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Northern Bald IBIS (Akh-Bird) أبو منجل الأصلع الشمالي (طائر - الآخ)

Jiří Janák

Waldrapp/Schopfibis Ibis chauve

Three different kinds of ibis species are attested from ancient Egypt: the sacred ibis, the glossy ibis, and the northern bald ibis. Pictorial representations of the latter bird—easily recognizable by the shape of its body, the shorter legs, long curved beak, and the typical crest covering the back of the head—were used in writings of the noun akh and related words and notions (e.g., the blessed dead). We can deduce from modern observations that in ancient times this member of the ibis species used to dwell on rocky cliffs on the eastern bank of the Nile, that is, at the very place designated as the ideal rebirth and resurrection region (the akhet). Thus, the northern bald ibises might have been viewed as visitors and messengers from the other world—earthly manifestations of the blessed dead (the akhu). The material and pictorial evidence dealing with the northern bald ibis in ancient Egypt is accurate, precise, and elaborate in the early periods of Egyptian history (until the final phase of the third millennium BCE). Later, the representations of this bird became schematized and do not correspond to nature. Thus, they do not present us with any direct and convincing evidence for the presence of the northern bald ibis in Egypt, and, moreover, they most probably witness both the bird's decline and its disappearance from the country.

يمكن تحديد ثلاثة أنواع مختلفة من طائر أبومنجل (الأيبيس) في مصر القديمة: أبو منجل المقدس، وأبومنجل اللامع، ثم أبومنجل الأصلع الشمالي (أبو منجل الناسك). إن التمثيل التصويرى للأخبر - يمكن تمييزه ببساطة عن طريق سمات جسده الأرجل القصيرة ، والمنقار الطويل المعقوف ثم العرف المميز الذي يغطي مؤخرة رأسه - استخدم فى كتابة الأسم آخ (akh) وما يتعلق بها من الكلمات والمفاهيم (مثل: الموتى المباركين). ومن خلال المرحظات الحديثة فإننا نستطيع أن الإستنتاج أن هذا النوع من طيور أبومنجل إعتاد أن المرحظات الحديثة فإننا نستطيع أن الإستنتاج أن هذا النوع من طيور أبومنجل إعتاد أن المرحظات الحديثة فإننا نستطيع أن الإستنتاج أن هذا النوع من طيور أبومنجل إعتاد أن يقطن المنحدرات الصخرية على الضعاف الشرقية للنيل في العصور القديمة، وهذا يعتبر ألموضع المثالي الذي يدل على المعقوف الشرقية للنيل في العصور القديمة، وهذا يعتبر ألموضع المثالي الذي يدل على الضفاف الشرقية للنيل في العصور القديمة، وهذا يعتبر ألموضع المألي الذي يدل على المعقوف الشرقية للنيل في العصور القديمة، وهذا يعتبر ألموضع المألي الذي يدل على البعث والميلاد الجديد (akhe). ولهذا فربما قد اعتبرت ألموضع المألي الذي يدل على المعقوة النيل والرسل المهاجرة من العالم الآخر لتتجلى في الدنيا كأنها أرواح المتوفين (akhu). إن الشواهد المادية والتصويرية المصرية القديمة في الدينا ألمرين والرسل المهاجرة من العالم الآخر لتتجلى ألموضع المألي الذي يدل على البعث والميلاد الجديد (akhe). ولهذا فربما قد اعتبرت المور أبومنجل الأصلع الشمالي مثابة الزائرين والرسل المهاجرة من العالم الآخر لتتجلى ألمومنجل المصري أرواح المتوفين (akhu). إن الشواهد المادية والتصويرية المصرية ألمورا الموران والرسل المهاجرة من العالم الآزرين في المري ألمواجر التجلى ألمورا أرواح المتوفين (akhu). إن الشواهد المادية والتصويرية المصرية ألمورا ألموالي ألمورا ألمورا المعاور ألمورا ألمووا ألمورا ألمورا ألمووا أ



he northern bald ibis (*Geronticus* eremita, Linnaeus 1758; fig. 1) is a middle-sized (height: 70 - 80 cm, kg, wingspan: 125 - 135 cm)

