

Species unique to single island should not be rare there

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Animal and bird species found only on a single island should still be common within that island.

This is the finding of a new model developed by researchers from the University of Leeds and Imperial College London. The model could apply both to actual islands and isolated areas of habitat on the mainland that are home to unique [species](#), such as the table top mountains of South America.

The natural history of islands is littered with examples of unusual species found only in one place, such as the Hawaiian Goose, Galápagos Tortoises and Dodo that may once have been common on their islands, but since human contact have become rare or even extinct. Now this new modelling approach shows that in general, most unique island species should be common on their island. If they are not, then the researchers believe human activity is most likely to be the cause.

"Models of island ecology have tended to focus on the total number of different species that you might expect to find on an island, rather than on how common or rare those species are and whether or not they are unique to the island," says Dr James Rosindell, of Leeds' Faculty of Biological Sciences. "Our model is able to predict the way that new species develop in isolation from the mainland as well as how many individuals of each species we could expect to see in their natural habitat. However, there is little data on population sizes and this highlights a real gap in knowledge that we need to fill."

To develop the model, the researchers collated data on [bird species](#) found across 35 islands and archipelagos. Modern genetics makes it possible to identify which species have diverged to create new species – so the team were able to test their model against actual data.

The model and data both show that whilst islands close to the mainland have no unique species, more distant islands tend to have unique species that are closely related to mainland species. Only the islands and archipelagos furthest from the mainland are expected to contain large numbers of unique species closely related to each other, such as Darwin's finches on the Galápagos and the Hawaiian honeycreepers.

"This model is still in its early stages of development, but we hope it will help to prompt more study of population sizes on islands," says Dr Albert Phillimore, from Imperial's Department of Life Sciences.

"Comparing the predictions of different models to actual data can help us to identify where other factors are coming into play – such as additional ecological processes and human intervention. In the future, we plan to look at how the model could also help make predictions relevant to conservation strategy."

Provided by University of Leeds

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