



CREATURES OF EARTH, WATER, AND SKY

ESSAYS ON ANIMALS IN ANCIENT EGYPT AND NUBIA

edited by

Stéphanie Porcier, Salima Ikram
& Stéphane Pasquali





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AGENCE NATIONALE DE LA RECHERCHE
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DE LA MÉDITERRANÉE ET DE
L'ÉGYPTE ANCIENNES
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From Egyptology to Ornithology

The Cults of Sacred Falcons and The Musée des Confluences' Raptor Mummies

Rozenn Bailleul-LeSuer¹

Introduction to Sacred Birds – The Ibis and the Falcon

In addition to the various kinds of avifauna exploited in Egypt during the Greco-Roman period, a distinct category of birds had a major impact on the society of the time, an importance reflected both in the written and the archaeological records. They are the ibis sacred to the god Thoth and the falcon most traditionally associated with the god Horus.² The cults of these sacred birds have left a significant mark in the Egyptian landscape in the form of cemeteries scattered throughout the country, including the oases of the Western desert (Ikram 2012: 44-45). Mummified remains of ibises and birds of prey continue to emerge from the sand and to be discovered in tombs and necropoleis specifically dedicated to house these birds for eternity.³ After a phase of development during the Late Period, the cults of the ibis and of the falcon, in which live birds played a key role, reached their pinnacle during the Ptolemaic period. They continue to be attested during the Roman period, only to presumably come to an end with the spread of Christianity in the country and the edict of Thessalonica in AD 380, which ordered the closing of all pagan temples in Egypt.⁴ With almost a thousand years of activity, numerous texts, inscriptions, and especially the millions of animal mummies

1 I wish to thank the members of the MAHES research program, in particular S. Porcier, A. Charron, and S. Ikram, for giving me the opportunity to join their ranks; all the staff of the Musée des Confluences, in particular D. Berthet, for granting me access to the collection of bird mummies and for helping me in my research. I look forward to working with them as we pursue this project.

2 It should be noted that the avian features and characteristics of the falcon have been assigned to a large number of Egyptian deities, Horus being the main representative. See Altenmüller (1977: 94-95) for a list of sites with falcon cults and their associated deity. See also Vernus (2005b: 373-374).

3 A falcon necropolis was recently discovered at Quesna (Rowland & Ikram 2013). Furthermore, as the team of J. Galan was excavating in the area of the Theban tomb of Djehuty (TT 11), they came upon a cache of bird mummies, both ibises and raptors. It has been estimated that at least 1,000 mummies are present in this tomb and those surrounding it, including TT 12 and 399 (Ikram & Spitzer, In Press; http://www.excavacionegipto.com/el_proyecto/campaigns.php?year=2015&option=summary. Last accessed July 15th, 2018).

4 Evidence in the form of jars found in the bird catacombs of Tuna el-Gebel, however, suggests that the worship of Thoth at the site continued after this edict. "*Deux de ces amphores datent du Ve siècle apr. J.-C.; elles témoignent des festivités ou des rites qui se déroulaient en ce lieu mais aussi de la durée d'utilisation du cimetière d'animaux, que l'on pensait jusque-là s'arrêter au Ier ou IIe siècle apr. J.-C.*" (Flossmann-Schütze 2014: 11).

In: Porcier, S., S. Ikram & S. Pasquali. Eds. *Creatures of Earth, Water and Sky. Essays on Animals in Ancient Egypt and Nubia.* – Leiden, Sidestone Press: 87-97.

discovered in the cemeteries attached to cult centers, testify to the popularity of these religious practices, not only among the population of native Egyptians, but also among Greek settlers living in their midst (Charron 1998; Smelik 1979: 239; von den Driesch *et al.* 2005: 236).

The study of sacred animal cults has generated considerable interest among scholars. This academic fascination started in ancient times, with Greek historians and geographers, most notably Herodotus, Diodorus Siculus, and Strabo, who recorded the bewildering rituals and practices they witnessed or heard reports thereof (Charron 2015). In the course of the 20th century, the Egyptological community has placed much emphasis on understanding the theology and unique ritual traits of this phenomenon. Scholars are also eager to clarify why the Ptolemaic royal house so generously sponsored these native cults (Charron 1998; Fitzenreiter 2003; Kessler 1989). The management of the live birds involved in these rituals, however, is only starting to be fully investigated (Charron 2015; Ikram *et al.* 2015). For instance, where did the Egyptians acquire the flocks of birds, which came to be buried by the millions in underground galleries, in abandoned tombs, or simply under the desert sand? What proportion was captured in the wild as opposed to bred in captivity? Such inquiries are especially pertinent in the case of birds of prey, as many species of raptors are known for their solitary behavior and are only seen in Egypt during their yearly migratory flight through the country. This paper endeavors to propose answers to these questions by gathering clues both from the written record and from the study of the mummies of diurnal birds of prey that are now housed in Lyon's Musée des Confluences.

