Living by the Water – Boon and Bane for the People of Körtik Tepe

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Introduction

Despite a long and on-going discussion on the development of early sedentism and the broad spectrum revolution as a precondition for sedentary farming communities, many studies have been biased by focusing on the study of wild cereal remains. However, recent botanical and archaeozoological studies have shown clearly a wide spectrum of plants and small game that were used by hunter-gatherers opportunistically (*e.g.* Hillman *et al.* 1989; Stiner *et al.* 2000; Savard *et al.* 2006; for theoretical considerations see Benz 2000:75-90; Olszewski 2004). Many ethnographic examples and pioneering studies on prehistoric coastal fishing and even trade of marine fishes into the hinterland during the early Holocene (*e.g.* Lernau and Lernau 1994; Zohar *et al.* 2001:1051, for further literature see Sampson 2008:205) demonstrate the importance of fish for sedentary communities. Nevertheless, fish remains have rarely been studied systematically. In a recent overview on data of Near Eastern Early Neolithic sites, van Neer *et al.* (2005) could list only a hand-full of Epipalaeolithic and Early Neolithic sites for which a systematic collection of fish bones had been practised. The missing systematic collection of microfauna and fish remains from flotation or fine sieving has hampered quantitative as well as qualitative analyses of fish remains and microfauna on many sites.

Although a systematic collection of fish remains from flotation samples will become possible at Körtik Tepe only in future seasons, we argue that the archaeological materials and archaeozoological remains in the sediments and graves clearly illustrate that fresh water resources such as fish and waterfowl, besides other small game such as tortoise, played an important role for the flourishing of the Körtik Tepe community during the PPNA[1] and contributed much to its richness and identity.

The Site and Environmental Conditions

The extraordinary findings and the lavishly endowed burials of the early Holocene site of Körtik Tepe (37°48'51.90" N, 40°59'02.02"E) have been presented recently in this journal and in many other publications (*e.g.* Özkaya 2009; Özkaya and Coşkun 2009; for ^{14}C-data see Coşkun *et al.* 2010). The site is located near the confluence of the Batman Creek and Tigris River. An old channel of the Batman Creek visible on the aerial photo passes directly by the site. Preliminary analyses of charcoal remains suggest that Körtik Tepe lay in the oak park-woodland at the beginnings of the Holocene, with the dominance of oak and some *Amygdalus* sp., *Maloideae*, *Pistacia* sp., *Celtis* sp. and *Rhamnus* sp. Furthermore, *Tamarix* sp., *Populus* sp. /*Salix* sp., *Vitis* sp., *Alnus* sp. and *Fraxinus* sp. hint at the proximity of gallery forests indicative of water. The seed remains underline the proximity to water reservoirs.[2] They comprise a wide spectrum of wild plants including hygrophilous species such as sea club rush (Scirpus maritimus) (12 %). The abundance of taxa such as tragant (Astragalus sp.) and medusahead (Taeniatherum caput-medusea/crinitium), however, indicate the presence of open vegetation. Large-seeded grasses (*Poaceae*) contribute the main portion (37 %) and occur in every sample, whereas progenitors of modern cereals account for less than 6 %. A specialization on one or the other plant does not show up in the botanical remains, and domestication of plants could not been proven so far (Riehl *et al*. n.d.). The people of Körtik Tepe thus had access to at least three different environmental milieus, of which they used the plant and animal resources opportunistically.

Matting

Remains of fibers on the floors, on stone vessels and in graves suggest that mats and lines (nets) were common on the site. Impressions of textiles on the gypsum, which surrounds some of the burials, indicate that the skeletons were additionally wrapped in mats. Additional evidence for matting is the geometric decoration of many stone vessels that resembles basketry. An especially thoroughly decorated stone object looks like a plaited container with a lid (Fig. 1). Although the fibers have not been determined so far, it may be suggested that sea club-rush was one possible resource that was used for matting.

Fig. 1 Chlorite stone object decorated with a pattern similar to woven textiles or matting.

Animal remains

The wide spectrum of plant remains is corroborated by the many faunal remains that were exclusively from wild species, including wild cattle, red deer, sheep, and goats, which make up the majority of the sample. Other wild animals include pigs, fox, wolf, hare and gazelle. Waterfowl such as mallard (*Anas platyrhynchos*), goose (*Anser* sp.) and two other members of Anatidae were identified. Because of the high frequency of wing parts Arbuckle and Özkaya (2006: 17) suggested that the feathers of the birds could have been used for decoration. But once hunted, their meat was probably consumed too. Most of the identified waterfowl were a good additional food in winter as they are typically winter visitors to eastern Turkey except for mallard, which is a summer visitor (Arbuckle and Özkaya 2006: 126).

So far, fish remains have been recovered by hand and by sieving the sediment from graves. One specimen has been identified as a Cyprinidae (Arbuckle and Özkaya 2006). Yet, if remains are collected by hand, ubiquitous and large fish such as Cyprinidae are systematically overrepresented (Van Neer *et al.* 2005). The sample is therefore probably biased for large species, but in the following seasons it will be possible to collect fish remains and microfauna systematically during flotation.

