

Representations of Birds in Minoan art

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ABSTRACT During the second millennium BC, the Minoan civilization was established in the southern Aegean Sea. In Minoan art, especially on Crete, birds occupied a prominent place, and were often represented in wall-paintings and craft objects. Species still occurring on the island, such as cormorants, mallards, cuckoos, owls, hoopoes, and swallows, as well as exotic taxa such as partridges and possible domestic forms such as pigeons, were the subject of artistic inspiration, and they were depicted not only in purely cult contexts, but also in the backgrounds of naturalistic landscapes. The aim of this paper is to reconsider the identification of some of the birds depicted and to discuss them in the context of the environmental conditions and osteological finds from the southern Aegean islands in Minoan times. © 1997 by John Wiley & Sons, Ltd.

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Introduction

The Minoan civilization flourished in the eastern Mediterranean basin on Crete and other nearby islands, such as Thera, Kea and Melos, during the second millennium BC (Figure 1), with the Theran settlement of Akrotiri appearing to have been destroyed by a volcanic eruption around the middle of the second millennium BC. The largest of the islands, Crete, had a wide variety of biotopes and it is well known for the present richness of its endemic flora and fauna.^{1–3} The native Quaternary faunas were also characterized by a large number of endemic species, including birds which became extinct between the end of the Pleistocene and the advent of human colonization⁴ in the Neolithic period.

The palaces and other buildings of the Minoan civilization have wall paintings in which natural subjects occupied a very important place,^{5–49} just as they did in the art of ancient Egypt.^{6–9} According to Marinatos¹⁰, Minoan art attributed great importance to the representation of landscapes and natural elements, which was

probably related to religious attitudes and perceptions of the world. The iconographic sources furnish information that supports the biological data. When the animal representations are naturalistic the images are an effective source of palaeofaunistic and palaeoenvironmental evidence for the archaeozoologist.

The aim of this study is to provide a survey of the bird life portrayed in the southern Aegean art of the second millennium BC, and to attempt to compare the present occurrence of ornithological species with that of Minoan times, on the basis of current palaeontological, archaeozoological and ornithological knowledge.

Bird depictions from Thera

The best and most original artistic talent of the Aegean Bronze Age was probably deployed in the art of wall-painting from the time of the later palaces onwards, ca. 1500 BC.¹¹ Wall-paintings very similar in style were discovered during the excavations of the settlement of Phylakopi, on the island of Melos, Hagia Irini on Kea, and several Cretan sites, but they are often fragmentary. The best-preserved paintings have come to

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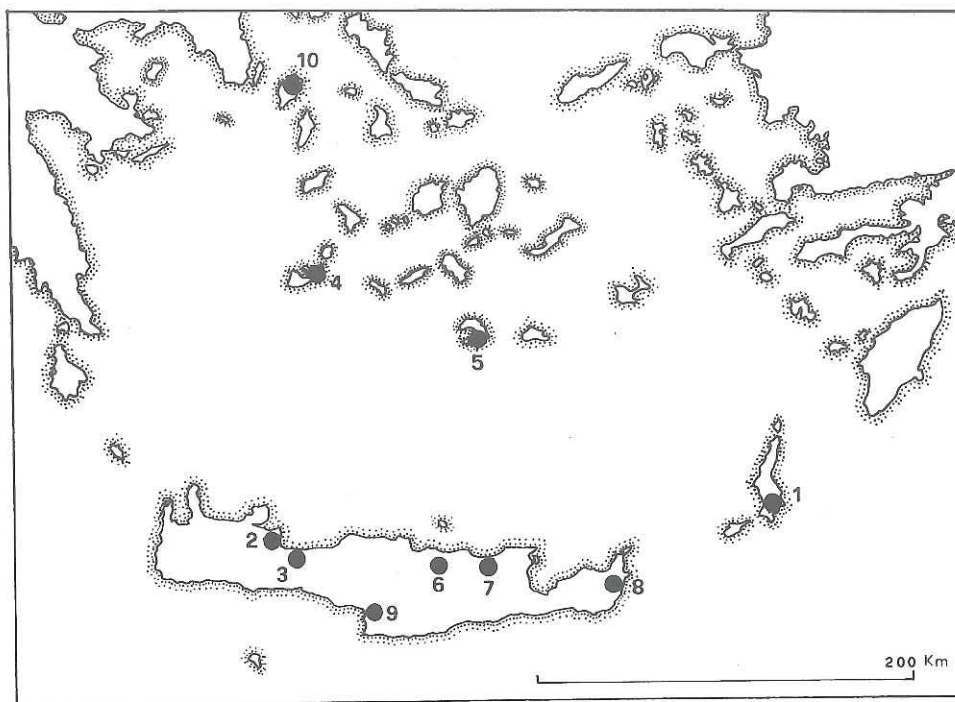


Figure 1. Map of the Southern Aegean sea with sites mentioned in the text: 1, Cave of Pigadia (Karpatos); 2, Liko cave (Crete); 3, Gumbes (Crete); 4, Phylakopi (Melos); 5, Akrotiri (Thera); 6, Knossos (Crete); 7, Mallia (Crete); 8, Zakros (Crete); 9, Hagia Triada (Crete); 10, Hagia Irini (Kea). Drawing by Silvia Cantagalli Masseti.

light in the Akrotiri settlement on the Cycladic island of Thera (Santorini). It has been observed that these wall-paintings, like most of Minoan art, are naturalistic even though they do not accurately reproduce nature. In fact, representations of botanical and zoological elements, as well as the natural environment, are pervaded by symbolic meanings and therefore stylized. However, in most cases, the depiction of the natural characters is accurate enough to permit their taxonomic identification.

