

Orioles and Ocelots: Wisconsin's Costa Rica Connection

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It is a portentous prediction, largely unnoticed by the media. A recent article in the journal *Conservation Biology* predicts a mass extinction of monophagous insects (organisms that specialize in feeding on one species of plant) in the world's biodiversity hotspots (Fonseca 2009). The little things that run the world, it turns out, are rapidly losing ground—literally. Nowhere is that situation more acute than in the Tropical Andes.

Arguably the most biodiverse landscape on the planet, the Andes of northern South America are a treasure trove of biological wealth, the result of a unique convergence of tropical climate and complex topography. Rain drenched valleys and fog-en-shrouded peaks support a spectacular radiation of species, thousands of which are found nowhere else. Strictly in terms of its feathered denizens, the rugged spine of the continent is the apex of global bird diversity (Mittermeier et al. 2000). More than 1,700 species have been documented. New species are still being discovered.

What then, of the insects? Tiny as they may be, the role insects play in

ecosystems—herbivory, pollination, nutrient cycling, predation, food chain support—is enormous. Remove these six-legged building blocks of ecosystem function and the foundation begins to crumble. Thus, the predicted mass extinction of “specialists” is indicative of a much larger problem—ecosystem deterioration. The unraveling of the Tropical Andes' forested ecosystems is mirrored across Latin America and the implications for North America's neotropical migrant birds are enormous.

A MIGRATORY SPECTACLE

As summer wanes and the golden-rods begin to flower, shortening day length gives rise to physiological changes in birds. Migratory species become restless, increase food uptake, and add layers of fat in anticipation of the most demanding (and perilous) event of their peripatetic lives—hemispheric migration.

Then, responding to internal cues and prevailing weather conditions, they leave their breeding grounds for warmer climes in tropical latitudes.

Their numbers are legion. It is estimated up to five billion birds depart Canada's vast boreal forest every fall. Sweeping southward on a broad front, they are joined by hundreds of millions more from the United States. It is a spectacle of global proportion, rivaling even the great wildebeest migrations of Africa's Serengeti. And yet, under the cover of darkness, this nocturnal river of birds passes largely unnoticed. Some will spend two months traveling to their ancestral wintering grounds in South America. Others will abbreviate their journey, escaping the rigors of a temperate winter in the ruin-studded forests of Guatemala. Regardless of their destination, all are dependent on the availability of tropical habitats for survival.

Consider the Cerulean Warbler (*Dendroica cerulea*). Weighing in at 8 to 10 grams (a few feathers less than your average chickadee), twice a year this remarkable bird undertakes a journey that would put the most accomplished tri-athlete to shame, navigating every manner of hazard to run the gauntlet from its breeding grounds in eastern North America to its wintering grounds in the Tropical Andes and back. Upon arrival in South America, our little blue friend is confronted with a situation that is decidedly grim.

Ceruleans are rather finicky about their winter haunts, having a strong affinity for middle elevations on the humid, forested slopes of the Andes (Moreno et al. 2009). That is also the preferred habitat of the world's most heavily (legally) traded commodity—coffee. As you might imagine, given our appetite for lattes and cappuccinos, slopes at that elevation have been largely laid bare, converted to agricul-

tural uses. More than 90% of the original vegetation has been lost, thrusting the tiny warbler into a rather tenuous spot—ever shrinking habitat. Canada Warbler (*Wilsonia canadensis*), Golden-winged Warbler (*Vermivora chrysoptera*), and Olive-sided Flycatcher (*Contopus cooperi*), all with core winter range in the Tropical Andes, are in comparably dire straits.

Shifting our focus northward, to the steamy lowlands of Central America, we find a landscape dominated by industrial agriculture. Central America's Caribbean slope forests are among the most endangered on the planet (Stotz et al. 1996), pushed to the brink of oblivion by a hungry world. A morning in an ultralight aircraft would reveal a landscape dominated by a green patchwork quilt of monocultures—sugar cane, citrus, bananas, pineapple, with oil palm (for biofuel) looming on the horizon. Isolated trees—lone, leafy giants—stand in silent testimony to the once vast forests that blanketed the region from volcanic summit to Gulf shore. Gone are the expansive tropical forests needed by Wood Thrush (*Hylocichla mustelina*), Kentucky Warbler (*Oporornis formosus*), and Acadian Flycatcher (*Empidonax virescens*).

Across Latin America the story is the same. Burgeoning human populations coupled with an expanding agriculture frontier are delivering a potent one-two punch to the region's remaining wild places. Spectacular wildlife, including our neotropical migrants, are in retreat as remaining forests shrink. More than one-half of Wisconsin's 238 species of breeding birds winter in Latin America (Fig. 1). The same is true for North America's 650+ species of breeding birds.

