

Project Diversification a Positive Sign for Pulse Future

By the editor

The week of Pulse II was busy with the interactions of researchers from the first SEKI study 10 years ago and leaders of new satellite studies that were added more recently. The Pulse projects had diversified from the bread-and-butter originals of remeasuring the permanent reference stands and reexamining their decay processes to include forest mapping, epiphyte studies, and others.

Ph.D. candidate Robert Van Pelt of UW brought his expertise in three-dimensional mapping to the Pulse as the groundwork for developing a detailed computer model of a sequoia grove that could be used to answer What if . . . ? questions.

Studying canopy lichens and other epiphytes that live hundreds of feet off the ground in giant sequoias challenged epiphyte niche expert and aerialist Steven Sillett (OSU) and his partners. The experienced tree climbers spent three days scaling four sequoias and examining the relationship between tree height, growth surface availability, and lichen species. Their goal was to produce a detailed map of the distribution of the epiphytes in the tall canopies.

David Shaw's (UW) team used a method for surveying the tree canopies for lichens that allowed them to operate from the ground. The tedious job involved collecting all of the lichens that had fallen from the trees overhead and were lying within a series of 2m-radius plots ran-

domly located throughout the six study plots. Shaw's hope was to determine the diversity of the lichens found in the mixed pine/fir stands, to estimate their abundance in the forest, to associate them species by species with tree species, and to categorize them by function. Both Sillett's and Shaw's work provide an inventory of species diversity, density, and health that will serve as baseline data for future pulses.

The Pulse approach to research has generated tremendous interest as exemplified by the number, and kind, of participants. The large undertaking appealed to graduate students who wanted to contribute their skills to proven research experiments. The experiments also enticed researchers wanting to learn about the pulse process and imitate it in similar studies elsewhere on the continent. Now recognized as a foundation for long-term research, the Pulse study plots lured scientists to the park to add a layer of new studies to augment the originals.

The Sierra Nevada Global Change Program (initiated by NPS, now run by NBS), while independent of Pulse, coordinated eight projects, many of which used the same Pulse study plots to add to the collective data. Pat Halpin, Global Change research assistant from the University of Virginia, summed up the success and synergism of Pulse in saying, "the beauty of the Pulse Study lies in the permanent plots that have been established and that can be

used by subsequent researchers. New projects can be started that build on a foundation of data that will improve with time. Scientists hear about the Pulse and are more likely to sign on because they trust that their own work will contribute to a greater whole. It creates a research situation that compounds."

The growth in participation at Pulse II suggests that the study may operate under its own power in the future while getting to the bottom of the tough questions about the forest ecosystem's health, its dynamism, and its threats. Pulse founder and dynamic leader Jerry Franklin always wanted it this way.



Pulse investigator Robert Van Pelt surveys a study plot in the Lower Crescent Meadow drainage at Sequoia with the help of a state-of-the-art laser theodolite. Van Pelt plans to generate a detailed 3-d computer model or "map" of the giant sequoia plot with enough detail to predict the effects of global warming and other natural disturbance regimes on the forest.



Tree climber Sillett ascends a 280 foot tall giant sequoia (*Sequoia gigantea*) in search of lichens and other epiphytes living high up on the huge trees.