

### 3. The search for new stimulation techniques to enhance Dutch flatfish trawling

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Flatfishes employ a sedentary bottom dwelling lifestyle, with occasional ‘swim and glide’ swimming movement, but they also bury themselves in the sediment under high currents. Field and laboratory studies have shown that flatfish tend to swim away in response to approaching fish nets (trawl gear). However, the literature on the interactions between flatfish and fishing gear is incomplete for various targeted species. In this study, we focus on two commercially targeted flatfish species from the North sea, the common sole (*Solea solea*) and the European plaice (*Pleuronectes platessa*). Both are captured through the use of tickler chains, a mechanical fishing technique that stirs up fish burrowed in the seabed by dragging heavy chain mats. The result is low selectivity, high fuel consumption, large seabed disturbance and high invertebrate bycatch. A more economically viable and less destructive fishing technique is needed. To improve the efficacy of said fishing gear, we need to improve the understanding of the swimming and escape behaviour of these targeted species by executing controlled swimming performance tests. Additionally, we will investigate the startle response and burrowing behaviour within a sandy-bottomed pool replicating the native environment of the flatfish. Once a baseline description of the flatfish behaviour is established, the two species will be exposed to various stimuli (physical, visual, auditory, thermal, and chemical). Ultimately, we aim to facilitate the implementation of the best combination of these stimuli that mitigate burrowing and encourage escape behaviour towards the net thereby improving the capture efficiency of future trawling gear.