Acoustic tagging of Atlantic cod - the silver bullet to investigate behaviour?

J Reubens$_1$*, M De Rijcke$_1$, S Degraer$_{1,2}$, M Vincx$_1$
1 Ghent University, Biology Department, Marine Biology Section, Krijgslaan 281, Sterre S8 9000 Ghent, Belgium
2 KBIN-MUMM, Gulledelle 100, 1200 Brussels, Belgium

Objective: **Unravel the diurnal behaviour of Atlantic cod (*Gadus morhua L.*) at windmill artificial reefs**

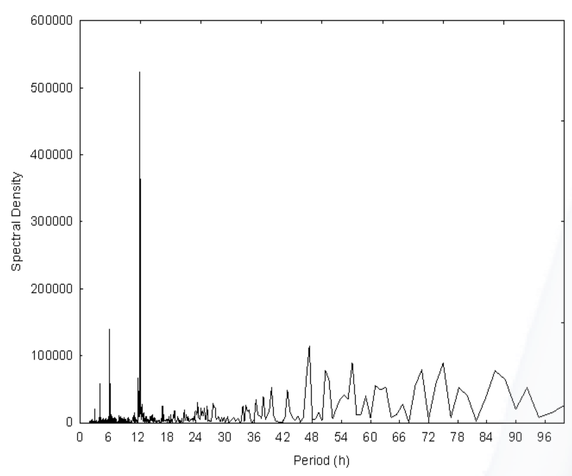
Methodology: ***Acoustic telemetry*** **in combination with** ***catch statistics*** **and** ***diet analysis***

Results:

Acoustic telemetry

Fast fourier transformation revealed 2 peaks in activity :

Dominant peak at 12 h related to crepuscular movements
Secondary peak at 6 h related to tidal movements



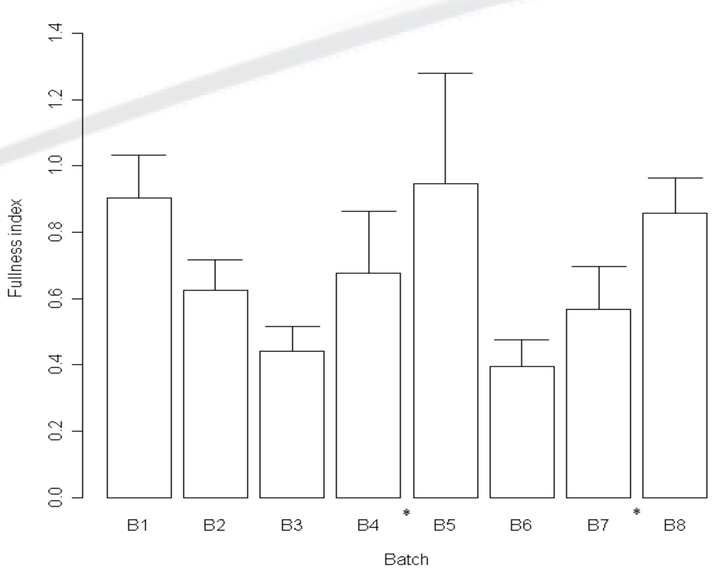
Catch statistics

Highest catch rates were recorded close to sunrise and sunset
Fish were collected during 8 sampling batches

Batch	Sampling time (UTC)	CPUE (ind h^{-1} fm^{-1})
B1	09:10 - 09:40	21.5
B2	12:00 - 12:25	27
B3	14:55 - 15:30	21
B4	17:55 - 18:20	29.4
B5	21:05 - 21:40	9.89
B6	00:25 - 00:55	17.5
B7	03:05 - 03:40	5.71
B8	06:00 - 06:25	31.2

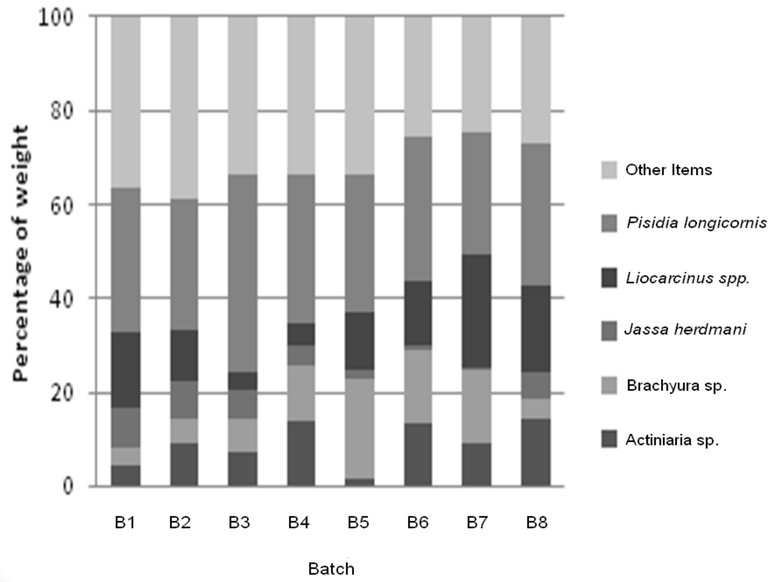
Diet analysis

Stomach content analysis revealed peak in stomach fullness close to sunrise and sunset



Stomach fullness at each sampling batch
* indicate dusk and dawn

Observed prey species



Average relative weight of dominant prey species in the stomachs of Atlantic cod

Conclusions:

- **Atlantic cod exhibited crepuscular movements related to feeding activity.**

- **Food availability** and ***shelter against currents*** may **stimulate aggregation behaviour** at the windmill artificial reefs

Conceptual representation of the diurnal activity patterns of Atlantic cod at the windmill artificial reefs. Atlantic cod are most active during twilight periods, followed by a smaller activity peak during periods of low current velocity.

*Jan.Reubens@Ugent.be, Marine Biology Research Group, Krijgslaan 281 Sterre S8, 9000 Ghent, Belgium +32 9 264 85 17