One of the most remarkable of the Akrotiri wall-paintings is that known as the 'Spring Fresco' or 'Lilies Fresco', now in the National Museum of Athens. It is a large composition that adorned a room of building Delta 2,¹²⁻¹⁴ which dates from ca. 1550 BC. It depicts an aspect of the Late Minoan natural world, showing a spectacular landscape characterized by volcanic rocks from which grow red-blossomed lilies, *Lilium chalcedonicum* L.¹⁵ The white sky of the background is enlivened by flying swallows. In general these are shown in

profile, in accordance with the principle of lateral layering, but in a few figures the artist has evidently attempted to render the birds from below.¹⁴ The excellent quality of the depiction permits the birds to be identified as *Hirundo rustica* L., 1758. This is probably the most common swallow of the Mediterranean region, easily recognized by the reddish throat and forehead, and its long tail streamers (Plate 1). Wall-painting fragments showing images of *H. rustica* were also found during excavation of sectors Xesté 3¹⁶ and Alpha,^{14,17} of the Akrotiri settlement, and possibly also at the site of Phylakopi, on Melos.¹⁹ The swallows depicted in the Theran frescoes are all characterized by adult plumage. Marinatos¹³ noted that the 'Lillies Fresco' provides us with an unexpected image of Thera before the fatal eruption and suggested that swallows later omitted Thera from their migratory routes, as a consequence of the catastrophe. However, it is rather difficult to understand Marinatos's assumption because, as Douglas pointed out in 1892,

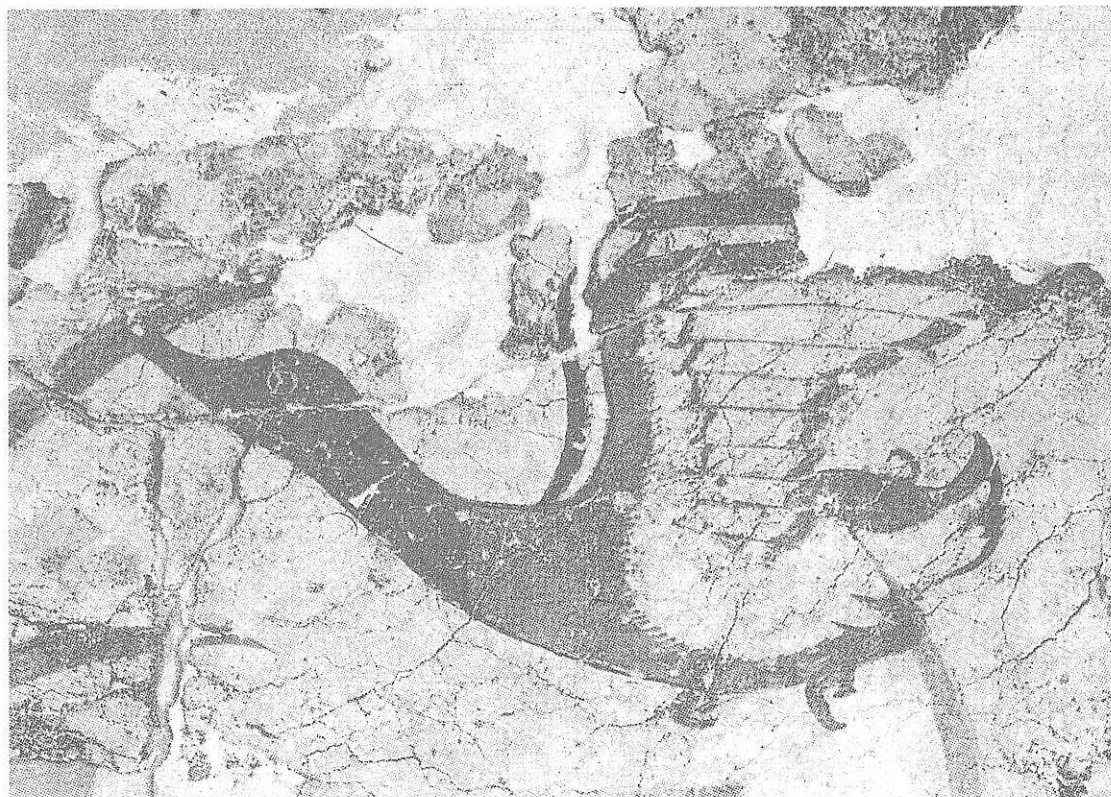


Figure 2. Detail of wall painting from Akrotiri, Thera, showing a male mallard, *Anas platyrhynchos*.

swallows still figure among the most common birds reported from the Cycladic island.

Images of wetland birds are found in wall-paintings of the building Xesté 3, Akrotiri, which probably reflect aspects of wildlife sheltered by the reed thickets of an ancient Theran swamp.¹⁶ The best preserved of these came from room 3b (Late Minoan IA, ca. 1550 BC). It represents a flying duck, clearly identifiable as a male mallard, *Anas platyrhynchos* L., 1758 (Figure 2). Again, the rendering of the species is so accurate that the Minoan artist presumably knew the subject well, and may even have used a live specimen as model. Mallards are among the most common bird species recovered from excavations of prehistoric sites in continental and insular Greece.²⁰

