New mesoamerican pine beetle described

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An adult mesoamerican pine beetle is shown removing resin and boring dust from the entrance of its gallery. Credit: Brian Sullivan

A newly-discovered species of tree-killing bark beetle, *Dendroctonus mesoamericanus* Armendáriz-Toledano and Sullivan, has been described in a paper published online in the *Annals of the Entomological Society of America* by a group of researchers that includes a U.S. Forest Service scientist.

Numerous and diverse studies by a research team that includes members from the U.S., Mexico, and Norway determined the organism to be a species new to science and provided information needed to manage the insect, which may share responsibility with the southern pine beetle for catastrophic damage to pines of Central America in recent years.

Authors of the description paper include Dr. Brian Sullivan, research entomologist with the Forest Service Southern Research Station, Francisco Armendariz-Toledano, graduate student with the Instituto Politecnico Nacional (IPN) in Mexico City; Dr. Gerardo Zuniga of IPN, Dr. Lawrence Kirkendall of the University of Bergen, Norway, and Alicia Nino, graduate student at El Colegio de la Frontera Sur (ECOSUR), Chiapas, Mexico.

Bark beetles of the genus *Dendroctonus* rank high among the most destructive conifer pests and include the southern pine beetle, which attacks pines from New Jersey to Texas and south to Nicaragua, as well as the mountain pine beetle recently causing extensive tree mortality in the Western U.S. and Canada. In recent decades, massive beetle attacks in Central America attributed to southern pine beetle have led to declines in pine forests and multimillion dollar losses in timber, recreation, and other ecosystem services.

Sullivan and fellow researchers found that not all of these losses could be attributed to southern pine beetle.

Kirkendall first proposed this beetle as a new species in 2002 but was

only able to provide limited evidence. The studies Sullivan did between 2006 and 2010 on the pheromone and body wax chemistry of the beetle provided clear biological evidence that it was a species new to science. These findings stimulated subsequent interest and research at IPN and ECOSUR. Extension and forest health education programs in the Central American region have already begun to include information on the mesoamerican pine beetle.

"We found in research with our cooperators in Mexico and Norway that insects previously identified as southern pine beetles are actually two different species—southern pine beetle and the newly identified mesoamerican pine beetle," said Sullivan. "The new species is nearly indistinguishable from the southern pine beetle. The two species appear to work in cooperation to kill trees, and outbreaks by both may be more persistent and destructive than those by southern pine beetle alone."

Southern and mesoamerican pine beetles do differ in several respects. The mesoamerican adults tend to be somewhat larger than the southern pine beetle, and the holes where they enter the tree's bark exude more resin, producing bigger "pitch tubes." Field observations suggest that the new species attacks trees shortly after southern pine beetle, colonizing the lower trunk and branches. The mesoamerican pine beetle also has a distinct pheromone chemistry and does not respond to traps baited with southern pine beetle lures.

Researchers have found mesoamerican pine beetles attacking eight species of native Central American pines and have collected the insect from Belize, southern Mexico, Guatemala, El Salvador, Honduras, and Nicaragua.

"A thorough understanding of this species complex - the southern and mesoamerican pine beetle acting in concert—may prove critical for developing integrated pest management strategies for the Central

American region," said Sullivan. "This discovery also brings to light a potential exotic threat to the U.S. that was not previously known to exist."

More information: Access the full text of the journal article: www.srs.fs.usda.gov/pubs/47987

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