Supplement

A separate analysis was conducted to detect differences in parasite assemblage parameters within each locality. Generalized linear models (GLM, negative binomial for abundance, Poisson for species richness, Bernoulli for prevalence) were used to test inter-specific differences between host within each of the three sites (Morava, Rhine, Vistula).

IC parasite abundance of both gobiid hosts from the Morava was comparable with that of common gudgeon but significantly higher than that of perch. In contrast, parasite abundance of gobiids was significantly lower than that of perch from the Vistula. High variability within both native and non-native hosts was apparent in the Rhine, with only the tubenose goby reaching parasite abundance comparable with native ruffe, while other gobiid species hosted significantly lower abundances, comparable mostly with native perch (Fig. S1). The same trend was apparent in IC local parasite abundance (Fig. S2). The trend of IC parasite richness was similar to that of parasite abundance, with only tubenose goby hosting a lower number of parasite species than ruffe in the Rhine (Fig. S3).

Specialist parasite abundance varied substantially between both native and non-native hosts (Fig. S4). In the Morava, tubenose goby reached the same load as gudgeon, with round goby and perch hosting almost no specialists at all. In the Vistula, the monkey goby showed a similar low abundance of specialists as did native perch, with the racer goby hosting significantly higher numbers. In the Rhine, native ruffe matched non-native tubenose and monkey gobies in specialist parasite abundance, with a significantly lower load observed in native perch and non-native round and bighead gobies.

While adult generalists occurred solely on native hosts (Fig. S5), trends in abundances of larval generalist parasites matched those observed for overall parasite abundance (Fig. S6).

