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AN EXTENDED BROAD SPECTRUM OF PAPERS
PRESENTED TO LEENDERT LOUWE KOOIJMANS

EDITED BY

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An eagle-eyed perspective. *Haliaeetus albicilla* in the Mesolithic and Neolithic of the Lower Rhine Area.

Luc Amkreutz
Raymond Corbey

15.1 INTRODUCTION

Next to his successful career in archaeology, one of Leendert Louwe Kooijmans' various less conspicuous qualities is that of being a talented amateur-ornithologist. On numerous occasions he has outmatched others in specifying what flew by, or sang unseen. His interest in birds, however, is not confined to the present. One of his archaeological pet-tricks is to ask his audience to guess what species of bird ranks second in presence-absence counts on Mesolithic and Neolithic sites in the Lower Rhine Area after the wild duck (*Anas platyrhynchos*). The answer, the white-tailed eagle, has almost always puzzled his audience and often sparked discussions on an aspect of hunter-gatherer or early farmer life in the Lower Rhine Area of which we know little: the symbolic connotations of objects and animals. Such exchanges have never failed to be inspirational, and were sparked off by an animal with inspirational qualities. The white-tailed eagle has almost always taken center-stage wherever it occurs.

The consistent presence of bones and claws of white-tailed eagles at many Mesolithic and Neolithic sites in the Lower Rhine Area may offer a window not so much onto this raptor's importance to diet as onto less tangible aspects of past life. We would like to take this opportunity to investigate the existing archaeological evidence and try to elucidate some of this bird's symbolic meaning for past communities with the help of ethnographic and archaeological sources.

15.2 AN ORNITHOLOGICAL PROFILE OF *HALIAEETUS ALBICILLA*

The white-tailed eagle is an impressive bird of prey, its fingered wings spanning *circa* 225 cm. Its massive in-flight profile led the Dutch to lend it the rather befitting popular name of 'flying door' (*vliegende deur*) (fig. 15.1). Young birds are of an overall brown colour, tail included. Adult animals have a dark brown coat of feathers with slightly lighter ochrous colours around the neck and head. The short and wedge-shaped tail of adult animals is white, the large beak bright yellow, and the talons are uncovered. The white-tailed eagle can also be recognized by its loud, high-pitched call, a sound akin to *kjicklickleak-tjegjegow*, or, when agitated, *kra* or *krau*. The bird is indigenous to Europe as well as large parts of Asia, both as a migratory and local



Figure 15.1 Young white-tailed eagle in flight. Photo and courtesy René and Marianne Wanders.

species. Couples only start nesting at the age of 5 or 6, once a year between March and July. Nests are built on rocky cliffs or in trees with a flat crown and usually contain two white eggs. The same nests may be used for up to several years in succession.

The hunting territories of the white-tailed eagle are usually close to water and include rocky coasts, coastal plains, river mouths, marshes and estuaries, as well as more inland riverine settings. Prey is captured by diving and clawing and comprises larger fish, both living and dead, waterfowl, marine birds, rodents and other small mammals. Dead animals are scavenged on land (Elphick/Woodward 2003; Cramp 1977, cited in Oversteegen *et al.* 2001, 255; Rohm 1970; Van Wijngaarden-Bakker *et al.* 2001, 220) (fig. 15.2).

In the Netherlands the white-tailed eagle is very rare nowadays and mostly encountered when migratory from December to February. This is why the species is used by archaeologists as a seasonal indicator for occupation, as demonstrated at the Late Mesolithic Hardinxveld sites (Oversteegen *et al.* 2001, 256; Van Wijngaarden-Bakker *et al.* 2001, 223). This winter presence does not exclude the possibility that in the past the white-tailed eagle may also have nested in the Lower Rhine Area (Van Wijngaarden-Bakker *et al.* 2001, 221). In 2006 and 2007 a pair of white-tailed eagles nested in the region of the Oostvaardersplassen



Figure 15.2 White-tailed eagle on top of prey (young red deer). Photo and courtesy Martijn de Jonge, Amsterdam.

(Flevoland). A webcam placed next to the nest by Staatsbosbeheer, the Dutch national forestry service, registered how in March 2007 several eggs were laid in the nest and how one female bird survived and left the nest in July. Therefore it should be realized this bird can only be used with caution as a seasonal indicator species.

15.3 MESOLITHIC AND NEOLITHIC EAGLES IN THE LOWER RHINE AREA

As was remarked already, remains of white-tailed eagle are found in many faunal assemblages dating to the Mesolithic and Neolithic in the Lower Rhine Area (table 15.1 and fig. 15.3). Its contribution to the avian faunal assemblage is mostly limited. In a few cases it surpasses 5%, but this is mainly due to overall low numbers of bird bones encountered. Sometimes, however, bones of the species are found in higher numbers and form a considerable contribution to the overall assemblage, most notably at Vlaardingen, Hardinxveld-Giessendam Polderweg phase 1, and Húde I in Germany. At such sites these eagles seem to have been targeted more specifically.

Were these birds primarily hunted for subsistence or for other reasons? Many authors argue at least partially in favour of the latter, often referring to their impressive appearance (*e.g.* Laarman 2001; Van Wijngaarden-Bakker *et al.* 2001; Zeiler 2006). Albarella (1997, 348) adds that the meat of cranes and large birds of prey is not very tasty and quotes a seventeenth century English writer, who dismisses it as “tough, gross, sinewy and engendering a melancholic blood.” Clark (1952, 38), on the contrary, remarks that the flesh of eagles was regarded as a delicacy by both the Ukrainians and the natives of Kamchatka during the eighteenth century. He deems it unlikely, however, that Mesolithic man caught white-tailed eagles with the primary aim of eating them, given the availability of birds more prone to capture. Both Albarella (1997, 348) and Reichstein (1974, 124) point out that the meat of *young* eagles and cranes was regarded a delicacy, and there are historic records of its use in wedding feasts in England (Stewart 2001, 142) At the site of Húde I several bones of young sea eagles have been found (Boessneck 1978, 164).

