

In obligately sexual organisms, Fisherian sex ratio theory predicts equal parental investment into sons and daughters. This is because each individual has one mother and one father, and hence the total reproductive success of all males of a population is equal to the total reproductive success of all females of that population. Conversely, in facultatively parthenogenetic animals, such as stick insects, some individuals only have a mother, and no father. As a result, the total population-wide reproductive success of females is higher than that of males, and hence female-biased sex allocation is favored. The degree of the female-bias is directly related to the rate of parthenogenesis: if parthenogenesis is more common, optimal sex ratios become more female-bias. In stick insects, asexually produced offspring are always female, while sexually produced offspring have unbiased sex ratios. Using a mathematical model, we show that this system achieves optimal sex ratios in stable environments, but not in unstable or cyclic environments. We further compare stick insects to other facultatively sexual animals such as aphids and *Daphnia* and argue that the ability to produce males asexually enhances adaptation to unstable environments in facultatively sexual organisms.