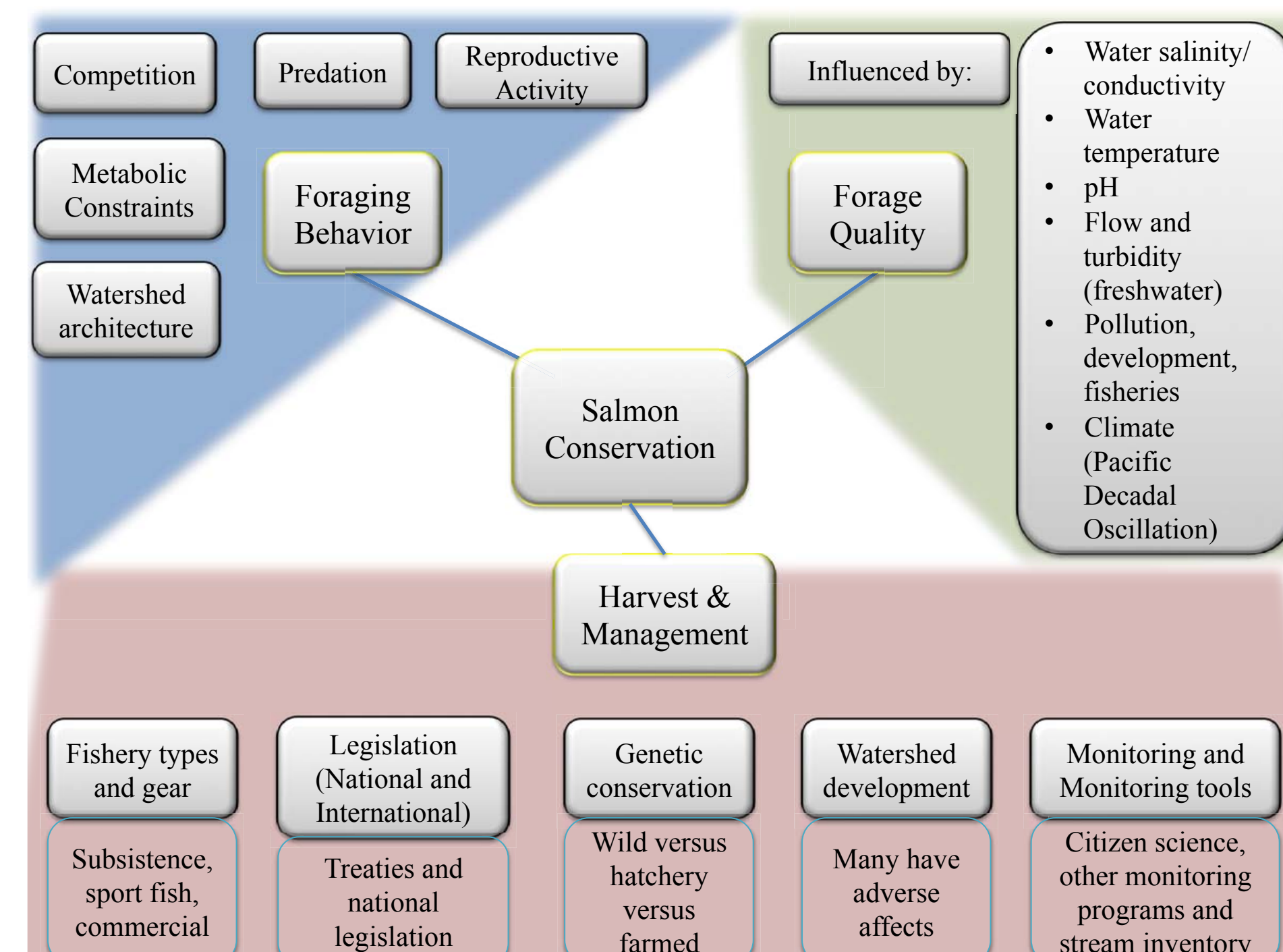


Pushing The Limits — Authentic Research In An Uncontrolled Environment

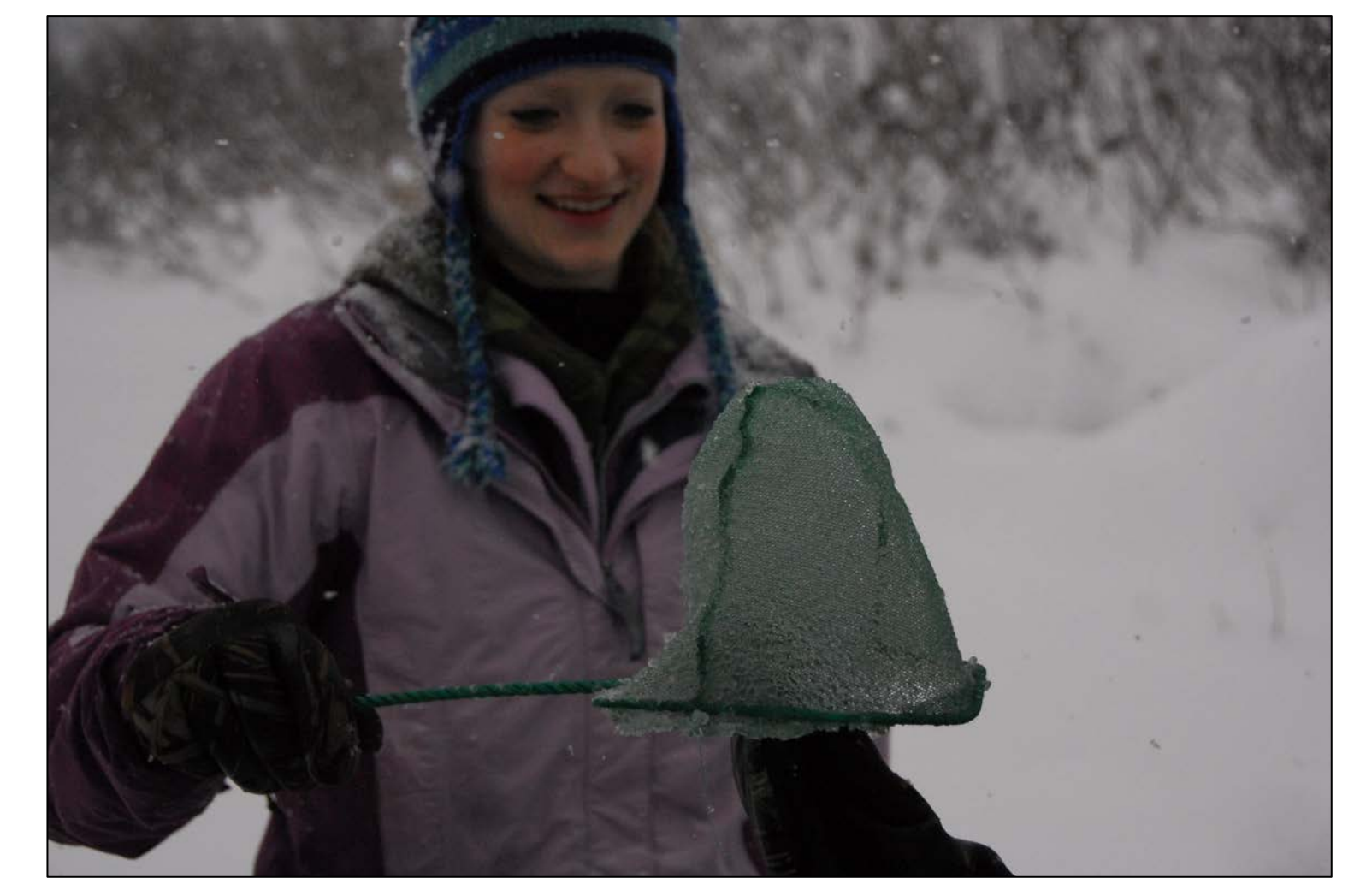
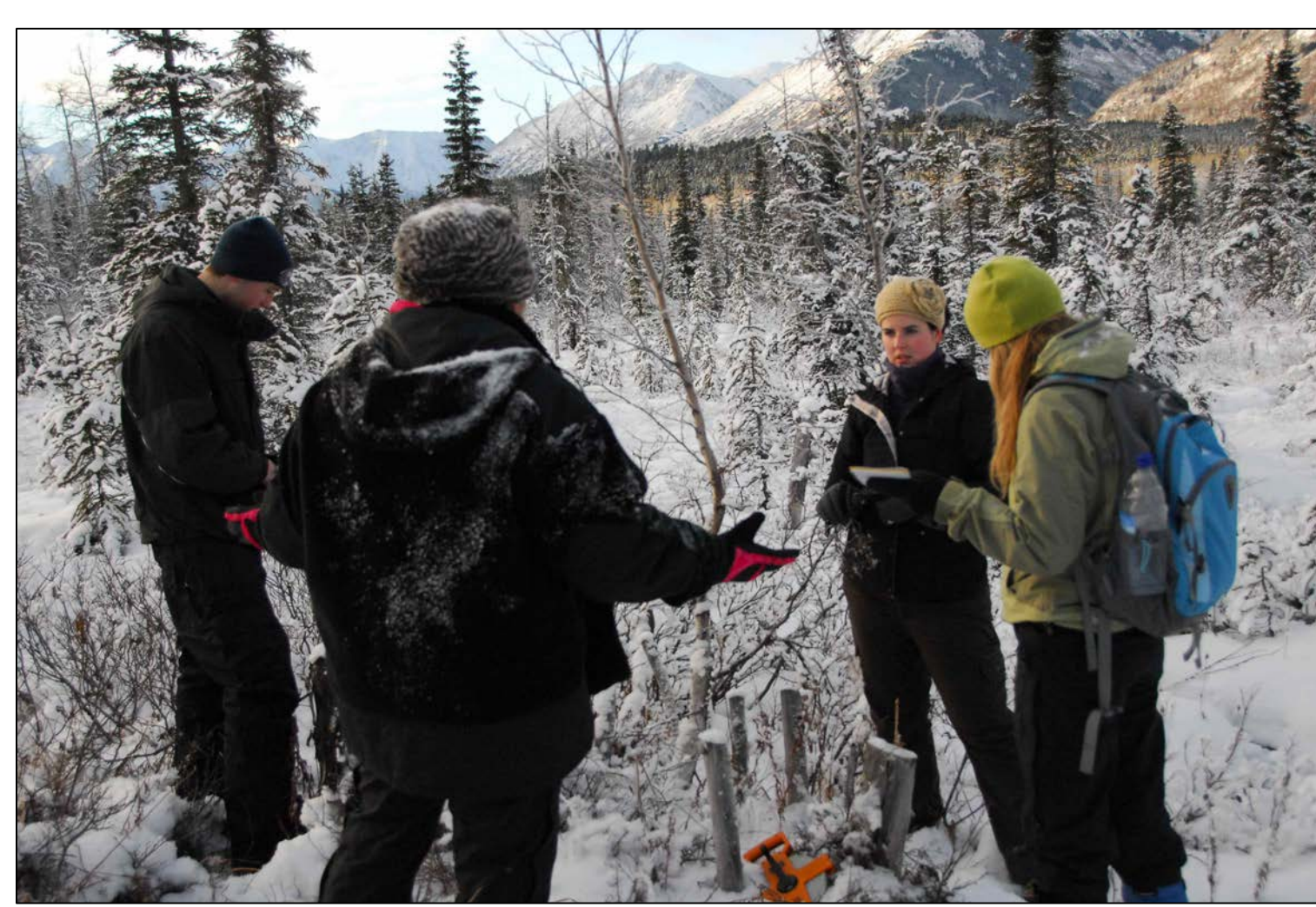
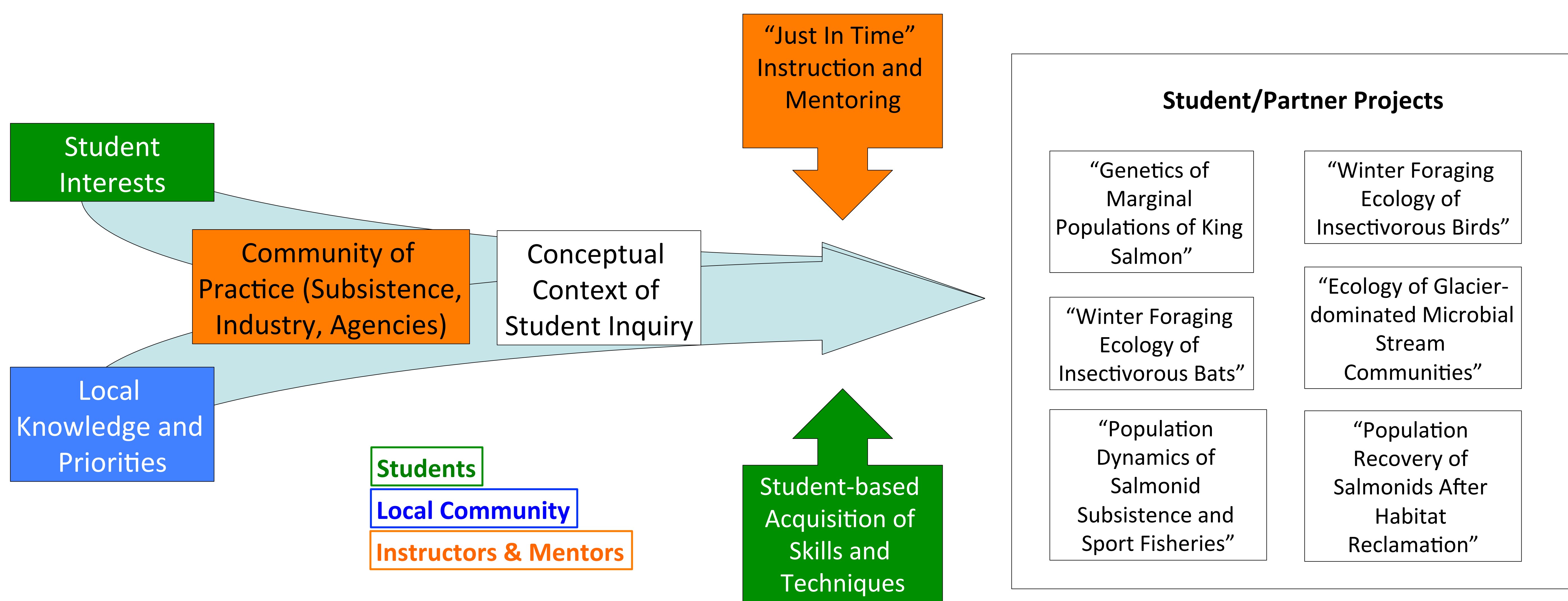
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When is authentic research in undergraduate biology education too authentic?

We may have come close to finding an answer to this question in an experimental course, Exploration Ecology, offered in Fall 2012 at the University of Alaska Anchorage. This was designed as an advanced upper-division lecture and laboratory experience using inquiry-driven learning and authentic research as a means for students to apply socioscientific reasoning skills in ecological contexts. These skills utilize authentic