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## Range-wide population genetic structure of wombats analysed for the first time

For the first time scientists have analysed the population genetic structure of the bare-nosed (or common) wombat across south-east Australia in an effort to help manage and conserve the species.

The researchers from the University of Tasmania's School of Natural Sciences, Drs Alynn Martin, Scott Carver and Chris Burridge, worked with colleagues to examine the population genetic structure.

"The bare-nosed wombat is wide-spread in south-east Australia but has also experienced fragmentation and local extinction of some populations within its range. Three subspecies have been considered to exist, including south-eastern mainland, Bass Strait Islands (Flinders, and formally King and Cape Barren), and Tasmanian," Dr Carver said.

"Additionally, a population of wombats exists on Maria Island. It was unclear whether they were entirely descended from a Flinders Island translocation, or if the island had its own subspecies or Tasmanian wombats had been introduced and interbred with them.

"A morphological study was carried out in the 1950s, which looked at the form and structure of wombats including their size and colour. However, we wanted to understand whether there were any genetic differences among the proposed subspecies.

"We knew almost nothing about the genetic structure of bare-nosed wombats across their range," Dr Martin said.

"Historically, Tasmania was connected by two land bridges to the Australian mainland, which may have influenced the genetic differences among wombat subspecies. One of those bridges contained Flinders Island, and the other King Island. However historical sea-level rise about 12,000 years ago separated Tasmania, Flinders Island, and mainland Australia," Dr Burridge said.

**Key findings from the research include:**

- Confirmation that there are three subspecies of the bare-nosed wombat in Australia. Subspecies are south-eastern mainland (the largest of the three), Bass Strait Island (the smallest and lightest coloured, from Flinders Island), and Tasmanian (middle sized);
- Maria Island wombats are found to be entirely from Flinders Island (not mixed with other subspecies);
- There were distinct genetic differences among wombat populations that had been fragmented on mainland Australia, and wombats living further apart were more genetically distinct within Tasmania.

“What was really interesting in regards to Maria Island is we knew there was a translocation of wombats carried out in the 1970s, but it was unclear if there were already wombats on the island,” Dr Carver said.

“The island now has a healthy number of wombats.

“We were expecting to see a mixture of genetics between Tasmania and Flinders Island on Maria, but our study showed the wombats were all descended from Flinders.

“What the study illustrates is that the genetic variation among the subspecies, and across large distances within the subspecies, should be taken into consideration when managing wombat populations.

“There are quite a large number of wombats on Maria Island, and there have been suggestions to move some.

“Given we have been able to show they are genetically distinct to Tasmania’s wombats, it raises questions about whether translocations back to Bass Strait islands, from which they once occurred, might be supported by local communities and the Tasmanian state government.”

The study, “Isolation, marine transgression and translocation of the bare-nosed wombat (*Vombatus ursinus*)”, was published in the journal *Evolutionary Applications*. The study is available here:

<https://onlinelibrary.wiley.com/doi/abs/10.1111/eva.12785>

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