Unfortunately there is little archaeological evidence that may shed light on the use of white-tailed eagle in the

site	period	N	% total bird	% total id.	MNI	reference
Mesolithic						
<i>Hardinxveld-Polderweg phase 0</i>	LM	1	8,3	14,3	1	Van Wijngaarden-Bakker et al. 2001
<i>Hardinxveld-Polderweg phase 1</i>	LM	30	2,7	5,7		Van Wijngaarden-Bakker et al. 2001
<i>Hardinxveld-Polderweg phase 1/2</i>	LM	1	0,5	1,4	1	Van Wijngaarden-Bakker et al. 2001
<i>Hardinxveld-Polderweg phase 2</i>	LM	1	1,7	2,7	1	Van Wijngaarden-Bakker et al. 2001
<i>Hardinxveld-De Bruin phase 1</i>	LM	–	–	–	–	Oversteegen et al. 2001
<i>Hardinxveld-De Bruin phase 2</i>	LM	9	1,6	2,3	–	Oversteegen et al. 2001
<i>Hardinxveld-De Bruin phase 3</i>	LM	2	0,6	1,6	–	Oversteegen et al. 2001
Neolithic						
<i>Hoge Vaart-A27</i>	SWB	8	–	2,9	–	Laarman 2001
<i>Brandwijk-Het Kerkhof</i>	SWB	1?	3,45	4,3	–	Lauwerier et al. 2005; Robeerst 1995
<i>Bergschenhoek</i>	SWB	3?	–	6,8	–	Clason/Brinkhuizen 1993
<i>Swifterbant-S3</i>	SWB	6	0,2	–	–	Zeiler 1997
<i>Hüde I</i>	SWB	62	22,5	23,7	9	Boessneck 1978
<i>Ypenburg</i>	Haz-3	23	0,2	1,5	–	De Vries 2004
<i>Rijksweg A4</i>	Haz-3	1	2	5	1	(Laarman in:) De Vries 2004
<i>Schipluiden-phase 1 handpicked</i>	Haz-3	2	–	5	–	Van Gijn 2006; Zeiler 2006
<i>Schipluiden-phase 1-2a handpicked</i>	Haz-3	4	–	2	–	Van Gijn 2006; Zeiler 2006
<i>Schipluiden-phase 2a handpicked</i>	Haz-3	14	–	1	–	Van Gijn 2006; Zeiler 2006
<i>Schipluiden-phase 2b handpicked</i>	Haz-3	5	–	< 0.5	–	Van Gijn 2006; Zeiler 2006
<i>Schipluiden-phase 3 handpicked</i>	Haz-3	2	–	< 0.5	–	Van Gijn 2006; Zeiler 2006
<i>Hazendonk</i>	VL	1	0,1	–	1	Zeiler 1997
<i>Hekelingen III-MI</i>	VL	2	3,1	6,4	–	Lauwerier et al. 2005; Prummel 1987
<i>Vlaardingen</i>	VL	23	–	17,8	8	Lauwerier et al. 2005; Clason 1967
<i>Zandwerven</i>	VL	1	–	7,1	1	Clason 1967
<i>Hellevoetsluis</i>	VL	1	–	–	1	Van Hoof in prep.
<i>Bouwlust</i>	TRB	+	–	–	–	Lauwerier et al. 2005
<i>Emmeloord-J97</i>	SWB-LN	1	12,5	25	1	Bulten/Van der Heijden/Hamburg 2002
<i>Mienakker</i>	LN/SGC	+	–	–	–	Lauwerier et al. 2005
<i>Molenkolk 1</i>	LN/SGC	+	–	–	–	Lauwerier et al. 2005
<i>Keinsmerbrug</i>	LN/SGC	+	–	–	–	Lauwerier et al. 2005
<i>Aartswoud</i>	LN/SGC	1	< 0.01	–	1	Van Wijngaarden-Bakker 1997
<i>Kolhorn-Noord</i>	LN/SGC	6	c. 0.9	–	–	Zeiler 1997/Lauwerier et al. 2005
<i>Kolhorn-Zuid</i>	LN/SGC	2	c. 0.2	–	–	Zeiler 1997/Lauwerier et al. 2005
total/mean		207	1,95	4,43		

Table 15.1 Numbers of bones and percentages of overall and identified species of birds for white-tailed eagle on Mesolithic and Neolithic sites in the Lower Rhine Area. - = absent; + = present; ? = *Aquila* sp., *Haliaeetus* sp., or *Accipitridae* sp.

