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The Whole Critter Catalog

Kendra Mayfield 03.13.02



"Ascendant" © 2000. A bouquet of 67 "ascendant" species (i.e. invader or weed species).

When it comes to cataloging the earth's inventory of living organisms, it turns out that scientists know relatively little. Taxonomists have identified fewer than 2 million species out of the 10-to-100 million that may exist on the planet.

To remedy this, a group of tech gurus and scientists launched the [All Species Inventory](#), an initiative with a simple yet ambitious goal: to discover, name and classify every living species on Earth within one generation, or 25 years.

"We don't even know how much we don't know," said Stewart Brand, who co-founded the project. "No one has any idea of how many species there are in the world."

"The idea is to fix that (knowledge gap) in the next 25 years in the same way that the Human Genome Project fixed a core ignorance," said Brand, who also founded [Global Business Network](#), [The Well](#) and the [Whole Earth Catalog](#).

Taxonomists today use the same techniques as Charles Darwin did over 150 years ago.

"It's an ancient way of doing it," said Kevin Kelly, who co-founded the project. "We simply will never get all the species inventoried at this rate. We have to accelerate it. It's a field that has tremendous room for technological development."

Since the 18th century, when Carl Linnaeus founded the modern system of classifying plants and animals, there have been varied attempts to create extensive biological inventories.

Scientists recently announced the first complete database of the world's 11,000 known ant species, [Antbase](#).

But the All Species Inventory is the first attempt to create a global survey of biodiversity with a set deadline. The effort will attempt to create a Web page for every species over the next 25 years.

"This simply couldn't be done unless new technology was brought to bear," said Kelly, who is also a former editor of [Wired magazine](#) and [Whole Earth Catalog](#). "To do this in 25 years requires new tools."

Technology is making it both possible and urgent to create an inventory of all species, directors say. They believe that new tools such as the Internet, GPS and DNA analysis will make it possible for taxonomists to complete the Linnaean task by accelerating the speed at which they can identify a species.

For example, researchers can instantly access a high-resolution digital image on the Web of a reference species that resides in a remote museum. In some cases, taxonomists can see even more detail in a digital

image than they could with a microscope.

Pattern recognition software can allow scientists to recognize shapes in snail shells or butterfly wings. GPS can assist taxonomists in relocating species. Satellite mapping can help researchers learn where they can expect to find new species.

Brand and his cohorts hope the project will reveal new species and provide a reliable baseline for counting populations and determining endangered species.

"We want to push that horizon and engage these technologies sooner than would otherwise happen," Brand said.

"What we're really about is helping innovators think about taxonomists as a field," agreed All Species CEO Ryan Phelan. "It hasn't been on (the) technologists' radar screen."

But the dearth of knowledge is immense. In the microbial area, three out of five kingdoms "are basically unknown," Brand said.

"Imagine doing chemistry knowing only one third of the periodic table," biologist Terry Gosliner writes on the All Species website. "Sure, it can be done, but with an immense handicap. We are trying to do biology knowing perhaps only a tenth, or one hundredth, of our species. It is an immense handicap that does not need to exist."

"We can't have a true understanding of ecological systems unless we know all the parts," Kelly agreed. "We only know a few percentage (of all the species)."

"The real knowledge isn't there," Brand said. "What we do know is it's tremendous. There is enormous loss of biodiversity."

"We're trying to increase the collection of knowledge, but at the same time we're working against a loss of habitat and an invasion of species."

Drawing enough manpower to fuel the project is yet another hurdle. There are only about 10,000 active taxonomists in the world.

Since the effort began, project directors have connected widely dispersed taxonomists to speed publication and coordination. Even amateurs can contribute to this open-source effort.

Directors hope to create a local network of indigenous and native collectors and naturalists who will distribute wealth from the developed world to developing countries.

"What our hopes are is that we could interest amateur natural scientists in this endeavor by making tools available," Kelly said. "We hope we can make available technology to allow people who are interested to assess inventory in their own backyard."

By infusing new technologies with taxonomy, those involved say the project will revamp the field's stodgy image.

"We're trying to make taxonomists cool," Kelly said.

But drawing public and private support to a field that has traditionally been dismissed is a daunting challenge.

"Taxonomy has partly been bogged down by academic dissing," Brand said. "With the coming of computers, it's much easier to get money for modeling than for data collection."

All Species received its first \$1 million in October 2000. The project has since reeled in funds from a number of tech contributors. The total effort will cost approximately \$3 billion.

"Getting the next level of funding will be the major challenge this summer," Brand said.

Some of the most important technologies for the project haven't even been envisioned, Kelly said. The group is currently working with the California Academy of Sciences to understand where new tools could be deployed.

"We know that technology can reduce the costs, even if we don't know what those technologies are yet," Kelly said.

Taxonomists and conservationists agree upon the need to forge ahead with data collection, Brand said.

"They share our goals: Get the damn data or else you're guessing," Brand said.

"This is another example where technology and the living world can cooperate and be used not just to trash the environment but to enhance it through knowledge and understanding," Kelly agreed.

The project's goals may seem audacious, but founders insist they are entirely within reach.

"It's a moon shot. It's a Human Genome Project," Brand said. "It's seemingly impossible, but it's barely possible and completely worth doing."