Grave findings document that fish vertebrae were occasionally used as beads, but the emphasis was clearly on other jewelry like small stone ring beads, serpentine beads, and shell/gastropod beads. Additionally, 21 fish jaws were found, of which two were found in graves. Three of them show some polish. The graves in which fish remains were found do not show any other specificity but reflect the wide spectrum of grave types

Fig. 2 32 stone vessels with this standardized specific decoration of concentric circles (a) (sometimes combined with the representation of long horned animals [b]) have been found so far on the site, but in none of the burials discussed in this paper such a vessel has been found.

from Körtik Tepe. It is however interesting to note that in the graves with fish remains decoration of stone vessels with concentric circles and goats (*cf.* below, Fig. 2) never occur, and the vessels' decorations are generally rather crude.

Fishing equipment

Fish hooks

Nine fish hooks made of bone (Fig. 3) have been found so far (Özkaya 2009: Fig. 11); eight of them come from levels between -310 cm and -235 cm below the zero point of the excavation, suggesting that they belonged to the second main occupation period associated with stone buildings.[3] There is only one hook that stems from a higher level (-175 cm) (Fig. 3 b). The distribution on the site does not hint at a specialization because fish hooks have been found in all parts of the settlement (Fig. 4). Three items of a rather crude shape were found in the grave of a male adult (M10, A80; *cf.* Tab.1 and Fig. 3 c, h, i and Fig. 5) combined with a pestle, a bone pin and a tortoise shell lying on the head of the individual. The hooks and the pin lay close together suggesting that they had been placed in a perishable container.

The most recent hook (Fig. 3 b) was found in a grave (M5, A80) that belongs to the lavishly endowed graves of the upper layers. Beside 275 stone beads and 242 shell beads, the grave goods comprised two rectangular serpentine beads, two large perforated stone objects (possibly net weights), two longish perforated stone objects (7.8 cm and 6.6 cm respectively) and two stone bowls, one of which is decorated with a rather crudely incised, unrecognizable pattern or representation. All of these items might be interpreted as that of a fishermen with fish hooks, net and fishing line weights.

Many perforated but otherwise unworked stones have been found in some graves and in other contexts. According to their use traces they may have hung on a line as sinkers for the hooks.

Shape of the hooks

Most of the Körtik Tepe fish hooks have a U-shape with a high and thick bow part, more resembling Mesolithic fish hooks than Neolithic ones (*cf.* Hernek and Jonsson 2003; Hüster-Plogmann 2004: Fig. 326; Herling 2007; Sampson 2008: 203-207, plate 12.1A-B). The gapes, the space between the shank and the point, is quite large except for one exemplar. None of the Körtik Tepe fish hooks has a barbed point. Two items, the one from the upper level and one from a deeper level (-303 cm) have a different shape with a rectangular lower part of the bow. Additionally the recent exemplar has a very wide gape. Unsurprisingly, it is broken on the bow, but it had been repaired by two holes which have been connected probably by a string (Fig. 3 b). As Olson *et al.* (2008) could demonstrate, bow fractures

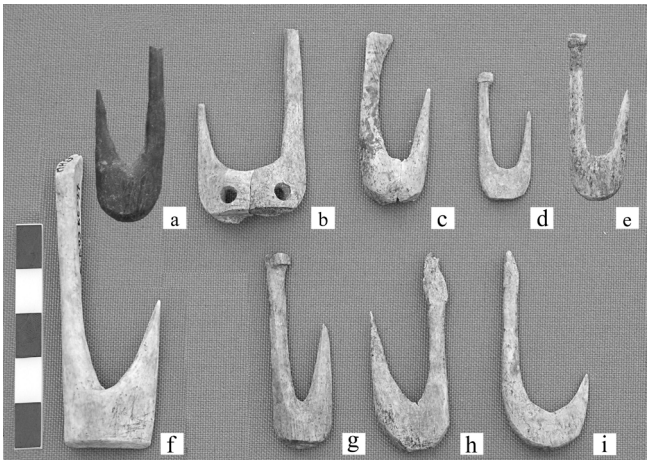

Fig. 3 Fish hooks found on the site, in grave A80, M5 (b), and in grave A80, M10 (c, h, i).

are the most common fresh fractures within their sample of 384 fish hooks of the Stone Age site of Ajvide, Sweden, and of replicas, which have been used for material strength tests. The top of the shank is preserved only in three items, which have a thickened round end to fix the line. None of the items has grooves or a perforation on the shank, but three of them show a thickened top. The strength tests of Olson *et al.* demonstrate that the fixing of the line has no consequences on the load which can be caught.

Concluding from the shape and the few numbers and the distribution of fish hooks from Körtik Tepe, fishing with a pole was technologically not very elaborated, nor was it obviously a very specialized occupation. However, fishing with such equipment implies good skills and knowledge as the line must be kept tight once a fish has been caught. Otherwise the risk that the fish unhooks itself is very high. Additionally, the thickened part of the bow of nearly all items indicates that the producer of the hooks knew the weak point of the hooks very well. It is astonishing that none of the hooks had a barbed point.

