

**DRAFT CONSERVATION BUSINESS PLAN for CENTRAL AND SOUTH AMERICAN HIGHLANDS Linked to APPALACHIAN and NORTHEASTERN HARDWOOD and MIXED FOREST REGIONS, north to the BOREAL REGION.**

## **1. Summary**

These linked geographies include the Central and South American Highlands, defined as areas above 1,000m elevation from Nicaragua south through Central America, and the northern Andes of Colombia and Ecuador, with perhaps a small portion of Peru and Venezuela. These Highland areas support non-breeding populations of numerous high priority Neotropical migrants as well as populations of priority resident endemics. In North America, the linked geographies include the hardwood forests of the Appalachian Mountains and Northeastern U.S. as well as mixed forest regions for northern New England and eastern Canada north to the boreal zone. Bird Conservation Regions covering these hardwood and mixed forest areas include Boreal Softwood Shield (BCR 8), Boreal Hardwood Transition (BCR 12), Lower Great Lakes/St. Lawrence Plain (BCR 13), Atlantic Northern Forest (BCR 14), Prairie Hardwood Transition (BCR 23), and Appalachian Mountains (BCR 28). They are also covered by these Habitat Joint Ventures: Eastern Habitat, Upper Mississippi River/Great Lakes, and Appalachian Mountains.

The conservation targets include Golden-winged Warbler, Cerulean Warbler, and Canada Warbler for Neotropical migrants. A set of target resident species for Central and South America within the Highlands geography will also be identified but more input is needed from people working in those areas before additional target species are identified.

For the Neotropical migrant target species, major threats in the Central and South American areas include continued loss and degradation of suitable secondary habitat (e.g., shade-coffee, agro-forestry, agro-pasture) and loss of primary forest, which impacts overall landscape context and overall suitability of surrounding habitats. Loss of primary forest directly limits habitat availability for the conservation targets. Both primary forest and secondary forest are under pressure from conversion to intensive non-shade agriculture or pasture.

In North America, threats include overall poor forest condition and health resulting from previous land use (e.g. extensive forest clearing in late 1800s and early 1900s), lack of appropriate forest disturbance regimes to maintain a mosaic of patches of early forest successional stages within a matrix of mature forest with complex canopy structure, invasive plant species (especially in early successional habitats), and human development/urbanization and energy development (mining, natural gas extraction, wind power) that remove and fragment breeding habitat for priority migrants.

Prior conservation plans and documents for the conservation targets upon which this conservation business strategy are based include:

- [Golden-winged Warbler Status Review and Conservation Plan](#). 2012. Roth, et al., editors

- [Golden-winged Warbler Best Management Practice Guides and Habitat Supplements](#). Golden-winged Warbler Working Group
- [Golden-winged Warbler Habitat: Management Practices for Forestlands in Maryland and Pennsylvania](#). 2011. Bakermans et al.
- [A Conservation Action Plan for the Cerulean Warbler](#). 2007. Dettmers, editor
- [Proceedings from Cerulean Warbler Summit 2: Development and Implementation of Conservation Actions](#). 2007. Dettmers and Woods, editors
- [Cerulean Warbler Management Guidelines for Enhancing Breeding Habitat in Appalachian Hardwood Forests](#). 2013. Wood et al.

## 2. Goal Identification for Conservation Targets

The conservation targets include Golden-winged Warbler, Cerulean Warbler, and Canada Warbler for Neotropical migrants. Target resident species from Central and South American will also be identified after further input from people working in those areas.

The Cerulean Warbler Technical Group has agreed upon a goal of doubling the global population of this species and returning its numbers to 1980's levels by 2035, but specific habitat goals have not been established by the Technical Group yet. In general, the Technical Group has recommended non-breeding ground habitat goals of maintaining existing amounts of primary forest and improving the quantity and quality of secondary habitats (e.g., shade-based agriculture). For the breeding grounds, the goals are to improve the quality of forest habitat (i.e., improve forest structure) within the core of this species' breeding range and improve the quality and quantity of forest habitat in non-core areas by reducing fragmentation and increasing the size and quality of forest patches.

The Golden-winged Warbler Working Group has set the goal for the Golden-winged Warbler to increase its current population by 50% by 2050. The timeline for achieving this goal will require stabilizing the global population (stop present declines) within 10 years and then increasing the population by 50% in the following 30 years. In addition, it has set a habitat goal to increase the amount of early successional breeding habitat from 2.07 million acres to 3.1 million acres by 2050. These population and habitat goals are further broken down by two conservation regions, the Great Lakes and Appalachians, as described in the following table.

