



Costa Rica Bird Observatories

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## Annual Report 2011

**Pablo Elizondo, C. John Ralph, Jared Wolfe and John Alexander**



# Costa Rica Bird Observatories 2011 Annual report

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## About the Costa Rica Bird Observatories

The Observatories (CRBO) are a nationwide partnership of field stations that promotes bird conservation through monitoring, science, and education in Costa Rica. Many avian populations worldwide appear to be in decline and CRBO is responding by increasing monitoring activities focused on identifying factors that prevent population recovery. Bird monitoring in Costa Rica is particularly important because the country represents less than half of one percent of the Earth's landmass, yet more than 8% of the world's bird species have been documented within the country's political boundaries. To adequately monitor Costa Rica's globally important bird community we work with partners to gather, preserve, and analyze bird monitoring data and generate tools that inform, enhance, and promote bird conservation. We work in collaboration with many entities inside and outside of Costa Rica, notably the National Institute of Biodiversity (INBio) in Costa Rica, the US Forest Service, and the Klamath Bird Observatory.



**Our vision:** To gather, preserve and disseminate information on birds and their habitats to further conservation and bird science in Costa Rica.

**Our mission:** To provide leadership for bird monitoring in Costa Rica through the establishment of successful field efforts that inform strategic decisions affecting bird conservation at a regional scale.

As part of our day-to-day activities we work with governmental, private, industry, academic, non-profit, and community organizations to establish sustainable relationships focused on bird monitoring and conservation efforts.

## A year in review

2011 has been an important year for increased capacity building and enhancement of previous initiatives. Inherently associated with success are new challenges imposed by continuous growth. In 2011 we expanded monitoring activities by adding stations and having our crews rotate amongst all existing and new stations over a broad geographic area. Stations include: the urban station at INBio in the outskirts of San Jose, three stations at Madre Selva in the Cerro de la Muerte area, and five stations at our longest-running effort in Tortuguero. CRBO's involvement with Costa Rica's National Park system has been strengthened with the inclusion of the Ministerio de Ambiente Energia y Telecomunicaciones (MINAET) as part of the Costa Rica Bird Banding Network.



Social Flycatcher (*Myiozetetes similis*)

Our continued outreach efforts have been enhanced

with the development of a bird-centric education guide for environmental educators and activity books, which are kept at each station, based on curriculum recommended by the Ministry of Education. Full support from foundations, agencies, individuals and the private sector has ensured our sustained growth as a program leader in Costa Rican bird conservation.

A total of 2630 individuals pertaining 148 species were banded during 2011.

## Award

Our collective success in furthering avian conservation in Costa Rica was recently recognized by the US Forest Service with the “Wings Across the Americas International Conservation Award” in 2011. The Wings Across the Americas Program is a prestigious annual award given to outstanding projects in the fields of birds, bats, butterflies, and dragonflies.

CRBO was awarded the “International Cooperation Award” for its “...outstanding work towards establishing the Network of Bird Banders of Costa Rica (Red de Anilladores de Aves de Costa Rica)”. The first of its kind in the Americas, the network is a model for other Latin America countries and facilitates cooperative research projects such as data sharing through the Landbird Monitoring Network of the Americas (LaMNA). The Costa Rica Bird Banding Network and LaMNA are both integral parts of The Western Hemisphere Bird Banding Network (Red de Anillamiento de Aves del Hemisferio Occidental), where they serve a primary coordinating role.

The award consisted of crystal trophies, and engraved certificates, and were accepted in person by the Director General of Instituto Nacional de

Biodiversidad (INBio), Dr. Carlos Hernández, host of the bird observatories, as well as John Alexander from the Klamath Bird Observatory, Geoff Geupel from PRBO Conservation Science, and Carol Lively and C.J. Ralph from the US Forest Service.



Picture of the “Wings Across the Americas International Conservation Award”, given by the US Forest Service to CRBO.



### **Award Winners included:**

- C. John Ralph, Pacific Southwest Research Station, US Forest Service
- Carol Lively, International Programs, US Forest Service
- John Alexander, Klamath Bird Observatory
- Pablo Elizondo, Costa Rica Bird Observatories/INBio
- Roxana Silman, Sea Turtle Conservancy
- Emma Harrison, Sea Turtle Conservancy
- David Godfrey, Sea Turtle Conservancy
- Rodrigo Gámez, Instituto Nacional de Biodiversidad
- The Elizondo Family
- Leo Salas, Point Reyes Bird Observatory
- Stephen Rumsey, The Wetland Trust
- Judy Richardson, San Vito Bird Club
- Jared Wolfe, Louisiana State University



**From left to right: Dr. C. John Ralph, Dr. John Alexander, Dr. Carlos Hernández, Carol Lively and Geoff Geupel.**

The award was presented In Kansas City, Missouri, at the 76th North American Wildlife and Natural Resources Conference, held March 14-19, 2011.

### **International Partner Visit**

Since its inception, CRBO has followed a model of partnership actively seeking advice and support from many organizations to facilitate continued growth. In March 2011,

the observatories were pleased to host CRBO friends and partners at several of our stations in Costa Rica.

