

# EUROPEAN BISON MOVEMENTS DEPENDING ON HOME RANGE STRUCTURE

chistopolova\_m@mail.ru



<sup>1</sup>A.N. Severtsov  
Institute of Ecology  
and Evolution RAS

<sup>2</sup>Natural Reserve  
"Kaluzhskiy Zaseki"



<sup>3</sup>Lomonosov  
Moscow State University

Russian Bison  
specialists' group

Maria Chistopolova<sup>1</sup>  
Sofia Troparevskaya<sup>3</sup>  
Alexander Minaev<sup>1</sup>  
Taras Sipko<sup>1</sup>  
Jose A. Hernandez-Blanco<sup>1,2</sup>



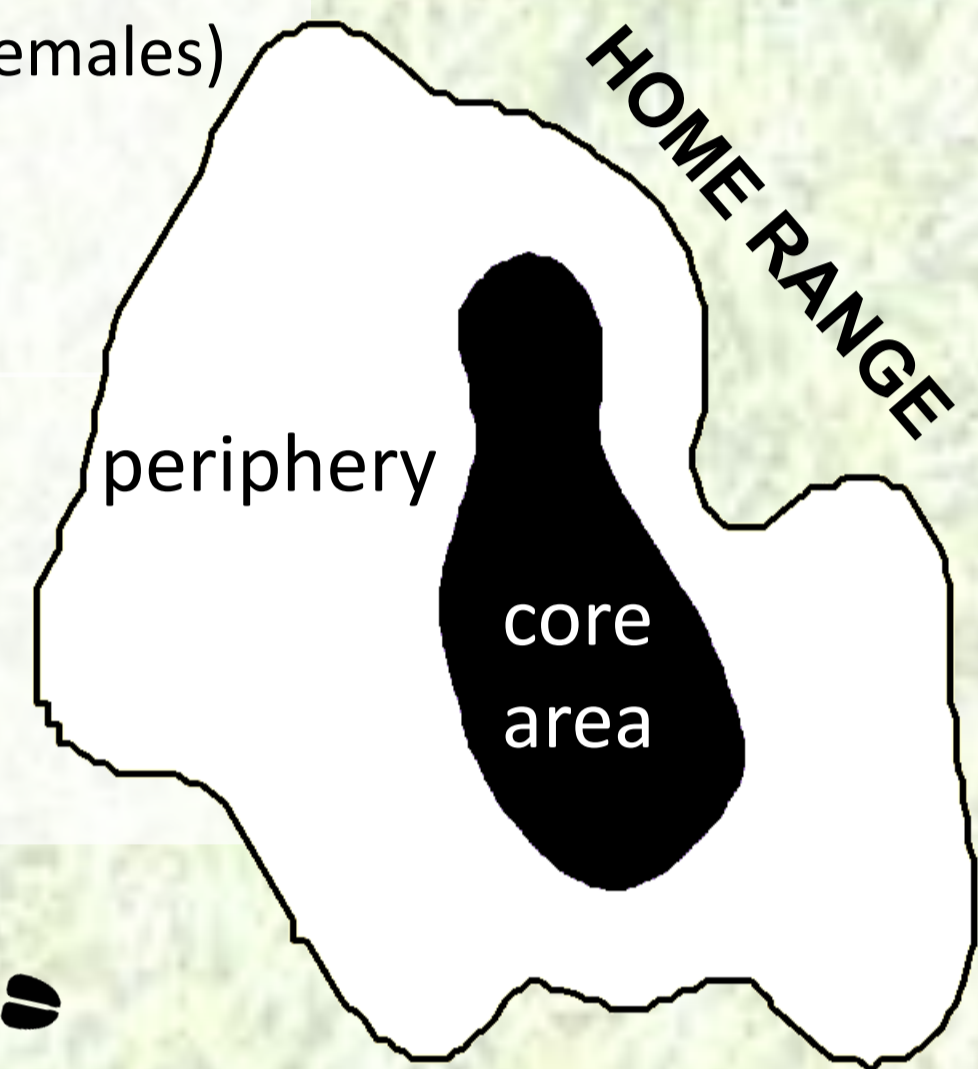
Estimation of home range's boundaries is an important ecological task, and revealing its internal structure and dynamics is almost impossible without taking into account animal behavior. The internal structure of the home range can be one of the factors determining the speed of the movement of the animal.

## HYPOTHESIS $H_0$

We assumed that home range's core area of E. bison, where the main activity is concentrated, will determine the slow rate of movement, in contrast to the home range's periphery.

