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Kooijmans, L.P.L.; Jongste, P.; et al., ; Jongste, P.F.B.; Kooijmans, L.P.L.

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A NEOLITHIC SETTLEMENT ON THE DUTCH NORTH SEA COAST *c.* 3500 CAL BC

EDITED BY LEENDERT P. LOUWE KOOIJMANS
AND PETER F.B. JONGSTE

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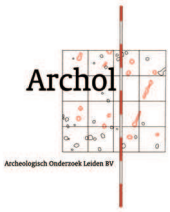

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24 Background fauna: small mammals, amphibians and reptiles

Jørn Zeiler

Besides bones of animals that were brought to the settlement on the dune by the occupants – cattle, shot wild animals, caught fish – we also found remains of animals that ended up on the dune without human intervention, or secondarily via owls' pellets. The animals in question are small rodents and insectivores, amphibians and reptiles. They are to be regarded as representing the site's background fauna, and hence as indicators of the local environmental conditions.

24.1 Research questions

The animals covered in this chapter – small rodents and insectivores, amphibians and reptiles – can be regarded as background fauna. Their remains, unlike those of domestic and hunted animals, will generally speaking have ended up at the site without human intervention. That is why they are being discussed separately from the remains of birds and other mammals. The aim of the analysis of the background fauna was to obtain information on environmental conditions on and around the dune.

24.2 Methods

One of the aims of the special ecological sieving programme, using sieves with mesh widths of 1 and 2 mm, was to obtain a sample of remains of small mammals, amphibians and reptiles. Remains of these groups of animals were also recovered from the 4-mm sieve fraction and some were incidentally gathered in the general manual recovery of finds. As the cranial elements (including molars) of small rodents and insectivores

		phase	1-2a	2a	2b	3	1–3	totals
collected by hand								
mole	*Talpa europaea*		–	1	–	4	1	6
wood mouse	*Apodemus sylvaticus*		–	–	–	1	–	1
root vole	*Microtus oeconomus*		–	8	–	11	–	19
vole	*Microtidae*		–	1	7	10	–	18
small rodent	*Rodentia*		–	3	8	25	1	37
Totals			–	*13*	*15*	*51*	*2*	*81*
4-mm								
mole	*Talpa europaea*		4	–	4	8	–	16
common shrew	*Sorex araneus*		–	–	–	–	2	2
ground vole	*Arvicola terrestris*		2	–	–	1	–	3
root vole	*Microtus oeconomus*		9	8	16	2	13	48
vole	*Microtidae*		12	4	15	3	8	42
small rodent	*Rodentia*		8	10	8	6	14	46
Totals			*35*	*22*	*43*	*20*	*37*	*157*
1-and 2-mm								
common shrew	*Sorex araneus*		–	2	1	–	–	3
common / french shrew	*Sorex araneus / coronatus*		–	1	–	–	1	1
harvest mouse	*Micromys minutus*		–	–	–	–	1	1
wood mouse	*Apodemus sylvaticus*		–	–	–	1	–	1
bank vole	*Clethrionomys glareolus*		–	–	–	2	–	2
root vole	*Microtus oeconomus*		1	17	3	5	3	29
vole	*Microtidae*		4	66	10	28	20	128
small rodent	*Rodentia*		5	6	1	1	4	17
Totals			*10*	*92*	*15*	*37*	*29*	*183*

Table 24.1 Remains of small mammals presented according to recovery technique, species and phase.

phase / samples N=		1-2a	2a	2b	3	1-3	totals
collected by hand							
Units		–	13	15	51	2	81
features		–	–	–	–	–	–
Totals		–	*13*	*15*	*51*	*2*	*81*
4-mm sieve							
Units	320	35	22	43	20	34	154
features	8	–	–	–	–	3	3
Totals	*328*	*35*	*22*	*43*	*20*	*37*	*157*
1- and 2-mm sieve							
Units	119	10	85	15	37	3	150
features	19	–	7	–	–	26	33
Totals	*138*	*10*	*92*	*15*	*37*	*29*	*183*

Table 24.2 Remains of small mammals presented according to recovery technique, context and phase.

are the most suitable for species identification, only this category was used for this purpose. Postcranial elements were recorded as deriving from 'small rodents'. An exception is the mole, whose postcranial elements can also be readily identified thanks to their specific morphology. The remains of small rodents and insectivores were identified by D.L. Bekker (*Vereniging voor Zoogdierkunde en Zoogdier-bescherming*; Association for the Study and Conservation of Mammals). The amphibians were identified on the basis of the data of Böhme (1977). The remains were only counted, not weighed.

