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THE KITTATINNY COALITION

State of the Kittatinny Report 2013 - 2014

This has been an exciting two years for the Kittatinny Ridge Coalition, with much progress to report on land and habitat protection, research, citizen engagement and education, species conservation, municipal outreach, and a global recognition for the Ridge!

We also have a new logo (upper left) and a variety of communication tools to help educate and connect more people to this beautiful and valuable resource. Much work has also been done on the website which has a fresh, new look and more information than ever before—check it out and keep coming back!

Conserved Land

Audubon and The Nature Conservancy conducted a GIS analysis of privately-owned land along the Ridge to identify landowners who own larger, unprotected properties that are in between state or federally-owned lands. The results of this analysis is feeding into a multiple-land trust effort to reach out to landowners about conservation opportunities for Kittatinny lands.

Parcels within 11 of the 12 Kittatinny counties were analyzed, resulting in 707 priority parcels identified, representing more than 98,000 acres.

In 2014, a collaborative effort was formed by conservancies and land trusts across the Ridge landscape to reach out to landowners with information about land protection options and opportunities. Spearheaded by The Nature Conservancy (TNC), this collaboration was awarded a DCNR grant to begin this critically-important work in 2015. Working with TNC on this exciting project will be: Central Pennsylvania Conservancy, Berks Nature, Wildlands Conservancy, Manada Conservancy, Lebanon Valley Conservancy, and Natural Lands Trust.

Celebrating a Very Important Acquisition Along the Appalachian Trail

State Game Lands 168 was expanded by 354 acres of Kittatinny Ridge lands in southwest Monroe County in 2013 when a 12-year effort to stop a proposed racetrack and acquire the ecologically-sensitive property was finalized.

Much credit is due to local residents who formed the Blue Mountain Preservation Association to focus attention on the threat, with early support for the fight by Lehigh Gap Nature Center and Appalachian Trail Conservancy. After years of legal and regulatory wrangling, a number of Kittatinny Coalition partners and state agencies combined resources to buy the property and transfer it to the PA Game Commission for permanent protection. *This critical acquisition brings the total number of protected Kittatinny Ridge acres (in public or private ownership or protected with a conservation easement) to just over 152,800, or 38.5%.*



Dedication ceremony of the Monroe County property in July 2013. Pictured from left to right: Dave Mitchell, PA Game Commission; Dan Kunkle, Lehigh Gap Nature Center; Karen Lutz, Appalachian Trail Conservancy; Chris Kocher, Wildlands Conservancy; Kathleen Patnode, U.S. Fish & Wildlife Service; Paul Zeph, Audubon PA; Paul Matinho, Alpine Rose Resorts, and daughter Juliet; Jim Kunkle, PA Dept. of Environmental Protection; and Frank O'Donnell, Blue Mountain Preservation Association.

Native Habitat

Habitat Monitoring Program

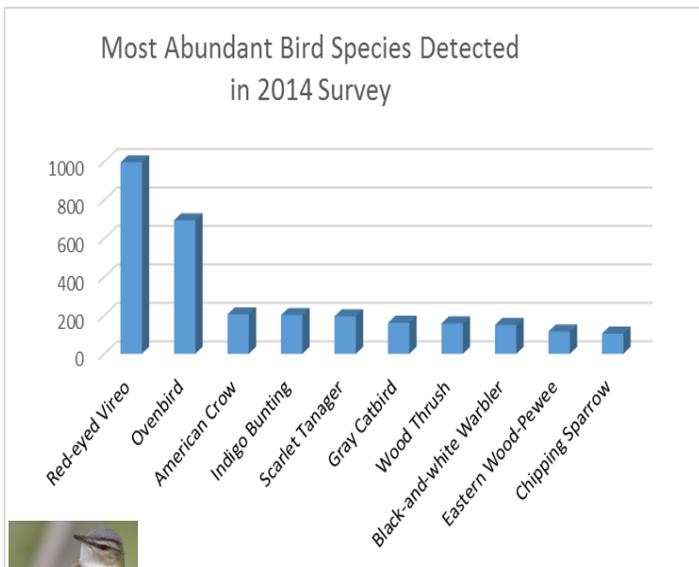
2014 saw the launching of a Kittatinny Ridge monitoring project, under the guidance of Dr. Diane Husic (Moravian College) and Dr. Terry Master (East Stroudsburg University).* The pilot project had four goals:

- 1) To garner information about the ecological value of the ridge to make a strong case to the public about the need for conservation;
- 2) To survey and digitally document the habitat quality of the Ridge;
- 3) To survey key avian species which may serve as indicators for forest habitat integrity; and
- 4) To gather baseline data for climate change impacts on the Ridge.

