

Modeling capital stuffing and fleet redundancy in a limited entry fishery

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Abstract

We introduce a modified version of the standard Gordon-Schaefer fishery model. Standard theoretical models usually treat fishing effort as an aggregate measure encompassing all different types of inputs. Consequently, these models do not enable us to examine the problem of fleet redundancy and capital stuffing separately, i.e. two ways in which the effort can be increased are not modeled in isolation. Using the modified version of the Gordon-Schaefer model, we attempt to isolate capital stuffing from fleet redundancy, and so to describe the overfishing problem in a limited entry fishery. Our model predicts no capital stuffing in a limited entry fishery, while the overfishing problem will still be present, so long as fleets under operation face no other restrictions. However, when the vessels face some other restrictions in addition to limited entry, the overfishing problem arises due to both the capital stuffing and fleet redundancy.