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Interactive comment on “Carbon dynamics in boreal peat-lands of the Yenisey region, Western Siberia” by E. D. Schulze et al.

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Received and published: 21 August 2015

On the potential role of beaver

In the paper there is only an indication on a potential role of the beaver on the hydrology of this region. The role of the beaver in the creation and in the long term maintenance of wetlands has been very well documented in the scientific literature (Naiman et al. 1988; 1994; Butter Malanson, 2005). The indication in the paper is suggesting that the colonization of the region by the Ket people occurred around 2000 yr ago could have impacted the beaver population and consequently the hydrology in the region. The Ket were the last group of hunter-gatherers to survive the spread of pastoral peoples across landlocked northern Asia, only abandoning their mobile lifestyle during the forced Soviet collectivization campaign of the early 1930s. They subsisted entirely on

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hunting, fishing, and the gathering of wild plants (Vajda, 2011). As reported in the paper, the Ket people are not responsible for the nearly extinct beaver population in the region. However, a concrete hypothesis could be that the Ket people may have removed beaver dams from the second order of the western tributaries of the Jenisey to use the river system as communication network. In such a flat landscape the removal of beaver dams could result in an increased drainage capacity of the western tributaries, thus affecting the wetland species composition. A description of a similar landscape dynamic is provided in Naiman et al 1991 : “In North America, beaver (*Castor canadensis*) provide a good example for linking long-term population dynamics to ecosystem-level processes. At the time Europeans arrived in North America, the beaver population exceeded 60 million individuals (Jenkins Busher 1979). These beaver created extensive wetlands throughout their 15 x 106 km² range. Yet, by 1900 AD the beaver was nearly extinct and much of their former habitat had reverted to dry-land (Naiman et al. 1988). At the beginning of this century, with a relative absence of predators, laws regulating trapping, and an abundance of forage and habitat, beaver began a rapid population increase throughout most of their former range. Beaver alter the landscape by cutting forests within about 100m of water courses and by changing the hydrologic regime through dam building. These activities are readily quantified from aerial photographs taken since the mid-1920s (Johnston Naiman 1990a, b).”

References

Butter DR Malanson GP (2005) The geomorphic influences of beaver dams and failures of beaver dams. *Geomorphology* 71: 48-60

Jenkins SH Busher PE (1979) *Castor canadensis*. *Mammalian Species* 120: 1-8

Johnston CA Naiman RJ (1990a) The use of a geographic information system to analyze long-term landscape alteration by beaver. *Landscape Ecol.* 4: 5-19

Johnston CA Naiman RJ (1990b) Aquatic patch creation in relation to beaver population trends. *Ecology* 71: 1617-1621

Naiman RJ, Johnston CA Kelley JC (1988) Alteration of North American streams by beaver. *BioScience* 38: 753-762

Naiman RJ, Manning T, Johnston CA (1991) Beaver population fluctuations and tropospheric methane emissions in boreal wetlands. *Biogeochemistry* 12: 1-15, 1991

Naiman RJ, Pinay G, Johnston CA Pastor J (1994) Beaver Influences on the Long-Term Biogeochemical Characteristics of Boreal Forest Drainage Networks. *Ecology* 75: 905-921

Vajda EJ (2011) Siberian landscape in Ket traditional culture. *Landscape Culture in Northern Eurasia* Pp. 297-314

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