The survey spanned 6 of the 12 counties of the Ridge, from the easternmost location at Tott's Gap in Monroe and Northampton counties, moving west through Carbon and Lehigh counties, to Hawk Mountain at the westernmost location in Berks and Schuylkill counties. Although the survey targeted primarily birds and trees, other species of plants and animals were noted during the study. Some highlights of results can be found below, along with some recommendations for future ecological monitoring.

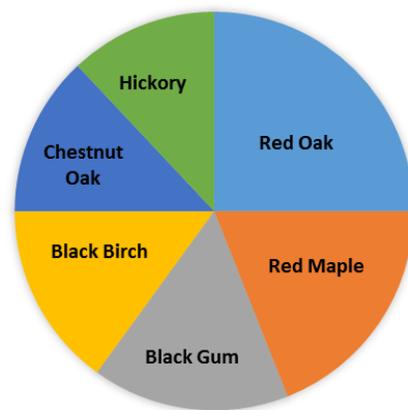
The complete report can be found on the Kittatinny website at www.kittatinnyridge.org/explore/research-education.

* Also assisting with the project were students Corey Husic, Harvard University; Stephen Kloiber, East Stroudsburg University; and Kerry Reider, Moravian College.



The Red-eyed Vireo was heard singing in nearly every survey location and in high densities; but it is difficult to see due to its propensity for seeking insects in the leafy tree-tops.

ECOLOGICAL IMPORTANCE VALUE** OF TOP 6 TREE SPECIES FOUND



** Ecological Importance is defined as: Relative Frequency (percentage of inventory points occupied by a given species) + Relative Density + Relative Dominance (total basal area of each species per unit area; feet² per meter²).

A Few of the Researchers' Recommendations

- Given the many threats currently impacting the ecology of the Ridge (including habitat loss due to development, invasive plants and insects, and climate change), the off-road bird surveys should continue every three-to-five years.
- The vegetative survey was very preliminary, and should be expanded to the entirety of the Ridge to obtain a better picture of the Ridge's habitat quality and what may be changing over time. Surveys should be done at different times of the year to get data on all of the plants.
- More extensive surveys should be done for reptiles and amphibians, as well as for key mammal species of concern.
- Areas of the Ridge that burned in Spring 2015 should be monitored closely to see vegetative response to fire. There is a particular concern across Pennsylvania with invasive plant species taking over disturbed areas in our forests.
- Impact on trees from gypsy moth infestations should be closely watched, as well as effects of hemlock woolly adelgid on the Eastern Hemlocks of the Ridge.

Wildlife Conservation

Wildlife Hotspot: Fort Indiantown Gap

Fort Indiantown Gap Training Center (FIG) is a military facility for training Army and National Guard personnel, located along the Kittatinny Ridge with property in western Lebanon and eastern Dauphin counties. Staff oversee more than 17,000 acres of very diverse habitats at FIG, managing more than 90 species of concern. The unique land management required for the lands actively used for training, coupled with a surrounding forest buffer of mostly undisturbed habitat, results in the FIG property as having one of the highest numbers and concentrations of species of concern along the entire Kittatinny Corridor.



BIRDS: FIG lands are particularly good for birds. Since the second PA Breeding Bird Atlas was published in 2012, several species have been seen in increasing numbers or for the first time on FIG property, exhibiting breeding behavior that puts them in the “probable nesting” category. These include the wetland-dependent species of Least Bittern, Sora, Virginia Rail, and Sedge Wren; and the Golden-winged Warbler (an early-successional forest habitat nester). New birds for which there has been nesting activity include Cliff Swallows, Bald Eagles, and the deciduous forest-nesting Kentucky Warbler.



The Blue Grosbeak, a bird that historically has nested south of Pennsylvania, has also been seen in increasing numbers at FIG during the summer months due to the many acres of shrub and other open habitat found throughout the military post.



Grassland and early-successional specialists, such as Grasshopper Sparrows and Blue-winged Warblers, continue to thrive. Cerulean Warblers are still well spread throughout both ridges on the property (Blue Mountain and Second Mountain).

MAMMALS: Fishers and river otters have been spotted on the installation in the last five years. This is the first they have been recorded there since they



were extirpated from the area nearly a century ago. There are regular observations of Allegheny woodrat, meadow and woodland jumping mice, and bobcat. Bat numbers are overall still looking good, but the species composition has dramatically changed from strongly myotis to overwhelmingly red and big brown bats. The first ever Eastern small-footed bat was netted there in 2014, which has taken advantage of recent open boulders created by range construction. Eastern pipistrelles have been heard recently, and a Northern long-eared bat was captured on an adjacent property.