The Administration of Falcon Cults: Textual Evidence

It is well documented that the cults of the ibis and the falcon were frequently administered jointly, as some servants of the ibis (*sdm.w-š (n) n3 hb.w; ιβιοβοσκοι*) were also in charge of taking care of falcons and held the title of servants of the falcon (*sdm.w-š (n) p3 bīk; ιερακοβοσκοι*).⁵ Furthermore, in many animal cemeteries, including Kom

5 In a text dated to ca. 87 BC, Armius and his colleagues held both titles at the temple of Hermes-Thoth in Tebtubis (Traversa 1960, p. 52). A similar trend is attested at the Sacred Animal Necropolis of North Saqqara, as mentioned in texts 19, 21, and 22 of the Archive of Hor (Ray 1976: 137). In the latter series of texts, it is not certain that the same people occupied both positions at the same time. However, it is clear that both the cults of the ibis and the falcon (*p3 hb p3 bīk*) were associated. A visual attestation of the close tie uniting the two birds can be seen on stela FCO-70, uncovered in the falcon catacombs of Saqqara and dated to 89 BC. In the lunette painted at the top of this object, a squatting sacred ibis and a falcon are depicted facing each other, with an offering table (?) between them (Davies & Smith 2005: 79, pl. 29a).

Ombo, Thebes, Abydos, Tuna el-Gebel, Sharuna, and Saqqara (Cauville 1989: 63; Ikram 2005a: xviii; Davies & Smith 2005: 8), mummies of ibises and falcons could be deposited in the same galleries.⁶ On the other hand, our knowledge of the management of the falcons and birds of prey involved in these cults is meager when compared to that of the cult of the ibis. What Ray (2011: 222) observed regarding the cult of the falcon at Saqqara, namely that there was “*little or no hieroglyphic sources to shed light on the temple of Horus the Falcon and its cult; the walls of the various corridors and gateways [in the falcon galleries] are almost devoid of graffiti,*” also applies to other sanctuaries associated with deposits of raptor mummies.

In the written record, the bird connected to the cult of the falcon was named *bīk*⁷ or *ιέραξ*.⁸ The type of raptor to which it corresponds in our modern taxonomy remains a question of debate. There appears to be no doubt that the bird of Horus is a member of the genus *Falco*, readily identified by its short hooked bill equipped with a “tooth” on its upper mandible and its long pointed wings, which, when folded, are as long as the bird’s tail (Brown *et al.* 1982: 442). The peregrine and lanner falcons (respectively *Falco peregrinus* and *F. biarmicus*) have often been favored as being representatives of the god Horus, notably because of the coloring of their plumage resembling that of the bird depicted in Egyptian art and because of the characteristic black moustachial streaks on the pale cheeks of these two species of falcons. Scholars, however, favor the theory that the Horus falcon was in fact an amalgam of the various falcons ancient Egyptians artists would have been able to observe, to which was added a hint of artistic license (Houlihan 1986: 46, 48; Kozloff 2012: 59-60).

6 In the falcon catacombs of the Sacred Animal Necropolis of North Saqqara, Emery (1971: 9) remarked that “*it is notable that some of the communication passages of the Ibis mausoleum go in the direction of the Falcon Galleries, and that demotic graffiti in the masonry blockings and gates blocking some of the side galleries of the falcon installations bear dedications to Thoth the Ibis more frequently than they do to Horus the Falcon.*” For a discussion of the possible motivations for combining the cults, whether on religious or purely pragmatic grounds, see Quaegebeur (1975: 23 n. 36), Ray (2011: 221), Ritner (1986: 103 n. 28), Smelik (1979: 240-241), Vandorpe (1991: 116 n. 12), Vernus (2005b: 377), von den Driesch *et al.* (2005: 236).

7 Erman & Grapow (1971a: 444 no. 13-14). As noted by Junker (1934: 51) and Wassell (1991: 126-127), the term *bīk* was sometimes encountered in association with the word *gmḥsw*, especially in texts of the Ptolemaic period, leading Junker to propose that, in those instances, *gmḥsw* may have referred to sacred falcons or cult images of falcon deities. Wassell further proposes that the two words *bīk* and *gmḥsw* had become synonymous by the Ptolemaic period.