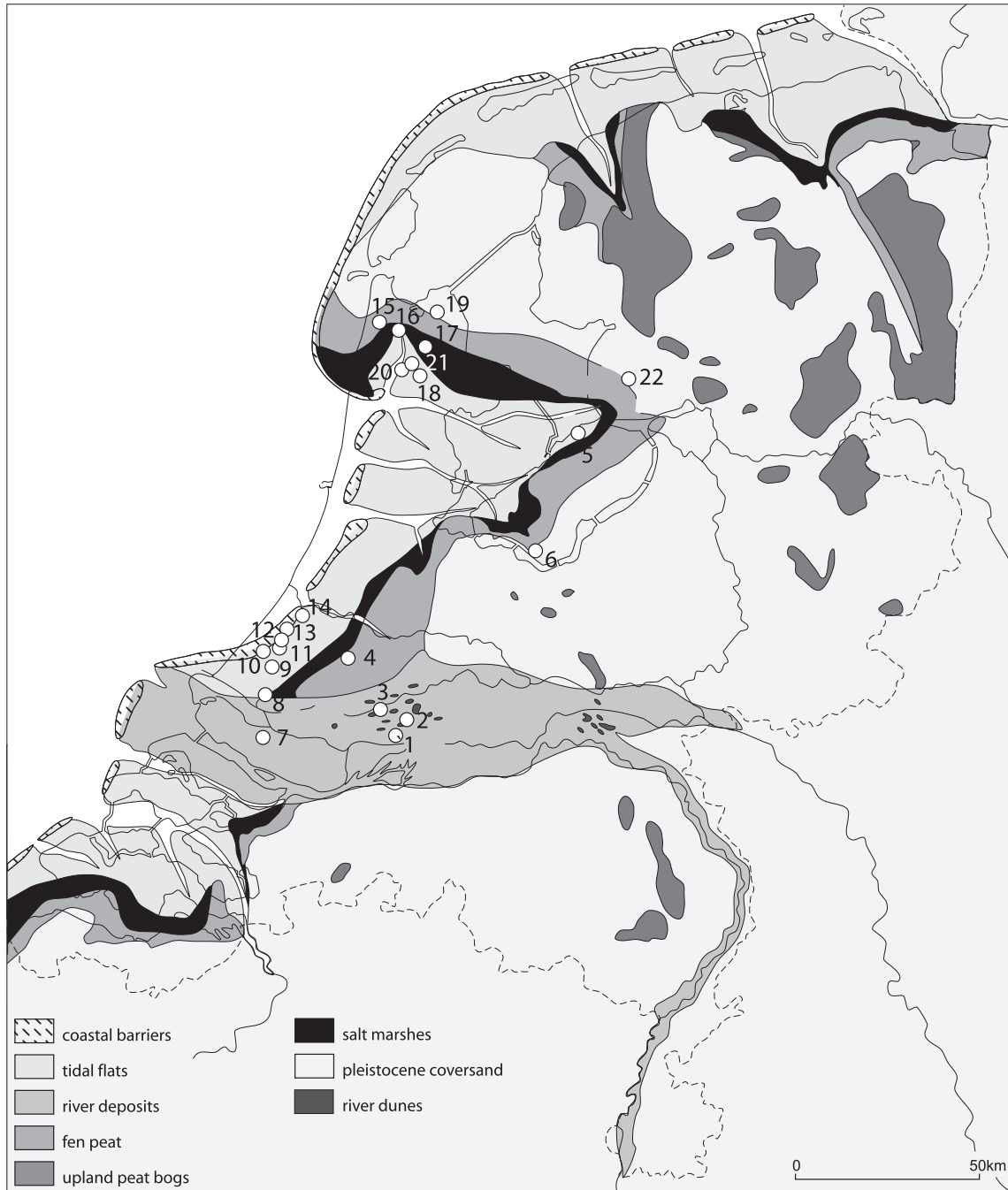


Figure 15.3 Map of the Netherlands around 4200 cal BC depicting sites with bones of white-tailed eagle, except for the German site of Hüde-1.

- | | | |
|-------------------|-----------------|---------------|
| 1 Hardinxveld | 9 Schipluiden | 17 Aartswoud |
| 2 Hazendonk | 10 Wateringen-4 | 18 Zandwerven |
| 3 Brandwijk | 11 Ypenburg | 19 Slootdorp |
| 4 Bergschenhoek | 12 Rijswijk-A4 | 20 Mienakker |
| 5 Swifterbant-S3 | 13 Leidschendam | 21 Molenkolk |
| 6 Hoge Vaart-A-27 | 14 Voorschoten | 22 Emmeloord. |
| 7 Hekelingen-3 | 15 Keinsmerbrug | |
| 8 Vlaardingen | 16 Kolhorn | |

Mesolithic and Neolithic communities under study here. If organic remains are preserved these may not represent the initial composition, due to differential taphonomic processes at the sites. Elements such as feathers are usually not preserved, while complete wings or claws are often no longer in association. Furthermore, species-specific spatial information, indicating how and where bones of sea eagles were found, and which thereby might shed light on functional (waste) or symbolic deposition practices, is generally absent.

15.3.1 Frequency analysis

Some information on use may be gleaned from the frequencies of certain skeletal elements. Drawing on Ericson (1987), Van Wijngaarden-Bakker *et al.* (2001, 222) argue that for birds a specific ratio between wing and leg elements may point to consumption. While natural complexes would be characterized by a more or less equal ratio, consumption waste would be indicated by a predominance of wing over leg elements, with the exception of flightless birds. Predominating quantities of wing bones are here regarded as waste from consumption (Livingston 1989; Zeiler 2006).

Others (*e.g.* Reichstein 1974; De Vries 2004) argue that a predominance of wing elements may point to the use of feathers or even complete wings. It should be noted that Reichstein founded his opinion on an analysis of nine sites spanning some three millennia, from the Late Neolithic to early historic times. Evidently the reasons for the predominance of wing bones need not have been the same in all cases. In addition to this, bone frequencies are contingent

upon robustness of bones, differing per species, as is stressed by Livingston (1989, 545-546). The picture is further complicated by butchering and waste disposal practices, taphonomic regimes, and the overall area excavated, as well as socio-cultural attitudes towards specific species, cuisine and food preparation.

The analysis of bone frequencies is thus fraught with methodological problems. Nevertheless it may shed some light on past behaviour towards specific species of birds. Of the sites with remains of white-tailed eagle presented above, several have yielded information regarding bone frequencies (table 15.2).

The ratio between leg and wing elements can be seen to differ strongly per site. This contradicts Reichstein's (1974, 124-126) argument that procurement was specifically targeted at obtaining wings. On the other hand the alternative of regular consumption is equally questionable. Reichstein (1974, 126) argues that in a natural assemblage the ratio between wing and leg elements should be 93:70, or 4:3. If we take into account the arguments presented by Van Wijngaarden-Bakker *et al.* (2001) and Ericson (1987), there should be an overrepresentation of wing elements. This is the case at just five sites, while the overall counts closely approximate the natural population.

