

P186*Colony defense and plasticity of the stingless bee, Tetragonisca angustula***Christopher Jernigan**, David Roubik, William Wcislo, Brian Smith

Understanding how animals respond to novel and familiar stimuli in their world is a vital part of understanding their behavior and ecology. Previous studies exploring colony defense behavior by social insects have shown two general outcomes of repeated interactions. In the ant, *Pheidole denata*, repeated exposure to a heterospecific 'enemy' ant caused an increase in defense response to that species. However in a number of ants, including *Pheidole*, *Acromyrmex*, *Manica* and *Formica*, decreased aggression with repeated exposure has been observed. We explore the defense plasticity and compare and contrast previous findings to that of the stingless bee defense system in *Tetragonisca angustula* using a natural alarm stimulus, synthetic alarm pheromone mixture, novel odors, and visual threat models in the field in Panama. These bees are unique in that they maintain a force of both standing and hovering guards. Our goal was to explore the role of these two guard castes during controlled aggression events and measure the plasticity of these behaviors with regards to habituation to their own alarm pheromones and novel stimuli. We found during aggression events by *T. angustula*, they express a dramatic increase in the activity and number of hovering guards and a prominent decrease in standing guards, as many of these took to areal defense. Bees often performed 'death bites' on foreign objects during these events. We found in mild events, colony working-memory of the event had impacts on behavior for approximately 24 hours. Bees exhibited habituation, or a decrease in defense behavior, to the same stimuli with repeated stimulation 2-12 hours after exposure. Normal defense responses were recovered after 24 hours, however in mass raid events bees were observed to maintain highly increase guard numbers for up to 3 days.