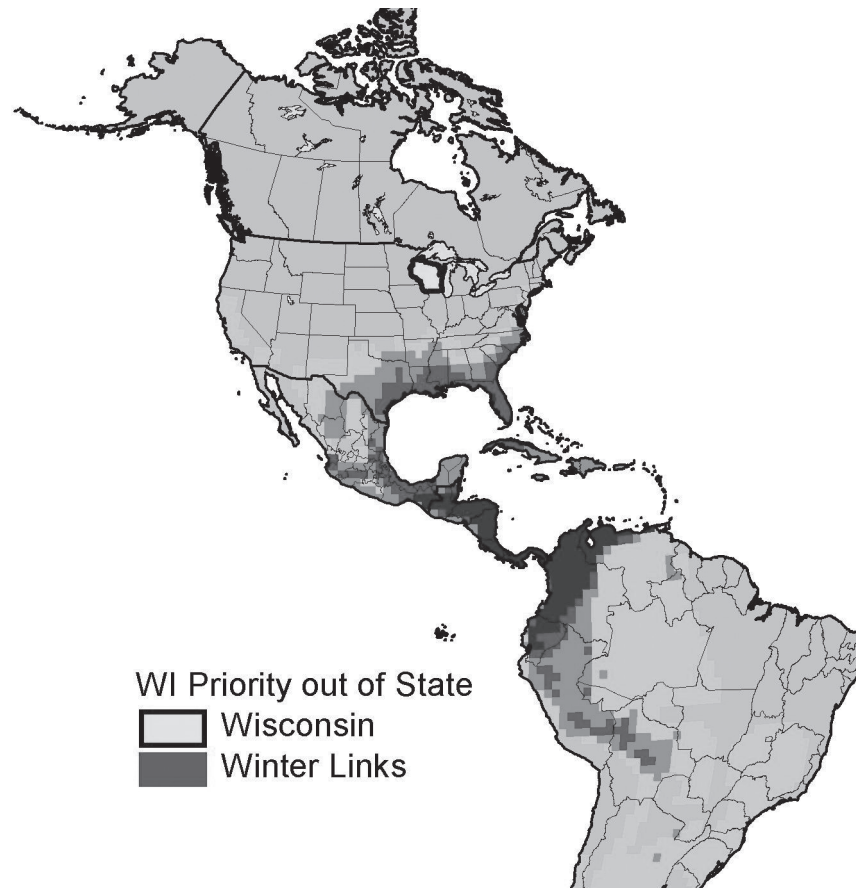


Figure 1. Wisconsin Winter Links. This map depicts the wintering distribution for Wisconsin priority species. Darker shading indicates a higher number of species. It is used as a coarse filter to direct Wisconsin's wintering bird habitat protection efforts. Developed by Peter Blancher et al in 2006. Map courtesy of Partners in Flight.

Their collective fate is inextricably linked to that of forests throughout the New World tropics.

THE WINTERING HABITAT CONNECTION

Soft-ball sized and snowball white, the endangered Yellow-billed Cotinga (*Carpodectes antoniae*) is a habitat specialist, nesting in mangroves and for-

aging in adjacent upland forests. For years bird conservationists have fretted while this rare frugivore has careened toward extinction, the victim of relentless habitat destruction. The fate of this Pacific Coast endemic and its preferred habitat are one. Why should we care? Because the same mangroves that serve as breeding habitat for the cotinga provide essential wintering habitat for the Prothonotary Warbler (*Protonotaria citrea*),

the “little yellow comet” of Wisconsin’s floodplain forests. Thus, wintering habitat conservation becomes a critical component of the calculus of conservation for this neotropical migrant. If we want the warbler’s rich “zweet, zweet, zweet” to echo through stands of silver maple and swamp white oak every spring, conservation of Latin America’s mangrove forests is not optional.

There has been long-standing recognition that tropical forests are important for neotropical migrants, but considerable debate about just how important. Ongoing scientific investigation is in the process of laying that debate to rest. The verdict? Wintering habitat is key to long-term conservation of many species. Indeed, the availability and condition of wintering habitat is the primary factor limiting populations for numerous neotropical migrants.