24.3 Materials

The majority of the remains of small mammals and insectivores, amphibians and reptiles were found in the samples from phases 2a, 2b and 3. That none of the remains can be indisputably dated to phase 1 is to be attributed to the facts that the remains from the Unit concerned on the southeastern flank of the dune were collected mechanically and only a very small number of features can be dated to phase 1.

By far the most small mammal remains were recovered from the sieved material, the proportion recovered from the 4-mm sieve fraction being of the same order of magnitude as that recovered from the ecosieve fraction (table 24.1). Remarkably, 19% of the total number of remains were recovered by hand, indicating that the collecting was done most meticulously. It should incidentally be borne in mind that the figures quoted in table 24.1 are not representative of the actual ratios, as the ratio of the volumes of soil sampled according to the three collection methods (collection by hand, 4 mm sieve, 1 and 2 mm sieves) was roughly 1000 : 80 : 0.7 (m^3).

As for the context, the great majority of the remains (more than 91%) come from Units. The remains recovered from features almost all come from well fills; three remains were collected from depressions (table 24.2). Almost all the remains of amphibians and reptiles come from Units. Exceptions are four amphibian remains that were recovered from the ecosieve fractions of soil from two well fills. The number of amphibian remains is remarkably low, especially in relation to the number of small rodent remains (table 24.3). The fact that so few small mammal and amphibian remains were found in well fills indicates that the wells did not remain open for a long time and that they did not contain water for a long time either.

		phase	1-2a	2a	2b	3	1-3	totals
collected by hand								
common toad	*Bufo bufo*		–	1	–	1	–	2
toad	*Bufo sp.*		–	–	–	3	–	3
grass snake	*Natrix natrix*		134*	–	–	–	–	134
4-mm sieve								
frog	*Rana sp.*		–	–	1	1	–	2
toad or frog	*Anura*		–	–	1	1	–	2
1- and 2-mm sieve								
common toad	*Bufo bufo*		–	–	–	–	2	2
toad	*Bufo sp.*		–	2	–	–	–	2

* one individual

Table 24.3 Remains of amphibians and reptiles presented according to recovery technique and phase.

24.4 Results

24.4.1 General results

Tables 24.1 and 24.3 present the remains of small mammals, amphibians and reptiles per collection method and phase. The (few) amphibian remains are equally distributed across the three fractions in terms of numbers. Remains of reptiles, in this case grass snake (*Natrix natrix*), were encountered only among the remains collected by hand. The mammal remains almost all derive from small rodents and insectivores.

24.4.2 Rodents and insectivores (figs. 24.1-5)

As already mentioned above, all the rodent remains that were identified to species or genus level are cranial elements (jaws and stray molars). Two of those elements derive from wood mouse (*Apodemus sylvaticus*) and one from harvest mouse (*Micromys minutes*, fig. 24.2-3). The latter species had previously not been found at a prehistoric site in the Netherlands. What makes this find (a mandible) extra remarkable is that the length of the row of molars (2.93 mm) exceeds the maximum of 2.8 mm employed for Dutch harvest mice.

