

Title: **An Experimental Analysis of Harvest Timing in Fisheries With Sectors Managed By Different Methods**

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Abstract: In many fisheries, harvesters of different scales, different gears, or on different sides of political boundaries crossed by a single stock are effectively managed separately. The New England Multispecies (groundfish) fishery is about to dramatically expand the number of management systems in place concurrently, by allocating portions of the total allowable catch (TAC) to self-identified groups of harvesters, to manage in any way they wish. Under this "catch share" system, groups (called "sectors") would receive quota allocations proportional to the harvest history of their members, and some groups' vessels may operate under individual quotas, while others may operate under daily trip limits, and yet other vessels will not associate with a group and remain in a common pool fishery.

Understanding the economic consequences of this arrangement requires understanding how effort and harvesting patterns are affected when multiple management systems are applied concurrently to the same stock. We use human subject experiments to evaluate the interaction of groups of harvesters being managed by different systems, testing the predictions of control theoretic models. We focus on the interaction of a common pool derby fishery with an individual quota managed sector. Pilot data suggest that, in the presence of a harvest congestion externality, subjects in the common pool do race to fish, dissipating rents, and subjects managed by individual quotas wait for the common pool to exhaust its quota and be shut down, then apply a lower level of effort through the balance of the season to collect high rents.