

Longitudinal monitoring of stag calling activity during the rut in two Siberian red deer *Cervus elaphus sibiricus* facilities in Central Russia

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Introduction: Roaring counts are often used as indices of red deer abundance. Hunting managers apply from one to a few counts by ear per roaring season, what does not consistently synchronous with the roaring peak. Automated recording systems Song Meter validate red deer censuses by ear. They can be scheduled for recordings through 24 hours through the season for assessment of the dynamics of calling activity of red deer populations.

Results:

Between populations:

The total number of calls recorded during the 70 days:

Tver population: 4341 calls

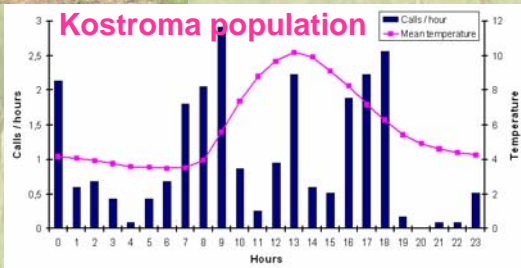
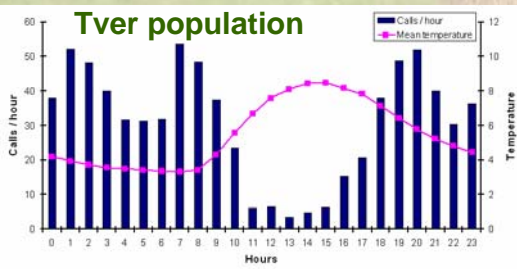
Kostroma population: 145 calls

30 times more at Tver than at Kostroma!

Call number per day: no correlation between populations ($r=0.05$, $p=0.67$)

Average temperatures: positive and highly significant correlation ($r=0.85$, $p<0.001$)

Call number per hour during 24 hours:



Tver population: significant negative correlation with average temperature per hour ($r=-0.74$, $p<0.001$)

Kostroma population: no correlation with average temperature ($r=0.18$, $p=0.40$)

Tver population: one peak from 18.00 to 09.00, significant relation to daytime

Kostroma population: two peaks between 07.00-09.00 and between 16.00-18.00



Methods:

Recording rutting calls of Siberian red deer stags *Cervus elaphus sibiricus* in two private facilities on the European part of Russia, separated by a distance of 510 km.

The "Tver" population: 400 animals on a fenced 5000-hectare territory.

The "Kostroma" population: 108 animals on a fenced 70-hectare territory.

Automated recording systems Song Meter SM2+ with simultaneous registration of air temperature.

The recording schedule was set at 5 min per hour (120 min in total per day), from 3 September to 11 November 2013 (for 70 days in total).



Song Meter SM2+

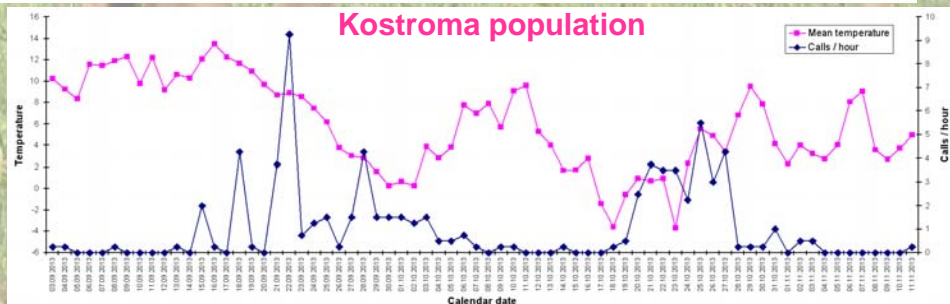
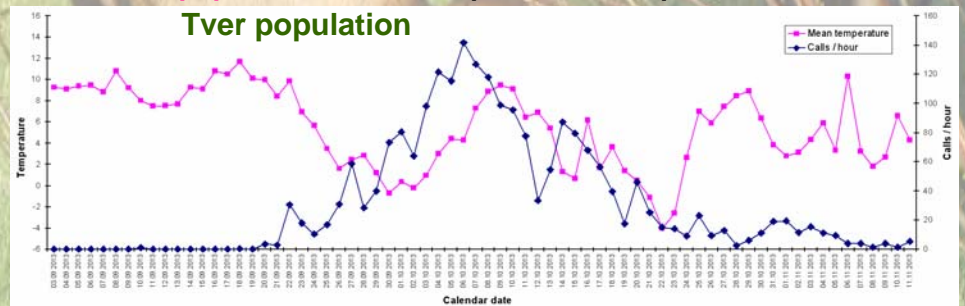
Call number per hour during 70 days:

Tver population: significant negative correlation with average temperature per day ($r=-0.29$, $p=0.01$)

Kostroma population: no correlation ($r=-0.15$, $p=0.20$).

Tver population: one large peak around 6 October

Kostroma population: two small peaks at 22 September and 25 October



Differences in rut vocal activity between populations!

Tver population: 12 hectares per individual, many mature stags, hunting but no velvet antler collection.

Kostroma population: 0.65 hectares per individual, many stags below the reproductive age, velvet antler collection and no hunting.