The stratigraphic position of the hooks shows that there was no typological change from the upper to the lower layers. The rectangular shape of the most recent hook is similar to an older item. The shape of the few examples was quite standardized and did not change too much over time. But as there is only one piece from the upper levels and none from the deep cut this observation has to be verified by further excavation.

Net Fishing

Net fishing is one of the neglected occupations in prehistory. Several hundreds of net sinkers have been recovered in the circum-alpine pile dwellings (*e.g.* Hüster-Plogmann 2004). Probably some of the Körtik Tepe perforated ground stone tools may have been used as net sinkers too. Use traces on the left and right side of the hole on some of the perforated stone objects also suggest

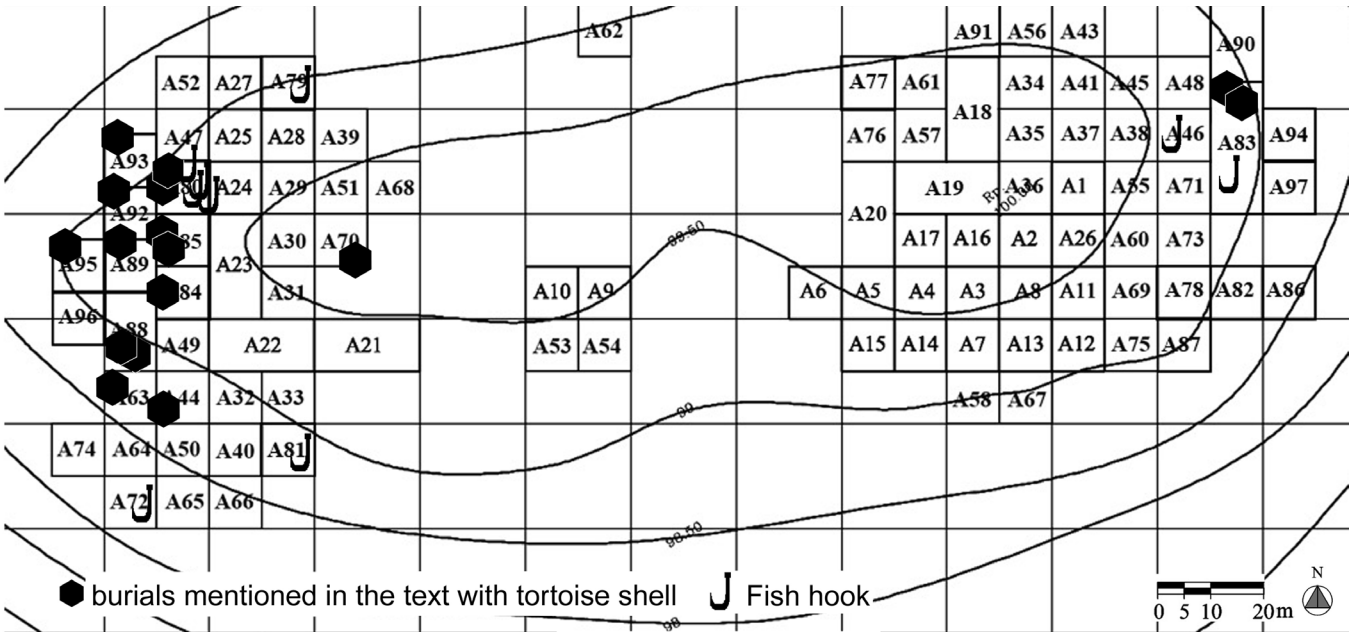

Fig. 4 Distribution of fish hooks and graves with tortoise shell on or nearby the head.

that they have not been fixed on a stick as mace heads or other tools, but that a string had been pulled through the hole and moved back and forth (Fig. 6). Many other perforated stones have been found and document the ubiquity of this occupation. Several bone awls and fine needles illustrate that at least technologically net knitting would have been possible (*cf.* anthropological evidence).

One technology that leaves no traces is fishing with traps. However, the above mentioned preliminary analyses of the botanical remains indicate that sea club-rush (*scirpus maritimus*) is very frequent on the site. In combination with willow twigs, for example, it could have been possibly used for the construction of traps, too.

Although quantitative and qualitative estimations of fish consumption are not possible so far (*cf. e.g.* Gross *et al.* 1990; Schibler *et al.* 1997: 329-335), we can

Fig. 5 Burial of an adult man (A80, M10) with three fish hooks, a bone pin, a pestle, and a tortoise shell.

