

## UPCOMING EVENTS

- MAY 6** **Star Watch**  
Bethel, NY
- MAY 21** **Open House - Lemons Brook Farm Lens, Pen, and Place**  
Bethel, NY, 1pm-5pm
- JUNE 25** **Native Plants Walk with Dr. Ann Rhoads at the BioBlitz**  
Ten Mile River Boy Scout Camp, Tusten NY, 9am-12pm
- JUNE—AUG** **Nature Walks with a Volunteer**  
Select Weekends in Bethel, NY
- AUG 27** **Community Picnic for our Members and Friends**  
Bethel, NY, 12pm-4pm
- SEP 15-18** **Women and Their Woods Educational Retreat**  
Beach Lake, PA

Visit [www.DelawareHighlands.org](http://www.DelawareHighlands.org), or call 570-226-3164/845-583-1010 for more information on these events and others, and to register.

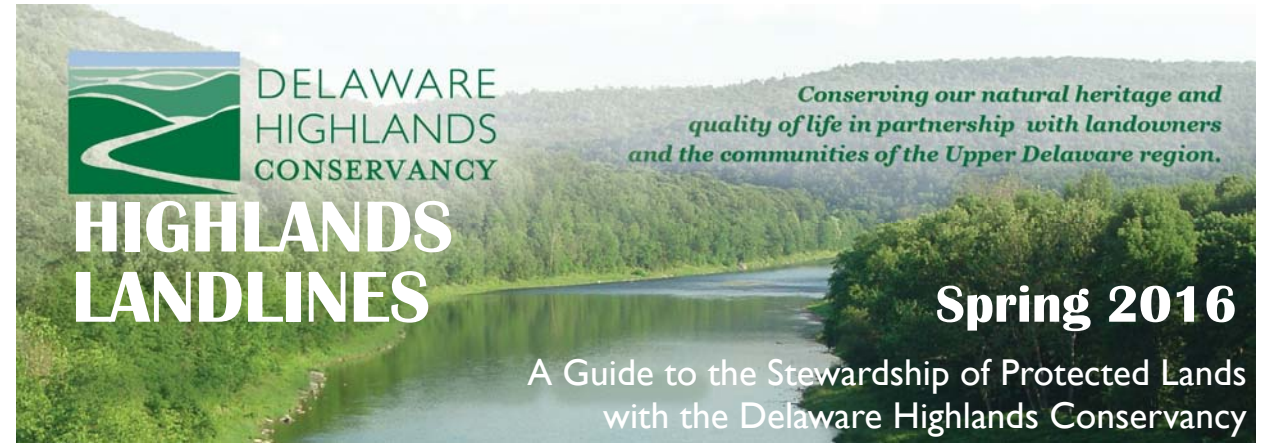
- **INSIDE**
- **Radical change projected for northern forests**
- **A fossilized tropical forest in arctic Norway**
- **Annual Monitoring Questionnaire**
- **Clear Choices Clean Water**



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### Radical change projected for northern forests is rooted in past, current management

Forests in the Nation's most densely forested and most densely populated region will change radically in the next 50 years, primarily because of the way they are managed -- or not managed -- today, according to a new report by a team of USDA Forest Service scientists and partners.

Change is nothing new to Northern forests, and much of it has been positive over the past century. Since the early 1900s, a period when forests were exploitively logged and cleared for farms, there has been an increase of 11 million acres of forest land and an increase of 144 million cubic feet of timber, both despite a population increase of 26 million people.

However, other changes are causing concern for forest owners and managers: the expanding impact of invasive species, loss of species diversity, low diversity in forest age classes, increasing urban expansion that is shrinking forest acreage, fragmentation of forest land, parcellation of forest ownerships, loss of forest-based employment, effects of burgeoning white-tailed populations on tree regeneration and forest composition, and increasing atmospheric carbon emissions.