Bird depictions from Crete

From the 'House of the Frescoes', west of the palace of Knossos, Crete, comes a remarkable

series of paintings showing blue monkeys and blue birds in a rocky landscape among streams and waterfalls with luxuriant vegetation, dating from Late Minoan IA, ca. 1550 BC. They are now in Herakleion Museum (Figure 3). The scene represents a raid of monkeys on a nesting area, which might explain why most of the birds are depicted in flight. Blue monkeys are a recurrent subject in the production of Minoan artists. Their images have also been discovered in Theran frescoes that date from Late Minoan IA, and in the paintings from the Pillar Crypt area on Melos.²¹ The representations of the monkeys feature the unmistakable morphological patterns of the East African green monkey, *Cercopithecus aethiops* (L., 1758), but the identification of the blue birds presents some problems. According to Cameron,²² they may represent doves, and examination of the available material for the present work does indeed suggest that the images refer to rock doves, *Columba livia* GMELIN, 1789 (Plate 2). This species is

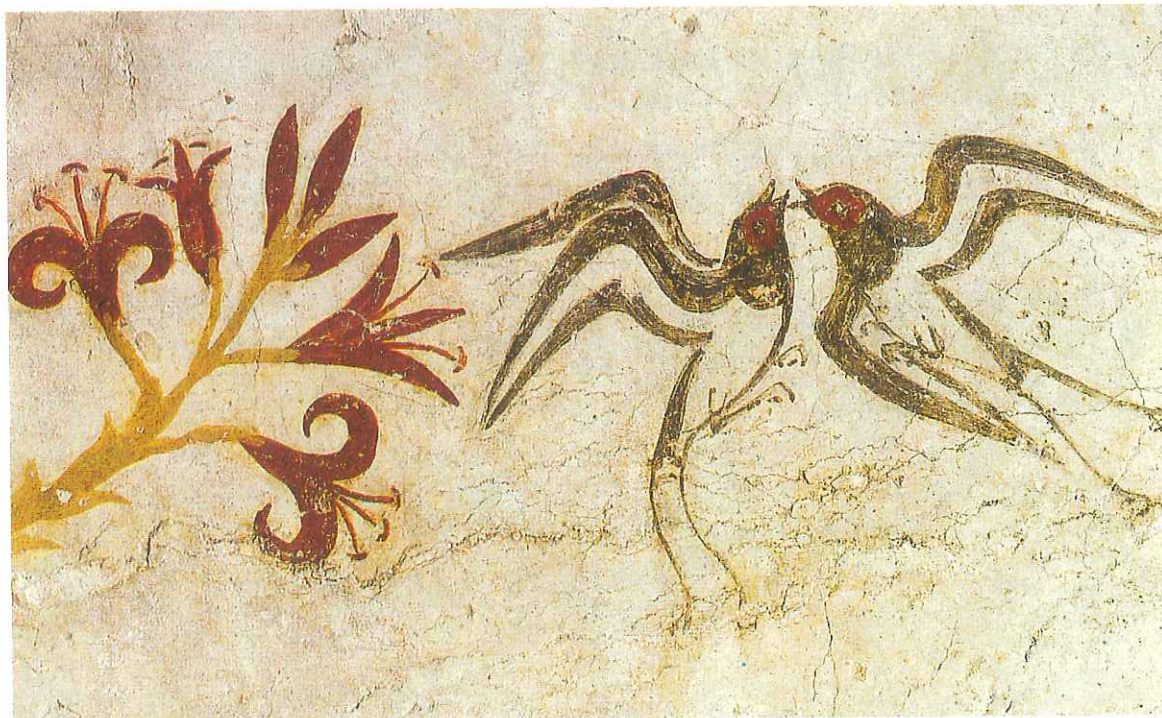


Plate 1. Detail of the 'Spring' fresco from Akrotiri, Thera, showing swallows of the species *Hirundo rustica*.

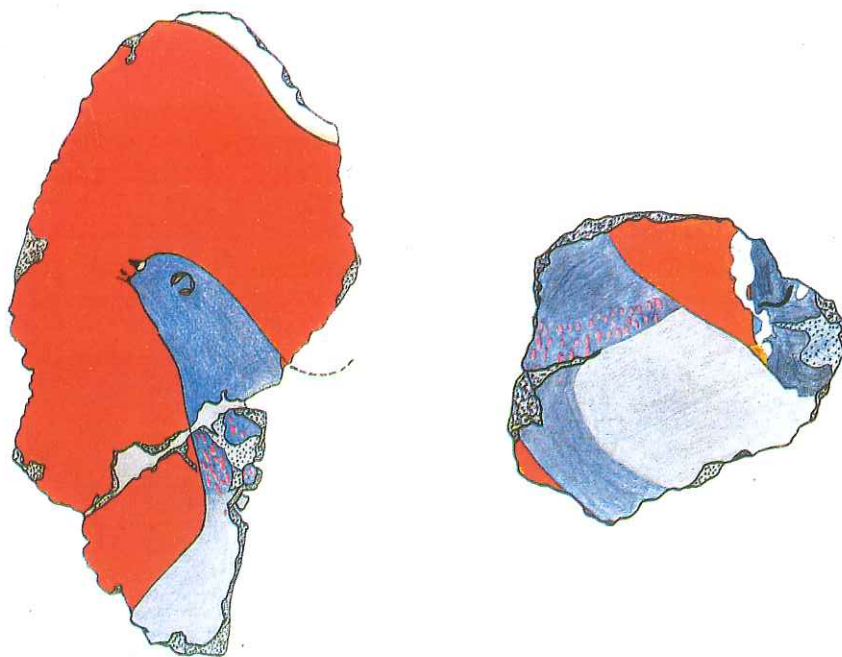


Plate 2. Detail of birds from the 'blue monkeys and blue birds' fresco.