The visit included international visitors such as Carol Lively from the USFS Washington office, C. John Ralph from the USFS Redwood Sciences Laboratory in California, John Alexander from the Klamath Bird Observatory and Cagan Sekercioglu from the University of Utah. Other guests included Judy Richardson, ornithologist Fred Sibley, and many others who joined us for several activities.



Opening ceremony of the renovated station in Madre Selva

offices at the National Institute of Biodiversity (headquarters of CRBO), conferred with our friends at the San Vito Bird Club in the southern area of the country, and explored expansion possibilities of monitoring stations into new areas of the country.

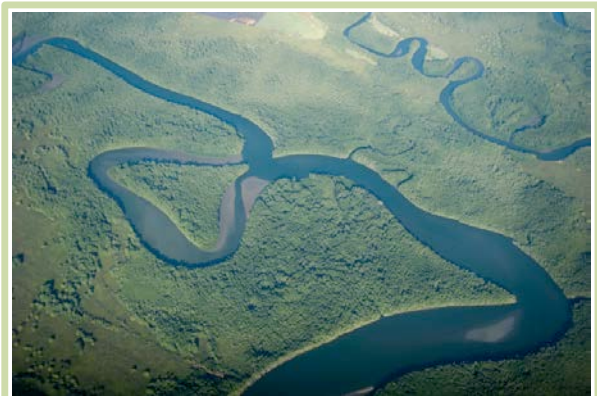
The most important event during the visit was the opening ceremony of the new field quarters at Madre Selva where dignitaries, government officials, international visitors, business leaders, entrepreneurs, and community members toured the station. In addition to visiting the new field quarters, visitors explored the picturesque lower lake portion of the private reserve and met with enthusiastic local children. The wonderful weather, amazing people and impressive birds interacting at the observatory were a delightful mix.

### Expanding bird conservation horizons: new bird observatories

Based on the March visit and the progress we made in engaging new partners, we have been able to expand operations into new regions of the country: the Osa



From left to right: Cagan Sekercioglu, Carol Lively, John Alexander, Pablo Elizondo, Rodrigo Gámez and C.J. Ralph



A view of Osa Peninsula's countryside

Peninsula and La Selva Biological Station. Both places are of enormous importance as they host many bird species and have great facilities.

The Osa Peninsula is an iconic landscape in Costa Rica, one of the least developed places in the country and is world-renowned as a biodiversity hotspot, providing habitat for more than 400 species of birds including endemics such as the Black-cheeked Ant-tanager (*Habia atrimaxillaris*) and an endangered Costa Rican endemic species, the Mangrove Hummingbird (*Amazilia boucardi*). The Osa Peninsula hosts 4% of the world's biodiversity and is considered one of the most species rich regions on the planet. Since our March visit, we have confirmed partnership with prominent organizations, Rio Tigre Lodge, Osa Conservation, Lapa Rios, El Remanso and Bosque del Cabo Lodge to establish long-term bird monitoring on the Osa Peninsula.

La Selva Biological Station is a very well known ecology research station of the organization for Tropical Studies, providing a facility of worldwide importance for tropical research. Located in the northeastern lowlands, La Selva includes a nature reserve that protects about 15 square kilometers (5.8 sq mi) of primary tropical rainforest, surrounded by Braulio Carrillo National Park. Both La Selva and the Osa Peninsula are of enormous importance as they host many bird species and have great facilities. We are working very hard on this and will be running in the first months of 2012.



**Bicolored Antbird (*Gymnopithys leucaspis*) in the Osa Peninsula**

Finally, in central San Jose, in partnership with INBio, Scotia Bank and Instituto Costarricense del Deporte y la Recreación (ICODER) we have undertaken bird monitoring activities in the urban park of La Sabana. The park is undergoing major restoration construction that focused on replacing all exotic species with native counterparts, and using birds as indicators of restorative success. With funding provided by Scotia Bank the project will be conducted over a period of eight years.



**Students of the bird monitoring course.**

### **Capacity building**

Our bird conservation efforts reflect our policy of integrating science, education and outreach as components of successful management and conservation strategies.

Over the past few years, we have emphasized involvement of Costa Rican Nationals in our bird monitoring efforts, which led to year round training courses available to students majoring in natural resources and biology at Costa Rican universities. Our efforts are preparing the next



generation of Latin American ornithologists and conservation advocates.

For example, in 2011 we hosted a bird-monitoring course with 14 Costa Rican candidates; each candidate had routinely attended monthly lectures and participated in monitoring efforts at INBio, Madre Selva, Tortuguero as well as assisting our partners at the San Vito Bird Club. Some of our students have started independent monitoring operations and will be reporting banding and census data to the Landbird Monitoring Network of the Americas (LaMNA).

Jorge Leiton, one of the interns from 2009 and 2010 has successfully returned from an intensive internship at the headquarters of the Klamath Bird Observatory in Oregon, United States. From May to November of 2011, Jorge received rigorous hands-on training in advanced bird monitoring techniques that culminated with his

certification from the North American Banding Council (NABC), at both the bander and trainer levels. Jorge is serving CRBO as field coordinator of operations and is fully engaged with other partners, ensuring timely and successful banding and monitoring operations.



