

Tell me what parasites you have and I will tell you who you are

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The life on Earth seems to be very simple in its essence – to find a place and a way of exploration indispensable resources, next to assign part of them for production of offspring. All this, just to propagate the genes in next generations. For parasites all living beings are potential ecological niche and resource to be explored. They remain underestimated, even though they are probably the most common way of living on earth. And the role they play in the theatre of life still amazes and surprises.

The aim of my study is to investigate the impact of parasites in system of competing bird species. To do this, I want to see if there are any differences in susceptibility to malaria parasites of two co-occurring and competing species – pied (*Ficedula hypoleuca*) and collared flycatchers (*F. albicollis*). Additionally, I want to reveal if malaria parasite infections have significant effect on condition of birds, secondary sexual traits or the number of offspring they recruit. Finally, I want to check if there is any pattern or species specificity in infections of *Haemoproteus pallidus* and *H. balmorali*.

To achieve my goal I collected blood samples from both species that breed on Baltic island - Öland. Then, using a method of nested PCR and quantitative PCR, I distinguished between avian and malaria parasite DNA and amplified the latter. That gave me a general image of susceptibility to malaria parasites in these birds, as well as information about specific infections of *Haemoproteus pallidus* and *H. balmorali* and how heavily they are infected by them.

My study shows that pied flycatchers are much more frequently infected by malaria parasites than collared flycatchers (44% and 17% respectively). Moreover, there's no species specificity in infection of different parasites – 95% of individuals were infected by *H. pallidus*. Most interestingly, collared flycatcher seems to be only marginally affected by malaria parasites in terms of condition, reproductive success or sexually selected traits! Conversely, pied flycatcher shows various and significant relationships between the frequency and level of infection and other traits. For instance, more heavily infected birds tend to be heavier (indicator of condition), have bigger wing patch, have less grey on their back (sexually selected traits) and have a higher maneuverability in flight performance.

These results suggest, that due to a bigger impact parasites have on pied flycatcher this bird species tends to be more tightly co – evolved with them. In the result, only superior individuals, with high quality in terms of condition, sexually selected traits and flight performance can afford to breed successfully. This may have an effect on the outcome of inter-specific competition between flycatcher species that we cannot neglect. For more detailed and cause-and-effect conclusions, further experiments are needed.

Then, if we look more carefully at them, parasites will not only tell us more about themselves, but also about the hosts they infect.