

Book of abstracts



8th International
Workshop
on the Biology
of Fish Gametes

20-23 September 2022
Gdańsk
POLAND

[O25]

EFFECT OF LIGHT COLORS ON SPERMIATION AND SPERM KINETICS PARAMETERS DURING OUT OF SEASON REPRODUCTION IN POND-REARED EURASIAN PERCH (*PERCA FLUVIATILIS* L)**Jarosław KRÓL^{1*}, Sławomir KREJSZEFF¹, Katarzyna PALIŃSKA-ŻARSKA¹, Daniel ŻARSKI²**¹The Stanisław Sakowicz Inland Fisheries Institute, Olsztyn, Poland²Institute of Animal Reproduction and Food Research, Polish Academy of Sciences, Tuwima 10, 10-748 Olsztyn, Poland

*Presenting author (j.krol@infish.com.pl)

Despite that commercial production of Eurasian perch has already been established in several countries, controlled reproductive protocols in this species still require further optimization, including lighting in hatchery condition. This is especially essential in Eurasian perch in which light spectrum has been reported to be important modulator of stress response. In the present study, we have focused on characteristic of pond-reared Eurasian perch sperm parameters following controlled wintering with application of different light colors (white, blue and red), hypothesizing that this might affect stress level and further reproductive capacity of males.

Pond-reared Eurasian perch males, obtained in early November were transferred to RAS and then were exposed to a 40 day-long wintering period before spawning. During entire experiment fish were exposed on three different light colors: white (W), blue (B) and red (R). 7 days before sperm collection, males from each lighting group were divided for two subgroups which one of them was stimulated for spermiation with 50 $\mu\text{g kg}^{-1}$ of the sGnRHa. Semen was collected with a catheter from 5 males originated from each subgroup. The total volume of semen (VOL) was determined with accuracy of 0.1 ml. Sperm kinetics were examined with CASA system (SCA, Microptic S.L., Spain). Parameters which were chosen for analysis: MOT—percent of motile sperm (%), VCL—curvilinear velocity ($\mu\text{m s}^{-1}$), VAP—average path velocity ($\mu\text{m s}^{-1}$), VSL—straight line velocity ($\mu\text{m s}^{-1}$) and LIN—linearity of movement. All analyses were performed at a significance level of 0.05 using one-way ANOVA followed by HSD Tukey post hoc test.

No significant differences in spermiation success, semen volume and any CASA variables in response to light colors (white, blue or red) used during wintering period preceding out of season reproduction of Eurasian perch were found. Hormonal stimulation had a positive effect on total semen volume in all tested groups, however it had no effect on the observed sperm kinetics parameters, irrespective of light color. In conclusion, we consider that light color has no effect on spermiation and sperm kinetics parameters during controlled out of season reproduction in Eurasian perch creating possibilities for perch managers to freely adjust light colors. However, still the effect light color on stress and immune response indices should be further investigated to elucidate linkage between light color and physiological reaction in this species.

Keywords: light condition, wintering period, out of season spawning, CASA analysis

Acknowledgements: Supported by PRO-PERCH project, supported by Polish Operational Programme "PO RYBY 2014–2020" within European Maritime and Fisheries Fund (00002-6521.1-OR1400004/17/20). Participation on the conference of the first author was financed by the scholarship fund of the S. Sakowicz Inland Fisheries Institute in Olsztyn.