

Buds

■ Records showing that plants, leaves and flowers are emerging earlier in year suggest that climate in Northeast is getting warmer

BY BRYN NELSON
STAFF WRITER

The old-fashioned lilac bushes once grew thick on the farmsteads around Richard Hendrickson's home. The 93-year-old Bridgehampton resident remembers how the dense blooms often ended up packed in ice, and then on the gravestones of Brooklyn cemeteries for Memorial Day.

Since 1967, an old-fashioned lilac bush with lavender blossoms and an intense aroma has whispered of a different history in the backyard of the venerable East End weather watcher and retired farmer.

During the first 18 years of Hendrickson's botanical observations, his "Red Rothomagensis" lilac never unfurled its leaves before the end of March — except in 1976 and 1977, the only years it also revealed its first flowers more than two weeks before Memorial Day.

But an early start to his lilac season is now the rule rather than the exception. From 1997 to 2002, its leaves emerged by the end of March five times, and twice within the month's first two weeks. And after sev-

eral years of early May flowers, Hendrickson saw the bush's first ever April blooms in 2002.

Springtime in Bridgehampton, it seems, is breaking free of the calendar.

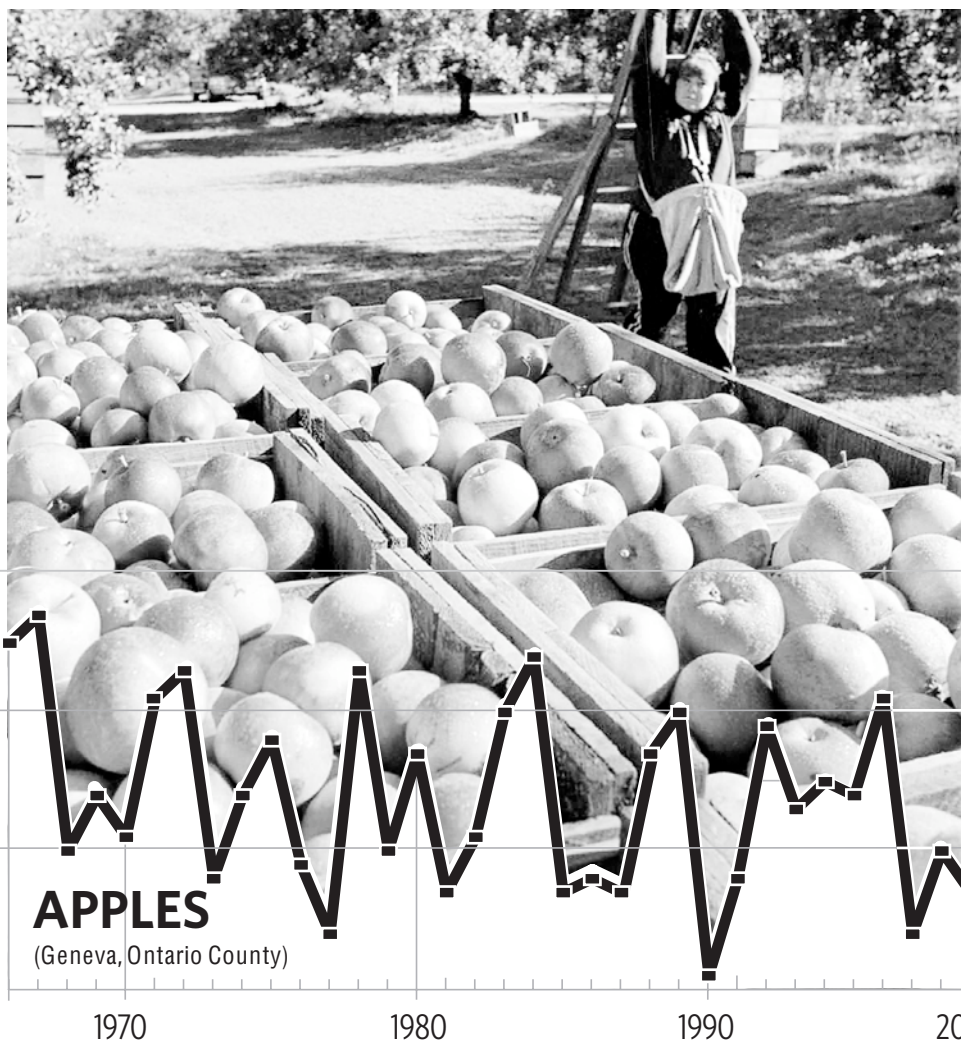
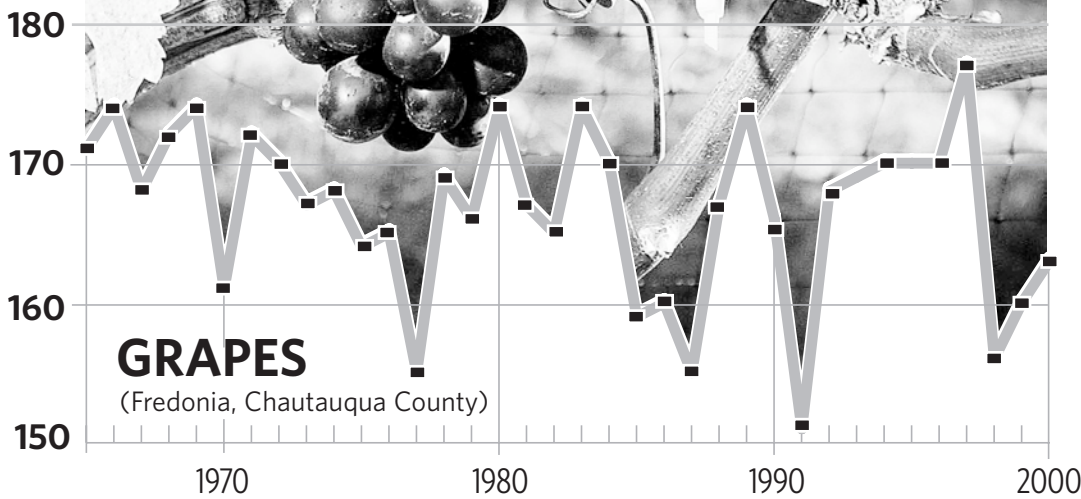
The year-to-year debut of spring leaves and flowers can fluctuate wildly, due in part to annual variations in temperature and rainfall. But longer growth records for lilac bushes, grapevines, apple trees and a host of other plants have begun suggesting the same story: the Northeast is getting warmer.

