The Horse in Bohai and Jurchen Societies – Based on Osteological Studies from the Southern Part of the Russian Far East[1]

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The role of the horse (Equus caballus) in the history of the Bohai and Jurchen states is well-known. It was intensively used in agriculture, hunting, warfare and transportation. Chinese annals furthermore provide copious information about horses used in the military operations waged from Bohai or Jurchen territory. The state of Bohai (Russ.: Бохай; Kor.: Parhae 발해; Chin./Jap.: Bohai/Bokkai 渤海) existed in what is now the Russian Maritime Region (Primorskij krai/Приморский край), North Korea and Northeastern China from the late 7th to the early 10th centuries A.D. The Jurchen (Chin.: 女眞; Russ.: чжурчжэни; Kor.: 여진) established several states, most notably the Jin 金 (Jur.: *amba-an antʃu-un*, Great Golden) empire (1115–1234). The Manchu-led Qing 清 empire (Man.: *Daiqing gurun* 1644–1912) can in many ways be regarded as a successor state to the Jin.

The study of the Bohai and Jurchen sites in Russia began in the period 1820–1850 when Nikita Bichurin / Никита Бичурин (the Archimandrite Iakinf / архимандрит Иакинф), Viacheslav Gorskij / Вячеслав Горский and Vasilii Vasil'ev / Василий Васильев translated several Manchu, Chinese and Korean texts on the Jin Empire and the Bohai people (Kim 2011), supplementing a great number of fragments from Chinese, Korean and Japanese annals about Mohe, Bohai and the Jurchen. However, these materials could not provide much insight concerning horses. In their stead, archaeological material can add new information, in particular osteological evidence. Since work with osteological remains is complicated and not inexpensive, Russian scholars in the Primorye region lack the resources to carry out excavations.

Early strata in Bohai sites abound with bones of young bulls, while in later layers the bones of older bulls have been found. One logical conclusion has been that the earliest Bohai settlers raised bulls for beef, but that in later periods, bulls were used as agrian draft animals, their meat only being consumed when bulls became ill or

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grew too old for fieldwork (Kim 2017). Such evidence therefore also reveals how Bohai agriculture developed in this region.

Despite the great number of Bohai and Jurchen sites excavated by Russian and Soviet archaeologists (more than 200) and a considerable number of archaeological publications (Han 2006), Russian experts tended to neglect osteological evidence. The first osteological studies were published by Ernestina Vital'evna Alekseeva / Эрнестина Витальевна Алексеева, Vladislav Innokent`evich Boldin / Владислав Иннокентьевич Болдин and Lyudmila Efimovna Semenichenko / Людмила Ефимовна Семениченко) in the 1980s. These Soviet scholars analysed fragments of animal bones which had been found in the Shajginskoe, Nikolaevskoe-II and Novogordeevskoe sites (Alekseeva & Shavkunov 1983). Shavkunov, Boldin and Semenichenko had studied archaeology, whereas Alekseeva majored in paleozoology.

However, by the end of the 1990s, Alekseeva moved to Siberia, to complete research on osteological material, incl. fish and birds, which other scholars could not identify. In the following decades, only small collectives of scholars conducted research at medieval sites, generally of brief duration (Kim 2017). On the basis of such osteological materials, we can see that in the earliest periods (Sushen 肅慎 and Ilou 挹婁) the inhabitants of the modern Primorye region did not breed horses (Okladnikov 1959; Okladinokov & Derevyanko 1973) but rather pigs, supplemented by fishery and hunting. Not even one horse bone could be discovered in excavations of ancient settlements. The Chinese, Korean and Japanese annals lack information about economic activity in the southern part of today's Russian Far East, which is why we can conclude that in the early era horses simply did not exist.

Horse bones were found by Soviet archaeologists at early medieval sites, namely Mohe settlements. During this time, Mohe tribes (Russ.: Мохэ; Chin.: Mohe 靺鞨; Kor.: Malgal 말갈) arrived in the territory of the modern Russian Far East from the Altai region (Okladnikov 1959). They were nomadic groups who used horses for many aims. The Mohe subjected the aboriginal populations of the modern Primorye region and later became assimilated with these. The Mohe also started to use the *kang* (a heating system used in East Asia, usually located under the floor and possessing two or three channels for hot air), learnt how to breed pigs while giving the local tribes new elements of their own culture and economic activity, for example horse breeding. The Mohe remained in this area from the third to the eleventh century and played a major role in managing relations between the Chinese empires, Korean kingdoms and Bohai.

