NUTRIENT LIMITATION OF AQUATIC PRIMARY PRODUCTION IN GRAND TETON NATIONAL PARK

Michael Parker
Department of Zoology and Physiology
University of Wyoming
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All field and laboratory work has been completed. Some analysis of data remains to be done before completion of a final report.

In bioassays with Selenastrum capricornutum phosphorus (0.005 to 0.05 mg/l) always significantly increased algal standing crop over Jackson Lake controls, while nitrogen (0.01 to 0.05 mg/l) did on some occasions. Other nutrients were not evaluated.

Water movements in Jackson Lake were followed with drogues. Surface waters directly exposed to the stress of the wind were very quickly transported downwind. Some of the Snake River water entering the north end of the lake in late June/early July followed the old river bed. It apparently did not mix with epilimnetic water, at least until some distance south of Wilcox Point. Water from Third Creek also followed the old creek bed, until reaching a portion of the lake directly exposed to the wind. At that point it moved downwind.

Addition of phosphorus or nitrogen to Jackson Lake should stimulate algal growth. If added at a location where wind action would not transport and dilute the nutrients in open water, relatively small amounts might cause changes noticable to the untrained eye. If brought into the lake by the Snake River, the shallower northern end of the lake could be likewise affected. Larger amounts might be transported along the old river bed and affect the epilimnion south of Wilcox Point. Nutrients entering via Third Creek would affect the bay where the creek enters the lake. Because of prevailing winds it would also quite likely affect the shallower region of the lake east of the creek and north of the dam. Additional calculations need to be made before "small amounts of nutrients", etc. can be estimated in terms of absolute amounts and absolute rates of nutrient input.