In the mid-1960s, the U.S. Department of Agriculture funded a project that installed the same clone of Persian lilac, "Red Rothomagensis," in select yards and gardens as a sort of living Farmer's Almanac.

"If the lilacs bloomed earlier, it could mean we had a milder winter, so look out for potential insect outbreaks," said David Wolfe, a professor of horticulture at Cornell University. Early blooms also could advise farmers on when to plant their wheat and guide the Chicago Futures Market by suggesting whether yields would be early.

The records from 72 sites in the Northeast suggested some-

First flower date



Spring-ing ahead

Data from studies on three different plants in three different regions of the state would seem to indicate an earlier flowering of the season. Data represent calendar date of first flowering of each species.

First flower date (Jan. 1 equals Day 1)

SOURCES: MARK SCHWARTZ, UNIVERSITY OF WISCONSIN-MILWAUKEE; DAVID W. WOLFE, CORNELL UNIVERSITY; WORLD DATA CENTER FOR PALEOCLIMATOLOGY, BOULDER, COLO.



are bloomin' early

thing else to Wolfe and collaborators. Since the mid-1960s, lilac blooms have arrived four days earlier, on average.

Similar records gleaned from grape and apple growers in upstate New York revealed an even bigger trend: a six- to eight-day jump start to the season.

"We can anticipate that if they're responding, then other living things are responding," he said, "even though we don't have good records for that."

Half-century of warming

In 2004, University of New Hampshire researcher Cameron Wake and a colleague compiled as much data as they could about climate change in New England.