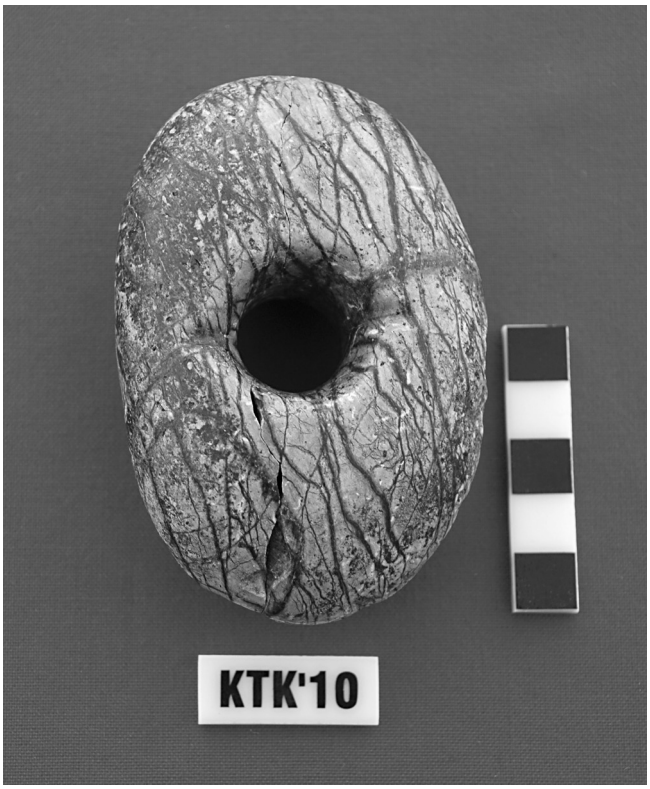

Fig. 6 Perforated stone item with use traces on the left and right side of the hole.

deduce from the faunal and archaeological remains that fish and waterfowl were consumed (*cf.* anthropological evidence).

Excursus: of tortoises and men

Because of their slow motion tortoises are highly valued small animals (Stiner *et al.* 2000). The findings from Körtik Tepe additionally illustrate the high social value these animals might have had. In 16 burials tortoise shells were found lying nearby or covering the head of the individuals (Table 1, Fig. 5). Most of them (n=14) are located in the western part of the site (Fig. 4), but whether this implies a certain spatial affiliation (household) has to be verified by deeper excavations in the eastern part.

Most of the identified individuals buried with tortoises are adults of different ages, but also children and one perinatal individual were buried with tortoise shells. There is no differentiation by gender either. Concerning the burial ritual, these individuals do not differ much from the other burials. Their orientation is typical for most of the Körtik Tepe burials. Also for the use of plaster it is not unusual that in the most upper burials little or no plaster was used.

Concerning additional grave goods, it is interesting to note that in none of the burials with tortoises, as it was observed for the burials with fish remains, stone vases with concentric circles have been found. Additionally, some of the other equipment can also be related to fishing activities, such as the fish hooks of M10 of Trench A80. Individuals with tortoise shells cover the whole spectrum of the quantity of grave goods: from lavishly endowed ones to burials without any additional grave goods.

It can thus be summed up, that there was a selection for some individuals, but that the criterion was neither chronology nor gender or age. The fact that children also were buried with a tortoise shell on or near the head makes a certain professional occupation improbable, but it cannot be excluded that a certain social affiliation or ritual position was attributed to these children, too. The exclusion from skillfully decorated stone vessels is striking and might imply a different corporate identity of the "fisher-tortoise-men".

Anthropological Evidence

Possible further hints to the activity of fishing can be gained by the anthropological analyses of the skeletons from Körtik Tepe. Besides a low caries frequency indicating a low intake of carbohydrates and ground resources (Özbek 2005: 42-43), the most important evidence hinting at fishing activities comes from auditory exostosis (AE), which is a bony anomaly located on the tympanic portion of the temporal bone (Frayer 1988). Of 48 skeletons having at least one temporal bone, 21 individuals (43.8 %) have variously sized AE. Of these, 63.6 % are male (n=11) and 57.1 % (n=14) female individuals. AE has not been observed among infants younger than 2.5 years, but it was observed first at about the age of 6.5-7 years. While the frequency of AE is 38.5 % in children, it increases to 50 %, 60 % and 80 % in young adults, adults and old adults, respectively; in contrast, there is no statistically significant difference between males and females. Körtik Tepe adults have a higher frequency of AE than other living populations, which show a pretty low frequency of AE (Hanihara and Ishida 2001; Okumura *et al.* 2007; Velasco-Vazquez *et al.* 2000).

Experimental research carried out with guinea pigs and humans indicates that there is a strong relation between the prolonged exposure to cold water and the presence, frequency, and degree of AE (Standen *et al.* 1997; Chaplin and Steward 1998). Similarly, clinical investigations demonstrate that the AE frequency is between 73-80 % among surfers, surf life-savers and white-water kayakers (Wong *et al.* 1999; Chaplin and Steward 1998; Moore *et al.* 2010). Moreover, it has been widely accepted that there is a significant relationship between the years spent in cold water and AE (Wong *et al.* 1999; Chaplin and Steward 1998; Moore *et al.* 2010).

