- Today I will present work of the Cerulean Warbler Technical Group, the collaboration among members to develop, synthesize and evaluate population status of Cerulean Warbler into coherent and coordinated planning frameworks for future activities, principally in conservation implementation.

- The Cerulean Warbler is North America's fastest declining neotropical migrant songbird. Numbers have plummeted by almost 70% since 1966 and is listed as Vulnerable by IUCN.

- Saving this bird is going to require a concerted and continuous effort in both North and South America

Outline

1. Synthesis of research into two conservation plans
2. Initiate implementation of conservation plans
3. Next steps

2

- Two plans have been produced, one a general strategy for the conservation and management of the species over its entire range and a more restricted plan for conservation of nonbreeding populations, their landscapes, and the economic vitality of the local communities.

- In a short time, notable conservation implementation successes have been achieved.

Synthesis of research into two conservation plans

1980s	Recognize a problem
1990s	Data on basic biology
2001	Cerulean Warbler Technical Group formed
2003-08	Non-breeding field surveys and expeditions
2006	USFWS decision *not* to list as Endangered Species
2007	USFWS Conservation Action Plan
2010	Grupo Ceruleo Wintering Conservation Plan

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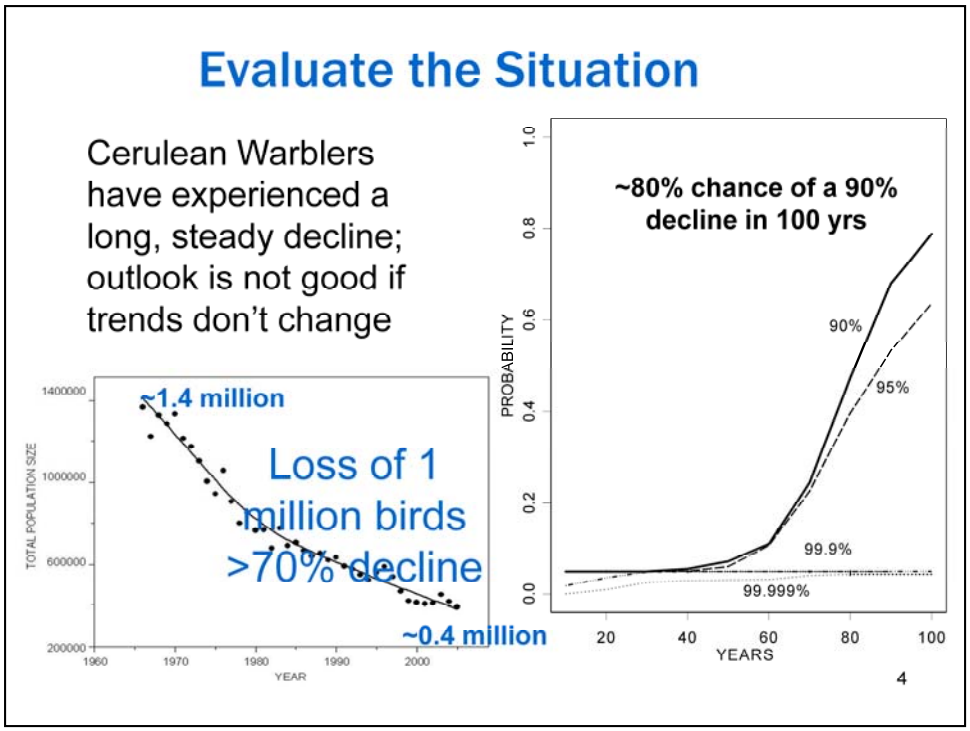
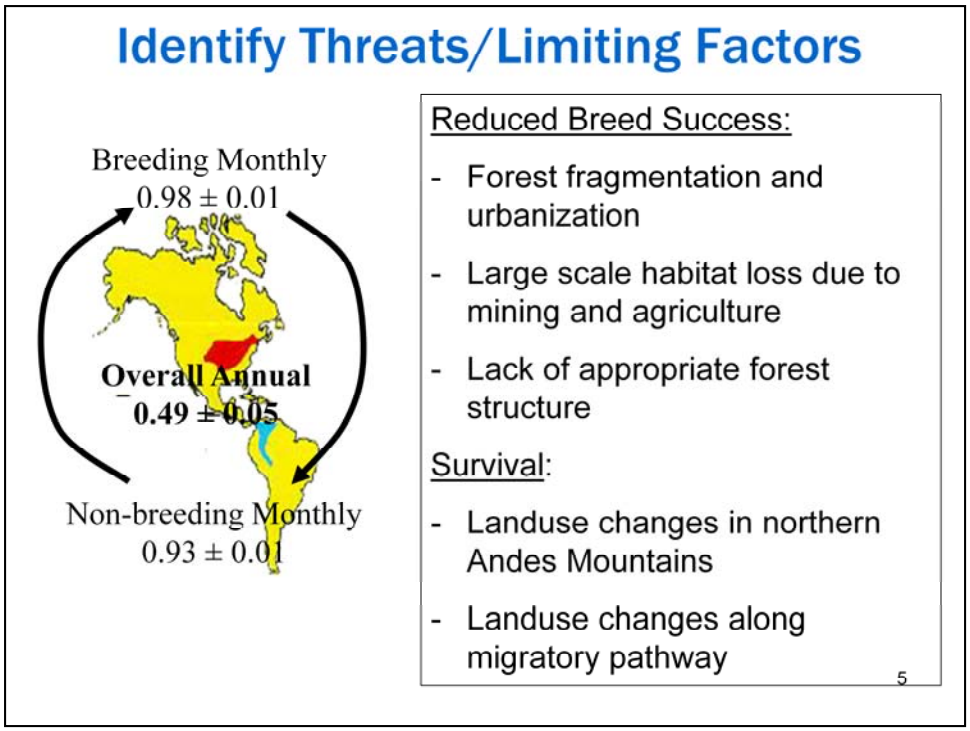


