appropriate to the Monteverde region
2. Visit functioning and non-functioning treatment systems in the Monteverde area to gain a better understanding of why certain systems work and why others fail
3. Investigate why the MVI’s greywater treatment system is not working and provide recommendations based on findings
4. Give a public presentation about findings
5. Depending on length-of-stay, and working in conjunction with the Institute’s staff, the intern will help implement recommendations made to get the treatment system up and running

Topics that may be covered during this internship include:

1. Greywater treatment systems:
   What treatment systems are available and which are the most appropriate for the Monteverde region and an institution the size of the MVI?
2. Water quality:
   Which physical-chemical and biological parameters are used to measure water quality and why? For waters discharged into streams, what are the maximum allowed levels of these parameters set by the Costa Rican Water Law?

Requirements: interns must have a strong interest in improving the quality of water discharged to streams and rivers. Basic knowledge and understanding of Ecology, Freshwater Biology, water quality and treatment wetlands is helpful.

Key areas of internship: Sustainability, Water quality, Environmental Engineering, Ecology
Time Frame: January-May, July-December

Length of Internship: 4-8 weeks

Background information: Water pollution is one of Costa Rica’s most critical problems, with only 5% of total domestic wastewater treated before being discharged to surface waters. Streams in the Monteverde region are no exception, and pollution through direct discharge of greywater is a major problem. In 2005, the MVI installed a reed bed treatment system to reduce its impact on local streams. By 2009, the treatment system was no longer working and was completely reconstructed. It is unclear for how long it was effective, but currently, it is no longer functioning. This internship would fulfill a direct need of the MVI, which is to understand why the treatment system it is not working, recommend steps for its improvement or replacement with another alternative, and potentially help with its reconstruction.

Intern Responsibilities:

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings
2. Field data collection on no less than 8 internship workdays: e.g., field visits to greywater treatment systems around Monteverde and surrounding communities
3. Literature review
4. Data analysis
5. Statistical analysis, interpretation, and report (only report for Education/Outreach interns)
6. Power point presentation preparation and delivery
7. Participation in academic modules

Final products:

1. Renovated greywater treatment system (if intern length-of-stay permits)
2. For digital information: Data files (raw data and compilations). Include a written list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it’s useful to the MVI when content not obvious. Digital backup of all final files should be given to the director at end of project. Original datasheets should be delivered to the director.
3. Data analysis for reporting results of research topic.
4. Report of the specific topic (e.g., the MVI’s greywater system failure):

| Abstract: brief summary of topic and results |
| Introduction: MVI’s greywater system |
| Study area and methods: site information, selected systems, methods |
| Results: data summary as related to topic |
| Discussion: your interpretation and implications of the results |
| Acknowledgements |
| References |

5. Oral presentation of results
Intern Positions: Research Assistant- Preliminary soil analysis/profiling

Coordinators: Sarah Burbank
Supervisor(s): Katie Johnson
Academic Supervisor: Fran Lindau

*****************************************************************************

Internship Description: This internship is a preliminary assessment of soil types found in the Bellbird Biological Corridor. Data from this internship will contribute to research that examines soils as a limiting factor in recruitment for trees in the Lauraceae family. Interns will evaluate small to medium scale soil variability by examining soil cores over several different plots throughout the BBC. Soil samples will be used to analyze pH, water content, composition, nutrient content, and possible contaminated content (near forest edges). Depending on duration of internship and background research obtained during this internship, interns may also be expected to use GPS for mapping soil boundaries.

Topics that will be covered during this internship may include the following:

1. Soil description
   What are the soil classifications, horizon designation, diagnostic horizons, and horizon boundaries of area in question?

2. Soil boundaries
   How are these boundaries usually delineated?

3. Techniques for mapping soils
   What information already exists in this area e.g., small-scale soil maps, topographic maps, geological maps etc.? What are modern day methods/technology used for mapping?

4. Soil variability
   What is soil variability? What are soil properties or patterns over small, medium, and large-scale variability?

Requirements: This internship position requires an interest in soils and getting dirty, stamina for fieldwork, data collection, and scientific article research skills. Data entry and organization are also requirements.

Key areas of internship: Soil Science, Ecology, Soil Profiling, Soil Variation, GPS Mapping, Vulnerable Bird Species

Time Frame: On-going
Length of Internship: 4-15 weeks

Background information: Changes in the climate contribute to biogeochemical variations in the tropics, which can affect plant production, decomposition, and nutrient cycling. Previous studies conducted in Costa Rican lowlands have found that tree species can affect N fixation and soil respiration. Gathering information about the soils found throughout the BBC will aid in further understanding ecosystem processes that may affect gene flow and Lauraceae recruitment. Because the Three-wattled Bellbird feeds on fruits from trees in this family, understanding soil variability will grant insight to the protection of this endangered species.

Organization/project information: The Bellbird Biological Corridor (www.cbpc.org) is an ecological connection that spans 10 distinct life zones from the high elevation cloud forests (1850 masl) to the mangroves at the Gulf of Nicoya (0 m asl) on the Pacific slope of Costa Rica. The corridor has been created by nine collaborating organizations to protect and enhance biodiversity, promote the sustainable use of natural resources while providing socio-economic benefits to the communities of the corridor. One of the pending decisions is how to identify and prioritize areas in need of habitat protection and restoration.

The Monteverde Institute (www.monteverde-institute.org) combines academic experiences and community partnerships in order to advance the knowledge of sustainability. The MVI teaches and hosts courses from over 25 universities in the fields of Tropical Ecology, Conservation Biology, Sustainability, Landscape Architecture, Environmental Education, Culture, and Community Health. The MVI spearheads various community projects such as Traveler’s Philanthropy, sidewalk development, recycling, and the Bellbird Biological Corridor.