weight: 1.3 kg, wingspan: 125 - 135 cm) gregarious bird that nests in colonies. These birds have a long curved red bill, red legs, and an unfeathered reddish head with the typical dark crest of neck plumes covering its back. The main color of the birds is black, with tints of blue, green, and copper. This iridescent purple and green "shoulder patch" on the wings of the bird is well visible in the sunlight. The northern bald ibises prefer to inhabit an arid or semi-arid environment, with cliffs for breeding and nesting. These birds feed during the day in adjacent dry fields and along rivers or streams by pecking on the ground. They live in areas with low level vegetation (arid, but preferably cultivated, places), where they can find worms, insects, lizards, and other small animals on which they feed. When the birds awake, or when they come together at sunset, this is always, but especially in the morning, marked by high activity (Pegoraro 1996).

The northern bald ibis has been found in North Africa and Ethiopia, the Middle East, and throughout Central Europe (Hirsch 1979; Pegoraro 1996). However, only a few colonies survive in the world today, totaling in all not more than about 400 individuals. Some of them nest in the Souss Massa Park in Morocco (Bowden 1998; Bowden et al. 2003), a few breed in Central Syria (Serra et al. 2003), and many northern bald ibises are kept in zoos or raised in special projects (e.g., the Waldrappteam in Austria). The northern bald ibis still counts among the most critically endangered species and is on the Red List. Causes of the decline are thought to be pesticides, human persecution, habitat loss, and global fluctuation in rainfall (Serra et al. 2004 with references).

These ibises are usually migratory, they spend about four months in a breeding area, and their wintering period lasts between five and six months. The Syrian colony was observed to migrate through Jordan, Saudi Arabia, and Yemen to the central highlands of Ethiopia. On their return journey, they followed the western shore of the Red Sea through Eritrea to Sudan before crossing the Red Sea (Lindsell et al. 2009).

A colony of semi-wild northern bald ibises (locally known as kelaynak) is located in a Turkish town called Birecik (ancient Birtha, at the Euphrates). The nearby landscape shows a similarity to Egyptian localities with limestone cliffs, a large river, and fields. The ibis colony used to breed mainly on the eastern bank, near the town, from February/March to July, and their arrival was celebrated by the local inhabitants as a sign of the coming of spring. Some observers even state that the bird was considered semi-sacred in Birecik. It was a symbol of spring and life, transmigrating souls, the end of the Biblical flood, and the pilgrimage to Mecca (Kumerloeve 1962; Lawton 1989; Serra et al. 2003).

In ancient Egypt, the northern bald ibises most probably nested on rocks and cliffs to the east of the Nile, as suggested both by Egyptian religious texts that connect the *akhu* with the eastern horizon (*akhet*) and modern observations made in Bireçik and Morocco (Pegoraro 1996: 39). It may, thus, be conjectured that every morning part of the colony flew to the Nile in search of food, descending on fields, settlements, or even cemeteries. In the evening, the birds probably would have flocked together and returned to the horizon.

There is no exact (textual) evidence that records Egyptian observations of the northern bald ibis migration; however, using data gained by interpretation of religious ideas, textual and pictorial evidence, and close interdisciplinary cooperation, we can partially reconstruct the image. In ancient times, Egypt was probably a breeding area for these ibises that migrated there once a year, possibly at the same time as in Syria. Northern bald ibises,



Figure 1. The northern bald ibis (in WWF Oasis at Laguna di Orbetello, Italy).

thus, would have arrived in Egypt in March together with the rising temperatures and stayed there until July before migrating southwards, along the Nile, towards Ethiopia. This hypothesis is based both on modern comparisons and on the fact that the weather of the Egyptian spring (the shemu season)corresponding to the low level of the Nile and the time of harvest-would have suited the needs of the bird best. If this were indeed the case, then the northern bald ibises would have left just before the arrival of the Nile inundation and the beginning of a new year. As for the northern bald ibis and its presence in modern Egypt, this bird was an accidental migrant, and its last recorded spotting in Giza is dated to 1921 (Houlihan 1988: 31).