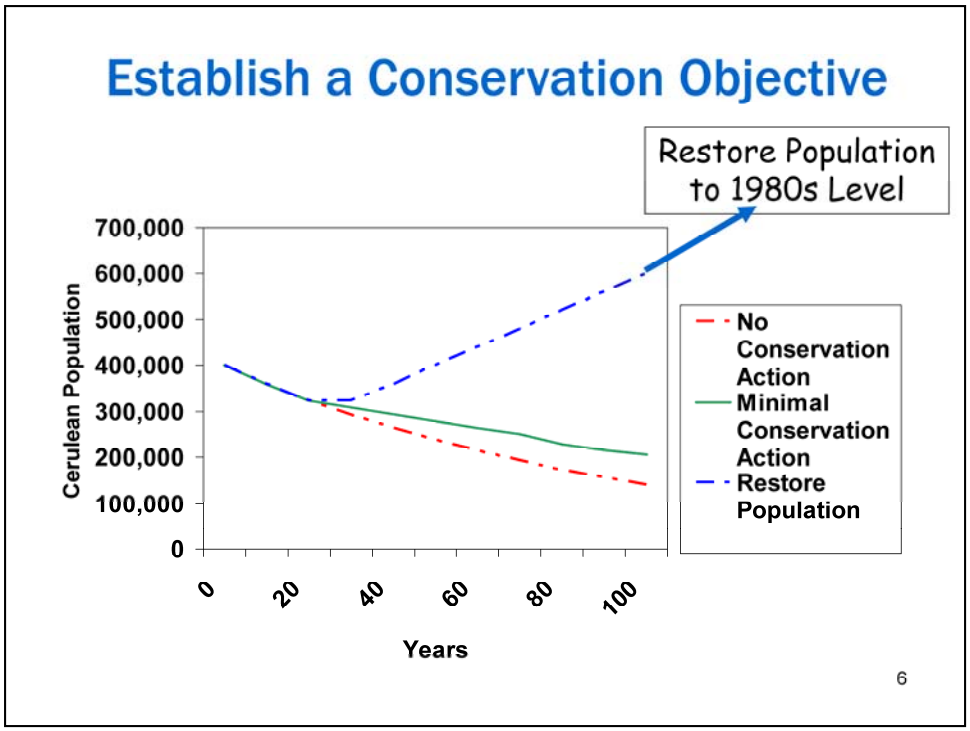
Cerulean Warblers have experienced the steepest declines of any wood warbler in the United States,

Breeding Bird Survey, 3.2% per year for 40 years, 1966-2005.

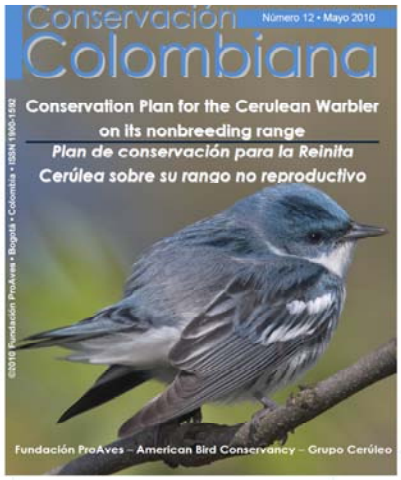
If actions are not taken to halt these declines, the future outlook for this species is not good (i.e., high probability that the current population will decline by 90% within the next 100 years)



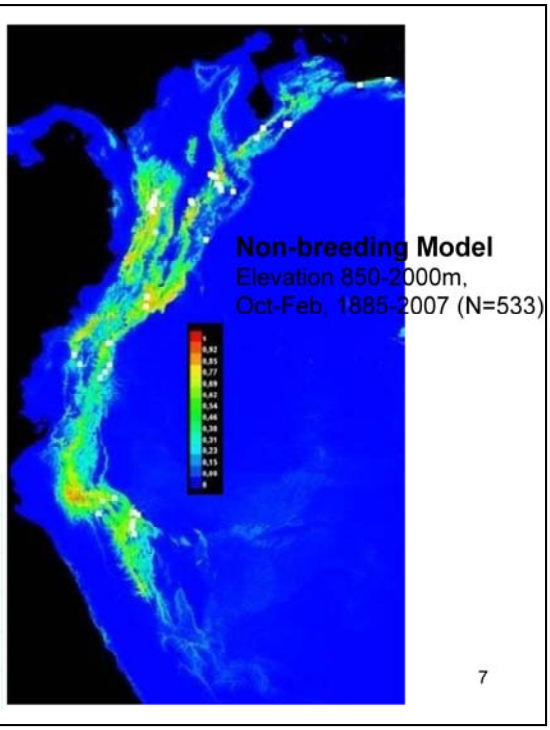
Numerous threats to population growth exist for Cerulean Warblers. While seasonal survival is generally high during both the breeding season in North America and the non-breeding residency season in South America where suitable habitat remains, overall annual survival rate for adults is only about 50%. Loss of suitable habitat along migratory pathways and in South America are clear threats. Low reproduction rates in fragmented landscapes in the breeding grounds are not adequate to support increasing populations at this adult survival rate. So habitat loss and fragmentation are also threats on the breeding grounds in North America. Lack of appropriate forest structure may also reduce reproductive success in some portions of the breeding grounds (Brian Smith talk).



The Cerulean Warbler Technical Group has agreed on a conservation objective of restoring Cerulean Warbler populations to their levels in the 1980s, which equates to doubling the current population.