Intern Responsibilities:

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings
2. Field data collection on no less than 8 internship workdays: e.g., soil sampling and GPS
3. Literature review
4. Data analysis
5. Statistical analysis, interpretation, and report (only report for Education/Outreach interns)
6. Power point presentation preparation and delivery
7. Participation in academic modules

Final products:

1. Interpretative materials on soil taxonomy (e.g., posters, digital files etc.,)
2. For digital information: Data files (raw data and compilations). Include a written list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it’s useful to MVI and the BBC when content not obvious. Digital backup of all final files should be given to the director at end of project. Original datasheets should be delivered to the director.
3. Data analysis for reporting results of research topic.
4. Report of the specific topic (e.g., Soil types found in the BBC and implications for tree recruitment):
Abstract: brief summary of topic and results
Introduction: biochemical variation and soil type
Study area and methods: site information, soil sampling, methods
Results: data summary as related to topic
Discussion: your interpretation and implications of the results
Acknowledgements
References

5. Presentation of results
Intern Positions: Research Assistant- density and spatial distribution of tropical tree genera *Ocotea* and *Cinnamomum*

**Coordinators:** Sarah Burbank  
**Supervisor(s):** Katie Johnson  
**Academic Supervisor:** Fran Lindau

************************************************************
**Internship Description:** This internship is a preliminary assessment of *Ocotea* and *Cinnamomun* tree spatial distributions throughout the Bellbird Biological Corridor. Eventually these data will be used in future studies to investigate phenology and density and spatial distribution over different scales (local and landscape). Initial assessment will involve locating, measuring, and taking GPS points of adults, \( \geq 25 \) cm DBH, on at least three 50 x 50 meter plots. Interns will learn Lauraceae family characteristics and will be actively involved in tree identification for this study.

Internship topics may include the following:

1. **Plant identification**  
   *What are some key morphological characteristics of the Lauraceae family and species found in the *Ocotea* and *Cinnamomun* genera that provide fruits for the Three-wattled Bellbird?*

2. **Spatial distribution**  
   *What methods are used to map spatial distribution? What is the spatial distribution of species found in these genera?*

3. **Recruitment**  
   *What is tree species recruitment, and what are some limiting biotic and abiotic factors?*

4. **Phenology, seed dispersal and density-dependent predation**  
   *What role do phenology, seed dispersal, and seed predation play in the success of these species?*

**Requirements:** This internship position requires an interest in forestry and getting dirty, stamina for fieldwork, data collection, and scientific article research skills. Data entry and organization are also requirements.

**Key areas of internship:** Ecology, Forestry, Mapping, Spatial distribution, Reforestation, Recruitment, Seed dispersal, Vulnerable Bird Species

**Time Frame:** On-going
Length of Internship: 4-15 weeks

**Background information:** Changes in climate have created a shift in phenology patterns for both plants and avian species. The timing of flowering and breeding is especially important for migratory frugivorous bird species, such as the Three-wattled Bellbird. Gathering information about *Ocotea* and *Cinnamomum* distributions found throughout the BBC will aid in further understanding ecosystem processes that may affect phenology and Lauraceae recruitment. Because the Three-wattled Bellbird feeds on fruits from trees in this family, understanding recruitment will grant insight to the protection of this vulnerable species.

**Organization/project information:** The Bellbird Biological Corridor ([www.cbpc.org](http://www.cbpc.org)) is an ecological connection that spans 10 distinct life zones from the high elevation cloud forests (1850 masl) to the mangroves at the Gulf of Nicoya (0 mamsl) on the Pacific slope of Costa Rica. The corridor has been created by nine collaborating organizations to protect and enhance biodiversity, promote the sustainable use of natural resources while providing socio-economic benefits to the communities of the corridor. One of the pending decisions is how to identify and prioritize areas in need of habitat protection and restoration.

The Monteverde Institute ([www.monteverde-institute.org](http://www.monteverde-institute.org)) combines academic experiences and community partnerships in order to advance the knowledge of sustainability. The MVI teaches and hosts courses from over 25 universities in the fields of Tropical Ecology, Conservation Biology, Sustainability, Landscape Architecture, Environmental Education, Culture, and Community Health. The MVI spearheads various community projects such as Traveler’s Philanthropy, sidewalk development, recycling, and the Bellbird Biological Corridor.

**Intern Responsibilities:**

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings
2. Field data collection on no less than 8 internship workdays: e.g., tree identification, plot boundaries and GPS
3. Literature review
4. Data analysis
5. Statistical analysis, interpretation, and report (only report for Education/Outreach interns)
6. Power point presentation preparation and delivery
7. Participation in academic modules

**Final products:**

1. Interpretative materials (posters, signs, digital information, etc.)
2. For digital information: Data files (raw data and compilations). Include a written list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it’s useful to the MVI and BBC when content not obvious. Digital backup of all final files should be given to the director at end of project. Original datasheets should be delivered to the director.
3. Data analysis for reporting results of research topic.
4. Report of the specific topic (e.g., Spatial distribution and density of *Ocotea* trees throughout the Bellbird biological corridor):

<table>
<thead>
<tr>
<th>Abstract: brief summary of topic and results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction: methods of recruitment and success</td>
</tr>
<tr>
<td>Study area and methods: site information, selected species, methods (samples of different <em>Ocotea</em> species and density within plots, data analysis)</td>
</tr>
<tr>
<td>Results: data summary as related to topic</td>
</tr>
<tr>
<td>Discussion: your interpretation and implications of the results</td>
</tr>
<tr>
<td>Acknowledgements</td>
</tr>
<tr>
<td>References</td>
</tr>
</tbody>
</table>

5. Presentation of results
Intern Positions: Foreign Language Teaching Assistantship

Coordinators: Sarah Burbank
Supervisor(s): Cristina Rubio Rey
Academic Supervisor: Fran Lindau

******************************************************************************

Internship Description: This internship requires students with advanced Spanish skills to help identify new materials to be used in conjunction with Spanish classes. These materials should focus on intercultural relationships, and emphasize current social, political, and cultural events of Costa Rica. Similar materials might also be developed for MVI English classes. Interns will incorporate methods using scenario planning and role-play situations in order to promote intercultural understanding and cultural sensitivity within student groups. Interns will be expected to collaborate as an assistant to Spanish teachers, and should also have a strong interest in second language acquisition, ESL, and other teaching modalities.

Topics may include:

1. Development of second language grammar (Spanish)
2. Second language production and comprehension
3. Input processing
4. Acquisition of pragmatic and sociolinguistic competence
5. Methods of teaching college Spanish
6. Communicative language teaching
7. Research on second language development

Requirements: This project requires 1-2 interns with strong Spanish language skills and an interest in both curriculum development and second language acquisition. Interns must be willing to research and implement materials with students in a classroom setting.