The Northern Bald Ibis as the Akh-Bird

As for the connection between the northern bald ibis and the *akh* (G 25; see fig. 2), some scholars reached the conclusion that there was no (or only a phonetic) intrinsic relation between the two (Friedman 1981: 27, 2001: 47); others connected the root word *akh* with the term *jakhu* ("light, radiance or glow") suggesting that the "glowing" purple and green feathers on the wings of the bird represented its link to the ideas of light, splendor, and brilliance (Englund 1978; Friedman 1981: 26 - 27; Kumerloeve 1983: 213 with references). There are, however, scholars who have challenged the theory that the word *akh* was primarily connected with light and glare (Allen 1989; Jansen-Winkeln 1996) and suggested that the original meaning of the notions *akh* and *akhu* might have been linked, for example, to the idea of a mysterious, invisible force and to the efficacy of the sun at the horizon (Jansen-Winkeln 1996).

The significance of the northern bald ibis within ancient Egyptian culture has to be examined in connection with Egyptian religion and cosmology. The tree levels or realms of created cosmos (the earth, the sky, and the underworld) converged at the horizon (*akhet*). The latter term represented the junction of cosmic realms, and it was also viewed as the place of sunrise, hence the place of birth, renewal, and resurrection (Friedman 1981: 67 - 68). Moreover, it was considered a place where divine beings (both gods and the

blessed dead) dwelt and from whence they could venture forth (Allen 1989: 17 - 21; Assmann 1980: 3 - 7; Friedman 1981: 68 - 69).

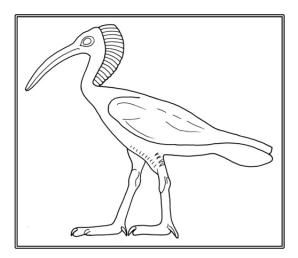


Figure 2. The akh-sign from the 5th Dynasty mastaba of Hetepherakhty.

The notion of the akh (Janák 2013) has often been translated as "spirit" or "blessed dead," though the range of its aspects and powers covered also the meanings of "superhuman power" or "sacred mediator" (Assmann 2001: 36 - 37, 440 - 444; Friedman 1981). The Egyptians considered their blessed and influential dead-the akhu-as "living," i.e., as "the resurrected"; however, human beings had to be transfigured and admitted into this state (Assmann 2001; Smith 2008: 2 -3). Finally, the akh represented a mighty and mysterious entity that was part of the divine world and yet still had some influence upon the world of the living (Friedman 1981). They could interact with the living by means of superhuman powers and abilities (Adams 2007), guard their tombs, punish intruders or wrongdoers, help in cases when human abilities were insufficient, or act as mediators between gods and men (Baines 1991: 152 -161; Demarée 1983: 198 - 237; O'Donoghue 1999). In a parallel with the gods and people, a certain hierarchy existed even within the society of spirits. The deceased king thus represented "the head of the akhu" (Pyramid Texts Spell 215, §2103). According to Egyptian cosmology and mortuary texts, the

akhu were "born" or "created" at the horizon, where they also dwelled and where they came from (Allen 1989: 17 - 21; Friedman 1981: 68 - 69; Hays 2009: 209 - 212). Some sources (e.g., the so-called *Book of the Dead*), thus, use an expression *jmyu akhet* ("those who dwell in the horizon") to denote or describe the blessed dead. Since the *akhu* were dependent on ritual actions performed by the living, a mutual relationship and cooperation between men and *akhu* formed one of the pillars of ancient Egyptian religion (Assmann 2001: 54 - 88, 161 - 163; Baines 1991: 152 - 161).

Although there are many (probably secondary) aspects of the northern bald ibis' nature that could have been important for the Egyptians such as, for example, the abovementioned glittering colors on its wings, or its calling and greeting display, the main factor in holding the bird in particular esteem and connecting it with the akhu and the idea of resurrection was its habitat (Janák 2011). This member of this ibis species used to dwell at the very place designated as the ideal rebirth and resurrection region (the eastern horizon as the *akhet*); moreover, its flocks might have very well represented the society of the "returning" dead. The ancient Egyptians saw migratory birds as the souls or spirits of the dead (Hornung 1984: 485 - 486; Lange and Neugebauer 1940: 39 - 41), and the fact that the northern bald ibis counts among the migratory birds might also have been very important. The arrival of these birds could have been a sign of the coming "spring" or the harvest season, as was the case at Bireçik. Thus, we find circumstantial evidence, which seems to support the theory that in ancient Egypt, the northern bald ibises were viewed as visitors and messengers from the other world and were earthly manifestations of the blessed dead (the akhu).

