

Cerulean Warbler, Bill Hubick



Great Smokey Mtns. National Park, Becky Keller

Appalachian Mountains Joint Venture

2013 Year in Review

Dear AMJV Partners,

With 2014 well underway, I want to celebrate another very successful year for the Appalachian Mountains Joint Venture (AMJV). We continue to grow and succeed as a partnership, and that was certainly reflected in the multiple accomplishments during 2013. Some major highlights include:

- Hired Becky Keller as our Science Coordinator in February
- AMJV staff and partners played key roles in the Partners in Flight V Conference, including co-leading and facilitating some of the geographic focal area groups and helping draft the Conservation Business Plans for those focal areas.
- The Cerulean Warbler Forest Management Project received the Partners In Flight Award for Investigations. This project was completed in 2010 and resulted in the development of the *Cerulean Warbler Management Guidelines for Enhancing Breeding Habitat in Appalachian Hardwood Forests* released in February 2013.
- The Eastern Golden Eagle Working Group, which includes many AMJV partners, received the U.S. Forest Service Wings Across the Americas 2013 Research and Management Partnership Award.
- The Pennsylvania Young Forests Council Golden-winged Warbler Initiative received the Joint Venture Conservation Champions Award for Regional Partnership.
- The Natural Resources Conservation Service Working Lands for Wildlife Program continues to be a critical resource for Golden-winged Warbler habitat enhancement on private lands. In FY2013 over \$2.9 million was obligated in contracts, committing 5,671 acres to habitat improvement.

The success and strength of the AMJV lies with its dedicated partners, and your many accomplishments in 2013 are highlighted in this year-in-review. I know there is a lot here, but you as partners have been busy, and those accomplishments deserve recognition. We continue to face shrinking budgets and fewer resources, yet this partnership maintains an impressive record of successes in bird conservation. I thank everyone for their continued support and dedication to the AMJV partnership, and I look forward to continuing our work into 2014.

Todd Fearer
Coordinator, Appalachian Mountains Joint Venture



Field technicians in North Carolina that collected data for the regional CEAP project. Photo: Curtis Smalling



A male Lawrence's Warbler, one of the variations of a Golden-winged/Blue-winged Warbler hybrid. Photo: Curtis Smalling



Virginia USFWS staff starting a controlled burn at Mare Run. Photo: Chuck Almarez

Regional Accomplishments

Monitoring and Evaluating Golden-winged Warbler Use of Breeding Habitat in the Southern and Central Appalachians.

By Jeff Larkin, Indiana University of Pennsylvania

Indiana University of Pennsylvania-Research Institute (IUP-RI) and its partners successfully completed the second year of monitoring Golden-winged Warbler demographics across sites in the Southern and Central Appalachian states. Using funding awarded to IUP-RI in 2012 through the NRCS Conservation Effects Assessment Program (CEAP), Researchers from IUP-RI, West Virginia University, University of Tennessee, Appalachian State University, and North Carolina Audubon are monitoring and evaluating Golden-winged Warbler response to habitat management implemented using conservation practices suggested by the Natural Resource Conservation Service's (NRCS) *Working Lands For Wildlife (WLFW): Golden-winged Warbler Habitat Initiative*. To date, 68 sites were monitored across Pennsylvania, West Virginia, Tennessee, and North Carolina. Territory density, nest success, and habitat selected by Golden-winged Warblers at study areas were examined and placed into four NRCS conservation practice groupings: brush management, prescribed fire, prescribed grazing with brush management, and timber harvest. During the first two years of this effort, we conducted 528 point count surveys, banded 419 individual Golden-winged Warblers, delineated 444 territories, and monitored nesting success of 207 Golden-winged, Blue-winged (*Vermivora cyanoptera*), and hybrid Warbler nests. Work will continue in future years and WLFW-wide monitoring efforts will begin in 2015. Ultimately, data will be used to evaluate and modify guidelines to ensure that NRCS-WLFW program results in high quality Golden-winged Warbler breeding habitat on private lands.

Burning for Biodiversity in the Central Appalachians Fire Learning Network

By Marek Smith, The Nature Conservancy

Efforts by partners within the Central Appalachians Fire Learning Network (FLN) are restoring the historic role of fire to oak- and pine-dominated ecosystems throughout the region. Activities are benefiting a diversity of avian species dependent on forest structural and compositional heterogeneity. In the Allegheny and Potomac Highlands of Virginia and West Virginia, FLN partners completed burns on over 13,700 acres of federal, state and private lands. Partners, including The Nature Conservancy (TNC), USDA Forest Service, Virginia Department of Conservation and Recreation (VA DCR), Virginia



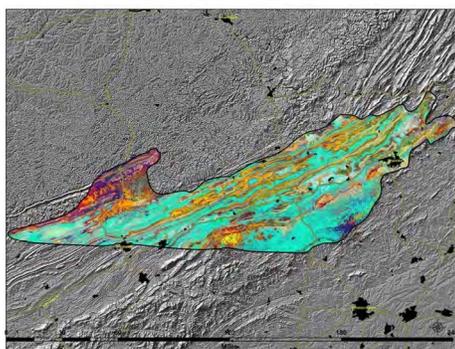
The Central Appalachians Fire Learning Network. Map © 2012 Liz Rank/TNC



Roanoke, VA, was the site of the 2013 Wildland Fire in the Appalachians Conference.



Ecological Zones on the
Jefferson National Forest Study Area:
First Approximation
Simon, Steven A.
Ecological Modeling and Fire Ecology, Inc., Asheville, North Carolina



A 1st approximation of Ecological Zones centered on the Jefferson National Forest, Great Valley of Virginia, the Northern Ridge and Valley, and Central Blue Ridge Mountains was developed from 4,900 field reference sites, 34 computer-generated environmental variables, and analysis and adjustment of ecotone boundaries using local environmental relationships between types. Oak-dominated Ecological Zones, about equally distributed on carbonate- and non-carbonate-bearing rock, (mapped bluish green, orange, and dark gray respectively) accounted for about 68% of the nearly 6 million acre landscape, Cove Ecological Zones 19% (red & dark blue), and Pine-Oak Ecological Zones 5% (green). The remaining 8% of the landscape included Alluvial Forest, Floodplain, Barrens, Glades, Northern Hardwood, and Spruce-Fir.

Ecological zone maps were completed for SW VA thanks to funding from the FLN. Ecological zones are extremely valuable for determining restoration needs throughout the Southern Appalachians

Regional Accomplishments (continued)

Department of Game and Inland Fisheries (VA DGIF), Pennsylvania Game Commission, and others, also treated 832 acres of non-native invasive species in Highland Wildlife Management Area (VA DGIF), Cowbane Prairie Natural Area Preserve (VA DCR), South River Preserve (TNC), and the George Washington National Forest. Many of these acres were treated in burn units or special biological areas where fire-adapted species are present.