## MATERIALS AND METHODS

- Collars: E. bison were tagged 13 times (11 females)
- GPS fix interval: 1 hour (24 locs per day)
- Analyzed period: snowless (spring, summer, autumn)



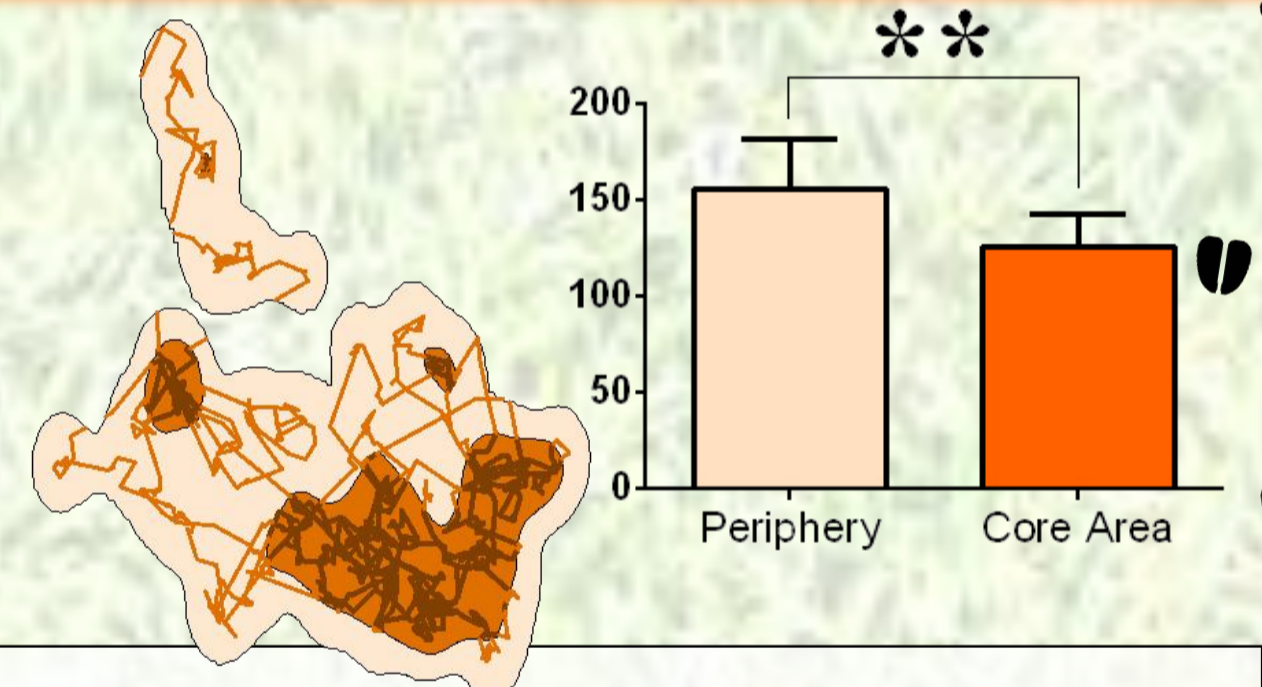
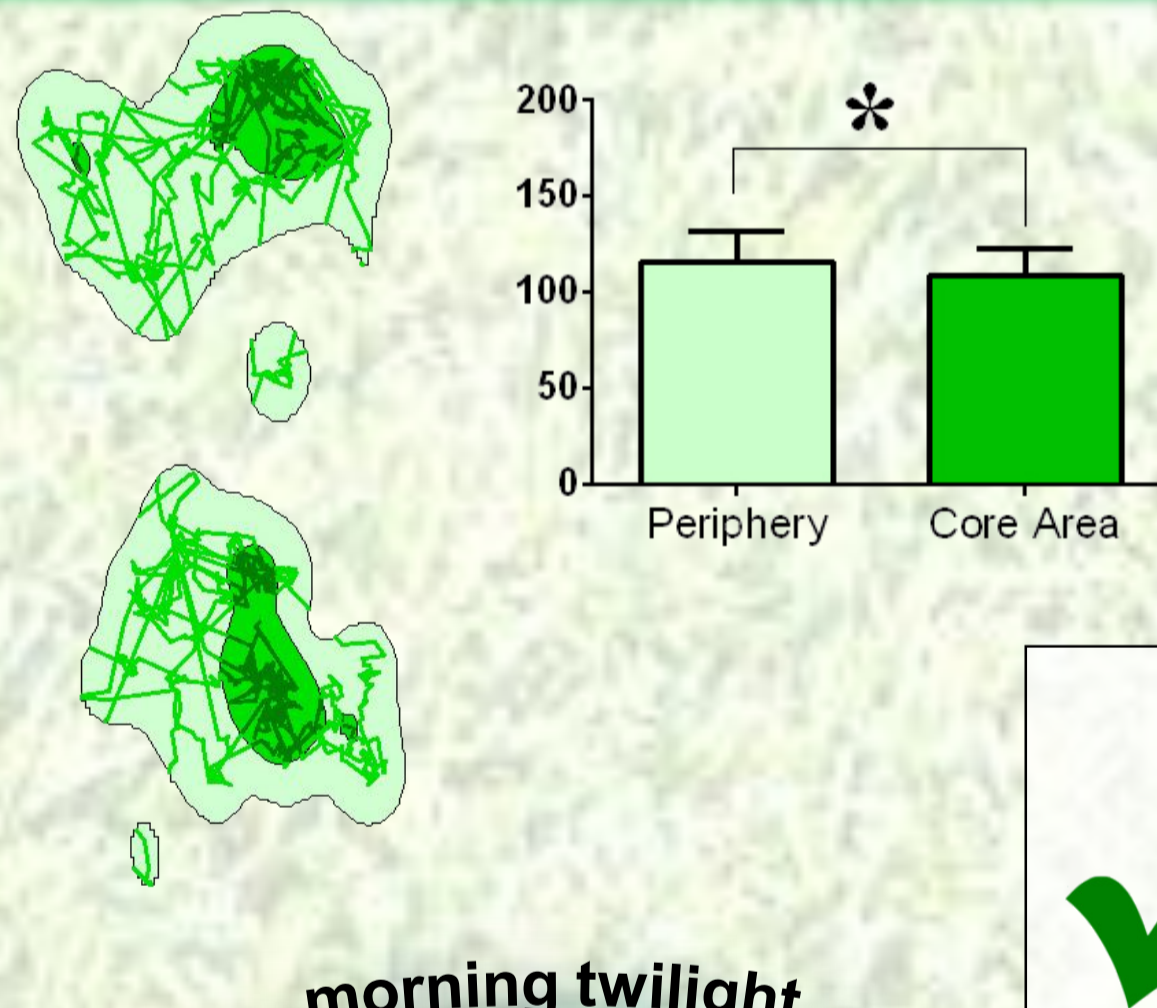
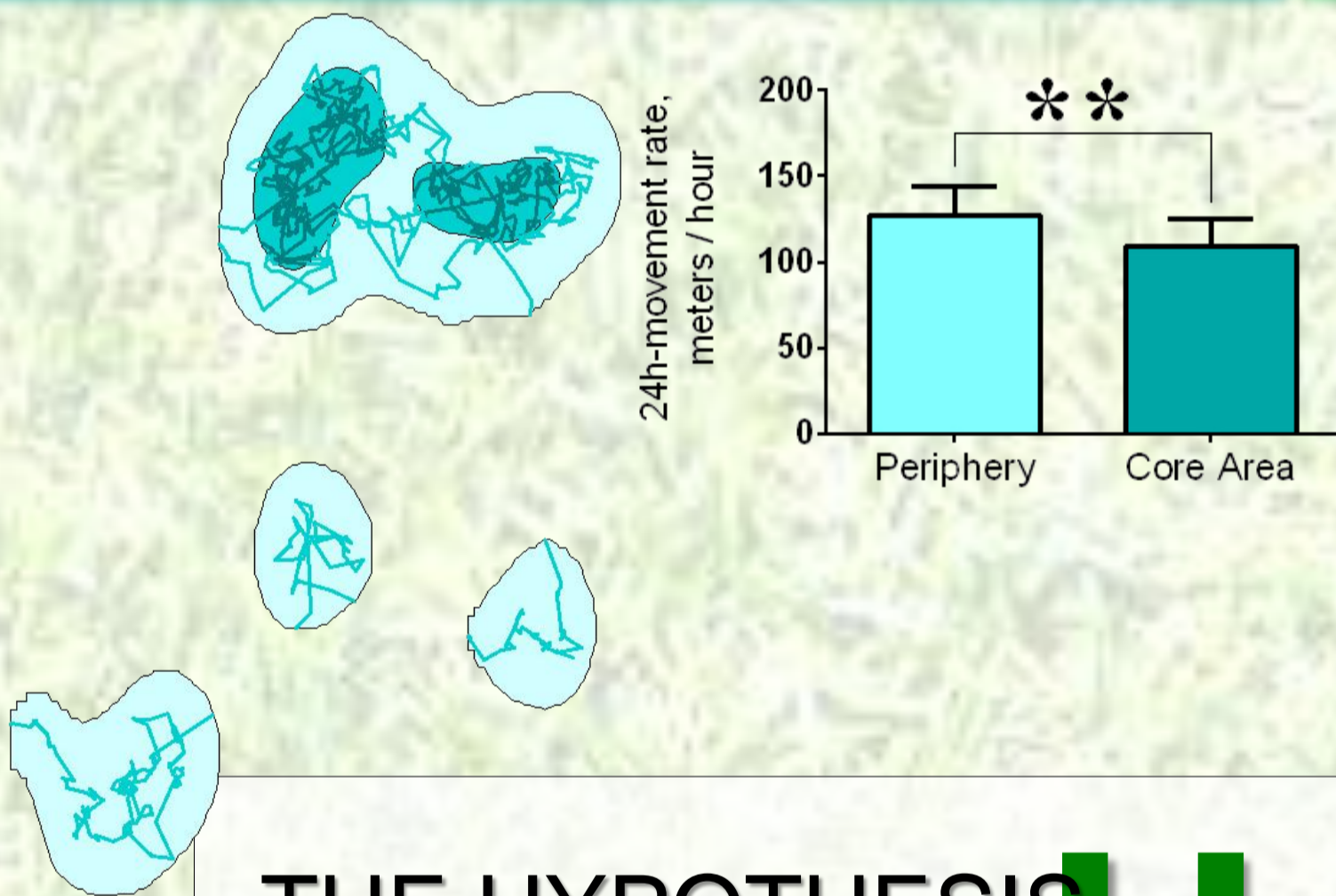
- Home range method: fixed kernel (Worton, 1989)
- Core area method: real core area using fixed kernel (Powell, 2000)
- Periphery method: excluding core area from home range
- Speed determination: average distance between two subsequent locations, each hour (**meters per hour**)
- 24 hours day division: night, morning twilight, day, evening twilight

