

## capitolo 6 Origine ed evoluzione degli animali: i vertebrati

### verifica la comprensione

Leggi il brano e rispondi alle domande.



#### Fish reproduction

Over 97% of all known fishes are oviparous, that is, the eggs develop outside the mother's body. Fertilisation takes place outside the mother's body, with the male and female fish shedding their gametes into the surrounding water. However, a few oviparous fishes practise internal fertilisation, with the male using some sort of intromittent organ to deliver sperm into the genital opening of the female, most notably the oviparous sharks, such as the horn shark, and oviparous rays, such as skates. In these cases, the male is equipped with a pair of modified pelvic fins known as claspers.

Marine fish can produce high numbers of eggs which are often released into the open water column. The eggs have an average diameter of 1mm.

The newly-hatched young of oviparous fish are called larvae. They are usually poorly formed, carry a large yolk sac (from which they gain their nutrition) and are very different in appearance to juvenile and adult specimens of their species. The larval period in oviparous fish is relatively short however (usually only several weeks), and larvae rapidly grow and change appearance and structure (a process termed metamorphosis) to resemble juveniles of their species. During this transition larvae use up their yolk sac and must switch from yolk sac nutrition to feeding on zooplankton prey, a process which is dependent on zooplankton prey densities and causes many mortalities in larvae.

Ovoviviparous fish are ones in which the eggs develop inside the mother's body after internal fertilization but receive little or no nutrition from the mother, depending instead on the yolk. Each embryo develops in its own egg. Familiar examples of ovoviviparous fishes include guppies, angel sharks, and coelacanths.

Some species of fish are viviparous. In such species the mother retains the eggs, as in ovoviviparous fishes, but the embryos receive nutrition from the mother in a variety of different ways. Typically, viviparous fishes have a structure analogous to the placenta seen in mammals connecting the mother's blood supply with the that of the embryo. Examples of viviparous fishes of this type include the surf-perches, splitfins, and lemon shark. The embryos of some viviparous fishes exhibit a behaviour known as oophagy where the developing embryos eat eggs produced by the mother. This has been observed primarily among sharks, such as the shortfin mako and porbeagle, but is known for a few bony fish as well. Intrauterine cannibalism is an even more unusual mode of vivipary, where the largest embryos in the uterus will eat their weaker and smaller siblings. This behavior is also most commonly found among sharks, such as the grey nurse shark, but has also been reported for *Nomorhamphus ebrardtii*.

(<http://en.wikipedia.org>)

- How do oviparous fish reproduce?
- How do the embryos of viviparous and ovoviviparous fish develop?
- What is meant by oophagy?