"The challenges facing northern forests are large, complicated, intertwined, and enduring," said Stephen Shifley, one of the 30 authors who collaborated on Future Forests of the Northern United States and a principle investigator for the Northern Forest Futures project. "By applying the best available science to look ahead at how forests are likely to change over the next 50 years, we think forest owners, managers, planners, and policymakers will be better prepared to avoid many future problems by implementing proactive management practices that are ecologically sound, socially acceptable and economically viable."



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The Delaware Highlands Conservancy is a land trust dedicated to conserving our natural heritage and quality of life in partnership with landowners and the communities of the Upper Delaware River region.

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Highlands LandLines is a semi-annual newsletter created by the Conservancy for landowners who have a conservation easement with the Conservancy. This publication is also available electronically.



**What is Highlands LandLines?**

You already receive the Delaware Highlands Conservancy's regular newsletter, *Highlands Journal*. Our newsletter is distributed to all of our landowners, members, and other like-minded folks who are interested in the Conservancy's activities, accomplishments, and conservation goals.

**This publication, *Highlands LandLines*, comes to you twice a year and is dedicated to landowners.** *LandLines* provides you, the landowner, with useful information and tips for the stewardship of your land and conservation easement.

**Participate in LandLines!**

We are interested in your ideas for future articles and features, or your comments on the publication in general.

We'd love to know what you think!



**Save the Date!**

Mark your calendars for these exciting events coming up in 2016—and visit [www.DelawareHighlands.org](http://www.DelawareHighlands.org) to view our full calendar and register!

**June 25—Native Plants Walk with Dr. Ann Rhoads**

Upper Delaware BioBlitz, Narrowsburg, NY

**August 27—Annual Free Community Picnic**

Conservancy Office, Bethel, NY

**Annual Property Visit Questionnaire**

Please help the Conservancy prepare for our annual property visits by completing the below survey and mailing to:

Delaware Highlands Conservancy Attn: Stewardship Coordinator  
PO Box 218, Hawley, PA 18428

Or email: [conserve@delawarehighlands.org](mailto:conserve@delawarehighlands.org)

**You may also complete the survey online at [www.delawarehighlands.org/conserve/caring-for-your-land/monitoring-form](http://www.delawarehighlands.org/conserve/caring-for-your-land/monitoring-form)**

Contact: \_\_\_\_\_ Email: \_\_\_\_\_

*Annual property visits allow the Conservancy to uphold the terms of the conservation easement for each property. These visits allow the Conservancy to determine whether the conservation values outlined in the conservation easement are intact. In addition, the visit is a fundamental part of relationship building between the Delaware Highlands Conservancy, its members, and landowners.*

Would you like to attend the property visit? ..... Yes No

Do you have plans to sell, subdivide or lease the property?..... Yes No

Have any structures (houses, sheds, barns, gazebos, garage, pole barn) been built or replaced within the boundaries of the conservation easement?..... Yes No

Has there been any land disturbance as a result of road/trail construction, digging/filling, planting, fencing or other construction?..... Yes No

In the last year, has the protected property been affected by any of the following:

Insect damage.....	Yes	No
Storm damage.....	Yes	No
Fire.....	Yes	No
Vandalism; trespassing, dumping, abusive use of ATVs or other vehicles....	Yes	No
Property line violations from neighboring parcels.....	Yes	No

Has there been any timber harvesting on the property?..... Yes No  
If so, was the harvest a result of a recommendation by a current Forest Management Plan?..... Yes No

Have you noticed any of the following affecting wetlands or waterways on the property?

