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THE STATUS OF VULTURES IN GREECE

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ABSTRACT

This paper gives the present status of the various vulture species in Greece. From the late 1950s onwards, dramatic declines have occurred in all species, and for the Black Vulture the chances of survival are slim.

INTRODUCTION

Greece, as a typical Mediterranean country with favourable conditions, still harbours the biggest vulture population of all Eastern Europe and, apart from the Caucasus and Spain, is the last stronghold of these birds on the whole continent.

Vultures were well known to the ancient Greeks. They are mentioned frequently in the ancient literature, even by Homer, whilst Aristotle was the first to describe some of them in his '*Physics*'. Indeed, it seems that they were very common at that time, and this is not surprising: the Eastern Mediterranean, and especially Greece, has been inhabited by man and his livestock for many thousands of years. Gradually vultures not only changed their diet from wild to domestic animals, but also quickly learned to co-exist with man and even to thrive in large numbers, taking profit from his pastoral activities. Thus they became a characteristic part of the Greek landscape and a valuable element in its ecology.

This situation probably remained the same for many centuries up to the late 1700s, when man's devastating impact on nature increased alarmingly. It still prevails and has grown further since the 1950s.

In 1965, Prof. K. Voous stated that the present population of raptors in Europe is only 1 percent of the numbers that existed 150 years ago (Bijleveld 1974). We do not have exact statistics or other detailed information about the vulture populations of Greece in the past, but the situation seems to be very close to Prof. Voous's estimate.

HISTORICAL BACKGROUND

In the mid-nineteenth century, all four species of European Vulture used to nest, even close to Athens. All the 19 specimens in the Zoological Museum of Athens University came from Attica. Dr Th. Krüper, Director of the Museum at that time and a keen collector and dealer in eggs and skins, secured many specimens of rare vultures, notably the Bearded, for various European museums. He collected

mostly around Athens and Akarnania but, as we could not locate his diaries or notes, we know few details about the status and distribution of vultures in his time. T. Powys (1860) mentions the Griffon and the Egyptian Vultures as very abundant in Epirus.

Around the turn of the century, O. Reiser, during three different expeditions to Greece, collected many birds including ten Bearded Vultures, most of these not far from Athens (Reiser 1905).

During the first half of this century, few studies took place, but in the publications of W. Glegg (1924), J. Harrison (1925, 1937) and others, some decline of the Black and the Bearded Vultures in Macedonia is noted, while Griffons and Egyptians are reported as still very common. From the late 1950s onwards, the status of vultures has changed rapidly. Declines have been dramatic, so that today, for one species at least, the chances of survival are very small.

STATUS OF SPECIES

BEARDED VULTURE (*Gypaetus barbatus*)

Habitat

Typically a raptor of middle altitudes, below 2000m, but forages over areas with marked differences in altitude. In some places, like Crete, it occurs in much lower areas. It usually frequents bare and rocky mountains with widespread Kermes Oak (*Quercus coccifera*), Locust Tree (*Ceratonia siliqua*) and Juniper (*Juniperus* spp.) forest. Most known nests are at between 400–1000m, usually on steep cliffs but also on quite accessible rocky hill-slopes. Although solitary and retiring, it will readily approach man, especially shepherds.

Distribution (*Figure 1*)

Thrace. Probably never common in this region, Wittgen in 1961 estimated the Thracian population at two to four pairs (Bijleveld 1974). One pair which used to nest west of Soufli disappeared after the construction of a televison tower on top of the nesting area in early 1970s. However, B. Hallmann (1981, pers. comm.) found another pair just north-west of this area. This is the easternmost limit of the species' distribution in continental Europe. In 1971 an immature bird was also seen in the Central Rodopi mountains, close to the Greek–Bulgarian border. The Thracian population is now estimated at two or three pairs.

Macedonia. Although reported as a rare breeder in the mountains of the north (Glegg 1924; Bauer *et al.* 1969), several records have come from Yugoslavian Macedonia (Stresemann 1920 and others).