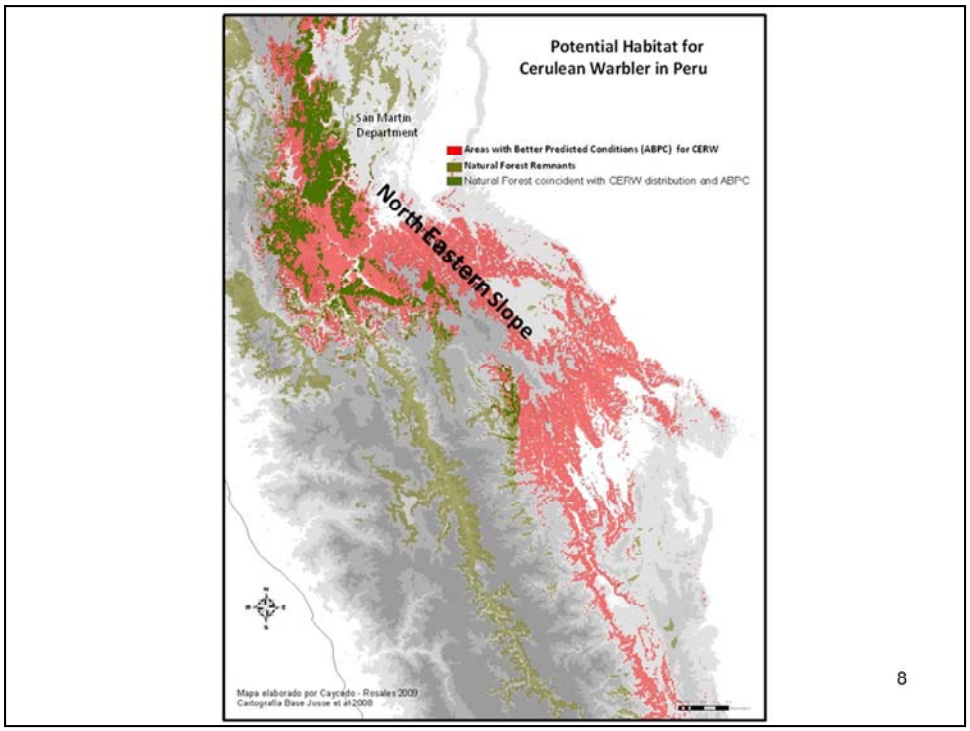


Huila, Santander, Colombia	33
Cauca, Colombia	0
Pichincha, Ecuador	47
Northern Peru	23
Venezuela	0



Map of Non-breeding records at preferred elevation (1885-2007, 533, Oct-Feb, elevation 850-2000m)

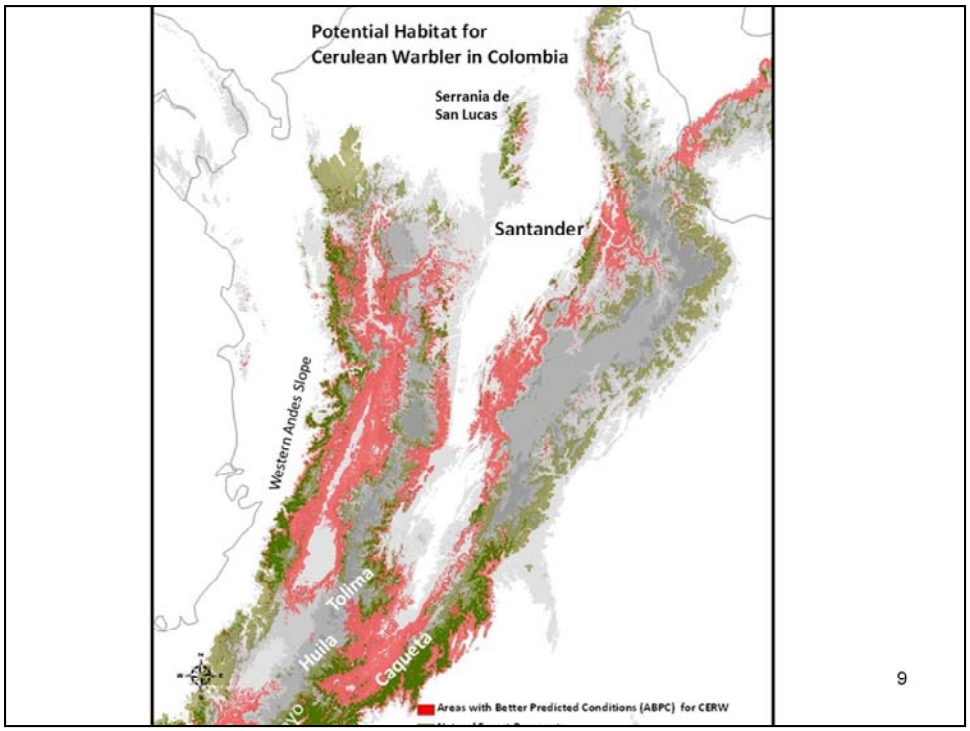
Field work in 2008 to verify predicted model sites. In two of the seven sites sampled there were no Cerulean Warblers observed (in Venezuela and in Cauca, Colombia). In Santander and Huila, Colombia, 33 individuals were observed: 14 males and 19 females (19 adults, 14 immatures); all the sample sites were coffee / rural landscapes. In Ecuador, 47 individuals were observed in Pichincha Province: 25 males and 22 females (17 adults, 1 immature, 29 unsure). The study area in Ecuador was mainly native forest matrix with pasture lands. In Peru, where the field work was done mainly in coffee rural landscapes, 23 individuals were observed: 13 males and 10 females (9 adults, 2 immatures, 12 unsure).



The potential distribution model for Cerulean Warbler was updated and combined it with a map of natural forest remnants of the Northern Andes (Josse *et al.* 2008).

First the coordinates of the Cerulean Warbler observation records were checked for accuracy, and then the records were filtered by elevation and date to include the nonbreeding period in South America (from October to February). We used MAXENT 3.3 (Phillips *et al*. 2006), in order to develop a potential distribution model based on these restricted features.

Using this potential distribution model of 'hotspots', field work was conducted in Venezuela, Colombia, Ecuador and Peru in February – March 2008 to look for Cerulean Warblers in previously unvisited places where the model predicts a high probability of presence. Those data are now being included in occupancy maps by Gabriel Colorado.

