ARCTIC ARK.
HUMAN-ANIMAL ADAPTATIONS TO THE ARCTIC ENVIRONMENT: NATURAL AND FOLK SELECTION PRACTICES (ARC-ARK)

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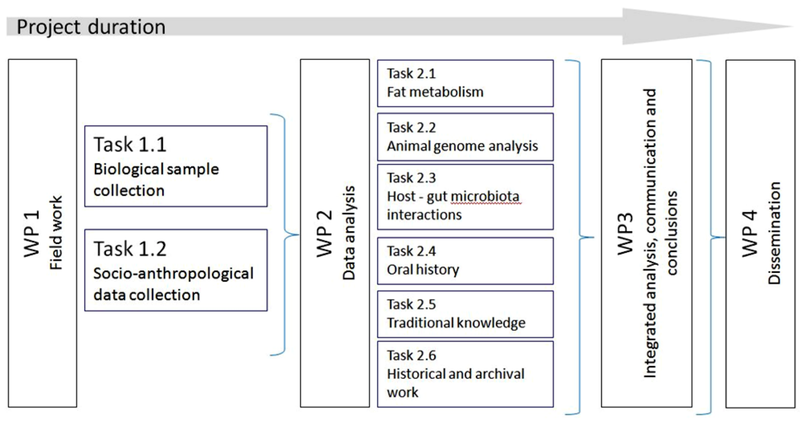
Introduction

In the Arctic, traditional animal husbandry is based almost exclusively on reindeer (*Rangifer tarandus*). However, in *Lapland*, *northern Russia* and *Siberia* also other locally adapted animals, namely cattle (*Bos taurus*) and horse (*Equus caballus*) are used for food production and other societal and cultural needs.

Arc-Ark investigates reindeer, cattle and horse farming in three northern regions.

Arctic Ark project studies animals' adaptation to the Arctic as a complex human-environmental process. As a result of natural and folk selection, reindeer and Arctic cattle and horse breeds show metabolic, morphological and reproductive adjustments.

Northern Finncattle (small photo) and Yakutian cattle (big photo) have higher fat and protein contents in their milk but produce less milk than commercial international breeds (F. Stammler).



Work flow and work packages in Arc-Ark.

Objectives

- To combine understanding of biological selection drivers in animal adaptation with human selection traditions.
- To study the ethnic coexistence of herders and 3 pastoral animal species in the Arctic .
- To study the importance of animal traits across field sites and ethnic groups for sustaining socio-cultural diversity and resilience of human livelihoods in the Arctic.
- To understand distinct values of Arctic animal genetic resources.

Methods

- In the animal genomics analyses we focus on animals' metabolic adaptation (rumen microbiota) and structural and functional genome variations using modern genomic approaches.
- In the social-anthropological studies we compare across regions animal farmers' knowledge of the environment, their practices in selection and breeding, and their desired animal characteristics that facilitate a sustainable Arctic livelihood.

The Yakutian horse grazes and drinks without human assistance even at –60ºC (F. Stammler).

Joint grazing: Reindeer being tied to horse, Eveno-Bytantaj Yakutia (F. Stammler)

Expected results

Arc Ark will produce new knowledge on the distinctiveness of Arctic animal genetic resources, differences between the species in adaptation and the role of "*symbiotic domesticity" (Beach & Stammler 2006, Stammler 2010)* in the adaptation process.

Arc Ark will show the importance of diverse pastoral animals for sustainable human livelihoods in the Arctic regions, as well as mapping impact of cultural practices on specific animal populations.

Arc Ark will establish a transdisciplinary understanding of Arctic adaptation as holistic biological-cultural processes by combining scientific and local knowledge. The project contributes new knowledge of the Arctic as a place of biological, social and cultural diversity.

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