## RESULTS AND DISCUSSION

### SPRING

### SUMMER

### AUTUMN



THE HYPOTHESIS WAS CONFIRMED  $H_0$

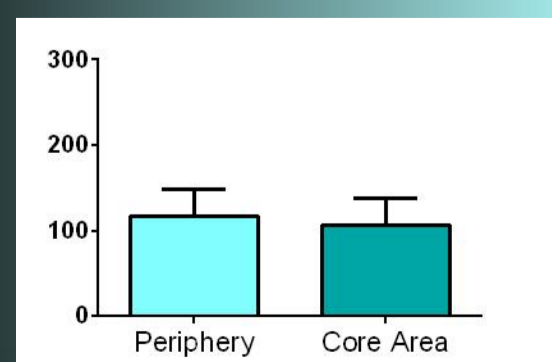
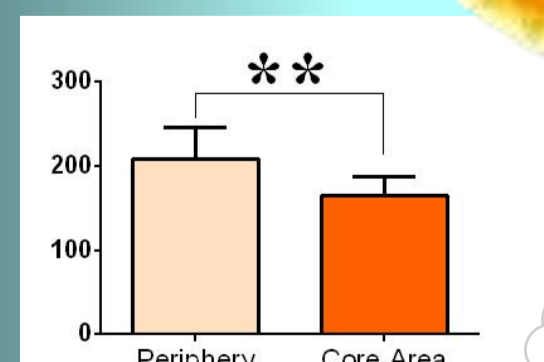
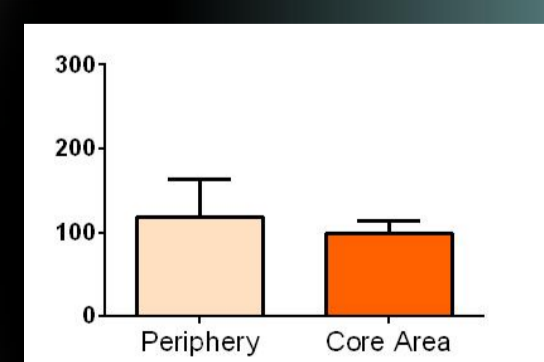
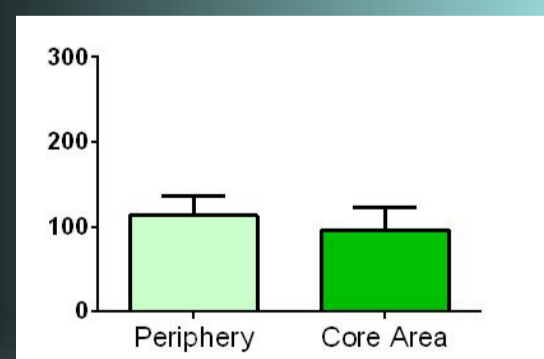
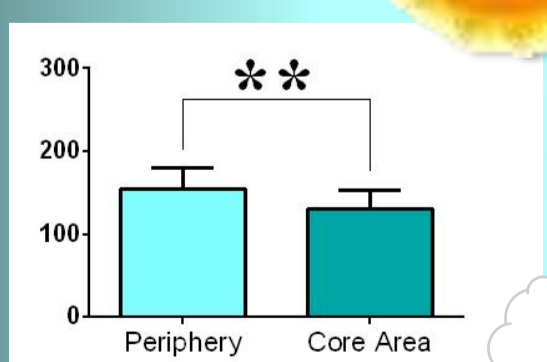
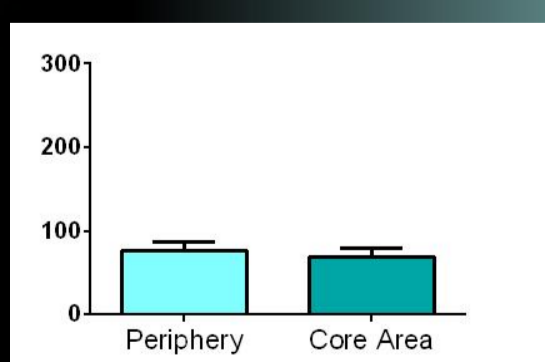
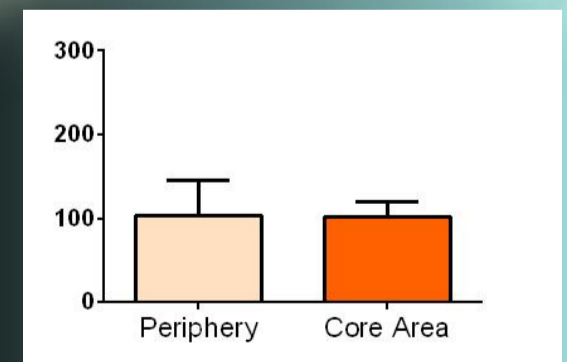
