The impact of pile-driving on seabass eggs and larvae

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Offshore wind farm

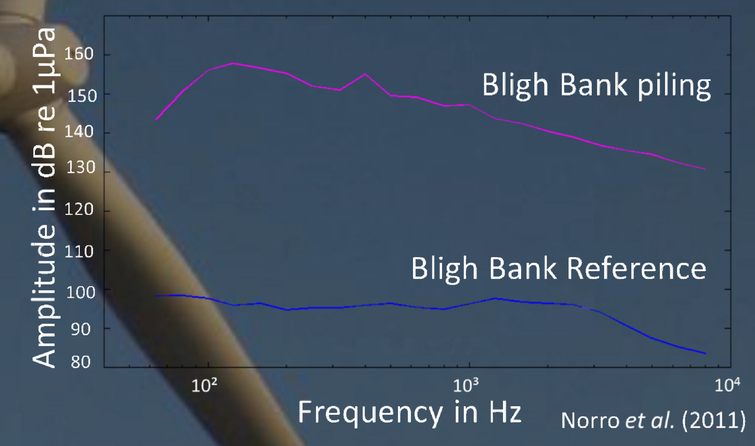
Reference noise ~90-100 decibels (re 1 µPa)

low frequency underwater noise

Construction phase ~186 decibels (re 1 µPa @ 750 m zero to peak sound pressure level)

strong impulse low frequency underwater noise

1/3 octave spectrum



Norro *et al.* (2011)

Potential impact on marine wild life

Barotrauma, auditory injury, mortality, disturbance of natural behaviour, stress

Great gaps + extrapolation is difficult

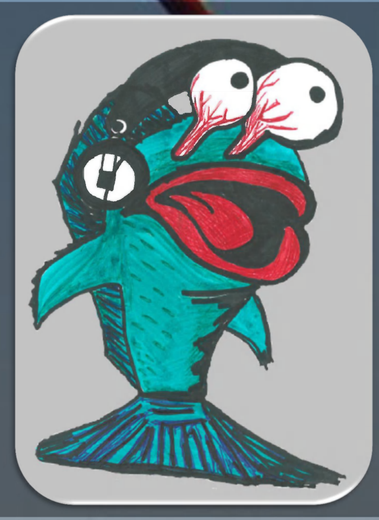
➡ **Need to examine fish eggs and larvae**

MSFD 11th Descriptor to achieve a Good Environmental Status (GES)

In Belgium the interim criterion based on the precautionary principle states that "the level of anthropogenic impulsive sound sources is less than 185 dB (re 1 µPa @750 m zero to peak sound pressure level)" ➡ More research is needed

European seabass (*Dicentrarchus labrax*)

Pile-driving of monopiles at Bligh bank @ 500 m



OFFNOISE PROJECT

Aim to assess the **acute** and **chronic** effects of short-term exposure of construction noise on **eggs** and **larvae** of European seabass

Impact on survival, development, fitness and stress

WORST CASE SCENARIO PILE-DRIVING EXPERIMENTS ON PILE-DRIVING

FIELD EXPERIMENTS

= real situation @40m from piling source

A strike every 1,5 second

Low frequency strong impulse noise

30 larvae/vial

1 complete piling event

Construction of monopiles at Lodewijkbank (07/2013)

LAB EXPERIMENTS

= simulate pile-driving

3000 Volt is discharged every second

Low frequency strong impulse noise

30 larvae/vial

30 min exposure

SIG sparker-electrode

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