Jorge Leiton and some students, during an educational visit to the Madre Selva station

By selecting Costa Rican candidates with direct involvement in local organizations for Klamath Bird Observatory internships, we ensure our investments in training skilled ornithologists will have a real effect on regional conservation efforts. Additionally, we maximize each intern's subsequent impact on bird conservation in Costa Rica by



Yellow-thighed Finch (*Pselliophorus tibialis*) in Madre Selva Station

adhering to training standards developed by the NABC, and data collection methodologies developed in close partnership with KBO.

At each field station we have continued our internship program where young biologists hailing from a diversity of countries travel among stations, creating a more appealing experience by allowing them to see and experience different ecosystems, cultures and birds. For the past 18 years CRBO has trained over 300

biologists and is the longest-running bird monitoring effort in Costa Rica.

In 2012 we will increase the number of bird banders and positions available, with an emphasis in hiring Costa Ricans and Latin Americans, and promoting exchange of expertise and culture.



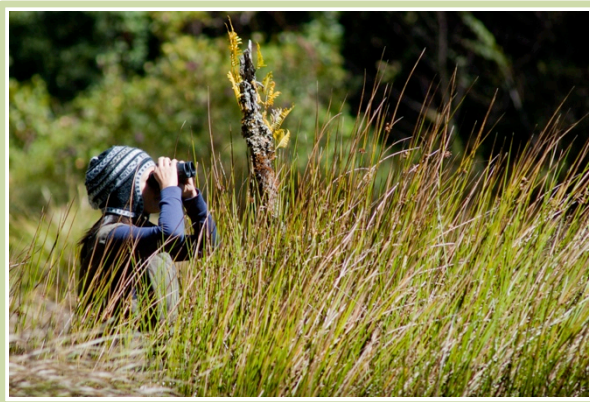
Alpacas (*Vicugna pacos*), spotted during the Neotropical Ornithology Congress.

### Western Hemisphere Bird Banding Network

We have assumed coordination of the Western Hemisphere Bird Banding Network (WHBBN) based out of our office in San Jose. This year we met in Peru to develop a series of activities with more than 60 banders and bird conservationists. The meeting was held during the Neotropical Ornithology Congress in Cusco, Peru, thanks to support from Environment Canada, the US Forest Service, and CORBIDI ([Centro de Ornitología y](#)

[Biodiversidad](#)) in Peru. Activities included a series of meetings and round table discussions involving representatives from banding schemas, government, NGOs and banding projects. The meeting provided an opportunity to exchange experiences and work on subjects of concern for the banding world.

In close partnership with Environment Canada, Museo de Historia Natural UNSA, CORBIDI, US Forest Service, and the Reserva Ecologica Taricaya, we developed an advanced training workshop with the participation of 14 candidates and 7 trainers from 5 Latin American countries. The course was held at Taricaya and Amazon Planet reserves in the Amazon Basin of Peru from November 16<sup>th</sup> to the 24<sup>th</sup>. We had great participation from Peruvians and we look forward to helping other countries create capacity based on our experience in Costa Rica and close relationships with the Redwood Sciences Laboratory and KBO.



Birdwatching at its best

### Outreach

CRBO has become an authority on bird related issues in Costa Rica, ensuring steady and friendly communications with journalists and the media, promoting bird monitoring awareness, conservation education and wildlife advocacy.

In 2011 we achieved over 140 minutes of coverage on prime time TV segments, as well as multiple newspaper and website publications. CRBO's media exposure facilitates unparalleled outreach opportunities

Our communication strategy is simple: engage; communicate and share, by telling the media interesting facts about species, research and conservation, putting science in a friendly format, thereby making complex ideas pertaining to bird conservation easily understandable.

Some TV segments include

Curso de Tecnicas de monitoreo de aves, INBio-FS-KBO

<http://www.youtube.com/watch?v=bnapeux137U>

Least Grebe (*Tachybaptus dominicus*) Zambullidor enano

<http://www.youtube.com/watch?v=c2kkUMU9fh4>

Live interview on Channel 7

<http://www.youtube.com/watch?v=XkR5SOBJw9w>

New bird records for the country

<http://www.youtube.com/watch?v=3wZqcpU58sg>

Shorebirds

<http://www.youtube.com/watch?v=M9tskViuwYY>

Some media links

<http://adn.fm/?TabId=2389&language=en-US>

[Bird monitoring at La Sabana](#)

[Make a bird feeder](#)

[INBio received award for their bird conservation initiatives](#)

[Interesting bird records for Costa Rica](#)

[Bird conservation in Costa Rica](#)

[US Forest Awards INBio](#)

[Efforts for Bird Conservation](#)

Our outreach efforts and the great capabilities of INBio have allowed us to host important visitors that include the Crown Prince Naruhito of Japan, and Dr. James D. Watson of DNA fame, among other important dignitaries as part of their visit to INBioparque.

