# NETWATCH

edited by JOCELYN KAISER

SITE VISIT

## Nurturing a Digital Tree of Life


Scientists have tallied an estimated 1.4 million living species, probably only 10% or so of the kinds of organisms that inhabit our planet. To keep track of that dazzling array of biodiversity, identical twins David and Wayne Maddison, systematists at the University of Arizona, Tucson, in 1996 launched the Tree of Life* site, a visionary attempt to link all known organisms in one phylogenetic tree.

More than 300 scientists from five continents have pitched in to tend this electronic tree, adorning its branches with new entries and sometimes hosting Web pages on their computers. Starting on the "root" page, visitors can follow links for eubacteria, archaea, eukaryotes, or viruses, reaching pages (with background info and images) for families, genera, and individual species. David estimates that the site catalogs fewer than 1% of known species so far. But where expertise does exist, the branches are sprouting luxurious growth. For example, Wayne's pages devoted to jumping spiders (Salticidae)—which sport four big eyes on their faces and four smaller eyes atop their heads—are crammed with detailed descriptions and photos, as well as QuickTime movies of the critters jumping and performing courtship dances.

Future plans include adding links to TreeBASE,† a Web repository of primary molecular and morphological data used to build phylogenetic trees. And the project, run on a shoestring budget, is now looking for grant support. Says David: "For the tree to grow, it needs nutrients."

* phylogeny.arizona.edu/tree/phylogeny.html
† herbaria.harvard.edu/treebase

NET NEWS

## Irish Lass Invents Crypto Code

A teenager from Blarney, Ireland, has become a media darling with her cryptography scheme that she claims is as secure as, but much faster than, the prevailing method for encoding Internet messages. Crypto experts, although skeptical, say they're eager to see the algorithm published.

Sixteen-year-old Sarah Flannery (below) won Ireland's 1999 Esat Telecom Young Scientist contest earlier this month with her project, called "Cryptography—A new algorithm versus the RSA." The RSA, invented in 1977, is a mathematical technique used widely to encrypt e-mail and credit card transactions. Like RSA, Flannery's code is a public key method—part of the key is public, rather than kept secret by the two people using it—and involves factoring two prime numbers. But Flannery's method, which uses smaller numbers and 2-by-2 matrix multiplication, is faster than RSA at higher security levels, Flannery says. It whittles from 30 minutes to a mere 60 seconds the time needed to encrypt a letter with a 1000-bit key. She now intends to patent the code, which she began developing last year as an intern at a Dublin technology firm.

Although Flannery's prize has made her a celebrity—the *Times* of London, the *Guardian*, and the BBC and ABC News have all featured her story—some cryptographers are dubious about how long her fame will last. "This sounds like it will be broken a few days after the details become public," wrote Bruce Schneier, president of Counterpane Systems, on an Internet discussion group last week. But other experts find the idea intriguing: "I think there may be something in it," wrote Derek Bell of Trinity College Dublin.

Flannery seems to be taking the criticism in stride, telling *Science* she's eager to publish her algorithm to find out "if it can stand up to peer review." And even Schneier adds in his January *Crypto-Gram* online newsletter: "It is cool to see serious cryptography out of a new researcher." And one barely out of puberty, at that.

COOL IMAGES

## Blasts From the Past

Movies like last year's *Deep Impact* give you Hollywood's take on a cosmic object slamming into our planet. But seeing the real thing is pretty awesome, too. Take Manicouagan (below), a 65-kilometer-wide, moatlike lake in southern Quebec gouged by an asteroid or comet 214 million years ago. The photo, taken aboard the space shuttle, comes from a Natural Resources Canada (NRC) database that lists the 160 or so known remnants of impact craters on Earth and holds images of 66 that are visible from above. They range from small moonscapelike depressions to giant rings such as this one. (When a crater gets more than 2 kilometers wide, its floor bounces back, forming peaks.) The site draws everyone from students to professionals, says the NRC's Richard Grieve, who's fascinated by the fiery birth of craters at time scales, pressures, and temperatures that he calls "completely out of this world."

gdcinfo.agg.nrcan.gc.ca/toc.html?/crater/world_craters.html

HOT PICKS

**Astro 101.** Looking for good astronomy teaching materials online, or have some you want to share? Visit this new American Astronomical Society database of education resources, all reviewed by AAS members and spanning the elementary to the graduate level. A sampling: a virtual asteroid lab, NASA's digital movie gallery, and a Web textbook on the search for extraterrestrial life.

www.aas.org/~education/index1.html

**Gene scene.** Mendelian genetics gets multimedia treatment at this new Cold Spring Harbor Lab online primer for high school students and laypeople (vector.cshl.org/dnaftb). The site is bursting with video clips of scientists and historians, animations, archival photos, quizzes, and more. Also aimed at the public, a new genetics glossary from NIH defines nearly 200 terms, from adenovirus to yeast artificial chromosome, and includes illustrations and audio from experts such as Francis Collins.

www.nhgri.nih.gov/DIR/VIP/Glossary

Send Internet news and great Web site suggestions to netwatch@aaas.org

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