

Mezcal worm in a bottle: DNA evidence suggests it is a single moth species

March 8 2023



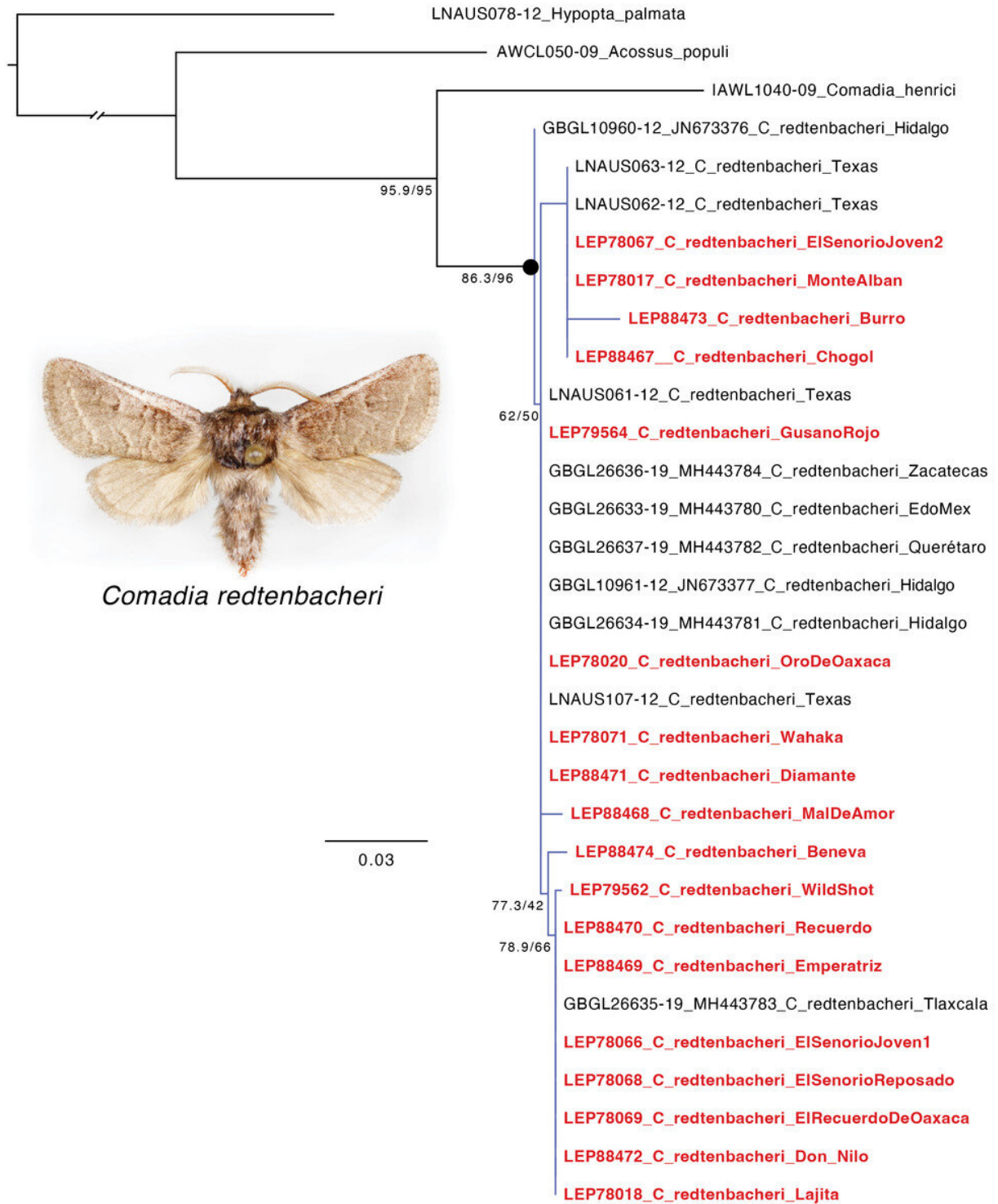
Closeup image showing a worm inside a bottle of “Lajita Reposado” mezcal.
Credit: Akito Y. Kawahara. CC BY 4.0.

A new study published in the journal *PeerJ* looked to identify the species of larva found in bottles of Mezcal. Mezcal is a distilled alcoholic beverage made from any type of agave.

Are people consuming larvae of the skipper butterfly *Aegiale hesperiaris*, or the larva of the moth *Comadia redtenbacheri*, the latter of which is thought to be declining in numbers in recent years? Or is the worm the larva of a weevil, or another unidentified insect species? Researchers used DNA-based identification analysis of larvae inside 21 commercially available mezcals to determine their identity.

Specimens were obtained from mezcal bottles that were purchased between 2018 and 2022. All larvae appeared superficially very similar, with a distinct head capsule and prolegs that are characteristic of lepidopteran larvae. Some [specimens](#) were white, others were pinkish red. Of the 21 larvae subjected to DNA extraction, 18 yielded DNA sequences that were suitable for analysis.

The results were somewhat unexpected. Historically there are about 63 species of larvae or "worms" that are consumed in Mexico, including the Tequila giant skipper (*A. hesperiaris*) which, given its name, implies that it is included in tequila and other mezcals.



Maximum likelihood tree showing the placement of the 18 successfully sequenced mezcal worms (in bold and red) in relationship to publicly available COI sequences of *Comadia redtenbacheri* (Hammerschmidt) and related

Cossidae species. Scale bar = number of substitutions/site. Credit: Jose I. Martinez. CC BY 4.0

The study found that all larvae are a single moth species affirming the importance of *C. redtenbacheri* for the mezcal industry. Larvae of *C. redtenbacheri* are one of the most popular edible insects in Mexico.

Adding larvae to Mexican beverages and foods (salts, garnishes, powders, etc.) is driven by [health benefits](#) and by beliefs that these larvae contain aphrodisiac properties (Contreras-Frias, 2013). This [trend](#) is resulting in greater demand that is applying pressure to local larval populations.

In response to the declining number of mezcal larvae, researchers have begun to develop methods to cultivate these [larvae](#) in captivity.

More information: Akito Y. Kawahara et al, Mezcal worm in a bottle: DNA evidence suggests a single moth species, *PeerJ* (2023). [DOI: 10.7717/peerj.14948](https://doi.org/10.7717/peerj.14948)

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Citation: Mezcal worm in a bottle: DNA evidence suggests it is a single moth species (2023, March 8) retrieved 25 April 2024 from <https://phys.org/news/2023-03-mezcal-worm-bottle-dna-evidence.html>

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