The Material Evidence

The only material evidence for the presence of the northern bald ibis in Egypt in the form of skeletal remains comes from Maadi where the so-called Maadi culture (c. 4000 - 3400 BCE) had its settlements (Boessneck 1988: 23

- 24). This unique find represents both the earliest evidence for this bird in Egypt and its only confirmed preserved bodily remains. The northern bald ibis was not hunted or sacrificed in Egypt, nor was it kept in temples and mummified at death (Boessneck 1988; Ikram 2005). This fact stands in striking contrast to the sacred ibis and the glossy ibis that are known to have been kept and mummified (Boessneck 1988: 140; Houlihan 1988: 26 - 30); there are many thousand mummified examples of the sacred ibis (Ikram 2005). Thus to date only pictorial representations of the northern bald ibis are recorded from later periods of Egyptian history.

The earliest Egyptian example of the bird's depiction is probably attested on the so-called Ibis slate palette (Musées Royaux d'Art et d'Historie, Bruxelles, No. E6186; Petrie 1953: B6-7) dated to the Nagada IIIa-b Period. Other examples of its early representation come from the Late Predynastic and Early Dynastic Periods. Depictions of the northern bald ibis among other birds and animals are preserved on two ivory objects from Hierakonpolis (a carved ivory panel and a carved ivory rod; Petrie Museum, University College, London; Quibell 1900: pl. XVI, figs. 1 - 2, 4). It was suggested that northern bald ibises also appear on small bone labels from the tomb U-j at Abydos (Dreyer 1998: 134, 139, 142, pls. 131 - 136), either by itself or together with an image of (desert) mountains. Although these carvings on six ivory labels (nos. 130 - 135) are still considered to depict the northern bald ibis, this identification is questionable several since of these representations (mainly the label no. 130) seem more likely to correspond to the secretary bird (Sagittarius serpentarius, Miller 1779). A schematic representation of northern bald ibises also occurs on small cylinder seals and other objects dated to the Early Dynastic Period (Kaplony 1963: figs. 101, 102, 113, 116, 119, 130, 194, 296, 435). There are, however, even more attestations of the akh sign from the Early Dynastic Period in different styles and accuracy (Kahl 1994: 523 -524, 2002: 3 - 4).

From the Old Kingdom onwards, a pictorial representation of this bird was constantly used as a hieroglyphic sign for the word root *akh*; thus, it is often to be found in texts, especially in those that deal with the blessed dead (akhu). Detailed hieroglyphs of Old Kingdom tombs reveal how precise the observations were that the Egyptians made about this bird. In the Dynasty 5 mastaba of Hetepherakhti from (Rijksmuseum van Oudheden, Saqqara Leiden; Mohr 1943), depictions of the northern bald ibis are shown in several styles and even with the remains of polychrome showing the dark blue and red colors, which match with the living species. Similar artistic accuracy of the akh sign was reached in the case of the Dynasty 5 mastabas of Akhethotep (Ziegler 2007: 127), Ptahhotep II (Murray1905: pls. IX, XII, XIII), Ankhmahor (Kanawati and Hassan 1997: pls. 34 - 35) at Saggara, and Seshathotep at Giza (Kanawati 2002: pl. 46). On the other hand, depictions of this ibis attested in later tombs, as for example, the Dynasty 12 tomb of Hesu-wer (Silverman 1988: pls. 31, 34), are not as detailed as earlier examples. It is noteworthy that in the famous Beni Hassan tomb of Khnumhotep II dated to Dynasty 12 (Griffith 1896: pl. II), the northern bald ibis is represented in a surprisingly incorrect manner: neither the shape nor the colors (white body and red wings) match those of the living bird. Other birds and animals in this tomb, on the other hand, are represented with unique accuracy and detail.

The northern bald ibis also appears on several (probably funerary) Old Kingdom diadems (Giza, Dynasties 4 and 5). These objects were decorated by discs composed of two opposed papyrus umbels with an ibis on each of the blossoms. In some cases, an *ankh* sign appears between the birds. These diadems were probably meant to ensure proper transfiguration of the deceased and his/her blessed afterlife existence (Dunham 1946; Staehelin 1966).