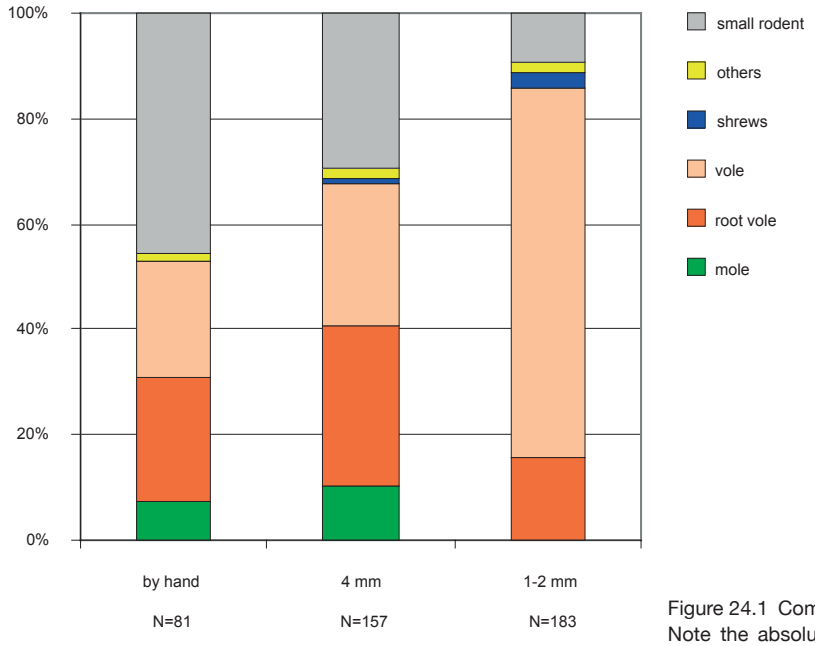

Figure 24.1 Composition of the samples of remains of small mammals. Note the absolute dominance of root vole. The graph illustrates the modest effect of the recovery technique on the species composition.

Higher values (of up to 3.1 mm) are however employed further east, for example in Germany. This implies regional variation in size. The Schipluiden find could imply chronological variation, too.

The others are all remains of voles. Insofar as they could be identified to species level, they almost all derive from the root vole (*Microtus oeconomus,* fig. 24.4-5), except for three remains of ground vole (*Arvicola terrestris*) and two of bank vole (*Clethrionomys glareolus*). This means that most of the remains that were identified as 'vole-like' will derive from root vole. The large differences in the numbers of remains of (root) voles between the occupation phases in the three fractions are attributable to the unequal distribution of the samples over the distinguished phases and to differences in preservation and recovery processes in the different kinds of soil in which the remains were buried.

Of the insectivores, the mole (*Talpa europaea*, fig. 24.4) was represented in the largest quantities. The remains concerned comprise both cranial and postcranial elements. Those of small insectivores (shrews) are exclusively cranial elements (mandibles). Five of those elements derive from the common shrew (fig. 24.4), two from the common shrew or Millet's shrew (*Sorex araneus*/*S. coronatus*).

24.4.3 Amphibians and reptiles

Nine out of the total of thirteen amphibian remains come from toads – four of which from the common toad (*Bufo bufo*), two from frog or toad (Anura) and two from frog (*Rana* sp.). As already mentioned above, the reptiles are represented by grass snake. The remains concerned are 81 vertebrae and 53 rib fragments from one individual (fig. 24.6).

24.5 Reconstruction of the former landscape

The facts that the small rodents are dominated by a single species and that the remains do not constitute a combination of species from different biotopes indicate that the assemblage represents the local rodent fauna of the dune and its flanks,

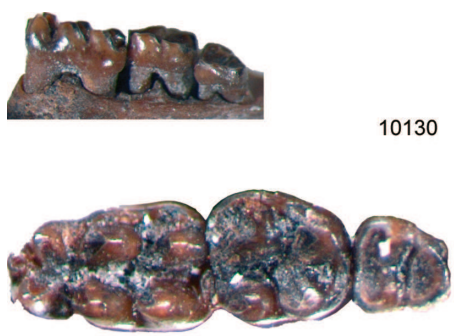

Figure 24.2 10,130 right mandible of harvest vole.
a lateral view (10×)
b occlusal view (20×)

Figure 24.3 Harvest vole.

but it may also include remains secondarily deposited via owls' pellets. A pronounced dominance of root vole is quite normal in highly dynamic biotopes.

