



The fauna of Greece and adjacent areas in the Age of Homer: evidence from the first written documents of Greek literature

Eleni Voultsiadou* and Apostolos Tatolas

Department of Zoology, School of Biology,
Aristotle University of Thessaloniki,
Thessaloniki, Greece

Abstract

Aim To study the composition of fauna in Greece and adjacent areas around 3000 years ago based on the knowledge of Homeric man about the animal kingdom.

Location Greece and adjacent areas.

Method Analysis of information derived from a thorough study of the first written documents of Greek literature, the epics, attributed to Homer and Hesiod.

Results Records of 2442 animals were found, corresponding to 71 different animal names. All animal names were attributed to recent taxa, at different category levels; the majority (65%) were assigned to taxa at the species level and the rest to supraspecific taxa. Most of the animal names recorded in the epics have been retained as integral words or roots in Modern Greek and they have been used in the formation of the Latin scientific taxa names. Five animal phyla appear in the texts: (1) Chordata (mostly birds and mammals), (2) Arthropoda, (3) Mollusca, (4) Porifera, and (5) Annelida. Information in the epics also includes morphology, biology, ecology (habitat and prey–predator relationships), and behaviour. The presence of several species in the area in that period is documented on the basis of archaeological and/or palaeontological findings from various Greek localities.

Main conclusions The knowledge of Homeric man about animals, as reflected in the epics, seems to concentrate mainly, but not exclusively, on animals involved in human activities. The populations of some common animal species of the Homeric Age in Greek populated areas have become extinct or reduced at the present time. On the other hand, some common animals of the present time do not appear in the epics, since they were introduced later. Useful zoological information can be derived from the study of classical texts, which may help historical biogeographers as a supplement to archaeology and art, in the reconstruction of faunas of older periods.

Keywords

Age of Homer, animal distribution, animals in antiquity, extinction, geometric period, Greece, historical zoogeography.

*Correspondence: Eleni Voultsiadou,
Department of Zoology, School of Biology,
Aristotle University of Thessaloniki, GR54124,
Thessaloniki, Greece.
E-mail: elvoults@bio.auth.gr

INTRODUCTION

Scientists have searched for palaeo-faunistic and palaeo-environmental evidence in their attempt to gain an understanding of animal life and the environment in the past and for evidence of human intervention and subsequent impact on regional faunas. Palaeontologists and archaeologists have

studied osteological material found in Greek archaeological sites during excavation. Based on these findings, they have drawn interesting conclusions concerning the relationships between man and animals in previous epochs, such as the Pleistocene (Jarman, 1996) or the early historical periods such as the geometric period (Tsoukala & Hatzi-Valianou, 1996; Wilkens, 1996). Another angle of approach has been through

the study of art. Iconographical sources have commonly given zoologists useful evidence. For instance, various authors have tried to recognize and record the animals depicted in Minoan wall paintings, vases or figurines (Vanschoonwinkel, 1996).

In addition to archaeology and art, useful information can be derived from written documents from early civilizations. The Age of Homer is a critical moment in Greek history. It is the late geometric period, covering the eighth and seventh centuries BC. During this period the Greek alphabet was developed and the first written documents of Greek literature, the epics, appeared in two main forms: the heroic epic represented by Homer and the didactic epic represented by Hesiod. The epics, in spite of being questionable as historical documents, constitute a useful source for historians and archaeologists in their attempt to understand early historic community culture. The 'Homeric community' reflects three different time periods (Latacz, 1997; Mazarakis Ainian, 2000): (1) prehistoric (mostly Mycenaean), (2) intermediate (corresponding to the dark ages, covering the eleventh to ninth centuries BC), and (3) the eighth century BC (the period in which Homer lived). The latter two form the so-called 'geometric period'. A fourth layer, which is mythical, appears to be an invention of the poet's imagination.

Langdon (1993) considered that the dynamic relationship between art and poetry signalled both the climax and the end of the Age of Homer. The presence of animals is conspicuous in both the art and the epics of this late geometric period. These first written documents of Greek language contain valuable information on the relationship of Homeric man with animals. Furthermore, the results of their study should help zoologists and historical zoogeographers reconstruct the fauna of this age. This paper presents an annotated list of all animals appearing in the epics, makes an attempt to assign the classical animal names to recent taxa and gives a comparison of fauna illustrated in the texts of that age to present fauna.

CLASSICAL NAMES AND RECENT TAXA

As mentioned above, an attempt was initially made to record all animals appearing in the texts of the Age of Homer and to correlate them to recent taxa. To achieve this goal, according to the historical documentation of Greek classical literature of that period (Lesky, 1971; Easterling & Knox, 1985), the following texts were studied *Iliad* (I) and *Odyssey* (O) by Homer, *Theogony* (T), *Works and Days* (D), *Aspis* (A) and *Catalogue of Women* (C) by Hesiod, and the *Homeric Hymns* (H) written after Homer's death. The standard editions of Oxford classical texts were used together with valid translations in Modern Greek, such as those by Doukas (2000), Lecatsas (1941, Zacharopoulos Press, Athens), and Papaditsas and Ladia (1997, Estia Bookstore Press, Athens). First, all lines were checked for animal records. The correlation of animal names to recent taxa was made possible by combining the information embodied in animal names (most of which have been retained in Modern Greek) with morphological descriptions and/or information on the ecology, biology, and behaviour

given in the texts. Wherever possible, this was supported by available archaeological or palaeontological evidence. All the above data were evaluated by employing a variety of zoological books and papers (Nowak, 1991; Handrinos & Akriotis, 1997), as well as encyclopaedias and general or specialized lexicons (Encyclopedia Papyros Larousse Britannica; Liddell and Scott: *Great dictionary of the Greek language*; Kofiniotis: *Homeric Lexicon*). The works of Aristotle (i.e. *History of animals*) were also consulted. In addition to this material, various specialists in different taxonomic groups were consulted.

