(55) ALPINE GLACIAL STREAMS: INTER-GLACIAL VARIATION AND SEASONALITY IN MACROINVERTEBRATE COMMUNITIES. C.T. Robinson, U. Uehlinger, and M. Hieber. Department of Limnology, EAWAG/ETH, 8600 Duebendorf, Switzerland robinson@eawag.ch

Glacial streams are predominant features of alpine environments that vary considerably in space and time. We examined the inter-glacial and longitudinal variability in benthic macroinvertebrate communities in 5 different glacial streams in the Swiss Alps over an annual cycle. At each glacier, sites were situated near the glacial snout and about 300 m downstream. In contrast to expectations, sites near the glacial snout had similar taxon richness, densities and biomass to downstream sites. Predominant macroinvertebrates included chironomid (*Diamesia* groups) and *Rhypholophus* dipterans, *Rhabdiopteryx* and *Leuctra* stoneflies, and *Baetis* and *Rhithrogena* mayflies. Macroinvertebrate abundances reached 10,000 ind. m^{-2} and biomasses of 1.5 g m^{-2}. Variation in assemblage structure among glacial streams reflected differences in channel stability caused by differences in the degree of glacial influence and channel slope. For example, taxon richness varied from 2 common taxa at unstable glacial streams to 14 taxa at the most stable stream. The majority of sites displayed strong seasonal changes in macroinvertebrate abundances that corresponded to seasonal changes in glacial influence. High abundances were observed in late autumn early winter when glacial melt decreases and periphyton biomass is high.

(56) ALPINE STREAMS AND LAKE OUTLETS: SEASONAL PATTERNS OF BENTHIC AND DRIFTING MACROINVERTEBRA
M. Hieber, C.T. Robinson, U. Uehlinger, and J.V. Ward. Department of Limnology, EAWAG/ETH, 8600 Duebendorf, Switzerland hieber@eawag.ch

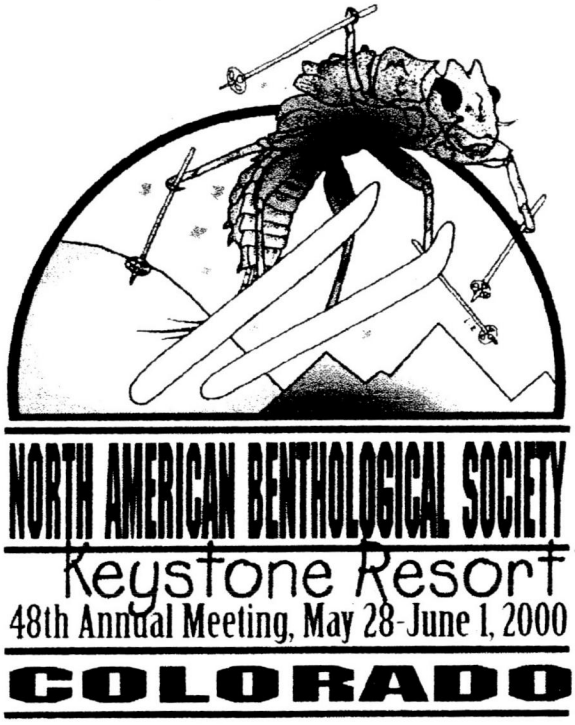
There is a general paucity of biological information pertaining to alpine stream ecosystems. Further, virtually no data are available regarding the ecology of alpine lake outlets, distinctive features in the alpine landscape. We investigated the macroinvertebrate communities (benthos and drift) of 6 lake outlets (2 glacial) and 5 other alpine streams (2 glacial) in the Swiss Alps over 1.5 years. Drift densities were generally low; <10 ind./m^3 drifting in lake outlets regardless of season. In the other streams, however, drift densities increased in autumn and winter reflecting seasonal changes in benthic abundances. Seasonal variability in benthic invertebrate abundance was highest in glacial streams but low in non-glacial streams and lake outlets. Macroinvertebrate community composition varied in their degree of seasonality between the different stream types; glacial streams displayed a pronounced increase in diversity in autumn. Although the Chironomidae dominated most assemblages, especially glacial streams, these alpine streams displayed a rich fauna of ephemeropterans, plecopterans, trichopterans, and dipterans consisting mostly of scrapers, collector-gatherers, and predators. Filterers occurred only rarely, especially in the lake outlets.