8 As mentioned by Arnott (2007: 66), “*Hierax is the name given by Aristotle (HA 620a17-b5) and ancient Greeks generally to all diurnal raptors smaller than the larger Eagles and Vultures (i.e. with a length less than about 60 cm) but excepting Kites.*”

According to the papyrological record, members of these sacred bird installations included staff responsible for the care of falcons, presumably kept captive in an aviary. These men were known as the servants of the falcon (*sdm.w-š(n) p3 bīk*; ἱερακοβοσκοί).⁹ Despite the use of the singular *p3 bīk* in this title, more than one bird of prey were kept captive at sanctuaries, with one of them granted a special status.¹⁰ Little is known of the duties of these employees, but it undoubtedly included feeding meat to the birds.¹¹ They would have also cleaned the aviaries, removed the decaying leftover food, provided the birds with clean water, and ensured their overall well-being. They would also have gathered the remains of dead birds of prey discovered on the temple premises, as a short inscription on a limestone sarcophagus discovered in the falcon cemetery at Saqqara mentions.¹² While it is still uncertain what mummy is confined in this sarcophagus, which has remained unopened, the inscription states that “*a perished one*” (*sge*) had been found lying near the entrance of a gallery of the Serapeum (Ray 2011: 271-272). Its remains had been collected, probably mummified, placed inside the sarcophagus, and subsequently deposited in the falcon cemetery.

The innumerable “falcon” mummies encased in jars specifically manufactured for these birds’ burials, carefully deposited in stone sarcophagi, or simply lying on the ground in reused tombs and catacombs’ passages the remains of a wide range of diurnal and also nocturnal birds of prey. At Tuna el-Gebel, for instance, alongside mummies of sacred and glossy ibises, zooarchaeologists have identified 35 species of raptors, including the following species of eagles, kites, hawks, harriers, and falcons (von den Driesch *et al.* 2005: 216-217; Tab. 1).

Although passages mentioning the capture of birds of prey have yet to be identified in texts, ancient

9 For a list of attestations of the title ἱερακοβοσκός, see Sosin (1999: 140 n. 3-4).

10 Cauville (1989: 63 n. 87); Shore (1979: 149): In Dendera, the *strategos* was responsible for *t3 hr:t n p3 hm irm n3 bīk.w nh(w) hr hrw* “the food of the sacred falcon and the living falcons daily.” This Demotic inscription is incised on a copper alloy writing tablet kept in the British Museum, London (BM EA57371).

11 Charron (2009: 55). Diodorus Siculus, Greek historian of the 1st century BC, recorded what had been reported to him regarding the feeding of falcons in temples: “The caretakers for the hawks cut meat into tidbits; then, summoning the birds with a sharp cry, they toss each morsel up to them as they fly by, until they catch it” (*Bibliotheca Historica* I. 83; translation from Murphy 1990: 104). Several centuries later, Aelian, writing on the nature of animals during the reign of Septimus Severus at the end of the 2nd c. AD, reported how servants of the temple of Apollo, with whom the Greeks identified the god Horus, took special care of the birds dedicated to the Falcon god (*De Natura Animalium* VII. 9; translation from Scholfield 1959: 108-111).

12 Sarcophagus inventoried as FCO-434 by the archaeologists and now kept in the Cairo Museum (JE 91911; Davies & Smith 2005: 119).

Scientific Name	English Vernacular Name	Status	MNI
<i>Haliaeetus albicilla</i>	White-tailed sea eagle	A	4
<i>Haliaeetus vocifer</i>	African fish eagle	A	4
<i>Milvus migrans</i>	Black kite	R/M	26
<i>Elanus caeruleus</i>	Black-shouldered kite	R	29
<i>Circaetus gallicus</i>	Short-toed eagle	M	3
<i>Accipiter nisus</i>	Sparrowhawk	W	49
<i>Accipiter brevipes</i>	Levant sparrowhawk	W	7
<i>Accipiter gentilis</i>	Goshawk	A	10
<i>Buteo lagopus</i>	Rough-legged buzzard	A	1
<i>Buteo rufinus</i>	Long-legged buzzard	R/W	12
<i>Buteo buteo</i>	Buzzard	R/W	5
<i>Hieraetus fasciatus</i>	Bonelli's eagle	W	1
<i>Hieraetus pennatus</i>	Booted eagle	W	2
<i>Aquila heliaca</i>	Imperial eagle	W	18
<i>Aquila pomarina</i>	Lesser spotted eagle	W	12
<i>Circus aeruginosus</i>	Marsh harrier	M	23
<i>Circus cyaneus</i>	Hen harrier	W	20
<i>Circus macrourus</i>	Pallid harrier	W	7
<i>Circus pygargus</i>	Montagu's harrier	M	21
<i>Falco cherrug</i>	Saker falcon	W	13
<i>Falco biarmicus</i>	Lanner falcon	R	20
<i>Falco pelegrinoides</i>	Barbary falcon	R	8
<i>Falco subbuteo</i>	Hobby	W	10
<i>Falco vespertinus</i>	Red-footed falcon	W	9
<i>Falco naumanni</i>	Lesser kestrel	W	23
<i>Falco tinnunculus</i>	Kestrel	R/W	249

Tab. 1: List of the remains of diurnal birds of prey recovered in the catacombs of Tuna el-Gebel (From: von den Driesch *et al.* 2005: 216-217). Key: A: Absent from Middle Egypt; M: Migratory Visitor; R: Resident; S: Summer Visitor; W: Winter Visitor; MNI: Minimal Number of Individuals.

