**Supplementary material**

Reproductive females and young mouflon (*Ovis gmelini musimon* x *Ovis* sp.) in poor body condition are the main spreaders of gastrointestinal parasites

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Table S1: Model selection of mixed-effects models for individual characteristics based on corrected Akaike’s Information Criterion (AICc) for testing the effects of the scaled delay (scaled number of days) between sampling and coproscopic analyses (*delay*), and the scaled sampling date *(sampling date*) on the fecal oocyst/egg count (FOC and FEC for *Eimeria* spp. and gastro-intestinal strongyles, respectively) in mouflon in the Caroux-Espinouse massif, France. *df* are the degree of freedom, *weigh*t are the Akaike weights. All models included the individual identity and the year of sampling as random effects.

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| --- | --- | --- | --- | --- | --- |
| **Response variable** | **Model** | **df** | **AICc** | **ΔAICc** | **weight** |
| **FOC** | Sampling date | 5 | 1404.4 | 0.00 | 0.293 |
| Sampling date + delay | 6 | 1405.1 | 0.69 | 0.207 |
| Sampling date + sampling date² | 6 | 1405.3 | 0.91 | 0.186 |
| Sampling date + sampling date² + delay | 7 | 1405.8 | 1.38 | 0.147 |
| Sampling date + delay + delay² | 7 | 1406.7 | 2.30 | 0.093 |
| Sampling date + sampling date² + delay + delay² | 8 | 1407.2 | 2.80 | 0.072 |
| Null | 4 | 1415.3 | 10.90 | 0.001 |
| Delay | 5 | 1417.3 | 12.88 | 0.000 |
| Delay + delay² | 6 | 1418.3 | 13.95 | 0.000 |
| **FEC** | Delay | 5 | 1370.7 | 0.00 | 0.460 |
| Sampling date + delay | 6 | 1372.6 | 1.83 | 0.184 |
| Delay + delay² | 6 | 1372.8 | 2.06 | 0.165 |
| Sampling date + sampling date² + delay | 7 | 1374.5 | 3.76 | 0.070 |
| Sampling date + delay + delay² | 7 | 1374.6 | 3.90 | 0.065 |
| Sampling date + sampling date² + delay + delay² | 8 | 1376.6 | 5.83 | 0.025 |
| Null | 4 | 1377.1 | 6.38 | 0.019 |
| Sampling date | 5 | 1378.7 | 7.97 | 0.009 |
| Sampling date + sampling date² | 6 | 1380.8 | 10.02 | 0.003 |

**Figure S1.** Predictedfecal oocyst count (FOC) values for *Eimeria* spp. as a function of the selected variables related to sampling design (see Table S1) scaled sampling date (a) and scaled delay (scaled number of days) between sampling and coproscopic analyses (b), with null values of delay and sampling date, respectively. Lines represent predicted values and grey bands represent the 95% confidence interval. Points represent average partial residuals of scaled sampling date (a) and scaled delay (b) (values were grouped at 10% quantile intervals), with the size of the dots being proportional to the number of observations (top of the graph).



**Figure S2.** Predicted fecal egg count (FEC) values for gastro-intestinal strongyles as a function of the selected variables factors related to sampling design (see Table S1) scaled sampling date (a) and scaled delay (scaled number of days) between sampling and coproscopic analyses (b), with null values of delay and sampling date, respectively. See Fig. S1 for details.



**Figure S3.** Predicted fecal egg counts (FEC) for gastro-intestinal strongyles as a function of the scaled mass index (SMI) of males and females mouflon based on the second best model (Table 2). Predictions were computed for null values of scaled delay (scaled number of days) between sampling and coproscopic analyses, and scaled sampling date, and for 4 years old mouflon. Numbers on the top of the graph are the total number of females and males used to compute average partial residuals. See Fig. S1 for details.

