tabolic activity, nutrient e measured nutrient uptake in 1 (NH₄⁺), inorganic phosphorus le) from June through October e fitted to a 1-D advection-7 streams and increased in 3 P (p<0.05, sign test). Uptake 1 few of the streams are NH₄⁺ and PO₄⁻³ ributed to benthic scouring

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or the Great Salt Lake Basin us stage and temperature data d according to changes in the ach storm. Expected observed temperatures during were correlated with land storm runoff. The magnitude nmercial/industrial land use er. Increases in the in land use and decreases in ed in consistently higher r and early fall.

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h bed sediments in s and steps in 12 randomly Dregon. Regression models edictably with increasing scale that is consistent with g and downwelling areas f stream reaches to measure e longitudinal length of units such as riffles and ping channel units. These licted from patterns of

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; for organic matter. To s, we quantified carbon lients that extended from

Spring 2002

streamside wet meadow communities to dry meadow communities, located on floodplain terraces. Plant biomass carbon (0.40 to 2.01 kg m⁻²) and nitrogen (0.01 to 0.04 kg m⁻²) pools were dominated by belowground components, and differed among communities (wet > moist > dry meadow). In contrast, soil pools were highest in dry meadows and similar in wet and moist meadows. Biomass + soil C pools were composed of 2 to 4% aboveground biomass, 2 to 23% belowground biomass, and 81 to 95% mineral soil; N pools were composed of 0.07 to 1.6% aboveground biomass, 1.5 to 6% belowground biomass, and 94-98% mineral soil. Total biomass C and N pools, soil N pools, and soil C:N were strongly correlated to median water table elevation and redox potential, suggesting that hydroperiod is a dominant control over accumulation and storage of C and N in these riparian meadows.

(521) EFFECTS OF RIPARIAN DEGRADATION ON CRAYFISH AND BENTHIC INSECTIVORE TERRESTRIAL CARBON DEPENDENCE IN HEADWATER TROUT STREAMS.

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Riparian forests impact a multitude of physical, chemical, and biological dimensions of aquatic ecosystems. Among these impacts is the important role that terrestrial carbon inputs from riparian forests play in supporting and structuring aquatic food webs. At present, human encroachment has converted most riparian forests to narrow, discontinuous corridors of vegetation along streams embedded within watershed matrices of anthropogenic land uses. This study assessed the impact of such riparian degradation on the terrestrial carbon dependence of crayfish and benthic insectivorous fish in 7 headwater trout streams in the Upper Chattahoochee River basin, Georgia, USA. GIS techniques were used to classify 1999 color-infrared aerial photographs of study watersheds, and several assessments of riparian degradation were made. Basal food resources (algae, CPOM, FBOM, and seston), crayfish, and benthic insectivorous fish were collected and analyzed for natural abundance of stable carbon isotopes. Basal resource δ13C signatures had no relationship with riparian degradation. However, crayfish as well as three fish species δ13C signatures showed significant enrichment with riparian degradation, such that biota δ13C diverged from CPOM δ13C with increasing riparian degradation. Thus, the dependence of aquatic food webs on terrestrial carbon decreased with increasing riparian degradation in these headwater streams.

(522) TEMPORAL VARIATION IN THE RELATIONSHIPS BETWEEN LAND-USE AND STREAM CONDITIONS. M.A. Estrada. Environmental Sciences and Resources Program, Portland State University, Portland, Oregon 97207 psu22135@pdx.edu

It is challenging to develop nutrient loading criteria and a trophic classification system in streams. The objective of this study is to assess the relationships among nutrients, algae, and watershed characteristics, and how these relationships may vary temporally between wet and dry seasons. Physico-chemical variables, benthic periphyton, and stream phytoplankton are being sampled monthly from 18 streams along a land-use gradent in the Northwestern Oregon Cascades Range. The initial correlation analysis of the first two sets of physico-chemical data indicates that the correlations between physico-chemical variables and land use during late summer (dry season) was weak, and as the rainy season began these correlations increased. Thus, the correlation between turbidity and TP was relatively low in September 2001 (r=0.04), and increased in November 2001 (r=0.71). The correlation between percentage vegetation cover and in-stream variables (e.g., nutrients, temperature, conductivity and turbidity) increased from – 0.46 to -0.68 (average). The initial results suggest that land-use, hydrology and interactions between these factors may all contribute to variation in nutrient loading, and their effects on lotic periphyton in streams.

(523) DIEL PATTERNS OF EMERGENCE AND RETURN IN A WESTERN OREGON STREAM. A.M. Farrand¹, J.L. Li¹, and S.L. Johnson². ¹Department of Fisheries and Wildlife, Oregon State University, Corvallis, Oregon, 97331, ²USDA Forest Service, PNW Research Station, Corvallis, Oregon, 97331 alex.farrand@orst.edu

We examined diel patterns of emergence and return to the stream of several species of mayflies, stoneflies and caddisflies at the H. J. Andrews Experimental Forest in the central Oregon Cascades. From June to September 2001, emergence and pan traps were set continuously along a 100m reach of Lookout Creek. Diel patterns were determined for two twelve-hour periods each week and seasonal patterns were derived by comparing weekly samples. Overall return rates were 25% for caddisflies, 48% for mayflies, and 42% for stoneflies. Overall emergence and return of mayflies and caddisflies were higher at night than during the day, whereas stoneflies were more common in daytime samples. Seasonal trends include an overall decrease in the total numbers of all three orders in both trap types. Densities of birds and spiders, common riparian insectivores, were also estimated. Spider densities increased during the summer and are potentially the dominant consumer of aquatic insects in the riparian zone. Bird numbers remained low throughout the study period.

Bulletin NABS 19 (1)

Spring 2002



Bulletin
of the
North
American
Benthological Society

50TH ANNUAL MEETING Pittsburgh, Pennsylvania



Spring 2002 VOLUME 19 NUMBER 1