

# Using Static Acoustic Monitoring to describe echolocation behavior of Heaviside's dolphins in Namibia

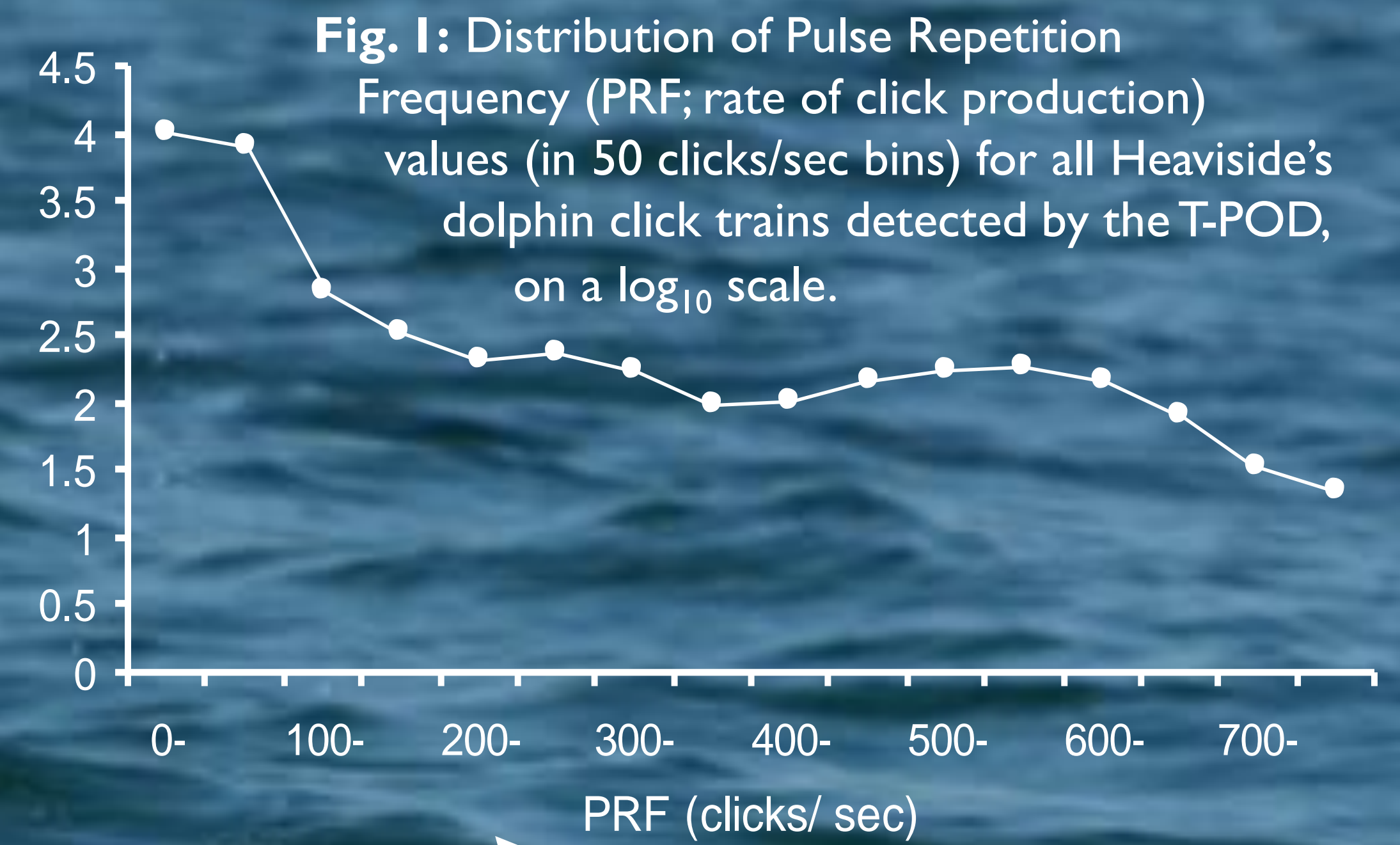


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## Introduction

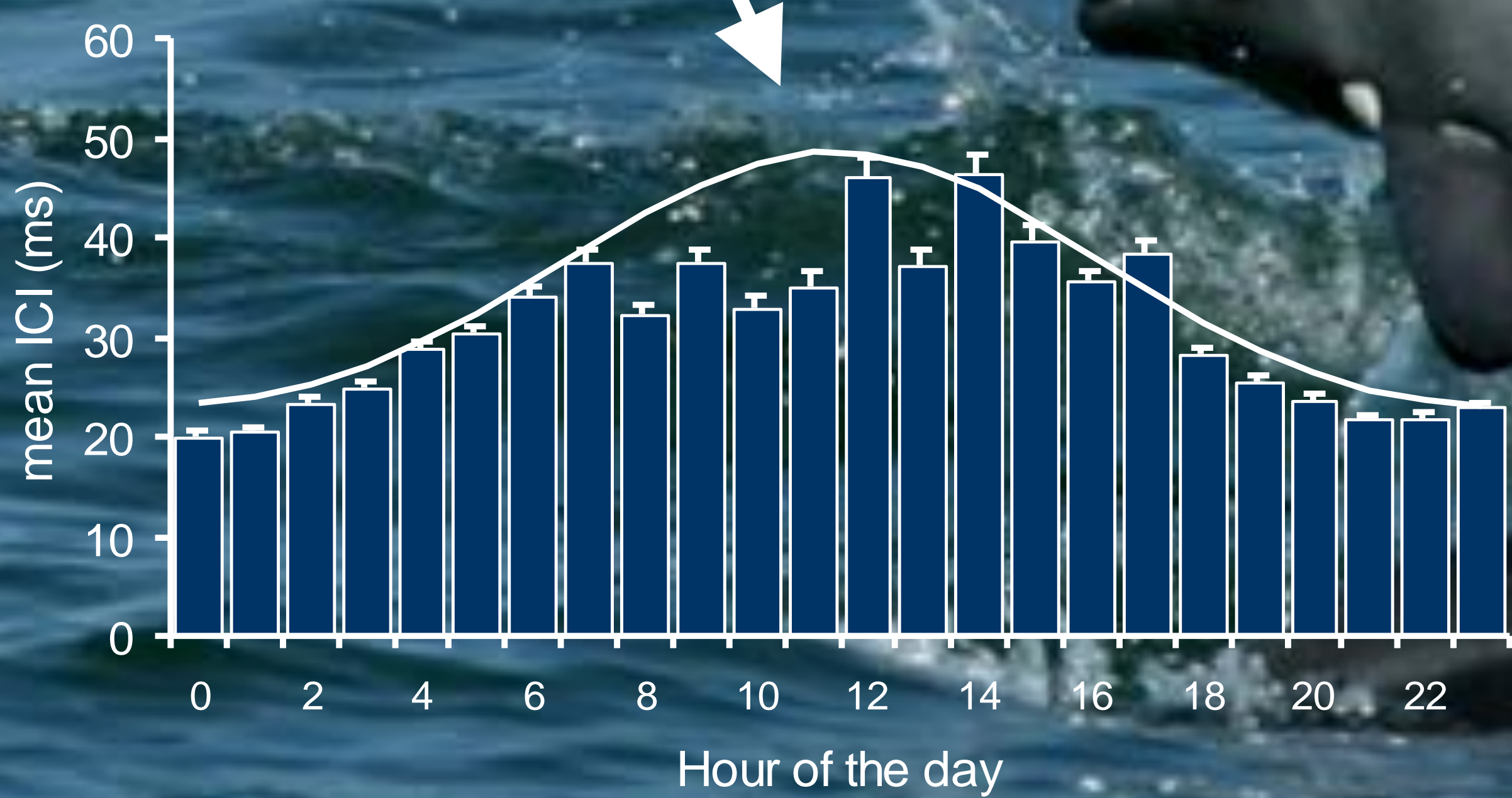
- Static Acoustic Monitoring is a cost-effective, low-effort means of gathering large datasets on habitat use by odontocetes.
- Heaviside's dolphins (*Cephalorhynchus heavisidii*) were monitored using a T-POD in July 2008, at Walvis Bay, Namibia (southwest Africa).
- The T-POD is a self-contained, submersible hydrophone & digital processor which recognises & logs high-frequency echolocation clicks made by odontocetes.
- It provides site-specific data on dolphin habitat use & behaviour within detection range of the T-POD.



Most clicks produced at rate of <150/ sec, with secondary peak at 500-600 clicks/ sec

T-POD settings :	To detect Heaviside's	To detect bottlenose/ other
Target (A) frequency (kHz)	130	50
Reference (B) frequency (kHz)	90	90
Ratio A/B	5	4
A integration period	short	short
B integration period	long	long
Minimum intensity	3	3