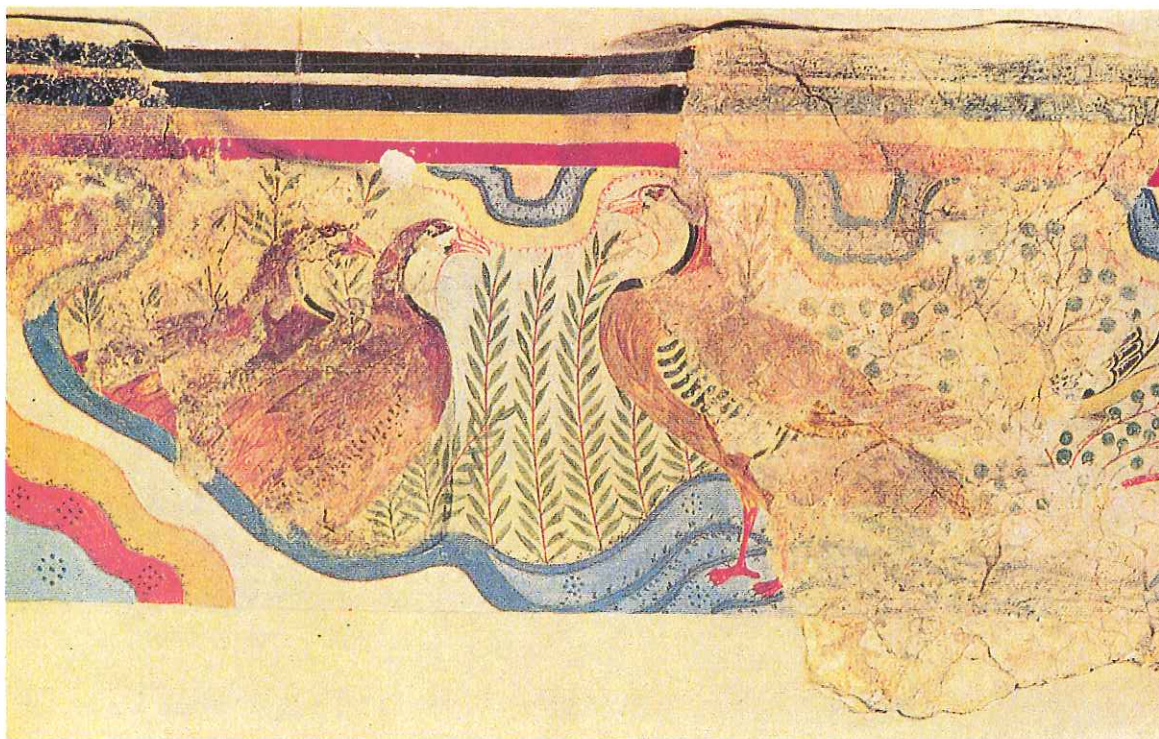


Plate 3. Detail of the 'Caravansera' frieze, Knossos, illustrating partridges.

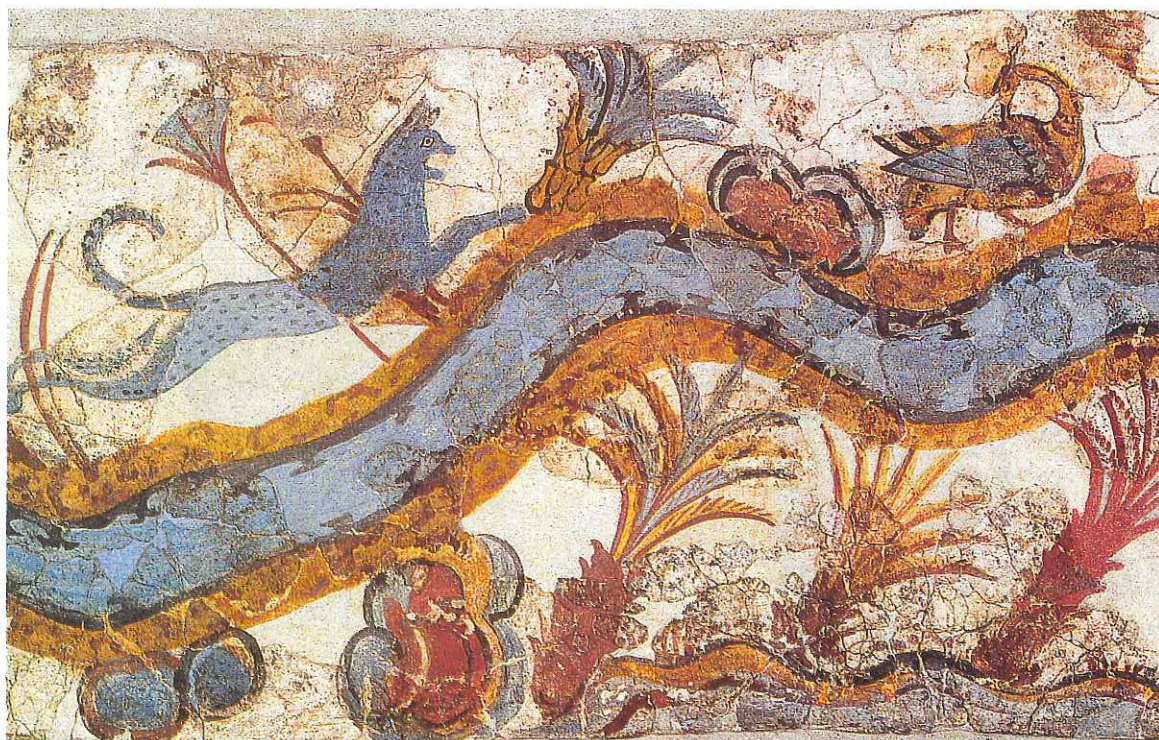


Plate 4. Detail of bird from the 'North African landscape' from the West House at Akrotiri, Thera.

