**Influence of sex ratio on reproductive success of male and female daphnia**

The classical theory of gender conflict says that in animals with sexual reproduction and traditional sex roles, males compete for females, and in females, competition for partners is weak, since males are always in abundance. This inference follows from the fact that one male can fertilize many females. Accordingly, males are in abundance in the population, and their reproductive success (the number of offspring) increases with the number of partners. For females, this should not be the case: the number of partners does not increase their reproductive success, so they are not chasing the number of partners, but their quality. However, in recent years, both theory and practice show that not only males, but also females can compete for partners, especially in situations where there are many females and few males.

Daphnia alternate parthenogenesis with sexual reproduction. During the period of sexual reproduction, the sex ratio in natural populations can be strongly shifted towards females. Accordingly, questions arise about how many females a male can fertilize and whether females experience a shortage of males, which can lead to reproductive failure and competition of females for males.

Scientists from the Koltsov IDB (RAS), IEE RAS, and CEFE (France) tested these hypotheses in a series of experiments with Daphnia magna. In the article Sex ratio effects on reproductive success of male and female Daphnia, recently published in the Journal of Evolutionary Biology, it is shown that one male Daphnia can actually fertilize a large number of females, about 50. However, with the sex ratio strongly shifted towards females quite common in nature, this is not enough - many of the females remain unfertilized. Contrary to the classical theory of gender conflict, males are in short supply. It is interesting that females also suffer when there are many males - their mortality increases. Perhaps the reason for this is the pursuit of numerous males and / or the negative impact of increased density of population.

Thus, Daphnia magna females need a certain number of males for optimal reproductive success. It is likely that a shortage of males causes the females to compete, which creates conditions for sexual selection.