The presence of AE in Körtik Tepe and its relation to prolonged exposure to cold water have been proposed by Özbek (2005: 44-45). Such pathologies have also been observed in other skeletal populations living by water sources such as the Neolithic sites of Çayönü and Aşıklı (Özbek 1992: 151; Özbek 2004: 33). Similar anthropologic interpretations have also been made for different sites in the world. Namely, it has been suggested that the Mesolithic population of Vlasac living by the Danube were associated with aquatic activities taking in account the faunal remains and 34 % of AE (Frayer 1988). In addition, Standen *et al.* (1997), who have worked on three different Chilean populations dated to 7000 BC and 1450 AD, have emphasized the strong relationships between the activities such as diving and fishing (by which the ear is exposed to cold water) and the development of AE. Similarly, archaeological findings indicating fish and shell-fish consumption suggest that life at Gran Canaria mostly depended on marine resources (Velasco-Vazquez 2000).

Generally, these investigations have shown that the lifestyle depending on fishing and the exposure of the ear to cold water can cause the development of AE, and in these kinds of populations the frequency is higher than in other populations having different lifestyles. Although the exposure to cold water might be due to activities such as bathing, cleaning, swimming and playing in water as an entertainment, the above mentioned archaeological data suggest that fishing played an important role in daily life in Körtik Tepe, which is located by rich water sources like the Batman Creek and Tigris. While fishing with

Trench	Grave	Sex1,2	Age1,2	Inside house[2]	Level cm	Face	Orien-tation	Posi-tion[2]	Plaster[2]	Grave goods
A 80	M10	male	30-40 yrs	X	-309	S	NE-SW	HI	X	3 fish hooks, pestle, bone point
A 85	M3	male	45+ yrs	?	-269	S	E-W	HI	X	Ovoid chlorite pendant (2 x 1,1 x 0,5cm)
A44	M1	?	adolescent	X	-268	E	N-S	HI	X+ ochre	None
A92	M3	?	adult[3]	?	-253	N	E-W	Hr	X	Horn of a wild goat, animal bones, fragments of a bone pin.
A63	M1	?	adult[3]	?	-241	W	NE-SW	HI	X+ ochre	1 bone point (borer)
A83	M15	?	10 yrs	X	-233	S	N-S	Hb	X+ ochre	two tortoises
A89	M3	female	young adult	X	-227	E	NE-SW	HI	X+ ochre	241 stone ring beads,532 gastropod/shell beads, 1 undecorated lime stone vessel
A93	M5	?	adult[3]	Outside	-227	S	E-W	HI	-	None
A85	M2	male	25-28 yrs	?	-219	N	NE-SW	Hr (?)	X	7 undecorated stone vessels, 3039 gastropod/ shell beads, 5091 small stone beads.
A84	M7	female	23-27 yrs	X	-218	W	NE-SW	Hr	X+ ochre	1 fish bone [?]
A83	M27	?	child[3]	X	-217	NW	NE-SW	Hr	X	395 stone ring beads, 492 gastropod beads, 1 undecorated shaft-straightener, 2 perforated stone tools,1 perforated limestone tool, 2 undecorated stone vessels, 1 bone awl, 1 piece of obsidian, 1 net weight/mace head[4].
A70	M5	?	adult[3]	?	-200	E	N-S	Semi HI	X+ ochre	1 bone point
A88	M8	?	Perinatal	?	-193	?	?	destroit	-	2 gastropod/shell beads, fragments of undecorated stone vessels, piece of bone decorated with parallel lines.
A95	M5	?	child[3]	?	-172	N	E-W	Hr	-	None
A 80	M1	female	35-40 yrs	X	-163	SE	N-S	Hb	-	1 piece of obsidian, flint stone, 2 decorated, 1 undecorated stone vessel, 1 perforated stone tool, 1 mace head/net weight[4], 1 mortar, 585 small ring stone beads, 1 serpentine bead, 799 gastropod/shell beads, 19 fish vertebrae as beads.
A88	M1	male	45-50 yrs	?	-118	W	N-S	Hr	-	1 fragment of undecorated stone vessel

[1] Determination of age and sex (pers. comm. Y.S. Erdal)

[2] ? unknown; Hr=Hocker lying on the right side; HL=Hocker lying on the left side; Hb=Hocker lying on the back.
Plaster: X=present; - =without

[3] approximate estimation of age according to bone measurements (humerus/femur/tibia) and cranial sutures taken from photos.

[4] a final distinction between mace heads and net weights will become possible only when systematic use traces will be analysed.

Table 1 Burials with tortoise shells near or on the head of the skeletons.

poles and nets does not require the ear to be exposed to cold water, it is highly possible that Körtik Tepe individuals might have been subjected to cold water while setting traps and diving in order to catch fish or other aquatic resources. In brief, the ears of Körtik Tepe people might have been exposed to cold water over the long term, and this kind of daily life must have been continued for a lifetime.

