Also in this issue:
- Getting started with video
- Expansive project captures air threats near schools
- The dangers of digital age e-journalism
- Using citizen scientist to measure climate impact

A quarterly publication of the

Society of Environmental Journalists
TABLE OF CONTENTS

features

Letting the cards talk
By Susan Feathers page 5

Inside Story: An expansive investigation's key lesson: Think Big
By Bill Dawson page 9

SEJ’s birth
By Jim Detjen page 14

Twenty years of SEJ conferences
By Jay Letto page 18

columns

President’s Report: SEJ reaches out and expands in old and new ways
By Christy George page 4

E-Reporting Biz: It can be dangerous being an e-journalist in the digital age
By Bud Ward page 12

The Beat: Top universities rethink how to prepare e-beat journalists
By Bill Dawson page 20

SEJ News: Board election draws many candidates, record votes
By Carolyn Whetzel page 23

Science Survey: Notes on nature can be a telling scientific record of home
By Catherine M. Cooney page 24

Reporter’s Toolbox: A newbie’s advice on getting started with video
By Robert McClure page 26

Media on the Move: New jobs, projects and awards for SEJ members
By Judy Fahys page 28

Book Shelf Book Reviews page 30

Cover design by Nathan Skreslet
Science Survey

Notes on nature can be a telling scientific record of home

By CATHERINE M. COONEY

Are you searching for a new angle on global warming that you and your editor might both love?

How about investigating people in your own neighborhood — the so-called citizen scientists — who are tracking the tiny changes occurring in your local ecosystem?

These amateur researchers are engaged in a discipline known as phenology, or the study of the seasonal timing of cyclical life events of plants and animals. They observe insects emerging and laying eggs, plant leafing, blooming, fruiting, and the changing of leaf colors in autumn, for example. University and government researchers use this information to monitor the influence of seasonal cycles on biological resources.

These observations help detail how disease might affect particular species, if a species is in decline, or describe the differences of diversity in city versus rural or natural areas. The data can also help paint a picture of future ecological changes stemming from climate change.

Dave Bertelsen, 66, is a great example of an amateur scientist. Bertelsen hikes the Finger Rock trail in the Santa Catalina Mountains near Tucson once a week, each time jotting down notes about the flowering plants and mammals that he sees. He recently completed his 1,246th hike, each time covering an elevation gain of 4,158 feet. “One of the reasons [this trail] attracted me was the elevation gain enabled me to move from desert scrub, through riparian scrub, scrub grassland, oak woodland, oak pine woodland, and pine forest, and all in one day,” he says.

Bertelsen has collected more than 200,000 records of flora and fauna observations over the past 25 years. His notes are helping professional scientists flesh out what the effects are of the changing climate near Tucson. With assistance from two researchers at the University of Arizona, part of his data was published in the online Early View of the Journal Global Change Biology. They show earlier flowering along the Finger Rock trail, which the paper authors attribute to changes in climate.

Other citizen-scientist projects abound. Students, retirees, and other volunteers are walking trails in the Santa Monica Mountains outside Santa Barbara, Calif., and watching plants as part of a program sponsored by the University of California, Santa Barbara and the U.S. Fish and Wildlife Service. Volunteers are tracking more than 100 species in New England through the Invasive Plant Atlas of New England. And students at the University of Arizona are recording observations on the blooming of the creosote bush for Project BudBurst, a citizen-scientist project managed by the University Corporation for Atmospheric Research, the University of Montana, and the Chicago Botanic Garden.

U.S. birdwatchers flock to participate in the annual Great Backyard Bird Count, held during a week in February. It asks participants to submit checklists of birds they see to the Cornell Lab of Ornithology and the National Audubon Society. Last year, participants in the Bird Count turned in more than 93,600 checklists online, “creating the continent’s largest instantaneous snapshot of bird populations ever recorded,” according to the program.