Furthermore, the ratio varies strongly. While there is a slight overrepresentation of wing elements at Ypenburg, this is far more extreme at Vlaardingen and especially at Polderweg phase 1, possibly implying that wings or feathers may have been important after all. Conversely, at six sites, leg elements dominated over wing elements, most convincingly at

site	legs					wings					other	leg/wing ratio				
	fe	tit	tmt	lbl	other	hu	ra	ul	mc	cmc			cor	sc	lbw	other
<i>Hdx-Polderweg phase 0</i>											1				-/1	
<i>Hdx-Polderweg phase 1</i>	1	1				1	8	7		4	1	1		1	5	2/23
<i>Hoge Vaart-A27</i>			2					1							5	2/1
<i>Brandwijk</i>			1													1/-
<i>Hüde I</i>	3	11	12		1	4	4	11		3	2	2			9	27/26
<i>Hazendonk</i>					1											1/-
<i>Schipluiden</i>				4	13								8		2	17/8
<i>Ypenburg</i>		1			8	4	3	6			1					9/14
<i>Rijswijk A4</i>	1															1/-
<i>Vlaardingen</i>	1	2				8	5	3	2		1				1	3/19
<i>Zandwerven</i>								1								-/1
total	6	15	15	4	23	17	20	29	2	7	6	3	8	1	22	63/93

Table 15.2 Wing and leg elements per site and the ratio between leg and wing elements. Abbreviations: fe: femur; tit: tibiotarsus; tmt: tarso-metatarsus; lbl: long bone leg; hu: humerus; ra: radius; ul: ulna; mc: metacarpus; cmc: carpometacarpus; cor: coracoid; sc: scapula; lbw: long bone wing. For references see table 1.

Schipluiden and Hùde I. Remarkably, Schipluiden yielded a similar pattern for the common crane (*Grus grus*), diverging from for example the assemblage of crane at Ypenburg, where, again, wing elements dominate (De Vries 2004; Zeiler 2006, 440). The site of Hùde I indicates that this pattern is not unique, as its ratio cannot be aligned with consumption or preferential selection. It is possible that at these sites the talons or claws of the white-tailed eagle were sought-after elements. This may be evidenced by the predominance of phalanges at Schipluiden (Zeiler 2006, 428), or the burnt talon of *Haliaeetus* at the Hazendonk (Zeiler 1997), and is further substantiated by cutmarks on a claw-joint of white-tailed eagle from the Mesolithic site of Hallebygaarde and four eagle claws in a south-Swedish grave dating to the transition from the Late Neolithic to the Early Bronze Age (Clark 1952, 39).

Although the numbers of bones at some sites are very limited, some preliminary conclusions can be drawn. First of all, while wings and feathers may have been important this does not seem to be an exclusive pattern. Secondly, the overall ratio between wing and leg elements does not represent an evident dominance of wing elements in light of the natural ratio. The ratio per site fluctuates strongly, while at some sites leg elements clearly dominate. This confirms neither the natural situation nor a consistent consumption spectrum. Therefore, despite the limited number of sites and bones and taking into account the problems mentioned above, the bone ratio presents secondary evidence indicating that the white-tailed eagle was indeed not merely hunted for subsistence, but at least partially if not significantly for other reasons. The fluctuation in ratio may relate to site or period-specific preferences. Unfortunately, further archaeological evidence for the nature of this use is limited.

15.3.2 Artefacts

Several sites have yielded artefacts made of bones of white-tailed eagle (table 15.3).

Clearly long wing bones were most often used to make awls or needles, although in two cases legbones were used. Van Wijngaarden-Bakker (1997) analysed the birdbone artefacts from several Neolithic assemblages in the western Netherlands. She concludes that bones of larger bird species – mainly swan, crane and white-tailed eagle – were specifically targeted for the production of artefacts. While it may seem self-evident that these species were used because of their longer bones, at Aartswoud and Swifterbant the remains of these species were conspicuously lacking from the food remains (Van Wijngaarden-Bakker 1997, 342-343). This seems to be related to the importance of duck hunting for subsistence. At other sites, such as the Hazendonk, Hekelingen III, Bergschenhoek and Vlaardingen, these larger species of bird did occur within the consumption assemblage. Here, hunting was more strongly targeted at species such as swan and goose.

Nevertheless at several sites there thus seems to be some evidence for a more specific use of a number of the larger species of bird for the production of artefacts. At Bergschenhoek this was further evidenced by the find of a partial skeleton of Bewick's swan (*Cygnus Bewicki*), lacking head, wings and legs, *i.e.* specifically bones used for artefact production (Clason/Brinkhuizen 1993). The awls were usually made by removal of at least one of the epiphyses and in some cases a splitting of the long bones. One of the ends was subsequently rounded or worked to a point (Louwe Kooijmans *et al.* 2001b, 356). The subsequent polishing may have been done by means of hide or leather (Van Gijn 2006). Some of the awls are perforated at the opposite end. Usewear analysis of the often rounded points indicates a working of soft materials, rather than a tool for repairing nets (Louwe Kooijmans *et al.* 2001b, 356). Van Wijngaarden-Bakker (1997) suggests that they may have been used to pierce bird skins.

Next to more domestic functions awls may have been used for tattooing, as is suggested by ethnographic evidence

site	findnumber	phase	element	artefact	surface
<i>Hdx-Polderweg</i>	24,069	1	hu	–	polished, scratched
<i>Hdx-Polderweg</i>	14,299	1	ra	awl	polished, scratched
<i>Hdx-Polderweg</i>	20,246	1	ul	awl	polished
<i>Hdx-De Bruin</i>	9,110	2	tbt	pendant?	perforated, polished
<i>Hdx-De Bruin</i>	7,002	2	ul	awl	polished
<i>Hdx-De Bruin</i>	8,037	2	ul	awl/needle	
<i>Hdx-De Bruin</i>	5,147	2	ul	tool	polished around point
<i>Schipluiden?</i>	8091		lb	beads	cutmarks
<i>Aartswoud</i>	E34:XLI:17.29		tmt	awl	polished, scratched

Table 15.3 Artefacts of bones of white-tailed eagle on Mesolithic and Neolithic sites in the Lower Rhine Area. For references see table 1.

