Poughkeepsie Journal
OUR ENVIRONMENT
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THE DIRT Q&A

GLENN COLE
Environmental and wildlife consultant

Glenn Cole is a retired wildlife biologist for the State Department of Environmental Conservation. He lives in Pleasant Valley.

Q "Why do so many skunks seem to come out this time of the year? Everywhere I look I see them dead on the side of the road. Why do these skunks think they can brave the traffic?"

A The striped skunk (Mephitis mephitis) is found everywhere in the United States, Mexico and southern Canada. It is a member of the Mustelid family, which also includes weasels and otters.

Most noted for their offensive odor, skunks are nocturnal and sleep during the day in underground burrows most often made by other animals. This is also where they spend time in the winter, though they don't hibernate.

There are two times of the year when skunk behavior makes them vulnerable to being killed on highways.

In the winter breeding season, males search for receptive females, and in the summer young skunks move away from the family group to find new territory.

This movement causes them to cross roads more frequently and, since they aren't very quick or agile, they can't avoid being hit.

With the temperatures dropping, skunk activity is winding down now, but the relatively mild temperatures this fall kept skunks moving late into the season. Come mid-February, mating season begins and skunks will again become accident victims on highways.

It's your turn

Send your questions and comments to Dan Shapley at dshapley@poughkee.gannett.com or by mail at Poughkeepsie Journal, 85 Civic Center Plaza, Poughkeepsie, NY, 12601.

INTUNE

Got a new cell phone? Recycle your old one

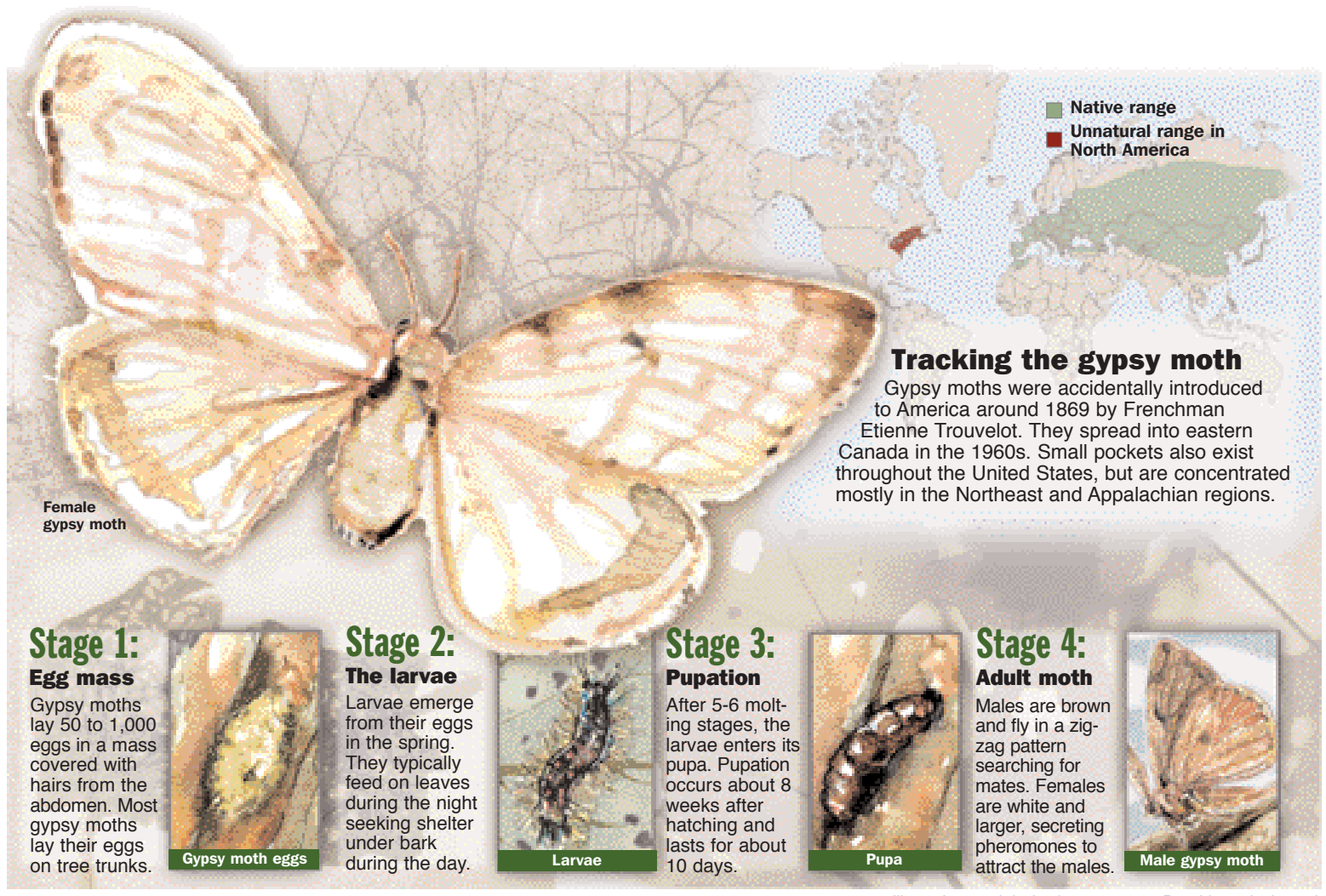
By 2005, 130 million cell phones will be discarded each year, according to the environmental research organization INFORM. Buried in landfills, cell phones contribute to the load of persistent, toxic chemicals that build up in the tissues of living things.