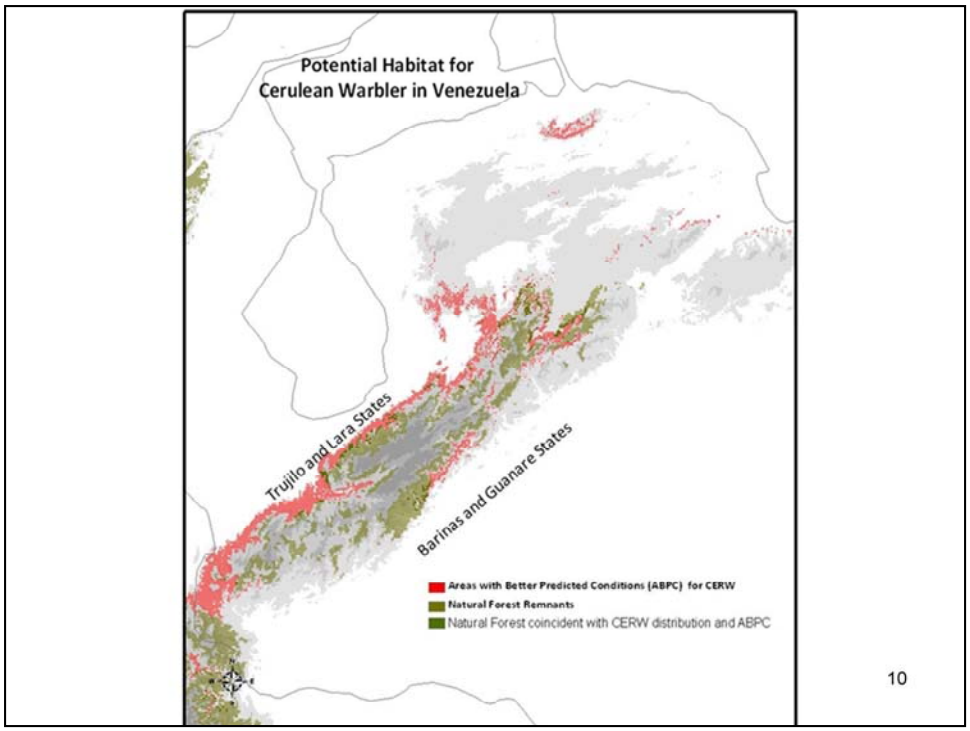


- The model predicts potential habitat in the western slope of the Western Andes; however, following Fundación ProAves (2009), the Cerulean Warbler prefers dry forest more than the very humid forest that is found in the Chocó region.

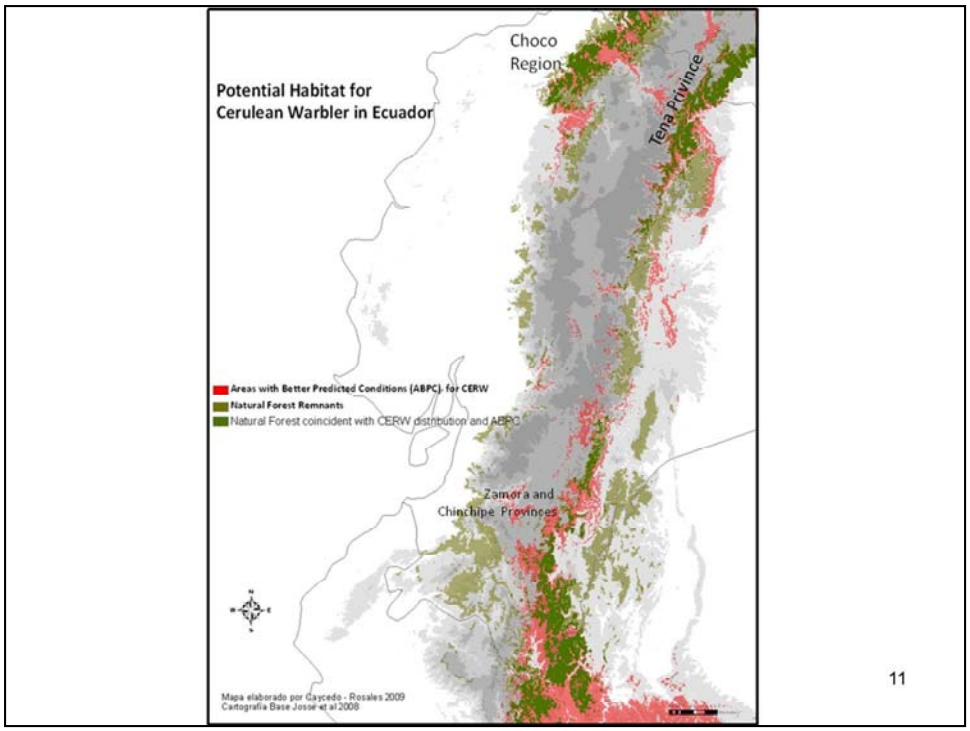
- The western slope of the Eastern Andes as well as the south region of the eastern slope of the Central Andes seem to be very important regions for the species (Figure 9).
- In Serranía de San Lucas Bolivar (Nariño Department), is completely unexplored for birds during the nonbreeding period.

- In addition, the eastern slope of the Eastern Andes (Caquetá and Putumayo Departments) has been poorly explored by ornithologists.

- The inter-Andean Valleys in Santander, Antioquia, Huila and Tolima departments show potential habitat for Cerulean Warbler.
- The Serranía de Yariguies, Santander Department has the highest number of Cerulean Warblers reported.



shade coffee landscapes of northeastern Trujillo and Lara States, as well as those of north Barinas and southeastern Portuguesa States



Even though the model indicated a high probability of the presence of Cerulean Warbler in the western slope of the Ecuadorian Andes, some authors (Jahn and Mena Valenzuela 2006, Juiña 2008a) found that continuous Chocó forest is only of minor importance as nonbreeding habitat. Perhaps this is because of the high precipitation (3000-4000 mm) and high temperatures (20-24 C) in this zone.

The south eastern slope has some reports of Cerulean Warbler in Zamora Chinchipe province, between 900 and 1400 m (Andrade *et al.* 2006), but it seems that a larger number of individuals winters in the north eastern Andean slope of Tena Province (Juiña 2008a). These areas are dominated by pasture, but some important forest fragments still remain, often in stream forests (Juiña 2008a), and also some protected areas (**Figure 9**).

These 5 broad activities have been identified by the Cerulean Warbler Technical Committee as priorities for implementation in order to improve the status of this species.

A. Complete map of current Cerulean Warbler wintering range and model of available wintering habitat

B. Establish standardized survey efforts and population trend monitoring in South America

C. Assess existing levels of conservation protection for wintering habitats

D. Protect habitats currently used by Cerulean Warblers in South America, including primary forest as well as secondary habitats such shade coffee plantations and other shade-grown agricultural systems

E. Conduct research on Cerulean Warbler wintering ecology, including temporal patterns in distribution, knowledge of specific habitat parameters, survival by habitat types, and time

periods when they are most vulnerable to mortality

F. Study factors influencing land use patterns and production of shade-grown coffee in South America in order to make recommendations on how to retain suitable secondary

habitats for Cerulean Warblers

G. Establish outreach and education programs to communicate awareness of non-breeding

1. Protect sites that support high densities of Cerulean Warblers.
2. Maintain existing natural forest and restore degraded areas.
3. Promote shade-grown coffee, agro-forestry, and silvipasture.

Intended Outcome:

Improved physiological condition and survival in non-breeding season.