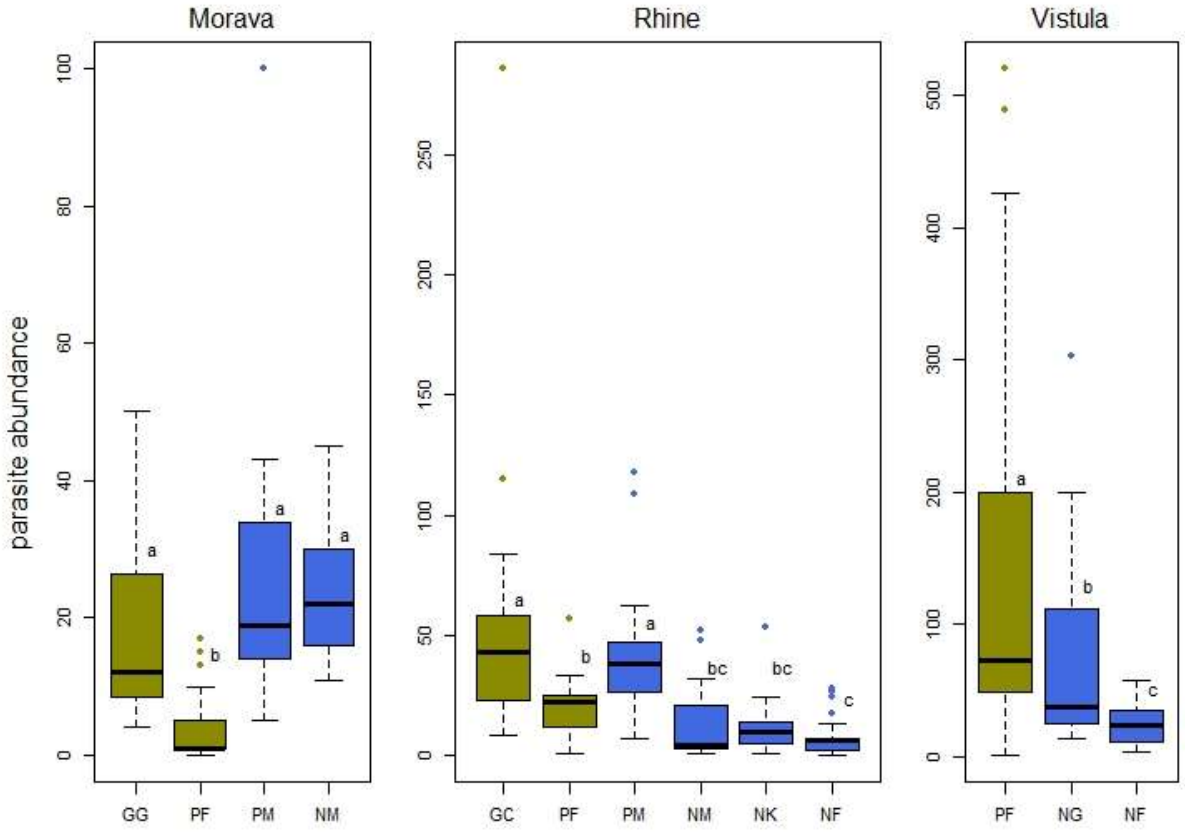

Fig. S1. Inter-host differences in parasite abundance from three distant river basins. Hosts (green – native, blue – non-native), parasite abundances that do not differ significantly within the same basin share the same lower case letter. Median – horizontal bar, interquartile range = box, non-outlier range (1.5 time interquartile range) = whiskers, outliers = points. GG= *Gobio gobio*, PF = *Perca fluviatilis*, PM = *Proterorhinus semilunaris*, NM = *Neogobius melanostomus*, GC = *Gymnocephalus cernua*, NK = *Ponticola kessleri*, NF = *Neogobius fluviatilis*, NG = *Babka gymnotrachelus*.