Care was taken to be as accurate as possible when attributing classical names to modern taxa. As a result, in various cases for which no clear evidence existed in the texts, we preferred to suggest a higher taxon instead of a specific species or genus. The fact that a classical name has been retained in Modern Greek was not in itself sufficient to identify a species, as shown through the examples given below. We should however, stress the continuity of Greek language from the Homeric poems up to the present, pointed out by various authors (Browning, 1983; Babiniotis, 2000; Doukas, 2000). It is remarkable that the majority of the Homeric words are used in the same way and many of them with the same meaning in Modern Greek. Additionally, etymology proves in several cases to be critical in recognizing animals. Some examples are: κυνοραϊστής (κύων = dog + ραίω = destroy), „μίονος („μι = half + νος = donkey), πάρδαλις (παρδαλός = spotted), πολύπους (πολύς = many + πούς = leg).

Detailed justification was not considered necessary for the names of well-known domestic animals such as the horse, cow, goat, sheep, donkey, pig, as well as the lion, wolf, honeybee, brown bear or the monk seal. However, in some cases the recent scientific name of an animal was not so clearly evident, or the authors had to decide among several closely related species. Several examples are given below showing how the identification of some animals was traced through various clues given in the texts.

The name „μίονος γργότερος (*Iliad*, II.852) was attributed to the species *Equus onager* (wild mule) due to the adjective γργότερος (wild) and the information about its area of origin, somewhere in northern Asia Minor. The known distribution of this species covers the area around the Caucasus, the Black Sea, Anatolia and Iran, although its populations are very restricted nowadays due to hunting and habitat destruction. This animal was distinguished from „μίονος (mule) which was frequently reported in the epics and was recognized as the hybrid of *Equus asinus* and *Equus caballus*. The animal called θωδιός (heron) (*Iliad*, XI.274) was identified as the night heron, *Nycticorax nycticorax* since it is reported to appear during the night. Μύια (fly) was recognized as a species of the family *Calliphoridae* according to the fact that it lays its eggs on wounds or decaying bodies. Αἴξ γργίη was attributed to the wild goat, *Capra aegagrus* as a result of the description of its habitat (*Odyssey*, IX.118–124) and the length of its horns (*Iliad*, IV.105). The name δελφίς (dolphin) most possibly corresponds to the most common dolphin species *Tursiops truncatus* because of its silver colour and the fact that it appears in schools very near

the coast (*Aspis*, 207–212; *Iliad* XX.122). Ύψ (woodworm), although as a name has been used in the construction of the genus name *Ips* of the family Scolytidae (the members of which live in wood) was attributed to a member of the family Dermestidae, since it is reported to eat objects made of animal body parts, such as Odysseus' bow (*Odyssey*, XXI.393). The species *Falco peregrinus* was assigned to the name κίρκος (a kind of harrier) because it was described as being very fast, nesting on rocky mountain slopes and praying on woodpeckers. *Cuculus canorus* was recognized under the name κόκκυξ, from its characteristic call mentioned by Hesiod (*Works and Days*, 486). *Cygnus cygnus* is the species behind the name κύκνος (swan), due to its piercing cry (*Homeric Hymns*, XXI.1). Πολύπους (having many legs) most probably refers to the species *Octopus vulgaris*; its distribution in shallow waters makes the observation of its thalamus easier (*Homeric Hymns*, III.77). The name τήθεον, although in some lexicons is described as 'a kind of bivalve', was recognized as a sea squirt of the class Ascidiacea, since a detailed description of these animals is given by Aristotle under the name τήθυνα (*History of Animals*, 531a9–31). The common commercial sponge species *Hippospongia communis*, which bears the most numerous and large canals, possibly hides behind the name σπόγγος (sponge) (*Odyssey*, I.111, XXII.439), while χέλυς is the margined tortoise, an endemic Greek species (*Testudo marginata*) having a large shell which was used by Hermes for the construction of his lyre (*Homeric Hymns*, IV.24–48). Finally, χελιδὼν (swallow) should be attributed to the swallow, *Hirundo rustica*, which is observed even inside buildings (*Odyssey*, XXII.239) and has been depicted on wall paintings in Thera (Masetti, 1997).

Overall 2442 records of animals, corresponding to 71 different animal names were revealed after a thorough study of the Homeric and Hesiodic epics. All animal names were correlated to current animal taxa (Table 1) at different category levels; the majority (65%) were assigned to species and the remaining to supraspecific taxa.

Out of the total of 2442 mentioned records of animals, 1283 were found in *Iliad*, 783 in *Odyssey*, 178 in *Homeric Hymns* and 195 in Hesiodic works. Only three of the animals recorded, the ant, the cuckoo and the carrion crow, were found exclusively in Hesiod, while a lot of animals found in the Homeric epics do not appear in the works of Hesiod. The tortoise appears exclusively in the 4th *Homeric Hymn*.

Additionally, c. 100 records that were not included in the above calculations were either common animal group names such as ἄχθους (fish) and ὄνις (bird), or zoological terms describing animal body parts, e.g. κέρας (horn), λοφίη (mane), ὄστρον (udder), μηρίον (thigh) and γαμφηλή (jawbone).

As seen in Table 1, 56 of the 71 classical Greek animal names (79%) found in the epics appear in Modern Greek, according to the *Lexicon of Modern Greek language* (Babiniotis, 2000). Although in some cases they do not have exactly the same form, they still retain the same main theme. Furthermore, 61 of them (86%) have been used in the formation of Latin scientific names. These estimations were based on species

catalogues of certain publications, such as Honacki *et al.* (1982) and Howard & Moore (1991). The wide use of Greek words in the zoological nomenclature is reflected by the set of rules found in *The International Code of Zoological Nomenclature* (Ride *et al.*, 1985) governing their transliteration and latinization. The contribution of the Greek element to the nomenclature and terminology of some animal groups reaches 80% (Voultsiadou & Gkelis, 2005).