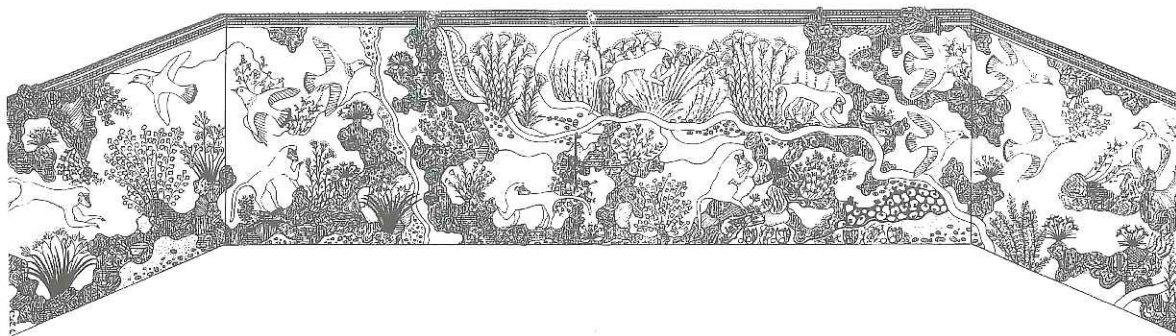


Figure 3. The 'blue monkeys and blue birds' fresco from the House of the Frescoes at Knossos restored as a continuous frieze. From Cameron.²²

recognizable from its peculiar shape and colour. The fragments show the grey-blue ground colour of the body contrasting with the pale grey of the wings. The outer tail feather tips are black. A broad glossy purple ring surrounds the neck area, from the lower throat down to the upper mantle and chest, which corresponds with the wild plumage of the rock dove.²³ The excavation of Sector Alpha at Akrotiri on Thera¹⁴ and the site of Hagia Irini on the island of Kea,^{24,25} also provided wall-painting fragments showing blue birds identical to these Knossos rock doves (Figure 4). Today the rock dove has a Palearctic, Afrotropical and Oriental distribution, although in its domesticated form it has spread all over the world. The occurrence of the species has been documented since the Late Pleistocene on Karpathos²⁶ and Crete,²⁷ where it is still reported as a common resident bird in open and rocky areas.^{28–30} The birds depicted in the Knossos wall-paintings show no colour variations resulting from human selection, and the realistic depiction of their plumage seems to refer to the wild form which is still widespread along the cliffs and in the sea caves of the southern Aegean islands.

From a room of the so-called 'Caravanserai' building, south of the Palace of Knossos, comes another remarkable frieze illustrating partridges and hoopoes, *Upupa epops* L., 1758, in a very life-like style, possibly from Late Minoan IB (Plate 3). Two species of partridge, the chukar, *Alectoris chukar* (J. E. GRAY, 1830), and the rock partridge, *A. graeca* (MEISNER, 1804), are today widespread in

the Aegean region. Crete lies at the intersection between the present eastern Mediterranean distribution of both taxa, as rock partridges occur in most of the Balkan peninsula, and chukars are widely distributed in Anatolia and in many Aegean islands, including Crete.^{23,31} The latter species is reported as a resident bird of rocky habitats from the southeastern Balkan peninsula east through Turkey, the Caucasus, Transcaucasia, and the Iranian region to the Middle East.³² Today Crete is characterized by the occurrence of the sub-species *A. chukar cypriotes* HARTERT, 1917, which also occurs in southern Turkey, Cyprus, and the southern Aegean islands, although it was first described as a Cypriot endemic form.^{23,33,34} On Crete, chukars were caught to meet the dietary needs of the natives until recent historical times, and still figure among the main local game birds.²⁸ The fragmentary condition of the 'Caravanserai' wall-paintings does not allow the taxonomic features

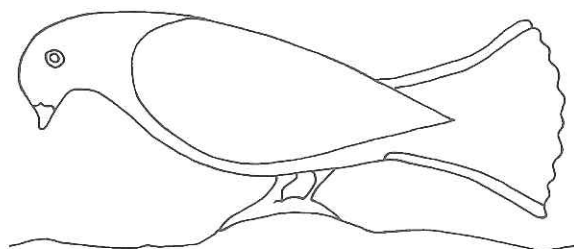


Figure 4. Detail of bird from the 'blue bird fresco' at Hagia Irini, after Abramovitz.²⁵

of the birds to be easily determined; however, some of the best preserved show an evident absence of speckles above the neck, and this is generally recognized as a main characteristic that differentiates the plumage of the rock partridge from that of the closely similar chukar^{23,32,35} (Figure 5).

The decoration of a sanctuary stone vase (rython) in Herakleion Museum from the Minoan palace of Zakros, in eastern Crete, dating from about 1650–1500 BC shows a peak sanctuary, on the roof of which a group of four wild goats is resting, probably ruminating. Two other goats are shown, one approaching the resting group, while the other is running in the 'flying gallop' position towards the lower slope of the mountain. The relief also shows two medium-sized birds, one flying above the right side of the scene (Figure 6), the other alighted on one of the horns of consecration which decorates the sanctuary. According to Platon,³⁶ these are sacred birds probably representing hawks, which perhaps symbolized the presence of divinities. Even if they are accurate from an artistic perspective, the naturalistic representation of these birds raises doubts about their identification. Rather than a hawk, one resembles a magpie, *Pica pica* (L., 1758), but this is unlikely because it is a species unknown to the Quaternary biogeography of Crete.^{27,28} The location of the scene on the top of a mountain may suggest that to make an accurate attribution we must examine the extant mountain avifauna of Crete, where choughs, *Pyrrhocorax pyrrhocorax* (L., 1758), are one of the more characteristic species.³⁰ However, the birds of Zakros feature necks, tails and wings that are too elongated for choughs, and do not show the slender bill typical of the species. The taxon closest to the birds on the rython seems to be the cuckoo, *Cuculus canorus* (L., 1758). The slender proportions of the birds portrayed, their short legs and long tails could be interpreted as features of the adult cuckoo. As noted by Heinzel *et al.*,³⁵ adult cuckoos resemble birds of prey, but they can be distinguished by their non-hooded bill as well as colour of plumage, which the monochrome vase decoration could not show. In the southern Aegean islands, cuckoos are reported from Thera,³⁷ and as breeding birds from