Recent work done by the Institute for Bird Population Studies (IBP) revealed both first-year survival and adult survival were the most important drivers of spatial variation in population trends for numerous neotropical migrants (DeSante and Sarraco 2009). Translation—survival of juveniles and adults is largely a function of habitat conditions on wintering grounds and migration routes. Conclusion—everything we do to protect and manage breeding habitat for those species will be of little value if we don’t protect their wintering habitat. David DeSante, Director of IBP, was decidedly more candid during an interview for Cornell Lab’s Living Bird magazine, “Now, if the bottleneck is winter survival, and you put all your efforts into breeding hatchlings [on breeding grounds], you are just increasing the

number of birds that die each winter” (Strieffert 2007). A sobering assessment indeed. But in that dour reality lies a clarion call for action.

If we want to get serious about migratory bird conservation, really serious, we need to implement habitat conservation strategies that span continents. Nothing short of a massive hemispheric mobilization will be sufficient. As the clock ticks, trees fall, and populations of many of our most beloved birds—Rose-breasted Grosbeak (*Pheucticus ludovicianus*), Eastern Kingbird (*Tyrannus tyrannus*), and Baltimore Oriole (*Icterus galbula*) (*see cover*)—continue to decline.

WISCONSIN STEPS UP

In southwest Costa Rica, where “good roads” are few and far between, a large land mass juts defiantly away from the country’s sinuous coast and into the turbulent Pacific. Landward of beaches occupied only by sea turtles and an occasional Red-footed Booby (*Sula sula*), an industrious Howler Monkey can travel for miles in unbroken canopy. Below, on the dimly lit forest floor, five species of cats—jaguarundi, margay, ocelot, mountain lion, and jaguar—prowl muddy trails, ever alert for their next meal. The Osa Peninsula is still a wild place.

Considered a global conservation priority due to exceptional species richness and high levels of endemism, “the Osa” as it’s known to those who frequent the area, is a land of superlatives—spectacular beaches, magnificent forests, gaudy birds. The peninsula’s ecosystems, the cornerstone of which is a block of forest a quarter million acres in size, are intact

Table 1. Wisconsin bird “species of greatest conservation need” documented on the Osa Peninsula. E = Endangered, T = Threatened, SC = Special Concern.

Species	Wisconsin Status
Blue-winged Teal (<i>Anas discors</i>)	SC
Northern Harrier (<i>Circus cyaneus</i>)	SC
Peregrine Falcon (<i>Falco peregrinus</i>)	E
Yellow-billed Cuckoo (<i>Coccyzus americanus</i>)	SC
Whip-poor-will (<i>Caprimulgus vociferus</i>)	SC
Olive-sided Flycatcher (<i>Contopus cooperi</i>)	SC
Acadian Flycatcher (<i>Empidonax virescens</i>)	T
Willow Flycatcher (<i>Empidonax traillii</i>)	SC
Least Flycatcher (<i>Empidonax minimus</i>)	SC
Wood Thrush (<i>Hylocichla mustelina</i>)	SC
Golden-winged Warbler (<i>Vermivora chrysoptera</i>)	SC
Prothonotary Warbler (<i>Protonotaria citrea</i>)	SC
Louisiana Waterthrush (<i>Seiurus motacilla</i>)	SC
Kentucky Warbler (<i>Oporornis formosus</i>)	T
Connecticut Warbler (<i>Oporornis agilis</i>)	SC
Hooded Warbler (<i>Wilsonia citrina</i>)	T
Canada Warbler (<i>Wilsonia canadensis</i>)	SC

and functional, supported by a cast of thousands of plants and animal species. But even here, in this remote corner of Central America, the storm clouds of change are gathering. The peninsula’s flat lands have been largely cleared for cattle pasture. Ocean views are fueling a growing real estate market for vacation homes. A proposed international airport on the Pacific slope promises massive landscape transformation.

Deep in the Osa’s forests, among skulking antbirds and furtive agoutis, a surprising number of “Wisconsin’s birds”—fifty four at last count—find safe harbor. Closer examination reveals 18 considered conservation priorities (Table 1). The Osa has served as their winter home for millennia. Today, the future of their forested redoubt is anything but certain. Compelled by conservation need and opportunity, Wisconsin has stepped into the breach. Since 2009, a home grown partnership has propelled the

Badger State to the forefront of international bird conservation.

THE ANATOMY OF A PARTNERSHIP

Wisconsin’s Osa partnership is built upon the twin pillars of conservation science and effective partners. To ensure success, an international venture also requires an on-the-ground partner with capacity, political savvy, and intestinal fortitude.