(*ibid.* 1997, 343). The beautifully decorated awl made from a longbone of a mute swan (*Cygnus olor*) found at Hardinxveld-Giessendam De Bruin (Louwe Kooijmans *et al.* 2001b, fig. 10.15, 355), may indicate that these tools were more than just everyday domestic objects. The same may go for the pendant found at De Bruin and the beads documented at Schipluiden, although the latter are not indubitably derived from *Haliaeetus albicilla*. Van Wijngaarden-Bakker (1997, 343) further mentions hollow tubes of bird bone. While none of these could be specified as *Haliaeetus* they may have been used for such activities as the sucking, sniffing, blowing of powdered substances, or blow painting.

Besides bone ratios and artefacts there is no direct archaeological evidence for the use of body parts of white-tailed eagle. It is very probable, and indeed widely assumed, however, that its feathers, especially the elegant pinions and tail feathers, were used for the manufacture of arrows as well as for decorative or symbolic purposes, not least on the basis of ethnographic evidence (*e.g.* Clark 1952; Van Wijngaarden-Bakker 1997 Zeiler 2006; Dove *et al.* 2005; see below). No feathers have been found in the Lower Rhine Area. However, the site of Hùde I yielded a peculiar case of trauma, *periostitis ossificans*, found in the area of the quill knobs of an ulna of a female white-tailed eagle. According to Boessneck (1978, 165) this could have developed due to the pulling of feathers. Boessneck also argues that for multiple 'harvests' the bird would have had to be held in captivity. This again brings Kazakh (Central Asia) hunting with tame eagles to mind, but alas, here we end up in pure speculation.

15.3.3 Other species

It is evident that, besides white-tailed eagle, other rare bird species were also actively pursued by Mesolithic and Neolithic hunter-gatherers. While this does not provide any additional information on their actual use, it is a further case in point that beside 'staple species' rarer species were also actively targeted. It concerns quite a few species of birds of prey (Boessneck 1987; Lauwerier *et al.* 2005; Oversteegen *et al.* 2001; Prummel 1987; De Vries 2004; Van Wijngaarden-Bakker *et al.* 2001), such as the sparrow hawk (*Accipiter nisus*), the common buzzard (*Buteo buteo*), the eagle owl (*Bubo bubo*), the long-eared owl (*Asio otus*), the osprey (*Pandion haliaeetus*), the goshawk (*Accipiter gentiles*), the falcon (*Falco peregrinus*) and the marsh harrier (*Circus aeruginosus*), whose wing bones were found at Schipluiden (Zeiler 2006). Other more or less rare species which hypothetically may have been hunted for other purposes besides, or rather than, subsistence include the common crane (*Grus grus*) (De Vries 2004, 33-34), the grey heron (*Ardea cinerea*), the ruff (*Philomachus pugnax*), the great spotted woodpecker (*Dendrocopos major*), the blackthroated diver (*Gavia arctica*), the greater flamingo (*Phoenicopterus ruber*) and the long-

tailed duck (*Clangula hyemalis*) (*e.g.* Van Wijngaarden-Bakker *et al.* 2001; Lauwerier *et al.* 2005; Zeiler 2006). It should be mentioned that such species may represent background fauna, especially when occurring in low numbers.

15.3.4 Preliminary conclusions

While the evidence provided here is not exhaustive some preliminary conclusions may be drawn. The white-tailed eagle indeed seems to provide a consistent, though limited, contribution to the avian faunal spectrum at Mesolithic and Neolithic sites. While it is not unlikely that the species was hunted for meat, the bone ratios of wing and leg elements indicate strikingly varied assemblage composition, most of which represent neither a natural nor a subsistence pattern. In some cases, the composition provides secondary evidence for specific targeting of wing or leg elements.

It should be stated once more that the value of this conclusion is dependent on often small assemblages, and site-specific preservational circumstances and excavation methods, as discussed already. Further evidence of non-subsistence use of *Haliaeetus albicilla* is provided by bone artefacts. Awls point both to use in various domestic tasks as well as perhaps more sporadic symbolic uses, while pendants or beads may have had a specific symbolic function. The presence of other rare species may point to non-subsistence motives for hunting certain species of bird too. Unfortunately, archaeological evidence enabling further clarification of such motives is largely lacking for the Lower Rhine Area. This is why, in the second part of this paper, we will draw on other archaeological and various ethnographic sources that may further elucidate the specific meaning *Haliaeetus albicilla* may have had for the communities under consideration here.

15.4 THE ARCHAEOLOGY OF EAGLES BEYOND THE NETHERLANDS

At the Italian Middle Bronze Age site of La Starza in Campania, bones of crane and vulture suggest that these species were mainly hunted for their feathers, since other wildfowl, which must have been present in region in much larger numbers, are largely absent (Albarella 1997, 347). Similarly to eagles, both cranes and vultures are known for their huge feathers which may have had symbolic, ceremonial or aesthetic value. Another example of the importance of birds is provided by Bronze Age hollow ceramic bird statues from the Lausitz culture. Although the species are often not identifiable it is evident that waterbirds are most often the subject of this type of imagery (Quietzsch-Lappe 2007).

This image is further substantiated by burial finds from Middle Neolithic Ajvide in Sweden and Mesolithic and Neolithic Zvejnieki in Latvia. At these sites birds played an important role in mortuary practice (Mannermaa 2008).