But such efforts aren’t limited to the United States. Amateur scientists are busy watching in countries around the world. Birdwatchers in India, for example, are listening to birdcalls to track changes in bird migration for a program called MigrantWatch.

Anyone can contribute to these data sets by clicking on the loads of online sites advertising for volunteers. On these sites you’ll find blogs where amateurs compare notes with scientists; pages describing plants that can be studied; and tutorials on how to collect data and how to submit observations and photographs. One program collects photographs for an annual contest.

Decoding the historical data

In 2007, the Intergovernmental Panel on Climate Change recognized the efficiency of phenology in the study of climate change. IPCC members wrote, “Phenology … is perhaps the simplest process in which to track changes in the ecology of species in response to climate change.” Indeed, nature enthusiasts have been observing changes in nature for as long as there have been people on Earth. Examples can be found in museums, or scrawled on barn doors where farmers note changes in the weather and dates when crops are ripe for harvest, says Jake Weltzin, a U.S. Geological Survey scientist and the executive director of a new national program, the USA National Phenology Network (USA-NPN).

A top priority for USA-NPN is to collect and compare all of this information jotted in notebooks and posted online, says Theresa Crimmins, network liaison for USA-NPN. Recently created with funds from several government agencies and universities, the program has its own site for citizen volunteers and professionals alike to submit their observations, and staff scientists are in the process of collecting historical phenology datasets for plants and animals.

Abraham Miller-Rushing, wildlife phenology program coordinator with USA-NPN, has tackled a particularly rich source of historical citizen-science data. He has spent months deciphering Henry David Thoreau’s diaries. Written more than 150 years ago,
they are jam-packed with notes on blooming dates, location changes, and appearances of over 600 species growing near Walden Pond in Concord, Mass.

Decoding the historical data so today’s researchers can use it is not easy. Miller-Rushing’s work on the Thoreau diaries, for example, presented a “bigger problem than you might think. Not only was his handwriting really, really messy, but they actually called plants by different names then,” he says. This type of historical data provides the raw material researchers need to be able to monitor how today’s changing climate might affect ecosystems in the future. Many researchers would love to study these changes, but they just don’t have the information, Crimmins says.

To ensure there is no false data submitted by over-zealous volunteers, USA-NPN is comparing data collected by volunteers with studies of nearby ecosystems conducted by scientists. What the researchers see, Miller-Rushing says, is that as temperatures rise, plants flower earlier. “This is exactly what you would expect to see with global warming,” Miller-Rushing says.

Next: tracking animals

In 2010, USA-NPN will launch an online data collection program for wildlife animals such as yellow-bellied marmots, ruby-throated hummingbirds, northern painted turtles, wood frogs, coho salmon, and bumblebees. The network is developing the list of protocols and methods for animal monitoring, says Weltzin, but the protocols for observing wildlife are more complicated than those designed for watching plant changes. The team is partnering with other programs, such as Frogwatch USA, eBird, and Journey North, to create a nationally standardized set of monitoring protocols. “Imagine the power of the dataset for increasing understanding of climate change impacts across the U.S. if everyone used the same monitoring approach,” Weltzin says. “That’s what a national network is all about.”

So pitch the story, but first check with your neighbors. They just might be bird-watching in their backyards.

Online sources for Phenology-related citizen science programs:
USA-APN: www.usanpn.org
Project BudBurst: www.windows.ucar.edu/citizen_science/budburst/
Cornell Lab of Ornithology: www.birds.cornell.edu

Publications:
Environmental Science & Technology, Volume 42, Issue 11, Date: June 2008, Pages: 3911-3913
Global Change Biology, Volume 15, Issue 5, Date: May 2009, Pages: 1141-1152

Other resources: For experts at the U.S.G.S. who are familiar with volunteer programs, contact Catherine Puckett, at 352-264-3532.
For volunteer programs related to invasive species, see the SEJ TipSheet, April 15, 2009: www.sej.org/node/1105

Catherine M. Cooney is a freelance writer based in Washington, D.C.