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Feeding behaviour and digestive physiology in larval fish: current knowledge, and gaps and bottlenecks in research

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Abstract

Food uptake follows rules defined by feeding behaviour that determines the kind and quantity of food ingested by fish larvae as well as how live prey and food particles are detected, captured and ingested. Feeding success depends on the progressive development of anatomical characteristics and physiological functions and on the availability of suitable food items throughout larval development. The fish larval stages present eco-morpho-physiological features very different from adults and differ from one species to another. The organoleptic properties, dimensions, detectability, movements characteristics and buoyancy of food items are all crucial features that should be considered, but is often ignored, in feeding regimes. Ontogenetic changes in digestive function lead to limitations in the ability to process certain feedstuffs. There is still a lack of knowledge about the digestion and absorption of various nutrients and about the ontogeny of basic physiological mechanisms in fish larvae, including how they are affected by genetic, dietary and environmental factors. The neural and hormonal regulation of the digestive process and of appetite is critical for optimizing digestion. These processes are still poorly described in fish larvae and attempts to develop optimal feeding regimes are often still on a trial and error' basis. A holistic understanding of feeding ecology and digestive functions is important for designing diets for fish larvae and the adaptation of rearing conditions to meet requirements for the best presentation of prey and microdiets, and their optimal ingestion, digestion and absorption. More research that targets gaps in our knowledge should advance larval rearing.

Keywords

Author Keywords: [absorption](#); [digestion](#); [gut](#); [ingestion](#)

KeyWords Plus: [BASS DICENTRARCHUS-LABRAX](#); [SEABREAM SPARUS-AURATA](#); [COD GADUS-MORHUA](#); [HALIBUT HIPPOGLOSSUS-HIPPOGLOSSUS](#); [FREE AMINO-ACIDS](#); [CHOLECYSTOKININ-IMMUNOREACTIVE CELLS](#); [PORGY PAGRUS-PAGRUS](#); [RED-SEA BREAM](#); [HERRING CLUPEA-HARENGUS](#); [SALT-ACTIVATED LIPASE](#)

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