In 2011 CRBO personnel published



Pablo Elizondo and Dr. James D. Watson, during Dr Watson's visit to INBio



several research papers focused on solidifying techniques necessary to accurately monitor tropical bird populations. Based on our publications, several prominent bird monitoring stations in North, Central and South American have adopted our recommendations for methods of monitoring. Several more publications comparing the life cycle of temperate and tropical taxa are in press and will be released in 2012. CRBO also has three additional manuscripts in review: a study focused on the habitat



Passerini's Tanager (*Ramphocelus passerinii*)

selection of migrant birds in Tortuguero, the influence of physiological condition on overwintering survival, and the demographic response of White-collared Manakins to the El Niño Southern Oscillation in mixed-aged forest. In addition to scholarly publications (see below), CRBO staff and associates have presented results at numerous professional meetings in 2011 from the Cooper Ornithological Society's annual meeting in Nebraska, USA, to the Neotropical Ornithological Congress in Cusco, Peru.

- Evers, David., Buck, D. Adams, E. Cristol, D. Martínez, Wilber. Cal, Reynold. Tzul, David. Garcia, W. Elizondo, P. Medina, D. y Marvin Torrez. 2011. Usando la red de monitoreo TERRA para investigar mercurio y sus impactos a la migración de aves neotropicales. *Mesoamericana*. 15-2.
- Elizondo, P. and O, Ramirez. 2011. Relación forestal, dinámica y diversidad de las poblaciones de las aves del Valle Central, Costa Rica. *Mesoamericana* 14(2).
- Wolfe, J. D., Johnson, M. D. and C. J. Ralph. 2012. Do Birds Select Habitat or Food Resources? Nearctic-Neotropic Migrants in Northeastern Costa Rica. *In review*.
- Wolfe, J. D., Ralph, C. J. and P. Elizondo. 2012. The Demographic Response of a Tropical Bird to the El Niño Southern Oscillation Cycle in an Uneven Aged Forest in Costa Rica. *In review*.
- Wolfe, J. D., Johnson, M. D. and C. J. Ralph. 2012 Winter Mass Influences Annual Survival: Prothonotary Warbler (*Protonotaria citrea*) Demography in Northeastern Costa Rica. *In review*
- Wolfe, J. D. and P. Pyle. 2012. Progress in our Understanding of Molt Patterns in Central American and Caribbean Landbirds. *Ornitologia Neotropical in press*.
- Wolfe, J. D., Ryder, T. B., Pyle, P. and E. I. Johnson. 2012. Using Molt and Plumage Cycles to Age Tropical Birds: Updates and Recent Advances. *Ornitologia Neotropical in press*.
- Johnson, E.I., Wolfe, J. D., Ryder, T. B. and P. Pyle. 2011. Modifications to a molt-based ageing system proposed by Wolfe et al. (2010). 2011. *Journal of Field Ornithology*. 82:422-424.



### Partnerships for success

CRBO was established based on a simple model of partnerships, based on the premise that anyone interested can make contributions according to their capabilities and that everyone is invited to be part of such a great initiative. Our intentions are to be fully involved with communities where we operate; this includes the citizens, industry, academia and government, all paving the way for conservation.



Brown-hooded Parrot (*Pyrrhuloxia haematotis*)

By developing activities that promote science, education and capacity building, we promote the coexistence of eco-friendly business activities coupling science and conservation.

New partners for 2011 include the great logistics of Nature Air, the first carbon neutral airline in the world, with headquarters in Costa Rica. We have also made great advances with Osa Conservation, nonprofit conservation organization founded to protect the Osa Peninsula's globally significant biodiversity, in the southern part of the country. A more serious relationship with Ministerio de Ambiente Energia y Telecomunicaciones (MINAET) has led to greater involvement of the national parks allowing us to inform official conservation policies. We have established conversations with the US Embassy in Costa Rica through the USDA/Foreign Agricultural Service to advance common conservation objectives.

### Our appreciation to a good friend

Conservation is a matter of maintaining the balance between humans and our surrounding environment, this requires a great skill: being able to listen to other's needs, understand science and finding sustainable solutions for day to day problems.

Carol Lively has been a great partner of CRBO, she has supported us with her vision and passion from the Washington office of the US Forest Service International Programs, coordinating the Wings Across the America Program from which she retired at the end of 2011.



Roseate Spoonbill (*Platalea ajaja*)

We are thankful to Carol for her commitment and leadership with CRBO and we look forward to her continued support as an advisor for our program.

**We thank all our generous partners for their great contributions towards bird conservation**

And the following individuals for their commitment and great contributions  
 Eladio Elizondo, Luis Elizondo, The Elizondo-Camacho Family, Dra. Emma Harrison, Raquel Gomez, Alvaro Herrera, Ana Ledezma, Jorge Leitón, Carol Lively, Linda Long, Oscar Ramirez, Judy Richardson, Alison Olivieri, July Girard, Lydia and Ernie Vogt, Dr. Rodrigo Gámez, Esteban Rodríguez, Josée Rousseau, Roxana Silman, Charlotte Foile, Robert Frey, Lisa Buttrey, Alison Olivieri, Julie Girard, Kate Desvenain, Sara Estrada, Jim Lewis, Dr. Carlos Hernandez, Randall García, Jose Joaquin Calvo, Ana Lorena Guevara, Gustavo Induni, Fabrice Declerck, Alejandra Martinez-Salinas.