Secondary data related to fishing have been extracted from dental grooves on 11 individuals out of 53 adults. Dental abrasion observed on the anterior dentition has mainly resulted from the production of cord, rugs, blankets, duck decoys, funerary bags, baskets, and fowling bags. Moreover, it could also result from the manufacture of nets, traps for fish, and also fishing activity (Cybulski 1974; Larsen 1985). It is concluded that some of the dental grooves on the anterior dentition might have resulted from the activity related to fishing (Cybulski 1974; Schulz 1977; Larsen 1985). These data suggest that the richness of the fauna and flora near the water was thus not only a boon, but also a bane for some individuals. They paid with their dental or/and ear health, and probably their general health.

Isotopic Evidence

Despite fairly bad preservation of collagen, we have managed to gain the $\delta^{13}C$- and $\delta^{15}N$-values from 18 out of a total sample of 42 individuals so far. Some preliminary results show that although the group of individuals is quite small, there is some variation of the dietary input that consisted of protein of plant and animal origin (Siebert *et al.* in prep.). However, concerning the management of water resources, the $\delta^{13}C$- and $\delta^{15}N$-values do not indicate a significant proportion of fish in the diet. A lowering effect of $\delta^{15}N$-values due to a high intake of pulses as has been suggested for Nevalı Çori (Lösch *et al.* 2006) seems to be rather improbable because the $\delta^{13}C$-values also hint at a mixed diet rather than a specialization on aquatic resources.

Water and aquatic resources in figurative representations

Figurative representations at Körtik Tepe show a wide spectrum of animals comprising long-horned animals (sheep or goat), birds, scorpions, deer, snakes and some

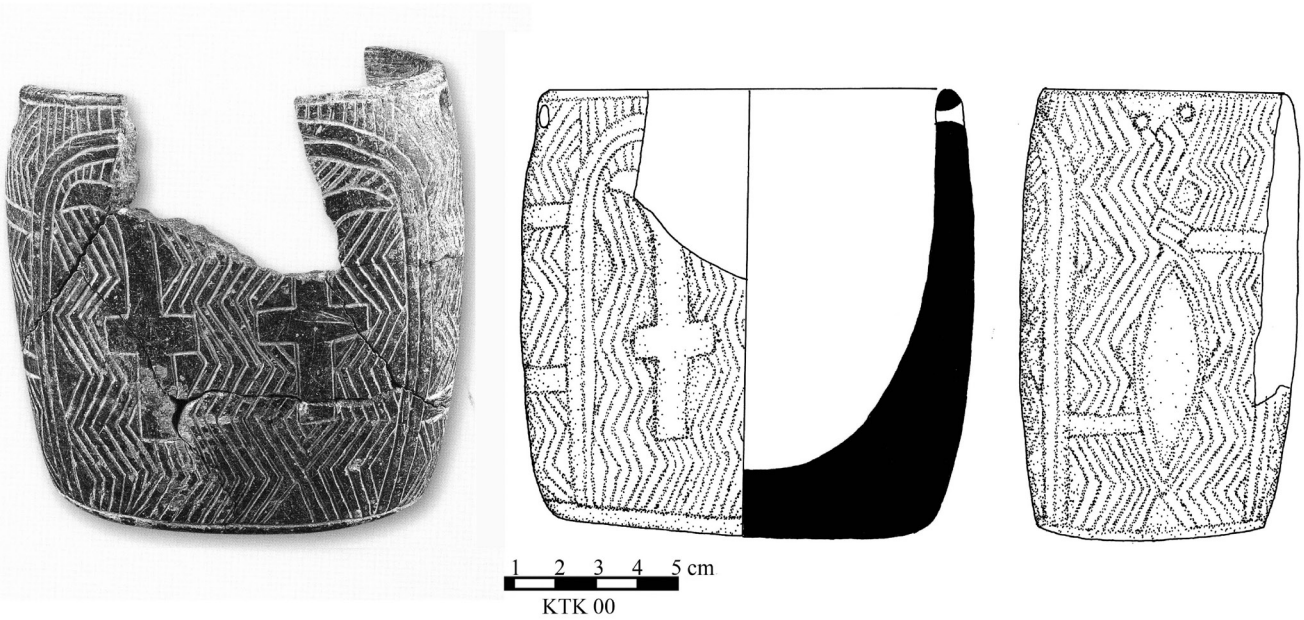

Fig. 7 Stone vessel with the representations of water and birds, possibly waterfowl. (Özkaya and Coşkun 2007: 146; Arbuckle and Özkaya 2006: fig. 3).

unidentified animals, possibly insects, which are very similar to figures interpreted as "insects" or "spiders" on the pillars of Göbekli Tepe (*e.g.* Schmidt 2007: 90). However, representations of aquatic resources are quite scarce. The many wavy and zigzag lines in metopes, all-over decoration, or ribbons surrounding the stone vases might be interpreted as stylization of water, but as the decoration of a bone item and of a stone vessel with concentric circles clearly show, these lines could be stylizations of snakes too (Fig. 2). However, abstract representations could be polyvalent and so one interpretation does not exclude the other.