Beads and pendants were fashioned from the wing bones of waterbirds and decorated the body or burial dress. Figurines were also found. Apart from these species the jay (*Garrulus glandarius*) may have been used regularly and might even have been a totem animal. Water birds seem to have played an important role possibly indicative of their symbolic status of travelers between both worlds (water and air). Ethnographically the ability to fly and dive is central to the tripartite universe of sky, earth and underworld of circumboreal belief systems and certain species of birds were even regarded as shaman's helpers (Mannermaa 2008). At the well-known Mesolithic burial site of Oleniy ostrov, the osprey (*Pandion haliaeetus*) is most often found in burials (*ibid.*). At the Estonian Early Neolithic site of Tamula golden eagle and capercaillies were more important. The site also yielded a bird figurine that was found in the grave of a child. Wing bones of cranes were placed at both hands (Kriiska *et al.* 2007, cited in Mannermaa 2008).

Specific evidence for white-tailed eagle is very abundant from various Neolithic monuments in Britain. Bones of large birds were discovered in the early 19th century already, for example in the King Barrow longmound, the Knook pavement and the Old Ditch Long barrow in Wiltshire. More recent excavations and better means of identification suggest that these bones, sometimes identified as heron in the past, probably belonged to crane or white-tailed eagle (Field 2006, 5). The southern ditch at Coneybury Henge near Stonehenge contained the deposition of part of a white-tailed eagle (*ibid.*) and the Orcadian chambered tombs of Midhowe and Knowe of Ramsay yielded eagle bones too. Furthermore a sea eagle was placed spread-eagled in the closure deposits of the Links of Noltdland settlement, also in the Orkneys (Jones/Richards 2003).

Most suggestive of the importance of white-tailed eagle however is the well-known Neolithic tomb of Isbister, also known as 'Tomb of the Eagles'. In this tomb the remains of at least fourteen white-tailed sea eagles sat among the remains of both humans and animals (Hedges 1984; Jones 1998). Some remains of white-tailed eagle were found in the foundation deposit of the Isbister tomb as well as other tombs. While initially interpreted as midden material, it now appears that specific parts of animals were selected for these foundation deposits. In the case of the eagles, this mainly concerns skulls, wings and claws. Quite a number of sea eagles were placed fully articulated in the central chamber (Jones 1998, 311-312).

Instead of regarding these deposits as sacrificial offerings, funerary feasting or totemic practices secondary to the main function of the tomb, Jones (1998, 309) ascribes a more primary function to them, related to the location of the tomb. Remarkably, sea eagles are almost exclusively deposited in chambered tombs located in high coastal and cliffside

locations. This indicates that animals may be linked to places according to topographic and symbolic principles. Within a specific conceptual map, birds may represent 'sky' and can be associated with flight and the metaphysical status of the soul. Furthermore, the difficulty in obtaining species such as the white-tailed eagle may act as a statement on the power relations involved in their procurement (Jones 1998, 315). This Late Neolithic example thus draws out further connections between sea eagles, the dead, high places and the spiritual, whilst simultaneously stressing the importance of place and the difficulties and skill involved in their capture.

In addition to the aforementioned Late-Neolithic examples, the importance of eagles and other birds of prey is evidenced from older archaeological sites. One remarkable example is the recovery of ancient feather fragments, mainly used in fletching arrows or darts, from melting ice patches high up in the mountains of southern Yukon, Interior Alaska. While these feathers, including those of bald or golden eagles, date to c. 2500 cal BC, other artefacts go back as far as c. 6500 cal BC (Dove *et al.* 2005). The specific use of non-food birds such as falcons and eagles for these artefacts indicates not only functional, but also symbolic or decorative use, and specific evidence for notched and worked specimens does so too. In recent times, Salish and Tlingit hunter-gatherers of the Pacific North-west Coast singled out specific species such as eagles for their supernatural and ceremonial significance. Eagle feathers were specifically used on arrows intended for big game, while feathers of hawk or raven were used for smaller game and waterfowl (O'Brien 1997, cited in Dove *et al.* 2005). It is likely that by doing so the hunter in this way endowed the arrow with some of the death-dealing qualities of the bird. Fletchings thus appear not to have been purely utilitarian, and recent symbolic practices may have been rooted in the ancient past (Dove *et al.* 2005, 42).

A final example takes us back even further, to the Late Palaeolithic Magdalenian occupation of southern France. The avifauna of the Grotte de Bourouilla in the Pyrénées Atlantiques included the bones of over 53 Snowy owls (*Nyctea scandiaca*). In contrast with bones of other species many of these bones showed signs of skinning and other modification. The scraping, cutting and scorch marks were not aimed at obtaining the meatier parts of the birds but seemed to focus on the procurement of skins, feathers, tubular bone shafts and claws, as was also evidenced by assemblages from other caves (Eastham 1998, 103). There seems to have been a preference for female birds at Bourrouilla, which may be related to differences in plumage (*ibid.* 99). The culling of these animals therefore seems to have been mainly for non-subsistence purposes. As with eagles, this may have involved a combination of functional and symbolical roles, richly documented in ethnography and comprising for instance feather decoration, the fabrication of

various containers, flutes, beads, tubes and needles, as well as the use of skin, claws, wings and beaks (cf. *infra*; Clark 1952; Dove *et al.* 2005).

15.5 AN ETHNO-ORNITHOLOGICAL NOTE

Ethno-ornithology, like ethnozoology and ethnobotany, is a branch of ethnoscience, the study of indigenous systems of classification. It may seem slightly preposterous to use this concept in connection with archaeological material because archaeologists do not have the same richness of data at their disposal as field ethnographers do. Gregory Forth, for example, studied in minute detail over a period of some fifteen years how the Nage people of Flores (Indonesia) classify birds and give them a chosen place in their cosmology and social practice (Forth 2004; cf. Boomert 2001 on Amazonia). Yet, as we show below, ethno-ornithological analogies do provide useful circumstantial evidence, and can be quite helpful in elucidating the uses of the Dutch sea eagle remains.