HERPS: FIG continues to have a high density of turtles and snakes with estimates of more than 1,000 box turtles, 500 wood turtles, and 300 spotted turtles. Rattlesnakes and several other snake species of concern are observed regularly.



FIG supports the largest regal fritillary population east of the Mississippi River. The regal fritillary butterfly, a Pennsylvania state species of concern, exists there due to the installation's grassy ranges—the Army's only live-fire, maneuver training site in the state.



This poses a unique challenge for the installation's natural resources conservation team to protect this beautiful insect while providing the landscape in which National Guard soldiers train for war. The team has actually met this natural resource challenge so successfully that it earned the Army's highest honor for environmental stewardship in 2007, the Secretary of the Army's Environmental Award for Natural Resources Conservation.

In a recent analysis of regal fritillary habitat at FIG, there was approximately 215 acres of fritillary habitat in 2005 and again in 2009. By 2014, however, the habitat area was expanded to more than 285 acres. The population of the fritillary has grown accordingly, with 1,020 individuals estimated for 2005, versus more than 5,400 for 2014!

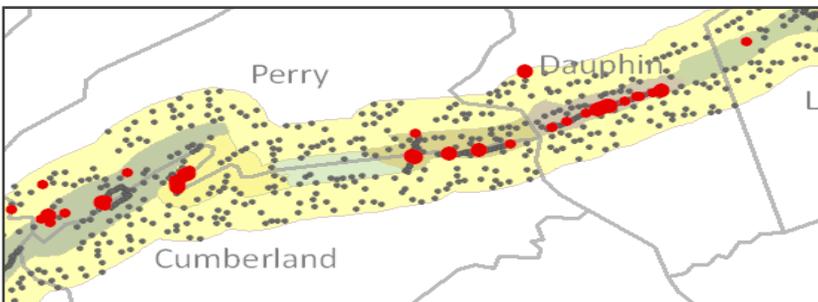
Thank you to David McNaughton, Assistant Wildlife Program Manager at FIG, for providing the information for this report.

The Kittatinny Ridge is now a *Global Important Bird Area*

In the 1980s and again in the 2000s, the PA Breeding Bird Atlas initiative collected data on where birds were breeding throughout the state. These surveys confirmed what birdwatchers have known for a long time — that the Kittatinny Ridge was a valuable place for many species that depend on larger, undisturbed forest areas for nesting success. Combined with the raptor migration data collected at hawk watch sites, the case was made for the Kittatinny Ridge to become one of Audubon PA’s first Important Bird Areas (IBAs).

These initial breeding bird surveys, however, focused on survey routes along roads, which left the more remote areas of the Ridge undocumented. Birds that nest away from roads tend to be undercounted using this methodology, and a concerted effort is needed to walk trails or “bushwhack” through inaccessible areas to completely cover an area like the Ridge during the prime breeding season (late May through early July).

In 2013, Dr. Andrew Wilson led a team into the field to hike trails between roads along the Ridge to fill in gaps of knowledge about the more remote forest-nesting species. The results can be found in the paper: *A Survey of Cerulean Warblers and Other Priority Birds Along the Kittatinny Ridge IBA, Pennsylvania.** One bird of particular interest is the Cerulean Warbler, which is a species on the federal “watch list” due to its steep population declines in recent decades. Dozens of Cerulean Warbler males were found all along the Ridge exhibiting breeding behavior, which qualified the Ridge to be nominated for “Global IBA” status, according to nomination criteria #2 — see box at right for details.



This map shows some of the “hot spots” found for Cerulean Warbler breeding activity along the Kittatinny Ridge. The larger the red spots, the more male Cerulean Warblers were found exhibiting breeding behavior.

In addition to the Cerulean Warbler, the Ridge also provides important migratory habitat for the American Bald Eagle, with more than 500 counted at the Waggoner’s Gap Hawk Watch in the fall of 2014, meeting Global IBA criteria #1. Finally, the Ridge is also a

This chart shows the total 2014 fall count of some of the migrating raptors recorded passing over Waggoner’s Gap Hawk Watch.