## And all our volunteers from 2011

Name	Country	Position	Time working at CRBO*
Tomás Alfaro Fallas	Costa Rica	Bander Intern	10 months
Oriol Andres Corejero	Spain	Bander Intern	4 Months
Miguel Barquero	Costa Rica	Bander Intern	10 Months
Emma Blackburn	UK	Bander	3 Months
Paula Calderon	Costa Rica	Bander Intern	10 Months
Eugenia Canals Sallent	Spain	Bander Intern	4 Months
Ed Conrad	United States	Bander	3 Months
Hanna Eberlein	Germany	Bander	4 Months
Tatiana Espinoza	Costa Rica	Bander Intern	10 Months
Sara Estrada Vaglio	Costa Rica	Bander Intern	10 Months
Charlotte Foale	Costa Rica	Bander	12 Months
Jillian Johnson	Canada	Bander	4 Months
Jorge Leiton	Costa Rica	Bander	7 Months
Roger Mendieta	Nicaragua	Bander	2 Months
Angie Michelle Sánchez Núñez	Costa Rica	Bander Intern	10 Months
Jose Pablo Molina	Costa Rica	Bander Intern	10 Months
Chris Muray	United States	Bander	3 Months
Marcela Murillo	Costa Rica	Bander Intern	10 Months
Morgan Parks	United States	Bander	3 Months
Oscar Ramirez	Costa Rica	Bander Intern	10 Months
Chris Smith	United States	Bander	3 Months
Noah Styker	United States	Bander	3 Months
Paul Urena	Costa Rica	Bander Intern	10 Months
Roberto Vargas	Costa Rica	Bander Intern	10 Months
Daniela Vásquez Obando	Costa Rica	Bander Intern	10 Months
Agustin Vega	Costa Rica	Bander Intern	10 Months
Iselda Vega	El Salvador	Bander	2 Months
Ben Vernasco	United States	Bander	2 Months

\*Estimated

## List of banded birds for 2011

	Stations									
Species Name	AERO	CAÑO	CCC	CRBO	HOME	INBio	LAKE	PARQ	TORT	Total
Acadian Flycatcher [Empidonax virescens]	7	1	8	0	0	1	0	0	1	18
Alder Flycatcher [Empidonax alnorum]	1	0	1	0	0	2	0	0	0	4
Alder/Willow Flycatcher (Traill's) [Empidonax alnorum/traillii]	9	0	34	0	0	5	0	3	1	52
American Pygmy Kingfisher [Chloroceryle aenea]	0	3	0	0	0	0	0	1	13	17
American Redstart [Setophaga ruticilla]	1	0	0	0	0	0	0	0	0	1
Band-tailed Barbthroat [Threnetes ruckeri]	0	0	0	0	0	0	0	5	1	6
Bare-throated Tiger-Heron [Tigrisoma mexicanum]	1	0	0	0	0	0	0	0	1	2
Barred Becard [Pachyramphus versicolor]	0	0	0	2	0	0	0	0	0	2
Bay-breasted Warbler [Dendroica castanea]	2	1	1	0	0	0	0	0	0	4
Bicolored Antbird [Gymnopithys leucaspis]	0	5	0	0	0	0	0	0	0	5
Black-and-white Warbler [Mniotilta varia]	0	2	0	0	0	0	0	0	0	2
Black-billed Nightingale-Thrush [Catharus gracilirostris]	0	0	0	18	4	0	3	0	0	25
Black-capped Flycatcher [Empidonax atriceps]	0	0	0	0	1	0	0	0	0	1
Black-cheeked Warbler [Basileuterus melanogenys]	0	0	0	48	4	0	13	0	0	65
Black-faced Solitaire [Myadestes melanops]	0	0	0	4	0	0	0	0	0	4
Black-headed Nightingale-Thrush [Catharus mexicanus]	0	0	0	1	0	0	0	0	0	1
Black-striped Sparrow [Arremonops conirostris]	1	0	2	0	0	0	0	0	0	3
Black-throated Green Warbler [Dendroica virens]	0	0	0	3	0	0	0	0	0	3
Blue-chested Hummingbird [Amazilia amabilis]	1	0	1	0	0	0	0	0	0	2
Blue-crowned Motmot [Momotus momota]	0	0	0	0	0	30	0	0	0	30