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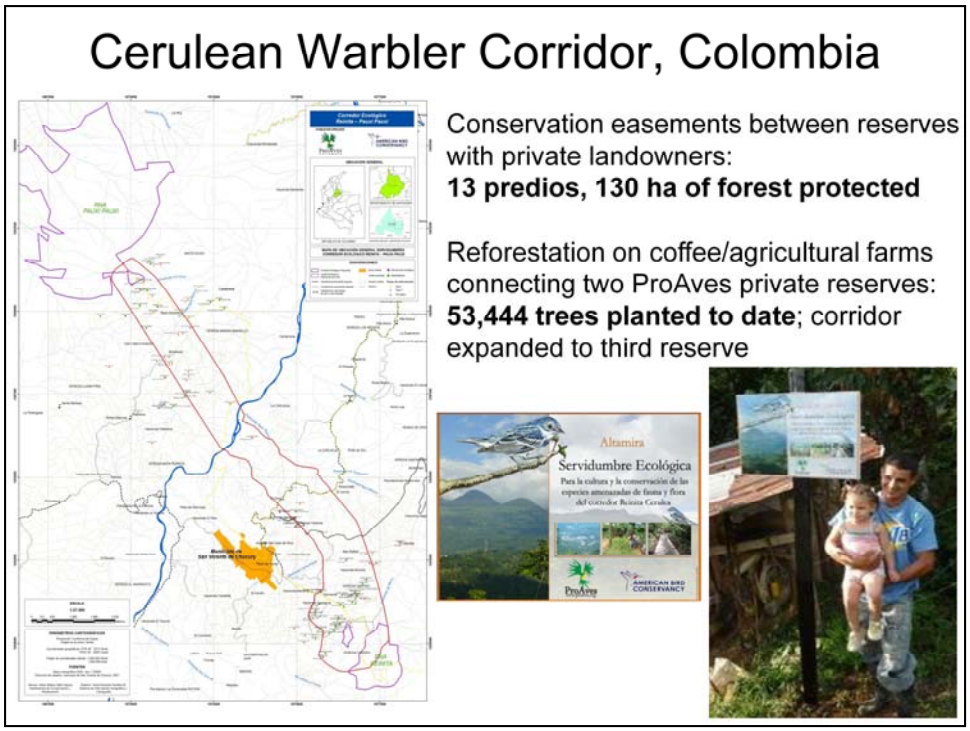
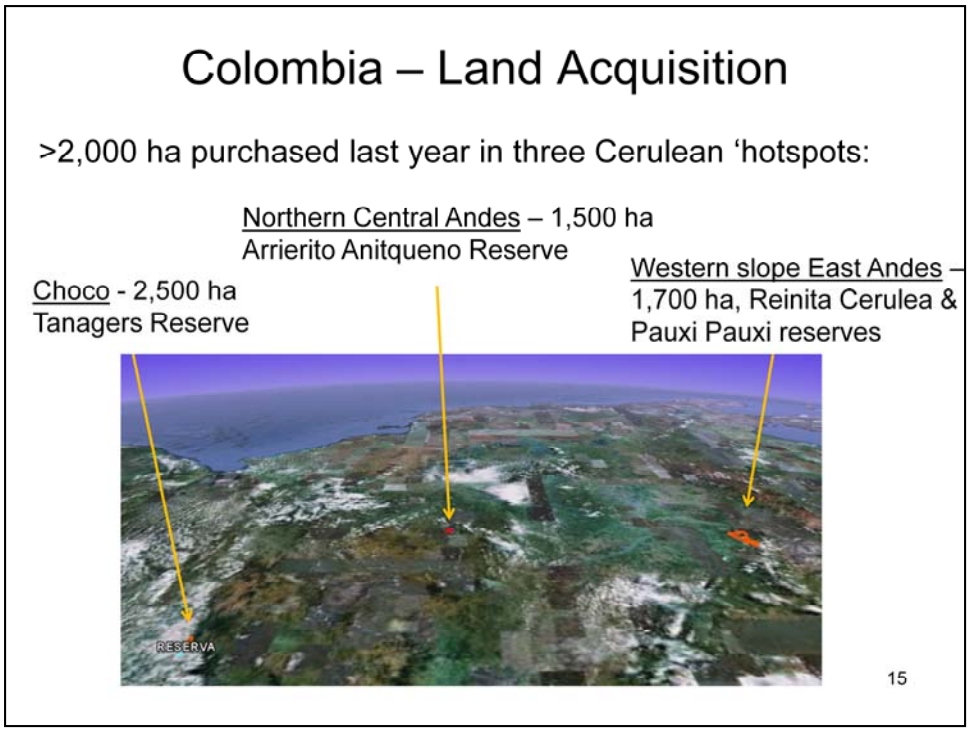
Employ all of these activities at a given site.

Brian Smith will share some data suggesting Ceruleans body condition improves in shade coffee and secondary forests.



Thirteen tracts of land totaling 312 acres in the Cerulean Warbler Corridor inserted conservation easements into the deeds for their farms to guarantee future habitat for Ceruleans

Easements require reforestation and a ban on timber harvesting and hunting. ProAves provided… fencing materials & saplings for reforestation,



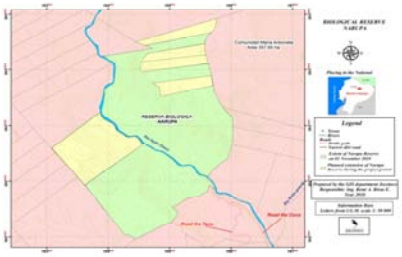
Restauration of degraded lands within reserves.

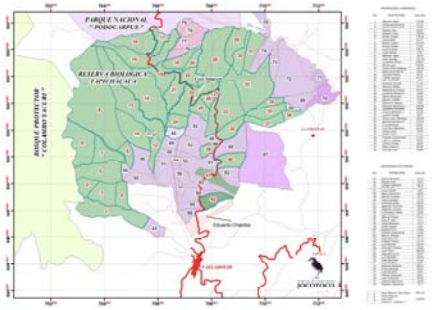
Work with community outside reserves. Reforestation, education.

Ecuador

Hotspot for Cerulean Warbler on Eastern slope.

In 2006, the Jocotoco Foundation established the Narupa Reserve, which was recently expanded to 596 ha (1473 acres).