Turkey Vulture	Osprey	Bald Eagle	Sharp-shinned Hawk	Cooper’s Hawk	Red-shouldered Hawk	Broad-winged Hawk	Red-tailed Hawk	Golden Eagle	Amer. Kestrel
2018	357	535	9917	531	245	6544	2927	241	320

Criteria for Global IBAs

- 1. Sites containing a significant population of a federally-listed endangered or threatened bird**
These sites are important to ensure adequate breeding, wintering, or migratory habitat for those species most at risk of extinction. In almost all cases, these sites are already given legal protection under the Endangered Species Act because of the presence of listed species.
- 2. Sites containing significant populations of bird species listed on the U.S. Watch List**
The WatchList is a list of bird species of conservation concern prepared by independent scientists as an early warning mechanism for wildlife managers. By providing adequate protection to these species, and the sites and habitats upon which they depend, we can help to avoid the possibility that they will eventually have to be listed as Endangered.
- 3. Sites containing significant populations of bird species with restricted ranges**
These species, though sometimes locally common, are vulnerable because habitat alterations over relatively small areas can quickly have a severe effect on their populations.
- 4. Sites containing large concentrations of migratory birds during some part of the year**
Many species congregate in large flocks during parts of their annual cycle, often during migration. The loss of a crucial staging or flyway area could have a catastrophic impact on populations already stressed by the hardship of migration. Raptors often migrate along unique topography which funnels the birds into narrow corridors where updrafts or thermals can assist their laborious migrations.

significant corridor for migration by many species of raptors, meeting the global IBA criteria #4.

In early 2015, Audubon PA was notified that the national Global IBA Review Committee had met to review our nomination, and it was formally approved to add to the worldwide list of Global IBAs.

*This paper is available at: www.kittatinnyridge.org/explore/research-education.

Connected Citizens

Spring 2013 saw the first ***Bird the Ridge*** hikes to expand the natural awareness of the many hikers who use of the Ridge's trails in the spring and summer, as well as recruit new people to the existing organized hikes offered by Kittatinny Coalition partners, Appalachian Trail (A.T.) clubs, and Audubon chapters. More than 60 people participated in the seven hikes held the first year, with participation numbers growing in 2014.



The Yellow-billed Cuckoo, a Ridge-nesting bird that eats gypsy moth caterpillars, was one of 80 species found on the ***Bird the Ridge*** hikes.

The Kittatinny Coalition used a variety of methods to reach audiences in 2013 and 2014:

- Sent communication tower guidelines to local officials
- Posted regularly on Facebook
- Collected and distributed exciting news from partners through e-newsletters
- Began developing a brand new website with many new ways for people to engage with the project

We also completed videos documenting the A.T. hiking experience in three sub-landscape regions of the Ridge.

Tap into it all at www.kittatinnyridge.org!

Teacher & Youth Programs

Work continues all along the ridge to reach more educators and their students. Each year, workshops held in several counties train dozens of more teachers about the Ridge and how to connect it to the daily lives of their students. In addition to the workshops, some recent accomplishments include:

