Biology

Zooplankton eggs break longevity record

The mud that squished between the toes of vacationers wading in freshwater ponds and lakes in the United States this summer may well have contained a large number of viable eggs from 17th century zooplankton, scientists say.

Researchers have known for many years that some of the many zooplankton eggs laid in lakes and ponds during the spring remain dormant until their environment proves more hospitable—notably, when water levels rise or predatory fish have stopped feeding.

A smaller number of eggs is buried in sediment before hatching and can remain dormant for years. Only when something stirs up their muddy world do they float up close enough to the sunlight to hatch. Indeed, investigators have retrieved from lake sediments viable eggs ranging from 15 to 90 years old.

But Nelson G. Hairston Jr. of Cornell University and his colleagues have now uncovered and hatched two 330-year-old eggs of *Diaptomus sanguineus* copepods, they report in the September ECOLOGY. The eggs had a median age of 36 to 46 years, and half of them hatched within 7 to 9 months.

The eggs came from a freshwater pond and a lake in South Kingstown, R.I., and scientists determined their age by means of radioactive dating. The pond alone contains roughly 6 billion dormant eggs, they calculate.

"I bet there are eggs that are several centuries old at the bottom of every lake . . . from algae, invertebrates, and crustaceans," Hairston says.

The zooplankton that laid the eggs normally live only 2 or 3 months. But because a drought or other environmental hazard can wipe out an adult zooplankton population, dormant eggs serve as a guarantee that the species will survive through tough times, the authors note.

One of the most polluted lakes in the United States, Lake Onondaga in Syracuse, N.Y., has captured Hairston's attention. He and his colleagues want to find out what organisms exist to help repopulate the lake once it gets cleaned up. So far, the signs appear favorable: Hairston and his colleagues have taken one core of sediment from the lake and found lots of viable eggs, he says.

Starlings: I'll sing it my way and ours

Starlings have a reputation as socializers. They live in colonies, to which the males return every day, and visit other colonies frequently. The birds also have a sizable repertoire of warbles and whistles.

For example, each male has his own special song. But he also sings songs that other members of his group sing. Females sing too, but researchers know less about their habits, explains Marten Hausberger and her colleagues at the University of Rennes I in Rennes Cedex, France.

Which tunes the birds sing depends on whom they are hanging out with, the team reports in the September JOURNAL OF COMPARATIVE PSYCHOLOGY.

The scientists monitored the singing habits of nine female and six male starlings for 13 months. They recorded the birds singing alone, with a mate, or with others of the same sex.

Song sharing increased over time among pairs of females housed together. Males, which often sing simultaneously, also shared more songs when living together, and their individual tunes grew more similar over time.

Even when paired, males and females rarely shared songs, Hausberger and her colleagues report.

Previous studies have suggested that birds change their tunes less often if their social environment remains stable. That finding prompted the French team to investigate the effect of social interactions on birds' song selection.

Science & Society

State asks: Is tamoxifen a carcinogen?

Numerous studies in the past 3 years have pointed to an elevated risk of several types of cancer among women taking tamoxifen, the world's leading drug to prevent breast cancer recurrence. Now, California regulators want to know whether tamoxifen's link to endometrial cancer—a uterine disease and the best-documented of these associations (SN: 4/16/94, p.247)—means the drug is a carcinogen. Such a determination would automatically require that warnings of the synthetic hormone's toxicity reach all California users.

California's Proposition 65, passed 8 years ago, has gained national attention—some would say notoriety—for its attempt to compile a comprehensive list of chemicals that cause cancer or reproductive harm. But Catherine Caraway of the state's Environmental Protection Agency in Sacramento and head of Proposition 65's implementation, describes the statute as primarily a right-to-know initiative. Often, she says, it requires little more than labeling a listed chemical with a "clear and reasonable warning" of toxicity. To date, she notes, drugs account for more than one-quarter of the 403 carcinogens listed.

On May 11, her agency convened a panel of scientific advisers to review data from animal and human studies of tamoxifen. By day's end, Carcinogen Identification Committee Chairman Thomas M. Mack of the University of Southern California School of Medicine in Los Angeles concluded that "evidence is convincing that tamoxifen does, in fact, produce endometrial carcinoma." When polled, the seven remaining committee members unanimously agreed that existing data offer sufficient evidence to call tamoxifen a carcinogen.

Ordinarily, that vote would have ended the matter—and brought Proposition 65's carcinogen total to 404. But then Leslie G. Ford of the National Cancer Institute in Bethesda, Md., stepped in. In a June 23 letter to James W. Stratton, interim director of the Proposition 65 office, she argued, "It is premature to make a determination as to whether tamoxifen plays a causal role in the development of endometrial cancer." High rates of the disease in human trials, she said, may signify that women in the studies receive better medical surveillance than those in the general population or that they had been exposed to hormones or other risk factors for endometrial cancer.

"This is the first time that we have had a last-minute call from a national agency saying that you need to review [a decision]," explains Caraway. Moreover, her agency's response—to delay listing tamoxifen as a carcinogen—"is unprecedented," she told SCIENCE NEWS. In the interest of giving the matter a full and open hearing, the California EPA will convene a public forum this coming week. Zeneca Pharmaceuticals Group of Wilmington, Del. (the drug's manufacturer), NCI, tamoxifen researchers, and others will all get a chance to discuss the drug's alleged carcinogenicity in greater detail.

Why all the fuss about tamoxifen? "That's a puzzle to me," Caraway says. "There appears to be a whirlwind storm around tamoxifen and [our consumers'] right to know."

But John R. Valencia, an attorney representing Zeneca, observed during the May 11 hearing that "once news is conveyed to the general public that tamoxifen has been decided upon as a carcinogen, there's [likely to be] a natural public reaction." Indeed, Zeneca and NCI may fear that this reaction would jeopardize the recruitment and continuing participation of healthy women in a controversial tamoxifen trial to prevent breast cancer (SN: 2/26/94, p.133).

Mack points out, however, that many drugs cause cancer, have been listed under Proposition 65, yet continue in widespread use—because their therapeutic benefits outweigh their risks. As he told SCIENCE NEWS, his committee's role was "not to make [such] cost-benefit judgments."