

Title: **Market-Based Size Selection in the Bering Sea Pollock Fishery**

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Abstract: For every fish species, future potential harvests are impacted by current catch levels and patterns. Traditionally, managers use regulations on gear (e.g., mesh size) to control so-called growth overfishing. Such regulations are likely economically inefficient due to increased search costs and lower catch rates. Bioeconomic models typically evaluate efficiency for the fleet as a whole (e.g., Gates 1974, Thunberg, Helser, and Mayo 1998, Eggert and Ulmstrand 2000). Here we propose that optimizing a fishery should focus instead on individual vessel operator behaviors. That is, vessels targeting young fish impose an externality on the rest of the fleet, meaning that the stock costs are born by the fishery as a whole rather than the individual vessel. In a fishery with observer data on fish size, a fee or quota adjustment can eliminate the externality that vessels impose on other members of the fleet in choosing to fish on less-than-optimal aged fish. Unlike gear restrictions, this allows vessels to catch younger fish when the cost of avoiding them is larger than the future benefit to the fish population. Here we conduct a retrospective analysis to explore the potential impacts of providing quota and fee incentives to the pollock fishery to target fish of different age classes.