

**ACOUSTICS2008/3123**  
**Animal censusing using seismic cues: techniques used for African elephants**

Jason Wood<sup>a</sup>, Caitlin O'Connell-Rodwell<sup>b</sup> and Simon Klemperer<sup>c</sup>

<sup>a</sup>Beam Reach Marine Science and Sustainability School, 7044 17th Ave NE, Seattle, WA 98115, USA

<sup>b</sup>Stanford University, Department of Otolaryngology, Head and Neck Surgery, Stanford, 94305, USA

<sup>c</sup>Stanford University, Department of Geophysics, Stanford, 94305, USA

Counting populations of animals has proven to be difficult and inexact for species that are difficult to detect visually. A growing number of researchers have successfully turned to detecting animals by their acoustic signals in order to count their numbers. To predict the number of animals present a regression line is generated from the relationship between such measures as calling rate and the number of animals documented visually during that recording by the researcher. Depending on the communication system of the species in question, a significant amount of the variation in calling rate can be attributed to other factors such as group behavior rather than the number of individuals present. For species where these other sources of variation are high it may be more appropriate to use acoustic cues to detect and count the number of animals. This paper will present techniques used to detect and estimate elephant numbers from geophone recordings of their footfalls; cues that are a byproduct of their locomotion and are thus not as dependent on group behavior.