Temperatures, ice dates, days with snow, growing seasons and other indicators together suggested a warming trend over the past half-century.

"And perhaps more shockingly, it showed an increase in the rate of warming over the last 30 years," Wake said.

The data haven't allowed scientists to say whether such change is due to human intervention, a larger point of conflict between many researchers and government officials. But, Wake said, "all of the warming is certainly consistent with a globe that has been warmed by greenhouse gases."



NEWSDAY PHOTO / DANIEL GOODRICH

Richard Hendrickson of Bridgehampton has recorded the budding of lilac bushes since 1967.

In a conference call last month, Wolfe and Wake joined two colleagues in christening March 13 the new start to "natural spring" in the Northeast.

"They say, 'Spring forward, fall back,' but spring has already sprung ahead," said Adam Markham, executive director of the nonprofit environmental group Clean Air - Cool Planet. "Biology is not waiting

for the equinox now."

To make sense of the growing trend and potential fallout, researchers are trying to establish what's known as a national phenology network. The integrated database of biological landmarks, such as when specific plants bloom, can be linked to temperature and provide one measure of climate change.

Mark Schwartz, a professor

of geography and a climatologist at the University of Wisconsin-Milwaukee, said cloned lilac bushes have been good choices for such studies because the hardy and non-invasive plants have well-defined stages of growth every spring. But recording a lilac's first leaves and blooms, as scientists know, captures only one snapshot of how plants might be re-

sponding to a warmer world.

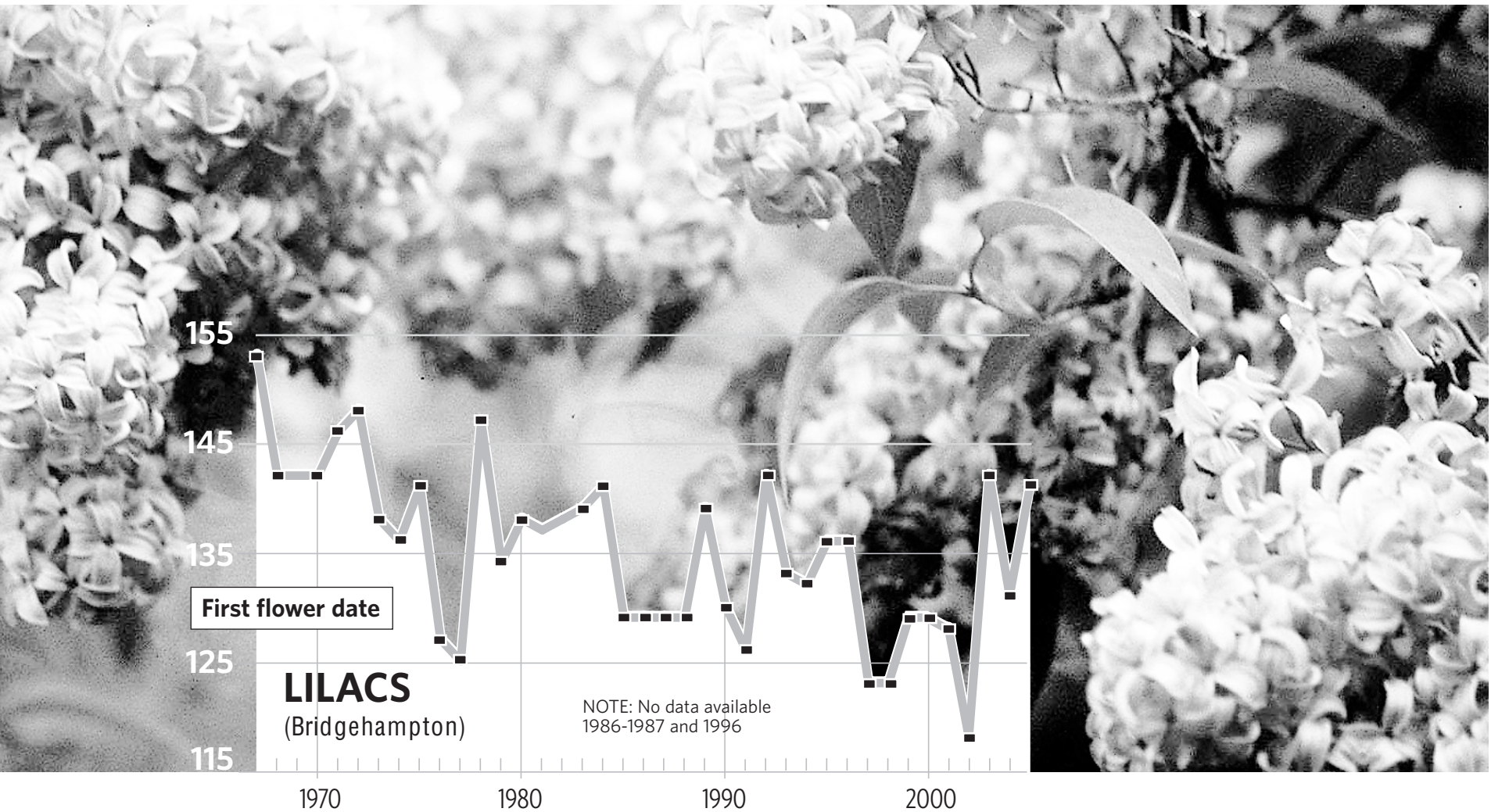
Studies in the lab have suggested that different species can vary dramatically in how they react to rising levels of carbon dioxide, the main gas linked to global warming. And because plants are often the linchpins of complex communities, a small change may lead to much larger and often unpredictable effects on microbes, insects, birds and even humans.