The vast majority of Egyptian images uses the bird only as a pictorial (hieroglyphic) sign and does not depict it in its natural setting.

The mastaba of Hesu-wer (Kom el-Hisn, Dynasty 12) represents an exception. The northern bald ibis (among many other birds) is represented there in a roosting position on top of a papyrus umbel. However, from all other scenes of similar nature, this bird is missing. This fact could hardly be surprising, since the bird is not a waterbird. Thus, the northern bald ibis might have been added to such a scene either to complete the image of all birds, or the ibis-on-papyrus icon might have had a special significance, as was the case with the above-mentioned diadems.

The Cultic Evidence

From the time of the New Kingdom onwards, a still mysterious ritual (nowadays called Vogellauf) is attested among cultic scenes depicted on temple walls. Seventeen representations of the ritual are preserved from temples, three from private coffins (Decker and Herb 1994: 42 - 123; Kees 1912: 4 - 21). The oldest evidence for this ritual activity dates back to the time of Hatshepsut; the latest is attested in the Temple of Dendera and comes from the first century BCE. The Vogellauf (bird run) ritual was probably associated with two other ritual "runs" known as the Ruderlauf (paddle run) and the Vasenlauf (vase run; Decker and Herb 1994: 42 - 123; Kees 1912: 22 - 102). The representations of the ritual show the king running towards a deity with a northern bald ibis in his left hand and three rods or scepters of life, stability, and power in the right one. Among the recipients we mainly find female deities (Hathor, Bastet, Satet, Isis, or Weret-hekau) or the creator god (Amun or Ra-Harakhte). Unfortunately, the accompanying text does not specify the cultic activity that is being performed by the king: "running (or hurrying) to deity X so that he (the king) might perform the life-giving (ceremony?) forever." The deity is also greeting the king (his/her son) in return and guaranteeing him his/her joy and favor.

However, due to artistic inaccuracies and iconographical differences, it can be assumed that the *Vogellauf* ritual did not embrace any sacrifice of the bird (Janák 2009, 2011). Moreover, during the New Kingdom there were most probably no northern bald ibises at the king's disposal (see below). It is thus more likely that the northern bald ibis in the king's hand is to be read symbolically. It either stood for the hieroglyph *akh* and referred to concepts linked to this word, or it represented a bird that was not present at the ritual (as a reminder or a representative: "hasting to the god with the first swallow").

The Presence of the Northern Bald Ibis in Egypt and Its Decline

As has been shown above, the material and pictorial evidence dealing with the northern bald ibis is much more accurate, precise, and elaborate in the early periods of Egyptian history (until the end of the Old Kingdom or the final phase of the third millennium BCE). In later times, on the other hand, the representations of this bird become more and more schematized, do not correspond with nature, and thus do not present us with any direct and convincing evidence for the presence of the northern bald ibis in Egypt. Moreover, there is no material, pictorial, or textual evidence for keeping, breeding, hunting, killing, mummifying, or sacrificing the northern bald ibis in ancient Egypt from any period of its history. Among thousands of mummies of sacred birds of dozens of species, no northern bald ibis has been identified so far in the material record of this ancient culture (Boessneck 1988).

From the final phase of the Old Kingdom (due to a climatic change with extreme desiccation, as well as to a higher human disturbance), the northern bald ibises either avoided Egypt during their migration or they ceased nesting there. Thus it is probable that either the northern bald ibis migrated via, or rather over, Egypt making no or fewer stops, or that the present migration route of the northern bald ibis from Ethiopia to Syria avoiding Egypt altogether (Lindsell et al. 2009) already originated at the beginning of the second millennium BCE (Janák 2011).

References

Adams, Christina

2007 Shades of meaning: The significance of manifestations of the dead as evidenced in texts from the Old Kingdom to the Coptic Period. In *Current research in Egyptology 2006: Proceedings of the seventh annual symposium*, ed. Maria Cannata, pp. 1 - 20. Oxford: Oxbow.

Allen, James

1989 The cosmology of the Pyramid Texts. In *Religion and philosophy in ancient Egypt*, Yale Egyptological Studies 3, ed. William Kelly Simpson, pp. 1 - 28. New Haven: Yale University Press.