Much rarer in recent times (Makatsch 1950), it has not been seen for many years. Probably one or two pairs still survive in the western part of this region.

Epirus. According to Powys (1860), the Bearded Vulture was not so common, at least in the western part of this region. Observed in N. Pindus (Tymphi massif) by Brewer (Bauer *et al.* 1969) and more recently by Kroft (July 1973). One adult, shot in 1974 and stuffed in Athens, probably came from the Tzoumerka mountains in SE Epirus. The total population of Epirus is estimated at one or two pairs.

Figure 1: The distribution in Greece of *Gypaetus barbatus*. Hatched areas show distribution *c.* 1850; solid black areas show distribution in 1980.

Thessaly. Despite some recent observations, the species no longer breeds in Meteora cloisters. It still survives on Mt Olympus, with probably more than two pairs, while various individuals, mostly immatures, have several times been seen in the Gorge of Tempi. It has disappeared from the area of Volos, where Reiser collected one near Velestino in 1896, but may still survive in the inaccessible mountains of the Central Pindus.

Sterea. Reported by various observers as very common in almost all the mountains of this region in the nineteenth century. All seven specimens in the Zoological Museum of Athens University come from the neighbourhood of Athens. Reiser, at the beginning of this century, collected nine specimens from Attica, Mt Parnassos and Lamia, while Simpson (1860) tried to get an egg from a nest in the gorge of Klisoura near Messolongi. Bijleveld (1974) states that many Bearded Vulture skins in European museums were collected in Greece. Undoubtedly they came from this region, where Krüper and others were active. Nevertheless the species still survives, with an estimated five or six pairs distributed mainly in the Parnassos, Giona and Vardoussia mountains but apparently no longer in Akarnania.

Ionian Islands. Few records (some doubtful) from the last century (Simpson 1860b; Reiser 1905). Now extinct.

Aegean Islands. Mentioned by Erhard (1858) for the Cyclades, its occurrence seems to have been sporadic even at that time. A former breeding bird in Rhodes (Salvadori & Festa 1913; Tortonese & Moltoni 1974) and, although reported as perhaps still existing there (Glutz *et al.* 1971), the present human pressure on the natural habitats of this island makes this unlikely.

Peloponnese. Fairly common during the nineteenth century and observed by various ornithologists. According to Niethammer (in Bijleveld 1974), the last individual was shot on Mt Taygetos in 1905. However, Ballance (*in* Bauer *et al.* 1969) again reports the bird from Mt Killini in 1966. Now extinct in this region.

Crete. According to White (1939), Bearded Vultures had been common in the past but were then already rare. Bauer *et al.* (1969) also reported them as rare breeders. The latest estimate for the present-day population is about 12 pairs plus a few immature birds (Vagliano 1981). The species is regularly distributed over suitable habitats on the island, and seems to thrive quite well.

In September 1981, two pairs of adults and one juvenile were seen soaring together over maquis-covered hill-slopes on the west coast.

Status—trends

Vulnerable. Total: about 35 pairs. Not immediately threatened at present, though declining in the north and central regions. In Crete quite stable.

EGYPTIAN VULTURE (*Neophron percnopterus*)

Habitat

Occurs in a wide variety of habitats. Usually at low altitudes, foraging over mountain slopes with low phrygana or maquis vegetation and hills with eroded soil or bare ground. Nests well below 1000m. Solitary, but in Meteora, W Thessaly, forming a large nesting colony. Quite tame, it frequents rubbish-dumps in villages and shepherds' huts especially in Central Greece.

Distribution (*Figure 2*)

Thrace. Quite common in the past (Harrison & Pateff 1937; Bauer *et al.* 1969), it has declined in recent years but still breeds in fair numbers. Latest estimates suggest no fewer than 50 pairs.

Macedonia. Described as common by Glegg (1924), although Harrison (1925) saw only one. Has declined but still breeds, mainly in the mountains along the border. The Macedonian population is now estimated at 80–100 pairs.

Epirus. According to Powys (1860), very common in Epirus in the mid-nineteenth century. Today much more sparse, the number of breeding pairs being estimated at about 50.