Species Name	Stations									
	AERO	CAÑO	CCC	CRBO	HOME	INBio	LAKE	PARQ	TORT	Total
Blue-gray Tanager [Thraupis episcopus]	0	0	17	0	0	14	0	0	0	31
Blue-throated Goldentail [Hylocharis eliciae]	0	0	7	0	0	0	0	1	0	8
Boat-billed Flycatcher [Megarynchus pitangua]	0	0	2	0	0	0	0	0	0	2
Bright-rumped Attila [Attila spadiceus]	2	2	3	0	0	0	0	1	4	12
Bronzed Cowbird [Molothrus aeneus]	0	0	0	1	0	0	0	0	0	1
Bronzy Hermit [Glaucis aeneus]	22	0	44	0	0	0	0	0	12	78
Brown-capped Vireo [Vireo leucophrys]	0	0	0	2	0	0	3	0	0	5
Buff-fronted Quail-Dove [Geotrygon costaricensis]	0	0	0	1	0	0	1	0	0	2
Buff-throated Saltator [Saltator maximus]	0	0	1	0	0	0	0	0	0	1
Canada Warbler [Wilsonia canadensis]	11	0	5	0	0	0	0	0	0	16
Charming Hummingbird [Amazilia decora]	0	0	0	0	0	0	0	0	1	1
Checker-throated Antwren [Myrmotherula fulviventris]	0	3	0	0	0	0	0	0	0	3
Chestnut-backed Antbird [Myrmeciza exsul]	0	0	0	0	0	0	0	2	3	5
Chestnut-capped Brush-Finch [Buarremon brunneinucha]	0	0	0	18	2	0	10	0	0	30
Chestnut-sided Warbler [Dendroica pensylvanica]	2	0	5	0	0	1	0	0	0	8
Clay-colored Robin [Turdus grayi]	1	6	12	3	0	308	2	4	3	339
Cocoa Woodcreeper [Xiphorhynchus susurrans]	0	0	0	0	0	0	0	1	0	1
Collared Aracari [Pteroglossus torquatus]	0	0	0	0	0	0	0	0	1	1
Collared Redstart [Myioborus torquatus]	0	0	0	18	10	0	2	0	0	30
Collared Trogon [Trogon collaris]	0	0	0	0	0	0	1	0	0	1
Common Bush-Tanager [Chlorospingus ophthalmicus]	0	0	0	12	2	0	3	0	0	17
Common Tody-Flycatcher [Todiostrostrum cinereum]	1	0	0	0	0	0	0	0	0	1
Eastern Wood-Pewee [Contopus virens]	8	0	8	0	0	0	0	0	0	16
Empidonax sp. [Empidonax sp.]	4	1	7	0	0	1	0	0	0	13

Species Name	Stations									
	AERO	CAÑO	CCC	CRBO	HOME	INBio	LAKE	PARQ	TORT	Total
Eye-ringed Flatbill [Rhynchocyclus brevirostris]	0	4	0	0	0	0	0	0	0	4
Ferruginous Pygmy-Owl [Glaucidium brasilianum]	0	0	0	0	0	1	0	0	0	1
Fiery-throated Hummingbird [Panterpe insignis]	0	0	0	7	0	0	0	0	0	7
Flame-colored Tanager [Piranga bidentata]	0	0	0	0	0	0	1	0	0	1
Flame-throated Warbler [Parula gutturalis]	0	0	0	4	0	0	5	0	0	9
Golden-bellied Flycatcher [Myiodynastes hemichrysus]	0	0	0	1	0	0	0	0	0	1
Golden-winged Warbler [Vermivora chrysoptera]	0	0	0	2	1	0	0	0	0	3
Gray Catbird [Dumetella carolinensis]	2	0	7	0	0	0	0	1	0	10
Gray-breasted Wood-Wren [Henicorhina leucophrys]	0	1	0	18	4	0	8	0	2	33
Gray-cheeked Thrush [Catharus minimus]	8	2	15	0	0	1	0	2	10	38
Gray-chested Dove [Leptotila cassini]	0	0	0	0	0	0	0	0	2	2
Grayish Saltator [Saltator coerulescens]	0	0	0	0	0	8	0	0	0	8
Great Crested Flycatcher [Myiarchus crinitus]	1	0	2	0	0	0	0	0	0	3
Great Kiskadee [Pitangus sulphuratus]	0	0	2	0	0	1	0	0	0	3
Green Violet-ear [Colibri thalassinus]	0	0	0	5	2	0	0	0	0	7
Green-breasted Mango [Anthracothorax prevostii]	0	0	18	0	0	0	0	1	0	19
Green-fronted Lancebill [Doryfera ludovicae]	0	0	0	2	1	0	1	0	0	4
Hairy Woodpecker [Picoides villosus]	0	0	0	2	1	0	1	0	0	4
Hoffmann's Woodpecker [Melanerpes hoffmannii]	0	0	0	0	0	3	0	0	0	3
Hooded Warbler [Wilsonia citrina]	0	1	2	0	0	0	0	0	0	3
House Wren [Troglodytes aedon]	0	0	2	0	0	10	0	0	0	12
hummingbird sp. [Trochilidae sp.]	0	0	0	28	30	0	30	0	0	88
Indigo Bunting [Passerina cyanea]	0	0	2	0	0	0	0	0	0	2

