

## Do African Tulip Trees Harm Native Pollinators?

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African tulip trees (*Spathodea campanulata*) are originally native to tropical dry forests in Africa but are now a common ornamental in parts of Southern California. They are frequently found in parks and residential yards and are easily recognizable by their large red, orange, or yellow trumpet-shaped flowers. The trees bloom in late summer and early fall and can grow quite large (up to 80 ft), although smaller trees are also common.



African tulip trees with both orange and yellow flowers growing in Mission Valley, San Diego.

Despite their beauty, African tulip trees may be hiding a deadly secret. Previous studies from Brazil have found the nectar of these trees may be toxic to some insects (or at least acts as a sticky trap) and numerous dead arthropods have been found inside the flowers. In particular this seems to be a problem for native stingless bees in Brazil. Similar effects have also been reported from Australia, where numerous native stingless bees have been found dead inside the flowers of African tulip trees. In both countries, the trees appear actively detrimental to at least some species of native pollinators.

This begs the question: Do African tulip trees in Southern California harm our native pollinators? No studies have been published on the effects these trees have on native pollinators in California, and the concern is that California native bees can be attracted to and then killed by the flowers.

To being to answer this question, I located multiple African tulip trees around San Diego and checked their flowers for dead insects during late summer and early fall of 2022 and 2023, and

am continuing to sample trees in 2024. Several Master Gardener volunteers across San Diego and Orange counties also checked African tulip trees around where they live and added to the data collection effort.

We found multiple dead native bees and numerous other dead insects inside African tulip tree flowers. In 2022 and 2023 we sampled ~50 trees, checked ~9,500 African tulip tree flowers, and found a total of 1,214 dead insects inside, including 241 dead bees. Almost all the bees were tiny native bees in the genera *Halictus* or *Lasioglossum*.

In 2024, I've sampled several trees more intensively to determine how many bees may be killed on a daily basis. From our results so far, some trees can be particularly deadly: One tree I sampled five days in a row had an average of 36 dead native bees per day and on the last day of sampling had 75 dead *Halictus* bees inside the flowers. Clearly African tulip trees can be harmful to some species of our native pollinators.



Several dead *Halictus* bees found inside a single African tulip tree flower.

However, the number of dead bees we found in flowers seemed to vary a lot by location and by time of year. For example, I found 84 dead native *Halictus* bees in a single small African tulip tree in Mission Bay in late August 2023. On the same day, numerous other African tulip trees within a couple hundred feet had no dead bees in their flowers. Additionally, we found the most dead bees right at the end of August, with fewer and fewer being found later on in the season. Time and place appear to matter quite a lot for how much these trees impact pollinators, and the results even vary day to day.

For now, we don't have enough information to say with certainty that African tulip trees are a true threat to our native bees, only that they can sometimes be a problem in certain locations. But given what we have learned, even small trees can kill up to 75 native bees a day if they are in the right location.

With the data from 2022-2024, I plan to apply for a research grant to expand our sampling efforts and get a better idea of how problematic African tulip trees may be to native bees in Southern California. Stay tuned for updates on this research as we continue to sample trees this year! In the meantime, if you have African tulip trees in your yard or in parks close to where you live, take a look inside the flowers. You just may find some dead bees or other insects.