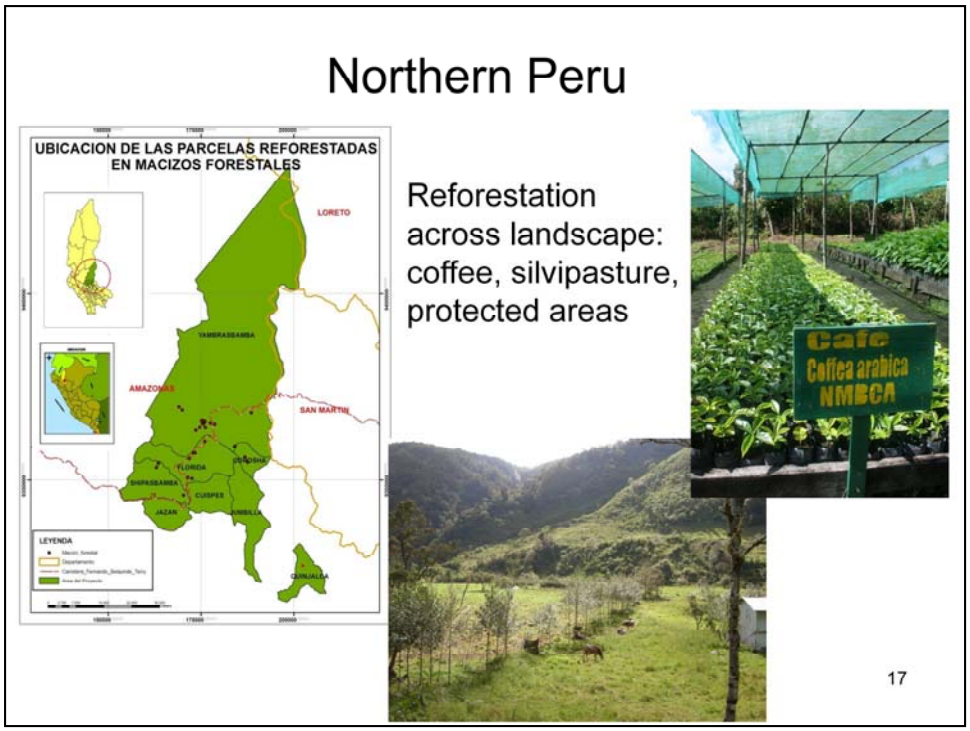


Cerulean also recorded at Tapichalaca Reserve in south 3,252 ha (8,036 acres)

16

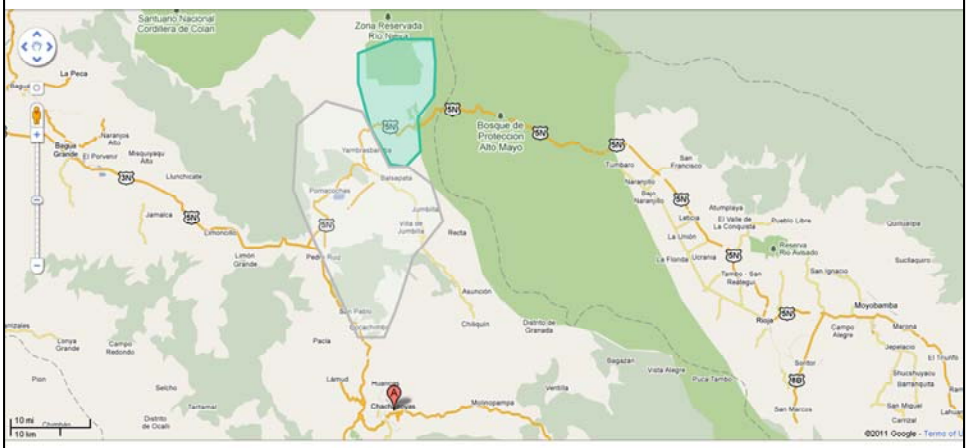
Additional properities identified for purchase in Narupa (250 acres)

Aves y Conservacion – separate talk on efforts in Sumaco National Park in Ecuador



How many kilometers, hectares, trees????

Northern Peru



Habitat protection – 3,200 hectares in Abra Patricia Reserve and 7,000 ha in Alto Mayo forest

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Reserve founded in 2005

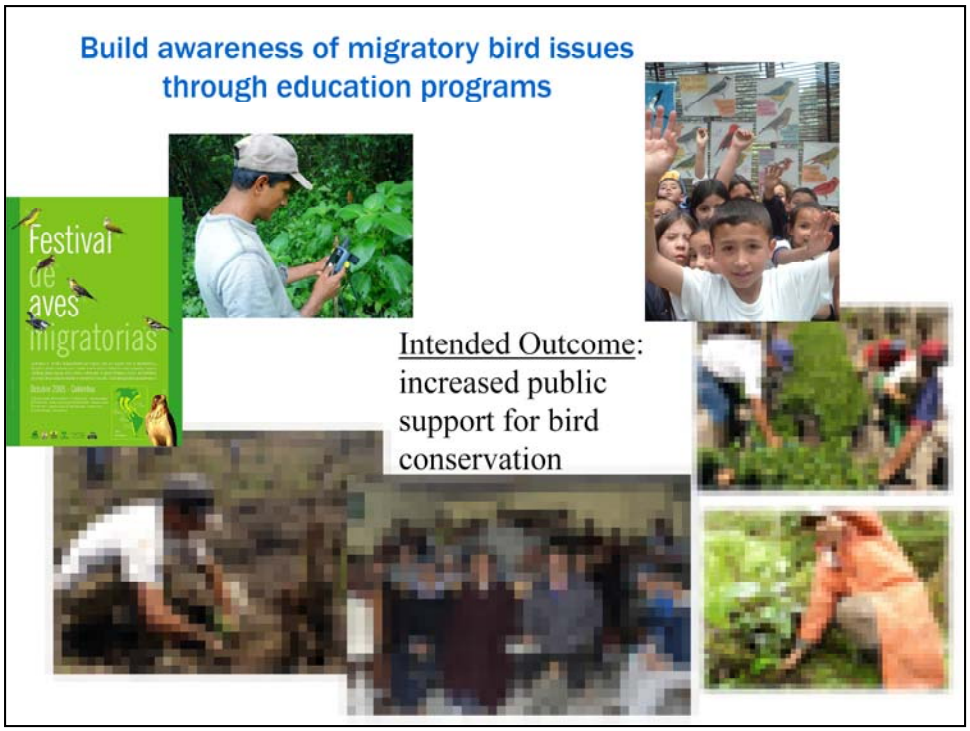
Reforestation Results

through two NMBCA Projects

	ECOAN (north Peru)	Jocotoco (Ecuador)	ProAves (Colombia)	El Jaguar (Nicaragua)	TOTAL
Reforestation sites	5+ communities around 2 reserves	3 reserves	12 communities	2 reserves	**21 sites**
Nurseries	5	2	2	1	**10 nurseries**
Plants produced annually	220,00	160,000	60,000	10,000	**~ plant capacity**
Tree species produced	~45	~70	~45	~18	**140+ species**
Trees planted to date	300,000	611,603	163,670	7,805	**1.1-1.5 million trees planted**

Coordinated multi-national project

Data reflects Reforestation I, and Reforestation II through May (June for Nicaragua). Data does not includes Andes, Quercus, or other older programs/grants. For instance, ECOAN claims to have planted 797,000 total trees in northern Peru



NMBCA Results:

Clockwise from upper left, local person using GPS in Nicaragua; Proud landowner displaying Cerulean Warbler sign recognizing his participation in a conservation easerment/reforestation program; communities planning reforestation (Peru); working inn tree nurseries (Peru); planting trees (peru); community meetings to discuss desired results (peru); planting trees (Peru).

