Title: **Markets, Pooling and Insurance for Managing Incidental Catch In Fisheries**

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Abstract: Bycatch is a nearly universal problem for fisheries, and it is becoming increasingly common to place strict limits on allowable bycatch, either on individuals or as a cap on an industry sectors bycatch. Individual bycatch quotas strengthen individual incentives to avoid bycatch and may reduce the likelihood that the bycatch cap will limit target species catch. However, in cases where bycatch is highly uncertain and highly variable, individual quotas and markets may not function effectively and efficiently. In some cases, such as sea turtles, marine mammals and rare seabird bycatch, the allowable take may be less than one take per permit holder making it difficult to allocate quota to individuals. There are a number of reasons, theoretical and empirical, to believe that a transferable quota market may not function effectively in cases like this, including very thin markets and very limited information with which to assess quota value for trading. I focus here on the implications of stochasticity and uncertainty of incidental catch for valuing quota in an individual quota system that includes both target species and incidentally caught species. I evaluate the degree to which quota markets reduces individual risk relative to simply having a non-transferable individual bycatch quota and also explore how pooling approaches and possibly market insurance can be used to increase value and reduce risk for fishermen.