Key areas of internship: Spanish, Latin American Studies, History, Comparative Literature, Bilingual Education, Teaching Methods, Acquisition, Development

Time Frame: On-going

Length of Internship: 3-12 weeks
**Background information:** Studying abroad in a Spanish speaking country offers many opportunities to advance teaching second language skills. By creating teaching materials and implementing creative teaching techniques, foreign language teaching assistants will be able to practice teaching skills while also providing resources for other teachers, such as those in TESL programs.

**Intern Responsibilities:**

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings
2. Literature review
3. Data analysis
4. Statistical analysis, interpretation, and report (only report for Education/Outreach interns)
5. Power point presentation preparation and delivery
6. Participation in academic modules

**Final products:**

1. Lesson plans/teaching materials (posters, signs, digital information, etc.)
2. For digital information: Data files (raw data and compilations). Include a written list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it’s useful to the MVI when content not obvious. Digital backup of all final files should be given to the director at end of project. Original datasheets should be delivered to the director.
3. Class assessment and evaluation
4. Program Report (e.g., Teaching college level Spanish):

   - Abstract: brief summary of topic and results
   - Introduction: Spanish teaching methods
   - Study area and methods: site information, lesson plans/materials, methods
   - Results: assessment and evaluation
   - Discussion: your interpretation and implications of the results
   - Acknowledgements
   - References
5. Oral presentation of results
Intern Positions: Native Ornamental Plant Landscaping, Propagation, and Gardening

Coordinators: Sarah Burbank
Supervisor(s): Willow Zuchowski, Felipe Negrini
Academic Supervisor: Fran Lindau

Internship Description: Landscaping with co-supervisor Felipe Negrini will be the initial focus with interns contributing to planning and/or implementation depending on the length of internship and season. Willow Zuchowski will be involved for botanical consulting in the landscape planning.

The propagation aspects will involve working with botanist, Willow Zuchowski, and greenhouse and garden manager, Lorenzo Vargas, in collecting cuttings and seeds of native species and planting them in the greenhouse, caring for plants, and possible experimentation with techniques on specific groups, such as those found in the Ericaceae (blueberry) Family.

The gardening aspects will involve maintaining present native plantings on the MVI property, planting new areas (depending on the season), working on interpretation (signs, etc.).

Other possible areas of work/study: invasive species (eradicating on MVI property); creating an interpretive ‘arboretum’ trail through part of the treed area of the land, which could connect to a larger ‘sustainability’ trail. There are opportunities to be involved in outreach and learning tropical plant families and plant-animal interactions in the tropics.

Requirements: Minimal experience in vegetable gardening, ornamental gardening, tree planting, etc.

Key areas of internship: Sustainability, Conservation, Landscaping, Environmental Education, Plant-animal interactions, Horticulture, Invasive species, Tropical Plant taxonomy

Time Frame: On-going

Length of Internship: 4-16 weeks

Background information: ProNativas is a network of scientists, biologists, landscapers and gardeners of Costa Rica concerned about the low diversity of native ornamental plants in gardens. This network started in 2004 as a local initiative in Monteverde. ProNativas’ mission is to promote the use of native ornamental plants, and raise awareness of their contribution to the rich ecology and beauty of Costa Rica’s landscape.
Organization/project information: ProNativas was created in order to provide compiled information about native plants found throughout the country, educate about the importance and disappearance of native flora, and promote sustainable alternatives to using exotic species in gardens. This internship will provide the Monteverde Institute with the design, proposal, and possible installation of native gardens as well as providing interpretive materials about these species to MVI visitors and community members.

Intern Responsibilities:

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings
2. Literature review
3. Data analysis
4. Statistical analysis, interpretation, and report (only report for Education/Outreach interns)
5. Power point presentation preparation and delivery
6. Participation in academic modules

Final products:

1. Interpretative materials (posters, signs, digital information, etc.)
2. For digital information: Data files (raw data and compilations). Include a written list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it’s useful to ProNativas when content not obvious. Digital backup of all final files should be given to the director at end of project. Original datasheets should be delivered to the director.
3. Garden development and design proposal
4. Data analysis for reporting results of research topic.
5. Report of the specific topic (e.g., Propagation techniques of Ericaceae ornamentals):
   - Abstract: brief summary of topic and results
   - Introduction: methods of Ericaceae propagation
   - Study area and methods: site information, selected species, methods (samples of different Ericaceae species and different propagation techniques, data analysis)
   - Results: data summary as related to topic
   - Discussion: your interpretation and implications of the results
   - Acknowledgements
   - References
6. Presentation of results
Intern Positions: Native Ornamental Plant Landscaping, Propagation, and Gardening

Coordinators: Sarah Burbank  
Supervisor(s): Felipe Negrini Sanjuán  
Academic Supervisor: Fran Lindau

******************************************************************************

Internship Description: This internship consists of developing specific parts of a Master Plan/blueprint for the MVI’s grounds in order to successfully achieve a structured plan to improve the landscape of the Monteverde Institute. This internship will focus on designing specific areas within a general overall plan (e.g., greywater system, arboretum, native plant gardens, etc.). The following topics will allow interns to investigate, understand information, analyze the environment based on previously collected data, and proceed with the landscape design.

Topics that may be covered during this internship include:

1. Site Analysis Blueprints:
   a. Large and medium scale location plans (influences).
   b. General distribution plan.
   c. Contour plan.
   d. Watercourses and flood zones.
   e. Soil types (soft - hard, permeable - impermeable)
   f. Section through site plan.
   g. Existing access zones and circulations.
   h. Forest and green areas condition plan.
   i. Distribution plan of important existing trees.
   j. Current zoning plan.
   k. Views and visual display barriers

2. Documentation:
   a. SWOT analysis (Strengths, Weaknesses, Opportunities and Threats)
   b. Mission and Vision
   c. Written Concept
   d. Philosophy of the project
   e. List of spaces and activities required
   f. Climate of the zone
   g. Background and present history of Monteverde and the MVI
   h. Photography
   i. Polls
   j. Interviews
**Requirements:** Drawing and design skills (design will not be based on technical blueprints, however basic drawing skills are required), interest in investigation/evaluation, creativity

**Key areas of internship:** Sustainability, Ecology, Landscaping, Education, Biology, Native Species, Architecture, Planting, Topography, Design.

