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WORLD OF SCIENCE

What's in a name?

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What has DNA barcoding accomplished so far?



Hebert and his co-workers successfully conducted "blind" tests, in which a small piece of tissue was provided by collaborators, which was then used to identify the specimen. More than 4,000 specimens belonging to 500 species of tropical insects were correctly identified.

Variation in the COI sequence between individuals from the same species and among individuals from different species has been determined for many vertebrates and invertebrates: birds, fishes, collembolans and insects. DNA barcoding seems a promising tool in all these cases.

DNA barcodes don't always agree precisely with traditional taxonomic classifications, (though they do seem to agree in almost all cases). In a study on butterflies, one set of butterflies that was believed to be a single species since 1775, showed so much genetic variation that barcoding split this set up into 10 different species. Scientists have suspected, however, that this species may actually not be one, and that there may be differences that

aren't visible to the eye.

Investigations

So, using DNA barcodes, scientists investigated these insects further, and found that although the adults looked alike, they were, in fact, 10 different species according to DNA barcoding. Going back into the field, they realised that these species could be distinguished when the appearance, behaviour and diets of their caterpillars were carefully examined, and taken into account. Most other butterfly species showed that traditional taxonomy had done an excellent job — their classifications matched up with the genetic groupings.

However, there were subtle differences in about four species, suggesting that in those cases, DNA barcoding would split up some species that traditional taxonomic approaches had lumped together.

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