FLN partners in Pennsylvania completed burns on over 4,000 acres and signed new memorandums of understanding with Bethlehem Authority, Pennsylvania Power and Light, and Pennsylvania State University to facilitate future work on these new partner lands. They also contracted with Arcadia University to initiate fire effects monitoring for their landscapes. FLN partners in Virginia revised their Forest Structure and Composition monitoring protocol and data forms. They also made significant progress on entering a backlog of previously collected data, with 55% of pre- and/or post-burn visits to the 333 total macroplots monitored by TNC and the George Washington and Jefferson National Forests now entered into a shared, integrated database.

Overall, this year saw increased communication and coordination on burns and monitoring visits, with several burns having five or more agencies and organizations participating and partners travelling outside of their typical areas of responsibility to assist others across the region. One avenue that led to increased communication and coordination was the Wildland Fire in the Appalachians Conference sponsored by the Association for Fire Ecology and the Consortium of Appalachian Fire Managers and Scientists in Roanoke, Virginia last October. Over 150 people throughout the Appalachians region attended, took part in over 30 sessions, and participated in an outstanding field trip to the Fenwick Mines and Mill Creek areas of the Jefferson National Forest. Excellent attendance at the joint reception for the Central Appalachians and Southern Blue Ridge FLNs on the second night of the conference provided informal opportunities for partners to catch up with friends, network, and share good stories. Oral presentations and posters are being compiled by the USDA Forest Service Southern Research Station for conference proceedings.

Also in 2013, Steve Simon of Ecological Modeling and Fire Ecology Inc. completed mapping of ecological zones for 5.6 million acres in southwestern Virginia. Funded by the FLN, this project includes mapping of potential natural vegetation on the Jefferson National

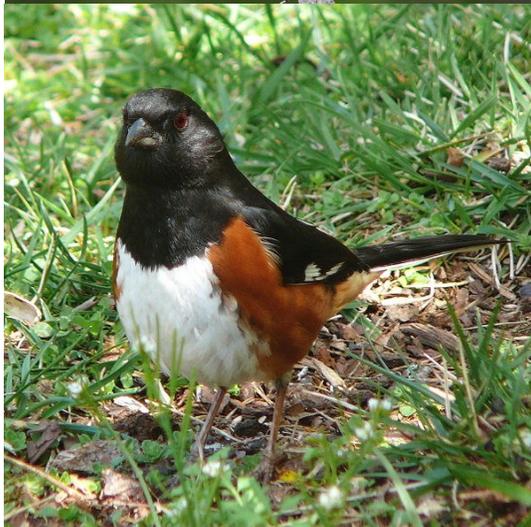


Laurel Schablein with The Nature Conservancy conducting avian point counts at one of the burn sites in the Warm Springs Mountain Restoration Project. Photo: Marek Smith

Regional Accomplishments (continued)

Forest and adjacent conservation lands. When combined with the first approximation mapping of ecological zones on the George Washington National Forest, it completes work of over 10 million acres in the Ridge and Valley and Blue Ridge provinces of western Virginia and eastern West Virginia. Maps have already helped determine current conditions in the George Washington National Forest revised management plan, stratify fire effects monitoring plots by ecological system types, prioritize burn units by their ecological benefits, and conduct an ecological departure analysis for the Lower Cowpasture Restoration Project. Ecological zones are extremely valuable for determining restoration needs throughout the Southern Appalachians, where over 6 million acres are mapped.

Finally, staff completed a third year of avian monitoring within the 18,000-acre Warm Springs Mountain Restoration Project, a collaborative initiative spanning lands owned by TNC and the George Washington and Jefferson National Forest. This restoration project was the first large-scale, adaptive management project designed by FLN partners to begin restoration of the historical fire regime through controlled burns and to monitor the landscape-scale responses of associated bird and plant communities. Since 2008, FLN partners have conducted controlled burns on four units totaling nearly 6,000 acres within the project area; partners burned an additional 880 acres by managed wildfire. Using standard point count methodologies and a time of detection protocol, TNC staff and volunteers counted a higher number of individuals than in previous years, with nearly 950 individuals detected this spring. Since initiated in 2011, total counts averaged 870 individual birds and 50 species. Species diversity increased across the landscape from 2011 to 2013 and was higher on burned plots. Preliminary abundance estimates for several focal species fluctuate by species and across years. However, on plots burned during the past five years, preliminary increases in abundance of Ovenbird, American Redstart, Eastern Towhee and Pine Warbler are evident. Relationships between vegetative changes in the landscape and avian community response are being explored in subsequent analyses.



American Redstarts (top) and Eastern Towhees (above) are both increasing in abundance on burned areas on Warm Springs Mountain. Photos: Bill Hubick (American Redstart) and Ken Thomas (Eastern Towhee)

For more information, please see the following websites:
Avian Monitoring Update 2013

<https://www.conservationgateway.org/ConservationPractices/FireLandscapes/FireLearningNetwork/NetworkProducts/Pages/Avian-Monitoring-Allegheny-Highlands---2013-Report.aspx>

Forest Structure and Composition Monitoring Protocol

<http://www.conservationgateway.org/ConservationPractices/>



Standardized protocols for monitoring forest structure and the bird community in response to the prescribed burning in the Allegheny Highlands of VA have been developed by partners in the Allegheny Highlands FLN.

Regional Accomplishments (continued)

[FireLandscapes/FireLearningNetwork/NetworkProducts/Pages/Central-Apps-Forest-Structure-Comp-Monitoring.aspx](http://www.conservationsgateway.org/ConservationPractices/FireLandscapes/FireLearningNetwork/NetworkProducts/Pages/Central-Apps-Forest-Structure-Comp-Monitoring.aspx)

Ecological Zones

<http://www.conservationsgateway.org/ConservationPractices/FireLandscapes/FireLearningNetwork/NetworkProducts/Pages/Simon-MappingEcoZones.aspx>

Georgia

Golden-winged Warbler Habitat Enhancements Continue on the Chattahoochee-Oconee National Forest

By Jim Wentworth, USFS



Forest management for Golden-Winged Warblers on Brawley Mountain in GA. Photo: Jim Wentworth

In 2013, significant progress was made in the continued implementation of habitat management that is enhancing conditions for the Golden-winged Warbler on the Blue Ridge Ranger District of the Chattahoochee-Oconee National Forest. Located on Brawley Mountain in Fannin County, the project is the site of Georgia's only remaining Golden-winged Warbler population. The project is being executed under a Stewardship Agreement with the National Wild Turkey Federation and has led to approximately 235 acres of timber harvest, 150 acres of midstory chainsaw felling, 115 acres of herbicide stump treatment, and 7 acres of native warm season grass planting. Plans are being finalized to prescribe burn a portion of the area this winter. When completed, the project will create approximately 400 acres of open oak woodland conditions favored by this species and other wildlife. Biologists with the US Forest Service and Georgia Wildlife Resources' Nongame Conservation Section developed the Brawley Mountain Project. Significant support has been provided by the National Audubon Society's Georgia Important Bird Areas program.