**Time Frame:** On-going

**Length of Internship:** 4-16 weeks

**Background information:** This internship is intended to improve green areas located on the MVI property and serve as a model for the Monteverde community in terms of developing adequate strategies for the use of space. Along with promoting two of the Institute’s pillars (Community and Education), teaching landscaping techniques also inspires the creative process.

**Organization/project information:** As a local landscape architect who knows Monteverde’s background and respects its uniqueness, it is important to me to help with initiatives that not only improve the quality of community spaces, but that can also serve as a model for planning environmental spaces.

**Intern Responsibilities:**

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings
2. Literature review
3. Statistical analysis, interpretation, and report (only report for Education/Outreach interns)
4. Power point presentation preparation and delivery
5. Participation in academic modules

**Final products (may include the following depending on duration and specific area of internship):**

1. Proposal Blueprints:
   a. General concept
   b. Zoning plan
   c. MTVI as a biological corridor (ecological units and connections)
   d. Access and circulation areas
   e. Views and visual displays
   f. Recovery of the forest
   g. Thematic gardens
   h. Public space
   i. Evacuation routes and areas
   j. Integral plan
   k. Detailed fingerprint of each zone
   l. Details sketches
   m. Landscape palette
   n. Components diagram
2. General specifications
   a. Maintenance manual

3. For digital information: Data files (raw data and compilations). Include a written list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it’s useful to the MVI when content not obvious. Digital backup of all final files should be given to the director at end of project. Original datasheets should be delivered to the director.

4. Data analysis for reporting results of research topic.

5. Report of the specific topic (e.g., sustainable designs: greywater system at the MVI):
   - Abstract: brief summary of topic and results
   - Introduction: grey water design methods and proposal
   - Study area and methods: site information, selected species, methods
   - Results: data summary as related to topic
   - Discussion: your interpretation and implications of the results
   - Acknowledgements
   - References

6. Oral presentation of results
Intern Positions:  Landscape Designer

Coordinators: Sarah Burbank
Supervisor(s): Felipe Negrini Sanjuán
Academic Supervisor: Fran Lindau

******************************************************************************

Internship Description: This internship consists of developing a detailed plan and blueprint of a roadside beautification project, specifically for an area between the Biological Reserve and San Luis, which exhibits constant solid waste issues (i.e., litter) and neglect. This internship and community initiative involves designing proposals for an aesthetically pleasing garbage disposal, a collection site for recycling, as well as integrating comfortable waiting areas for public transportation (e.g., micro park, informative place, animal observatory). This integrated landscape design could be used as a model for future developments, providing continuity, and contributing to the identity of Monteverde.

Topics that may be covered during this internship include:

1. Site Analysis Blueprints:
   a. Large and medium scales location plan (influences).
   b. Watercourses and flood zones.
   c. Section through site plan.
   d. Existing access zones and circulations.
   e. Forest and green areas condition plan.
   f. Views and visual display barriers

2. Documentation:
   a. SWOT analysis (Strengths, Weaknesses, Opportunities, Threats)
   b. Mission and Vision
   c. Written Concept
   d. Philosophy of the project
   e. List of spaces and activities required
   f. Climate of the zone
   g. Background and present of Monteverde and the Institute
   h. Photography
   i. Polls
   j. Interviews

Requirements: Drawing and design skills, creativity
Key areas of internship: Landscape architecture, Ecology, Biology, Design, Sustainability, Education, Native Species, Planting, Topography, etc.

Time Frame: On-going

Length of Internship: 4-8 weeks

Background information: Given the uniqueness of Monteverde, considering models for planning environmental spaces is a growing concern. These kinds of projects can improve the quality of life by providing the Monteverde community with solutions for solid waste contamination issues.

Intern Responsibilities:

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings
2. Literature review
3. Statistical analysis, interpretation, and report (only report for Education/Outreach interns)
4. Power point presentation preparation and delivery
5. Participation in academic modules

Final products (may include the following depending on duration of internship):

1. Proposal Blueprints:
   a. General concept
   b. Zoning plan
   c. Access and circulation areas
   d. Views and visual displays
   e. Public spaces
   f. Detailed plan
   g. Details sketches
   h. Landscape palette
   i. Components diagram
   j. Planting plan
   k. Materials
2. General specifications
   a. Maintenance manual
3. For digital information: Data files (raw data and compilations). Include a written list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it’s useful to the MVI when content not obvious. Digital backup of all final files should be given to the director at end of project. Original datasheets should be delivered to the director.
4. Data analysis for reporting results of research topic.
5. Report of the specific topic (e.g., Landscape design: roadsides and greenways):
   - Abstract: brief summary of topic and results
   - Introduction: methods of Landscape Design
Study area and methods:  site information, methods, and design elements
Results:  data summary as related to topic
Discussion: your interpretation and implications of the results
Acknowledgements
References

1.  Presentation of results/ final products
ARTS COLLABORATOR INTERNSHIP PROPOSAL
WITH THE MONTEVERDE INSTITUTE (MVI): ARTS AND SCIENCES INTEGRATION
SPRING 2014

Intern Positions: Artist-Scientist

Coordinators: Sarah Burbank
Supervisor(s): Carla Willoughby
Academic Supervisor: Fran Lindau

Internship Description: Interns will conduct pedagogical research on arts and sciences integration, including required and suggested readings and documentaries. After reflecting on scientific learning based on current coursework or experience in the Monteverde region, interns will identify one or more scientific and/or sustainability concepts to explore through an artistic medium. This internship will require that interns choose one or more artistic mediums for developing a community educational tool/presentation about the identified scientific or sustainability concepts, keep a daily creative journal based on prompts from the internship supervisor, and identify an audience and a setting for the proposed unveiling of the artistic education.

Requirements: Interest in using artistic skills for community education about scientific and/or sustainability concepts

Key areas of internship: Tropical Ecology, Sustainability, Education, Visual Arts, Documentary, Creative Writing, Dance, Theater, Music, Arts and Sciences Integration,

Time Frame: January-May, August-December

Length of Internship: 4-8 weeks

Background information: Increasingly, attention is being given to the arts as a vehicle for understanding and appreciating Science. Instead of placing the two disciplines at separate ends of a knowledge spectrum, current pedagogical methods are recognizing how both disciplines draw on creativity, insight and logic. As such, arts and sciences integration is an example of a holistic approach to education.