HOMERIC MAN AND HIS KNOWLEDGE OF THE ANIMAL KINGDOM

The data given in Table 1 show that man's knowledge of animals in the Age of Homer based on the epics, concentrates around 5 phyla; of the animal taxa reported in the examined texts, c. 81% were Chordata, 14% Arthropoda, 1.5% Mollusca, 1.5% Porifera, and 1.5% Annelida (Fig. 1). Within Chordata, birds and mammals prevailed, including 48% and 41%, respectively, of the total chordates recorded. Tunicates, fish and reptiles participated with low percentages (2%, 4% and 5%, respectively).

Mammals and birds, besides being easily recognizable, are more familiar to man at that age due to their involvement in human activities: agricultural works and transportation (cattle, horses and mules), hunting (wild boar, deer, brown hare, lion), food and clothing (goat, sheep, pig), construction of household and war objects (cattle, dog, goat), offerings to gods (cattle, sheep), and symbolism (e.g. lion, owl, common crane). This is further supported by the number of records of each animal in the studied texts. The most frequently appearing animals are: the horse (contributing with 30% of the total records), domestic cattle (14%), the pig (8%), the dog (7%), the goat (7%) and sheep (7%). These six animals constitute 73% of the total records. Some animals occur frequently in metaphors and similes used to describe human behaviour or appearance. The owl, for example, appears in the texts only through the adjective γλαυκώπις meaning 'having shining eyes' or 'grey eyed'. Obviously, the prominence of these animals in the texts does not necessarily mean high densities of populations at that time.

Invertebrates and small-sized vertebrates do not seem to be of interest to man, with the exception of some species of economic importance (either useful or harmful to people or their domestic animals). Examples are the honeybee, the common sponge, the sea squirt, the gadfly, and the tick. The knowledge of marine fauna also seems to be limited. The only marine animals mentioned are the monk seal, cat shark, European eel, bottle-nosed dolphin, common sponge, common octopus, and an edible ascidian species. Fish are reported in general as ἄχθους and the sea is often called ἄχθυες πόντος meaning 'sea full of fish'.

Knowledge about the ecology and behaviour of animals is illustrated in the texts. Most of the time, information is given on the habitat and prey–predator relationships (Fig. 2). Behaviour, diet and migration are also discussed in several cases. Thirteen taxa are reported more than three times for their ecology or behaviour (Fig. 3): the dog is the most frequently reported of all (17%) due to its involvement in

Table 1 List of taxa names attributed to the classical Greek animal names recorded in the epics. Common English names, total records found and one selected record for each item are also given