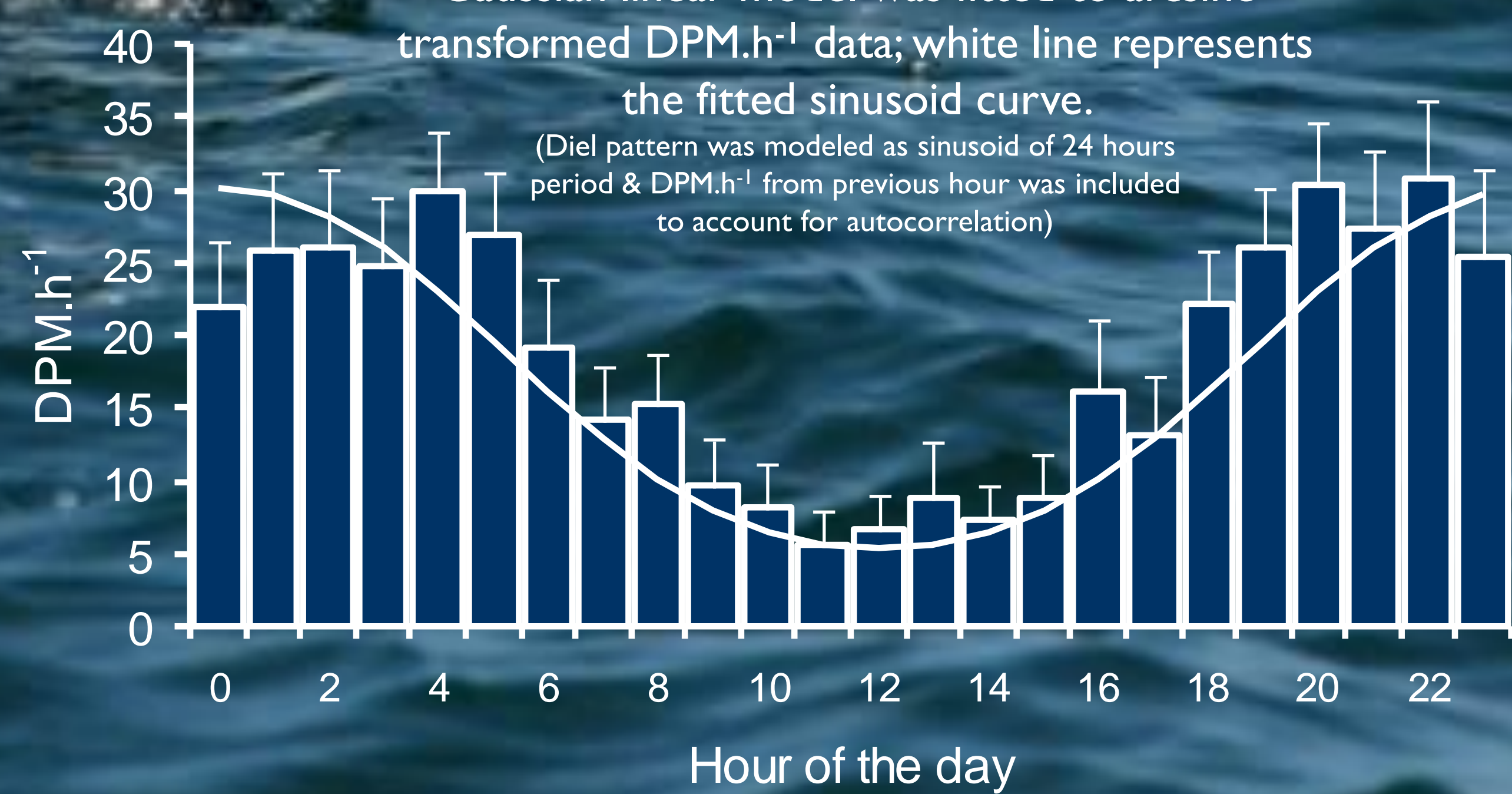
Time between successive clicks in a train is longer in the middle of the day



**Fig. 2:** Hourly mean inter-click intervals (ICI) ± s.e. per train. GLM with a log link and gamma errors were used to fit a sinusoid curve with a period of 24 hours. White line represents the fitted sinusoid curve for the model. (Impact of likely autocorrelation of ICI values reduced by including log-transformed mean ICI of the most recently recorded train as a time-lagged predictor variable)

Higher click activity (= more dolphins?) at night than mid-day

**Fig. 3:** Mean (+ s.e.) hourly detection rates (detection-positive minutes per hour; DPM.h<sup>-1</sup>), (n = 14 for most hours; minimum n = 8). Gaussian linear model was fitted to arcsine-transformed DPM.h<sup>-1</sup> data; white line represents the fitted sinusoid curve. (Diel pattern was modeled as sinusoid of 24 hours period & DPM.h<sup>-1</sup> from previous hour was included to account for autocorrelation)



## Conclusions :

- This is the first known use of Static Acoustic Monitoring to study Heaviside's dolphins.
- T-POD scans in 120-140 kHz range detected Heaviside's dolphin clicks; lower frequency scans did not.
- A distinct diel pattern to click activity & the mean hourly inter-click interval was observed.
- Static Acoustic Monitoring (T-PODs) is an effective technique for monitoring habitat use by Heaviside's dolphins.

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