Species Name	Stations									
	AERO	CAÑO	CCC	CRBO	HOME	INBio	LAKE	PARQ	TORT	Total
Keel-billed Toucan [Ramphastos sulfuratus]	0	0	0	0	0	0	0	1	0	1
Kentucky Warbler [Oporornis formosus]	3	0	4	0	0	0	0	0	0	7
Large-footed Finch [Pezopetes capitalis]	0	0	0	29	2	0	7	0	0	38
Lesser Greenlet [Hylophilus decurtatus]	0	1	7	0	0	0	0	0	0	8
Long-billed Hermit [Phaethornis longirostris]	3	20	30	0	0	0	0	44	36	133
Magnificent Hummingbird [Eugenes fulgens]	0	0	0	4	2	0	1	0	0	7
Magnolia Warbler [Dendroica magnolia]	0	1	0	0	0	0	0	0	0	1
Mountain Elaenia [Elaenia frantzii]	0	0	0	29	3	0	18	0	0	50
Mountain Robin [Turdus plebejus]	0	0	0	5	1	0	2	0	0	8
Mourning Warbler [Oporornis philadelphia]	2	0	6	0	0	1	0	0	0	9
Northern Barred-Woodcreeper [Dendrocolaptes sanctithomae]	2	1	8	0	0	0	0	1	0	12
Northern Waterthrush [Seiurus noveboracensis]	6	10	15	0	0	12	0	2	5	50
Ochraceous Wren [Troglodytes ochraceus]	0	0	0	0	1	0	0	0	0	1
Ochre-bellied Flycatcher [Mionectes oleagineus]	0	4	0	0	0	0	0	1	0	5
Olive-backed Euphonia [Euphonia gouldi]	0	3	0	0	0	0	0	0	1	4
Olive-striped Flycatcher [Mionectes olivaceus]	0	0	0	2	0	0	1	0	0	3
Ovenbird [Seiurus aurocapilla]	1	1	5	0	0	1	0	1	0	9
Palm Tanager [Thraupis palmarum]	0	0	3	0	0	0	0	0	0	3
Passerini's Tanager [Ramphocelus passerinii]	0	0	1	0	0	0	0	0	0	1
Plain Wren [Thryothorus modestus]	0	0	0	0	0	5	0	0	0	5
Prevost's Ground-Sparrow [Melozone biarcuata]	0	0	0	0	0	2	0	0	0	2
Prothonotary Warbler [Protonotaria citrea]	12	3	13	0	0	1	0	3	2	34