There is one stone vessel which could give a clue to the identification as waterfowl and fishes (Özkaya and Coşkun 2007: 146; Fig. 7). On this vessel the typical stylization of birds is surrounded by many parallel zigzag lines and a half bow surrounding the birds. Whether the double line surrounding the birds should represent a trap or fishing pole remains speculative. On the opposite side, an elliptical form with pointed ends is surrounded by the same zigzag pattern. Although this form could be interpreted as a boat which is attached to some kind of footbridge, it might represent a fish or a shell too. The same almond-like sign is represented on two bone amulets, in combination with a scorpion and a snake respectively. This could speak in favor of an animal.

Similar bundles of zigzag lines combined with identically stylized birds were incised on several stone vessels (*e.g.* Özkaya and Coşkun 2007: 145-146; Özkaya and San 2007: Fig. 17). In the above mentioned grave with a tortoise (M1, A80; *cf.* Table 1), one stone vessel was decorated all over on its upper part with similar parallel zigzag lines.

Besides the naturalistic and abstract representations of birds/waterfowl, the upper ends of some stone pestles have the shape of bird heads. Although a clear identification as waterfowl has to be proven, given the high frequency of waterfowl in the archaeozoological remains and the frequent combination of zigzag lines and birds on the vessel decoration, it can be suggested that the stylized birds could represent waterfowl and need not be related coercively to vultures and death as it has been convincingly demonstrated for other sites (Stordeur n.d.; Schmidt 2007). A small chlorite animal head resembling more a duck or goose than a bird with a pointed beak could corroborate this interpretation (Fig. 8).

If we accept this interpretation, waterfowl are represented quite frequently. The high frequency of wing parts led Arbuckle and Özkaya (2006: 17) to suggest that the feathers might have been used for decoration. Both observations hint at the social importance - at least of the secondary products of waterfowl - for the identity of the people.

In contrast, fish and tortoises are almost absent in decorative art. Besides the above mentioned geometric symbol, two ovoid forms on a bone item, which might be interpreted as catfish (Yayın balığı, Silurus triostegus), were combined with some kind of insects and again scorpions (Fig. 9). The decoration of a small chlorite item could represent a turtle/tortoise head (Fig. 10).[4] It should be kept in mind that - except in one case (Özkaya 2004: 598, Fig. a) - none of the representations of birds or fishes were combined with the concentric circles so often used as decorations on stone vessels and other stone items (Fig. 2). Additionally, the latter representations have been found in none of the above mentioned graves with fish hooks or tortoises, but instead those of water.

This exclusion of one or the other decoration in the graves is significant and might hint at a special identity of the people with the tortoise and fishing equipment. However, there seems to be no exclusive use by one

Fig. 8 Chlorite item in the shape of a goose or duck head.

Fig. 9 Decorated bone item with representations of scorpions, some kind of insect and possible representations of (cat-) fish found in Grave M13, A87.

segment of the society. Vases with concentric circles as well as graves with tortoises and bird representations have been found in the same trenches.

Discussion

Taking the evidence from the different studies altogether, we suggest that the people of Körtik Tepe used a wide spectrum of freshwater animals and hygrophilous plants for their subsistence, personal adornments, and equipment. A mix of hunted large and small animals and wild plants seems to have provided the main calorific input. Our results thus corroborate the findings of other contemporaneous sites where an opportunistic use of plants and animals could be demonstrated (Savard *et al.* 2006; Starkovich and Stiner 2009). We suggest that the intensive, probably year-round permanent use of the site is not due to the intensive use or even cultivation of cereals as has been suggested for the Natufian of the Levant. Rather, it seems that highly valued and/or calorie-rich resources such as acorns, pistachios, Celtis, and probably almonds, as well as easy to catch small animals like tortoises or fish, contributed to the diet. The rich and diversified environment made the site attractive for a permanent settlement. A specialization on cereals could not be observed so far. The interpretation of plant remains has long been biased by our modern perspective, where the focus on cereals as one of the basic nutritional elements has been projected onto the past (Olszewski 2004).

Microwear analyses on the grinding and pounding tools from Körtik Tepe could further elucidate which plants were ground. Concerning small game, fish have especially been a neglected resource because sampling methods for a systematic analysis have

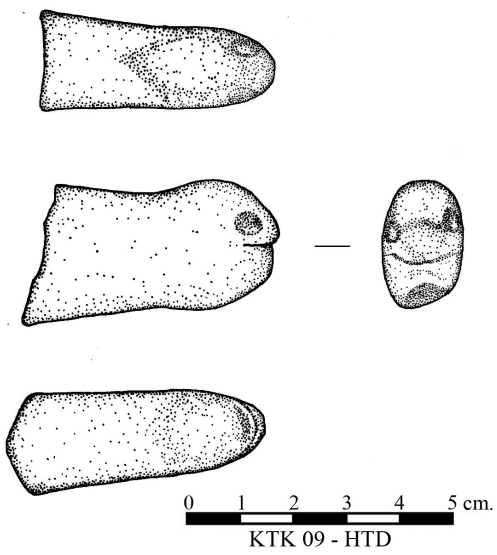

Fig. 10 Chlorite item, which might represent a tortoise head.

been insufficient (*e.g.* Starkovich and Stiner 2009: 50). Even if their quantitative contribution to the diet and their social role for the inhabitants of Körtik Tepe were of minor importance, they were probably a valuable addition to the diet. Pathological findings, such as auditory exostosis, hint at prolonged exposure to water, possibly by fishing or collecting other aquatic resources (Frayer 1988; Standen *et al.* 1997; Özbek

2005: 42-45; Erdal and Koruyucu n.d.). Furthermore, dental grooves could result from preparing fibers for nets or other fishing equipment.

