

Abstract Submitted
for the DFD20 Meeting of
The American Physical Society

Measurements of performance and kinematics for a steady sinusoidal swimming gait of a 3 degree of freedom fish model SARETA GLADSON, SETH BROOKS, MELISSA GREEN, Syracuse University — A scale model of a streamlined tuna was used to approximate a steady sinusoidal swimming gait. The model consisted of a stationary head and a tail with three passive joints. The tail was composed of a midbody piece, three ribs, and a trapezoidal acrylic caudal fin that were connected by a flexible spine. The midbody and ribs were able to pitch relative to one another with a finite but small amount of stiffness. The model was actuated at the midbody piece while the characteristics of the surrounding fluid determine the motion of the three ribs and caudal fin. Input torque, thrust, and tail kinematics were measured and compared for nine combinations of Strouhal number and tail flexibility (shim material). Future work will include flow field measurements, and variations of the prescribed actuation waveforms.

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Date submitted: 10 Aug 2020

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