

Red Sea Research Center Symposium

Session Topic: FISH

Session Leaders: Prof. Stein Kaartvedt

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Title: Modelling Vertical Migration: Combined Effects of Environment and Animal Motivation

Abstract: Vertical migration is one of the most important types of animal migrations, encompassing most zooplankton and many fish species in the world's oceans. Typical patterns include a diel rhythm of staying in shallow waters at midnight and in deeper waters at midday, and an annual migration for deep water overwintering. The major forces for these migrations are abundance of food near the surface combined with high risk of becoming food for others. Thus, most organisms will avoid the surface waters when predation risk is too high (midday) or feeding gain is too low (winter).

I will explain ways to model this migration. Emphasis is laid on how theory of evolution can be used to model the motivations of individuals, and of how expectations to feeding and mortality risk can be modelled in the open oceans. Finally, I will explain why the location of KAUST may allow studies of importance for understanding the dynamics of life in big oceans of the world.