Horseback riding became a hallmark of the region and the Mohe gained fame as warriors and horseback archers. The Mohe took active part in military conflicts between states on the Korean peninsula and with Chinese empires, which is well documented in the historical annals. Despite the importance of horsemanship during the Mohe period, Soviet scholars did not systematically quantify horse bones (Kim 2017). For example, Novogordeevskoe played a big role in Soviet Bohai studies in the 1980s. The ancient town of Novogordeevskoe is located near a village which bears the same name. It is a multilayer site which included two Bohai layers. Situ-

ated near the Arsenyevka River, it has two layers with Bohai remnants. During the excavations of 1972–1973, Soviet archeologists collected a number of artifacts and remains, including 5,500 animal bones or bone fragments (Alekseeva, Boldin 1989). But they did not identify such osteological evidence.

The Novogordeevskoe / Новогордеевское site by the Arsenyevka / Арсеньевка, river (pre-Russified name: Daubi-He / Даубихе) was discovered in 1887 by Fedor Fedorovich Busse / Федор Федорович Буссе, chairman of the Society for the Study of the Amur Region (Obshhestvo izucheniia Amurskogo kraia / Общество изучения Амурского края). However, it was not before E. V. Shavkonov's excavation of 1965/6 that archaeological fieldwork was carried out. Several ancient and medieval cultural layers were discovered and Shavkunov obtained a sizeable number of archaeological artifacts, securing this site for future excavations. The next Soviet archaeologist to work at Novogordeevskoe was L. E. Semenichenko, who excavated medieval layers during 1970–1973. She found many archaeological artifacts, paid attention to osteological materials and collected animal bones from this site. The third scholar to arrive was V. I. Boldin, during the field seasons of 1986 and 1987. Also he discovered a great number of archaeological artifacts and osteological finds (Alekseeva & Boldin 1989). The three Soviet had all been trained in Bohai and Jurchen studies.

In the above-mentioned Bohai sites, Soviet specialists excavated bones of foxes, bears, badgers, forest pigs, otters, sables, martens, weasels, elks, spotty deers, Manchurian and white hares, beavers, squirrels, raccoons, dogs *et cetera*, as well as bones of household animals – dogs, horses, swine, cattle and fowl (Alekseeva & Boldin 1986). However, many bones had been broken by humans or damaged by rodents. Alekseeva analysed the collected materials and concluded that some bones could not be identified. Moreover, the contemporary research equipment was not advanced and computer support absent. Small bone fragments or unknown osteological materials could not be identified as belonging to certain animals. In Bohai, layers the bones of wild animals consisted of 23.2–26 percent and of household animals 74–76.8 percent of all collected osteological materials.

The Konstantinovskoe site has several layers, from the Neolithic period to the period of the Korean village, which existed until the 1930s (period of the Stalinist repressions). We can therefore deduce that this location provided security and material comfort. Russian archaeologists excavated part of this site (Bohai and Jurchen layers) in 1992–1993 and found close to 3,000 bones (Alekseeva & Boldin 1994). When Russian scholars analysed evidence of domestic animals in Konstantinovskoe, the bones of, for example, dogs (Canidae), horses (Equus caballus), pigs (Suidae) and bulls (Bovidae) were found – alongside bones of parasitic animals such as mice (Microtus) and rats (Rattus).

Alekseeva compared bones of domesticated (pig, dog) and wild (fox, deer) animals and concluded that some medieval animals differed greatly from modern animals in bone structure. The results of her excavation show the changes in agriculture in this region. Based on their analysis of osteological materials, the specialists could

state that in the earliest layer of Konstantinovskoe locality, dog meat played a big role, but in the late layer the situation had changed – medieval inhabitants became eaters of pork. Hence pig-breeding developed and Bohai people began to use dogs mainly for hunting and as sentry animals. Certainly, inhabitants of this site ate dogs, but not in large numbers like one or two centuries before.

