

# Habitat use by nesting waders at South Eastern Taimyr in dependence on weather conditions and food abundance



Eldar N. Rakhimberdiev<sup>1</sup>, Mikhail Y. Soloviev<sup>1</sup>, Victor V. Golovnyuk<sup>2</sup>

1. Dept. of Vertebrate Zoology, Biological Faculty, Moscow State University, Moscow 119991, Russia, eldararak@gmail.com

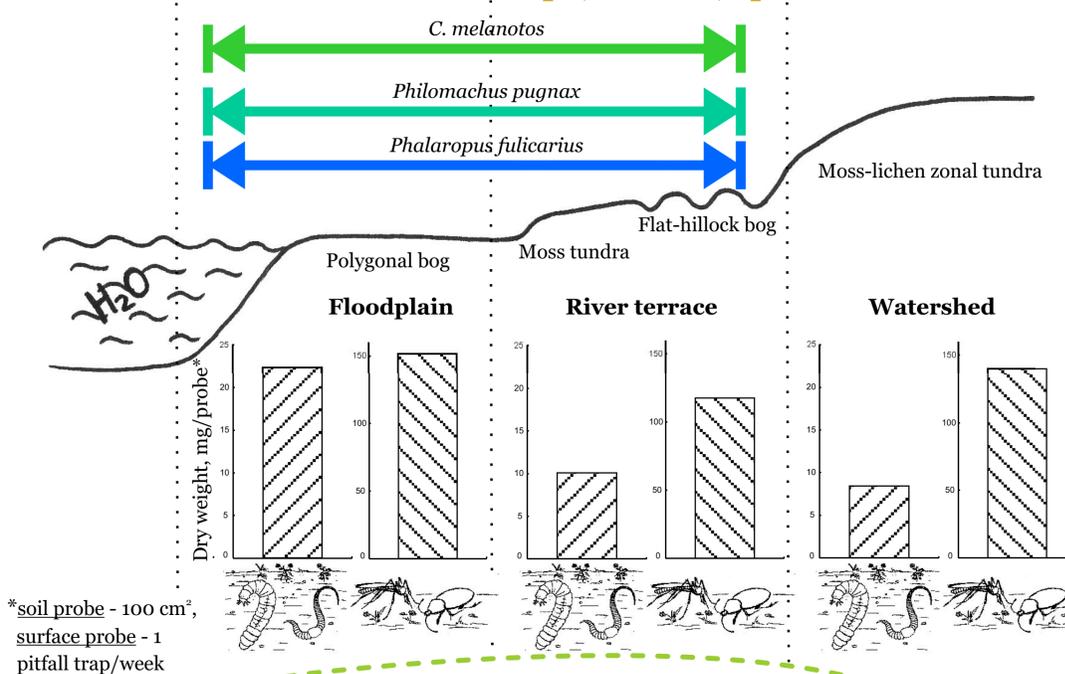
2. State Biosphere Reserve "Taimyrsky"

Being especially sensible to the climate change, Arctic communities provide a perfect ground for research on the process and its consequences for ecosystems. We investigated effects of spring weather conditions on nest distribution on different spatial scales in six wader species, common for typical tundra of Taimyr Peninsula.



All the six wader species steadily prefer one (little stint) or two (all other species) landscape elements for nesting.

The preference is mostly related to foraging conditions and spring flood timing.



Studies were carried out in the south-eastern Taimyr (72°51' N, 106°04' E), the subzone of typical tundra, in 1994–2003.