Golden-winged Warbler. Photo: Bill Hubick

New Jersey

Promoting the Creation of Young Forest Habitat on Public and Private Lands

By Sharon Petzinger, NJ Fish and Wildlife

The NJ Division of Fish and Wildlife (NJDFW) prioritized parcels of land suitable for Golden-winged Warbler habitat in northern NJ to identify the highest priority landowners to solicit enrollment in the Working Lands for Wildlife (WLFW) program and determine areas on public lands that have not been surveyed but have a high probability of being occupied by breeding Warblers. The National Wild Turkey



NJDFW is helping landowners enroll in WLFW to manage for Golden-winged Warbler habitat. Photo: Al Bourgeois

New Jersey (continued)

Federation and Natural Resources Conservation Service helped rank and solicit private landowners to enroll in WLFW. Eleven landowners applied for the program in 2013 and ten went to contract. In addition, two applicants that did not go to contract in 2012 were contracted in 2013, resulting in about 120 acres of land approved for management for golden-winged warblers over the next 10 years. This brings the total amount of WLFW managed lands for Golden-winged Warblers to over 200 acres.

Meanwhile, NJDFW biologist Sharon Petzinger gave a series of presentations to various stakeholder groups promoting young forest management for Golden-winged Warblers in an attempt to gain support for a number of proposed forest stewardship plans on state lands that target Warblers as an umbrella species. Sharon also facilitated a small working group comprised of state biologists, foresters, and private ecologists/conservationists to discuss concerns about conducting forestry practices on state lands. The group provided recommendations to address these concerns moving forward with forest stewardship plans. NJDFW and NJ Division of Parks and Forestry (NJDPF) reached consensus on a compromise and a new process was proposed outlining the planning procedures in the creation of forest stewardship plans on any NJDFW or NJDPF land.



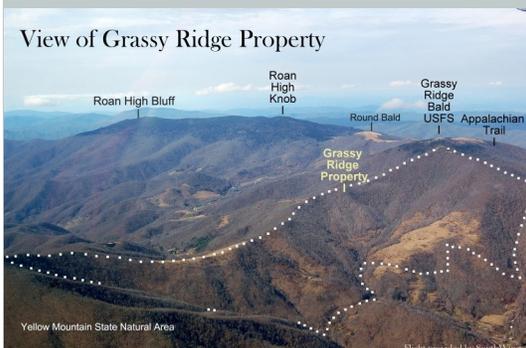
**Sparta Mountain WMA
GWWA Habitat Improvement Project Location**
0 0.030.06 0.12 0.18 0.24 Miles

North Carolina

Southern Appalachian Highlands Conservancy Protects and Improves 1,000 Acres in the Highlands of Roan

By Chris Coxen, Southern Appalachian Highlands Conservancy

Last winter, with financial assistance from a Neotropical Migratory Bird Conservation Act grant award from the U.S. Fish and Wildlife Service, SAHC protected the 600-acre Grassy Ridge tract within the Highlands of Roan, providing critical connectivity between U.S. Forest Service land and North Carolina Yellow Mountain State Natural Area lands and permanently protecting several important habitat types. The site features high elevation heath and grassy balds, northern hardwood and high elevation red oak forests, and substantial old-field successional habitat that currently supports breeding Golden-winged Warblers and American Woodcock. A second property, the 357-acre Yellow Mountain Gateway tract, featuring rich cove, high elevation red oak, northern hardwood forests and riparian habitat along its streams, also was protected on the Roan. A formal bird survey has not yet been completed on this property, but we expect it to support Wood Thrush.



View of Grassy Ridge Property
Location of the Grassy Ridge Property acquired this year by SAHC. Photo: Hanni Muerdter



Male Golden-winged Warbler detected in habitat improvement areas on Little Hump Mountain . Photo: Chris Coxen



View of Bradley Gap from Hump Mountain. Photo: Nora Schubert



Vesper Sparrows and other species that use high elevation early successional and open grassland habitat should benefit from the work at Bradley Gap and Hump Mountain.

North Carolina (continued)

Finally, SAHC wrapped up its National Forest Foundation (NFF) Roan Massif Community Wildlife Habitat Improvement Project. Through NFF and Appalachian Trail Conservancy support, SAHC restored or maintained over 35 acres of high elevation grassy bald habitat on Round Bald, Jane Bald, and Grassy Ridge and created seven acres of Golden-winged Warbler habitat on Little Hump Mountain. This project continued our Golden-winged Warbler restoration activities on Little Hump, which began in 2011. In 2013, two singing males were found utilizing habitat first created in the fall of 2011.

Appalachian Trail Conservancy-North Carolina integrates Golden-winged Warbler Habitat Management with High Elevation Grassy Bald Community Restoration Project

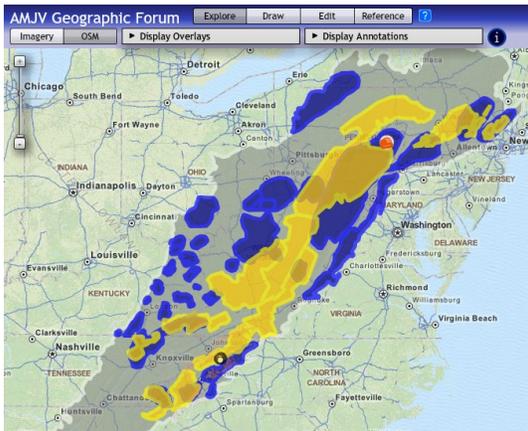
By Nora Schubert, Wildlife Biologist Consultant

During 2013, the Appalachian Trail Conservancy-North Carolina funded a project designed to enhance and expand early successional/ grass bald habitat on high elevation bald margins located at an elevation from 4800 to 5600 feet. The project site is located along the *Appalachian Trail* corridor, which spans the NC/TN state line on the Roan Mountain Massif, and is a component of a multi-partner endeavor to restore and maintain the globally endangered grassy bald community while enhancing Golden-winged Warbler habitat in the Southern Appalachian Mountains. Ecotones are being created to promote a gradual vegetation transition on grassy bald margins. A total of 52 acres were treated (approximately 21.5 acres hand mowed, 15.5 acres treated with chainsaws, and 15 acres brush-hogged) on U.S. Forest Service lands at Hump Mountain and Bradley Gap. Of the 52 acres, at least 37 acres of habitat modifications were implemented using the *Golden-winged Warbler Best Management Practices* to directly create and enhance habitat for breeding Golden-winged Warblers. In addition, habitat modifications are expected to benefit Ruffed Grouse, American Woodcock, Vesper Sparrow, and other bird species that use high elevation early successional and open grassland habitats in the Southern Appalachian Region.

