**Three Simple Rules for Ecosystem-Based Fisheries Management**

SCRS/P/2015/019

Rainer Froese , GEOMAR, Kiel, Germany

Presentation at the ICCAT workshop in Madrid, Spain, 10 June 2015

**ABSTRACT**

Ecosystem-based fisheries management is called for at the international level as well as in regional directives and national laws. To assist in practical implementation, three simple rules for ecosystem- based fisheries management are proposed: 1) Take less than nature, i.e., the mortality caused by fishing should be less than the natural rate of mortality; 2) Maintain population sizes above half of natural abundance, i.e., at levels where populations are still likely to be able to fulfill their ecosystem functions as prey or predator; and 3) Let fish grow and reproduce, i.e., adjust size at first capture such that the mean length in the catch equals the length *Lopt* where the biomass of an unexploited cohort is maximum. For rule 3), the basic equations describing growth in age-structured populations were reexamined and a new optimum length for first capture (*Lc\_opt*) was established. For a given rate of mortality caused by fishing, *Lc\_opt* keeps catch and profit near their theoretical optima while maintaining large population sizes. Compared with current fishing, management according to these three simple rules results in higher catches, lower cost of fishing, larger stock sizes, more large fishes, and an age and size structure that is close to that of an unexploited population. The presentation is based on a paper by Froese et al. entitled “Minimizing the impact of fishing”, submitted to *Fish and Fisheries*.