"Science provides an understanding of a universal experience. Art provides a universal understanding of a personal experience" - Mae Jemison

Organization/project information: This project seeks to promote MVI’s mission and vision to promote arts, sustainability and education in the community.
Intern Responsibilities:

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings
2. Literature review
3. Data analysis
4. Statistical analysis, interpretation, and report (only report for Education/Outreach interns)
5. Power point presentation preparation and delivery
6. Participation in academic modules

Final products:

* Note: It is advised that participating interns bring any art materials and/or equipment especially cameras, video cameras, and instruments that they may need. The internship includes funding for art materials, however it is limited.

1. One or more of the following: Create a visual arts exhibit, Choreograph and perform a dance, Write and perform a puppet show, Write and illustrate a children’s story to be read aloud, Create a radio, photography or video documentary
2. For digital information: Data files (raw data and compilations). Include a written list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it’s useful to the MVI when content not obvious. Digital backup of all final files should be given to the director at end of project. Original datasheets should be delivered to the director.
3. Data analysis for reporting results of research topic.
4. Report of the specific topic (e.g., Project Assessment and Evaluation):
   - Abstract: brief summary of topic and results
   - Introduction: methods of project implementation
   - Study area and methods: site information, selected species, methods
   - Results: data summary as related to topic
   - Discussion: your interpretation and implications of the results
   - Acknowledgements
   - References
5. Presentation of results
Intern Positions: Emerging Herbalist

Coordinators: Sarah Burbank  
Supervisor(s): Carla Willoughby  
Academic Supervisor: Fran Lindau

Internship Description: This internship involves ethnobotanical research on native and non-native medicinal plants conducive to growth in Monteverde. Interns will visit several community medicinal plant garden initiatives and learn how to identify medicinal plants by their scientific and common names. With this gained knowledge interns will be capable and responsible for choosing medicinal plants for expanding existing community gardens, and/or locate an area in the community for the design and installation of a new medicinal plant garden.

Requirements: Interest in medicinal plants and herbalism, gardening and landscape design, community education, and Ethnobotanical Research.

Key areas of internship: Landscape Design, Gardening, Health Care, Medicinal Plants and Herbalism, Sustainability, Education, Medical Anthropology, Ethnobotany.

Time Frame: On-going

Length of Internship: 4-8 weeks

Background information: Community knowledge of medicinal plants, specifically native medicinal plants and their uses, is a form of local holistic sustainability in the sense that a community becomes enabled to draw on its available natural resources. Medicinal plant gardens located at the Monteverde Institute and at the Cloud Forest School/Centro de Educación Creativa are in need of maintenance, renovation and expansion. With the work of the Emerging Herbalist Internship, both gardens, and/or any future planned gardens will serve the local community and students as demonstration gardens to promote the awareness and use of medicinal herbs.

Intern Responsibilities:

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings.
2. Field data collection on no less than 8 internship workdays: e.g., field data may include plant identification as well as qualitative research in ethnographic interviewing.
3. Literature review.
4. Data analysis.
5. Statistical analysis, interpretation, and report (only report for Education/Outreach interns).
6. Power point presentation preparation and delivery.
7. Participation in academic modules.
Final products:

1. Create interpretive materials on medicinal plants (Spanish)
2. Prepare medicinal infusions, decoctions, tinctures, salves and syrups
3. Design and participate in informative medicinal plant booth at the local farmer’s market
4. Create an educational presentation to a local community group or school
5. Create ethnobotanical survey about current medicinal plant use in the Monteverde region and report or document findings
6. For digital information: Data files (raw data and compilations). Include a written list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it’s useful to the MVI when content not obvious. Digital backup of all final files should be given to the director at end of project. Original datasheets should be delivered to the director.
7. Data analysis for reporting results of research topic.
8. Report of the specific topic (e.g., ethnobotanical trails):

   | Abstract: brief summary of topic and results |
   | Introduction: ethnobotanical methods       |
   | Study area and methods: site information, selected species, methods |
   | Results: data summary as related to topic  |
   | Discussion: your interpretation and implications of the results |
   | Acknowledgements                           |
   | References                                 |

9. Presentation of results
Intern Positions: Healthy Living program/project assistant

Coordinators: Sarah Burbank
Supervisor(s): Jenny Peña Leiva
Academic Supervisor: Fran Lindau

Internship Description: Assistants will provide support for community in various associated fields. Internship focus will be supporting and aiding in increasing physical activity among marginalized populations of the Monteverde community. Other internship goals include: promoting general nutrition and preventative health issues awareness, increasing local organizing capacity for sport and recreational opportunities, facilitating participation in creative physical activities, and enabling participants to monitor changes in biophysical parameters, self-esteem and empowerment.

Topics that may be covered in this internship include:

1. Nutrition:
   Enhance awareness of general nutrition and preventative health issues; workshops about nutrition and health, monitoring changes in biophysical parameters of participants and their nutritional status
2. Arts:
   organizing arts activities within target groups
3. Sports and physical activity:
   facilitate participation in creative physical activities through classes and public events
4. Education:
   promoting healthy living, prevention and health materials; enhance awareness of general nutrition and preventative health issues.

Requirements:
1. Undergraduate/Graduate students from sports, health, nutrition or arts fields.
2. Experience in health, recreation, sports or physical activity preferred. The ideal candidate would have strong communication and leadership skills, and will be expected to lead community groups
3. excellent sport or recreational skills.
4. Language Proficiency: conversational Spanish (intermediate and advance level).