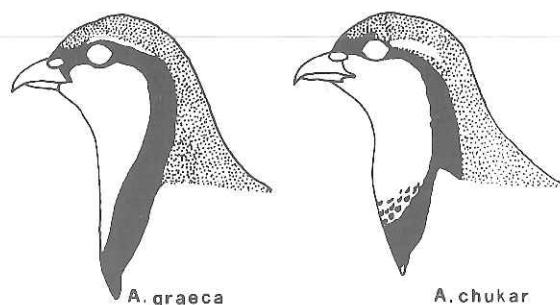


Figure 5. Adult plumage variations between *Alectoris graeca* and *A. chukar*. Drawing by Silvia Cantagalli Masseti, after Johnsgard.³²

Crete^{28,30,33} The cuckoo is well known for its habit of laying its eggs in the nests of other birds. If this is in fact the species represented on the decoration of the Zakros rython, the image may hide a symbolic meaning.

A golden earring from the so-called Aigina Treasure now in the British Museum, possibly from the Chrysolakkos funerary complex at Mallia (Middle Minoan III, ca. 1700–1550 BC), is adorned by double-looped chains terminating in gold discs and flying owls. It is generally reputed to be Cretan work of the seventeenth or sixteenth centuries.⁶ Although the artistic rendering of the birds is not very realistic, these golden images are one of the few representations of owls in Minoan art and are most similar to the little owl, *Athene noctua*. Crete has been described since antiquity as an island not inhabited by little owls, according to classical authors such as Aristotle (*Historia animalium*), Pliny the Elder (*Naturalis historia* VIII and X, 76), and Aelian (*De natura animalium*, V. 2), and the palaeontological evidence seems to confirm this absence. In recent times, the little owl has been recorded from Thera,³⁴ Karpathos,²⁶ and also Crete, although only as a rare resident bird.^{26,28,30} It is possible to imagine that the legend which grew up around the supposed absence of the little owl on Crete, like the swallows on Thera, was related to cult and symbolic meanings.

Exotic environments

As noted above, the naturalistic portraits of the Thera landscape depicted in the 'Spring Fresco'



Figure 6. Detail of the restored relief decoration on a sanctuary stone vase from the palace at Zakros, Crete. Photograph M. Masseti by permission of Heraklion Museum.

and the wall-paintings of Xesté 3 are realistic representations that show aspects of the natural environment familiar to the artists. Other artistic productions of the Theran Minoan settlement, however, provide a different perception of natural subjects, which have been depicted as if the artist did not have sufficient knowledge of the scenes he was asked to portray by his patrons. This may be the case of the depictions of exotic habitats, extraneous to the ancient Aegean natural world, which were discovered in the so-called West House (Ditike Oikia) of Akrotiri, Thera. These images of the Late Minoan IA period constitute a miniature frieze portraying the glory of Minoan sea power, with scenes of sea-faring, towns, battles, and exotic landscapes.^{14,39} According to one interpretation, warships attended by sporting dolphins sail in triumph past what is thought to be the Libyan coast of Africa.^{40,41} Certainly, the subtropical

landscape depicted in this scene has elements unusual to the natural environment of the southern Aegean islands. In a riparian setting with palms and other exotic trees, aquatic birds and wild mammals are depicted in the eternal struggle for survival (Plate 4). The painting includes a representation of a spotted carnivore stalking a pair of aquatic birds. These were described by Marinatos as 'ibis or flamingo' due to their curved beaks, whereas Doumas identified them as wild ducks. The two birds, together with another in flight further to the left, have the shape of the duck family (Anatidae), but, however, look more like geese than ducks. They have a long neck, short legs and squat body, and resemble Egyptian geese, *Alopochen aegyptiacus* (L., 1766), but it is impossible to refer them to any precise genus or species, because of the inaccuracy of the representation. The same unrealistic mode of depiction also characterizes

the stalking carnivore. It can be assumed that, rather than portraits of species known to the artists, both the depicted birds and the spotted carnivore represent free elaborations of iconographic models that were not of Minoan origin. This scene seems to derive its inspiration from pattern books of contemporary Egyptian art, where wetland hunting scenes were a common subject of paintings.⁵ Evidence of cultural contacts between Egypt and the Minoan world has been identified from as early as the Cretan pre-palatial Early Bronze Age and the Egyptian Early Dynastic, Old Kingdom and First Intermediate Period,⁴² ca. 3000–1900 BC. Among the main examples of this Egyptian iconographic tradition one might cite the wall-paintings in the tomb of Khnumhotep III at Beni Hasan of ca. 1900 BC, or those from the Theban tomb of Nebamun of ca. 1450 BC. Whatever its source of inspiration, the 'subtropical landscape' of the Thera 'West House' miniature seems to describe a natural environment unknown to the Minoan artist.

