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Most marine fishes have biphasic life cycle during which larvae disperse into the open ocean before coming back to a coastal habitat and renew adult population. This incredible journey represents a massive challenge for such tiny organisms that will have to not only orientate themselves, but also find food, escape predators, grow, and face massive external and internal changes to transform into juveniles that look like miniature adult. This transformation, is called metamorphosis and is under the control of thyroid hormones. It must occur during the transition between the oceanic and costal phase. Thyroid hormones are thus not only responsible for triggering metamorphosis, they in fact coordinate multiple processes to ensure that the outcoming juvenile will be equipped to adapt to its new habitat at the right time. Recent evidences are thus suggesting that thyroid hormones have an ecological function that is to ensure that developmental transitions are aligned with environmental transition. However, during such critical period, marine fish can be particularly vulnerable to external factors such as habitat quality, pollution, increase temperature, ocean acidification etc. We will present the experimental evidences supporting this model and discuss its implications