

Abstract Submitted  
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**Comparison of real and idealized cetacean flippers**<sup>1</sup> MARK MURRAY, U.S. Naval Academy, PAUL WEBER, LAURENS HOWLE, Duke University, FRANK FISH, West Chester University — We explored the consequences of the idealization process by creating exact scale models of cetacean flippers using CT scans, creating corresponding idealized versions, then determining the hydrodynamic characteristics of the models via water tunnel testing. We found that the majority of the idealized models did not exhibit fluid dynamic properties that were drastically different from those of the real models, although multiple consequences resulting from the idealization process were evident. Drag performance was significantly improved by idealization. Overall, idealization is an excellent way to capture the relevant effects of a phenomena found in nature, which spares the researcher from having to painstakingly create exact models, although we have found that there are situations where idealization may have unintended consequences such as one model that exhibited a decrease in lift performance.

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