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Emulating a Fish Swim Bladder JAMES VESENKA, University of New England, DAWN MEREDITH, JESSICA BOLKER, CHRISTOPHER SCHUBERT, University of New Hampshire, GERTRUD KRAUT, University of Southern Virginia — The University of New Hampshire and the University of New England are developing biologically relevant physics laboratories for their predominantly health science audiences. Buoyancy plays an important role in a variety of biological processes. We describe an inexpensive laboratory activity based on the Cartesian Diver that allows students to quantitatively emulate the swim bladder of a fish. Inflation of the “bladder” is externally controlled through an external gas syringe or squeezing on the plastic water containment vessel (a 2L soda bottle). The students can accurately determine the volume of a “fish” at the point of neutral buoyancy by visual measurement of the trapped air pocket. A simple electronic gas pressure sensor allows the hydrostatic pressure on the fish to be analyzed simultaneously.

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