Key areas of internship: Public Health, Nutrition, Education, Sports and physical activity

Time Frame: January-May, August-November

Length of Internship: 8-12 weeks
Background information: According to national studies, there exists a high incidence of obesity among Costa Ricans, which contributes to the development of hypertension, heart disease, dyslipidemia, diabetes and other chronic diseases. Specifically, young people have been reported to show changes in their dietary and food habits. At the local level, instilling healthy eating habits in Monteverde’s youth remains a challenge; families report difficulty in controlling their children’s food preferences, when today’s youth spends more time outside of the household than inside. The following excerpt explains nutrition and food security issues associated with the Monteverde population:

In 2011, the Monteverde Institute’s Community Health Program and the University of South Florida (USA) completed a 3-year study funded by the National Science Foundation titled, “The Impact of Economic Change on Food Habits and Nutritional Health in Monteverde, Costa Rica: Mixing Food Production and Tourism.” In addition to finding significant levels of food insecurity (50.76% of 200 households surveyed), the study also identified an alarming rate of health issues related to dietary practices, stress, lifestyle behaviors and a lack of physical activity. Among these issues are increased prevalence of overweightness and obesity, and their associated health risks such as hypertension, cardiovascular disease, and diabetes (results pending publication). While these issues are correlated to food insecurity, they are further exacerbated by factors such as cultural and gender norms (e.g., % of women who don’t work outside of the home), socio-economic realities (e.g., labor conditions and limited recreational/physical activity alternatives), a lack of public infrastructure and organization (i.e., few sidewalks, gravel roads, formal opportunities for participation, etc.) and local geography (i.e., few flat areas, heavy rains during much of the year, etc.). These factors particularly isolate women, youth and the elderly from participation in physical activity.

Intern Responsibilities:

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings
2. Field data collection on no less than 8 internship workdays
3. Literature review
4. Statistical analysis, interpretation, and report (only report for Education/Outreach interns)
5. Power point presentation preparation and delivery
6. Participation in academic modules

Final products:

1. Project proposal
2. Developed program activities
3. Educational and preventive material for participants
4. For digital information: Data files (raw data and compilations). Include a written list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it’s useful to MVI when content not obvious. Digital backup of all final files should be given to the director at end of project. Original datasheets should be delivered to the director.
5. Data analysis for reporting results of research topic.
6. Report of the specific topic (e.g., physical activity as a preventative measure against obesity):
Abstract: brief summary of topic and results
Introduction: Physical activity in Monteverde
Study area and methods: site information, population sampling, methods
Results: data summary as related to topic
Discussion: your interpretation and implications of the results
Acknowledgements
References

7. Presentation of results
COMMUNITY HEALTH INTERNSHIP PROPOSAL
WITH THE MONTEVERDE INSTITUTE (MVI)
SPRING 2014

Intern Positions: Researcher Assistant- food security status of Monteverde’s youth

Coordinators: Sarah Burbank
Supervisor(s): Jenny Peña Leiva
Academic Supervisor: Fran Lindau

*******************************************************************************

Internship Description: Interns will survey and evaluate the nutritional status of Monteverde’s youth by assessing the nutritional needs and/or problems of students or unschooled youth. The goals of this survey are to: understand the nutritional preferences of this population (i.e., which factors determine tastes and perceptions of food security), determine the nutritional needs and problems of Monteverde’s youth, and establish alternatives and solutions. Interns will be expected to participate in either writing project proposals in order to implement possible healthy solutions and alternatives to this population, or designing a formal project for future grant proposals for long-term research in the Monteverde area.

Topics that may be covered in this internship:

1. Nutrition and food security: food availability, access, and choices
2. Nutritional Status: physical
3. Nutritional awareness
4. Overweight and obesity
5. Cardiovascular diseases

Requirements: This project requires graduate students with strong Spanish language skills and an interest in quantitative and qualitative participatory research.

Key areas of internship: Public Health, Medical Anthropology, Nutrition, Psychology, Sociology

Time Frame: January-May, August-November

Length of Internship: 8-12 weeks

Background information: According to national studies, there exists a high incidence of obesity among Costa Ricans, which contributes to the development of hypertension, heart disease, dyslipidemia, diabetes and other chronic diseases. Specifically, young people have been reported to show changes in their dietary and food habits. At the local level, instilling healthy eating habits in Monteverde’s youth remains a challenge; families report difficulty in controlling their children’s food preferences, when today’s youth spends more time outside of the household than
inside. The following excerpt explains nutrition and food security issues associated with the Monteverde population:

In 2011, the Monteverde Institute’s Community Health Program and the University of South Florida (USA) completed a 3-year study funded by the National Science Foundation titled, “The Impact of Economic Change on Food Habits and Nutritional Health in Monteverde, Costa Rica: Mixing Food Production and Tourism.” In addition to finding significant levels of food insecurity (50.76% of 200 households surveyed), the study also identified an alarming rate of health issues related to dietary practices, stress, lifestyle behaviors and a lack of physical activity. Among these issues are increased prevalence of overweightness and obesity, and their associated health risks such as hypertension, cardiovascular disease, and diabetes (results pending publication). While these issues are correlated to food insecurity, they are further exacerbated by factors such as cultural and gender norms (e.g., % of women who don’t work outside of the home), socio-economic realities (e.g., labor conditions and limited recreational/physical activity alternatives), a lack of public infrastructure and organization (i.e., few sidewalks, gravel roads, formal opportunities for participation, etc.) and local geography (i.e., few flat areas, heavy rains during much of the year, etc.). These factors particularly isolate women, youth and the elderly from participation in physical activity.

Intern Responsibilities:

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings
2. Field data collection on no less than 8 internship workdays
3. Literature review
4. Statistical analysis, interpretation, and report (only report for Education/Outreach interns)
5. Power point presentation preparation and delivery
6. Participation in academic modules

Final products:

1. Project proposal
2. For digital information: Data files (raw data and compilations). Include a written list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it’s useful to MVI when content not obvious. Digital backup of all final files should be given to the director at end of project. Original datasheets should be delivered to the director.
3. Data analysis for reporting results of research topic.
4. Report of the specific topic (e.g., Eating habits in teens):
   - Abstract: brief summary of topic and results
   - Introduction: nutrition and food security in Monteverde teens
   - Study area and methods: site information, population sampling, methods
   - Results: data summary as related to topic
   - Discussion: your interpretation and implications of the results
   - Acknowledgements
   - References
5. Presentation of results
RESOURCE DEVELOPMENT COLLABORATOR
INTERNERSHIP PROPOSAL
WITH THE MONTEVERDE INSTITUTE (MVI) AND
THE MONTEVERDE COMMUNITY FUND (MCF)
SPRING 2014

Intern Positions: Resource Development and Communications Assistant
Research Assistant- Program Development Funding

Coordinators: Sarah Burbank
Supervisor: Justin Welch
Academic Supervisor: Fran Lindau

******************************************************************************

Internship Description: The first internship focuses on the organization of resource material that could be valuable to local community groups and non-profit associations in terms of organizational and project development. Material should be summarized and made available on our website in a user-friendly manner. Resources could include, among other things, directories of professional services offered by local and national organizations (academic, governmental and NGO), funding and training opportunities, as well as a platform to announce volunteer/“voluntourism” projects available with local community organizations. Other related tasks could include database management and web design.

