

**Cryptic diets of forage fish: jellyfish consumption observed in the Celtic Sea and western English Channel**

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**Abstract**

Localized outbreaks of jellyfish, known as blooms, cause a variety of adverse ecological and economic effects. However, fundamental aspects of their ecology remain unknown. Notably, there is scant information on the role jellyfish occupy in food webs: in many ecosystems, few or no predators are known. To quantify the magnitude of jellyfish predation we conducted a molecular gut content assessment of potential predators using cnidarian-specific mtDNA primers and sequencing. Analyses were conducted on opportunistically sampled fish from the Celtic Sea in October 2015 (autumn) and compared with those previously collected in February and March 2008/9 (winter) from the Irish Sea. Mackerel *Scomber scombrus*, one of the most abundant fish species in the Celtic Sea, was found to feed extensively on hydrozoan jellyfish in autumn, mostly the scyphozoan *Pelagia noctiluca* as well as the hydrozoans *Geryonia proboscidalis*, *Scolionema suvaense* and *Liriope tetraphylla*, with occasional consumption also detected in sardine *Sardina pilchardus* and sprat *Sprattus sprattus*. By contrast, moon jellyfish *Aurelia aurita* appeared to escape predation in autumn and were not recorded in fish stomachs, potentially as a result of somatic growth and the development of stinging tentacles. In February and March, *A. aurita* ephyrae were identified as being heavily preyed upon by herring, whiting and several other predators. Consequently, we show that jellyfish predation may be more ubiquitous than previously acknowledged. These results infer that there may be hitherto poorly appreciated limits on the proliferation of jellyfish, and strong interactions with commercial fish species.

**Keywords:**

Celtic Sea, diet, gelatinous zooplankton, molecular gut content analysis

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