(57) SPATIAL AND TEMPORAL DYNAMICS OF STREAM TEMPERATURE: GEOMORPHIC AND RIPARIAN INFLUENCES.
S. Johnson[1] and J. Jones[2]. [1]Department of Fisheries and Wildlife, Oregon State University, Corvallis, OR 97331, [2]Department of Geosciences, Oregon State University, Corvallis, OR 97331 johnsons@fsl.orst.edu

The spatial and temporal variability of stream temperature has been examined in very few stream networks. For several years, we have examined stream temperatures at 50 locations throughout the H.J. Andrews Experimental Forest, Oregon to better understand factors controlling temperature maxima, minima and variability in summer and winter. Stream temperatures are influenced by combinations of biotic, climatic, hydrologic and geomorphic factors and in turn control key biotic processes such as metabolism, growth and rates of decomposition. We found maximum temperatures and diurnal fluctuations to be the highest in the downstream section of Lookout Creek (5th order), but observed high variability along the length of stream in contrast to the pattern suggested by the RCC. We note that geomorphic controls (substrate type, groundwater input, and hyporheic flow) can have as large an impact on stream temperatures as shading by riparian vegetation. These initial findings point to a need for better understanding of the mechanisms of heat exchange within streams and their influence upon ecosystem properties.

(58) THE EFFECTS OF DROUGHT DISTURBANCE AND GEOGRAPHICAL ISOLATION ON THE BENTHIC MACROINVERTEBRATES OF SAN JUAN ARCHIPELAGO STREAMS. C.W. Wiseman and R.A. Matthews. Institute for Watershed Studies, Huxley College of Environmental Studies, Western Washington University, Bellingham, WA 98225, USA wisemac@cc.wwu.edu

The watersheds in the San Juan Archipelago, northwest Washington (USA), receive very little summer rainfall and are primarily underlaid by bedrock or glacial till. This causes widespread summer drought in many streams. We investigated the effects of summer drought, substrate, water quality, and geographic isolation on the benthic macroinvertebrate communities in six San Juan Archipelago streams. Quantitative macroinvertebrate samples were collected from two streams and qualitative macroinvertebrate species lists were generated for four additional streams. Water quality and substrate diversity in archipelago streams were comparable to the mainland; however, summer drought and geographical isolation appeared to limit the diversity of macroinvertebrates in all archipelago streams. Taxonomic richness (particularly Ephemeroptera and Plecoptera), community evenness, and presence of long-lived taxa were reduced in all six streams compared to mainland streams. Most macroinvertebrate communities were dominated by *Eogammarus* (Amphipoda), which is closely related to marine and estuarine taxa. All of the streams that went dry during the summer



NABS 2000

May 28-June 1, 2000

Members of the North American Benthological Society and other interested persons are invited to the 48th Annual Society Meeting to held in Keystone Resort, Colorado, USA.

The NABS' annual meeting has established a reputation, not only for its camaraderie, but also for the high quality of its program and presentations.

In keeping with this tradition, the NABS 2000 Program Committee has assembled a record number of presentations for your science pleasure! So, get ready to pack your bags and head out to the high country!

♦ **Taxonomy Faire**

Given the success of the **Taxonomy Fair** in Duluth, led by **Dave Penrose**, the Technical Information Committee is sponsoring another Faire at Keystone during the poster session on Wednesday afternoon, May 31st. The "Faire" format consists of taxonomy stations, each manned by a recognized expert of a taxonomic group. Participants are free to bring their own specimens to these expert stations and are able to gain personal access to the gurus of aquatic invertebrate taxonomy. Bring your vials and slides!

♦ **SPECIAL WORKSHOP ON NATIVE AMERICAN ISSUES**

The NABS Human Resources Committee will be hosting a workshop Sunday, May 28th, at the 2000 Keystone meeting will feature issues related to water quality and monitoring on tribal lands. Please visit the NABS website or contact Judy Li for more information.