The second group of internships will support the development of funding programs with specific thematic foci and are contingent on the interests and skills of applicants. Interns will be expected to conduct preliminary research on related themes to identify the state-of-the art in each field, available technical support and funding opportunities at the national and international levels, as well as initial stakeholder mapping and needs assessments at the local level. Research topics may include the following:

1. Carbon Neutral Exchange
2. Youth Leadership & Development
3. Sustainable Agriculture & Food Security
4. Ecological Restoration & Natural Resource Conservation
5. Sustainable Tourism & Social Corporate Responsibility
6. Innovation & Small Business Incubator
7. Applied Research, Participatory Planning & Policy Development

Requirements:

- Bilingual (English/Spanish)
- Self-motivated
- Organized
- Strong verbal and written skills
Key areas of internship: Sustainability, Community/Grassroots Development, Communications/Marketing

Time Frame: March - November

Length of Internship: 4-12 weeks

Background information: The MCF is currently developing specialized funding and technical assistance programs around key thematic areas identified by community residents and organizations in recent planning processes. We hope to develop concrete services that will best meet local needs and attract donors through transparent and effective programs. Previous background research on these thematic areas will help us to develop programs that incorporate the most current set of best practices available.

Organization/project information: Founded in 2012, the Monteverde Community Fund is a philanthropic organization that unites diverse resources, stakeholders and strategies to promote sustainability initiatives in the Monteverde region and its surrounding communities. Registered as a non-profit membership association in Costa Rica, our model reflects that of many community foundations found throughout North America, Europe and Africa.

We seek to support local entities who propose innovative and constructive solutions to environmental, social and economic challenges of the region through: 1) strategic fundraising; 2) training and technical assistance; and 3) facilitation of networks between entities at all levels. The organization stems from a pilot project led by the Monteverde Institute titles, “Developing a destination-wide traveler’s philanthropy initiative”, which is based on:

1. The perspective that the well-established tourism sector in Monteverde can play a much more effective role in local environmental conservation and human development; and
2. The philosophy that the local civic and non-profit sector also needs support for the development, funding and management of priority projects.

Intern Responsibilities:

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings
2. Literature review
3. Statistical analysis, interpretation, and report (only report for Education/Outreach interns)
4. Power point presentation preparation and delivery
5. Participation in academic modules

Final products:

1. Inventory of internship and voluntourism programs available within businesses, NGOs and governmental orgs in Monteverde.
2. Inventory if scholarships and small grants programs available within the region, and common programs at the national level.
3. Initial inventory of NGOs and governmental programs at national level that work in our thematic areas.
4. User friendly website with useful resources for various types of community based organizations.
5. Summary report of international carbon markets and national policies/programs, including an analysis of common trends regarding offset and adaptation best practices.
6. A summary report on potential funding sources, expert organizations and common trends/foci for the other thematic areas where MCF would like to develop further grant-making opportunities.
7. Data files (raw data and compilations). Include a written list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it's useful to MCF and the MVI when content not obvious. Digital backup of all final files should be given to the director at end of project. Original datasheets should be delivered to the director.
8. Data analysis for reporting results of research topic.
9. Final report
10. Presentation of results
COMMUNICATIONS INTERNSHIP PROPOSAL
WITH THE MONTEVERDE INSTITUTE (MVI)
SPRING 2014

Intern Positions:  Assistant Journalist

Coordinators:  Sarah Burbank
Supervisor(s):  Selena Avendaño
Academic Supervisor:  Fran Lindau

******************************************************************************

Internship Description:  Research has been conducted throughout the Monteverde area in various subjects. Currently, information surrounding these studies is written for the scientific community, thus providing little to no benefit to the community. The potential of converting these studies into public resources is vast. Interns will be in charge of researching past investigations and studies conducted in the Monteverde area and creating interpretive and informative materials (e.g., brochures, booklets, videos, etc.). Research topics will focus on health, agriculture in tropical areas, or biological data. Interns will be expected to have a good rapport with community members and the MVI librarian.

Topics that may be covered in this internship include:

1. Research methods in a small community:
   *Researching in a community where most information is transferred by word of mouth, and little documented information is available.*

2. Research interests:
   *Creating lists of research focus interests of affiliates and community members.*

3. Communication methods:
   *Different communication options and appropriate use*

4. Information research:
   *Compilation and documentation with the different tools presented within the domain of communications.*

Requirements:  Intermediate to advanced level of Spanish, basic research skills, knowledge about basic communication methods: Photoshop, Illustrator, and if interested in making a video, a video-editing program (PremierPro is available through the institute).

Key areas of internship:  Communications, Research, Journalism, Blogging, Health, Tropical Biology, Library Science

Time Frame:  On-going

Length of Internship:  8-15 weeks
**Background information:** One of the MVI’s pillars is research, due to this philosophy many important studies have been conducted. Various visiting students have collaborated with researchers throughout the Monteverde area. One of the Communication Department’s goals is to provide this information in a way that it can be used as a resource for the Monteverde community.

With Community being another MVI pillar, individual research and improvement efforts within the community are also important. Together we can collaborate to promote awareness of these activities within the Monteverde community.