Scientific name	Classical Greek name (modern Greek name)*†	Common English name	Number of records	Selected record‡	Example of scientific name formation
Accipitridae sp.	αἰετός, πέρικνος*† (αετός)	Eagle	19	I(XVII.674)	<i>Gypaetus</i>
Acrididae sp.	ἀκρίς*† (ακριδα)	Locust, grasshopper	1	I(XXI.12)	<i>Acrididae</i>
<i>Anguilla anguilla</i> (Linnaeus, 1758)	ἐγγχελυσ*† (ἐγγχελυσ, χέλι)	European eel	2	I(XXI.203)	<i>Scolecenchelys</i>
<i>Anser anser</i> (Linnaeus, 1758)	χην*† (χίνα)	Graylag goose	9	O(XV.160)	<i>Chenoptera</i>
<i>Apis mellifera</i> Linnaeus, 1758	μέλισσα*† (μέλισσα)	Honeybee	107	O(XIII.105)	<i>L. melissa</i>
Araneidae sp.	ἀράχνη*† (αράχνη)	Spider	4	D(777)	<i>Arachnida</i>
Asciacea sp.	τῆθος†	A kind of tunicate	1	I(XVI.747)	<i>Tethya</i>
<i>Athene noctua</i> (Scopoli, 1769)	γλαῦξ*† (γλαύκα)	Little owl	112	I(X.553)	<i>T. glaucopis</i>
Aves sp.	αἰθυα†	Unknown bird	2	O(V.352)	<i>Aethia</i>
Aves sp.	κῆξ	Unknown bird	1	O(XV.479)	
Aves sp.	κύμινδης, χαλκίς	Unknown bird	1	I(XIV.290)	
<i>Bos taurus</i> Linnaeus, 1758	βοῦς*† (βους, βόδι)	Domestic cattle	340	I(XX.466)	<i>Bos</i>
Calliphoridae sp.	μυῖα*† (μύγα)	Blow fly	9	I(XIX.25)	<i>C. myia</i>
<i>Canis aureus</i> Linnaeus, 1758	θῶς*† (θως=τσακάλι)	Jackal	4	I(XI.473)	<i>O. thous</i>
<i>Canis familiaris</i> Linnaeus, 1758	κύων*† (κύων=σκύλος)	Dog	183	D(604)	<i>Chrysocyon</i>
<i>Canis lupus</i> (Linnaeus, 1758)	λύκος*† (λύκος)	Wolf	14	I(X.334)	<i>Lycalopex</i>
<i>Capra aegagrus</i> Linnaeus, 1758	αἰξ ἀγρίη*† (αίγα αγρία)	Wild goat	8	O(XX.118)	<i>C. aegagrus</i>
<i>Capra hircus</i> Linnaeus, 1758	αἰξ*† (αίγα)	Domestic goat	170	O(XX.173)	<i>C. aegagrus</i>
<i>Capreolus capreolus</i> Linnaeus, 1758	πρόξ	Roe deer	2	O(XVII.294)	
<i>Cervus elaphus</i> Linnaeus, 1758	ἐλαφος*†, ἐλλός (ελάφι)	Red deer	33	O(X.158)	<i>C. elaphus</i>
<i>Chlidonias niger</i> or <i>Sterna</i> sp.	κορώνη εἰναλίη	(Black) tern	3	O(XII.418)	
Cicadidae sp.	τέτιξ*† (τέτιξ=τζίτζικας)	Cicada	3	A(393)	<i>Tettigonidae</i>
<i>Columba livia</i> Gmelin, 1789	πέλεια†	Rock dove	12	I(V.778)	<i>Scotopelia</i>
<i>Columba palumbus</i> Linnaeus, 1758	φάσσα* (φάσσα=αγριοπερίστερο)	Woodpigeon	1	I(XV.237)	
Corvidae sp.	κόραξ*† (κόρακας)	Crow	1	C(54-1)	<i>C. corax</i>
<i>Corvus corone</i> Linnaeus, 1758	κορώνη*† (κουρούνα)	Carrion crow	2	D(746)	<i>C. coroneae</i>
<i>Corvus monedula</i> Linnaeus, 1758	κολοιός*† (κολοιός=καλιακούδα)	Jackdaw	2	I(XVII.755)	<i>Colius</i>
<i>Cuculus canorus</i> (Linnaeus, 1758)	κόκκυξ†	Cuckoo	1	D(486)	<i>Coccyzus</i>
<i>Cygnus cygnus</i> (Gmelin, 1789)	κύκνος*† (κύκνος)	Whooper swan	5	H(XXI.1)	<i>Cygnus</i>
Dermestidae sp.	ἰψ†	Dermestid beetle	1	O(XXI.393)	<i>Ipidae</i>
Elephantidae sp.	ἐλέφας*† (ελέφαντας)	Elephant	11	O(XXIII.199)	<i>Elephas</i>
<i>Equus asinus</i> Linnaeus, 1758	ὄνος*† (όνος)	Domestic donkey	1	I(XI.558)	<i>E. hemionus</i>
<i>Equus caballus</i> Linnaeus, 1758	ἵππος*† (ἵππος=άλογο)	Domestic horse	748	I(X.436)	<i>Hippopotamus</i>
<i>Equus caballus</i> × <i>E. asinus</i> hybrid	ἡμίονος, οὐρεὺς*† (ημίονος)	Mule or hinny	55	I(XXIII.265)	<i>E. hemionus</i>
<i>Equus onager</i> Boddaert, 1785	ἡμίονος ἀγρότερος*† (ημίονος ἀγριος)	Onager	1	I(II.852)	
<i>Falco peregrinus</i> Gmelin, 1788	κίρκος*†, ἱριξ (κιρκινέξ)	Peregrine	13	I(XXII.138)	<i>Circus</i>
Falconiformes sp.	ἄρπη†	Falcon	1	I(XIX.350)	<i>Harpia</i>
Formicidae sp.	μύρμηξ*† (μυρμήγκι)	Ant	2	C(7-5)	<i>Myrmex</i>
<i>Grus grus</i> (Linnaeus, 1758)	γέρανος*† (γερανός)	Common crane	4	I(II.459)	<i>G. leucogeranus</i>
<i>Gypaetus barbatus</i> (Linnaeus, 1758)	αἰγυπιός†	Lammergeyer	7	A(405)	<i>Aegyptius</i>
<i>Gyps fulvus</i> (Hablizl, 1783)	γύψ*† (γύπας)	Griffon vulture	7	I(XVIII.270)	<i>Gyps</i>
<i>Haliaeetus albicilla</i> (Linnaeus, 1758)	φήνη	White-tailed eagle	2	O(III.372)	
<i>Hippospongia communis</i> (Lamarck, 1814)	σπόγγος*† (σπόγγος)	Common sponge	5	I(XXII.438)	<i>Spongia</i>
<i>Hirundo rustica</i> Linnaeus, 1758	χελιδών*† (χελιδόνι)	Swallow	3	O(XXII.239)	<i>Chelidoptera</i>
<i>Ixodes ricinus</i> Linnaeus, 1758	κυνοραϊστής	Tick	1	O(XVII.300)	
<i>Larus</i> sp.	λάρος*† (λάρος, γλάρος)	Gull	1	O(V.51)	<i>Larus</i>
<i>Lepus capensis</i> Linnaeus, 1758	λαγώς*†, πτώξ (λαγός)	Brown hare	6	I(XVII.676)	<i>Lagomorpha</i>
<i>Lumbricus</i> sp.	σκώληξ*† (σκουλίκι)	Earthworm	1	I(XIII.654)	<i>Scolex</i>
<i>Luscinia megarhynchos</i> Brehm, 1831	ἀηδών*† (αηδόνι)	Nightingale	2	O(XIX.518)	<i>T. aedon</i>
<i>Lynx lynx</i> (Linnaeus, 1758)	λύγξ*† (λύγξ, λύγκας)	Lynx	1	H(XIX.24)	<i>Lynx</i>
<i>Martes</i> sp.	ἰκτίς*† (ικτίδα)	Marten	2	I(X.334)	<i>Ictidomys</i>
<i>Monachus monachus</i> (Hermann, 1779)	φώκη*† (φώκια)	Monk seal	8	O(IV.405)	<i>Phoca</i>
<i>Nycticorax nycticorax</i> (Linnaeus, 1758)	ἐρωδιός*† (ερωδιός)	Night heron	1	I(X.274)	<i>A. herodias</i>