Egyptians most likely acquired the majority of the raptors destined to be mummified in the wild. Based on the data recovered at Tuna el-Gebel, specialized fowling, well acquainted with the behaviors and migratory habits of these birds, would be especially active during the winter months.¹³ For the rest of the year, it appears that kestrels (*Falco tinnunculus*) were the most common targets, this small falcon being a relatively familiar

13 Birds of prey, especially large falcons, continue to be the favorite targets of some Egyptians fowling active in the Sinai, as these birds can be sold to falconers living in Saudi Arabia and several of the Gulf States (Baha el-Din & Salama 1991: 22-33).

bird in the Egyptian landscape,¹⁴ and one possibly deliberately reared for mummification (Ikram *et al.* 2015). All the captured birds would have been brought to aviaries and placed under the care of the *sdm.w-š (n) p3 bīk*. Major temples, such as those located at Edfu, Philae, and Athribis, were well equipped to provide for the needs of these birds and their guardians, since select plots of land were assigned specifically for the care of the falcon (Charron 2015: 89-90; Meeks 1972: 70; Vernus 2005b: 377). The revenue generated by these properties could be used to acquire the meat needed to feed the birds during their time in captivity. No evidence has yet emerged to indicate whether these men were able, or even intended, to breed birds of prey in captivity.¹⁵

While the management of most captive birds of prey is poorly documented, the Upper Egyptian site of Edfu stands out because of the quantity and quality of the scenes depicting the coronation ceremonies, during which a live falcon rose to prominence and sat for a year on the throne beside the god Horus of Behdet.¹⁶ Carved during the reign of Ptolemy IX Soter II (88-81 BC), a series of reliefs and detailed inscriptions relate how the statue of the god housed in this temple selected among the flock of birds kept at the site the special falcon, which would become the living and breathing receptacle of his *b3*, or

manifest physical power (Charron 2009: 51; Scalf 2012: 36). This chosen bird was referred to in inscriptions under a variety of names, including *bīk*, “falcon,” *bīk ʒ*, “great falcon,” *p3 bīk nḥ*, “the living falcon,” and more specifically *w.t n.t Hr-ʒḥ.ty*, “sacred animal of the god Horakhty.”¹⁷ Because of its elevated status, the sacred falcon of Edfu benefited from a privileged existence within the temple precinct. It was fed special meat dishes, including fowl and possibly donkey meat, symbols of the god’s enemies that had been ritually exterminated (Blackman 1945).¹⁸

The rituals of Edfu specifically state that the sacred falcon was chosen in the midst of a flock of *ḏrty.w*, “raptors.”¹⁹ Such a designation implies that it is only after being chosen by the god that the bird became a *bīk*, or “falcon.” One may assume that the actual species of the chosen bird, prior to undergoing the complex series of rites, was of no real importance, be it an eagle, a kite, or a hawk. As demonstrated by the wide range of birds of prey identified in the catacombs of Tuna el-Gebel, ancient Egyptians did not use the same sets of taxonomic criteria as those defined by ornithologists when selecting the “falcons” destined to be offered as votive mummies to falcon deities. All raptorial species appear to have been fair game, and one can surmise that the larger eagles of the *Aquila* and *Hieraaetus* genera represented exceptional representatives of their kind and thus may have been viewed as more valuable offerings (Baillieu-LeSuer 2012: 183-185; Charron 2003: 9, 11; Emmons *et al.* 2010: 87-89). Vernus (2005a: 354) further proposes that, when the remains of falcons were insufficient to provide for the needs of temple cults, ancient Egyptians would have used any available raptor. Notwithstanding this, the ceremonies

14 The kestrel (*Falco tinnunculus*) is represented in Egypt by two subspecies, one residing in the country all year long, and one visiting the country as a migrant. “[T]he form *F. t. rupicolaeformis* is a fairly common breeding resident in the Nile Delta and Valley and in several Western Desert oases. [...] Between (early) mid-September and mid-May (early June) the resident population is augmented by migrants belonging to *F. t. tinnunculus*” (Goodman & Meininger 1989: 200).