We can see the same situation in horse breeding. In the earliest period, Russian scholars found horse bones, which consisted of 14,3 % of all osteological materials from this layer, but in the late layer horse remains merely amounted to 3.1 percent. All bones belonged to adult animals, which were small in size. This information confirmed Chinese and Korean annals about the dietary habits of Bohai, who did not consume horse meat. It was probably a tradition taken over from the equestrian Mohe, who like other nomadic tribes valued horses too much to consume them as food. The quality of horses as friendly peers on their eternal journeying is reflected in the Turkmen saying: *Irden turda atyñy gör, atañdan soñ atañy* (Awakening in the morning, call first on your father, and then on your horse) (Kim & Nazarova 2017).

The Mohe were of crucial importance in the establishment of Bohai state, reflected in the great number of Mohe-Bohai sites in the modern Primorye region. Whatever their cultural development and size, almost all of them produced great amounts of equine bones, except for the rather exceptional Utesnoe-4 (Kim & Burdonov & Mezentsev 2020). Archaeological artifacts, such as remants of harnesses, provide information about the use of horses in economic activity, as well as for the important aspect of transport and riding while hunting (Alekseeva & Boldin 1989).

The same goes for cultural ceremonies, such as sacrifices. However, the major role in sacrificial rites was allocated to the pig, followed by the horse. In our region, we can state that the aboriginal inhabitants were swineherds, with particularly many sacrifices of pigs having been proven for the settlements of Ilou (Okladnkov & Derevyanko 1973), which existed for long time before the arrival of the Mohe tribes. When and where horses could become sacrificial objects is unclear. We can make conjectures based on certain traditions amongst the modern descendants of the Jurchen, esp. the Nanai, Udigae or other minorities of the Russian Far East. Such sacrifices may not necessarily have involved horses, but could have involved useful household animals (Samar), in particular during times of natural disasters or serious illness.

Osteological materials at Jurchen sites suggest the important role of horses. Equine bones (324 pieces or fragments) rank second after bovine (Bos Taurus) bones (2,105) (Alekseeva & Shavkunov 1983). Russian archaeologists such as Alekseeva explained the absence of sheds for household animals at the Shajginskoe site with the fact that the animals generally stayed on the farmstead but in winter inside the home. In her research, Alekseeva found that 80–90 percent of bones belonged to small-size horses. This horse had a long body and was of short stature in comparison with normal-sized horses (Equus ferus caballus) (Alekseeva & Shavkunov 1983). Initially, Alekseeva believed that this “Mohe horse” was an indigenous, rather minute, pony-like animal (Alekseeva & Shavkunov 1983). She later changed her opin-

ion to having originated from the Korean peninsula (Alekseeva & Besednov 1996), because such horses had been verified during the Koguryo period. Research during the 1990s, however, convinced her of significant differences to Korean horses, found many differences in the bone structures between the Korean and Mohe horses. As result, Alekseeva started to imagine the Mohe-Bohai-Jurchen horse as a kind of the cave forest animal, which was relatively recent. Other animal bones found were those of the hyena (or a similar animal), gopher (extinct in Far East Russia), reindeer (ditto) and beaver. Artem'eva posits, following excavations at a number of Jurchen sites, that these horses were Przewalski horses[2] (Equus przewalskii caballus, see picture 1), since this horse could be found in the modern Primorye region until recently.

However, both positions are not unproblematic from an archaeological viewpoint. Firstly, the tribes of the modern south of the Russian Far East did not leave behind any equine bones, including any of the Mohe horse. Therefore, we can conclude that the horse used by the Mohe was not a local animal, thus not at home in forest caves. However, in our opinion, Alekseeva was right about the Mohe horse as a forest animal. We believe that this horse arrived with Mohe tribes in the territory of the modern Primorye region and Manchuria. Since the Mohe originated in the Altai region, the Mohe horse must also stem from there.

