Innovative lake trout spawning and incubation investigations and new information related to the effects of winter drawdown on lake trout in northern reservoirs. B. Schonewille\*, B. Snow and P. Tobler. EDI Environmental Dynamics Inc., Whitehorse, YT ([bschonewille@edynamics.com](mailto:bschonewille@edynamics.com): presentation).

Yukon Territory relies on hydro facilities to generate power. Water storage in reservoir lakes is critical to supplying the Yukon with renewable energy, particularly during the winter months when demand is high. Yukon Energy Corporation, Yukon’s public utility company, is exploring the optimization of two of its hydro facilities by increasing the storage/drawdown range in its reservoirs. Lake trout (*Salvelinus namaycush*) are a focal species for management in large Yukon lakes due to their importance in recreational and subsistence fisheries in the region. Being a fall spawning species, lake trout eggs are particularly susceptible to winter drawdown as they incubate over the winter months; this period co-incides with the drawdown of the reservoir lakes for power generation. We studied lake trout egg deposition and survival in two Yukon lakes with different water level management regimes. Through innovative studies on spawning habitat categorization, egg deposition, incubation survival and spawning habitat enhancement, we have acquired a detailed understanding of lake trout spawning ecology and better comprehension of the effects of winter drawdown on these populations, most of which is new knowledge for northern Canada. Our studies have documented the ability of dewatered lake trout eggs to survive under the ice for extended periods of time and a successful habitat enhancement trial that has attracted lake trout to rehabilitated, deep water spawning beds. Our results suggest that lake trout egg deposition depth is related to the water level management regime of the lake; this regime must be considered when assessing the impact of winter drawdown on lake trout egg survival in northern lakes.