Rationale for the Great Lakes Aquatic Tissue Analysis Repository (GLATAR)

The Great Lakes Aquatic Tissue Analysis Repository (GLATAR) was created in order to share data on the energy content and body composition of Great Lakes and North American fishes and their invertebrate prey species. Information on the energy content of both fish and their food items is needed for modelling the growth of individual fish and for studying the flow of energy through aquatic food webs. Understanding fish growth and the energy flow supporting fish populations can help in the management and conservation of fishes in the Great Lakes and North America.

The energy content of fish and invertebrates is determined by measuring their energy density, the average joules of energy per gram of wet weight. Measurements of energy density are done in the laboratory and are typically made by determining how much heat is produced by completely oxidizing a dried sample of the organism. Processing such samples is laborious and requires special equipment. Results of sampling have demonstrated that fish energy density varies among species, among populations or locations, and often varies with fish size, life stage, and across seasons.

In addition to data on energy density, GLATAR also contains data on body composition of fish and invertebrates, including proximate body composition (protein, lipid, ash and water), elemental composition (especially carbon and nitrogen), stable isotopes, fatty acids, thiamine, mercury, and PCBs. This information is important for studying the flow of matter as well as energy in aquatic systems.

The GLATAR data repository is intended to help to share this important information for studies of Great Lakes and North American fish populations. In addition, the information in the GLATAR data repository can also support the analysis and synthesis of the compiled data. There are likely patterns in this data that can further our understanding of the growth of individual fish and the growth of fish populations in the Great Lakes, North America, and beyond.