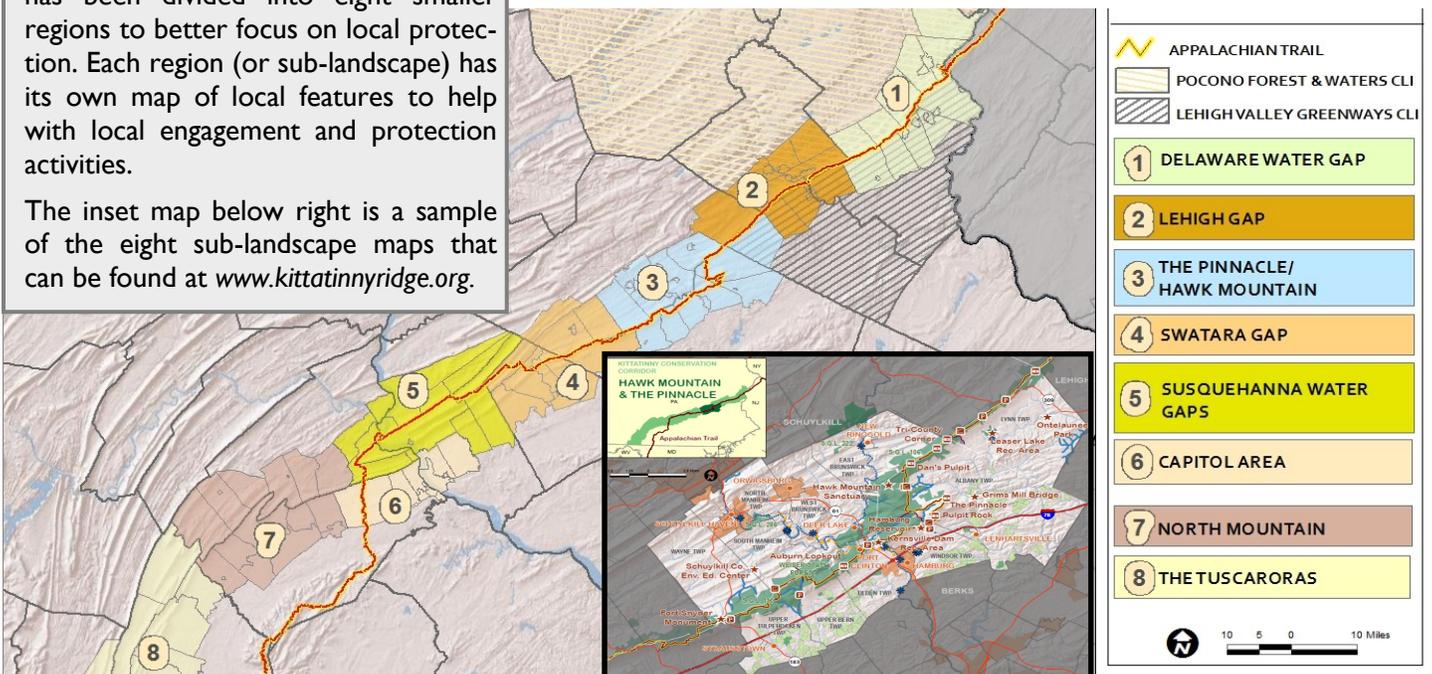
- Creating a listserv for 150 teachers
- Incorporating activities from ***PA Land Choices*** to help students better understand how local land-use decisions impact the Ridge
- Organizing school field trips to Waggoner's Gap HawkWatch for a total of 120 students and 18 adults
- Offering 10 in-school citizen science programs in the Carlisle school district
- Incorporating citizen science into teacher training workshops reaching 49 teachers



The Kittatinny Conservation Corridor has been divided into eight smaller regions to better focus on local protection. Each region (or sub-landscape) has its own map of local features to help with local engagement and protection activities.

The inset map below right is a sample of the eight sub-landscape maps that can be found at www.kittatinnyridge.org.

Creation of Sub-landscape Regions



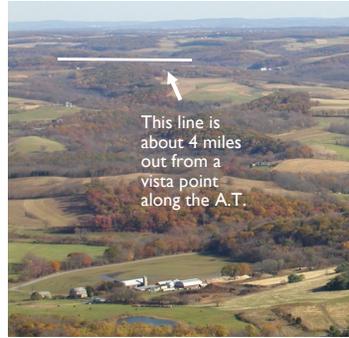
Heritage Landscapes and Thriving Communities

Municipal Land Use Outreach: Building Partnerships for Protection

Before conducting outreach to municipalities whose boundaries intersect with the Appalachian Trail, the Appalachian Trail Conservancy (ATC) wanted to first understand how zoning ordinances and other measures were currently serving to protect the values of the Trail, as required in the Pennsylvania Appalachian Trail Act of 2008. To help with this understanding, ATC hired Natural Lands Trust (NLT) to conduct an evaluation of all land use regulations for communities along the A.T.

Each municipality was evaluated by NLT for their efforts to enact measures to protect the Trail, using three principles: 1) Zoning Regulations Applicable to the Trail and its Surrounding Landscapes; 2) Mandates and Incentives for Conservation Design; and 3) Regulation of Potentially High Impact Uses.

As expected, there was quite a range in the findings, even within each county, with some municipalities having put in place many more ordinances and protection measures than others.



Looking into Berks County from the A.T., it is easy to see that any development within four miles would have a measurable impact on the pastoral view.

With this knowledge in hand, ATC is now embarking on an outreach effort to municipalities seeking partnerships for Trail protection. In the process, community officials and citizens will learn more about the history of the A.T., the national and global significance of the Trail and Kittatinny Ridge; conservation efforts underway along the Ridge; and how effective planning and zoning can protect habitat, promote responsible development, and preserve the Trail and Ridge landscape.

To assist municipalities in their efforts to protect their piece of the Trail, ATC has a mini-grant program that invests in municipal planning and zoning projects. Learn more about the **ATC Conservation Assistance Mini-Grant Program** and obtain an application by contacting akanth@appalachiantrail.org.

