COMPARISON OF EARLY-LIFE STAGE STRATEGIES IN 65 EUROPEAN FRESHWATER FISH SPECIES

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INTRODUCTION

Different trade-offs at the egg and larval stages ensure that larvae are starting to feed when environmental conditions are optimal for them

Goals >> based on the analysis of 12 egg and larval variables, temperature and spawning season for 65 freshwater fish species*:  
1. reassess previous conclusions on the possible relationships between egg size, larval size, temperature and time  
2. explore further the different trade-offs during early-life stages ensuring that larvae start feeding at the right time

*All data are issued from a specific database, called STOREFISH (3).

MATERIALS AND METHODS

Egg traits
- Oocyte diameter : \( \Theta \), in mm  
- Egg diameter : same, double or triple  
- Egg buoyancy : demersal or pelagic  
- Egg adhesiveness : sticky or not

Larval traits
- Size upon hatching: \( L \), in mm  
- Larval behavior : demersal or pelagic

Variables studied for \( I \) and \( EF \)
- Time: \( t \), in days
- Temperature: \( T \), in °C
- Degree-days: \( °D \) \( [t \times T] \)

RESULTS AND DISCUSSION

When excluding \( \Theta > 4.5 \) mm : \( r^2 = 0.52 \)
Egg size sets a limit on the larvae that can hatch from it  
Relationship ≠ from marine fishes (2)

When excluding \( \Theta > 4.5 \) mm : \( r^2 = 0.21 \)
Egg size not correlated with the amount of reserves  
\( °D \) for incubation also not correlated with \( \Theta \) (4)

\( T \) => the most important environmental factor affecting \( t \).  
\( T \uparrow \) tissue differentiation rate, activity of hatching glands and embryo motility (1)

\( \Theta \), \( L \) and \( T \); \( T \uparrow \)
ACP on all traits  
=⇒ 5 groups (5)

\( D, t, \Theta \) and \( L \); \( T \uparrow \)

Developmental stages at hatching and at the onset of exogenous feeding are not fixed in ontogeny ⇒ species-specific (1)

Whatever the spawning season ⇒ larvae are first-feeding during spring, when food size and abundance are the most appropriate (6)

REFERENCES
5. Teletchea et al. (2009b) Comparative analysis of reproductive traits in 65 freshwater fish species: application to the domestication of new fish species. Reviews in Fish Biology and Fisheries (in press)