

FiSHPIC

Nuptial tubercles in fish: what are they for?

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With the arrival of spring, many freshwater fish begin their reproductive period. The longer photoperiod and higher water temperature activate fish endocrine system, which controls the maturation of gametes and stimulates physiological and behavioural changes associated with reproduction. During the reproductive season, males of some fish, such as the Leuciscidae family, present dermal structures called nuptial (or breeding) tubercles.

Nuptial tubercles are tiny keratinized epidermal structures that grow on the body parts of males which are likely to come in contact with females during courtship and spawning (Moyle & Cech (2004). They are used by some species for defence of nests and territories, and as a stimulus for egg laying in species whose courtship involves chasing and pressing the head against the urogenital area of the female by males (Carvalho et al., 2003; Sousa-Santos et al., 2014). It has been suggested that they might also be involved in conspecific recognition (Vladykov et al., 1985). Their development is stimulated by hormones secreted by the pituitary and adrenal glands, being induced shortly before the reproductive period.

Males of the critically endangered Portuguese arched-mouth nase, *Iberochondrostoma lusitanicum* (see picture) have extremely evident tubercles during the breeding season, when fish form large aggregations for spawning (Carvalho et al., 2003). During this season sexual dimorphism is clear and sex can be easily determined in the field by visual inspection: females exhibit swollen abdomens and males have larger fins and show the developed nuptial tubercles (Collares-Pereira et al., 2021).

Nuptial tubercles
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