Collecting Vital Population Information on Golden-winged and Cerulean Warblers North Carolina

By Chris Kelly, North Carolina Wildlife Resources Commission

A coordinated effort among Working Groups and partners led to a successful season of surveying populations and collecting vital data on the abundance of Golden-winged and Cerulean Warblers in the North Carolina region of the AMJV. The Southern Appalachian Golden-winged Warbler Working Group surveyed 54 sites and observed 29



NCWRC staff helped test the newly released AMJV Mapping Forum Tool for survey activities



NCWRC staff have initiated surveys for Cerulean Warblers in western NC. Photo: Bill Hubick



Audubon NC's Private Lands Biologist Aimee Tomcho
Photo: Curtis Smalling

North Carolina (continued)

Golden-winged Warblers, including one male in Macon County that sang a Northern Parula Warbler song; a phenomenon also reported by an independent contractor working in the Roan Highlands. Golden-winged Warbler surveys and monitoring efforts included official Golden-Winged Warbler Atlas Project points, timber harvest units on the Nantahala National Forest Game Lands, and old field habitat throughout western NC, with a blitz at Roan Mountain. In planning this year's efforts at Roan, North Carolina Wildlife Resources Commission (NCWRC) staff helped test the newly released Mapping Forum Tool developed by the Appalachian Mountains Joint Venture for such activities.

Meanwhile, a monitoring program initiated last year for western North Carolina's core Cerulean Warbler populations focused on the Graham County population this year. This is part of an effort by NCWRC to enroll core Cerulean Warbler populations into a monitoring cycle. Staff scouted and surveyed points established and visited in recent years by a U.S. Forest Service contractor in the vicinity of Stecoah Gap, Wildcat Knob, Cable Gap, and Joyce Kilmer. Lacking a standardized survey protocol, staff developed a protocol and accompanying datasheet using time bands, passive listening, and audio-lures was developed. These efforts documented 10 Cerulean Warblers across 36 survey points, suggesting stability in all locations with the surprising exception of forests south of Joyce Kilmer where they were not detected during a single survey session. Cerulean Warbler and Golden-winged Warbler overlapped in shelterwood units at two survey points.

Audubon North Carolina Local and International Achievements for Bird Conservation

By Curtis Smalling, Audubon North Carolina

Enrolling Landowners and Acres in Working Lands for Wildlife

Working with Natural Resources Conservation Service through a National Fish and Wildlife Foundation Conservation Partners grant, Audubon is working to increase enrollment of private landowners into Working Lands for Wildlife program.

Earlier in the year, we began identifying landowners who might be eligible to enroll in the program. For the initial sign up in late winter and spring of 2013, seven projects totaling 145 acres were enrolled. A conservation biologist was then hired who began to identify new landowners and to complete a GIS based analysis of properties that would score high in the ranking and scoring matrix. This biologist also spent some time in the field with our research crew to learn as much



Golden-winged Warbler nest with chicks.



Female Golden-winged Warbler on a nest. Photo: Ed Burress



PIF 5 Breakout Session. Audubon supported international attendance for this meeting Photo: Becky Keller

North Carolina (continued)

as possible about the bird, its habitat preferences, and biology. During the summer, the biologist procured recent parcel data from each county, conducted the GIS based analysis, and prepared a letter that went out to landowners in ten counties who met the criteria. We also prepared press announcements in those markets prior to the mailings to prep landowners that the mailing was coming and to educate the broader public about early successional and Golden-winged Warblers. Overall, 1500 landowners representing some 65,000 acres of potential habitat received mailings. Of these, 105 landowners responded, which is a 7% return rate and similar to other efforts in other WLFW programs (PA, TN). Site visits are underway to these respondents and staff are helping write management recommendations and doing property evaluations to expedite entry into the program. Audubon is working closely with state NRCS staff to complete the process and work flow for property owners. Our site visits are often conducted in tandem with NRCS staff but we are also making first contact with a number of land owners to explain the program, stream line the process of enrollment, and gauge their interest prior to engaging NRCS staff. We are also working closely with NRCS and other partners to host workshops for NRCS District Conservationists, county foresters, and agricultural extension specialists, as well as to conduct follow up mailings to increase our numbers.

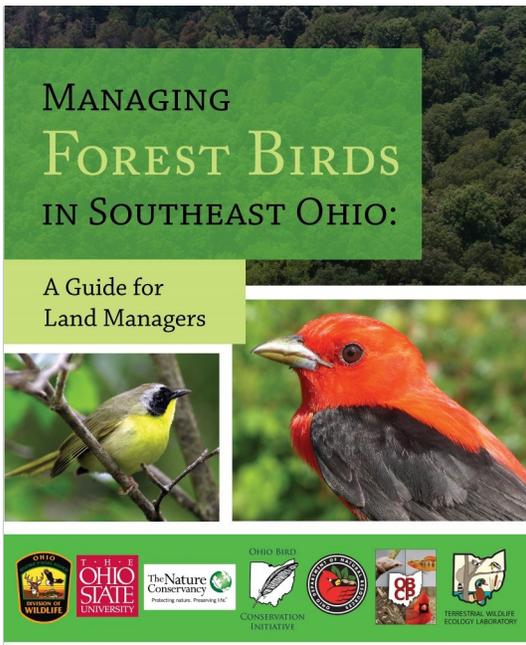
Golden-winged Warbler Outreach

Audubon NC, PA, and MI received funding through the National Fish and Wildlife Foundation Keystone Program to conduct Golden-winged Warbler outreach work in 2012. Since then, this grant has let us:

- Conduct five outreach meetings directly with landowners
- Work with four land trusts to identify potential landowners
- Coordinate with a variety of public agencies (national forest, state parks, state gamelands) on management planning for Golden-winged Warblers on parcels where birds occur or have occurred. This represents about 700 acres of projects that will be actively managed in 2014.

Providing International Support for Bird Conservation

Working with partners in Nicaragua, Audubon supported international attendance at the Partners in Flight V meeting in Snowbird, Utah and remains involved in the post conference planning process. Audubon is also continuing to support winter MoSI (Monitoreo de Sobrevivencia Invernal) efforts and other research in Nicaragua including sponsoring an Appalachian State University student to conduct surveys of areas undergoing reforestation in the country.



Ohio

Advancing Best Management Practices for Ohio’s Forests and Birds

By Amanda Duren, Ohio Bird Conservation Initiative

The Ohio Bird Conservation Initiative and its partners released a guide to assist land managers in making forest management decisions to benefit bird populations. "Managing Forest Birds in Southeast Ohio: A Guide for Land Managers", written by Amanda Rodewald, provides recommendations for land managers in how to improve habitat conditions for forest birds. Management recommendations in the guide are based on nearly a decade of research in the forests of Southeastern Ohio. Other project partners include the Ohio Division of Wildlife, Ohio State University (School of Environment and Natural Resources, and Terrestrial Wildlife Ecology Lab), The Nature Conservancy in Ohio, OSU Extension, and the Ohio Biodiversity Conservation Partnership. Training sessions for professional foresters and land managers based on the guide are planned for June 2014.

"Managing Forest Birds in Southeast Ohio" provides recommendations to land managers for improving forest bird habitat.

"Managing forest birds in Southeast Ohio: A Guide for Land Managers" is available at: www.obcinet.org/healthy-forest-management/

Pennsylvania

Partnership Continues Successful Implementation of Golden-winged Warbler Habitat on Public and Private Lands.

