

Hybrid sterility plays a key role in reproductive isolation during evolution of species. The mechanisms responsible for hybrid sterility are relatively well understood in organisms with heterogametic males, such as *Drosophila* or mouse but are largely unknown in organisms with heterogametic females (e.g. birds). Studies on reproductive isolation in birds takes place in natural hybrid zones, instead of captivity. Hybrid sterility preferentially affects the heterogametic sex, males in mammals (XY) and females in birds (ZW), according to Haldane's rule. This leads to reduced introgression in sex chromosomes and mitochondrial DNA compared to autosomal DNA. The purpose of this thesis is to summarize known information on hybrid sterility and its expression in two models of interspecies hybridization: flycatchers and nightingales. Additionally, this thesis contains also a practical part, which compares morphology of sperms of two species of nightingales.