	Great Lakes <u>Conservation Region</u>	Appalachian <u>Conservation Region</u>	<u>Rangewide</u>
<u>Population (individuals)</u>			
Estimated Population (2010)	392,000	22,000	414,000
Population Goal (2020)	441,000	270,00	466,000
Population Goal (2050)	588,000	440,00	621,000
<u>Breeding Habitat (in Hectares)</u>			
Estimated Breeding Habitat (2010)	79,300	45,000	838,000
Breeding Habitat Goal (2020)	892,000	55,000	943,000
Breeding Habitat Goal (2050)	1,190,000	89,000	1,257,000

No specific habitat conservation targets have been established for the wintering grounds for this focal area and associated species, and this is probably one of the greatest limiting factors that needs addressed in the development of this business plan. The Golden-winged Warbler Conservation Plan identifies a goal of increasing Golden-winged Warbler survival through protection and enhancement of habitat during the non-breeding season and by addressing non-habitat limiting factors, and included the following objectives:

Objective 2.1: Define winter distribution, identify habitats and elevations used during winter, identify characteristics that produce high quality habitat at non-breeding sites, and identify threats to quality habitat in their non-breeding range.

Objective 2.2: Complete wintering grounds conservation strategy in partnership with organizations and governments in Central and South America.

Objective 2.3: Identify important migratory stopover habitat and priority areas for conservation.

Objective 2.4: Assess connectivity between breeding grounds and non-breeding areas in order to more closely link demographic parameters and establish linkages for collaborative conservation actions.

Objective 2.5: Identify significant migratory obstacles and scale of possible effect on populations.

Objective 2.6: Coordinate management and policy activities across countries within Golden-winged Warbler wintering distribution.

This goal and the associated objectives could be generalized to include all species in this geographic focal area. While the objectives do not identify measurable conservation targets, they do describe where gaps in knowledge exist that must be addressed, or at least acknowledged as limitations/caveats, before measurable targets are developed.

### **3. List of the key threats that affect the conservation targets**

#### ***A. Threats within the Central and northern South American Highlands***

The primary threats to the target species within this geography are thought to be related to loss of forest habitat, often caused by conversion to various agro-forestry systems and pasture for livestock. Several non-habitat threats also have the potential to impact these species. A general lack of knowledge of the distribution, ecology, and demography of the target species within this geography continues to be an indirect threat that limits our ability to develop conservation actions targeted at the most important threats.

The general categories of threats and specific issues or contributing factors are summarized in the following table. Also see the conceptual diagram below this section for a visual representation of potential relationships between the conservation targets, general threats, specific threats, and potential strategies for addressing the threats.

<b>General threat category</b>	<b>Specific threat, issue, or contributing factor</b>
Forest habitat loss	Logging for timber products Conversion to agricultural crops Conversion to pasture Conversion to mining Residential and urban development
Habitat degradation	Conversion of shade-coffee to sun coffee Altered floristics (due to disturbance, logging, etc.) Forest fragmentation (leading to reduced connectivity and increased edge effects)
Contaminants	Pesticide use (e.g., causes reduced prey abundance)
Climate Change	Shifts in location or condition of suitable habitat Increasing frequency of severe weather Mismatch in migration timing and prey abundance
Migration hazards	Wind energy development Communication towers
Anthropomorphic	Feral cats

### ***B. Threats within Eastern Hardwood, Mixed, and Boreal Forests of Eastern North America***

The primary threats for the target migrant species within this geographic region are typically thought to be overall loss and fragmentation of forest habitat due to human development and conversion to other land uses (e.g., surface coal mines, agriculture), as well as lack of appropriate vegetation structure due to incompatible forestry practices and natural disturbances. These factors are likely to reduce the overall carrying capacity for the target species as well as lower overall breeding productivity.

Specific threats to consider include the following, which are somewhat generalized statements intended to cover many of the target species:

- i) Loss of quantity and quality of suitable habitat due to lack of appropriate forest management practices to create canopy heterogeneity and patches of early successional habitat.
- ii) Loss and fragmentation of suitable habitat due to human development/urbanization.
- iii) Loss and fragmentation of effective core forest habitat due to energy extraction (e.g.,

surface coal mining, Marcellus gas well development, wind development).

iv) Loss and fragmentation of suitable habitat due to conversion to agriculture.

v) Lack of optimum habitat (landscape-withinstand-micro) due to management practices that do not consider all requirements of the target species at all scales.