Encroachment of invasive vegetation or animals.....	Yes	No
Change in flow, quality or quantity of water .....	Yes	No
Livestock in or near waterways or wetlands.....	Yes	No
Erosion along banks or channels.....	Yes	No

Have you signed a lease for use of the land? (ie. gas lease, agricultural)..... Yes No

Have you noticed new populations or an increase in existing populations of invasive vegetation?..... Yes No 7

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A few of the trends that will affect Northern forests over the next 50 years include:

- ◆ Forest area is projected to decrease between 3.5 and 6.4 percent with losses concentrated around existing urban and suburban areas.
- ◆ Forest area is currently concentrated in the 40-to-80-year age class and is expected to increase in mean age over time, reducing forest diversity and, with it, important types of wildlife habitat.
- ◆ Forests are under the expanding influence of numerous native and invasive insect pests including emerald ash borer, Asian longhorned beetle, spruce budworm, Sirex woodwasp, winter moth, hemlock woolly adelgid, and gypsy moth as well as dozens of invasive plants.
- ◆ Aboveground forest biomass is expected to increase by about 4 percent, but total carbon sequestered by northern forests (including soils) is expected to decrease by about 2 percent, primarily as the result of reduced forest acreage combined with slower tree growth that is typical for aging forests.
- ◆ Projected population increases in the North are expected to cause Federal and State park land area per capita to decrease by 19 percent and non-Federal forest land area per capita to decrease by 26 percent.



By David B. Soete

Future Forests of the Northern United States is one of a series of publications examining past, present and anticipated changes in forest biodiversity, productivity, health, soil and water, carbon, biomass, energy, commodities, employment, and recreation in the U.S. North. Other publications are available at: <http://www.nrs.fs.fed.us/futures/pubs/>.

Source: USDA Forest Service, Northern Research Station. Reprinted and edited for length from <https://www.sciencedaily.com/releases/2016/03/160308084935.htm>.

## \$2 Billion in New Private Sector Investments to Protect Natural Resources

On March 7, at a White House roundtable on environmental conservation and restoration, private sector leaders announced more than \$2 billion in new private sector and nonfederal investments to protect land, water and wildlife for future generations--collectively, one of the biggest non-federal investments in conservation ever. . These investments highlight the ability to leverage the Administration's work to encourage private investment in the health and restoration of our natural resources and the significant opportunities for the private sector to invest in conservation across the country.

In addition, the Departments of the Interior and Agriculture are announcing new steps to build on the Administration's conservation priorities, including an investment of nearly \$20 million to help promote new technologies and tools to benefit farmers, ranchers and landowners across the country. For the full story and areas of focus, visit <https://www.whitehouse.gov/the-press-office/2016/03/07/fact-sheet-2-billion-new-private-sector-investments-protect-natural>.

## Invasive Species Corner

### Japanese stilt grass (*Microstegium vimineum*)

A common invasive in our area, stilt grass grows up to 3 feet tall and branches. The leaves are long and skinny (lance-like) with a pale line down the middle of the leaf. It can thrive in shade or full light, and likes moist areas. It grows thickly along some roads in our area. Running water and probably lawnmowers can transport the seeds. It can overrun forest floors, crowding out native plants.

Stilt grass also spreads by rooting at stem nodes. Luckily, it has shallow roots, so it's easy to pull out the entire plant, including roots, if the soil is wet. Do that in late summer, before it flowers in September. Weed after a rain, or water before weeding. After weeding, sow native grass seeds to discourage its return. You can also mow in late summer to reduce its prevalence, but not earlier because it will flower and seed early.

Source: [http://www.dcnr.state.pa.us/cs/groups/public/documents/document/dcnr\\_010258.pdf](http://www.dcnr.state.pa.us/cs/groups/public/documents/document/dcnr_010258.pdf)

Photo: <https://www.nps.gov/plants/alien/fact/mivi1.htm>



## Native Species Spotlight

### Christmas fern (*Polystichum achrostichoides* or *Polystichum acrostichoides*)

Christmas fern is native to the eastern half of North America, from northern Canada through Texas. Green all year round, it grows to two feet tall, sometimes taller.

It thrives in moist places with partial to full shade, but tolerates drier areas once it's established. Since it will not spread very far, it does not require much maintenance. It can inhibit soil erosion on slopes and other areas prone to erosion.