On southern Crete, the excavations of the Minoan villa of Hagia Triada, in the vicinity of Phaistos, yielded a fragment of a large wall-painting fragment of Late Minoan IA that is discoloured by fire (Figure 7). It shows a scene similar to that depicted in the 'North African landscape' from Thera. The fragment, now at the Herakleion Museum, features a cat-like carnivore waiting in ambush in dense vegetation for a red bird with a long black tail. This fragment also seems to derive its inspiration from the Egyptian Nilotic scene. If the identification of the carnivore is again impossible due to its improbable depiction, doubts must also arise about the identification of the bird. It has been described as pheasant-like⁴⁴ or, according to Hood, reminiscent of a pheasant. It seems rather to resemble a cormorant, perhaps depicted according to the Egyptian iconographic tradition.⁷ In the Hagia Triada bird, the morphological characters of a cormorant are its posture, the long square tail, the elongated body, and the long neck, which is held slightly retracted. Further, the location of the image in the context of a scene of 'Nilotic' inspiration suggests that it refers to an aquatic bird. Three species of cormorants are reported today from Crete: the

cormorant, *Phalacrocorax carbo* (L., 1758), the shag, *P. aristotelis* (L., 1761), and the pygmy cormorant, *P. pygmeus* (PALLAS, 1773).^{28,30,38} As far as is presently known, the shag is the only representative of these documented from the Late Pleistocene deposits of the island.²⁷ However, this bird, like other biological elements portrayed in Cretan wall-paintings that look so natural yet defy classification, might be a species unknown to nature.

Discussion

In Minoan art, there seems to be no reflection of the endemic birds that characterized the Late Pleistocene faunas of Crete, such as *Aquila chrysaetos simurgh* WEESIE, 1988, *Gyps melitensis* LYDEKKER, 1890, and the endemic terrestrial owl, *Athene cretensis* WEESIE, 1982, all of which are likely to have been extirpated long before the advent of Minoan culture on the island.^{27,49} The bird fauna documented by the artistic representations from Minoan archaeological sites, confirmed by the osteological data, is essentially referable to the extant western Palaearctic species of the eastern Mediterranean. The aquatic birds set in wetland landscapes probably attest to the relatively widespread occurrence of this habitat on some of the southern Aegean islands during the Bronze Age. With the exception of the 'Nilotic scenes' the representation of wetlands in the Minoan frescoes must be considered not merely as ornamental motifs, but as the pictorial rendering of certain aspects of the contemporary Minoan natural world.

The avifauna that seems to have been most attractive for the Minoan artist were species that could be set into places occupied by humans and living side by side with them. These include Mediterranean migratory wild species, such as the rock dove, the hoopoe and the swallow. In contrast with the majority of the osteological remains of birds reported from the excavations of Aegean prehistoric sites, which includes great bustard, *Otis tarda* L., 1758, mallard, rock partridge, and quail, *Coturnix coturnix* L., 1758,²⁰ not all of the species depicted in Minoan art are necessarily edible, nor perhaps were they considered so at the time. As discussed, the