Bad news for good parasite

A study conducted in Connecticut and 14 other sites in North and South America suggested that weather extremes linked to warming trends may interfere with a parasitic wasp's ability to find its caterpillar prey. What's bad for the parasite is a boon for the crop-munching insect and a headache for farmers and gardeners contending with a surge in the caterpillar population.

Other experiments suggest that higher levels of carbon dioxide may act like fertilizer for ragweed, prompting more misery during the pollen-induced allergy season. And researchers say a forward shift in flowering may help a plant avoid a late-emerging pest, but throw the plant out of sync with its main insect pollinators.

See SPRING on A36



As world changes, so does forest

BY BRYN NELSON
STAFF WRITER

On a chilly March afternoon, Chuck Peters describes a tide of inevitable change while surveying the still-bare branches of the largest remaining woodland in New York City.

Now part of the New York Botanical Garden in the Bronx, the 40-acre parcel of old-growth forest has seen better days, according to the botanical garden ecologist.

"What I noticed as a forester and ecologist is that the forest is essentially falling apart," Peters says, indicating a slew of fallen hemlocks, oaks and other old-guard shade trees, whose passing is opening up new gaps in the canopy. "What is coming up bears no resemblance to what has fallen down."

Like much of the human population around it, the wood's newcomers hail from around the world. By some estimates, invasive species now comprise nearly 30 percent of the woods.

Is warming hastening their spread? Perhaps, Peters says, but it's only one in a long list of changes wrought by humans.

"Heavy metals, acid rain — whatever you want, we've got it," he says. "As an ecologist, I'm happy that there are trees that can still function and grow under these conditions."

The plant known as Japanese knotweed may be invasive, for

example, but Peters says it's also protecting a once-bare bank of the Bronx River from further erosion.

"What else would you plant that can thrive under the current conditions?" he asks, pointing out the brown tangle of knotweed beneath a bridge. He knows that some would like to restore the forest to the way it was 200 years ago. "My response is that you'd have to put the Bronx back the way it was 200 years ago," he says.

If the "pulse of the forest" is changing, though, Peters would at least like to measure it. Three years ago, he began a phenology study to keep track of seasonal changes in representatives of 20 tree species — 10 natives and 10 non-natives — near the wood's meandering path. Now in its fourth season, the project has enlisted the help of volunteers who often spend their lunch hours documenting when the trees leaf out and flower and how long the growing season lasts.