15 Aelian, in *De Natura Animalium VII. 9*, reported that, in Egypt, falcons were said to nest in the sacred grove attached to the temples of Apollo, with whom the Greeks identified the god Horus (Translation from Scholfield 1959: 108-111). He did not, however, observe this captive breeding program himself. This assertion should therefore be taken with caution, especially considering that most species of falcons are cavity nesters, favoring isolated ledges on cliffs or tall buildings. Furthermore, the challenges encountered by the scientists who dedicated considerable efforts to restoring the rapidly declining populations of bald eagles (*Haliaeetus leucocephalus*) and peregrine falcons (*Falco peregrinus*) in the United States testify to the difficulty of successfully breeding birds of prey in captivity without the help of modern techniques, such as artificial insemination and incubation (Enderson *et al.* 1998; Holland 2007: 525-531). It should be noted, however, that the ancient Egyptians were aware of the presence of breeding birds of prey in their midst. During the Old Kingdom, in the Sun Temple of Niusera and in the causeway of king Unas, both the falcons *bīk.w* and *tnḥ.w* are shown to sit on their nests in the Autumn (Edel 1961: 233-235, fig. 10). Some scholars have posited that the evidence of force-feeding in some falcon mummies might support the idea of captive breeding (Ikram *et al.* 2015).

16 See Alliot (1949), Baum (2007), and Charron (2009) for a detailed description of each step in the elaborate coronation ritual of the living falcon by the god Horus of Edfu.

17 For *w.t* meaning “sacred animal,” see Alliot (1949: 577), Blackman (1945: 63 n. 26), Charron (2009: 54), and Meeks (2012: 526).

18 Donkey meat is specifically listed on pBerlin 13547 from the Ptolemaic period (Porten 1996: 323). On this document from Elephantine, the flesh of 10 donkeys were said to have been put aside as being the food of the falcon. The bird in question here is most likely the sacred falcon of Philae, this temple also housing a sacred, unique, falcon. See Junker 1912 for more information on the sacred falcon of the temple of Philae. A sacred falcon was also housed in the temple of Horus Khenty-Khety, in Athribis, as mentioned on the statue base of Djed-Hor, on display in the Oriental Institute Museum at the University of Chicago (OIM E10589). Djed-Hor claimed to have been the chief guardian of the falcon, *hry s3w n p3 bīk*, responsible for preparing the food for the falcons and also ensuring their proper burials after their death (Scalf 2012: 38; Sherman 1981; Teeter 2003: 101-102).

19 Erman & Grapow (1971e: 596 no.2-5). I agree with Charron (2009: 54) that the word *ḏrty.w* should not strictly be translated as “falcons”, since it has been demonstrated that both Isis and Nephthys could be referred to as *ḏrty.t*, often represented as kites (*Milvus* sp.) or kestrels (*Falco tinnunculus*). The words “raptors” or “birds of prey” are more appropriate to describe the cast of birds from which the sacred falcon was to be selected.

and the ritual actions of the statue of Horus of Behdet would have transformed the “ordinary” bird into *p3 bꜥk ḥḥ*, the proper embodiment of the Behdetite.

Insight into the Cults of Sacred Falcons: The Study of the Mummified Birds of Prey from the Musée des Confluences

As mentioned above, myriads of bird mummies were manufactured for centuries throughout Egypt, at times at a quasi-industrial rate (Ikram 2015). While thousands still remain buried in tombs and underground galleries, some mummified bundles have made their way into the Egyptian collections of museums throughout the world. The largest collection of bird mummies outside of Egypt is currently kept in the Musée des Confluences in Lyon, with more than 600 registered specimens. Alongside the mummies of crocodiles, snakes, cats, dogs, gazelles, fish, and shrews, to name but a few of the animals represented in this prestigious collection, the raptor mummies of the Musée des Confluences have been incorporated into the body of material investigated by the multidisciplinary research project MAHES based at the University Paul-Valéry Montpellier III and coordinated by Stéphanie Porcier. Specifically dedicated to the in-depth study of mummified animal remains, this project aims at gaining further insight into the mummification practices associated with ancient Egyptian sacred animal cults. Each mummy, referred to as *ntr*, “god,” by the ancient Egyptians, contains unique material, whose examination may highlight different aspects of the treatments received by the animals involved in these cults after their demise (Porcier 2014). In some instances, it may even be possible to gather some clues on the lives of these animals from the analysis of their skeletal remains and soft tissues.