Photo © Kent McFarland from [http://eol.org/data\\_objects/24977256](http://eol.org/data_objects/24977256)

Source: <http://plants.usda.gov/core/profile?symbol=poac4> and <http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a710>



## How a fossilized forest in Arctic Norway changed the Earth's climate

By Story Hinkley

Researchers recently unearthed ancient forests in arctic Norway from 400 million years ago. And while the fossils themselves are exciting, UK scientists believe these trees were responsible for one of the greatest climate shifts in Earth's history.

Dr. Chris Berry, a senior lecturer at Cardiff University's School of Earth and Ocean Sciences, identified the fossil forests in Svalbard, a Norwegian archipelago in the Arctic Ocean almost halfway between Norway and the North Pole.

"These fossil forests show us what the vegetation and landscape were like on the equator 380 million years ago, as the first trees were beginning to appear on the Earth," Berry explained in a press release.

Originally a tropical forest growing near the equator, researchers say continental drift carried the trees north. With diamond pattern trunks and flared branches of needle leaves, these 12-foot-tall trees were nothing like anything in our forests today.

By examining preserved tree stumps, Dr. Berry suggests the trees lived during the late Devonian period, which existed 420 to 360 million years ago. The fossilized forest in Svalbard is one of the oldest ever discovered, eclipsed only by another Devonian forest found in Gilboa, N.Y.

The Devonian period is presumed to coincide with a 15-fold reduction in atmospheric carbon dioxide levels that occurred during the same time. Theories attribute the drop in CO<sub>2</sub> to tree evolution, when vegetation was changing from diminutive plants to large forest trees.

The evolution of tree-sized vegetation caused a "huge drop" in the level of atmospheric CO<sub>2</sub> "from 15 times the present amount to something approaching current levels," Berry explains.

So instead of being a radical CO<sub>2</sub>-scrubbing machine, these fossilized trees were actually quite normal – they absorbed CO<sub>2</sub> during photosynthesis, just as our trees do today. But these tropical trees caused a massive carbon reduction because they absorbed a lot more CO<sub>2</sub> compared to the smaller mosses that had previously defined Earth's plant life.



Photo Credit: Cardiff University; illustration by Dr. Chris Berry from Cardiff University.

"The evolution of tree-sized vegetation is the most likely cause of this dramatic drop in carbon dioxide because the plants were absorbing carbon dioxide through photosynthesis to build their tissues, and also through the process of forming soils," says Berry in a press release.

And this recent discovery in arctic Norway challenges experts' preconceived notions of tree evolution. The trees that were most populous in the older fossilized forest in New York were absent in Norway.

Such an absence "suggests that more than one tree group was forming forests and these forests were not the same everywhere on the planet," Berry told LiveScience.

But experts say even a similar finding in Norway would be exciting because it's not every day that we unearth a forest that would have been ancient to the dinosaurs. "It is rare fossil forests such as this that inform our understanding of the ecology and global distribution of large land plants during the transition to a forested planet," the article concludes.

Reprinted from the *Christian Science Monitor*, November, 22, 2015, <http://www.csmonitor.com/World/Global-News/2015/1122/How-a-fossilized-forest-in-Arctic-Norway-changed-the-Earth-s-climate>.

## Clear Choices, Clean Water: My Delaware River

You know that healthy forests are key to filtering rainwater and pollutants and keeping lakes, rivers, and streams clean and clear. But there are also many smaller actions you can take around the home and garden to protect and conserve clean water, from taking shorter showers to planting a rain garden or installing a rain barrel.

Visit [mydelawariver.clearchoicescleanwater.org](http://mydelawariver.clearchoicescleanwater.org) to take the pledge to take action. With every pledge through June 27, 2016, you'll be entered to win a 9' Old Town Heron kayak, generously donated by Alice's Wonderland in Greeley, PA. You'll see how many gallons of water or pounds of algae you're preventing, and you'll see how many of your friends and neighbors have taken the pledge.



Find us at <http://www.facebook.com/DelawareHighlandsConservancy> and [www.DelawareHighlands.org](http://www.DelawareHighlands.org) or on Twitter @DHConservancy