1124-39-246 **Michael A. Radin** (michael.radin@rit.edu), Rochester Institute of Technology, College of Science, School of Mathematical Sciences, Rochester, NY 14623, **Harold M. Hastings*** (hhastings@simons-rock.edu), Bart College at Simon's Rock, 84 Alford Rd, Great Barrington, MA 01230, and **Tamas I. Wiandt** (tiwsma@rit.edu), Rochester Institute of Technology, College of Science, School of Mathematical Sciences, Rochester, NY 14623. *Fishing Quotas, Induced Allee Effect and Fluctuation-Driven Extinction.*

The problem: planning for sustainable harvesting of a fishery in a fluctuating environment, in the face of global climate change

Challenges: data poor fisheries [1], global climate change

Deterministic dynamics: harvesting policies can induce Allee effect in logistic and similar fishery growth models [2-4]

Stochastic dynamics: Fluctuations, generalized Ornstein-Uhlenbeck dynamics, expected survival time (first-passage time to extinction) depends sensitively upon model parameters [5], especially harvest rates. C.f. also [6].

1. Costello, Ovando, Hilborn, et al., Science 338, 517 (2012). Gordon HS. J Fisheries Board Canada 10, 442 (1953); Schaefer MB. ibid.14, 669(1957);

2. Clark, CW, Munro GR. J Environ Econ and Management 2, 92 (1975).

3. Ricker WE, J Fisheries Research Board Canada, 11, 559 (1954).

4. Beverton RJH, Holt SJ. On the Dynamics of Exploited Fish Populations (1957).

5. Beale PD. Phys Rev A 40, 3998 (1989).

6. Kramers HA. Physica 7, 284 (1940).

(Received September 10, 2016)