The success of conservation efforts is dependent on good communication, outreach, and education of appropriate audiences. Building public awareness and support for bird conservation is necessary to accomplish our goals for improving the status of species like the Cerulean Warbler. Education programs such as the Migratory Bird Festival in Colombia and educating consumers in the United States about the benefits of choosing shade-grown coffee are two examples of efforts to address this issue.

A. Develop and implement forest management recommendations for Cerulean Warblers that can be incorporated into management plans for public and private forestlands within the

breeding range – including the monitoring of fitness parameters so that effects of management actions can be assessed

B. Develop and implement surface coal mining recommendations for Cerulean Warblers that can be incorporated into federal and state mine regulatory agency permitting

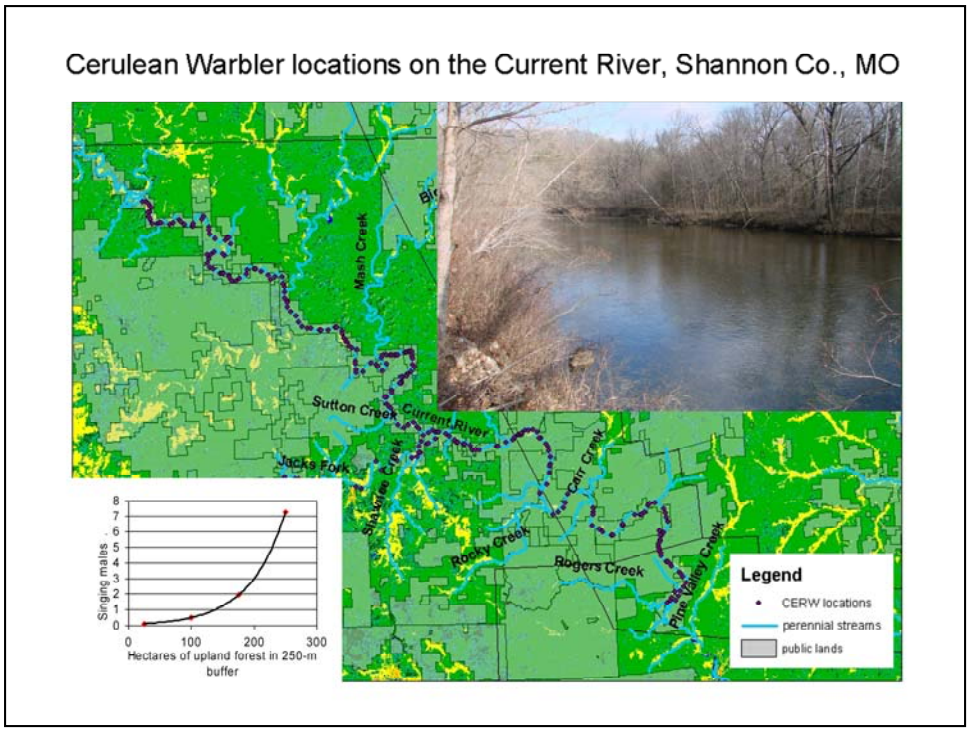
processes within the breeding range.

C. Reduce forest fragmentation and prevent major forest loss on the breeding grounds

D. Identify and manage for high quality post-fledging habitat

E. Refine population goals for Cerulean Warblers; develop habitat conservation objectives and identify focus areas for habitat conservation efforts to support population goals

F. Establish education and outreach programs regional and local development planners



These are locations of singing male CERWs in the Current River basin as mapped from our canoe surveys. The Current river basin is where CERWs reach their highest numbers in Missouri.

These are the locations of rivers surveyed for CERWs by canoe from the later 1990s to the early 2000s. The project was funded in part by the Cornell Lab of Ornithology CERW Atlas project and MO Dept. of Conservation.

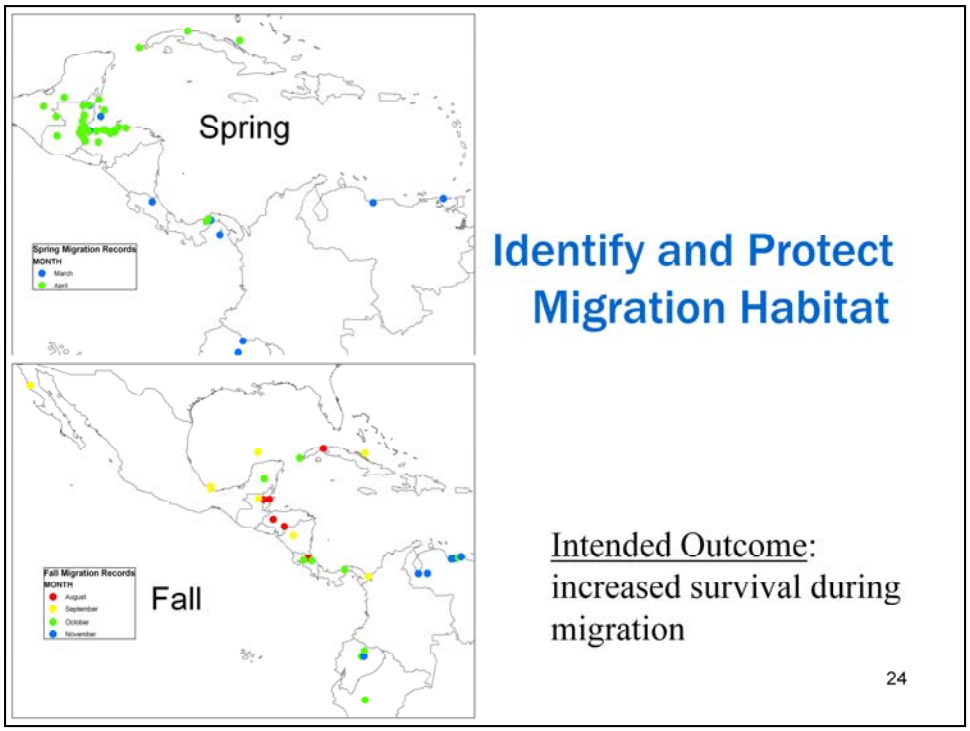
This is the Jack's Fork River, very near where ABC helped to buy the first piece of property for CERWs in the Missouri Ozarks. Other partners were TNC, Mo Dept. of Conservation (MDC) and MO Heritage Conservation Fund. The property is now in the ownership of MDC and surrounded on 3 sides by public lands.