Table 1 continued

Scientific name	Classical Greek name (modern Greek name)*†	Common English name	Number of records	Selected record‡	Example of scientific name formation
<i>Octopus vulgaris</i> Cuvier, 1797	πολύπους*† (πολύποδας)	Common octopus	2	O(V.432)	<i>C. polyypus</i>
<i>Ophidia</i> sp.	ὄφις*†, δράκων (όφης, φίδι)	Snake	18	A(161)	Ophidia
<i>Ophidia</i> sp.	ὕδρος	Water snake	1	I(II.722)	
<i>Otus scops</i> (Linnaeus, 1758)	σκῶψ*† (σκωψ=γκιώνης)	Scops owl	1	O(V.65)	<i>O. scops</i>
<i>Ovis aries</i> Linnaeus, 1758	ὄις†, ἀρνειός*, ἀρήν (αρνί)	Domestic sheep	162	O(XX.1)	Ovis
<i>Panthera leo</i> (Linnaeus, 1758)	λέων*†, λις (λέων, λιοντάρι)	Lion	86	I(V.161)	<i>P. leo</i>
<i>Panthera pardus</i> (Linnaeus, 1758)	πάρδαλις*† (λέο-πάρδαλη)	Leopard	7	I(X.29)	<i>F. pardalis</i>
<i>Passer domesticus</i> (Linnaeus, 1758)	στρουθός*† (στρουθί)	House sparrow	3	I(II.311)	<i>Struthio</i>
<i>Rhinolophus</i> sp. or <i>Myotis</i> sp.	νυκτερίς*† (νυκτερίδα)	Bat	2	D(6)	<i>Nycteris</i>
<i>Scyliorhynchus</i> sp.	κύων	Cat shark	1	O(XII.96)	
<i>Sturnus vulgaris</i> (Linnaeus, 1758)	ψάρ, ψήρ*† (ψαρόνι)	Starling	2	I(XVII.775)	<i>Leucopsar</i>
<i>Sus scrofa</i> Linnaeus, 1758	σῦς†, χοίρος*, κάπρος* (χοίρος, κάπρος)	Wild boar or pig	192	O(XIV.5)	Sus
<i>Tabanus</i> sp.	οἰστρος*†, κυνάμνια (οἰστρος)	Gadfly	3	O(XXII.229)	<i>Oestrus</i>
<i>Testudo marginata</i> Schoepp, 1792	χέλυσ*† (χέλυσ, χελώνα)	Marginated tortoise	5	H(IV.25)	<i>Chelys</i>
<i>Turdus</i> sp.	κίχλη†	Thrush	1	O(XXII.468)	<i>Cichlornis</i>
<i>Tursiops truncatus</i> (Montagu, 1821)	δελφίς*† (δελφίνι)	Bottle-nosed dolphin	8	I(XXI.22)	<i>Delphinus</i>
<i>Ursus arctos</i> (Linnaeus, 1758)	ἄρκτος*† (ἄρκτος)	Brown bear	10	H(V.157)	<i>U. arctos</i>
Vespidae sp.	σφήξ*† (σφήκα)	Wasp	2	I(XII.167)	<i>Sphigidae</i>

*Words appearing either as roots or as integral words in modern Greek names are given in parentheses.

†Words used as integral words, prefixes, bases or suffixes, in the formation of Latin scientific taxa names (examples are given separately).

‡I, *Iliad*; O, *Odyssey*; T, *Theogony*; D, *Works and Days*; A, *Aspis*; C, *Catalogue of Women* and H, *Homeric Hymns*.

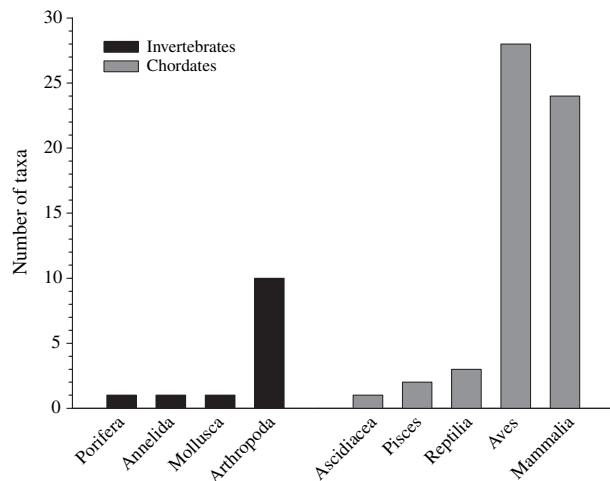


Figure 1 Number of animal taxa per higher taxonomic group found in the texts of the Age of Homer.

hunting and protection of domestic animals. Some animals (wolf, jackal, peregrine, lion, leopard) are distinguished as active predators, others as prey (red deer, roe deer, wild goat, brown hare, domestic cattle, sheep and pig), hunted by both animals and humans. In this latter category we find several bird species, such as the jackdaw, rock dove, house sparrow, woodpigeon, graylag and starling. Parasitic relationships are also mentioned, such as those encountered in dermestid beetles and ticks. Interesting information is given on the habitat of various animals, sometimes contributing to their identification. Graylags, whooper swans and common cranes

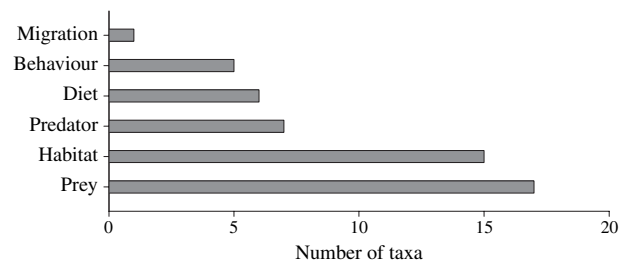


Figure 2 Histogram showing the number of records on various aspects of ecology and behaviour for animals given in the texts of the Age of Homer.

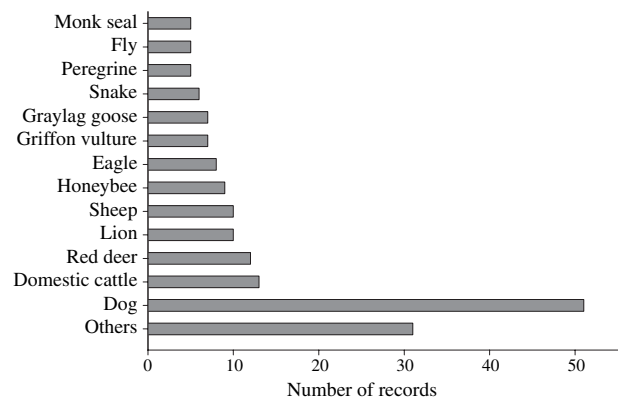


Figure 3 Histogram showing the number of records of the most frequently recorded animals for their ecology and behaviour in the texts of the Age of Homer.

are reported to be living in groups by the rivers, monk seal populations in coastal marine caves, octopuses in their thalami, peregrines on steep mountain slopes, scops owls in areas covered with poplars and cypresses. In some cases, the behaviour of animals is illustrated in metaphors and similes, as mentioned above: people are chatting like cicadas, persistently protecting their land like honeybees or wasps, being cowardly like doves or brave as lions or wild boars, trapped like thrushes, being tough and persistent like mules, and so on. Man at that age was interested in the lives and habits of animals that signal agricultural activities. The arrival of swallows was a sign for pruning the vineyards (*Works and Days*, 568), while the clang of cranes signified the beginning of ploughing (*Works and Days*, 448). Overall, the information given in the epics on the ecology and behaviour of animals does not seem to contradict current knowledge.

