Population Dynamics of Honeybees – Megan Asche and Kelly Sears

Honeybees are eusocial insects that have huge economic importance to the agricultural industry. They are unique in that they have a sex-determination system know as haplodiploidy, which is further complicated through the complementary sex determination (csd) locus. The Csd locus induces a significant genetic load through the consequences of homozygosity in diploid males and heightens the effects of inbreeding. Queen bees are polyandrous, and mate with 10-20 drones. This mating behavior minimizes the likelihood of inbreeding in feral populations. However, within domesticate colonies multiple breeding techniques (closed population, artificial insemination, queen production) have been employed that have selected for economically important traits at the expensive of likely reducing many other traits that are important for colony health. Luckily, despite the breed tendencies of the industry, hybridization with Africanized honeybees has occurred in the Southern US and provided significant gene flow that will help slowly reduce some of the consequences of artificial selection and prohibition of honeybee importation.

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