

founders on each island, the founding individuals' genetics were not fully representative of their source populations, and over time, the resulting populations diverged genetically.

This founder effect has had several consequences for the crickets, particularly their mating system. Female crickets are typically drawn to a male by his "singing"—the chirping sound that crickets make by rubbing their wings together. This surprisingly loud calling card is made possible because the wings have a serrated surface, but on two islands in Hawaii, Kauai and Oahu, some males have mutations that result in a loss of serration and therefore cannot sing (fig. 4.16a). This new genotype was first observed in Kauai (Zuk et al. 2006), and later a different non-singing genotype was identified in Oahu (Pascoal et al. 2014). In Australia, the source population, females are very selective about mate choice and acceptance and strongly prefer singing males.

As it turns out, female acceptance of males is itself a genetically based trait. By performing mating experiments with females from multiple mainland and island populations, Tinghitella and Zuk discovered that females on the islands of Kauai and Oahu were less discriminating than those in Australia or its more closely neighboring islands, as seen in figure 4.16 (Tinghitella and Zuk 2009).

Although loss of discrimination in females could have occurred through genetic drift, in this environment it is more

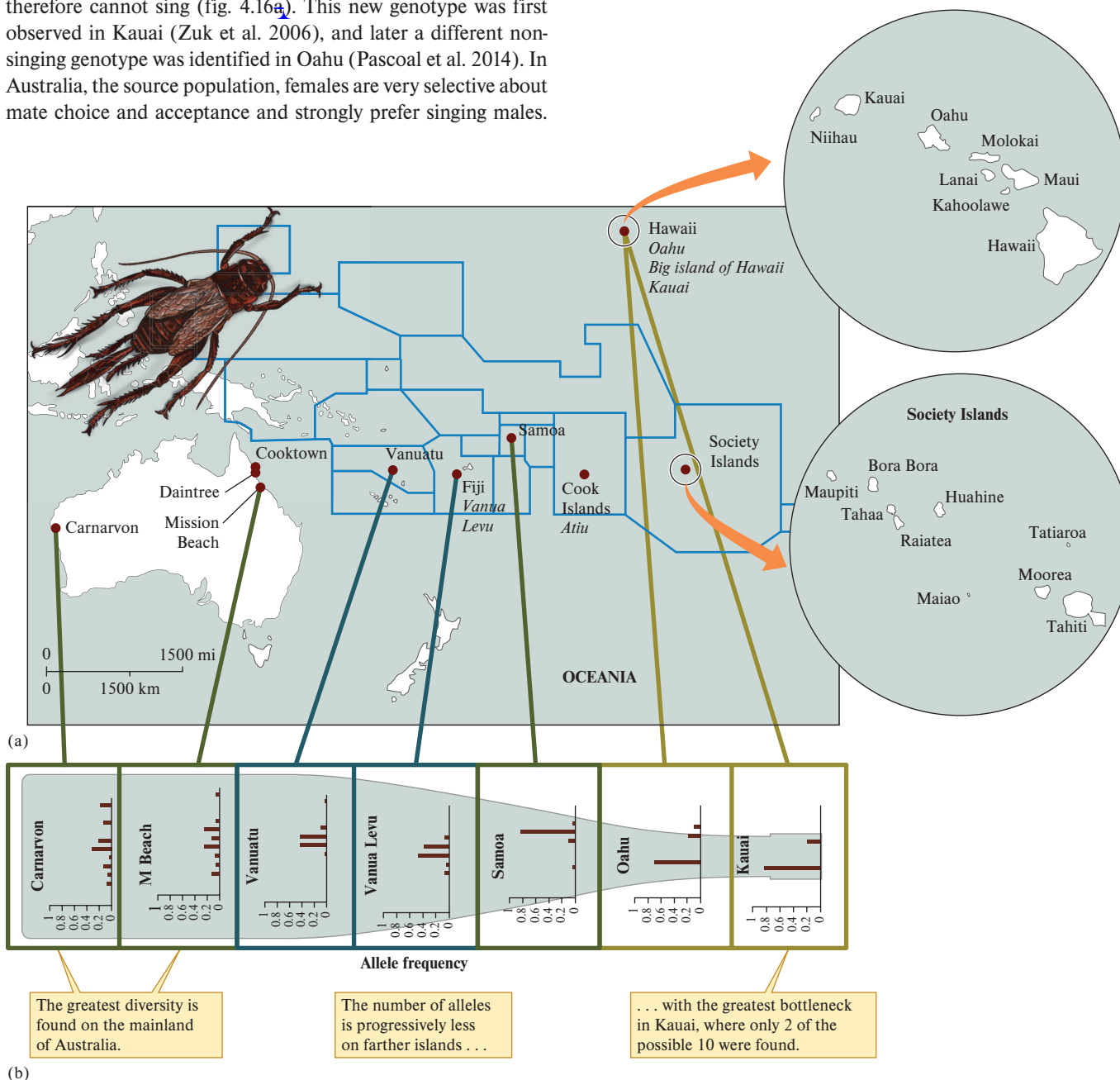


Figure 4.15 (a) Map of Oceania, with those locations indicated where the genetic diversity of field crickets, *Teleogryllus oceanicus*, was measured. These include the mainland Australian cities where field crickets are native and ancestral, as well as a subset of islands where they dispersed later, some through human movement. (b) Frequencies of alleles that were sampled through microsatellite analysis for some of the locations that were sampled by Tinghitella and colleagues (2011). Each bar represents a different allele, the height of which reflecting how common it is. Frequencies sum to 1; thus, there are either many alleles at low frequencies (as in Australia) or few at high frequencies (as in Hawaii). The bottleneck in genetic diversity observed with distance from the mainland is likely due to founder effect, a mechanism of genetic drift (data from Tinghitella et al. 2011).