Rare Events in Remote Dark Field Spectroscopy: An Ecological Case study of Insects

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Abstract

In this paper, a novel detection scheme for the monitoring of insect ecosystems is presented. Our method is based on the remote acquisition of passive sunlight scattering by two insect species. Procedures to identify rare events in remote dark-field spectroscopy are explained. We further demonstrate how to reduce the spectral representation, and how to discriminate between sexes, using a hierarchical clustering analysis. One-day cycle showing the temporal activities of the two sexes as well as data on activity patterns in relation to temperature and wind is presented. We also give a few examples of the potential use of the technique for studying interactions between sexes on a time scale of milliseconds.

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