

IN231 Speciation of birds in SE Sulawesi

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Island biogeography has been one of the primary driving forces behind the development of the theory of evolution. It was Charles Darwin who was struck by differences in bird populations on the Galapagos islands, and in recent years a great deal of research has been conducted on the finches of those islands. However, when Darwin returned from his travels, he spent a great many years considering and refining his ideas. He seemed reluctant to present them to the scientific community. It appears it was correspondence with Alfred Russell Wallace (working near to Sulawesi, in an area that now bears his name) that prompted Darwin to present his work to the Linnaean Society in London. Wallace had been fascinated by the small, but clear, differences he had seen between the island populations of Indonesia. Although the terms "island biogeography" and "allopatric speciation" were not coined until much later, it is clear that both Darwin and Wallace understood these concepts.

Indonesia is a perfect country for studying island biogeography, as it is comprised of somewhere in excess of 17,000 islands. Several new vertebrate species have been reported from Indonesia in recent years, and a least two new bird species from islands just off Sulawesi. Clearly the islands of Indonesia have yet to reveal all of their secrets. Indeed, work by Operation Wallacea teams has revealed new bird populations on Kabaena, the Wakatobi islands and mainland Sulawesi. An ongoing research partnership between Trinity College in Dublin and Haluoleo University in Kendari (SE Sulawesi) is continuing to make further discoveries. While the distance between the islands of Buton and Sulawesi is rather small (as little as ##km in places), some species (e.g. white-eyes) show a remarkable reluctance to cross even the shortest oceanic barriers.

The aim of this project is to continue in the collection of morphometric data of birds from Buton island and mainland Sulawesi, in an attempt to understand the spread and development of bird populations in the area. Laboratory-based investigations (in Dublin) are beginning to show complex competitive interactions between a number of bird species. Both trophic competition (i.e. competition for food) and trophic release (i.e. a lack of competition for food) may be strong drivers of evolution. There is clear physical evidence of divergent island populations on the Wakatobi islands, but we have yet to examine Buton and mainland Sulawesi for those same signs.

Students will be comparing bird populations within and across islands. This data will allow a clearer picture of similarities and differences between bird populations on neighbouring islands. Our principal area of comparison will be morphology; birds will be trapped in mist-nets in similar habitats across our study areas, measured and released. Measurements will include; wing length, bill length, bill depth, tarsus length, tail length and weight. This suite of measurements will allow us to identify changes in gross morphology, as well as more subtle changes, e.g. dietary changes. Additional information will be collected on plumage, wing shape, population density, relative abundance, song and behaviour, as time allows. All trapped birds will be colour-ringed to prevent the duplication of data.

Competition (both when it is present and when it is absent) is an important driver of speciation. By identifying the local bird biodiversity, as well as the relative abundance of those species, it may be possible to explain any differences we discover. Geographic features other than oceanic barriers may serve to isolate populations, so it will be important to consider local geography as well as biodiversity.

While our focus will be on the more easily-trapped bird species (e.g. white-eyes, sunbirds, flowerpeckers, monarchs and babblers), we will document all species, wherever possible. As Buton island and the SE peninsula of Sulawesi are poorly studied, there is still potential for new discoveries.

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