For options about reusing or recycling out-of-use cell phones, try these:

■ The Charitable Recycling Program has local drop-off spots at the credit union and administration building at the State University of New York at New Paltz, at WRWD on Washington Street in Poughkeepsie and at the Moose Lodge on Route 9G in Hyde Park.

■ The Wireless Foundation's Donate A Phone program: *www.wirelessfoundation.org/DonateAPhone*

■ Cellular Telecommunications & Internet Association: *www.recyclewirelessphones.com*



Source: US Department of Agriculture Forest Service Illustrations and design by **Sten Miller**/Poughkeepsie Journal

Fungi, mice control tree menace

By Clive Jones
For the Poughkeepsie Journal

In 1869, imported silk was popular but expensive. Etienne Trouvelot thought he could make money crossbreeding sensitive silk moths with hardy European gypsy moths that would survive our cold climate.

His breeding experiments failed, he did not make his fortune, but our forests paid a high price for the few gypsy moths that escaped from his backyard in Medford, Mass.

The insect spread. Young caterpillars ballooned in the wind on silken threads, and egg masses hitched a ride on vehicles and garden items when people moved. More than a century later, the moth has wandered north into Canada, west to the Great Lakes, and south to Virginia.

10-year cycles

Every 10 years or so, moth populations increase rapidly, sometimes to millions of caterpillars per acre. Once they strip oaks bare of their leaves, the caterpillars feed on other trees, including conifers.

Oaks can withstand a year of complete defoliation, but are often killed by successive years of heavy damage. A single defoliation kills conifers.

Eventually, lack of food, a viral disease and predatory insects kill most caterpillars, and the outbreak collapses.

Our long-term studies at the Institute of Ecosystem Studies in Millbrook show that moths are too rare most years to cause the widespread damage to trees they did in the past. Two unlikely organisms — white-footed mice and a fungus — have, to a large degree, kept moth populations in check.

Gypsy moths arrived in Dutchess County in the 1940s. In New York state, small amounts of defoliation occurred in the mid-'40s, increasing in the mid-'50s, '60s and '70s.

Many will recall the massive outbreak of the early '80s when nearly 2.5 million acres of forest were defoliated statewide in both 1980 and 1981. Outbreaks reoccurred in the early 1990s and the turn of the new century, but with much less defoliation.

Since the end of the 1980s outbreak, the gypsy moth seems to have receded into the background. Is it becoming an innocuous forest occupant or will it periodically resurge?

In all but three years since the 1980s outbreak, caterpillar densities have been well below levels that could cause serious damage to trees. In some years, moths have been so scarce that we found only one or two egg masses after searching acres of forest.

We now understand why moths are usually rare. Intriguingly, the very oak trees gypsy moths eat indirectly prevent moth outbreaks by co-opting the help of the white-footed mouse.

