

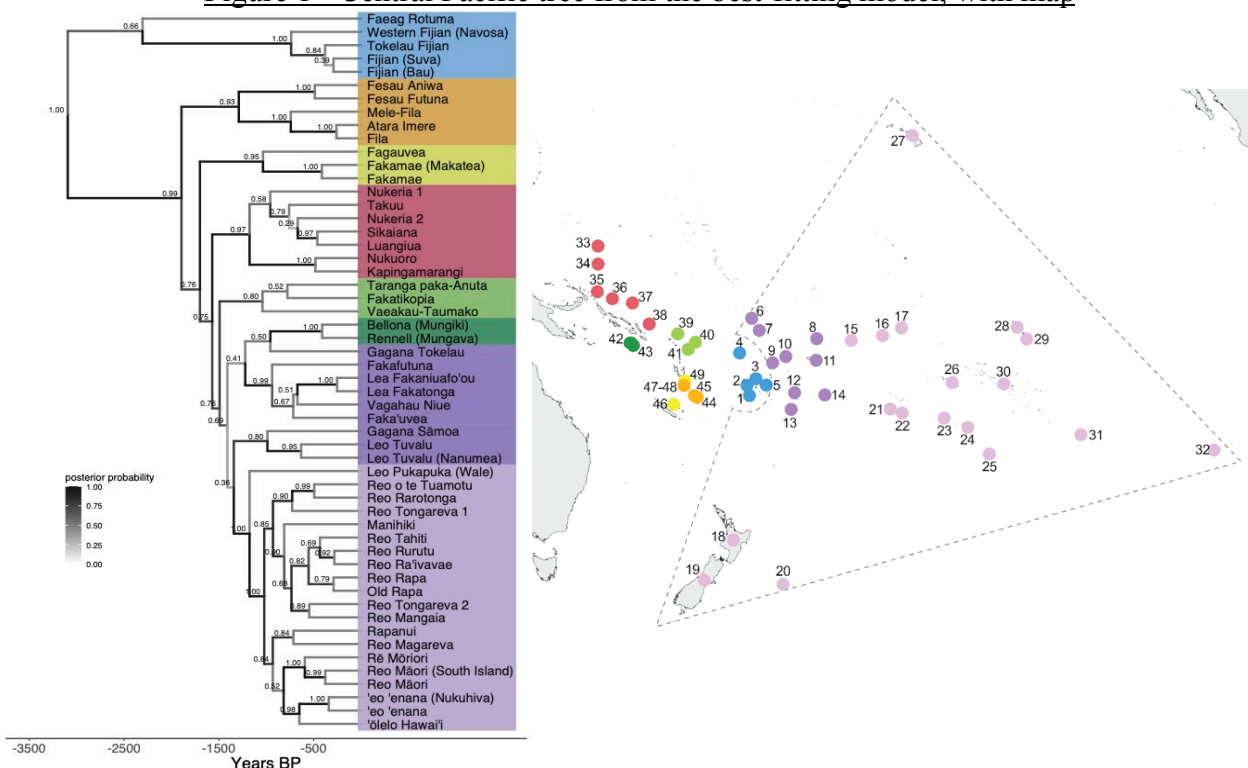
## Disentangling the complex history of the Polynesian Outliers\*

The peopling of the Pacific Islands by Oceanic-speaking peoples represents one of the greatest population expansions in human history. It is characterized by three major phases of settlement: the arrival of Austronesian-speaking peoples into Near Oceania 3350 years ago (Kirch 2017; Denham et al. 2012), migrations outward into Remote Oceania between 3200 BP and 2800 BP (Bedford & Spriggs 2019), and the Polynesian expansion out of Western Polynesia 1500 to 2000 years later (Kirch 2017). In only a few hundred years, Polynesian-speaking peoples moved east to discover and settle the entire Eastern Pacific Ocean and also expanded westward to settle on certain Western Pacific islands that had been previously inhabited nearly 2000 years prior (Leach & Davidson 2008, Kirch & Yen 1982). In spite of its significance as a major phase of Pacific settlement, the Polynesian migration “back” to previously inhabited areas of the Western Pacific remains shrouded in mystery. These ancestral Polynesian populations left little defining material evidence and the extent of their expanse is evident primarily through the Polynesian languages that are spoken today beyond the geographic area of Polynesia, known as the “Polynesian Outliers”.

In this paper, we use an innovative and interdisciplinary approach to unknot the complex history of the Polynesian Outlier expansion. Here, we answer the questions: How do the Polynesian Outlier languages relate to one another? Did the Outlier populations expand westward in one major pulse, or in multiple waves? Where and when did this expansion begin? For this study, we compiled basic vocabulary data (202 concepts) for 54 Central Pacific language varieties into the Austronesian Basic Vocabulary Database (Greenhill et al., 2008), and we applied the historical comparative method in order to establish cognate sets. We then used Bayesian phylogenetic methods to infer internal relationships among these languages and novel phylogeographic methods (Neureiter et al., 2021) to further determine migration paths.

Our results (Figure 1) provide evidence for a new subgrouping of the Outlier languages, in which we identify five major Outlier groups - two comprising the Outlier languages of Southern Oceania, an Eastern Solomons group, a Western Solomons, and a Northern Outlier group. We further demonstrate a minimum of five corresponding Outlier migration waves from the Western Polynesia area. Additionally, we estimate the beginning of the diversification of the Polynesian Outlier languages from other Polynesian languages to between 1300 and 1100BP. This new evidence for the Outlier expansion challenges recently proposed hypotheses of Outlier affinities (Wilson 2012, 2021), while offering a detailed account of the internal relationships of the Outlier languages and shedding light on the history of the Outlier populations.

Figure 1 - Central Pacific tree from the best-fitting model, with map



## References

- Bedford, S., & Spriggs, M. (2019). *Debating Lapita*. ANU Press.
- Denham, T., Ramsey, C. B., & Specht, J. (2012). Dating the appearance of Lapita pottery in the Bismarck Archipelago and its dispersal to Remote Oceania. *Archaeology in Oceania*, 47(1), 39–46.
- Greenhill, S. J., Blust, R., & Gray, R. D. (2008). The Austronesian Basic Vocabulary Database: From Bioinformatics to Lexomics, 4:271–283. *Evolutionary Bioinformatics*, 4, 271–283.
- Kirch, P. V. (2017). *On the Road of the Winds: An Archaeological History of the Pacific Islands before European Contact, Revised and Expanded Edition*. University of California Press.
- Kirch, P. V., & Yen, D. E. (1982). *Tikopia: The Prehistory and Ecology of a Polynesian Outlier*. Bernice P. Bishop Museum.
- Leach, F., & Davidson, J. (2008). *The archaeology on Taumako: A Polynesian outlier in the Eastern Solomon Islands*. New Zealand Journal of Archaeology.
- Neureiter, N., Ranacher, P., van Gijn, R., Bickel, B., & Weibel, R. (n.d.). Can Bayesian phylogeography reconstruct migrations and expansions in linguistic evolution? *Royal Society Open Science*, 8(1), 201079.
- Wilson, W. H. (2012). Whence the East Polynesians? Further linguistic evidence for a northern Outlier source. *Oceanic Linguistics*, 51(2), 289–359.
- Wilson, W. H. (2021). East Polynesian Subgrouping and Homeland Implications Within the Northern Outlier–East Polynesian Hypothesis. *Oceanic Linguistics*, 60(1), 36–71.

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