The fauna of the Altai region is only home to two types of local horses: the Mongolian horse (see picture 3) and the Yakutian horse (see picture 2). However, the Mongolian horse measures 120 cm at the withers, whereas osteological evidence from Bohai and Jurchen sites in the Primorye suggests that the Mohe horse reached nearly 135 cm and its Yakutian counterpart around 140 cm. The Mohe horse, in our opinion, was related to the Yakutian horse, for a number of reasons explained as follows.

Both the Mongolian and the Przewalski horses have developed molars, but as herbivores both horses lack strong incisors. The Mohe horse, however, has both developed molars and incisors. The Yakutian horse shares this characteristic, using its developed incisors for eating tree bark and also for defending itself against wild dogs and wolves. Its molars allow the Yakutian horse to function as an effective grass eater. All taken into account, the Yakutian horse is more adapted to life in the forest, compared to others. We can thus conclude that Alekseeva's hypothesis of the Mohe horese as a forest dweller was accurate.

We can observe that in Bohai sites on today's Russian territory nearly 90 percent of equine bones belonged to Mohe horses, and 80 percent in Jurchen sites. But although both populations entertained intensive trade contacts with China, they nevertheless preferred small horses. The Primorye region was peripheral to the Bohai state and to the Jurchen empire, largely located in Manchuria, while the situation concerning horses in northeastern and central China was different. In the provinces with developed Chinese agriculture, the population preferred to work with Equus ferus caballus, dictated by the material conditions and economic activity of the

2 Private discussion in 2005.

inhabitants. However, for the Bohai and Jurchen people the small horse was more important in other aspects.

The Bohai army consisted close to 80 percent of cavalry, an effective weapon in the war of 732–733 between Bohai and the Tang empire. Small horses were used by the Bohai forces because they could move over rugged terrain. The Yakutian horse could accomplish the same, but this was impossible for an Equus ferus caballus. Moreover, these horses took part in the hunting by battue practised by Bohai and Jurchen game hunters, attacking their prey from two flanks – which was also a method of attack employed by the cavalries of nomadic armies. As a result of this type of hunting, Mohe horse had experience in big game hunting (tigers, elks or bears), undeterred by arrows or big animals (such as the Bactrian camels used in Mongolia and Manchuria). Mohe horses consume different kinds of the food, including grass and bark, and are generally highly agile forest animals. With such a wondrous weapon, the Bohai army in 732 effectively expelled the Chinese army from Manchuria, only to be halted near Madoushan Mountain (bordering today's Great Wall) after the Chinese military resorted to blocking the road with large rocks (Kim 2015). This, of course, proved to be an insurmountable obstacle even to the Mohe cavalry.

The Jurchens were highly developed horse breeders. During its formative years, the Jurchen army of the Jin state (1115–1235) consisted between 70 and 90 percent of cavalrymen. According to materials from the *Liao shi* 遼史 (History of the Liao Empire), the Khitan waged military expeditions against Jurchen tribes in 11th century. In one single expedition against Jurchen tribes, the Khitans received near 200,000 horses as their trophy (Vorob'ev 1975). Osteological research has shown that these horses were small in size. Such horses were not only important for Jurchen military and economic activity, many of them were reared for export. The states of the Korean peninsula were avid importers of horses from the Jurchen tribes.

Chinese annals referred to the Jurchen cavalry of the Jin to the effect that they used small horses in warfare, despite also having normal-sized horses. Because the Mohe horse can move in temperatures ranging from plus 40 to minus 60 degrees Celsius, it was very useful in wars in central China between autumn and spring. This property influenced the military activity of the Jin against the Song armies, mostly in the autumn and winter months. When the Jurchen cavalry became active in the Mongolian steppe in the 1130s (Goncharov 1986), they successfully battled against Mongol tribes. These two examples show that Mohe horses adapted to greatly varying circumstances – conditions that would have been impossible for the Equus ferus caballus. Modern Mongolian and Yakutian horses, however, are fully capable of doing so.

During the winter, household animals normally stayed indoors in the living quarters (Alekseeva & Shavkunov 1983). For horses, however, this was impossible, because Jurchen homes were small and concentrated near the kang. The kang played a very important role for family life in the Bohai and Jurchen periods, especially in the winter periods. Usually, Jurchen families were big, a fact confirmed by archaeologi-

cal and written sources. In this situation, horses would not have had a place in an ordinary Jurchen house. This would have been the case in the homes of wealthier Jurchens, but most cavalrymen were ordinary commoners.