Mice depend on oak acorns for food; mouse populations increase dramatically the year after a bumper acorn crop. Mice are also voracious predators on moth pupae. In summers following a fall with acorns, mice consume most moth pupae before they get the chance to emerge as adults and lay eggs. This keeps moth populations in check, preventing outbreaks.

When acorns are scarce, mouse populations decline, less moth pupae are preyed upon, and moth populations start to rise rapidly. If acorn crops remain low for more than a year or two, moth populations can rise to levels where mice can no longer control them, even if mice become abundant again due to acorns.

Density, but not defoliation

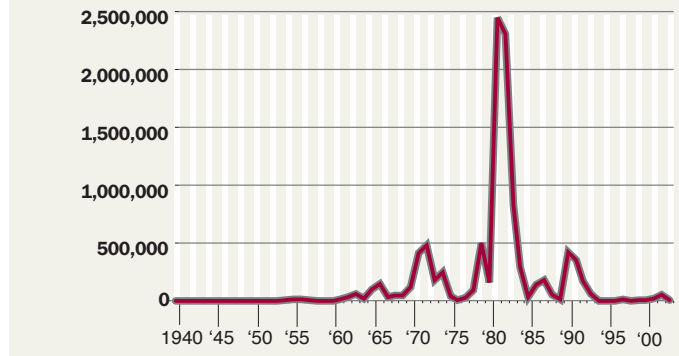
This happened at IES in the early 1990s. Moth density rapidly increased over a two-year period, resulting in patchy, light defoliation in 1994. In contrast to the 1980s outbreak, however, the moth population rapidly declined with no further defoliation.

The difference was the unexpected appearance of a fungus that killed most of the caterpillars before they could strip the forest. This fungus showed up again in

Please see **Moths**, 8B

An appetite for leaves

This chart shows the acres of trees left without leaves because of gypsy moth infestations in New York, from 1940 to 2002.



Source: U.S Department of Agriculture Forest Service **Sten Miller**/Poughkeepsie Journal

Scientists think pollution, not predators, killing trout

Knight-Ridder News Service

CHICAGO — American Indians knew them as the namaycush, or "tyrant of the lakes," and before their mystifying disappearance in the middle of the last century, lake trout sat atop the Great Lakes food chain as a prodigious predator.

When the fish disappeared, it devastated the Great Lakes commercial fishing industry, opened the door for invasive species to run wild and left scientists with a riddle: What killed off the lake trout?

A new federal study strongly suggests there was an invisible perpetrator that eradicated the lake trout, one that finally explains how the king of the largest freshwater system in the world vanished in a few decades.

The results of the 15-year study suggest that minute traces of a type of industrial pollution — dioxins — likely played a large role in killing off the fish.

"This is as close to a smoking gun as we've found," said Stephen Wittman, spokesman for the University of Wisconsin Sea Grant Institute in Madison.

Old theories in question

The findings challenge old theories that overfishing and the invasion of parasitic sea lampreys drove down the numbers of the fish.

American Indians sustained villages on the protein-rich meat of the lake trout, and European settlers harvested the fish commercially beginning in the early 1800s. Millions of fish were hauled out of the depths, and hundreds of fishing camps sprang up across the Northwoods to take advantage of a seemingly endless bounty.

Knight-Ridder News Service

Freshwater biologist Chad Dolan examines native trout fingerlings, which cost about $4 billion annually and seem to vanish in a cycle of waste. Scientists are working to discover what is killing the lake trout.

Despite these human pressures, populations of the deepwater predator held relatively steady.

From the late 1930s through about 1960, however, Great Lakes lake trout numbers plunged until the fish was virtually extinct outside of some isolated pockets in Lake Superior. In Lake Michigan, the population fell off a cliff.

The U.S. Environmental Protection Agency and the Sea Grant Institute led a team that examined Lake Ontario's lake trout population dating to 1865. The researchers examined only Lake Ontario, but they believe their work will help determine what happened to lake trout in all the Great Lakes.

The study found that rising levels of dioxins directly correspond with the rapid demise of the lake trout in Lake Ontario, said Philip Cook, an EPA research chemist.

