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Age and sex related differences in endoparasite burdens in a colony of Alpine ibex (*Capra ibex*)R. CASSINI¹, M. MOSCONI¹, M. DALLA FONTATA¹, P. SEMENZATO², A. FRANGIPANE DI REGALBONO¹, E. STURARO², M. RAMANZIN²¹Department of Animal Medicine, Production and Health, University of Padova, Italy²Department of Agronomy, Food, Natural Resources, Animals and the Environment, University of Padova, Italy

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Many studies demonstrated that there is high variation in parasitism rates among hosts in natural conditions. This variability is associated with heterogeneities in the host population, and age and sex are two of the main factors generating these patterns. Alpine ibex (*Capra ibex*) live most of the year in sexually segregated groups, and it has been reported that genders have strong differences in abomasal helminthic community abundances, with males harbouring a total burden up to twice that of females. Few or incomplete information are available on distribution patterns among hosts of other gastro-intestinal and broncho-pulmonary parasites. Data collected during a 3-years survey on endoparasite dynamics in the colony of Alpine ibex of the Marmolada massif, in the eastern Italian Alps, were used to assess differences in parasite prevalence and abundance between males and females and between kids and adults.

A total amount of 356 faecal samples were collected monthly during the period of accessibility (June-November) from 2013 to 2015 in the study area. Faecal samples were collected from the ground. Samples were assigned to kid age class (<1 year old) either to adult age class (≥ 1 year), based on obvious differences in faecal pellets' size. Gender was assigned only when it was possible to reliably associate the sample to an adult female or to an adult male. Quali-quantitative analyses for gastro-intestinal parasites (Coccidia oocysts; strongyles, *Nematodirus/Marshallagia*, Cestoda, *Trichuris* and *Capillaria* eggs) and broncho-pulmonary nematodes (larvae) were implemented. Different genera of lungworms were identified based on the linear lengths and the morphology of the tail. Differences in parasite prevalence and abundance values among considered groups were evaluated using respectively the Pearson Chi-squared test and the Mann-Whitney U test. Kids (n=41) were compared only with adults (n=223) living in the same areas (mostly females and undetermined yearlings, because of segregation of adult males). Adult females (n=157) were compared with adult males (n=106), excluding samples possibly belonging to yearlings. Among the 356 collected samples, all (100%) were positive

for Coccidia, 352 (99%) for strongyles, 265 (74%) for *Nematodirus/Marshallagia* and 74 (21%) for Cestoda. *Trichuris* and *Capillaria* eggs were sporadically found in faecal samples, respectively nine times and once. Concerning lungworms, 258 samples (72%) resulted positive for larvae of the genus *Muellerius* and 36 (10%) for *Protostrongylus*, whereas *Neostrongylus* and *Cystocaulus* were found in few samples, 11 and 2 respectively. Statistically significant differences in prevalence values between age classes were identified only for lungworms, with adults (77%) more infested than kids (32%) for *Muellerius* ($p<0.001$) and, on the contrary, kids (63%) more infested than adults (3%) for *Protostrongylus* ($p<0.001$). Prevalence values were not statistically different between males and females for all investigated parasites. Abundance values (overall average output of specific parasitic stages in faeces) also showed significant differences among considered groups. Kids had higher output of Coccidia oocysts ($p<0.001$) and *Protostrongylus* larvae ($p<0.001$), whereas adults were found with greater outputs of strongyles eggs ($p=0.018$) and *Muellerius* ($p<0.001$). Females showed a slightly higher output of Coccidia ($p=0.033$). The larval output of *Muellerius* tends to be higher in males ($p=0.052$). The results of the study showed different patterns in age-related prevalence and abundance of the considered groups of parasites. Strongyles and *Muellerius* burdens seem to increase with host age, probably due to increased exposure to parasite infective stages. On the contrary, Coccidia and *Protostrongylus* loads are high in young animals and decline in adults. Acquired immunity and age-dependent changes in exposure to parasites are among the different mechanisms that might account for this decline. Females and males showed very similar values for most of the parasites. The only significant difference was found for Coccidia, with higher oocysts outputs in females, which may be due to their living side by side with kids. The expected higher burden of strongyles in adult males was not confirmed by our study.