



Physics Colloquium

Friday, January 28, 2011, 4:00 pm, PS 3046

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New Technology Developments for Understanding Spatial and Temporal Activity Patterns of Fish in Nature

Measurements of fish movements, activity, and energetics in nature, have always been technologically challenging. In many species around the world detailed movement and activity information is urgently required for a variety of reasons. Issues related to fishing pressure, habitat degradation, pollutants, and responses to environmental change are just a few of the many applications that require knowledge of the temporal and spatial movement and activity patterns of fish.

Here we describe the development and implementation of a new multi-array positioning system (VPS – VR2W Positioning System) and a new activity acoustic transmitter (V9AP) that can be used in a variety of biological applications to study the behavior of fish in nature. VPS is more suited to a larger variety of applications compared to existing positioning systems that are constrained by cost and equipment deployment limitations (i.e., wire connecting hydrophones). A VPS study can be as small as 1 triangle covering 2500 m² or less (3 receivers) and up to tens of kilometers² and greater. To date VPS has been successfully used in small and large area studies in lakes, rivers and ocean environments.

In this presentation we will discuss the design and specifications of VPS, the factors that influence positioning accuracy and we will show examples of various VPS study designs. We will also illustrate how to use an accelerometer transmitter to get the most of your VPS study.