A. Map migratory pathways and important stop-over sites between the southern U.S., Central America, and northern South America and model potential stopover habitat.

B. Assess existing level of conservation protection and develop conservation programs to protect key migration sites in Central America

C. Provide adequate quality and quantity of spring migratory landfall habitat along the U.S. Gulf coast

D. Establish outreach and education programs to build awareness of migratory bird issues in Central America and promote linkages between countries



Stop-over sites may be

2004 Melinda Welton followed up on Colombia River Forest in Belize site visited by Ted Parker in 1992. Cerulean most frequent neotropical migrant.

2005-2006 Surveys of wet low montane forest on Carribbean slope from Chiapas to Nicaragua (0f 83 sites, 24 had Ceruleans and only one of those was not predicted by the model).

Next Steps: full season study in Belize; need to find the Deleware Bay in Colombia

Nicaragua reforestation, 2 years, 10,000 trees outside El Jaguar Reserve, plans to expand to connect to Cerro de Yali to create corridors

Information gaps

- Differences between female Ceruleans
- Post-fledgling survival
- Dispersal patterns
- Migration routes

- Define more specifically where Cerulean winter to develop action plans for these sites
- How demographics vary across range and seasons

American Bird Conservancy

Intended Outcome:
Improved knowledge for better conservation

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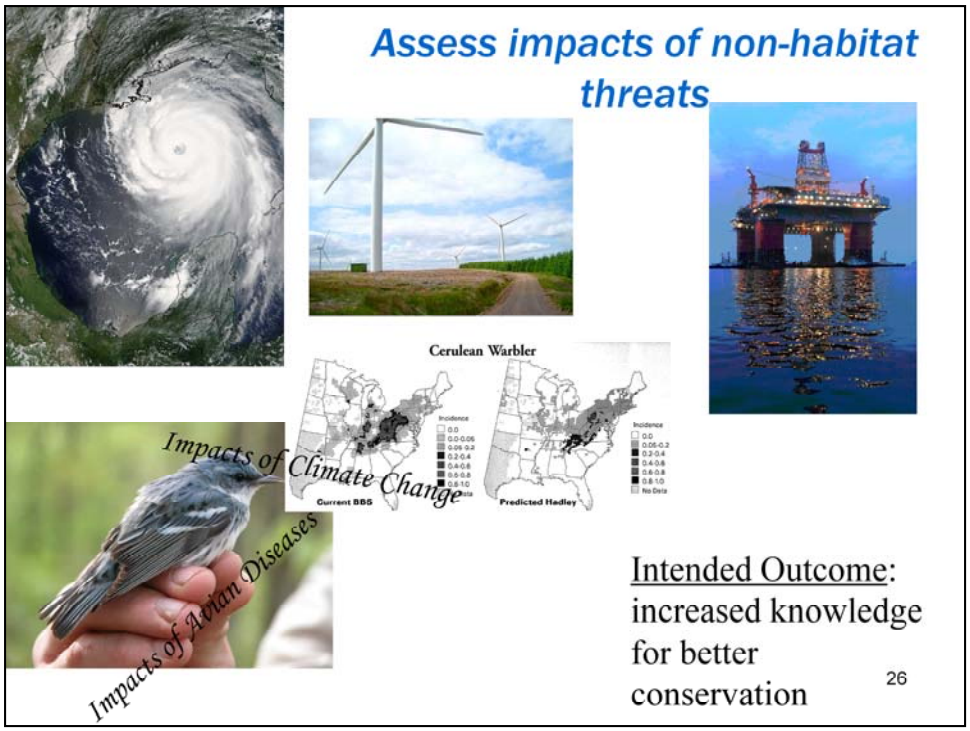
Continued research on these topics will improve our ability to implement conservation actions that are most effective for this species.



A. Model the potential for impacts of **catastrophic weather events**, particularly hurricanes during the fall migratory period

B. Assess and reduce/mitigate risks from **collisions** (including off-shore oil platforms, wind farms, communications towers, etc.)

C. Investigate correlations between **climate change** and forest availability as a potential tool for predicting future changes in Cerulean Warbler distribution and management needs

D. Investigate correlations between climate change, timing of spring arrival of Cerulean Warblers on breeding grounds, and timing of emergence of insect prey populations

E. Investigate the potential effects of **mercury contamination and acid deposition**

F. Investigate the potential effects of **disease**

As with all migratory birds, more work is needed to assess the potential impacts of various non-habitat threats that can cause mortality for Cerulean Warblers, so that we can begin to address those having the largest impacts. These threats include towers, buildings, wind turbines, off-shore platforms in the Gulf of Mexico, effects of climate change, and avian diseases.

ABC addressing collisions, wind turbines.

Full life cycle approach- Breeding, wintering and transitory stopover places

Partner driven

Now building current set of 10-12 projects into major hemispheric initiative

We invite you to join us – help provide science, help identify conservation opportunities, help us on the ground!

Cerulean - Already a flagship species – with a long history of ABC work ---- focal species (USFWS)

Next Steps

1. Implement and refine plans (occupancy maps, hotspots)
2. Identify projects that can be scaled up and replicated.
3. Identify and protect stop-over sites.
4. Continue to address scientific knowledge gaps.
5. Coordination of international partners.
6. Account for all activities (governments, Federacion Nacional de Cafeteros)

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Success at reaching our conservation goal for this species will depend on good communication, collaboration, and coordination among many stakeholders working within an international partnership.

Acknowledgments & Thanks!

- Cerulean Warbler Technical Working Group
- Grupo Ceruleo