For some of the animals, both the domesticated and the wild forms are reported under the same name such as in the case of the graylag (χῆν). In others, the two different forms are found under different names, as in the case of the wild boar (κάρδος) and the domestic pig (χοῖδος); obviously people were aware of the close relationship between the two forms since they used a third name (σῦς) describing both.

Although in the present work a thorough study of the animals reported in the first written documents of Western civilization was attempted, it should not be considered that a comprehensive picture of the fauna of ancient Greece at that age has been given. Actually, in this work we collect and decode the information regarding animal life recorded in the texts from a biological point of view, in an attempt to show human knowledge as is reflected therein. Although the Homeric heroic poems are far from being historical documents (since they reflect different historical periods), they still remain a rich source of knowledge on human life and interests of a time around 3000 years ago. The Hesiodic *Works and Days* have long been considered as a valuable document on the agricultural life of the same age (Mireau, 1954). It is highly possible however, that Homeric man was familiar with many more animal species than those reported in the epics. This is supported by the fact that four centuries later, Aristotle gives a catalogue of c. 500 animal species, more than 160 of which are fish and marine invertebrates that hardly appear in the texts of the eighth century BC (E. Voultsiadou and S. Kiouisis, unpublished data).

PAST AND PRESENT: COMMENTS ON FAUNAL COMPOSITION

Some of the species appearing in the studied texts and constituting basic faunal elements of the late geometric period have now become extinct in Greece and adjacent regions. Lions were widely distributed in northern Greece, as reported in various classical texts (Xenophon, *Hunting*, IX.1; Herodotus, *Histories*, VII.126; Aristotle, *History of animals*, 6.579b). Nowak (1991) claimed that lions disappeared from the Balkan Peninsula around 2000 years ago. Lions roamed Europe in early antiquity but had disappeared by the first century BC,

possibly due to the forestation (Hughes, 2003). Leopards and other wild animals, such as lions, lynxes and bears are mentioned by Xenophon (*Hunting*, IX.1) to inhabit various areas of northern Greece (e.g. Mount Pangaion and Pindos). Populations of the endangered subspecies *tulliana* of the genus *Panthera pardus* still exist in western Turkey (Hughes, 2003). Bones of both *Panthera leo* and *P. pardus* from the Pleistocene have been found in various Greek sites (Tsoukala, 1989; Guest-Papamanoli, 1996). However, while lion bones have been found at archaeological sites in southern Greece, the presence of the leopard in the Balkan Peninsula in historical times has not been confirmed. The common crane, *Grus grus*, which appears both in Homeric and Hesiodic texts and is reported by Aristotle in *History of Animals* (e.g. 597a4), stopped resting in Greece during its migration after 1965 (Handrinos, 1992).

The populations of several species known in the Age of Homer have been reduced in the present time and are restricted to certain areas. Examples are the populations of lynx, brown bear, red deer and wild goat. As far as the species *Lynx lynx* is concerned, its populations have been dramatically reduced in Europe because it has been severely hunted for its fur until recently; isolated populations have survived in the southern Balkans among other European areas (Nowak, 1991). It is the biggest cat in Greece today and no information on its population size and distribution exists (Paraschi, 1992). *Ursus arctos* and *Cervus elaphus* have been recently included in the endangered species list of the Greek fauna (Merzanis, 1992; Poirazidis & Paraschi, 1992). Populations of wild goat, *Capra aegagrus*, have been restricted to a few Aegean islands, with the largest population in Crete, where the subspecies *Capra aegagrus cretica* (Schinz, 1838) is currently protected by law (Paragamian, 1992). Bones of this species were found in various excavations at Cretan locations (Jarman, 1996). Hughes (2003) claims that the extinction or decline of biodiversity in some areas in antiquity was the result of the reckless collection and consumption of animals by Greeks and Romans.

It has to be mentioned that the elephant was not present in Greece during the Homeric Age, but was well known for its ivory, which was a much-appreciated decorative material. People had come across elephant bones found as fossil remains that as a result of their imaginative interpretations were thought to be the skeletons of mythical giants and monsters (Mayor, 2000; Hughes, 2003). The fossil bones of a pygmy elephant species of *Elephas*, *E. falconeri* Busk, 1867 that had lived in the late Pleistocene and the early Recent epochs, have been found on some Aegean islands (Nowak, 1991); radiocarbon dates as late as 4390 BC have been reported for specimens from the Greek island of Telos.

Archaeological excavations in various sites over the Greek territory (such as in Crete and Peloponnesus) have revealed bone material of several species, confirming their presence in the area during the Homeric Age. *Bos taurus*, *Canis familiaris*, *Capra aegagrus*, *C. hircus*, *Equus asinus*, *E. caballus*, *Martes foina* (Erxleben, 1777), *Sus scrofa* and *Ovis aries* were recognized from bones and/or horns as significant elements of the domestic fauna and the contemporary economy (Jarman, 1996; Tsoukala &

Hatzi-Valianou, 1996; Wilkens, 1996). Besides these, the fox, *Vulpes vulpes* (Linnaeus, 1758), the wild cat, *Felis sylvestris* Schreber, 1777, the rabbit, *Oryctolagus cuniculus* (Linnaeus, 1758), and the badger, *Meles meles* (Linnaeus, 1758), although not mentioned in the epics, have been found. Furthermore, fossil bone collections from the late Pleistocene and Holocene add information on the presence in the Greek territory (mainland and islands) of species such as *Canis lupus*, *C. aureus*, *Ursus arctos*, *Cervus elaphus*, *Testudo marginata*, *Lynx lynx*, *Cervus dama* Linnaeus, 1758, *Lepus timidus* Linnaeus, 1758, *Rhinolophus* sp. and *Myotis* sp. (Trandalidou, 1996; Tsoukala, 2001, 2003). To these should be added some species of rats and mice [e.g. *Apodemus mystacinus* (Danford & Alston, 1877)], *Mus musculus* Linnaeus, 1766 and *Rattus rattus* (Linnaeus, 1758), as well as frogs (e.g. *Bufo viridis*), which seem to be continuously present in Greek territory through time though they were totally absent from the studied texts.