The root vole and the ground vole are clear indicators of a wet landscape abounding in water. Water voles are found along the banks of stagnant and slowly flowing water, preferably with a dense bank vegetation. The root vole prefers moist to waterlogged biotopes with a dense grass or shrub vegetation, such as peats, bogs, soggy and intensively used pastures and bank vegetations of streams and rivers. Unlike other vole species such as the field vole, this species can survive well in areas with varying water levels. The fact that this species was well represented at Neolithic sites such as Ypenburg (De Vries 2004), Swifterbant and Kolhorn (Zeiler 1997) indicates that it was quite common in those days. The dynamic environment during the Neolithic – with a coastline that was still interrupted by waterways, and creeks and rivers that could flood their banks without restraint – will have afforded an ideal habitat for the root vole (chapter 14).

Figure 24.4 Some remains of small mammals (magnification 4×).
4620 right mandible of mole
1482 right mandible of common shrew
2336 left mandible of root vole

The presence of bank vole in phase 3 indicates that the area was not entirely devoid of trees. This species prefers (moist) woods with a lush undergrowth, though it is also found in other biotopes (reed borders, tall herb vegetations), providing they do not lie too far from areas with plenty of trees. Of importance for harvest mice is a tall, dense vegetation. The species is to be found in areas of tangled growth, copses, (fairly dry) reedlands and dunes.

The other mammal species – wood mouse, wood shrew and mole – can live well in the landscape outlined above, but they are not characteristic of it. Moles will avoid very dry soil rather than excessively wet soil, and mole remains have also been found at other wet sites such as Swifterbant and Barendrecht (Zeiler 1997, 2000).

The amphibian and reptile remains, finally, also provide some information on the local environment: a moist to very

Figure 24.5 Root vole.

Figure 24.6 Vertebrae of grass snake *(Natrix natrix),* no. 2883 (magnification 4×).

wet landscape that however also contained drier areas (Arnold *et al*. 1992). The common toad has a fairly broad ecological amplitude; outside its mating and overwintering season it shows a preference for drier soil with some cover in the form of shrubbery. As the frog remains cannot be identified to species level they tell us little more about the former landscape than that it contained open (fresh) water. In general terms the very small number of amphibian remains implies that this biotope was rare on the dune and in its immediate surroundings. The presence of grass snake likewise points to open (fresh) water, although the species is also found in drier areas.

Diachronic changes in the environmental conditions on and around the dune cannot be demonstrated on the basis of the background fauna.

24.6 THE MICROFAUNA IN RELATION TO THE OCCUPANTS

Generally speaking, the remains of small mammals, amphibians and reptiles will have ended up at the site without human intervention. They may have been secondarily deposited, via owls' pellets. The remains found at Schipluiden show no traces suggesting human use. They may therefore be interpreted as background fauna, and hence as indicators of the local environmental conditions. It should however be noted that this will not always be the case. Moles, for example, may have been caught for their skins (Jensen 1984). And as for amphibians: remains of natterjack toad (*Bufo calamita*) and common toad found at the Bronze Age sites P14 (Gehasse 1995) and De Bogen (Van Dijk *et al*. 2002) showed cut marks indicating consumption, or possibly medicinal or ritual use. In their survey of grass snake remains found in archaeological contexts, Van Wijngaarden and Troostheide

(2003) draw attention to the fact that the remains are all vertebrae (in one case combined with rib fragments). If the animals concerned had died a natural death then, according to the authors, parts of the head should have survived, too, but no such parts were found. One explanation for this could be that the animals were killed by a blow to the head that fractured their skulls. Possible reasons for killing grass snakes could have been use of the skin, consumption of the meat or use for ritual purposes.

English	Dutch	scientific
bank vole	rosse woelmuis	*Clethrionomys glareolus*
common shrew	gewone bosspitsmuis	*Sorex araneus*
french shrew	tweekleurige bosspitsmuis	*Sorex coronatus*
ground vole	woelrat	*Arvicola terrestris*
harvest mouse	dwergmuis	*Micromys minutus*
mole	mol	*Talpa europaea*
root vole	noordse woelmuis	*Microtus oeconomus*
small rodents	kleine knaagdieren	*Rodentia*
voles	woelmuizen	*Microtidae*
wood mouse	bosmuis	*Apodemus sylvaticus*

Table 24.4 Small mammals, glossary of the English, Dutch and scientific names.

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J.T. Zeiler
ArcheoBone
Aggemastate 135
8926 PC Leeuwarden
The Netherlands
abone@planet.nl