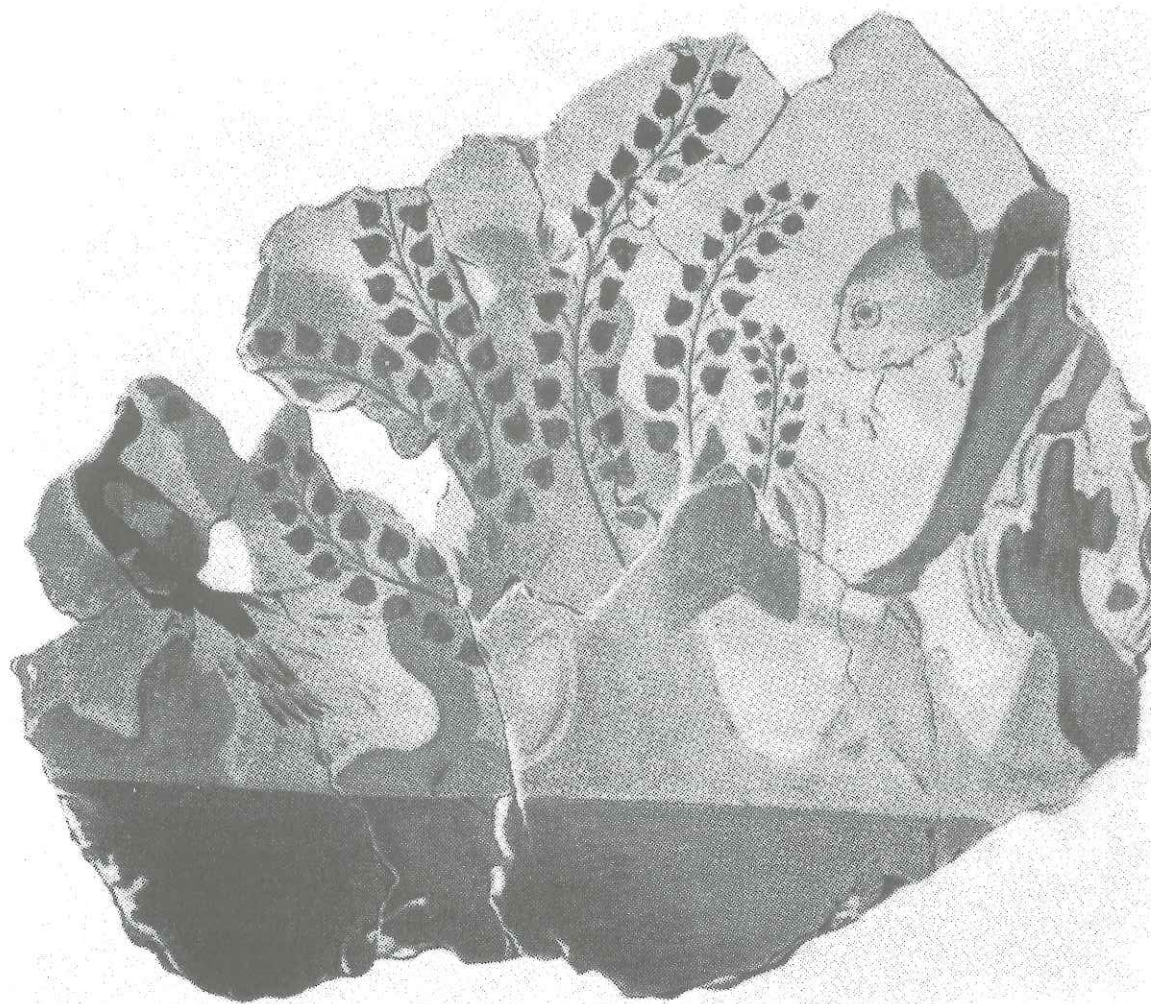


Figure 7. Detail of wall-painting fragment from Hagia Triada, Phaistos, Crete, showing a carnivore stalking a bird with a long tail.

rock doves of the 'House of the Frescoes' at Knossos have the plumage of the wild form, but the context in which they were depicted may indicate a place controlled by humans, such as a nesting area. This is suggested by the fact that the East African blue monkeys depicted in the same scene must have had to be kept within an area controlled by humans, because of their rarity and value. Whether the birds depicted on the rython from Zakros are cuckoos, rather than hawks, or are another as yet unidentified species, they would seem in any case to represent a form that was not particularly consonant with life in areas densely settled by man. In fact, the Minoan artist set them on a mountain top, which was

characterized by a poor and scattered bushy vegetation, and was apparently located in an area marginal to human settled environment. Probably, not by chance, this is the same type of habitat that provided refuge to another representative of the wildlife of Minoan times, the Cretan wild goat, *Capra aegagrus* ERXLEBEN, 1777, depicted in the same scene.

Minoan artists also portrayed exotic taxa. Some can easily be recognized as imaginary representations, but in other cases they represented real biological elements that must have been imported from abroad. Whatever species is represented by the partridges in the frescoes of the Knossos 'Caravansera', the paintings

document the occurrence on the island of galliformes that has never been documented among the native Quaternary avifauna of Crete. Their depiction suggests that they were imported by humans to the island. They were perhaps bred in captivity, and kept in a sort of menagerie, as in the case of the blue monkeys.

The discovery in archaeological contexts of Minoan Crete of bird species extraneous to the native Quaternary faunas is not surprising, as excavations of Minoan sites have often yielded exotic cultural objects as well as flora and fauna imported from the Greek mainland, North Africa, or the Near East. Plants and animals, together with artistic ideas and fashions, were spread by trade and especially, according to Hood, by the exchange of costly gifts between rulers. In the Minoan world, the evidence of the importation of exotic animals is attested by the importation (perhaps through Egypt) of creatures from Ethiopia, such as the blue monkeys from Knossos, Melos and Thera, of which osteological remains have been reported from Thera.^{5,45–47} Gazelles, depicted in the frescoes of Thera (Ditike Oikia, Room Beta 1) may also have been imported, although no remains have been reported.

As well as contributing to knowledge of contemporary fauna, the artistic representations of the natural environment in Minoan art show that there had already been a profound redefinition of the ecological equilibrium on the islands, essentially related to human intervention. It had begun in prehistoric times as early as the second millennium BC and was destined to continue throughout history.

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The Identification of Extant European Bird Remains: a Review of the Literature

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ABSTRACT This paper reviews the literature on the identification of bird bones found in European sites. Such a review is useful both to Quaternary palaeontologists and to zooarchaeologists attempting to identify bird bones. The publications are considered systematically. We stress that the published works should not be used for identification in isolation, but that a comparative collection is essential. © 1997 by John Wiley & Sons, Ltd.

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Key words: bird bones; identification; Europe; Quaternary.

Introduction

The purpose of this review is to produce a list of literature of relevance to those Quaternary palaeontologists and zooarchaeologists attempting to identify bird bones in Europe. Various authors have commented on the problems inherent in the identification of avian remains.^{1,2} It was therefore thought that such a list would be of great value to both disciplines, as much of the literature is far flung and sometimes obscure. Some of the papers have an emphasis on bone identification while others are comparative studies using osteology in order to ascertain systematic relationships between birds. The latter, although not designed for use by Quaternary palaeontologists or zooarchaeologists, are nevertheless useful. We have also attempted to include papers such as site reports in which authors have published the criteria by which bones were identified.

Broadly speaking there are two aspects to the identification of bird remains. They are the use of comparative measurements and the use of comparative morphology. The subject of size has been dealt with by Ericson,³ Northcote^{4–7}, Lahtiperä and Bochenski,⁹ and Driesch¹⁰ also details further some of the problems of using measurements. It is clear that variation within a species, whether its source is geographic, temporal or sexual will hinder specific identification or at the very least confuse the picture. Morales¹¹ discusses this problem in relation to the two European species of kite and also questions the possibility of identifying the species of thrush and partridge (*Alectoris* spp). Less often, however, is consideration given to variation in morphology between individuals of the same species. The work of Ashley¹² makes a particular contribution in terms of method: in addition to measurements, morphological features are quantified in terms of proportionate occurrence, and Bochenski¹³ too uses diagnostic differences between species quantified much in the manner done for Cervids by Lister^{14,15} and for Bovids by Gee.¹⁶ The methodology described in the study done by Bochenski and

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