When one delves into the available literature on eagle iconography and symbolism it becomes immediately apparent that various eagle species have played major roles in many cultural contexts throughout history. Let us first consider the European tradition, in which eagles loom large symbolically. In the *Odyssey* and the *Iliad*, both dating to c. 800 cal BC and describing events taking place some 500 years earlier, the eagle is interpreted as the messenger and envoy of upper God Zeus. It is associated with thunder and lightning (referring to its capacity for speedy dives) and the sun (related to its ability for flying at high altitudes, sharp sight and capacity for staring directly into the sun). The eagle also figures at least twenty times in the Bible and later on resurfaces several times in the Christian tradition, associated with God himself. It fulfilled a comparable role in the lore, religion and myths of the Babylonians, Assyrians, Hittites and Phoenicians between 2400 and 500 cal BC. The eagle, the king of birds, was the bird of kings, gods and rulers (Lemaire 2007, 81 ff.).

Eagle imagery was also adopted by Roman legions and emperors, and appears in Vergil's epic *Aeneis* as well as in the *Physiologus*, a second-century didactic and moralizing text on animals and nature. Vikings, medieval aristocrats, Russian tsars, Prussian emperors, and German National Socialists adopted the eagle. It occurs in Medieval bestiaries, Dantes' *Divina Commedia* and Nietzsches' *Also sprach Zarathustra* (cf. Kularov/Markovets 2004) and is still used – not least printed on money – by present-day states such as Poland, Mexico, Austria and the United States (*e.g.*, Śmiełowski 2000). Britain's Barclays Bank was urged to drop its distinctive eagle logo by employees from a Dutch bank it was trying to take over in 2007. For these employees it evoked too strongly the eagle symbol used by the Nazi

occupants of the Netherlands during the Second World War.

While eagle symbolism has clearly figured prominently in the Old World from the classical era onwards this need not necessarily be informative on the meaning of eagles in the much earlier, small-scale communities of hunter-gatherers and, subsequently, farmers of the Lower Rhine Area. Therefore a brief look at ethnographic data regarding recent small-scale, non-state societies is in order.

The prominence of eagles in (north-) American-Indian cosmologies is attested to by the number of references to this bird in the – electronically available – *Annual Reports of the Bureau of American Ethnology* between 1881 and 1933: the eagle occurs 3970 times in 54 articles. The hawk, by comparison, occurs 968 times in 51 articles, the crow 1097 times in 46 documents, and the owl 854 times in 50 articles. Symbolic dealings with eagle claws, beaks, feathers and images are frequent all over the Americas, from the far north to the far south.

Possibly the most famous of these dealings is eagle-trapping by human males hidden in pits among the Hidatsa and other Plains Indian peoples along the Missouri. "If only one or two eagles were caught, they might be released after the tail feathers had been plucked. If a larger number were caught, some of them would be killed for the wings to make fans and plume arrows", Gilbert L. Wilson, an ethnographer and Presbyterian minister who lived several years among the Hidatsa, wrote in 1928. "Three eagle tails yielded enough feathers to make one good war-bonnet, or *maicu-mapuka* (eagle-hat)" (Wilson 1928, 213). As it happens a much less well-known and less ritually formalized but striking parallel was buzzard trapping for prestige by adolescent males of St.-Geertruid, the Netherlands (Limburg), in the mid-twentieth century. They hid in concrete animal rearing troughs underneath wooden shelves upon which a dead rabbit was positioned. Maybe Leendert came across similar activities in Arnhem, where he grew up. In recent decades, the eagle has acquired pan-Amerindian significance as a symbol of brotherhood among the autochthonous peoples of the North-American continent. On the other side of the Bering Strait, eagles are equally important. Among Siberian peoples like the Yakut, Tungus, and Buryat, for example, the eagle is associated with spring, fertility and shamanism.

The widespread and emphatically positive symbolic role of eagles almost certainly has to do with perceived attributes which make the eagle a "natural symbol" in the sense of Mary Douglas (1970), or not so much "good to eat" as "good to think with" (Lévi-Strauss 1962). The first phrase points to the phenomenon that people tend to select suitable, obvious entities from their environment with which to express meanings. The second expression more specifically stresses the articulation of one's personal, family or group identity as different from that of other individuals or groups

in terms of the different animals or plants with which one claims kinship or which one flaunts as emblems. In pre-state societies such articulations of identity in terms of favoured species usually carry strong animistic connotations, with the animal as ancestor and kin, while in more complex state societies they function as totems, symbols and emblems in a usually looser, but comparable sense. Of course, this valuable analytic viewpoint somewhat reductionistically singles out just one aspect of a rich, moral and reciprocal relationship with other spiritual beings in nature.

In a case study on pigeon and friar bird among the Nage of central Flores, Gregory Forth stresses the formative role of empirical properties – morphological, behavioural, vocal – in the attribution of symbolic value to species, quite frequently in contrasting pairs, such as eagle-snake in the casuistry under consideration here. This may well explain the remarkable similarities in animal symbolism the world over (Forth 2007). Eagles soar high, display agile flight, have sharp vision and strong claws, hunt and kill skillfully, and impress by their visual splendour and sheer size. It is clearly these attributes which have promoted them to their prominent symbolic roles which, in our view, provide strong circumstantial evidence that the Dutch eagle data fit within the pattern displayed by so many cultures. In the Rhine delta, *Haliaeetus albicilla*'s territoriality, monogamous pairs and huge nests also may have provoked cultural meanings, the specifics of which are forever lost. More often than not in non-sedentary and pre-state sedentary societies, specific significant animals are connected to places in the – perceived, mythical, storied – landscape, and this may well have been the case in the Dutch Mesolithic and Neolithic, in which case the identity of spirits/birds, humans and places must have been interconnected.

