

IS THE CHOICE OF WEANING STRATEGY OF EURASIAN PERCH (*Perca fluviatilis* L.) LARVAE DEPENDS ON DOMESTICATION LEVEL OF SPAWNERS?

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Introduction

Information on how domestication affects early life stages in fishes is limited. Our recent studies showed that domestication has an impact on the digestive capacity of Eurasian perch larvae that coincided with a higher growth rate recorded for domesticated ones. Weaning is a critical step for cultured percid species as the transition from live food to commercial feed often results in high mortality. Further studies are required for the optimization of the weaning strategy at the earliest possible stage of perch larvae during their rearing. Therefore, the aim of this study was to determine the effect of a different weaning strategy (sudden switch vs co-feeding) of perch larvae originated from domesticated or wild spawners on the results of their subsequent rearing parameters.

Materials and methods



At the end of the experiment all survivors (34 dph) per tank were counted, weighed, and measured. A two-way ANOVA was used to test the effects of origin of the perch larvae (domesticated or wild), weaning strategy (sudden switch or co-feeding) and the interactions of both these factors on subsequent rearing parameters of perch larvae. Differences were considered significant at $P < 0.05$.

Results

At the end of experiment, domesticated and co-fed (*Artemia* nauplii and commercial feed) perch larvae characterized by better growth, lower mortality caused by type II cannibalism and final bigger biomass, whereas these wild perch larvae which were fed only by *Artemia* nauplii, until were switched entirely to commercial feed, had better final survival, lower mortality other than cannibalism and final bigger biomass. Based on two-way ANOVA, origin of perch larvae (domesticated or wild) affected individual body weight, mortality caused by type II cannibalism and mortality other than cannibalism. Weaning strategy significantly effected on individual body weight, mortality caused by type I cannibalism and final survival of the fish. None of the factors had a significant impact on the final fish biomass. However, significant interactions between origin of the larvae and the weaning strategy were found in all tested rearing parameters (Table 1).

Table 1. F-values and P-values ($*P < 0.05$) from the two-way ANOVA analysis used to study the effects of origin of perch larvae (domesticated or wild), weaning strategy (sudden switch or co-feeding) and the interaction of these two predictors on dependent rearing parameters.

Predictor	Origin		Weaning strategy		Origin x Weaning strategy	
	F-value	P-value	F-value	P-value	F-value	P-value
body weight	7,59	0,02*	6,43	0,03*	11,72	0,01*
fish biomass	1,68	0,23	0,31	0,59	15,22	0,01*
survival	0,10	0,76	8,50	0,02*	6,11	0,04*
cannibalism type I	3,13	0,11	11,91	0,01*	15,85	0,01*
cannibalism type II	15,53	0,01*	3,26	0,11	16,72	0,01*
other type mortality	12,59	0,01*	2,60	0,14	6,90	0,03*

Discussion and conclusion

Our study supports the hypothesis that the type of food is the main challenging factor in intensive Eurasian perch larviculture conditions affecting its final efficiency. Our recent study suggested that the production of digestive enzymes does not matter when easily digestible high-quality food, such as *Artemia*, is offered, although digestion capability was higher in wild than in domesticated perch larvae. However, in the presented study, significant changes in growth between perch larvae originated from wild and domesticated spawners were observed even before *Artemia* was completely replaced with commercial feed using co-feeding scheme. This suggests that other processes than only the production and activity of digestive enzymes are modified by progressive domestication. **In conclusion, our results indicate, that choice of the weaning strategy in Eurasian perch larvae may depend on the domestication level of their parents and could significantly affect their subsequent rearing parameters.**

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