**Intern Responsibilities:**

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings
2. Field data collection on no less than 8 internship workdays: (e.g., Journalistic covering/reporting)
3. Literature review
4. Statistical analysis, interpretation, and report (only report for Education/Outreach interns)
5. Power point presentation preparation and delivery
6. Participation in academic modules

**Final products:**

1. Interpretative materials (booklet, videos, digital information, etc.)
2. For digital information: Data files (raw data and compilations). Include a written list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it’s useful to the MVI when content not obvious. Digital backup of all final files should be given to the director at end of project. Original datasheets should be delivered to the director.
3. Data analysis for reporting results of research topic (how interpretive materials were made, problems, suggestions to future interns, etc.).
4. Report of the specific topic (e.g., Communication methods and assessment):

<table>
<thead>
<tr>
<th>Abstract: brief summary of topic and results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction: methods creating resources</td>
</tr>
<tr>
<td>Study area and methods: site information, methods</td>
</tr>
<tr>
<td>Results: data summary as related to topic</td>
</tr>
<tr>
<td>Discussion: your interpretation and implications of the results</td>
</tr>
<tr>
<td>Acknowledgements</td>
</tr>
<tr>
<td>References</td>
</tr>
</tbody>
</table>

5. Presentation of results
Intern Positions: Photographer/ Documentarian

Coordinators: Sarah Burbank
Supervisor(s): Selena Avendaño
Academic Supervisor: Fran Lindau

Internship Description: In an age of information and digital media it is easy to be bombarded with images, however it is refreshing to see a photo essay taken with the sole purpose of documentation. This is an opportunity to see how an outside eye can transform the way we see ourselves, and the world around us.

We have all heard of the power of photographic documentation. There are a lot of photos taken on a daily basis, however the idea of this project is to create photographic essays of different activities in the Monteverde area with a photojournalistic approach (e.g., agricultural practices, research, homestay families, cultural representations).

This photo essay will serve as a project to create awareness in each of the chosen fields. The focus will be creating a professional digital portfolio for the MVI and conceptually well-executed photographs. The theme is relatively open, however the supervisor and intern will collaborate on the project to create a final product.

Interns will participate in a skills module that will cover the following topics:

1. Subject specific practical skills:
   camera technique and setup, including the use of hardware accessories

2. Photojournalism:
   introduction to the history of photojournalism, tactics, approaches and suggestions; the role of the photojournalist in the modern world, including the laws and codes of ethics relating to photojournalists; discussion of the work of critically acclaimed photojournalists; photojournalism health and safety in a foreign setting

3. Community:
   tour through the community to take in a first person perspective and consider different themes; interpersonal skills in a second language and in diverse locations.

4. Communication:
   oral presentation and explanation of internship work and experience to the Monteverde community; discussion of intern’s work and that of well-known photojournalists

5. Photo documentation and information technology:
techniques in applying ethics, ideas and representations: photo editing using the proper criteria and basic photo correction (e.g., Adobe Photoshop image editing)

6. Research Skills:  
   planning and executing workflow with an understanding of industry standards (i.e., digital workflow)

Requirements: DSLR camera, basic use of Photoshop, willing to socialize and be an active participant in community activities.

Key areas of internship: Photography, Documentaries, Communications, Information Technology, Research

Time Frame: On-going

Length of Internship: 4-15 weeks

Background information: Monteverde is known to be a place full of cultural and natural diversity. This unique blend of so many different world representations has created a unique town with plenty of stories. Monteverde is surrounded by contrasts, on one hand there is constant change, and on the other there are old traditions. There are the forest wonders, agricultural practices, attempts to allow both to strive side by side and the stories go on.

The idea of this internship is to document stories, and in some cases compare them with older ones. The goal is to create a journal of Monteverde in order to visually understand how things change with time. This is an opportunity to be able to join and understand how different activities merge and affect each other (e.g., farming along forest edges or cultural perceptions of tourism, etc.).

Intern Responsibilities:

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings
2. Field data collection on no less than 8 internship workdays: e.g., Photographs
3. Literature review related to the thematic focus of the project
4. Data analysis
5. Statistical analysis, interpretation, and report (only report for Education/Outreach interns)
6. Power point presentation preparation and delivery
7. Participation in academic modules

Final products:

1. Photojournalistic coverage of an event in the Monteverde community
2. Development of a portfolio
3. For digital information: Data files (raw data and compilations). Include a written list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it’s useful to the MVI when
the content is not obvious. Digital backup of all final files should be given to the director at end of project. Original datasheets should be delivered to the director.

4. Coverage analysis for reporting results
5. Report of the specific topic (e.g., Cultural perceptions of tourism):

| Abstract: brief summary of topic and results |
| Introduction: Perceptions of ecotourism in Monteverde |
| Study area and methods: site information, selected stories/interviews, methods (techniques and information analysis) |
| Results: data summary as related to topic |
| Discussion: your interpretation and implications of the results |
| Acknowledgements |
| References |

6. Oral Presentation of results
Intern Positions: Assistant Library Coordinator—Database Project

Coordinators: Sarah Burbank
Supervisor(s): Marlene Leitón Campbell
Academic Supervisor: Fran Lindau

Internship Description: Interns will develop further the existing library database, as well as research web resources that are relevant for the MVI, student coursework, and community members. Students will gain a wide knowledge of available resources, particularly in the areas of Sustainable Development, Biological Sciences, Tropical Ecology and Health.

Requirements:

- Undergraduate
- Basic background or desire to learn more about library science.
- Students need to be able to work independently once they have received basic training in the system used at the Monteverde Institute Library.
- Intermediate level of Spanish

Key areas of internship: Library Science, Sustainable Development, Biological Sciences, Tropical Ecology, and Health

Time Frame: On-going

Length of Internship: 4-6 weeks

Background information: These databases generated from MVI internships and community projects provide continuity and information resources. By making this information more accessible and available, research will be made easier for students and community members.

Intern Responsibilities:

1. Coordinate with internship supervisors during first days of internship to identify priority tasks/locations and to schedule weekly update meetings
2. Literature review
3. Data analysis
4. Statistical analysis, interpretation, and report (only report for Education/Outreach interns)
5. Power point presentation preparation and delivery
6. Participation in academic modules
Final products:

1. For digital information: Data files (raw data and compilations). Include a written list of digital files (with accurate file names included) that were created during the internship. List should include brief information on contents and how it’s useful to the MVI when content not obvious. Digital backup of all final files should be given to the director at end of project. Original datasheets should be delivered to the director.

2. Data analysis for reporting results of research topic.

3. Report of the specific topic (e.g., Propagation techniques of Ericaceae ornamentals):

   | Abstract: brief summary of topic and results |
   | Introduction: methods of Ericaceae propagation |
   | Study area and methods: site information, selected species, methods (samples of different Ericaceae species and different propagation techniques, data analysis) |
   | Results: data summary as related to topic |
   | Discussion: your interpretation and implications of the results |
   | Acknowledgements |
   | References |

4. Presentation of results