In view of ethnographic evidence it is probable that not only aerodynamical properties but also metonymical associations of feathers used for fletching arrows were important. “Their efficiency was not merely mechanical,” J.G.D. Clark plausibly suggests in *Prehistoric Europe* (1965, 39), “it was also magical. The archer wished to direct the aim and increase the force of his arrow by appropriating something of the eagle’s power and keenness of vision”. Real and perceived attributes of eagles may well have been exploited by hunters in the Lower Rhine Area by their carrying claws and beaks as amulets. The Unangan of the Aleuts, for example, used to wear elegant, polychromous *chagudax*, wooden hats, decorated with bird-of-prey motives to make themselves appear as birds of prey and adopt their speed, agility and keenness of sight (Black 1991). Among the Swazi of southeast Africa, a society with a strong male rank order, only the *ingwenyama* (“king”) is entitled to wearing eagle feathers. The eagle is spoken of locally as “king of birds” and one of the local species is used in medicines to sanctify the king (Kuper 1973).

15.6 DISCUSSION

The foregoing consideration of archaeological, historical and ethnographical sources has highlighted the near-universal importance of that mighty predatory bird, the eagle. While this is highly suggestive as to the symbolic prominence of white-tailed eagle in the Late Mesolithic and incipient farming communities of the Lower Rhine Area, the specifics of that role are hard to come by. Recovering past ideological motivations empirically is rather problematic. In this respect the frequency analysis presented above only reveals part of the story. Analogies do not really offer ‘a way out’ of this impasse because of their lack of qualitative scrutiny. Nevertheless analogical reasoning remains germane to all archaeological interpretation, as a heuristic framework for linking mute artefacts and remnants of the past to the dynamics of past communities (e.g. Van Gijn/Zvelebil 1997; Hawkes 1954). In the absence of an ideal ethnographic parallel for these Mesolithic and Early Neolithic communities analogies are drawn from peoples such as the Alaskan Nunamiut, the Ojibwa of the Great Lakes, the Northwest Coast communities and the New Guinea Papuan peoples. There are, however, numerous geographical, economical and cultural arguments that limit the relevance of these comparisons (e.g. Louwe Kooijmans 2001a, 67). This is why we believe it is necessary to arrive at a more integrated analogical model, seeking out structural resemblances that, although their implementation and cultural expression remain highly specific, connect these communities.

One element that clearly stands out in the prehistoric communities studied here and in many ethnographic case studies such as the aforementioned is the importance of hunting. For the Lower Rhine Area it has been widely documented that despite the increasing availability of domesticates and cultigens during the process of neolithisation, wild resources such as game mammals, fish and fowl continued to form a staple element in subsistence (e.g. Louwe Kooijmans 1993; Raemaekers 1999). Hunting, including its social and ideological repercussions, therefore was a rather conservative central element in such societies. While other motivations should not be ruled out, it would seem to make sense to interpret the presence and importance of *Haliaeetus albicilla* at these sites from the perspective of hunting and the hunter. From this perspective, the specific qualities of the white-tailed eagle that set it apart from other birds and underline its specific treatment are of paramount importance. It is these aspects that hunters may have admired, revered or identified with.

Shooting such an animal would have greatly added to the status of the hunter and so to speak placed him and his skill on par with that of the eagle. The ethnographic and – limited – archaeological evidence for the decorative and symbolic use and display of feathers, claws, beaks, bones, skins and wings



Figure 15.4 Example of a wooden early 19th-century Unangan hunting hat (National museum of Finland). The bone ornaments on both sides are shaped after the head of a bird and represent wings. Wearing a hat like this would enable a hunter to adopt the speed, agility and keen eye of a bird. The decorations furthermore warded off evil spirits and magical powers and enabled the hunter to lure out prey (Black 1991). Photograph by L. Amkreutz.

also points in this direction. Such trophies flaunt the hunter's status and capabilities and augment his reputation. It may have been the specific qualities of the white-tailed eagle that were much sought after by the Mesolithic and Early Neolithic inhabitants of the Lower Rhine Area. Its keen eye, superior speed, stealth and agility were acquired by proxy and subsequently objectified in the use of specific eagle elements. In this way the hunter may have assumed control over these qualities metonymically, as suggested by the ethnography of the *chagudax* wooden hats and the eagle fletchings.

While these ethnographically inspired interpretations necessarily remain suggestive, they do seem to tie in with the prominent position of eagles in communities of hunter-gatherers and early farmers in the Lower Rhine Area. Identification with the qualities of eagles was possible in

various, non mutually exclusive ways, and need not necessarily have precluded consumption of eagles. What does stand out is that they specifically draw on an analogy between the hunter and its quarry. In this light it is perhaps understandable that the presence of eagles and wildfowl in general seems to diminish dramatically in the course of the Late Neolithic and Early Bronze Age in the Lower Rhine Area, in synch with the diminishing importance of other game animals in favour of domesticates (Louwe Kooijmans 1993, 82). At the end of the Late Neolithic hunting was no longer a central element in everyday food procurement and community life and had probably lost a great deal of its symbolic value. In any case the white-tailed eagle no longer figures as prominently among the faunal assemblages of this later age.

15.7 CAUDA

In this paper we have tried to somewhat constrain speculations on the possible symbolic roles of *Haliaeetus albicilla* in communities of hunter-gatherers and incipient farmers in the Lower Rhine Area, by combining archaeological data and ethnographic parallels. We have procured, and zoomed in on, our prey, the eagle remains, and subsequently had to soar high to come to an ethnographically informed understanding. This offers a suitable analogy with Leendert Louwe Kooijmans' work over the past decades in unraveling some of the mysteries surrounding neolithisation in the Lower Rhine Area. While excavating several pivotal sites in minute detail he never failed to soar a bit higher every now and then. It is this delicate balance between the target on the ground and his eagle-eyed perspective which is most characteristic of his contribution to the understanding of our prehistory.

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