By Jeff Larkin (Indiana University of Pennsylvania), Ben Jones (PA Game Commission), Mike Pruss (PA Game Commission), Barry Isaacs (Natural Resource Conservation Service), Dan Brauning (PA Game Commission), Andy Duncan (DCNR-Bureau of Forestry), and Andrew Rothman (American Bird Conservancy)

The Pennsylvania Young Forest Council’s Golden-winged Warbler Habitat Initiative continued its exciting and productive efforts to create quality young forest habitat for breeding Golden-winged Warblers and associated wildlife throughout Pennsylvania. It was going to be tough to top our successes in 2012, a year in which we surpassed our annual breeding habitat goals for Pennsylvania by preparing or implementing greater than 15,000 acres of Golden-winged Warbler habitat across public and private lands. Nonetheless, we were committed to continued success by expanding landowner outreach efforts and building upon the many valuable lessons learned in previous years.



Emily Bellush, private lands GWWA –WLFW coordinator in PA, meeting with an interested landowner. Photo: Judy Bellush

Collectively, our partnership reached out to over 4,300 private forest owners in 2013. Ultimately, this outreach and our increased on-the-ground capacity resulted in 4,053 acres of Golden-winged Warbler



Brush management to improve Golden-winged Warbler habitat. Photo: Jeff Larkin



Golden-winged Warbler nest with eggs. Photo: Ed Burress



PA GWWA Initiative foresters standing in the first project in the “Golden-winged Warbler Cooperative Management Area” in northeastern PA. Photo: Jeff Larkin

Pennsylvania (continued)

breeding habitat enrolled in the NRCS-Working Lands For Wildlife (WLFW) program, more than twice the acreage we enrolled in 2012! Moreover, our strong partnership allowed Pennsylvania to account for more than 81% of all Golden-winged Warbler breeding habitat acres enrolled across the nine Appalachian states eligible to participate in the program. In the first two years of NRCS-WLFW, we enrolled a total of 5,705 acres belonging to 122 private landowners.

Implementation success also continued on public lands. While we recognize the important role of private lands in the conservation of the Golden-winged Warbler and other young forest-dwelling species, we also are aware of the exceptional opportunities for management on expansive areas of public land that exist within Pennsylvania’s Golden-winged Warbler Focal Areas. An Indiana University of Pennsylvania-Research Institute (IUP-Ri) public lands Golden-winged Warbler forester prepared 602 acres of potential habitat across two State Game Lands (SGLs). Additionally, Pennsylvania Game Commission created 1,780 acres of potential Golden-winged Warbler breeding habitat across 16 SGL and the Department of Conservation and Natural Resources Bureau of Forestry created 5,617 acres of potential habitat across 12 forest districts. Collectively, these efforts resulted in the creation of approximately 8000 acres of GWWA breeding habitat on Pennsylvania public lands this year.

Central to our partnership’s ability to implement Golden-winged Warbler habitat guidelines on public and private forests is a core group of staff at IUP-RI that solely focus on Golden-winged Warbler habitat conservation and are funded through external awards from National Fish and Wildlife Foundation, U.S. Fish and Wildlife Service-State Wildlife Grants, USDA-Natural Resource Conservation Service (NRCS), and American Bird Conservancy (ABC). These grant funds are only made possible with matching contributions from several outstanding partners. Grant-funded staff includes two full-time private lands foresters, one full-time private lands conservation planner, and one full-time public lands forester. These positions are housed in partner offices (NRCS, PA Game Commission, and USFWS) in areas with a demonstrated need for increased on-the-ground capacity.

This year we also welcomed two new member organizations to our partnership when the National Wild Turkey Federation and Pheasants Forever committed field staff to assist with private lands Golden-winged Warbler conservation planning and implementation. The significant contribution by these two partner organizations, traditionally not associated with songbirds, provides evidence of the well-known recognition that high quality Golden-winged Warbler



Wildlife Management Institute

Twelve organizations have partnered on the PA GWWA Initiative. In recognition of their success, the partnership received a Joint Venture Conservation Champion Award for a Regional Partnership.



Sign for El Jaguar Reserve in Nicaragua. Photo: Doug Gross



Liliana Chavaria banding a Wood Thrush at El Jaguar Reserve in Nicaragua. Photo: Doug Gross

Pennsylvania (continued)

breeding habitat also provides valuable habitat for many other game and non-game species.

Since the start of the Pennsylvania Golden-winged Warbler Habitat Initiative in 2011, our partnership's effort resulted in over 39,000 acres of potential Golden-winged warbler breeding habitat on private (7,645 acres) and public (32,000 acres) lands. These results indicate we are making significant progress toward increasing the availability of breeding habitat necessary to reverse the decline of Golden-winged Warblers in Pennsylvania. Our multi-agency team continues to be the key to our success. These partners include the Pennsylvania Game Commission (PGC); USDA-Natural Resource Conservation Service; Pennsylvania Department of Conservation and Natural Resources-Bureau of Forestry (DCNR-BOF); USFWS-Partners for Fish and Wildlife Program; American Bird Conservancy (ABC); National Fish and Wildlife Foundation (NFWF); Pheasants Forever (PF); National Wild Turkey Federation (NWTF); Wildlife Management Institute (WMI); Western Pennsylvania Conservancy (WPC); The Nature Conservancy (TNC); and Indiana University of Pennsylvania-Research Institute (IUP-RI).

Pennsylvania Game Commission Supports Winter Habitat Management for High Priority species in Nicaragua

By Doug Gross, Pennsylvania Game Commission

As part of its full life-cycle approach to Golden-winged Warbler and Wood Thrush conservation, the Pennsylvania Game Commission is supporting habitat restoration efforts around the El Jaguar Reserve in northern Nicaragua and in the proposed El Jaguar – Volcán de Yalí Corridor. The region supports an excellent Golden-winged Warbler wintering population as well as Wood Thrushes, Louisiana Waterthrushes, Golden-cheeked Warblers, and other high priority neotropical migrants. More than 25 neotropical migrants winter in the area. Tangible links in Wood Thrush connectivity have been established between northern Nicaragua and Pennsylvania by the work of the Stutchbury Lab, and are likely - but have yet to be established - for Golden-winged Warblers.

Funds helped to create four native tree nurseries in three communities at El Jaguar. Over 16,000 seedlings have been grown at these nurseries, with the majority of trees planted on over 14 properties in the vicinity of El Jaguar. At El Jaguar, nearly 10,000 saplings have been grown and planted. In addition to establishing native woody plant nurseries, El Jaguar Reserva is conducting sustainable agriculture workshops and promoting shade-grown coffee, reforesting waterways



Native tree nursery at El Jaguar Reserve, Nicaragua.

Photo: Doug Gross



View from Pulpit Rock along the Kittatinny Ridge. Photo:

Brian Byrnes



Black-and-white Warblers were very abundant in the Kittatinny Ridge surveys. Photo: W.H. Majoros

Pennsylvania (continued)

and along fence lines, and protecting remaining forest fragments. The PGC support for these activities in the Jinotega province of Nicaragua is through the Association of Fish and Wildlife Agencies Southern Wings project and the American Bird Conservancy, and compliments the work of other partners in the Nicaraguan highlands such as North Carolina Audubon Society.