County Economic Analyses of the Ridge's Natural Resource Values

"... The Lehigh Valley is a special place with its scenic mountains and farmland views, river corridors, pristine groundwater and large forest habitat. These features, along with the opportunities provided by growth in the region, are the foundation for a strong economy and high quality of life.

"A strong economy compared to environmental protection is not an 'either/or' choice. This report explains why a strong economy requires plenty of connected, accessible open space and a healthy environment."

This introduction to the 2014 Lehigh Valley Planning Commission's *Return On Environment* report could have been written for any of the counties along the Kittatinny Corridor.

Audubon PA has been helping to fund economic studies for a number of counties along the Ridge to help local decision-makers factor the benefits of a healthy Ridge ecosystem into their economic growth plans. Berks Nature used the economic data produced for the Berks

study, along with other local recreation and economic studies, to publish ***The Business of Nature: The "Return on Environment" in Berks***. This report shines a spotlight on the economic value of protecting the county's natural assets and developing recreation opportunities. A copy of the Berks publication is available at: www.greenberks.com/pdf/BOSbooklet.pdf.

The studies make the clear point that if the forests of the Ridge were lost, the cost of just replacing their air-cleaning and water-providing functions would be hundreds of millions of dollars each year *for each county!*

Then, add to that the additional hundreds of millions of dollars per year in value for outdoor recreation, tourism and property tax benefits.

The full reports for each of these counties can be found at www.kittatinnyridge.org.

Appalachian Trail Community: Delaware Water Gap

Delaware Water Gap was designated as an Appalachian Trail Community™ (A.T. Community) in June 2014. The town is drenched in history and visitors can learn more by visiting the Antoine Dutot Museum. After the Civil War, Delaware Water Gap was the second largest inland resort town in the United States.

In 1906, an advertising pamphlet estimated that over one-half million people visited the Gap annually with President Theodore Roosevelt being one of them in 1910. One of the main sources of recreation were the miles of mountain paths with vistas at frequent intervals. Many of these paths later became part of the A.T.



A.T. Community designation ceremony in the town of Delaware Water Gap, PA.

Because the town was a resort community in its heyday, hospitality is a longstanding tradition in the Gap. A.T. hikers are always welcome and the town has embraced the A.T. culture into their community. With a variety of restaurants and shops, there is something for everyone. The hotels welcome thru-hikers and also offer long-term parking options for section hikers.

A hostel at the Church of the Mountain provides rest and rejuvenation, as well as a weekly potluck dinner for thru-hikers on the Trail. And, with a full-service outfitter right in town, resupply and repair, as well as shuttle service, are simple and easy. In addition, the bus station in town connects Delaware Water Gap to the major cities and airports nearby.

Above story and photos courtesy of the Appalachian Trail Conservancy (ATC).



The addition of Delaware Water Gap to the Appalachian Trail Communities program brings the list of official A.T. Communities in PA to four. Boiling Springs was the first municipality to be designated in 2006, Duncannon was added in 2012, and Greater Waynesboro in 2014.

The following is an explanation of the A.T. Communities Program from ATC 's website:

The Appalachian Trail Community™ program is designed to recognize communities that promote and protect the A.T. Towns, counties, and communities along the A.T.'s corridor are considered assets by all that use the A.T. and many of these towns act as good friends and neighbors to the Trail. The program serves to assist communities with sustainable economic development through tourism and outdoor recreation, while preserving and protecting the A.T.

Designation as an Appalachian Trail Community™ and participation in the program is aimed to:

- Engage community citizens, Trail visitors, and stewards
- Recognize and thank communities for their service to the Trail and hikers
- Act as a catalyst for enhancing sustainable economic development
- Aid local municipalities and regional areas with conservation planning
- Help local community members see the Trail as a resource and asset

For more information about the A.T. Community Program, check out <http://appalachiantrail.org/what-we-do/community-engagement>

Clean Water

Water flows down from the ridge in more than 90 surface creeks, streams or runs, and flows down through the ridge's rock layers to from recharge underground sources that are used by hundreds of thousands of people living in the valleys.

Large rivers that intersect the Ridge itself include the Delaware, Lehigh, Schuylkill and Susquehanna rivers. More than 100 other smaller water bodies (streams, runs and lakes) either originate on the Ridge or run along its base. A table of these water bodies by county is at right.

In addition, many more streams and lakes are formed in the valleys within the wider Kittatinny Conservation Corridor, and are likewise fed by water running from the ridges within the Corridor. These surface water resources, along with groundwater sources, are used by Corridor residents for home use and recreation, and by thousands of businesses.

