

Title: **Optimizing intra-Annual Harvest in the Maine Lobster Fishery**

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Abstract: The Maine lobster fishery is one of the most valuable fisheries in the US, but the economic performance of the fishery has been poor and worsening as costs of fuel and bait increase while ex-vessel prices decline. Landings are heavily concentrated in the fall when quality is low, requiring the majority of lobster to be processed for meat rather than sold live. High trap density in peak landing periods also causes substantial congestion externalities. There have been calls to implement management reforms to spread catches over the year to increase revenues. We present a bioeconomic model of the Maine lobster fishery that incorporates a monthly demand model and an empirically estimated production function that accounts for seasonal changes in catchability and in-season depletion effects as well as congestions effects. We use the model to retrospectively identify the monthly levels of effort and catch that would have optimized profits in prior years subject to a constraint that catch is not above the observed catch. We also compare profit under an ITQ system with maximum profit to quantify the potential lost rents associated with congestion and in-season depletion externalities that would not be corrected by an ITQ. The models show that profits could be more than doubled by substantially reducing effort, but that catch would still remain heavily concentrated due to seasonal variation in catchability. In spite of congestion and in-season depletion externalities that remain, rent dissipation under ITQs is projected to be minimal.