New Off-Road Bird Survey Reveals Importance of Kittatinny Ridge to Priority Bird Species

By Andy Wilson and Julie Blum, Gettysburg College

The Kittatinny Ridge is a largely forested ridge that extends for 185 miles through southeastern Pennsylvania, extending from the Delaware Gap to the Mason-Dixon Line. It is notoriously one of the primary hawk migration routes in eastern North America and is designated an Important Bird Area (IBA). The Ridge also constitutes the largest block of contiguous forest in southern Pennsylvania and potentially very important for several forest species including high priority species such as Cerulean Warbler. However, since there are few off-road bird population surveys, the size of forest bird populations in this and other large forest blocks are poorly known. The recently conducted Second Pennsylvania Atlas of Breeding Birds (PBBA), 2004-2009, provided population estimates from point counts, but forest interior habitats were probably under-sampled because the points were conducted only along roads.

This study supplements the 2nd PBBA data with off-road point count data. Population estimates produced by this effort will assist in possible Global IBA nomination for the Cerulean Warbler, and will provide a baseline for future comparisons. Each point was referenced and metrics were collected for land cover type, landform, elevation, and distance to road. Points were conducted on 25 hiking routes, with each route comprising between 12 and 37 points along trails such as the Appalachian Trail and the Tuscarora Trail.

The results of this study were quite impressive. A total of 590 points were surveyed with 88 species and a total of 7,369 individual birds detected in all. The 20 most frequently detected species accounted for 81% of detections, with Red-eyed Vireo, Ovenbird, and Scarlet Tanager as the most numerous species. Red-eyed Vireos and Ovenbirds were particularly common, being detected at 96% and 81% of points respectively. Among the forest interior songbirds that were of prime interest, Black-and-white Warbler (189) and Hooded Warbler (166) were surprisingly abundant. Other notable totals of forest songbirds include 79 Worm-eating Warblers 57 Yellow-

Pennsylvania (continued)

throated Vireos, 54 Cerulean Warblers, 27 Black-throated Green Warblers, and 24 Louisiana Waterthrushes. Estimates were made of Cerulean Warbler densities in the 16 sections designated in the IBA. These estimates are only possible with large sample sizes (greater than 100 bird detections).

A comparison of singing males detected per point in the 2013 study with 2nd PBBA shows that the forest interior hiking trails allowed for much higher detection of forest interior songbirds, including Cerulean Warbler. The Cerulean Warblers were detected in distinct clusters with populations estimated to exceed 100 singing males in 5 of the 16 sections with a total estimate of 1,411 singing males, suggesting that this forested area deserves consideration as a Global IBA because of its importance to Cerulean Warbler. Results from this study are still being analyzed, but they certainly reveal that off-road point counts give much higher population estimates of forest interior songbirds than road-side counts of the same methodology.

Boreal Mountain Forest Bird Project Guides Protections for Rare Species that Occupy Unique Habitat

By Doug Gross, PA Game Commission

For several years, the Pennsylvania Game Commission has investigated the boreal mountain forest birds of the state. Information gathered from such studies is informing management on state game lands and state forests. Furthermore, guidance documents for environmental review were finalized in 2013 for both Yellow-bellied Flycatcher and Blackpoll Warbler, both state endangered species. These documents will guide protections and management of locations that support these and other rare species that occupy this unique habitat.

Boreal conifer forests, mountain habitat islands that can be small and isolated, support breeding populations of several rare species including Northern Waterthrush, Canada Warbler, and White-throated Sparrow, and are currently the southern breeding range extent for Yellow-bellied Flycatcher and Blackpoll Warbler. These forests are part of an extensive forest block known as North Mountain of the Allegheny Plateau, where there are populations of Northern Saw-whet Owls, Swainson's Thrushes, and other species of northern affinities.

The largest population of Yellow-bellied Flycatchers and Blackpoll Warblers are in the Dutch Mountain wetlands of Northeastern Pennsylvania, mostly on a single State Game Lands. These boreal conifer swamps known as Coalbed Swamp, Tamarack Swamp, and others are dominated by red spruce and hemlock with northern



The Kittatiny Ridge is being considered for designation as a Global IBA for Cerulean Warblers. Photo: Bill Hubick



Boreal conifer forests are important for Blackpoll Warblers which are state endangered in Pennsylvania. Photo: W.H. Majoros



Coalbed Swamp is one of several boreal conifer swamps dominated by red spruce, hemlock, and northern hardwoods. Photo: Doug Gross



Yellow-bellied Flycatcher female sitting on a nest. This state-endangered species has persisted in Coalbed Swamp for 20 years. Photo: Doug Gross

Pennsylvania (continued)

hardwoods, extensive shrub and fern cover, pit and mound topography, and dense moss cover as important habitat components. The state's Yellow-bellied Flycatcher population has been studied since 1985 and Blackpoll Warbler nesting population was discovered in 2004. In 2013, surveys found at least nine Yellow-bellied Flycatcher territories, seven of which were in Coalbed Swamp. At least four Blackpoll Warbler territories were found including a new population in Boulder Run Swamp. Nesting was confirmed for both species. Yellow-bellied Flycatchers have persisted in Coalbed Swamp for 20 years since their discovery there in 1994. Other Flycatcher populations in nearby wetlands have been intermittent but persistent since the mid-1990's. One of the surprising characteristics of these isolated populations is their persistence suggest good habitat quality.



Yellow-bellied Flycatcher nest in Coalbed Swamp. Photo: Doug Gross

Pennsylvania Golden-winged Warbler Monitoring Informs Management

By Doug Gross, PA Game Commission

Partners: Cornell Laboratory of Ornithology, USGS Breeding Bird Survey, PA DCNR, IUP, PA Society for Ornithology

The Pennsylvania Game Commission's (PGC) Wildlife Diversity section comprehensive monitoring program is informing the agency and its partners not only of Golden-winged Warbler population status but also potential for implementing best management practices. PGC has been coordinating the Cornell Laboratory of Ornithology (CLO) Golden-winged Warbler monitoring for several years and integrating standard surveys such as Breeding Bird Surveys, Breeding Bird Atlas, CLO Golden-winged Warbler Conservation Initiative Monitoring (CIM), and selective searches in appropriate locations. The team of field observers conducting monitoring activities includes both agency staff and volunteers.



An example of the shrubby cover used by Golden-winged Warblers in Pennsylvania. Photo: Doug Gross

Over the last three years, monitoring that follows up on Important Bird Area and Atlas surveys found Golden-winged Warbler in several game lands, state forests, state parks, and other locations, informing agency management of good habitat (early forest and thicket) in those areas. Golden-winged Warblers also were found in wetlands and scrub barrens that may serve as source populations for young forested areas. Most of these sites were located in the northeastern counties but scrub barrens occur at many locations in the state, especially on ridgetops. Surveys have reaffirmed that rights-of-way have poor Golden-winged Warbler persistence, but some wetlands and wet meadows seem good, especially in the Poconos. Wetland data were shared with the Indiana University of Pennsylvania team for its research and implementation. Management already is being targeted in



Scrub oak barrens were one of the habitats found to be used by Golden-winged Warblers during surveys by PA Game Commission staff. Photo: Doug Gross

Pennsylvania (continued)

game lands, forestlands, and on cooperating private lands due to the results of these surveys. Surveys have informed PGC wildlife habitat management of best potential locations for Golden-winged Warbler management on State Game Lands and that information is being included in those plans.