The Ridge corridor includes:

- Tens of thousands of private wells
- More than 1500 permitted wells
- At least 47 permitted surface water sources (streams and rivers used for public drinking water)*

Assessing Water Resources of the Conservation Corridor

Now that the land resources have been assessed and land protection efforts are underway along the Ridge, the Kittatinny Coalition has identified water as a critical resource on which to focus. With a better understanding of drinking water sources, watersheds, recharge areas and wastewater discharge points, areas needing better protection can be targeted. Although land protection work usually protects water as well, there may be additional measures that landowners and municipalities can implement to better protect their water resources.

Coldwater Conservation Plans

Trout Unlimited's collaboration with PA state agencies and the Foundation for PA Watersheds has enabled the

development of Coldwater Conservation Plans for many small watersheds throughout the state. More details about this program and copies of watershed conservation plans can be found on the Trout Unlimited website: www.coldwaterheritage.org.

In 2014, Audubon staff conducted an initial review of the existing Coldwater Conservation Plans for streams that are along the Ridge and adjoining Conservation Corridor (see table at bottom). These plans point out special designations, identified issues that may threaten the stream, and potential partners available to work locally to protect the stream or watershed.



Sober's Run in Northampton County is an example of a cold water stream being threatened with polluted water runoff.

Plans for 2015 and 2016 include working with Coalition partners to help guide the implementation of Coldwater Heritage Plans with local groups, assess additional streams for trout and map them; and advocate for appropriate stream designations.

Existing Coldwater Conservation Plans for Watersheds that Intersect With the Kittatinny Conservation Project Region			
County	Creek Name	Located on Kittatinny Ridge IBA	Within Conservation Corridor
Berks	Mill Creek	X	
Cumberland	Cedar Run		X
Dauphin	Clark's Creek		X
Dauphin	South Fork Powells Creek		X
Dauphin	Manada	X	
Lehigh	Coplay Creek		X
Lehigh	Trout Creek	X	
Northampton	Sobers Run		X
Northampton	Bushkill Creek	X	
Northampton	Little Bushkill Creek	X	
Northampton	Hokendauqua Creek	X	
Northampton	Waltz & Greenwalk creeks		X
Schuylkill	Northkill Creek		X
Schuylkill	Beaver Creek	X	
Schuylkill	Cold Run		X

* Numbers are from PA DEP GIS database.

Research-based Conservation

Kittatinny Science Summits

After a successful first Science Summit in 2012, where researchers from throughout the eastern part of the Ridge gathered to share and learn from each other, it was decided to continue the summits regularly. Lehigh Gap Nature Center has played a central role in making these summits happen, with a contribution of a lot of time and effort by the Center's executive director Dan Kunkle, and Center board member and Moravian College professor Diane Husic. The summits have been very popular and illuminating, with the urgent realization that the majority of the Kittatinny landscape is not being well studied or monitored.

Proceedings for each year's summits with more details than presented below can be found at:

www.kittatinnyridge.org/research-education

A few notes from the 2013 Summit:

Penn State researcher Elisabeth Crisfield highlighted the importance of the Ridge for climate change adaption of species for short distance migration, for migration upslope, and for corridor migration at the landscape scale. A few of her points included:

- Mountain ridges are very important for biodiversity protection and climate adaptations.
- Roughness of topography is correlated positively with species diversity.
- Protection of the Ridge is also important for Piedmont and Coastal Plain species as warming occurs.



The ridges within the Kittatinny Corridor have been identified as extremely valuable for the survival of plant and animal species as the climate warms. This picture looking south through the Susquehanna Water Gaps shows Peter's Mountain (left) and Cove Mountain on either side of the river in the foreground, and the Kittatinny Ridge in the distant background.

Marion Orlousky of the Appalachian Trail Conservancy discussed the phenology monitoring efforts along the A.T. (Phenology is the study of the timing of plant and animal life cycle stages and how they relate to changes in climate.) Volunteers are being trained to collect ecological information as part of the National Phenology Network, using their website to record findings: www.usanpn.org.

Terry Master of East Stroudsburg University reviewed some recent songbird research being conducted along the ridge. A sampling of findings discussed:

- Overall, species diversity and richness is highest at the bottom of the ridge and is twice as high as at the top of the Ridge.
- Trees are tallest at the lower elevations and shortest at highest.
- Breeding bird pairs are in the greatest density at the base of the Ridge.
- Hooded Warblers seem to be in high nesting densities where invasive bar-berry shrubs are prevalent.