The Great Lakes have been absorbing pollutants since the first sawmill went up on the shores of Lake Ontario around 1800. But no other pollutants have proved to be so lethal for lake trout in such low doses as dioxins, which explains why lake trout numbers held steady into the 1930s, when dioxins first showed up in measurable levels, according to the study.

Dioxins aren't manufactured intentionally — they are byproducts of industrial processes. Dioxins most commonly form during the burning of trash with chlorine or during the production of herbicides such as Agent Orange.

Small amounts deadly

Dioxins prove lethal for some lake trout larvae at levels as low as 30 parts per trillion, or one drop in 500,000 gallons, the study said. At 100 parts per trillion, dioxins kill all lake trout larvae.

Dioxin levels have been on the decline since the mid-1970s.

"The toxicity alone explains what happened" to the lake trout, Cook said. During the 1960s, he explained, the dioxin level was such that no lake trout larvae could survive.

"The mortality rate was 100 percent," he said. "It wouldn't even matter if there were sea lampreys or overfishing."

WHILE YOU WERE OUT

You might have missed ...

Indianapolis-based Great Lakes Chemical Corp. announced Nov. 3 that it will stop manufacturing certain PBDEs used in furniture, plastics, computers and appliances by the end of 2004.

Polybrominated diphenyl ethers (PBDEs) are a group of chemicals used for more than three decades as flame retardants in many common products.

While the substance has saved many lives by reducing the risk from fires, recent studies have raised concern they might cause neurological and immune system problems or cancer in ways similar to polychlorinated biphenyls (PCBs), which were banned in 1977 but still plague Hudson River fish and those who eat them.

PBDEs do not break down easily, and they have been found to build up in the fatty tissues of living things.

135 million
estimated pounds of PBDE used worldwide in 2001.

1,800
Estimated lives saved because of PBDE flame retardants over 10 years in Great Britain alone.

10-100
Factor at which PBDEs were found in the breast milk of North American women over and above the levels found in European women.

4
Estimated years it takes for the concentration of PBDEs to double in the environment.

89
Percent of edible fish Virginia Institute of Marine Sciences researchers collected in 2001 that had PBDEs in their body tissues.

2008
Year certain PBDEs will be banned in California, the state with the most widespread use of PBDEs because of its strict flammability standards.

RIVERLIFE

"The Northern Lights! They were amazing. ... My pup, Toby, and I were out for our evening trek when I noticed a white cloud-like streak across the sky. As its color changed to brownish red, other streaks, bands, and ribbons of pale greenish "clouds" appeared. ... What a show! Now every long white cloud at night looks suspicious."

Ellen Rathbone
Oct. 30, Newcomb, in the heart of the Adirondack Mountains

This item was submitted to the Hudson River E-Almanac, edited by Tom Lake and e-mailed weekly by the Hudson River Estuary Program of the Department of Environmental Conservation. To receive the E-Almanac, email hrep@gw.dec.sate.ny.us and write E-Almanac in the subject line.

ONTHEWEB

Our Environment online

www.poughkeepsiejournal.com/sections/environment

Moths: Other pests, problems could be ahead for local forests

Continued from 7B

2000, curtailing another outbreak.

Originally introduced from Asia to control gypsy moths, the fungus was released in Boston in 1910 and 1911 and in Pennsylvania in 1985. When and how it arrived in the Hudson Valley is unknown, but it was not detected at IES in the 1980s outbreak.

Will the fungus prevent moth defoliation in the future? We don't know. Fungi tend to thrive in wet conditions, which prevailed in 1994 and 2000. If this fungus always needs wet summers to kill moths, then there can be no guarantee that it will suppress every outbreak.

Even if the mice and the fungus do keep the moth in check, this is not the end of introduced pest and disease problems in Hudson Valley forests.

Other pests have arrived

Joining chestnut blight and Dutch elm disease of the past are newly arrived beech bark scale and canker, and the hemlock woolly adelgid. Looming on the horizon but yet to get here are the Asian longhorn beetle and sudden oak death.

As long as we fail to prevent accidental introductions, our forests will face uncertain, unpredictable futures.

Clive Jones is a research scientist at the Institute of Ecosystem Studies in Millbrook. He has been studying the gypsy moth in our oak forests since 1980.