Assmann, Jan

- 1980 Horizont. In Lexikon der Ägyptologie, Vol. 3 (columns 3 7), ed. Wolfgang Helck, and Wolfhart Westendorf. Wiesbaden: Harrasowitz.
- 2001 Tod und Jenseits im alten Agypten. Munich: C. H. Beck.

Baines, John

1991 Society, morality, and religious practice. In Religion in ancient Egypt: Gods, myths and personal practice, ed. Byron Shafer, pp. 123 - 200. Ithaca: Cornell University Press.

Boessneck, Joachim

1988 Die Tierwelt des Alten Ägypten. Munich: Beck.

Bowden, Christopher

1998 Last chance for the northern bald ibis. World Birdwatch 20, pp. 12 - 16.

Bowden, Christopher, Ali Aghnaj, Ken Smith, and Mohamed Ribi

2003 The status and recent breeding performance of the critically endangered Northern Bald Ibis Geronticus eremita population on the Atlantic coast of Morocco. *Ibis* 145(3), pp. 419 - 431.

Decker, Wolfgang, and Michael Herb

1994 Bildatlas zum Sport im alten Ägypten: Corpus der bildlichen Quellen zu Leibesübungen, Spiel, Jagd, Tanz und verwandten Themen. Leiden, New York, and Cologne: Brill.

Demarée, Robert

1983 The 3h ikr n R^c-stelae: On ancestor worship in ancient Egypt. Leiden: Nederlands Instituut voor het Nabije Oosten.

Dreyer, Günter

1998 Umm el-Qaab I: Das prädynastische Königsgrab U-j und seine frühen Schriftzeugnisse. Archäologische Veröffentlichungen, Deutsches Archäologisches Institut, Abteilung Kairo 86. Mainz: Zabern.

Dunham, Dows

1946 An Egyptian diadem of the Old Kingdom. Bulletin of the Museum of Fine Arts, pp. 23 - 29.

Englund, Gertie

1978 Akh: Une notion religieuse dans l'Egypte pharaon, BOREAS. Uppsala Studies in Ancient Mediterranean and Near Eastern Civilizations 11. Uppsala: Uppsala University.

Friedman, Florence

- 1981 On the meaning of Akh in Egyptian mortuary texts. Providence: Brown University. (Doctoral thesis.)
- 2001 Akh. In *The Oxford encyclopedia of ancient Egypt*, ed. Donald Redford, pp. 47 48. Oxford: Oxford University Press.

Griffith, Francis Llewellyn

1896 Beni Hasan III. London: Kegan Paul, Trench, Trübner & Co.

Hays, Harold

2009 Unreading the pyramids. In Le Bulletin de l'Institut français d'archéologie orientale 109, pp. 195 - 220.

Hirsch, Udo

1979 Studies of west Palearctic birds: Northern bald ibis. British Birds 72, pp. 313 - 325.

Hornung, Erik

1984 Ägyptische Unterweltsbücher. Zurich and Munich: Artemis.

Houlihan, Patrick

1988 The birds of ancient Egypt. Cairo: American University in Cairo Press.

Ikram, Salima (ed.)

2005 Divine creatures: Animal mummies in ancient Egypt. Cairo: American University in Cairo Press.

Janák, Jiří

- 2009 Natural world reflected in sacred space. Ritual in focus: Vogellauf. Redefining the sacred: Religious identity, ritual practice, and sacred architecture in the Near East and Egypt, 1000 BC AD 300. Oxford: Unpublished conference paper.
- 2011 Spotting the akh: The presence of the northern bald ibis in ancient Egypt and its early decline. Journal of the American Research Center in Egypt 46, pp. 17 - 31.
- 2013 Akh. In Jacco Dieleman and Willeke Wendrich (eds.), UCLA Encyclopedia of Egyptology, Los Angeles. http://digital2.library.ucla.edu/viewItem.do?ark=21198/zz002gc1pn

Jansen-Winkeln, Karl

1996 "Horizont" und "Verklärheit": Zur Bedeutung der Wurzel 3h. Studien zur Altägyptischen Kultur 23, pp. 201 - 215.

Kahl, Jochem

- 2002 Frühägyptisches Wörterbuch I. Wiesbaden: Harrassowitz.

