



# DNA bar code reveals new bird species

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Canadian researchers have co-authored a biodiversity study on DNA "bar-coding" they say will pave the way for cataloguing the world's organisms and lead to the discovery of untold numbers of new species.

With this technology, the study authors envision the creation of a hand-held device that will allow the average person, within minutes, to identify any species of plant or animal life and access biological information about it.

"When we're finished codifying bar codes and creating this reference library for life, any person on the planet will be able to identify any organism," said co-author Paul Hebert, director of the Biodiversity Institute of Ontario at the University of Guelph.

"Any person equipped with a bar-coder can walk through the forest and identify the life around them."

"Bar-coding is revealing legions of unrecognized species, and it's going to change the species count for the planet."

The study by the University of Guelph and New York's Rockefeller University, "Birds, Bats and DNA Barcodes: Extensive New Studies Reveal Many 'Overlooked' Species," appears Monday in the journal *Molecular Ecology Notes*.

Researchers cataloguing birds across Canada and the United States through DNA bar-coding discovered 15 new genetically distinct species, with variations nearly indistinguishable to the human eye. Researchers also found six new species of bats in Guyana.

The aim of bar-coding is to isolate a small piece of DNA and have it represented as a distinct numerical sequence about 650 digits long – similar to bar codes on retail products – using only the numbers 1 through 4.

That may seem like an unwieldy length, but if an organism's entire DNA chain were to be represented that way, it would be about 3.5 billion digits.

The study also revealed sets of DNA "twins" – species that have previously been classified as distinct, such as the king eider and common eider duck species, but that have the same 650-digit DNA bar code, although each would have a unique full DNA chain.

"We don't argue that all DNA twins should be lumped as single species," Hebert said.

"DNA bar-coding is not perfect, but I don't know of any other human enterprise that's perfect."

Hebert said the process is a relatively straightforward way for scientists to catalogue life on the planet.

"If you walk through a forest and look at a bird, you identify it by looking at its shape, its colour, its size, its sound," he said.

"And that works very well with small groups of species, but when you begin to look at millions of species ... no human on the planet can keep all those traits straight."

With today's technology, the process of DNA bar-coding requires about three hours and two or three pieces of equipment the size of dishwashers.

Hebert predicted that in 10 years, the process will take just minutes with a hand-held device the size of a global positioning system.

But will such portable and powerful technology take the fun and challenge out of birdwatching for the average Joe?

Absolutely not, Hebert said.

"If you arrive in Tahiti in a ship directed by a global positioning system as opposed to star navigation, would it be any less enjoyable to get there?"

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