History of the Collection in Lyon

The presence in Lyon of such a rich collection of ancient Egyptian mummified animals is the result of the vision of Louis Lortet, professor at Lyon’s School of Medicine and director of the Natural History Museum (1870-1909). Lortet, alongside the Egyptologist Victor Loret, dedicated many years and resources to the study of the ancient Egyptian fauna (Goyon 2008: 162-165; Rabolt 2013: 84; Nicolotti & Postel 1994: 35-36). With Gaston Maspéro at the head of the Service des Antiquités de l’Égypte in Cairo, the first shipments of mummified animals arrived in Lyon in 1900. Two years later, Lortet and his colleague, the zoologist Claude Gaillard, undertook to study more than a thousand bird mummies gathered from Lower and Upper Egyptian necropoleis. In addition to a large sample of ibis mummies, the Museum received a selection of “falcon” mummies from Giza, Kom Ombo, and El-Roda, this last site being located near Tuna el-Gebel (Lortet & Gaillard

1902: 18). A few bird mummies in the collection also came from Amarna, Thebes, and Aswan (Lortet & Gaillard 1909: 83). Even though X-ray technology was available at the time and was used on a selection of the Museum’s animal mummies, the two scholars chose to unwrap the mummified bundles to uncover their contents. They observed that a significant number of these mummies were filled with the remains of young birds, feathers, and unidentifiable fragments of bones (Lortet & Gaillard 1903: 113). By the end of their investigation, they had collected the well-preserved remains of almost 500 birds.

As Lortet and Gaillard were anxious to identify which avian species had been selected for mummification, a large proportion of the birds were dissected, their feathers and soft tissues removed, and their bones cleaned. Following a thorough osteological analysis, the skeletons were reassembled and mounted on a stand (Fig. 1). Additionally, the collection includes unwrapped mummies, some of which have remained in a good state of preservation, such as a female kestrel, which can readily be identified by the examination of its feathers alone (Inv. Nr. 90010145; Fig. 2A). A significant number of registered specimens also consist of various birds’ parts, most likely obtained during the dissection of large mummified agglomerates (Fig. 2B). Not all the mummies shipped to Lyon were unwrapped. Several specimens have retained the majority of their linen bandages. In a few cases, as was common practice at the time, wrappings around the head were removed in order to identify the bundle’s contents, as can be seen with the mummy of an osprey (*Pandion haliaetus*), now on display in the Musée des Confluences (Inv. Nr. 90001241; Emmons *et al.* 2010: 87, fig. 79).

The systematic and meticulous approach followed by Lortet and Gaillard when examining these bird remains allowed the two scientists to identify 26 species of diurnal birds of prey (Tab. 2). Just as it had been observed in the underground galleries of Tuna el-Gebel, the most common raptors represented in this collection are the kestrel, followed by the sparrowhawk, buzzard, and yellow-billed kite. To their surprise, Lortet and Gaillard did not encounter any remains of peregrine falcons, which Loret had previously identified as the live model and inspiration for the god Horus (Loret 1903; Lortet & Gaillard 1903: 116). On the other hand, they noted the presence in their assemblage of close relatives of the peregrine, namely the *Falco pelegrinoides babylonicus*, *F. p. pelegrinoides*, *F. biarmicus*, and *Hierofalco saker*.

A Hundred Years Later, Re-Examination of the Collection

Within the framework of the MAHES project, each category of animal mummies is being carefully examined. The records of each registered artifact are reviewed and complemented with new photography, measurements, and a condition



Fig. 1: Mounted skeleton labeled as *Milvus regalis* from Guizeh sent by Gaston Maspéro in 1900, from the Musée des Confluences. Inv. Nr. 51000113 (Photo by R. Bailleul-LeSuer).

report. Furthermore, this collection of animal mummies is unique not only because of its large size, its variety, and the frequently well-documented provenience of the specimens, but also because all of these mummified remains have recently been X-Rayed by Roger Lichtenberg and Stéphanie Porcier. Thanks to their endeavor, it is now possible to visualize the contents of the mummies in a non-destructive fashion, while respecting the integrity of these artifacts as a whole (Fig. 3). These X-Ray images are used in part to select the specimens exhibiting puzzling features, which will undergo additional analysis using Computed Tomography (CT) scanning and the beamlines of the European Synchrotron Radiation Facility (ESRF) in Grenoble.

The first stage of this investigation is an ornithological undertaking, which aims to identify the genus and, whenever possible, the species of all the birds of prey represented in the collection. The bones of the unwrapped specimens are currently being measured, in particular the central toe, tarsometatarsus, and tibiotarsus, as well as the skull and the bill, since these features and their relative proportions can help determine which type of raptor is being examined. Identification at the species level will not be a simple task, not only because of the large variety of birds of prey which can be encountered in Egypt during migration, but also because of the frequent size overlap in many species' skeletal features. This analysis will be conducted in close collaboration with specialists in avian osteology, using the comparative collections of Natural History Museums.