Kanawati, Naguib

2002 The tombs at Giza II: Seshathetep/Heti (G5150), Nesutnefer (G4970) and Seschemnefer II (G5080). The Australian Centre for Egyptology Reports 16. Warminster: Aris and Phillips.

Kanawati, Naguib, and Ali Hassan

1997 The Teti cemetery at Saqqara II: The tomb of Ankhmahor. The Australian Centre for Egyptology Reports9. Warminster: Aris and Phillips.

Kaplony, Peter

1963 Die Inschriften der ägyptischen Frühzeit III. Ägyptologische Abhandlungen 8. Wiesbaden: Harrassowitz.

Kees, Hermann

1912 Der Opfertanz des ägyptischen Königs. Munich.

Kumerloeve, Hans

- 1962 Zur Geschichte der Waldrapp-Kolonie in Birecik am oberen Euphrat. Journal für Ornithologie 103, pp. 389 - 398.
- 1983 Zur Kenntnis altägyptischer Ibis-Darstellungen unter besonderer Berücksichtigung des Waldrapps, Geronticus eremita (Linnaeus 1758). Bonner Zoologische Beiträge 34, pp. 197 - 234.

Lange, Hans, and Otto Neugebauer

1940 Papyrus Carlsberg No. 1: Ein hieratisch-demotischer kosmologischer Text. Copenhagen: Ejnar Munksgaard.

Lindsell, Jeremy, Gianluca Serra, Lubomir Peške, Mahmoud S. Abdullah, Ghazy al Qaim, Ahmed Kanani, and Mengistu Wondafrash

2009 Satellite tracking reveals the migration route and wintering area of the Middle Eastern population of critically endangered Northern Bald Ibis *Geronticus eremita*. Oryx 43(3), pp. 329 - 335.

Lawton, John

1989 Last of the Mohicans. Saudi Aramco World 4(40), pp. 2 - 5.

Mohr, Herta Therese

1943 The mastaba of Hetep-her-akhti: Study on an Egyptian tomb chapel in the museum of antiquities Leiden. Leiden: Brill.

Murray, Margaret

1905 Saqqara mastabas I. Leiden: Quaritch.

O'Donoghue, Michael

1999 The "Letters to the Dead" and ancient Egyptian religion. *The Bulletin of the Australian Centre for Egyptology* 10, pp. 87 - 104.

Pegoraro, Karin

1996 Der Waldrapp: Vom Ibis, den man für einen Raben hielt. Wiesbaden: AULA-Verlag.

Petrie, Flinders W. M.

1953 Ceremonial slate palettes. London: British School of Archaeology in Egypt.

Quibell, James

1900 Hierakonpolis I: Plates of discoveries in 1898. London: Quaritch.

Serra, Gianluca, Doug Williamson, and Caterina Batello

2003 From indifference to awareness: Encountering biodiversity in the semi-arid rangelands of the Syrian Arab Republic. Rome: Food and Agriculture Organisation of the United Nations.

Serra, Gianluca, Mahmud Abdallah, Adeeb Assaed, Ahmed Abdallah, Ghazy Al Qaim, Talal Fayad, and Douglas Williamson

2004 Discovery of a relict breeding colony of Northern Bald Ibis *Geronticus eremita* in Syria. Oryx 38(1), pp. 106 - 108.

Silverman, David

1988 The tomb chamber of Hsw the Elder I: Illustrations. Winona Lake: American Research Centre in Egypt.

Smith, Mark

2008 Osiris and the deceased. In UCLA Encyclopedia of Egyptology, ed. Jacco Dieleman, and Willeke Wendrich. Los Angeles: University of California. (Internet resource: http://repositories.cdlib.org/nelc/uee/1136.)

Staehelin, Elisabeth

1966 Untersuchungen zur ägyptischen Tracht im Alten Reich. Unpublished PhD thesis. Berlin: Hessling.

Ziegler, Christiane

2007 Le mastaba d'Akhethetep: Fouilles du Louvre à Sagqara. Leuven: Peeters; Paris: Musée du Louvre.

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Figure 1. The northern bald ibis (in WWF Oasis at Laguna di Orbetello, Italy). Photograph by the author.

Figure 2. The akh-sign from the 5th Dynasty mastaba of Hetepherakhty. Drawing by Jolana Malatkova (after a photograph by the author).