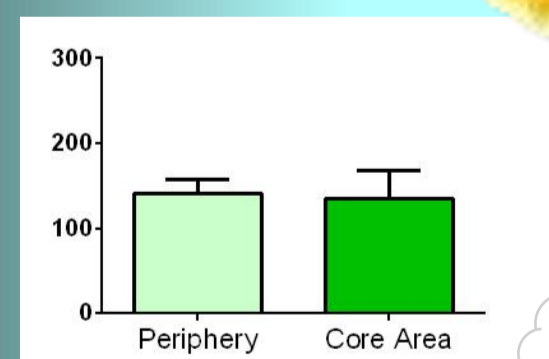
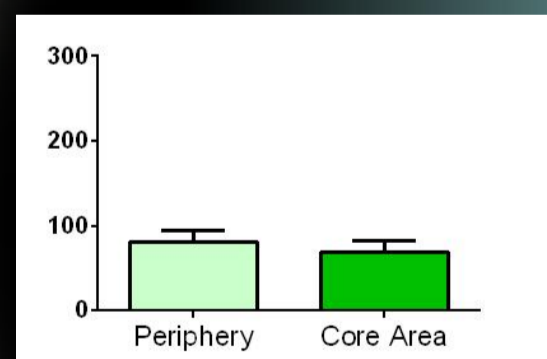
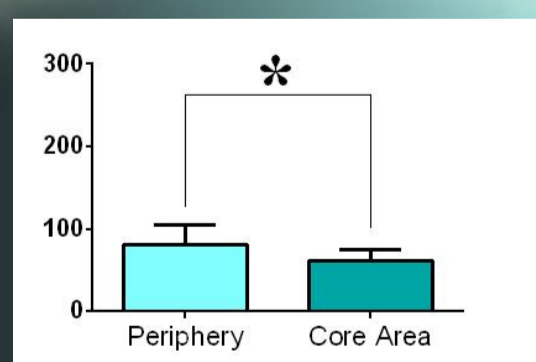
✓ 24h-movement rate was always significantly higher at the home range's periphery

morning twilight

night

day

morning twilight



evening twilight

Fastest movements were during the day, and the slowest ones were at night. This is also typical for all parts of the home range.

evening twilight