As far as it is possible to conclude from the distribution of artifacts, a specialization on fishing by some inhabitants did not exist. Fishing with a pole was not a very developed technology, either. However, fish remains have to be sampled systematically to consider the importance of fish and other possible technologies for fishing. Although tortoises might have been eaten as it has been recorded for the nearby contemporaneous site of Hallan Çemi (Starkovich and Stiner 2009: 58), the use of the tortoise shell to indicate a special social identity has been restricted obviously to a few individuals. The comparison with other sites where tortoise shells have been found in a burial (Grosman *et al.* 2008) suggests that the role of these individuals might have been in the ritual shamanistic sphere. However, at Körtik Tepe children were also endowed with tortoise shells, therefore, a shamanistic identity seems rather improbable.

Conclusion

Although there was no "domestication of water", no installations such as dikes, footbridges or fishing ponds, the evidence discussed above suggests that permanent water and its related resources made the site attractive for a permanent living near the Batman Creek and Tigris River and contributed to its success. Burial remains hint at a highly differentiated social community with many richly endowed burials. Obviously, the different social identities had to be demonstrated by personal items and body decoration (in its widest sense). Despite similarities with other contemporaneous sites, the people of Körtik Tepe developed their own iconographic repertoire. They seem to distinguish themselves from the other people in the region, although they took part in wide exchange networks of obsidian and of other exotic materials such as serpentine (Özkaya 2009).

However, within their own village access to aquatic resources does not seem to have been restricted to a certain group. If there was a commodification of resources (*sensu* Gebel 2010), it did not show up in the economic realm of aquatic resources or access and use of water but rather in the personal and ritual/ideological sphere with the tortoise burials and body decoration. Fish obviously did not play an important role for the demonstration of social identities. They do not show up – or if so only rarely – in the symbolic repertoire of the site, and the fish vertebrae, which might have been used as beads, are of a negligible quantity compared to other ornaments. In contrast, tortoise shells and probably the feathers of birds/waterfowl were used to demonstrate a personal – and more probably – a certain group identity. The burials with tortoise shells are distinct from other symbolic repertoires, such as the concentric circles and goats. However, the distinction was neither gender- nor age-specific. Future studies are necessary to clarify this matter, whether a distinction is, for example, also reflected in a different kind of subsistence or provenance.[4]

These trends will be verified by systematic and detailed studies of the fish bones and microfauna to gain more information on subsistence practices at Körtik Tepe. Morphometric studies of small game could contribute as much to questions of subsistence as will do systematic isotopic studies. The shift of focus on the opportunistic behavior of early Holocene hunter-gatherers avoids projecting the importance of cereals onto the past and contributes to a better understanding of the process of sedentarisation and commodification of resources and material culture during the Early Holocene.

Notes

[1] We use the term *Pre-Pottery Neolithic A* (PPNA) as a chronological term, being aware of the cultural differences between the PPNA of the Levant and southeastern Anatolia, and despite the fact that neither domestication of plants nor of animals could be demonstrated at Körtik Tepe and despite the Epipalaeolithic character of the flint and obsidian remains. The more appropriate term of *Protoneolithic* as it has been suggested by several authors (Schyle 1996; Benz 2000; Aurenche *et al.* 2001) could not be established in the scientific community. The term *Round House Phase* (*cf.* Savard *et al.* 2006) is not used either because it uses a constructional specificity which also occurs in other prehistoric periods.

[2] The archaeobotanic, a-DNA, and isotopic analyses are part of a cooperative project between Marion Benz, Department of Near Eastern Archaeology, Freiburg, Kurt W. Alt, Institute of Anthropology (AG Alt), Mainz, and PD Dr. Simone Riehl and Dr. Katleen Deckers, Archaeobotany of the University of Tuebingen. We owe our thanks to the German Research Foundation for financial support of the project (BE-4218/B1-2; AL287/9-1). We are grateful to Vecihi Özkaya and the Körtik Team for their cooperation and for the permission to study the material.

[3] An older settlement period with round buildings dug into the sediments with post holes has been identified in a test deep cut during the 2010 season. However, the excavated surface is too small to conclude anything about fishing so far during this earliest settlement periods.

[4] The only possible, but much debated representation of a turtle/tortoise stems from the later MPPNB site of Nevalı Çorı, on the Euphrates (Hauptmann 1999).

[5] Familial relationships might have played an important role, but unfortunately DNA is preserved too poorly for systematic analyses of this kind.

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