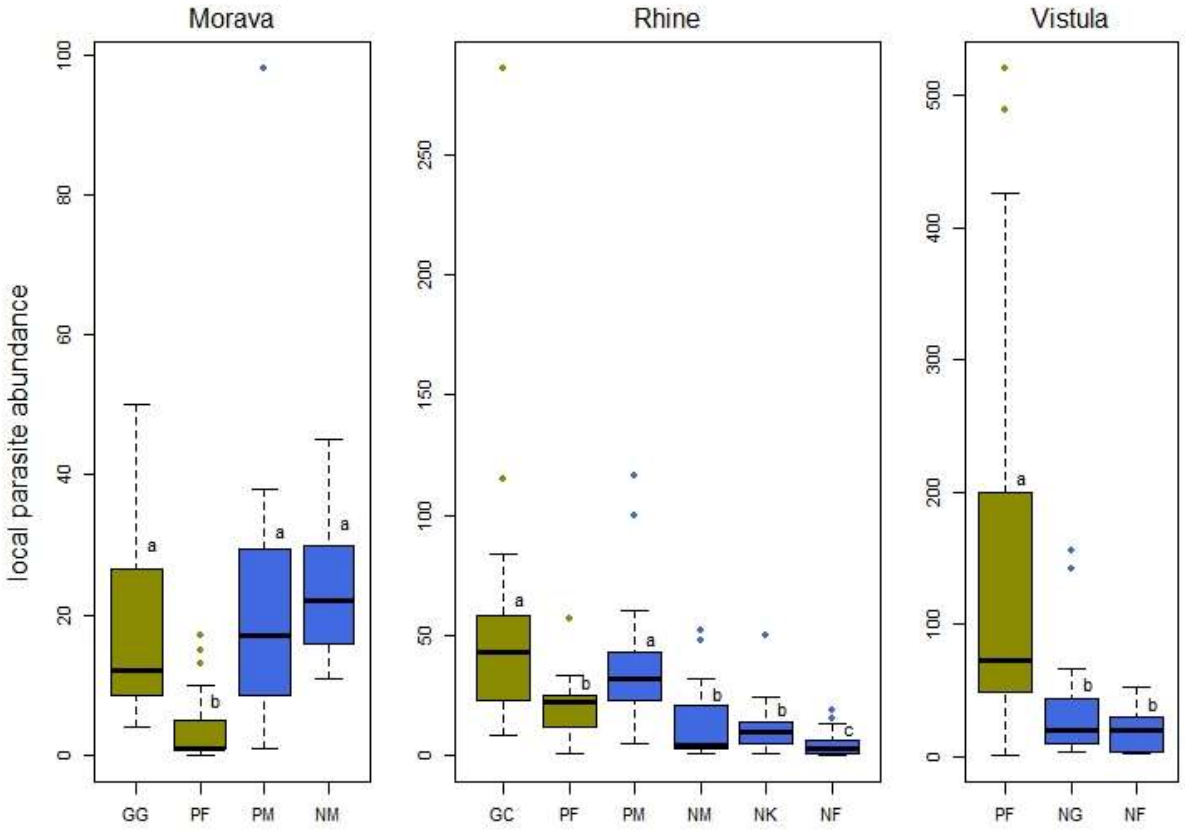

Fig. S2. Inter-host differences in local parasite abundance from three distant river basins. Hosts (green – native, blue – non-native), parasite abundances that do not differ significantly within the same basin share the same lower case letter. Median – horizontal bar, interquartile range = box, non-outlier range (1.5 time interquartile range) = whiskers, outliers = points.

