

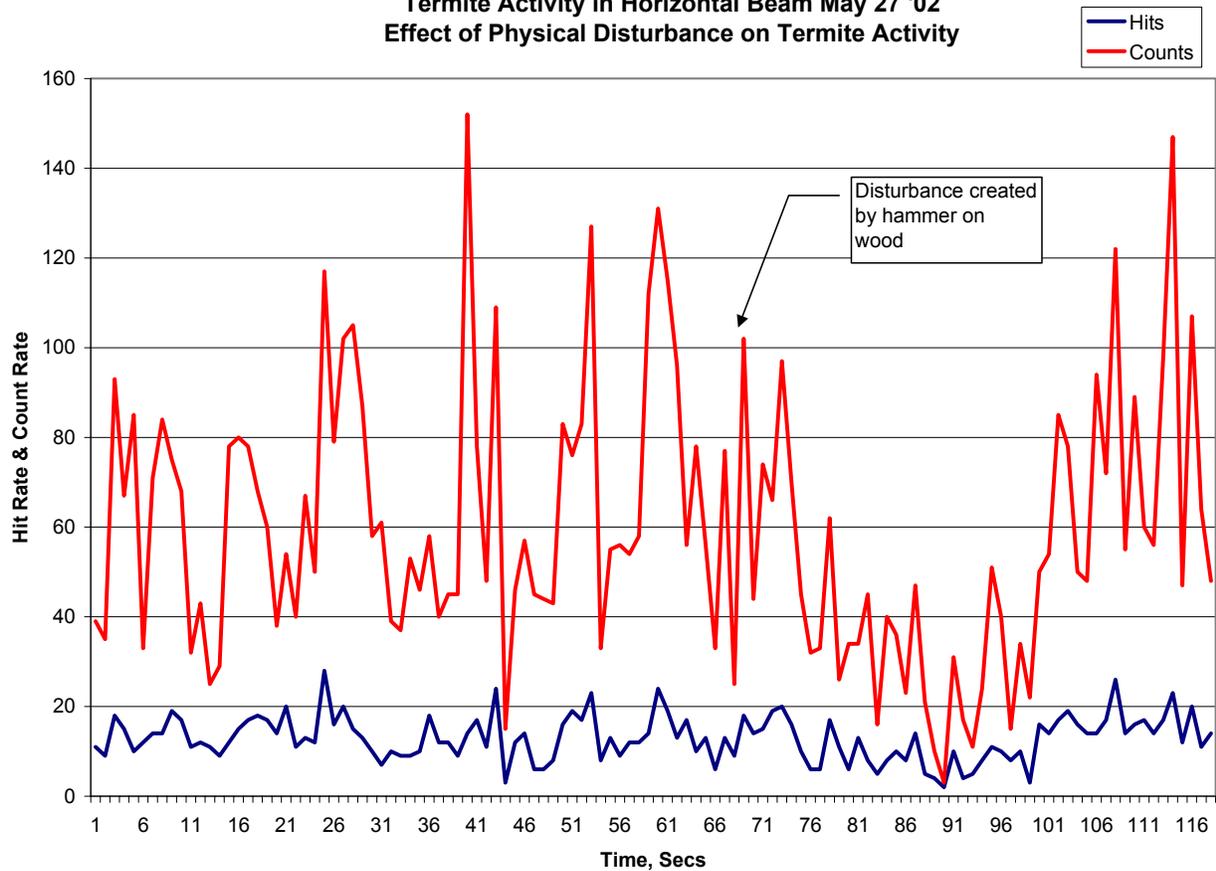
Termite activity is known to be a factor of environmental variables, such as temperature and humidity. The above graphic represents a quantification of activity rate in a horizontal beam (old railroad tie—see photo below) that was logged on the AED software over a 12-hr period. Monitoring began at 6:00 pm, when the ambient temperature was 80 F. It is likely because of the size of the wood beam and its contact with soil, that the temperature in the beam was still increasing even as the temperature began to fall at day's end. This is reflected in the short term increase in activity for a couple of hours after monitoring started. The temperature fell to ~50 F during the night, and there was a steady decrease of termite activity over this period. Overall the difference in rate of activity was a factor of five between the peak rate at 80 F and the low at 50 F (4000 hits/min vs 800 hits/min). Assuming that the beam and soil damped the temperature swing by a factor of two, to a 15 deg F swing between day and night, the apparent effect of temperature could well have been ~30% per deg F (500%/15F). This simple demonstration is a good example of how acoustic emission can help understand the feeding behavior of termites, and other wood eating insects.



Setup for monitoring termite activity in wooden railroad tie in the author's side yard. The AED-2000 instrument is equipped with the Model SP-1 probe with magnetic attachment. A ½ " x 3" lagbolt has been screwed into the wood to act as an acoustic waveguide, and as an attachment surface for the magnet. Shown also is a Sony MD minidisc recorder, which is being used to digitally record the sounds output from the headphone jack on the AED-2000. An example of the sounds of termite feeding activity can be heard by clicking the icon below.



Termite Activity in Horizontal Beam May 27 '02
Effect of Physical Disturbance on Termite Activity



Physical disturbances also influence termite activity. In the example above, data was logged to the AED-2000 for a minute, then hammer blows were delivered to the wood beam to disturb the termites. Note the activity decreases after the disturbance, but picks up to previous levels in less than a minute.