Once the bird identification phase is completed, the results will be used to gain insight into the strategies implemented by ancient Egyptian fowling and aviculturists to acquire these birds and maintain them in captivity. Were the birds of the Lyon collection mostly obtained in the wild? Can we see any evidence of certain birds having remained some time in captivity? How can we explain the presence of many neonates and juvenile birds? Lortet and Gaillard reported the presence of chicks of the genus *Milvus*, covered with down, in some of the mummy bundles



Fig. 2: Bird mummies from the Musée des Confluences: (A) well-preserved mummified remains of a female kestrel (*Falco tinnunculus*), Inv. Nr. 90010145; the primaries and tail feathers are now missing ; (B) detached head of a raptor, possibly a long-legged buzzard (*Buteo rufinus*), heavily covered with dark resinous material. Inv. Nr. 90010057 (Photos by R. Bailleul-LeSuer).

(Lortet & Gaillard 1903: 116), and suggested that both the parents and the brood had been captured at night. It is indeed conceivable that the nestlings had been gathered from active nests raided during the breeding season. What about the possibility of breeding birds of prey in captivity, either via artificial incubation, as has been potentially documented for the crocodiles of Kom Maadi (Bresciani 2005: 203-205), or by providing pairs of raptors with adequate conditions to favor breeding? Evidence is lacking to give definite answers to these questions. Eggs of birds of prey, contrary to those of ibises and crocodiles, have yet to be positively identified in animal necropoleis. Moreover, managing the captive breeding of raptors can be painstakingly difficult and aviculturists today often resort to artificial insemination (Holland 2007: 525-531; Enderson *et al.* 1998). Thus, until new evidence emerges, this author believes that all these nestlings were presumably collected in the wild from birds breeding in the Nile Valley, such as the kestrel, the yellow-billed or black-winged kites.

Conclusion

The ancient Egyptians have left us with ample evidence of their engagement in and support of sacred bird cults, both in the form of texts, whether these were prayers to the gods or administrative memoranda recording the care the animals were meant to receive, and in the representations detailing the phases of the ceremony during which an ordinary bird became a sacred falcon at Edfu. Some valuable witnesses to these cults, namely the mummified avian remains kept in the storage rooms of museums, are also awaiting further investigations, as they have the potential to not only reveal which species of birds inhabited the ancient Egyptian sky 2000 years ago, but they can also shed some light on the strategies ancient fowlers devised to trap the birds needed to provide for the falcon cults of the country.

While the publications of Lortet and Gaillard will never cease to be an invaluable resource, the new research conducted on the bird mummies of the Musée



Fig. 3: X-Ray image of five bird mummies from the Musée des Confluences, Inv. Nrs. 90002881-5. It shows that the bundles all contain the complete and articulated skeletons of birds of prey (90002883: European sparrowhawk (*Accipiter nisus*); the other four mummies each hold the remains of a small falcon, such as a kestrel (*Falco tinnunculus*), or of a black-winged kite (*Elanus caeruleus*)) (Projet MAHES, © R. Lichtenberg/S. Porcier).