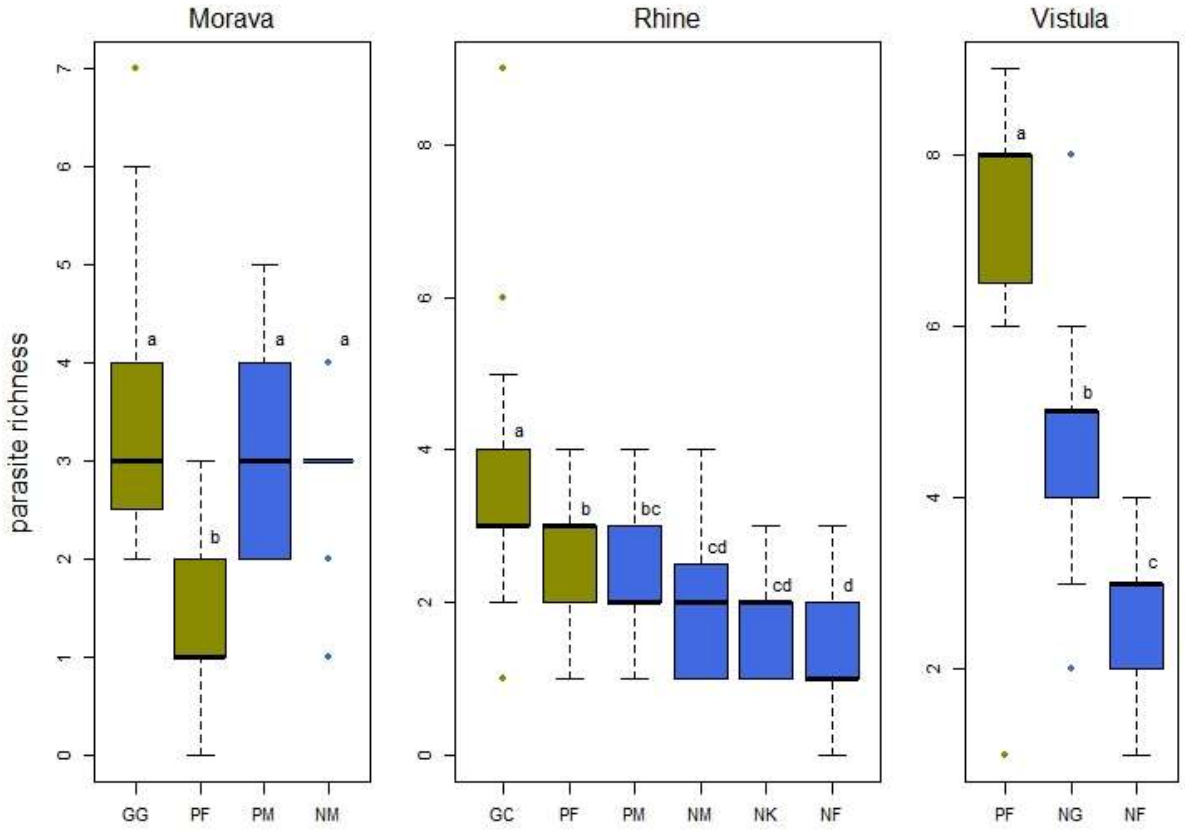

Fig. S3. Inter-host differences in parasite richness from three distant river basins. Hosts (green – native, blue – non-native), parasite richness that does not differ significantly within the same basin share the same lower case letter. Median – horizontal bar, interquartile range = box, non-outlier range (1.5 time interquartile range) = whiskers, outliers = points.