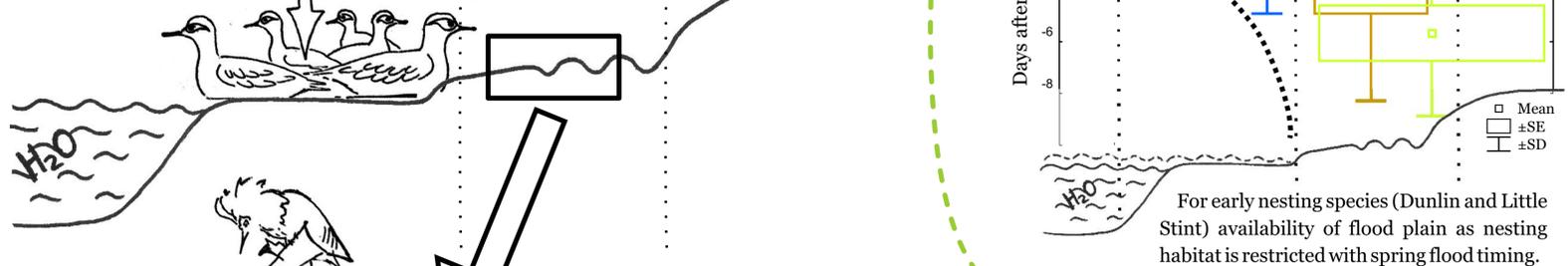
The spatial distribution of nests of six common wader species was evaluated in the permanent sample areas in all basic landscape elements:

- hilly watershed (moss-lichen zonal tundra)
- river terrace (flat-hillock bog)
- sedge-cottongrass moss tundra)
- floodplain (polygonal bog)

Foraging resources of the nesting habitats were investigated using pitfall traps for surface-swelling arthropodes and self-developed eclector traps for soil invertebrates.

Statistical methods used: ANOVA and Spearman rank correlation.

Spring temperatures affect the number of red phalaropes nesting on the floodplain ( $R = -0.81$ ,  $P = 0.05$ ). Increase in the density of phalarope nests in this habitat in cold springs could be associated with the nesting of birds that usually migrate to the northern parts of the range.



The greatest abundance of Tipulidae larvae in 2003 caused displacement of the nest density to the habitats with the highest average abundance of Tipulidae. The density of the nesting dunlins on the terrace was that year unusually high; the same with the densities of pectoral sandpipers and ruffs on the floodplain.

Variation in weather and foraging conditions between seasons modifies nest distribution on different spatial scales.

Spring precipitation determined distribution of ruffs and pectoral sandpipers nesting on the terrace. In the humid seasons, nesting densities of these species were higher in the flat-hillock marsh accumulating water ( $R = 0.74$ ,  $P = 0.02$  and  $R = 0.72$ ,  $P = 0.03$ ).

On more detailed scale, in the years with high precipitation ruffs preferred to make nests at the edges of the bog pools rather than in the overwatered pool centers ( $R = 0.61$ ,  $P = 0.06$ ).

Golden plover and little stints use convex bog mounds and in the cold seasons place their nests closer to depressions between mounds (bog pools), than in the warm years ( $R = 0.79$ ,  $P = 0.01$  and  $R = 0.93$ ,  $P = 0.003$ ).



**Golden plover** *Pluvialis fulva*  
Foraging preferences: surface-dwelling arthropodes



**Little stint** *Calidris minuta*  
Foraging preferences: surface-dwelling arthropodes



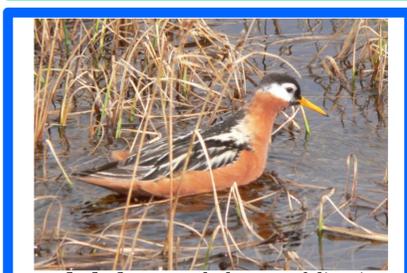
**Dunlin** *C. alpina*  
Foraging preferences: tipulidae larvae and imago



**Pectoral sandpiper** *C. melanotos*  
Foraging preferences: tipulidae larvae and imago



**Ruff** *Philomachus pugnax*  
Foraging preferences: tipulidae larvae and imago



**Red phalarope** *Phalaropus fulicarius*  
Foraging preferences: water-surface arthropodes

## Acknowledgements

Our study is a part of wader monitoring project on Taimyr, that was carried out in a framework of scientific cooperation between National Park Schlezvig-Holstein Wattenmeer and State Nature Reserve "Taimyrsky", and supported by Working Group on Waders (CIS) and Arctic Expedition of the Russian Academy of Sciences. We are grateful to all participants of our expedition and to Julia Karagicheva for drawing and assistance in making this poster.

## Conclusions

- Investigated wader species are steady in nest habitat choice, based on foraging conditions and spring-flood timing.
- Nest distribution of each of the species, except filopatric Dunlin, is affected by extraordinary food abundance, spring temperatures and precipitation on different spatial scales.

