

## Abstract

The motility of male gametes (sperm) is one of the important factors influencing the reproductive success of males. Because sperms are often subjected to strong postmating sexual selection and even closely related species often differ in sperm morphology, sperm motility could also differ between species, which may contribute to reproductive isolation between species. As part of my diploma thesis, I studied sperm motility in two closely related species of songbirds, the common nightingale (*Luscinia megarhynchos*) and the thrush nightingale (*Luscinia luscinia*). These two species of nightingales are an ideal model system because the areas of these two species overlap in the secondary contact zone across Central and Eastern Europe, where they occasionally hybridize and thus allow the study of speciation mechanisms in the natural environment. Both species also differ greatly in total sperm length. As part of my diploma thesis, I studied the possible influence of different sperm morphology on their motility. I further tested whether the motility of nightingale sperm differs in the fluid from the cloaca of a female of the same species and a different species, which would demonstrate the presence of postmating prezygotic reproductive isolation between species. The results of my work showed that despite the different morphology, the sperm of these two species do not differ in their motility. I also found that the sperm motility in fluid from the cloaca of a female of another species is significantly lower compared to the sperm motility in a neutral environment. In contrast, the motility of sperm in fluid from the cloaca of the same species did not differ from motility in a neutral environment. These results suggest that although the different morphology of spermatozoa in both species of nightingales does not by itself affect their motility, the presence of fluid from the cloaca of heterospecific females can significantly reduce motility. This may contribute to postmating prezygotic reproductive isolation between the two nightingale species.

Keywords: speciation, reproduction isolation, sperm, sperm motility, Nightingale (*Luscinia* sp.)