

Title: **An Economic Approach to Optimizing The Level of Observer Coverage**

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Abstract: The US Magnuson-Stevens Act authorizes the use of onboard observers to monitor commercial fisheries catch and bycatch (PFMC 2003). A question of concern in implementing an observer program is that of the appropriate level of observer coverage. Current practice varies by fishery; for example, the California-Oregon drift gillnet fishery for swordfish and thresher shark has employed an observer coverage level near 20 percent of effort since the programs inception in 1990, while the Hawaii shallow-set longline fishery currently requires a 100 percent coverage level to implement a sea turtle quota with shut-down provision which requires in-season fishing effort to end once either sixteen leatherback turtle or seventeen loggerhead turtle gear interactions have been observed.

We propose an economic approach to examining the question of what percent observer coverage level is optimal. Following Segerson (2007), we assume that bycatch occurs as a stochastic process whose mean level is conditionally dependent on the nominal level of fishing effort. We further assume a regulatory constraint to limit protected species bycatch through a quota with a stochastic shut-down provision which ends in-season fishing effort once the quota is reached with a specified predictive probability. Assuming a fixed cost per observed set of fishing effort, we develop and illustrate an efficiency criterion for determining the best level of observer coverage to balance the costs of a higher coverage level against the benefit of increased certainty that a protected species interaction quota has not been exceeded.

References:

PFMC, 2003, Fishery management plan and environmental impact statement for U.S. West Coast fisheries for highly migratory species. Pacific Fishery Management Council, Portland, OR, August 2003.

Segerson, Kathleen, 2007, Reducing Stochastic Sea Turtle Bycatch: An Efficiency Analysis of Alternative Policies, Department of Economics Working Papers (University of Connecticut).