By tabulating the trends in multiple species, Peters hopes to assess the behavior of the entire forest.

"Something very important is happening," he says. "The [trees] that have dominated this forest for probably several hundred years are stepping down and something else is taking their places. And I'm OK with that, but we can't deny that it's happening."



New York Botanical Garden ecologist Chuck Peters with garden publicist George Shakespear, left, research assistant Dawn Ward and Lehman College doctoral student Meng Hsueh, right.

Leaves, flowers coming out earlier

SPRING from A18

"Even a week earlier than usual — that is sufficient in most cases to alter entirely the situation with other plants and animals," said Massimo Pigliucci, an ecologist at Stony Brook University. The difficulty is in predicting exactly how those relationships will change, either for the better or worse.

"The answer, unfortunately, in a lot of ecology is, 'It depends,'" he said.

Julie Seghrouchni, a horticulture specialist at the Cornell Cooperative Extension of Nassau County, said a warming trend and extended growing season in the Northeast could favor warm-season fruits and vegetables such as watermelon, tomatoes and peppers, while hampering cool-season crops such as potatoes and cabbage.

The wine industry in upstate New York has flourished within the past three decades,

according to Cornell University's Wolfe, perhaps due in part to fewer nights with temperatures below minus 12 degrees Fahrenheit, when the severe cold can damage grape vines. But for apples, scientists have found that warmer winters may actually be interfering with normal flower and fruit development.

Despite a demand for simple answers — will climate change be good or bad? — nature seems unwilling to cooperate.

"To me, that means we need to move with sort of caution," Pigliucci said. "Although some of the change might in fact be positive, there's always the possibility of a catastrophe around the corner."

Dealing with warmer climate

Chuck Peters, an ecologist at the New York Botanical Garden, said global warming is but one of many human-mediated actions altering landscapes such as the garden's

40-acre remnant of old-growth woodland in the Bronx. Invasive species, acid rain, erosion, heavy metals: all have taken their toll.

A re-evaluation of conservation priorities, he believes, may be unavoidable given current realities. But others point out that global warming is adding a new wrinkle to that task. Unlike invasive weeds or pollution, warmer weather can't be reversed at the local level, even if the political will is there.

"You can't even mitigate it," said Camille Parmesan, a biologist at the University of Texas. Climate change may have an intensely local impact, she said, "but it's caused globally."

Any future decisions on global warming, nevertheless, may derive from very local concerns. Observers in Japan and Washington, D.C., have documented shifts toward earlier blooms among their beloved cherry trees. Forestry researchers have fretted over

Minnesota's iconic pines receding northward due to warming, while scientists in California have predicted a similar retreat of that state's blue and valley oaks.

Spring changes

Other observations are just beginning, and may eventually point toward climate change or a more complicated suite of factors. On Long Island, a botanist has noticed that the endangered pink flowers known as sandplain gerardia seem to be blooming earlier in late summer. An entomologist has noted that a plague of scale insects feasting on the East End's ornamental trees and pruned privet hedges has worsened. And an ecologist has observed that Japanese knotweed is rapidly expanding its domain throughout Suffolk County.

Every spring, a million other changes catch the eyes of those who look. Amid an unusually warm January, a gardener no-

ticed the evergreen leaves of pachysandra begin creeping across her yard in Huntington, while another noted that witch hazel trees in Oyster Bay were budding by month's end.

Snowdrops in Southold burst into full bloom in mid-February. One month later, daffodils in Hempstead followed suit with a sea of yellow and crocuses in Bridgehampton obliged with a complementary blue.

With March's unseasonably cool weather, the buds on Richard Hendrickson's Persian lilac held fast until spring's official start, its leaves yet to make their seasonal debut.

Most likely, the arrivals of buds, leaves and flowers across the Island will be different next year, and the year after that. But over time, the patterns may add to the history of a bush in Bridgehampton, one that has whispered to a long-time observer that his world is indeed becoming warmer.