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AMC Launches Innovative Citizen-Scientist Program To Track Indicators of Climate Change and Air Quality

WHITE MOUNTAINS, N.H.—A new program by the Appalachian Mountain Club (AMC) provides the public with an easy, hands-on way of observing indicators of climate change and tracking air quality in the mountains of the Northeast.

Through this effort, the club plans to build a network of “citizen-scientists” who track changes in visibility, weather, and plant activity, contributing to a better understanding of the impact of climate change and how air pollution affects the outdoor experience. These findings are then consolidated and made available on AMC’s website.

Under this program, known as Mountain Watch, visitors to AMC’s White Mountain huts and lodges track the timing of such seasonal events as bud-burst and leaf-out of hardwood trees and the blooming of alpine flowers in the spring, and the onset of leaf coloration in the fall. Participants also record ground-level ozone levels in the mountains, using specially designed ozone detector cards. They also record the distance seen from scenic viewpoints, and document views using digital cameras.

AMC staff researchers combine these findings with weather data and enter the information into a long-term database. Researchers expect that database to help provide information on the health of mountain environments long into the future. The results of these efforts can be seen on an interactive website at www.outdoors.org/mountainwatch.

“For many people, climate change and air pollution are abstract concepts,” said AMC Staff Scientist Georgia Murray, a chief architect of the program. “Mountain Watch provides people with very concrete examples of ways these issues impact us every day.”

Air quality is of particular concern to hikers because polluted air blown into the region, largely from industrial areas to the west and south, obscures scenic views. Regional haze can cut 90-mile views to 40 miles or less, according to AMC research. In addition, elevated levels of ozone in the mountains have been shown to impact lung function of healthy adult hikers.

Volunteers collecting data on seasonal plant behavior characterize their observations by comparing them with photographs in Mountain Watch field guides. Relating annual events, such as spring leaf-out, to weather is known as plant phenology. The phenology component of

Mountain Watch is based in the White Mountains, where volunteers observe specific trees at lower elevations and specific plants in the alpine zone above treeline.

Consistent changes in the timing of plant flowering, tracked over many years, can be an indicator of climate change.

"Recent analysis of a wide variety of indicators of climate change in New England indicates that the region is warming, and that the rate of warming has increased over the last 30 years. The Appalachian Mountain Club's Mountain Watch program, provides a wonderful opportunity to engage citizens in the air quality and climate change issues we face throughout the region," said Cameron P. Wake, Ph.D., Research Associate Professor at the University of New Hampshire and author of a recent study on climate change indicators.

"The timing of plant bud-burst and flowering has been used elsewhere as a climate-change indicator, and it's encouraging to see the AMC expand this type of monitoring to mountain environments. In fact, we expect mountain ecosystems to be one of the most sensitive to changes in our climate and air quality," Wake said.

AMC Senior Interpretive Naturalist Nancy Ritger said Mountain Watch engages people in the outdoors in a way that enhances their experience in the outdoors. "We've found people are very excited to know their experiences and observations are part of a larger effort that we expect will benefit the environment over the long term. It brings the importance of mountain stewardship to a real personal level," she said.

The Mountain Watch program is among the many activities offered for guests and visitors at the AMC's White Mountain huts, Highland Center at Crawford Notch, and Pinkham Notch Visitor Center. Anyone interested in participating can request a Mountain Watch kit from AMC staff members. "Using the kit and taking an observation typically takes 5 to 10 minutes per stop, depending on the type of measurement being done. It's akin to taking time to smell the roses and taking a closer look at what's around you on the trail," said Murray.

Southern New England and the Mid-Atlantic region are also locations in which the Mountain Watch program has taken root. Twelve AMC chapters are spread across the region from Maine to Washington, D.C., and chapter members are active participants in this "citizen science" program.

For more information on Mountain Watch, visit the AMC's website at www.outdoors.org/mountainwatch.

Founded in 1876, the Appalachian Mountain Club is the oldest conservation and recreation organization in the United States. With 90,000 members in the Northeast and beyond, the nonprofit AMC promotes the protection, enjoyment, and wise use of the mountains, rivers and trails of the Appalachian region.

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