Changing environment caused some isolated kangaroos to evolve separately

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A team of researchers with the University of Queensland in Australia has found that a group of kangaroos living along the Sunshine Coast in that country have some distinct genetic variations—they are not a separate species from the other kangaroos (they are still close enough that they can interbreed when given the chance) but instead have genes that show they evolved separately from others in other parts of the country. In their paper published in *PLOS ONE,* the team describes the

genetic studies they undertook and their hopes that additional study of the unique kangaroos will offer some insights into how such animals adapted to a changing environment.

The discovery was made as the team was studying eastern grey kangaroos hoping to learn more about their genetic history—they collected 317 fecal and tissue samples from 39 sites throughout Queensland and New South Wales and brought them back to their lab for analysis, in all a total of 256 samples were successfully sequenced which included 108 unique haplotypes. That allowed them to see that one small group had a distinct genetic variation. It also allowed them to trace the lineage back in time, which showed the kangaroos branching off after the last ice age.

Grassland became more widespread during the last ice age, the team notes, allowing the kangaroos to move about at will. But then, as temperatures warmed, some of those grassy areas became rainforest, cutting off travel and essentially trapping one small group of kangaroos in areas along the Sunshine Coast. The separation over those thousands of years led to some genetic differences compared to those that were not trapped. But of course, it was not as simple as that, the kangaroos had to do something to survive, the team notes—it appears they migrated to what is now North Queensland and other locations farther south.

Learning more about how one group of kangaroos survived major changes to their environment, the team explains, may offer clues regarding the fate of the species (and perhaps others as well) as the planet heats up and wild grasslands give way to urban development.

More information: Coghlan BA, Goldizen AW, Thomson VA, Seddon JM (2015) Phylogeography of Eastern Grey Kangaroos, Macropus giganteus, Suggests a Mesic Refugium in Eastern Australia. *PLoS ONE* 10(5): e0128160. DOI: 10.1371/journal.pone.0128160