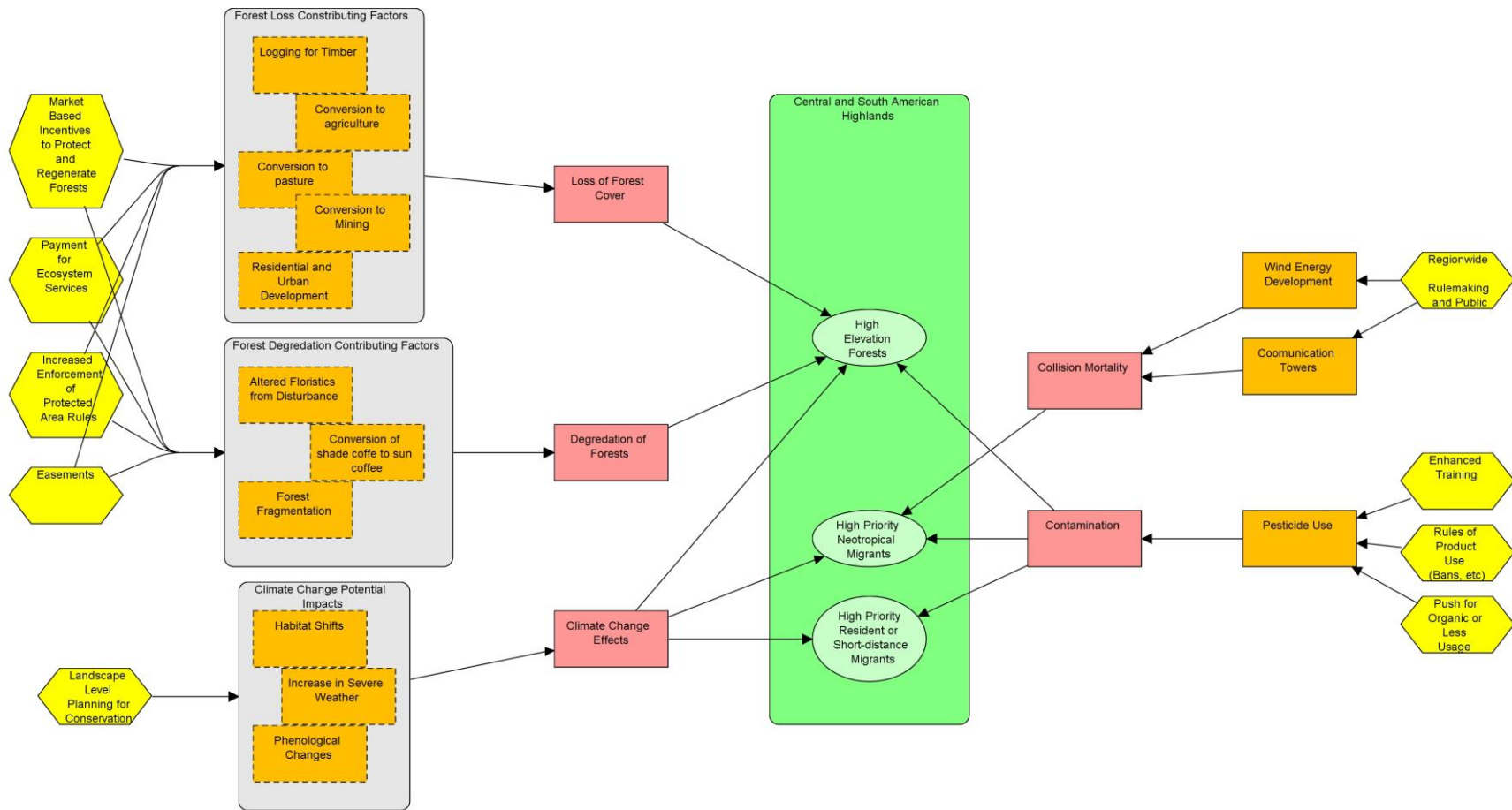
vi) Public opposition to land management practices necessary to create suitable habitat.

vii) For Golden-winged Warbler, co-occurrence of/hybridization with Blue-winged Warbler.

viii) Presence of invasive plant species within habitat, especially wetlands (phragmites) and old field habitats – mostly relevant to Golden-winged Warbler, but perhaps also Canada Warbler?

ix) Overabundant cowbird populations threaten the sustainability of populations in core forest habitats resulting in reduced productivity.

Conceptual Diagram of Relationships Between Conservation Targets (green), General Threats within the Central and northern South American Highlands (red), Specific Threats (orange), and Potential Strategies (yellow) to Address the Threats.



**TO BE COMPLETED DURING AND AFTER PIF V CONFERENCE**

**4. Prescribed actions by threat**

The results from breakout discussions can be fed into the Project Matrix (example found below). For each threat, identify strategies that should be pursued, and then begin to develop a list of projects and activities that can be undertaken to alleviate each threat. Consider filling in the Project Matrix for each project. List the measurable results expected. Describe the time period. Describe the costs for each project/action and, if known, potential funding source. What are the risks? Ensure that the Full Annual Life Cycle is considered for each threat, as appropriate (wintering, breeding, transit).

**The Project Matrix**

Key Threat (use as the organizing principle)	Stage W, B, T	Objectives	Key Theme and Strategy	Cons. targets	Project	Activity
Which of the main threats is being addressed here?	List if: Wintering Breeding and/or Transit work	What is the overall objective?	What type of work and what the strategy is being used?	What are the conservation targets	What is the project name?	What are the activities?
Lack of wintering habitat due to forest loss contributing factors (e.g., logging, conversion to agriculture, etc.)	Wintering	?? increase survival and body condition of target species??	Market based incentives	All target species		

Matrix continued...

Results of the Activity	Long-term Outcome	Timeframe	Anticipated Costs	Total Costs	Evaluation	Comments
What is the measurable result/deliverables?	What are the measureable long-term impacts/outcomes expected?	What time period? How long will it take/	Cost/year	Total project costs	How will the project be evaluated?	General comments, next steps, list of potential actors, risks