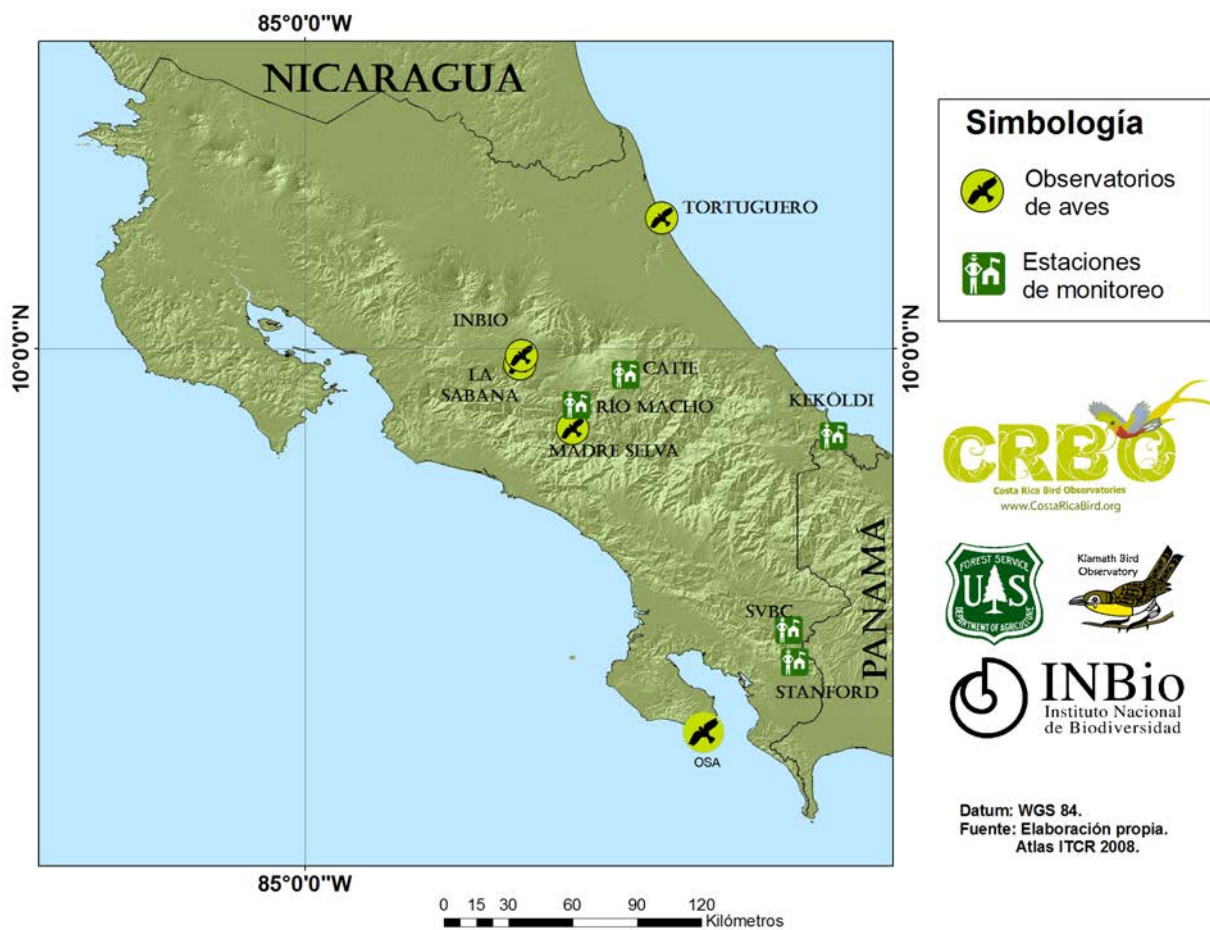
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Species Name	Stations									
	AERO	CAÑO	CCC	CRBO	HOME	INBio	LAKE	PARQ	TORT	Total
Spotted Barbtail [Premnoplex brunnescens]	0	0	0	2	1	0	0	0	0	3
Steely-vented Hummingbird [Amazilia saucerrottei]	0	0	0	0	0	2	0	0	0	2
Streak-breasted Treehunter [Thripadectes rufobrunneus]	0	0	0	3	0	0	0	0	0	3
Streak-headed Woodcreeper [Lepidocolaptes souleyetii]	1	0	10	0	0	0	0	0	0	11
Stripe-breasted Wren [Thryothorus thoracicus]	0	4	0	0	0	0	0	0	0	4
Stripe-throated Hermit [Phaethornis striigularis]	0	5	1	0	0	0	0	0	1	7
Summer Tanager [Piranga rubra]	0	0	7	0	0	3	0	2	1	13
Swainson's Thrush [Catharus ustulatus]	24	8	61	0	0	34	0	21	10	158
Tennessee Warbler [Vermivora peregrina]	0	0	0	0	0	7	0	0	0	7
Thick-billed Seed-Finch [Oryzoborus funereus]	0	0	4	0	0	0	0	0	0	4
Tufted Flycatcher [Mitrephanes phaeocercus]	0	0	0	1	0	0	0	0	0	1
Veery [Catharus fuscescens]	3	3	24	0	0	0	0	6	1	37
Violet Sabrewing [Campylopterus hemileucurus]	0	0	0	1	0	0	0	0	0	1
Violet-crowned Woodnymph [Thalurania colombica]	0	5	0	0	0	0	0	1	0	6
Volcano Hummingbird [Selasphorus flammula]	0	0	0	2	0	0	1	0	0	3
Wedge-billed Woodcreeper [Glyphorynchus spirurus]	0	5	0	0	0	0	0	0	4	9
Western Slaty-Antshrike [Thamnophilus atrinucha]	0	2	1	0	0	0	0	9	1	13
White-breasted Wood-Wren [Henicorhina leucosticta]	0	0	0	0	0	0	0	0	1	1
White-collared Manakin [Manacus candei]	52	55	65	0	0	0	0	32	53	257
White-eared Ground-Sparrow [Melozone leucotis]	0	0	0	0	0	1	0	0	0	1
White-flanked Antwren [Myrmotherula axillaris]	0	7	0	0	0	0	0	0	0	7
White-naped Brush-Finch [Atlapetes albinucha]	0	0	0	0	0	0	1	0	0	1
White-necked Jacobin [Florisuga mellivora]	0	3	2	0	0	0	0	0	0	5

Species Name	Stations									
	AERO	CAÑO	CCC	CRBO	HOME	INBio	LAKE	PARQ	TORT	Total
White-throated Mountain-gem [Lampornis castaneoventris]	0	0	0	11	4	0	5	0	0	20
White-tipped Dove [Leptotila verreauxi]	0	0	0	0	0	15	0	0	0	15
Wilson's Warbler [Wilsonia pusilla]	0	0	0	8	0	0	5	0	0	13
Wing-barred Seedeater [Sporophila americana]	1	2	24	0	0	0	0	1	2	30
Wood Thrush [Hylocichla mustelina]	1	3	5	1	0	16	0	2	0	28
Worm-eating Warbler [Helmitheros vermivorum]	1	0	0	0	0	0	0	0	0	1
Yellow Warbler [Dendroica petechia]	0	0	0	0	0	2	0	0	0	2
Yellow-bellied Siskin [Carduelis xanthogastra]	0	0	0	1	0	0	0	0	0	1
Yellow-green Vireo [Vireo flavoviridis]	0	0	0	0	0	2	0	0	0	2
Yellow-thighed Finch [Pselliophorus tibialis]	0	0	0	34	3	0	8	0	0	45
Yellow-throated Vireo [Vireo flavifrons]	1	0	0	0	0	1	0	0	0	2
Yellow-winged Vireo [Vireo carmioli]	0	0	0	2	6	0	2	0	0	10
Yellowish Flycatcher [Empidonax flavescens]	0	0	0	2	0	0	1	0	0	3
<b>Total</b>	<b>203</b>	<b>193</b>	<b>564</b>	<b>451</b>	<b>114</b>	<b>574</b>	<b>176</b>	<b>169</b>	<b>186</b>	<b>2630</b>

## Map of stations



Light Green circles represent stations of CRBO

Dark Green squares represent partner stations member of the Network of Costa Rica Bird Banders