Latin Name in Lortet & Gaillard's Publications	Updated Scientific Name	French Name	English Vernacular Name	Current Status ^a	Number of Specimens Identified and their Provenience
<i>Haliaeetus albicillus</i> , L.	<i>Haliaeetus albicilla</i> L.	Aigle pygargue à queue blanche	White-tailed sea eagle	FB? (WV)	1 specimen from Kom Ombo
<i>Milvus aegyptius</i> , Gm.	<i>Milvus migrans aegyptius</i> Gm.	Milan à bec jaune	Yellow-billed kite	RB, PV, WV	42 specimens: Kom Ombo: 21 Giza: 18 Roda: 3
<i>Milvus regalis</i> , Brisson	<i>Milvus milvus</i> L.	Milan royal	Red kite	PV	1 specimen from Giza
<i>Pernis apivorus</i> , L.	***	Bondrée apivore	European honey buzzard	PV	3 specimens: Kom Ombo: 1 Giza: 2
<i>Elanus caeruleus</i> , Desf.	***	Élane bleu	Black-shouldered kite	RB	4 specimens: Kom Ombo: 3 Roda: 1
<i>Circaetus gallicus</i> , Gm.	***	Circaète Jean-le-blanc	Short-toed eagle	CB, PV (WV)	3 specimens, all from Kom Ombo
<i>Accipiter nisus</i> , L.	***	Épervier d'Europe	European sparrowhawk	PV, WV	52 specimens: Kom Ombo: 22 Giza: 15 Roda: 15
<i>Buteo ferox</i> , Gm.	<i>Buteo rufinus</i> Cretzsch.	Buse féroce	Long-legged buzzard	CB, PV, WV	15 specimens: Kom Ombo: 6 Roda: 9
<i>Buteo vulgaris</i> , L.	<i>Buteo buteo buteo</i> L.	Buse variable	Common buzzard	PV, WV	10 specimens: Kom Ombo: 5 Giza: 4 Roda: 1
<i>Buteo desertorum</i> , Daudin	<i>Buteo buteo vulpinus</i> Gloger	Buse variable des steppes	Common buzzard (Western Steppe)	PV, WV	46 specimens: Kom Ombo: 11 Giza: 11 Roda: 24
<i>Aquila pennata</i> , Gm.	<i>Hieraetus pennatus</i> Gm.	Aigle botté	Booted eagle	PV (WV)	4 specimens: Kom Ombo: 1 Giza: 3
<i>Aquila imperialis</i> , Bechst.	<i>Aquila heliaca</i> Sav.	Aigle impérial	Imperial eagle	PV (WV)	2 specimens: Kom Ombo: 1 Roda: 1
<i>Aquila maculata</i> , Gm.	<i>Aquila clanga</i> Pallas	Aigle criard	Greater spotted eagle	PV, WV	27 specimens: Kom Ombo: 14 Giza: 1 Roda: 12
<i>Pandion haliaëtus</i> , L.	***	Balbusard pêcheur	Osprey	RB, PV, WV	2 specimens from Giza
<i>Circus aeruginosus</i> , L.	***	Busard des roseaux	Western marsh harrier	PV, WV	15 specimens: Kom Ombo: 3 Giza: 10 Roda: 2
<i>Circus cyaneus</i> , L.	***	Busard Saint-Martin	Hen harrier	PV, WV	6 specimens: Kom Ombo: 3 Giza: 1 Roda: 2
<i>Circus macrourus</i> , L.	***	Busard pâle	Pallid harrier	PV, WV	2 specimens: Giza: 1 Kom Ombo: 1
<i>Circus pygargus</i> , L.	***	Busard cendré	Montagu's harrier	PV (WV)	1 specimen from Roda
<i>Melierax gabar</i> , Dandin	<i>Micronisus gabar</i>	Autour gabar	Gabar goshawk	AV	5 specimens: Giza: 1 Kom Ombo: 4
<i>Falco Feldeggii</i> , Schleg.	<i>Falco biarmicus feldeggii</i> (migrant) and <i>F. b. tanypterus</i> Schleg. (breeding population)	Faucon lanier	Lanner falcon	RB, WV	6 specimens: Kom Ombo: 2 Giza: 1 Roda: 3

Tab. 2 (continued on opposite page): List of the species of diurnal birds of prey identified among the bird mummies sent from Egypt to Lyon's Natural History Museum (From Lortet & Gaillard 1903: 113). Key: ^a Goodman & Meininger (1989): MB: migrant breeder; RB: resident breeder; CB: casual breeder; FB: former breeder; PV: passage visitor; WV: winter visitor; AV: accidental visitor or vagrant; ***: indicates that the scientific name of the bird has not changed since the publications of Lortet and Gaillard.

Latin Name in Lortet & Gaillard's Publications	Updated Scientific Name	French Name	English Vernacular Name	Current Status*	Number of Specimens Identified and their Provenience
<i>Hierofalco saker</i> , Gm.	<i>Falco cherrug</i> J. E. Gray	Faucon sacré	Saker falcon	PV, WV	2 specimens: Giza: 1 Roda: 1
<i>Falco barbarus</i> , L.	<i>Falco pegrinoides pegrinoides</i>	Faucon de Barbarie	Barbary falcon	RB, PV?	1 specimen from Kom-Ombo
<i>Falco babylonicus</i> , Gurney	<i>Falco pegrinoides babylonicus</i>	Faucon de Barbarie (babylonicus)	Red-naped shaheen	AV	15 specimens: Kom Ombo: 6 Giza: 3 Roda: 6
<i>Falco subbuteo</i> , L.	***	Faucon hobereau	Eurasian hobby	MB, PV (WV)	3 specimens: Giza: 2 Roda: 1
<i>Cerchneis cenchris</i> , Frisch.	<i>Falco naumanni</i> Fleischer	Faucon crécerellette	Lesser kestrel	CB, PV (WV)	5 specimens: Giza: 3 Kom Ombo: 2
<i>Cerchneis tinnunculus</i> , L.	<i>Falco tinnunculus</i> L.	Faucon crécerelle	European kestrel	RB, PV, WV	91 specimens: Kom Ombo: 48 Giza: 21 Roda: 22

Tab. 2 (continued).

des Confluences by the MAHES research program will represent an updated complement to the work started at the beginning of the 20th century. It will include not only the perspective of naturalists and Egyptologists, but also major contributions from chemists (balm analysis and ¹⁴C dating), radiologists and physicists (X-Ray, CT-scanning,

synchrotron radiation), and textile specialists (examination of the linen bandages). Much work thus remains to be done on these birds to not only gain a better appreciation of their lives, but also identify how they died before acquiring their sacred status of *ntr:w*, destined to transmit the prayers and requests of devotees to the falcon gods of ancient Egypt.

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