Moreover, during military expeditions many Jurchen rode two horses as minimum: one horse for transport and one for battle. We also note that each Jurchen horseman had an *ališi* (armour-bearer) (Vorob'ev 1975), each of whom also had two horses: one horse for transport, the other for baggage. Baggage would include food, armour, weapons, medication, tents and receptacles for spoils. Therefore, *ališi* sometimes had two horses for baggage. Moreover, in annals we read of "armoured *ališi*", which indicates that in some cases *ališi* took part in battles. Clearly, their baggage would include weapons and armour both for the warrior and for the *ališi*. In almost all cases, the principal warrior and the *ališi* were relatives from the same house, such as father and son.

How would a family have accommodated four horses, as a minimum number? This would have necessitated a stable, not a human accommodation as with a single horse. This challenge was accomplished by means of the *meng'an-mouke* 猛安謀克 (Jur.: *miŋgan moumukə*) formula, the fundamental socio-economic system which united the economic aspects of a household with its military duties. The heads of the *meng'an-mouke* unit belonged to the Jurchen aristocracy and military elite and the system itself played a big role in all aspects of Jurchen society (Kim 2012). Each *meng'an* consisted of 10 mouke. One mouke included 100 houses (Vorob'ev 1975). Apart from its defensive role, *mouke* looked after specific herds of horses during the night, especially in walled compounds. Moreover, in each Jurchen city we observe vast open spaces, used by the population to let herds of horses graze. Probably, these herds were under the control of a civilian *mouke* head.

For this reason we believe that in Bohai and Jurchen towns and settlements, horses stayed outside people's homes. Horses in Mohe, Bohai and Jurchen settlements thus must have had a thick layer of body hair in order to endure the severity of the winter. We assume that the Bohai had a system resembling *mouke*. Because after the destruction of the Bohai state by Khitans in 926, the Bohai people organised themselves for emigration to Koryo, moving in groups of 100, 300 and 500 households (Kim 2019). These numbers are similar to the *mouke* system and suggest that their horses were kept in the same way. During the Manchu era, the *mouke* system was transformed to one of *mukun*, each consisting of 100 houses (Vorob'ev 1975) and each mukun sharing a common herd of horses.

Temperatures in a winter night in the Primorye region can plunge to minus 50 degrees, but we know for certain that even 40 degrees subzero is not comfortable for a Przewalski horse. Yakutian horses, however, can withstand temperatures of minus 60 degrees, and are thus popular with the aboriginal populations in the Republic of Saha. The attached pictures illustrate that Mongolian and Yakutian horses are richly covered in hair. As we can see, the osteological evidence from Bohai and Jurchen sites can complement historical information on these medieval societies and provide a basis for analysing the economic system of the medieval Far East.

Skeletons of the Yakutian and Mohe horses are similar in many details, but Mohe horses can frequently be recognised by the saline bulges on their bones, a problem possibly related to malnutrition (Alekseeva & Besednov 1996). However, since Bohai and Jurchen warriors used this animal for hunting and warfare, they are likely to have provided good nutrition for their Mohe horses. After all, they depended on their horses in many ways.

We can thus conclude that the small horse which lived in the south part of the Russian Far East during the Mohe, Bohai and Jurchen periods, was very much akin to the Yakutian horse. As a result of Manchu military activity, in 16th–17th C. almost all inhabitants in today's Primorye moved to Manchuria with their domestic animals, including horses. Only small groups of aboriginal populations remained, who lived in deep forests and did not used horses, invisible to the Manchu army. Once Russian military contingents arrived in the modern Primorye region during the second half of the 19th century, they did not encounter any kind of horse.

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Illustrations

Picture 1: Przewalski horse[3]

Picture 2: Yakutian horse[4]

Picture 3: Mongolian horse[5]

3 https://sun9-75.userapi.com/impf/c850420/v850420995/9f20a/d9lnpUu0ukY.jpg?size=275x224&quality=96&sign=ebf592b7b090e19d636953649718f17c&type=album (13.12.2021).

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