Two animal species that were very common later in Greece and Europe, the domestic cat and hen, are not included in the texts. Their absence strengthens the assumption that they were subsequently introduced to Europe from other areas. It is suggested that the cat came to Greece from Egypt, where it was an object of worship and had been domesticated (Herodotus, *Histories*, 2) by the fifth century BC (e.g. Hughes, 2003). Hens were introduced to Greece from India where the species *Gallus gallus* (Linnaeus, 1758) had been domesticated 4000 years ago. Hughes (2003) suggests that this introduction took place in the seventh century BC. Based on the above, the report of cats and cocks in the *Batrachomyomachy*, a text attributed to Homer by authors in antiquity (Easterling & Knox, 1985), strengthens the modern opinion suggesting that it was written at the same age, around 500 BC. Aesop's fables, in which records of these animals also exist, are also believed to have been written at a later date. It is clear that most of the domestic animals kept by man in the Age of Homer were aliens: horses, donkeys, sheep, goats, cattle and pigs had all been introduced from Asia, during the neolithic period (McNeill, 2003).

Finally, we should stress the importance of animal iconography as seen in the artwork of the Geometric or earlier Minoan period. Animals such as the dolphin, monk seal, wolf, bull, horse, wild goat, red deer, dog, lion and the swallow are depicted on wall paintings, vases and other objects (Langdon, 1993; Vanschoonwinkel, 1996). The red deer, monk seal and the little owl appear on early coins of the sixteenth, the seventh and the fifth century BC respectively. Sometimes, when animal representations are naturalistic, the image becomes an effective source of palaeo-faunistic evidence for the zoologist (Masseti, 2000).

CONCLUSIONS

Summarizing, the following conclusions can be drawn: (1) The knowledge of Homeric man about the animal kingdom concentrates mainly on animals involved in human activities: domestic animals are most frequently recorded in the epics. In addition, terrestrial fauna attracts more attention than marine or freshwater fauna. (2) Animals reported in classical texts can

be assigned to recent taxa on the basis of diverse information on their morphology, ecology, or behaviour given in the texts. Animal names can be of great help since most of them are retained in Modern Greek or were used in the formation of Latin scientific names. (3) Some populations, mainly wild animal species, common at that time in the Greek areas have disappeared or are now reduced, while some currently common animals do not appear in the texts since they were introduced at a later time.

Useful zoological information can be derived from the study of classical texts, which may help historical biogeographers, as a supplementary approach in addition to archaeology and art, in the reconstruction of the faunas of older periods.

ACKNOWLEDGEMENTS

We thank T. Sofianidou and V. Goutner for their help with animal species recognition, as well as S. Gkelis and D. Vafides for encouragement and improvement of the text and figures. Gratitude is owed to S. Kokkini, N. Krigas and A. Dardioti for inspiring the first author to search for biological information in the classical texts.

REFERENCES

- Babinotis, G. (2000) *Lexicon of Modern Greek language*. Centre of Lexicology Press, Athens (in Greek).
- Browning, R. (1983) *Medieval and Modern Greek*. Cambridge University Press, Cambridge (Greek translation by M. Konomi 2002. Papademas Press, Athens).
- Doukas, K. (2000) *Homeric dialect: the common language of Greeks. Homer's Iliad. Translation and interpretative comments*. Ideotheatron & Georgiadis Press, Athens (in Greek).
- Encyclopedia Papyros-Larousse-Britannica with an Interpretative and Etymological Lexicon of the Greek language* (1981–1994). Vols 1–61. Papyros Press, Amarousion, Attica (in Greek).
- Easterling, P.E. & Knox B.M.W. (1985) *The Cambridge History of Classical Literature. I: Greek Literature*. Cambridge University Press, Cambridge (Greek translation by N. Konomi, C. Griba & M. Konomi, 1999, Papademas Press, Athens).
- Guest-Papamanoli, A. (1996) Hunting and trapping in prehistoric Crete: a proposal for ethnoarchaeological research. *Pleistocene and Holocene fauna of Crete and its first settlers* (ed. by D.S. Reese), pp. 337–349. Prehistory Press, Madison, WI.
- Handrinos, G. (1992) Birds. *The red data book of threatened vertebrates of Greece* (ed. by S. Drosopoulos, J. Kalopisis, G. Katsadorakis, J. Matsakis, D. Bousbouras, M. Mylonas, P.S. Economidis, G. Handrinos and B. Chondropoulos), pp. 123–243. Hellenic Zoological Society, Athens.
- Handrinos, G. & Akriotis, T. (1997) *The birds of Greece*. A. & C. Black, London.
- Honacki, J., Kinman K. & Koepfle, J. (eds) (1982) *Mammal species of the world. A taxonomic and geographic reference*. Allen Press and Association of Systematic Collections, Kansas.
- Howard, R. & Moore, A. (1991) *A complete checklist of the birds of the world*. Academic Press, London.

