

## Evidence of geosystems transformation during Medieval development of South Primorye: Steklyanukha-2 fortress

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**Abstract.** We analyzed human impact on landscapes on the example of Steklyanukha-2 Medieval fortress, which is a multi-layered archaeological site, and adjacent territories. Buried soils, rampart matrix, cultural layer and surface soils were sampled within the fortress. Along with the material sampled at the site, two sections of the Upper Holocene deposits of the high floodplain of the Steklyanukha River were studied. The results of studying the spore-pollen spectra and diatoms are presented. The paleo-landscapes during the formation of various archaeological cultures have been restored and the signs of anthropogenic impact on vegetation have been identified. The buried soil in the section of the high floodplain is a natural archive for the environment history during the appearance of the people of the Yankovskaya Culture on this territory. The soil was formed under conditions of decreasing watering in the valley; the age is estimated at more than 2 ka. Oxbow lake deposits had been accumulated from 1.6 to 0.5 ka, when the valley was actively developed in the Middle Ages. Floodplain deposits at the top of the sections indicate that the valley has been heavily watered during the Little Ice Age. Pollen signs of settlements of the lower part of the valley in the Early Iron Age, Mohe and Late Middle Ages were found. Signals of the development of secondary birch and oak forests are identified. Ambrosia and Xanthium pollen, which are reliable evidence of agricultural activity in the valley, was found in the cultural layer and sediments that formed in the Middle Ages. The pollen of plants common in anthropogenically disturbed territories was also found. The study of diatoms in a depression within the fortress confirmed the archaeologists' assumption that it was used to store water reserves. The pollen spectra from the surface soils in the fortress and the high floodplain reflect the active agricultural development of the nearby river valleys since the second half of the 19th century. The largest amount of pollen of alien and synanthropic plants and weeds, as well as spores of pathogenic fungi (pathogens of soybeans and rice) and fire indicators were found here.

*Keywords*

**pollen analysis, diatoms, landscapes, human impact, Medieval fortress, Primorye**

**For citation:** Korniyushenko T.V., Razjigaeva N.G., Ganzey L.A., Grebennikova T.A., Kudryavtseva E.P., Piskareva Y.E., Prokopets S.D. Evidence of geosystems transformation during Medieval development of South Primorye: Steklyanukha-2 fortress. *Geosistemy peredodnykh zon = Geosystems of Transition Zones*, 2022, vol. 6, no. 1, pp. 24–42. (In Russ.). <https://doi.org/10.30730/gtr.2022.6.1.024-042>

**Для цитирования:** Корнюшенко Т.В., Разжигаева Н.Г., Ганзей Л.А., Гребенникова Т.А., Кудрявцева Е.П., Пискарева Я.Е., Прокопец С.Д. Признаки трансформации геосистем при освоении Южного Приморья в средневековье: городище Стеклянуха-2. *Геосистемы переходных зон*, 2022, т. 6, № 1, с. 24–42. <https://doi.org/10.30730/gtr.2022.6.1.024-042>

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