The CLO CIM sample matrix was adjusted in 2012 to the changing Golden-winged Warbler distribution and expanded in 2013 to 180 points in 36 quadrants. In 2013, there were 24 Golden-winged Warblers detected in these surveys, a decrease from 28 in 2012. There also were fewer Blue-winged Warblers detected in 2013 (22) than in 2012 (29). However, there are clusters of Golden-winged Warblers detected in quadrants where silviculture and controlled burning are being conducted. For the first time, an annual report was compiled for the agency about monitoring activities that includes many details of the locations where these priority birds were surveyed, searched for, and found.



Green Forests Work volunteers preparing a seedling to plant at an old surface mine at Cross Mountain, Tennessee. Photo: Green Forests Work

Tennessee

Green Forests Work and the Appalachian Regional Reforestation Initiative Plant 6500 Trees and Shrubs on a Legacy Surface Mine in Tennessee

By Rebecca Tidwell Dyer, Green Forests Work

Volunteers from the University of Tennessee and the Tennessee Valley Unitarian Universalist Church joined Green Forests Work (GFW) and the Appalachian Regional Reforestation Initiative (ARRI) at Cross Mountain in Tennessee to reforest approximately 10 acres of surface mined lands. These incredibly productive volunteers planted 6500 trees and shrubs, allowing the natural healing process to begin in an area transformed by the ARRI's Forestry Reclamation Approach. The planting prescription was formulated by Dr. David Buehler of the University of Tennessee to benefit Golden-winged Warbler populations. In addition to native hardwood species that are included in all GFW planting events throughout Appalachia, species such as blight-resistant American Chestnut Silky Dogwood, Elderberry, and Indigobush were added to create early successional habitat for this important species.



Volunteers planting trees at an old surface mine at Cross Mountain, Tennessee. Photo: Green Forests Work

Green Forests Work's mission is to reforest former surface mines throughout Appalachia. There are many important ancillary benefits to restoration of these areas, including but not limited to: carbon sequestration and climate change mitigation, improvement of downstream water quality, reduction of flash flooding, creation of



Patrick Angel (Office of Surface Mining, Reclamation, and Enforcement) helping a young volunteer plant trees.
Photo: Green Forests Work

Tennessee (continued)

habitat for wildlife species of concern (such as Cerulean and Golden-winged Warbler), local economic development through the establishment of forests, and creation of an improved resource base for future timber and woody products. For more information and volunteer opportunities, visit www.greenforestswork.org.

Golden-winged Warbler Monitoring Project Continues at Hampton Creek Cove State Natural Area

By Nora Schubert, Wildlife Biologist Consultant

A Golden-winged Warbler monitoring project, funded by the Tennessee Wildlife Resources Agency, has documented population and breeding activities of this priority bird species at Hampton Creek Cove State Natural Area (HCCSNA) for three consecutive years. The objectives of this project are to document arrival phenology, breeding site fidelity, and number and spatial arrangement of all Golden-winged Warbler territories through color banding and territory mapping. Monitoring is also recording nest success, vegetation characteristics of nest sites and territories, level of genetic introgression between Golden-winged Warbler and Blue-winged Warbler and hybrids, and evaluating the avian community associated with Warblers at this particular geographic location by conducting point counts. In the past year, a total of 17 territorial males (16 Golden-wings and 1 Brewster's Warbler) were monitored. Warbler response to 2008-2010 habitat management activities was also assessed. North Carolina Audubon assisted with data collection and data were incorporated into range-wide analyses for the Southern Appalachian Region.

Virginia

Virginia Golden-winged Warbler Group Brings together Diverse Membership to Coordinate Habitat Delivery

By Sergio Harding, VA Dept. of Game and Inland Fisheries

Working under the auspices of the Virginia Bird Conservation Initiative, the VA Golden-winged Warbler Partners Group launched in late 2012 to coordinate efforts under the Working Lands for Wildlife Initiative among a variety of partners. Meetings over the past year advanced understanding of Golden-winged Warbler habitat requirements in Virginia - which is an important link to establish effective on-the-ground management - improved communication and coordination among stakeholders, disseminated information on ongoing research in Virginia, and helped coordinate future Golden-winged Warbler surveys. The group brings together a diverse membership including personnel from the Virginia Department of Game and Inland Fisheries, US



A male Golden-winged Warbler banded at Hampton Creek Cove. Photo: Nora Schubert



Members of the VA Golden-winged Warbler Group discussing Golden-winged Warbler habitat Photo: Al Bourgeois

Virginia (continued)

Forest Service, National Wild Turkey Federation, Natural Resources Conservation Service, Appalachian Mountains Young Forest Initiative, Virginia Commonwealth University, The Nature Conservancy, and the Virginia Society of Ornithology. The partners' activities, as well as information on the ecology and status of Golden-winged Warblers in Virginia, are highlighted on a new website (www.vabci.org/golden-winged-warbler/).

West Virginia

Golden-Winged Warbler Management and Research on the Monongahela National Forest

By Cathy Johnson, U.S. Forest Service, Monongahela National Forest



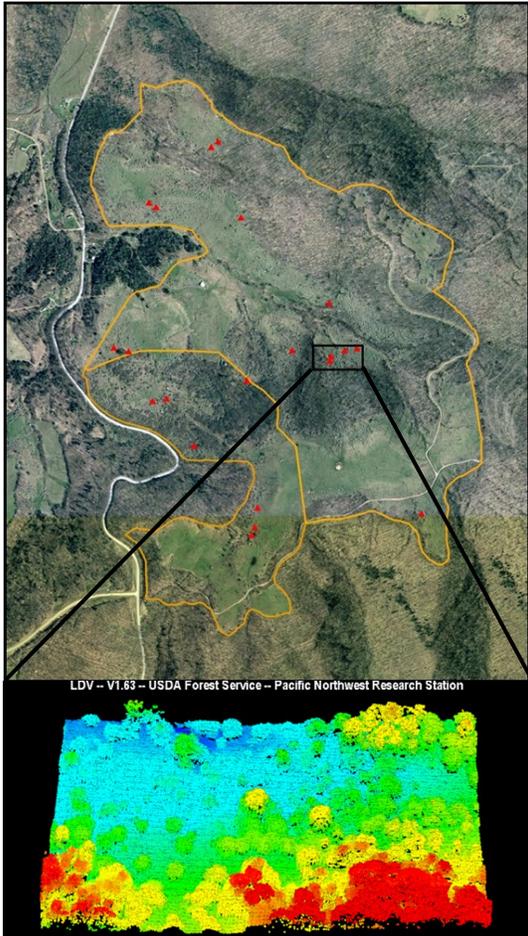
Golden-winged Warbler observed during a site visit in Virginia. Photo: Al Bourgeois

The Monongahela National Forest (MNF), in partnership with West Virginia University (WVU) and the West Virginia Cooperative Fish and Wildlife Research Unit, is actively managing range allotments across the forest to enhance habitats for Golden-winged Warbler and other early successional wildlife species while still meeting the needs of livestock. Management began in 2008 as part of a research project and continues because activities were successful, with hundreds of acres of Golden-winged Warbler-oriented management implemented over the last six years and several unidentified populations discovered across the forest. Staff conducted point count surveys at 157 locations in the area throughout the period, recording over 19,000 individual calls of 122 different species. Golden-winged Warblers occurred at approximately 41% of those points, and WVU researchers located and monitored 102 nests from 2008-2013. Results of this study contributed to development of the Golden-winged Warbler Conservation Plan and regional habitat management plans as well as provided site-specific information for management on the MNF.