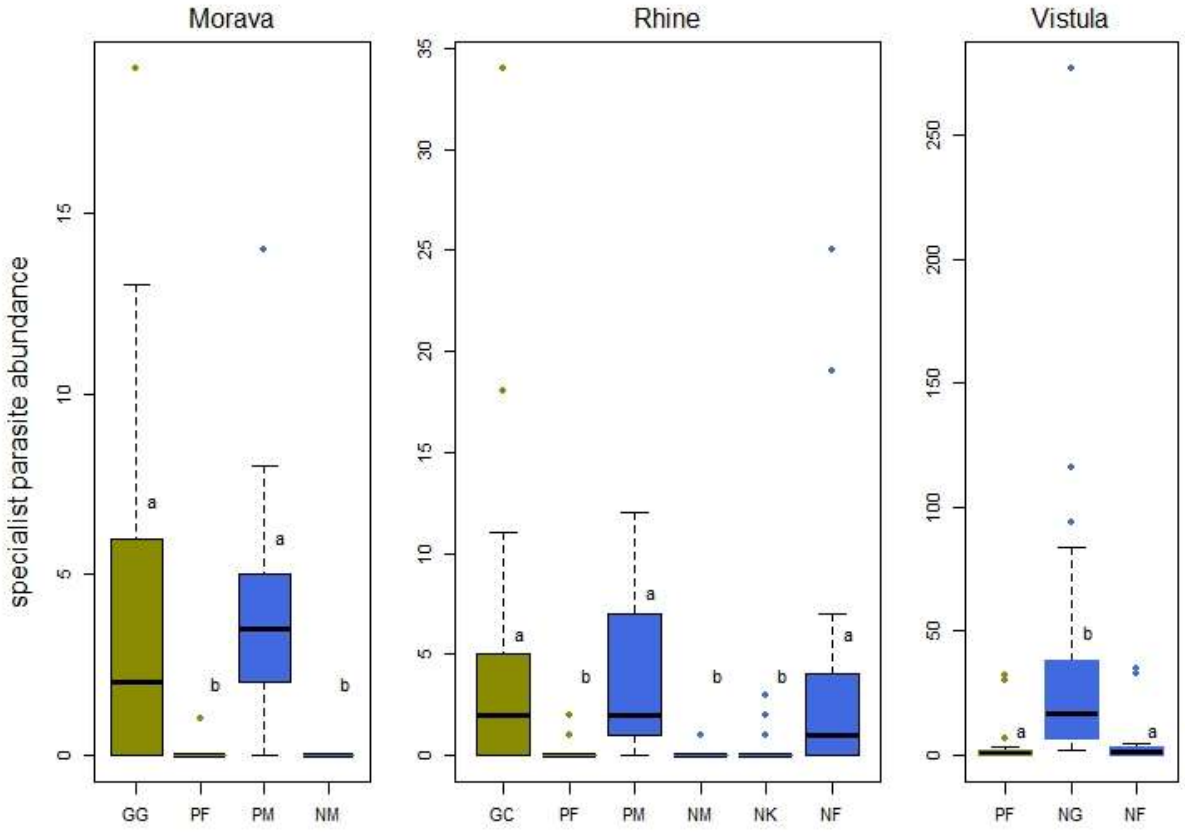

Fig. S4. Inter-host differences in abundance of specialist parasites from three distant river basins. Hosts (green – native, blue – non-native), parasite abundances that do not differ significantly within the same basin share the same lower case letter. Median – horizontal bar, interquartile range = box, non-outlier range (1.5 time interquartile range) = whiskers, outliers = points.

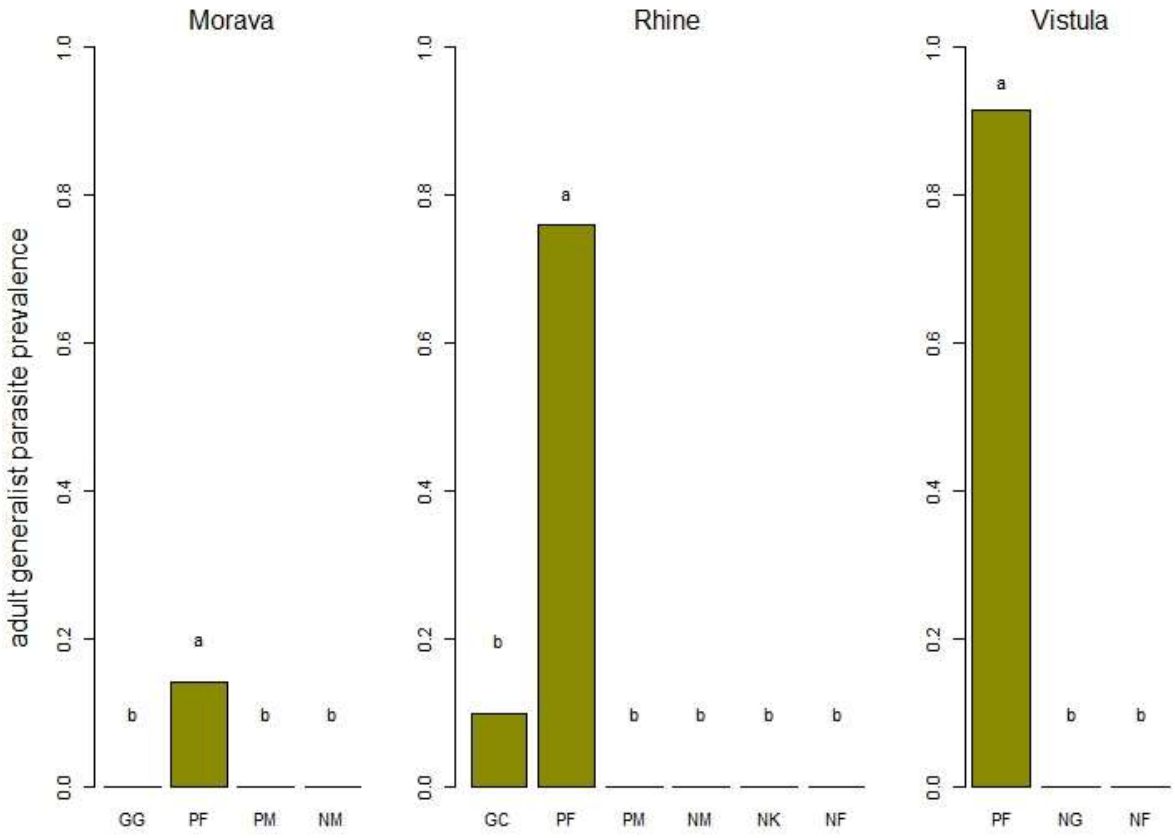

Fig. S5. Inter-host differences in prevalence of adult generalist parasites from three distant river basins. Hosts (green – native, blue – non-native), parasite prevelances that do not differ significantly within the same basin share the same lower case letter. Median – horizontal bar, interquartile range = box, non-outlier range (1.5 time interquartile range) = whiskers, outliers = points.