- Hughes, D. (2003) Europe as consumer of exotic biodiversity: Greek and Roman times. *Landscape Research*, **28**, 21–31.
- Jarman, M. (1996) Human influence in the development of the Cretan mammalian fauna. *Pleistocene and Holocene fauna of Crete and its first settlers* (ed. by D.S. Reese), pp. 211–229. Prehistory Press, Madison, WI.
- Kofiniotis, E. (1992) *Homeric lexicon*. Demiouorgia Press, Athens (in Greek).
- Langdon, S. (ed.) (1993) *From Pasture to Polis. Art in the Age of Homer*. University of Missouri Press, Columbia, Missouri.
- Latacz, J. (1997) *Homer. Der erste Dichter des Abendlandes*. Artemis & Winkler Press, Düsseldorf (Greek translation by E. Sistakou, 2000. Papademas Press, Athens).
- Lesky, A. (1971) *Geschichte der Griechischen Literature*. Francke, Bern (Greek translation by A. Tsopanakis, 2003. Kyriakidis Press, Thessaloniki).
- Liddell, H.G. & Scott, R. (1851) *Great dictionary of the Greek language*. Vols 1–5. (Greek translation by X. Moschos, 1990). Sideris Press, Athens (in Greek).
- Masetti, M. (1997) Representations of birds in Minoan art. *International Journal of Osteoarchaeology*, **7**, 354–363.
- Masetti, M. (2000) Did the study of ethology begin in Crete 4000 years ago? *Ethology Ecology and Evolution*, **12**, 89–96.
- Mayor, Á. (2000) *The first fossil hunters*. Princeton University Press, Princeton, NJ.
- Mazarakis Ainian, A. (2000) *Homer and Archaeology*. Book Institute, A. Kardamitsas, Athens (in Greek).
- McNeill, J. R. (2003) Europe's place in the global history of biological exchange. *Landscape Research*, **12**, 33–39.
- Merzanis, G. (1992) *Ursus arctos* (Linnaeus, 1758). *The red data book of threatened vertebrates of Greece* (ed. by S. Drosopoulos, J. Kalopisis, G. Katsadorakis, J. Matsakis, D. Bousbouras, M. Mylonas, P.S. Economidis, G. Handrinos and B. Chondropoulos), pp. 260–262. Hellenic Zoological Society, Athens.
- Mireau, E. (1954) *La vie quotididienne au temps d' Homere*. Librairie Hachette Paris. (Greek translation by K. Panagiotou, 1995. Papademas Press, Athens).
- Nowak, M. R. (1991) *Walker's mammals of the world*. The John Hopkins University Press, Baltimore and London.
- Paragamian, K. (1992) *Capra aegagrus cretica* (Schinz, 1838). *The red data book of threatened vertebrates of Greece* (ed. by S. Drosopoulos, J. Kalopisis, G. Katsadorakis, J. Matsakis, D. Bousbouras, M. Mylonas, P.S. Economidis, G. Handrinos and B. Chondropoulos), pp. 271–274. Hellenic Zoological Society, Athens, Greece.
- Paraschi, L. (1992) *Lynx lynx* (Linnaeus, 1758). *The red data book of threatened vertebrates of Greece* (ed. by S. Drosopoulos, J. Kalopisis, G. Katsadorakis, J. Matsakis, D. Bousbouras, M. Mylonas, P.S. Economidis, G. Handrinos and B. Chondropoulos), pp. 263–264. Hellenic Zoological Society, Athens, Greece.
- Poirazidis, K. & Paraschi, L. (1992) *Cervus elaphus* (Linnaeus, 1758). *The red data book of threatened vertebrates of Greece* (ed. by S. Drosopoulos, J. Kalopisis, G. Katsadorakis, J. Matsakis, D. Bousbouras, M. Mylonas, P.S. Economidis, G. Handrinos and B. Chondropoulos), pp. 270–271. Hellenic Zoological Society, Athens, Greece.
- Ride, W., Sabrosky, C., Bernardi, G. & Melville, R. (eds) (1985) *International code of zoological nomenclature*. Great Britain International Trust for Zoological Nomenclature and University of California Press, London.
- Trandalidou, K. (1996) The animal world. *The Palaeolithic period in Greece* (ed. by G. Kourtesi-Philippakis). *Archaeology and Arts*, **58**, 45–53 (in Greek).
- Tsoukala, E. (1989) Contribution to the study of the Pleistocene fauna of large mammals (Carnivora, Perissodactyla, Artiodactyla) from Petralona cave Chalkidiki (N. Greece). Doctorate Degree Thesis, Thessaloniki, Greece (in Greek).
- Tsoukala, E. (2001) Quaternary faunas of Greek Islands. *Bulletin de la Société des sciences historiques et naturelles de la Corse*, **697**, 277–303.
- Tsoukala, E. (2003) *Palaeontological research in Pella. Cave bears and late Pleistocene associated faunal remains from Loutra Arideas (Pella, Macedonia, Greece)*. Prefecture of Pella, Skydra, pp. 1–44 (in Greek).
- Tsoukala E. & Hatzi-Valianou D. (1996) *Fauna and human diet in the Acropolis of Smari in the geometric and the palaeoanactoric period*. Proceedings of the 8th Cretan Congress, Heraklion, Crete (in Greek).
- Vanschoonwinkel, J. (1996) Les animaux dans l' art minoen. *Pleistocene and Holocene fauna of Crete and its first settlers* (ed. by D.S. Reese), pp. 352–422. Prehistory Press, Madison, Wisconsin.
- Voultsiadou, E. & Gkelis, S. (2005) Greek and the phylum Porifera: a living language for living organisms. *Journal of Zoology*, **267**, 1–15.
- Wilkens, B. (1996) Faunal Remains from Italian Excavations on Crete. *Pleistocene and Holocene fauna of Crete and its first settlers* (ed. by D.S. Reese), pp. 241–254. Prehistory Press, Madison, Wisconsin.

BIOSKETCHES

Eleni Voultsiadou is an Assistant Professor in the Department of Zoology, Aristotle University of Thessaloniki, having also graduated from the Faculty of Philosophy of the same university. She teaches Zoology and Marine Biology and her field of research is taxonomy and zoogeography, focusing on marine invertebrates, especially sponges. She has recently been interested in the study of classical texts and art as sources of zoological and biogeographical information on the faunas of older epochs.

Apostolos Tatolas is a postgraduate student in the School of Biology, sharing the same interest for animal life in antiquity.

Editor: John Lamshead