

Abstract Submitted
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Empirical generalized regressions for swim speed and endurance of sturgeon species CHRISTOS KATOPODIS, Retired, LU CAI, Institute of Hydroecology, Ministry of Water Resources and Chinese Academy of Sciences, Wuhan 430079, China, RICHARD GERVAIS, Freshwater Institute, Fisheries and Oceans Canada, Winnipeg R3T 2N6, Canada — Swim performance data of various fish species ranging from prolonged (low) to burst (high) speeds are useful for both theoretical hydrodynamics and ecohydraulic applications, such as fish passage. Commonly such data are collected with experimental tests, are limited to fish speed and endurance for a small percentage of species, and are insufficient for variables such as tailbeat frequency. Limited data are available for the Sturgeon species, especially for burst speeds, and dimensionless variables use them more effectively. Robust regressions for several groups of species, as well as sturgeon, are obtained with a dimensionless fish speed, expressed in the form of a fish Froude number which does account for fish length. Regressions improve with dimensionless variables, including fish speed expressed as a fish Reynolds number, compared to traditional measures such as body lengths/s. Such regressions demonstrate swim performance similarity in sturgeon and other fish groups, offer empirical data generalizations, data collection strategies, and help validate biomimetic simulations.

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