scientific problems that are embedded in social and ethical contexts. They are focused specifically on empowering students to consider how science-based issues and the decisions made concerning them reflect ethical principles applied to their own lives, as well as the physical and social world around them.



Conceptual Context of Course-based Socioscientific Inquiry



Students interviewed members of the community of practice to determine which were their highest priorities for research or knowledge discovery within our context. Using these as potential research foci, students self-assembled into interest groups (e.g., plant communities, stream ecology, moose foraging behavior) and worked to design scientific research projects constrained by the factors listed above. We refined the content and delivery of lectures and laboratories throughout the course to match the progress and the maturation of student project activities. This “Just In Time” educational approach provided an immediate relevancy otherwise difficult to achieve in a standard predetermined syllabus. We based our assessment of student success by typical self-assessment instruments and surveys, narratives by students and participants, as well as preparation of manuscripts for publication.

However... We did not anticipate how difficult it would be to implement an experimental course of this type. We had planned for the educational challenges and in fact looked forward to them—this is what we do best. But every other aspect of this course was new as well and, consequently, we and the students were confronted with academic and administrative disconnect almost daily that reflected the complexities faced by all professional scientists and researchers. They ranged from a somewhat trivial concern that the credit hours assigned to this course were probably insufficient for the work performed by the students to a substantial set of potential liability issues that nearly cancelled the course mid-semester. Ultimately, all of these challenges were resolved. Students were directly involved in all of these issues and learned how critical scientific research can be in authentic contexts. As a consequence of high student achievement in this single course, our department is adopting the approach used here as a model for similar upper division courses. Minus, we hope, the controversies.