



# Session 2

Fish Telemetry II

# Schooling behaviour of Pacific bluefin tuna in a sea net cage

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## Abstract

*Schooling behaviour of Pacific bluefin tuna (PBF; *Thunnus orientalis*) was observed in a sea net cage located off the coast of Aso-bay, Tsushima-island using a fine-scale acoustic positioning and telemetry system. This system can record full frequency bands of underwater sound in stereo, and detect the three dimensional positions of the plural ultrasonic transmitters, which were attached to the backs of PBF. Twelve PBF of approximately 1.5 years old were used as an experimental fish and their behaviour was observed for 10 days. PBF generally formed a school throughout the experimental period. Immediately after the operation of the transmitter attachment, they formed more cohesive school rather than the few days after releasing. The behaviour of PBF was distinctive among day-time and night-time. During day-time, PBF swam in fast speed and formed relatively looser school at the bottom of the net cage. During night-time, in contrast, they swam in slow speed and formed cohesive and polarized school in the shallower range. Since the most important sensory organ for PBF is considered to be the vision, PBF might maintain the distance between individuals close, and swim in shallow water during night-time to keep visibility to form school.*

**Keywords:** *Schooling behaviour, Three dimensional behaviour analysis, Vision.*