Measuring habitat at a prescribed grazing site in West Virginia. Photo Kyle Aldinger

The MNF also acquired LiDAR data for a portion of the Forest to assist in development of habitat models for the species. WVU researchers collected data concurrent with Golden-winged Warbler surveys. The combination of vegetation metrics collected in the ground and vertical structure mapping developed from the LiDAR data will provide a valuable description of vertical habitat to combine with standard horizontal cover type mapping, and will enable us to better understand the structural habitat components that contribute to the use of early successional habitats by Golden-winged Warblers. Resultant mapping and models will assist local analyses and management planning. Results should also contribute to region-wide efforts to better understand the habitat requirements and preferences



West Virginia (continued)

of Golden-winged Warblers and allow for more focused management across the species range.

Conservation Accomplishments of High Elevation Spruce-Northern Hardwood Habitat in West Virginia

By Cathy Johnson, U.S. Forest Service, Monongahela National Forest

The Monongahela National Forest (MNF) and partners are focusing on conservation and restoration of red spruce-northern hardwood forests as part of the Central Appalachian Spruce Restoration Initiative (CASRI). While red spruce was a dominant forest type on the MNF and adjacent lands, logging practices severely impacted the spruce-northern hardwood ecosystem in the late 1800s and early 1900s. Only a small portion of the original acreage still exists. What remains provides critical habitat for many sensitive boreal bird species during both the breeding and non-breeding season, including AMJV priority landbirds such as the Northern Goshawk, Red Crossbill, and Blackburnian Warbler.

In 2013, CASRI partners raised over \$1.2 million for land conservation purchases and restoration projects associated with this boreal ecosystem. Part of CASRI's focus was on a large - greater than 2,000 acres - parcel of land known as the Thunderstruck Tract in Randolph County, WV, which serves to buffer and connect other boreal landscapes in the area and is considered a high priority area for restoration by CASRI. The US Forest Service (USFS) and The Nature Conservancy (TNC) worked together to acquire and protect this land for almost a decade; including the purchase of an additional 300-acre parcel by USFS in 2013. TNC, in partnership with other CASRI members, received a \$250,000 Wildlife Conservation Society grant to restore this landscape in 2012, with the first portion of the restoration project completed in 2013 and 34,000 red spruce trees planted. This represents the largest red spruce planting in the Central Appalachians to date. Another great example of spruce restoration efforts comes from the USFWS Canaan Valley National Wildlife Refuge, where 215 volunteers dedicated over 660 hours of their time to plant 7,800 red spruce seedlings in areas targeted for spruce restoration on the Refuge. As a result of these efforts and other planting projects spearheaded by CASRI, over 71,000 red spruce seedlings and other native plants were planted on 374 acres.

A 550 acre range allotment on the Monongahela NF, WV, actively managed for Golden-winged Warblers. Red points indicate nest site locations; inset shows sample of LiDAR data for study area. Photo: Cathy Johnson



Aerial image of spruce restoration efforts in progress as part of the ecological restoration work on the Mower Tract in WV. Photo: Cathy Johnson

The Monongahela NF also continued long-term spruce restoration work on high elevation reclaimed surface mine land on Cheat Mountain, known as the Mower Tract. USFS staff, CASRI partners, and volunteers worked on a new ecological restoration project within the



Spruce seedlings waiting to be planted.
Photo: USFWS

West Virginia (continued)

Mower Tract thanks to funding from EPA's American Rivers grant program administered by Green Forests Work. The heavily compacted soils were deep-ripped, staff added organic matter and tilled into the existing mine soils, and knocked down thousands of non-native trees to provide woody material spread across most of the area for wildlife habitat, long-term soil improvement, and nutrient-rich microsities for native plant germination. In addition, staff and volunteers planted over 1,300 red spruce and other trees and prepared 105 individual locations to develop as future vernal pools and wetlands across the landscape. The bulk of planting on the site will occur in 2014, with over 25,000 red spruce and thousands of perennials established across the site

West Virginia Breeding Bird Atlas Completes its Fifth Field Season and West Virginia Division of Natural Resources Staff Conduct Surveys for Rare and Secretive Species

By Richard Bailey, West Virginia Division of Natural Resources

During the fifth field season of the six-year Atlas Project, 86 WV Division of Natural Resources (WVDNR) staff and atlas volunteers logged 3,525 field hours and submitted nearly 15,000 observations of 165 species statewide to the Atlas data portal. Abundance sampling took place on 170 quads statewide.

WVDNR staff also located and monitored seven breeding pairs of rare Loggerhead Shrikes in Pocahontas, Greenbrier, and Monroe counties. Staff initiated partnerships with local Natural Resources Conservation Service offices to contact and work with landowners on access and habitat management. Staff reached out to nearby states to develop partnerships leading towards initiating a trapping/banding program and resolve genetics questions.

Other surveying activities focused on the Swainson's Warbler. A two-year survey for this secretive species in the northern Cumberland Plateau counties will identify the extent of their distribution. West Virginia is at the northern extent of their breeding range. Staff surveyed a total of 189 sites, with presence of Swainson's Warblers confirmed at 42. Habitat at sites with detection consisted of mostly-closed canopy with a woody understory, high stem density, and abundant leaf litter. The understory consisted of rhododendron in most but not all cases. Surveys will continue in 2014.



Juvenile Loggerhead Shrike observed in West Virginia
Photo: Rich Bailey



WVDNR are conducting surveys for Swainson's Warblers to determine the extent of their breeding range in WV.



Field border cut at a West Virginia Wildlife Management Area. Photo: Steve Wilson

West Virginia (continued)

WVDNR Uses Field Border Cuts to Create Early Successional Habitat

By Steve Wilson, West Virginia Division of Natural Resources

Approximately 20 acres of field border cuts were conducted on Wildlife Management Areas within the District I region of West Virginia. These border cuts, associated with creating open fields, will provide escape and nesting cover as well as a food source for numerous early-successional species of wildlife. Additionally, plantings of soft mast producing trees in the field border cuts will provide extra food sources. Finally, eight acres of controlled burning and five acres of mechanical mulching accompanied this habitat work.



Our **mission** is to restore and sustain viable populations of native birds and their habitats in the Appalachian Mountains Joint Venture region through effective, collaborative partnerships.

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Blue-headed Vireo nest. Photo: Dave Moore