Hooded Warbler

Dave Mitchell of the PA Game Commission reviewed habitat management practices on SGL 217 on the Ridge:

- SGL 217 is comprised of 7,368 acres on the ridge, including 1,500 acres in a ridge-top corridor.
- Target species for management include White-tailed Deer, Wild Turkey, Ruffed Grouse, Louisiana Waterthrush, and Cerulean Warbler.
- Forestry practices include the use of logging, thinning, regenerative cutting, and fire.
- Songbird migratory stopover is considered in management actions taken.
- Logging areas require a 100-foot buffer along streams to protect many species including waterthrushes.

Marlin Corn of the Mid-Atlantic Center for Herpetology and Conservation (MACHAC) introduced the PA Amphibian and Reptile Survey. Launched in 2013, this effort is an attempt to gather data collected by professionals and citizen-scientists alike over the next decade.

Sponsored jointly by MACHAC and the PA Fish & Boat Commission, it is also supported by the DCNR Wild Resources Conservation Fund. Details and instructions for contributing data can be found at:

<http://paherpsurvey.org>

A few notes from the 2014 Summit:

The third summit had a focus on two areas: 1. mapping for parcel prioritization, and 2. monitoring breeding birds and habitat characterization.

Continued next page

Kittatinny Science Summits, continued

Stephanie Orndorff, GIS Specialist for Audubon PA, described the joint effort between Audubon and The Nature Conservancy to identify high priority parcels along the Ridge that are currently not protected which will directly help with the landowner outreach work mentioned on page 1 of this report.

Laura McBride of Moravian College presented her work to develop an updated annotated bibliography of research related to the Kittatinny Ridge, building on the early work of Don Heintzelman. With more than 500 entries, this searchable database is available through the Lehigh Gap Nature Center: www.lgnc.org.

Andy Wilson of Gettysburg College presented his work on the Kittatinny Priority Forest Bird Survey, that produced data used to make the case for the Ridge becoming a Global IBA (see article on page 4 of this report).

Terry Master, East Stroudsburg University ; Diane Husic, Moravian College; and others reviewed their 2014 Kittatinny Ridge Monitoring Project. See page 2 of this report for details.

Project Updates

In addition, a series of shorter presentations provided updates of other research projects occurring in various places along the Ridge:

- Fort Indiantown Gap research on the Regal Fritillary butterfly, bats, and woodrats (see page 3 of this report).
- Bird The Ridge hikes along the Ridge.
- Manada Conservancy conservation stories from landowners.

Studying the Migration of Broad-winged Hawks

In 2014, Hawk Mountain launched a new study on the year-round habitat use and ecology of Pennsylvania breeding Broad-winged Hawks.

Support for the project has come from many private donors, the State Wildlife Grant program of Pennsylvania Game Commission and Audubon Pennsylvania. In the start up year, researchers located four nesting territories along the base of the Kittatinny in Lehigh, Berks, and Schuylkill counties. They are collecting data on parental behavior and prey types and hope to affix four satellite telemetry units on a few juvenile and adult Broadwings each July.

The Kittatinny Coalition has supported the cost of satellite telemetry for one hawk each year in 2014 and 2015.

The birds with transmitters will be followed throughout their migration to Central and South America, through the winter, and on their return migration in spring to learn more about conservation threats and ecology of these long-distance migrants. To follow the project and the birds, log in to www.hawkmountain.org or on Facebook, The Broad-winged Hawk Project.



Young Broad-winged Hawks being studied by Hawk Mountain researchers.



Female Broad-winged Hawk incubating eggs in her nest on the Kittatinny Ridge.

Looking Ahead for the Kittatinny Coalition

The State of the Kittatinny (SOK) report spotlights not only the health and challenges facing the Ridge, but also the progress made by Coalition partners in conserving the Ridge.

At the time of the first SOK report in 2011, partners were outlining goals and objectives, discussing their conservation programs and needs, and enhancing collaboration.

Today, as documented in this report, land trusts are working together to actively conserve priority areas; planners are engaged with local officials improving land use ordinances; the economic value of the Ridge's environmental services and recreational assets are being documented for

use in land-use decision-making; and the scientific community piloted a rigorous habitat survey.

Looking forward to 2015 and 2016, the Coalition will focus additional efforts on:

- a Ridge-wide habitat survey with science partners across the Kittatinny Corridor,
- communications with stakeholders and the public,
- water resource protection, and
- the growth of public utility infrastructure.

“High fives” to all of those who have contributed to the conservation of the Kittatinny Ridge. We look forward to sharing more progress in the next report!