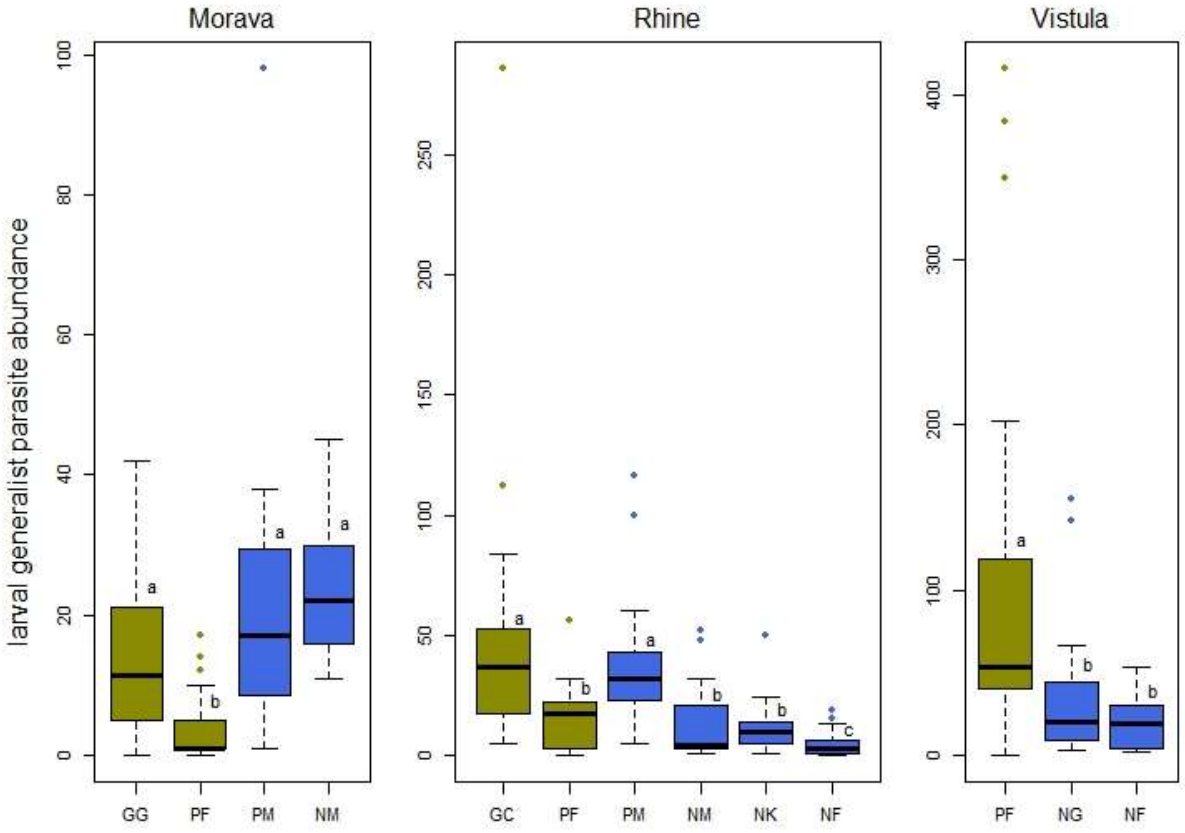

Fig. S6. Inter-host differences in abundance of larval generalist parasites from three distant river basins. Hosts (green – native, blue – non-native), parasite abundance that does not differ significantly within the same basin share the same lower case letter. Median – horizontal bar, interquartile range = box, non-outlier range (1.5 time interquartile range) = whiskers, outliers = points.