

Maintaining productivity and incomes in the Tonle Sap fishery in the face of climate change (TLSCC)

Call: Freshwater Security

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Tropical freshwater systems support fisheries that provide food security and incomes for hundreds of millions of people worldwide. These fisheries are more likely to be heavily exploited across all species, size classes and trophic levels, in contrast to temperate target fisheries where capital cost, barriers to entry, and travel distance focus exploitation on high value species. Almost nothing is known about how tropical indiscriminate fisheries respond to change. They may be fragile due to chaotic interactions between complex biology and complex human use, or their foodwebs may be simplified by heavy exploitation in ways that make them robust and resilient in the face of change. Climate change therefore puts these systems at risk in ways that have huge repercussions for poverty alleviation but are very poorly understood.

Here, we propose to (i) construct a general theory for understanding the social and ecological implications of truly indiscriminate fisheries under climate change, and; (ii) develop and test a specific application of this theory for the important case of the Tonle Sap fishery, Cambodia. Our focus on the Tonle Sap—perhaps the largest indiscriminate tropical freshwater fishery—allows us to inform responses to climate change in a fishery of major importance and one in which climate change interacts with other flow modifications (such as upstream development). We bring social science, fisheries, economics and management expertise to bear on this problem from research labs in eight universities and NGOs across three continents. The results of the research will be integrated into management through partners in three ministries, multiple communities and NGOs. Social impact in Cambodia will result by informing implementation of recent major management changes that have converted privately held fishing lots into community fisheries. Our team includes NGOs, local universities and early-career researchers to help effect this change. Internationally, our results will inform similar systems that feed and

provide income for millions of people by revealing management tools effective in heavily exploited, dynamic freshwater fisheries as climate changes.