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KEIVANY, YAZDAN. Biological Sciences, University of Alberta. (ykeivany@gpu.srv.ualberta.ca). Gasterosteiformes, Smegmamorpha, and phylogeny.

The Phylogenetic relationships of Gasterosteiformes is uncertain. Many hypotheses of its relationship have been proposed (e.g., Johnson and Patterson (1993), and Nelson (1994)). The main objective of this study is to test these hypotheses and to solve the Gasterosteiformes relationships. I will examine the osteology of the representatives of some 41 families (52 species) to hypothesize their systematic relationship within Acanthopterygii. I will use outgroup comparison method for polarizing characters and cladistic methods using the MacClade and Paup computer programs for reconstructing systematic relationships in this group. Evolution of some osteological characters especially caudal peduncle, pectoral skeleton, and visceral skeleton will be studied.

KELLY, DEBBIE M., MARCIA L. SPETCH and DAVID P. LEHELDT. Psychology, University of Alberta, (dkelly@psych.ualberta.ca). Encoding of spatial relationships in images of an outdoor scene: touch-screen studies with pigeons and humans.

Pigeons and humans were trained to search for a 2 cm² unmarked target area in images of an outdoor scene. Experiment 1 presented six different images of the scene which varied according to viewing distance and direction from the target. Although both the humans and pigeons learned to locate the target in training views, only the humans accurately transferred to novel views of the same scene. In Experiment 2, pigeons with outdoor experience and humans were trained with a different outdoor scene for that used in Experiment 1. A larger set of training images were used, 28 for pigeons and 12 for humans, these images provided for greater variation in viewing angle and richer depth cues than those used previously. Three of five pigeons acquired the task, and then showed some transfer to novel views. The humans transferred completely to the novel views. The two experiments show an interesting difference between humans' and pigeons' encoding of spatial relationships presented in pictures. Adult humans seem to readily encode three-dimensional relationships, the lack of transfer by pigeons in Experiment 1 suggests that this ability sometimes may be masked by a tendency to memorize the two dimensional relationships in each scene. Future research will explore whether the difference in training set or outdoor experience is responsible for the different transfer results shown by pigeons in Experiments 1 and 2.

KELLY, DAVID J., MAX L. BOTHWELL and DAVID W. SCHINDLER. Biological Sciences, University of Alberta; National Water Research Institute, Environment Canada. (djkelly@gpu.srv.ualberta.ca). Streambed community response to ultraviolet radiation under variable riparian canopy cover.

Logging alters several characteristics of streams including flow regime, stream morphology, riparian cover, substrate composition, and water chemistry, all of which can change the amount of ultraviolet radiation (UVR: 280-400 nm) that penetrates to the streambed. We examined the potential for UVR to affect the attached algal and benthic invertebrate communities at three sites with varied riparian canopy cover on the Little Qualicum River, Vancouver Island, British Columbia. The three sites included a completely open site, an intermediate site with a 25 m strip of riparian vegetation, and a control site with a completely intact old-growth canopy. At each site, three treatments were applied by using large area (1.25 m²) optical exclusion filters: No UVR, UVA (320-400 nm) only, and a control which included both UVA (320-400 nm) + UVB (280-320 nm). Preliminary results indicate that considerable site differences were observed in both the algal and benthic invertebrate colonization under the different light treatments.

KEMBEL, STEVEN. Botany, University of Manitoba. (kembel@cc.umanitoba.ca). The influence of understory species on jack pine (*Pinus banksiana* Lamb.) regeneration in the Manitoba Model Forest.

This study evaluated the relationship between *Pinus banksiana* Lamb. seedling regeneration density and understory vegetation composition in two upland *P. banksiana* stands in the Manitoba Model Forest. Correspondence analysis of the trends in understory composition indicated that *P. banksiana* regeneration density was correlated with the presence or absence of particular understory species. The absolute cover of different plant strata and the level of site disturbances were associated with the presence or absence of regenerating *P. banksiana* seedlings. A canonical