Since 2003, Friends of the Osa (FOO), a Costa Rican non-profit conservation organization, has skillfully cultured a growing awareness of the Osa’s biological treasures and the need to protect them. Not strictly a bird conservation organization, FOO has an ambitious, focused mission—ensure the Osa’s forests are worth more standing than cut. The bottom line is ecosystem viability, underpinned by sustainable local economies. Achieving as much re-



Figure 2. The Pacific Ocean from Cerro Osa. Photo courtesy of Rick Stanley.

quires an organic, multi-faceted approach to conservation of the peninsula's 13 distinct ecosystems. Sound science provides the foundation for their efforts, the core of which includes establishment of a protected area network buttressed by community and government support.

By design, the network will connect to Corcovado National Park, crown jewel of the Costa Rica park system. Rugged and remote, at 100,000-acres in size Corcovado is not large enough to sustain wildlife that needs room to roam—jaguar, mountain lion, herds of white-lipped peccary, and large forest raptors including Harpy Eagle (*Harpia harpyja*). The network, referred to as the Corcovado-Matapalo Biological Corridor, will effectively enlarge the park by creating an archipelago of protected land extending from

the park to Cabo Matapalo, the rocky headlands at the southern tip of the peninsula. Tens of thousands of acres of vital neotropical migrant wintering habitat will be protected as a result.

FOO's leader, Dr. Adrian Forsyth, is no lightweight. The Harvard educated biologist (a former student of the iconic E. O. Wilson) cut his teeth in the tropics long ago and has an impressive record of conservation accomplishments. Forsyth understands "many hands make for light work" and has become extraordinarily adept at forging effective partnerships.

In 2008, when a critical piece of the Cabo Matapalo corridor became threatened, Forsyth kicked things into gear. Cerro Osa, as the piece is known, is magnificent—1,500 largely forested acres offering stunning views of the Pacific Ocean (Fig. 2). The owner, an

eleven member partnership based in Florida, decided to develop the property for a resort and luxury homes, despite the presence of a conservation easement. "We knew there were technical problems with the easement," Forsyth said. "But if development proceeded, easements throughout the country would be in jeopardy. And development would compromise our ability to connect to Corcovado. We had to buy it to save it." The price was a whopping \$3.2 million.

Undaunted, Forsyth marshaled an alliance of international heavy hitters—Conservation International, The Nature Conservancy, the Gordon and Betty Moore Foundation, the Blue Moon Fund, the Beneficia Foundation, and the American Bird Conservancy. All pledged funds to save the property.

At the same time, thousands of miles north, a new partnership with its eye on the Osa was fledging. In recognition of the importance of the Osa to Wisconsin's wintering migrants, the Wisconsin Bird Conservation Initiative (WBCI) International Program led formation of a unique coalition that also pledged support. The Wisconsin Department of Natural Resources, The Natural Resources Foundation of Wisconsin, Neenah Paper, the American Transmission Company, and Xcel Energy provided vital funds to help protect Cerro Osa, as did numerous individuals and organizations. It is an innovative partnership, home grown, international in reach.

Ultimately, Cerro Osa was spared domestication by bulldozer, and became a key piece of the growing linkage to Corcovado. Just as important, for the first time in history Wisconsin rallied to save important wintering

habitat for its migratory birds, heralding a new era of bird conservation for our state. Cerro Osa represents not an end point, but rather the beginning of a long-term commitment to save wintering habitat for our precious migratory heritage.

A FUTURE FOR OUR BIRDS

Protection of wintering grounds for neotropical migrants is gaining steam nationally, and the seeds of locally driven, internationally supported conservation efforts are germinating throughout Latin America. Each new project site provides an anchor for species (including monophagous insects!) drifting toward extinction. That's very good news for our migratory birds, including the Baltimore Oriole and Cerulean Warbler. But much remains to be done.

The magnitude of forest destruction in the tropics is staggering. The anticipated loss of remaining habitat due to expected population increases in Latin America over the next 40 years—100 to 360 million—casts an air of uncertainty over the region's surviving tropical forests and all species dependent on them, including our neotropical migrants. There is a closing window of opportunity within which to act. Time is of the essence. We must all be part of the solution. Our untapped conservation capacity is considerable, our participation essential for success.

HOW YOU CAN HELP

If you'd like to help support protection of vital wintering habitat for Wis-

consin's neotropical migrants, you can send a donation to:

The Natural Resources
Foundation of Wisconsin
P.O. Box 2317
Madison, WI 53701

Specify "Osa Project" on the memo line.

ACKNOWLEDGMENTS

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- Craig Thompson is a Regional Land Program Supervisor with the Wisconsin Department of Natural Resources and serves as Chair of the Wisconsin Bird Conservation Initiative's International Committee. He has yet to see a Rufous-vented Ground Cuckoo.*