

notes from abroad

Editor's Note: From time to time we get reports from scientists who have attended conferences abroad. In order to encourage submissions of this kind of news, a "standing head" will be used to cover these accounts. Recently David L. Peterson, research scientist with the NPS/CPSU at U/WA, presented papers at the International Symposium on Tree Rings and the Environment in Ystad, Sweden, and at the International Conference on Acidic Deposition in Glasgow, UK. Following are highlights from his report and a listing of the papers he presented.

By David L. Peterson

The International Symposium on Tree Rings and the Environment was the second major meeting for dendrochronologists and was a follow-up to the conference held in New York in 1986... truly an international meeting with 120 participants from 25 countries, only 8 from the U.S. I was the sole NPS representative at the conference.

Subject matter was wide-ranging, with many papers presented on dendroclimatology, most of these from Europe. There is increasing interest in this subject because of its connection to global climate change through evaluation of past climatic conditions.

Most papers focused on the relationship between annual growth and individual climate parameters (such as monthly precipitation), as well as reconstruction of past climate. However, 3 papers, including mine, focused on long term growth patterns. I presented the results of a study of whitebark pine and lodgepole pine in the Sierra Nevada of California. These high elevation species have had increasing basal area increment growth since about 1850, a pattern also found at a few other North American subalpine sites. One of these papers, presented by Keith Briffa of East Anglia, UK, showed there has been a similar growth increase at many sites in mountainous areas of Europe. These results created a great stir of interest and helped encourage discussions about additional studies of subalpine species.

The session on methodology revealed there have not been many new developments in analytical capability. Disagreement still exists as to what statistical approaches to use for time series analysis of tree growth data. A movement is growing to look at individual tree growth patterns, in contrast to the traditional approach of aggregating data by groups of trees. This approach is better for examining the variance in any particular dataset. Some progress has been made in the technology of measuring tree cores, particularly in the areas of image analysis and densitometry. Both technologies are still very expensive, although image analysis may be a viable alternative if the resolution of discriminating among tree rings improves.

A number of "applied" topics were discussed, such as the use of tree ring analysis to date old European structures (e.g. churches) as well as structures at a number of archeological sites.

The International Conference on Acidic Deposition in Glasgow attracted 800 people from 25 countries, mostly Europe and the US. Again, I was the only NPS representative. This meeting provided a forum for synthesizing much of the information collected on this topic over the past decade. It may well be one of the last meetings of its kind because of reduced funding in this area and a shift to interest in global climate

change.

Considerable debate continues over the effects of acidic precipitation and other pollutants on terrestrial ecosystems. Many of the "declines" that received a lot of publicity in the early '80s have now been explained in terms of other phenomena or have not been linked conclusively to pollutants. The forest decline issue in central Europe is hardly even mentioned anymore; many trees studied on permanent plots have reverted to a more healthy condition in the last few years.

The condition of red spruce in the eastern US continues to command much attention. Experimental evidence with seedlings has shown a weak link at best with pollution. Establishing cause-and-effect relationships between trees and pollutants has not been very successful because of the difficulty (or lack of interest) in working with mature trees. I presented a similar paper to the one I gave in Sweden; the results on tree growth increases in the Sierra Nevada contrasted with most of the other papers that focused on damage and declines.

The best presentations were on the effects of acidic deposition on aquatic systems and soils. There appears to be a great deal of evidence that acidification of lakes and some streams is occurring at least in some locations. This seems most prevalent in areas that have the highest sulfur and nitrogen inputs and the ecosystems with the lowest buffer capacity. There also seems to be good evidence of the potential for soils to have increased acidity and decreased nutrient content under long term acid deposition. This has not been manifested on a large scale, but may be in the next 50-100 years if deposition is not reduced or mitigated.

The conference also revealed some of the usual prejudices in this field. The Canadians were upset with the US for supposedly acidifying their lakes and damaging sugar maple. Many US scientists think the Canadians use their research and publications mainly as environmentalist propaganda. The Scandinavians continue to complain about pollution from continental Europe and Great Britain. Unfortunately there were few eastern Europeans there to discuss what really severe pollution damage is like. Many of the studies were inadequately designed to link pollutants with effects in a realistic context, or were somewhat biased in their interpretation (usually in favor of pollutant damage).

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I visited some of the parks in Norway and Sweden and did quite a bit of hiking in Hardangervidda National Park in central Norway. This park is at about 62 deg. latitude and entirely above treeline. It contains a wide variety of alpine plants in both wet and dry habitats, lots of lakes and streams, and some spectacular glaciers.

Park management in Norway is relatively passive. The trails are well-marked, but that is about the only sign of management presence. There are no visitor centers, parking lots, campgrounds, interpretive material, or park personnel. Everyone seems accustomed to this and they just put on their backpacks and take off for a hike.

The parks also are used extensively for grazing, mostly by sheep, and have been used for this purpose for hundreds of years. Obviously, this has affected the local plant communities. I also visited some natural areas in southern Sweden, the largest of which was Skaralid NP. Again, management is passive in most

(Continued on page 22)

areas except for some recreational areas used for picnicking and group activities.

I saw heathlands as well as hardwood and conifer forests. The heathlands and other nonforested areas are used extensively for sheep grazing. The forested areas are managed for timber production as well as esthetic purposes. Intensive forest management is expected in most areas and there are as many as 8 thinnings prior to final stand harvest. Forest composition has changed a great deal over the years, with Norway spruce commonly planted in areas where it is not native. North American species are represented, particularly Douglas-fir.

I had the opportunity to see forest management practices in Great Britain, ranging from southern England to Scotland. Great Britain originally was 90 percent forested, a percentage now down to 10. In addition to the native Scots pine, a large number of non-native species have been planted. The most common are from North America: Sitka spruce, Douglas-fir, lodgepole pine, and noble fir. There is some effort by the British Forestry Commission to increase the amount of land containing forest, with an emphasis on plantations. This has some public support, but a lot of

opposition too. Many people apparently prefer a more "open" landscape that is traditionally used for grazing. Reprints of the following two papers are available from Peterson at NPS/CPSU; College of Forest Resources, AR-10; University of Washington, Seattle, WA 98195.

"High elevation tree growth trends in the Sierra Nevada, California, USA," by David L. Peterson, Michael J. Arbaugh, and Lindsay J. Robinson, IN ***Proceedings of the International Symposium on Tree Rings and the Environment. University of Lund, Sweden.*** 1990.

"Growth trends of whitebark pine and lodgepole pine in a subalpine Sierra Nevada forest, California, USA." by David L. Peterson, Michael J. Arbaugh, Lindsay J. Robinson, and Berg R. Derderian, ***Arctic and Alpine Research***, Vol. 22, No. 3, 233-243.

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Dave Parsons, Research Scientist at Sequoia/Kings Canyon NPs, attended the international workshop "Earth System Responses to Global Change – Northern and Southern Hemisphere Contrasts" in La Serena, Chile Nov. 30-Dec. 4, 1990. Highlights of his report will appear in the Summer issue Notes From Abroad.