

Sustainability Science Award



Lindegren

Möllmann

Nielsen

Stenseth

The Sustainability Science Award is given to the authors of work published in the past five years that makes the greatest contribution to the emerging science of ecosystem and regional sustainability through the integration of ecological and social sciences. Unprecedented directional changes in climate, human population, technology and social and economic institutions are altering the structure and functioning of current ecological and social systems. The Sustainability Science Award recognizes the role that science can contribute to addressing these challenges.

This year's award goes to **Martin Lindegren, Christian Möllmann, Anders Nielsen, and Nils Stenseth** for their 2009 paper, *Preventing the collapse of the Baltic cod stock through an ecosystem-based management approach*, published in PNAS.

The paper reports on a study to model the collapse of a commercially important cod stock. The authors develop a model for ecosystem-based fisheries management based on fishing pressure, salinity and other environmental conditions, climate, and food web dynamics and then applied the model to reconstruct the history of the stock. They then used the model to ask whether the collapse could have been prevented under different management scenarios. They demonstrate that in hindsight the collapse could only have been avoided by adaptive management of fish resources based on environmental conditions. The results illustrate that ecosystem-based fisheries management can prevent future catastrophic events, but only if adaptive management is applied based on multiple ecological and climatic dimensions.

The study is an excellent illustration of the type of work needed to move sustainability science from a discipline that identifies problems to a discipline that develops solutions. Secondly, the study is a concrete and unequivocal demonstration of adaptive management. While there have been many papers that highlight adaptive management, fewer papers test whether adaptive management provides an improved outcome for a commercially important resource.