Thessaly. Still not uncommon in this region. In fact it breeds in good numbers, forming the largest Greek colony in the Meteora cloisters, where more than 150 birds were seen in August 1977.

Figure 2: The distribution in Greece of *Neophron percnopterus*. Hatched areas show distribution *c.* 1850; solid black areas show distribution in 1980.

Sterea. Still very common 100 years ago (Powys 1860; Krüper 1862), it started to decline slowly at the beginning of the present century (Reiser 1905). In recent years, Egyptian Vultures have been observed in various places but it is doubtful if they still breed here. If they do, this region is the southernmost limit of their nesting distribution in Greece and the total number of pairs is certainly not more than five.

Ionian Islands. A former breeding bird in Corfu and perhaps elsewhere (Reiser 1905), it does not nest any more. Occasional sightings, e.g. in Kefallinia and Lefkada (Yeroulanos 1980, pers. comm.) are probably migrants or visitors from the mainland.

Aegean Islands. Also a former breeding species on some of the bigger islands like Rhodes (Wettstein 1938), Samos (Roux *in* Bauer *et al.* 1969) and perhaps Naxos (Reiser 1905). Now extinct, although a few individuals from the Turkish coast may wander as far as Lesbos, Chios or Samos, especially on migration.

Peloponnese. Egyptian Vultures were not rare in the Peloponnese during the

last century (Reiser 1905) and were even nesting towards the middle of the present century (Niethammer 1943b). Now extinct as a breeding species, but occasional birds shot in Mani in autumn suggest that there is some migration through the long peninsulas of the south.

Crete. White (1939) and Stresemann (1949) believed that this vulture was probably breeding on the island. At any rate it has never been observed since then, not even during migration (Vagliano 1981).

Status—trends
Rare. Total: about 250 pairs. No evidence of serious decline. Still common in some areas of the north.

GRIFFON VULTURE (*Gyps fulvus*)

Habitat
Once widespread in all kinds of hilly and mountainous habitats. Now restricted to inaccessible rocky hills and steep mountains, usually at middle altitudes (800–1500m), but again in Crete in lower areas.

Forages over a wide range, mainly in hills with scrub and rocky escarpments. Also over plains and flat country, including river deltas (e.g. Evros and Acheloos Deltas, etc.).

Most nesting colonies are in steep inland gorges, but a few are on small rocky islands (Oxia) or high cliffs above the sea (N Crete). Little information on nest-site structure and topography, but the majority of colonies face S–SW. There is a record of a solitary pair nesting far from any known colony (Vagliano, pers. comm.).

Now quite shy, though it has many times been seen closely following flocks of sheep, especially in high mountain meadows or between seasonal pastures.

Distribution (*Figure 3*)

Thrace. Harrison and Pateff (1937) described the Griffon as 'plentiful' in the region. Since that time the species has declined sharply, mainly due to strychnine poisoning and persecution. Today a colony of about 15 pairs still persists in the Evros area, plus an estimated 15 pairs for the rest of Thrace.

Macedonia. Frequently observed by Harrison (1925), it declined rapidly and today survives only in small scattered colonies, totalling about 30 pairs.

Epirus. Described as very abundant by Powys (1860), has faced much decline in this region also. Two or three small colonies still exist in the west, with more than 20 pairs, but in the Central Pindus massif (Mts Tzoumerka, Tymphi, etc.) the population may amount to more than 50 pairs.

Thessaly. Still survives in the mountains around the central plan. Biggest colonies today are on Mt Ossa (15 pairs), Central Pindus (35 pairs) and Mt Olympus (20–30 pairs).

Sterea. This rocky and mountainous region, full of sheep and goats, has been typical country for Griffons for centuries. These birds were indeed a common

Figure 3: The distribution in Greece of *Gyps fulvus*. Hatched areas show distribution *c.* 1850; solid black areas show distribution in 1980.

sight, not only to all 19th century travellers and ornithologists but also to the Ancient Greeks, who knew well the Griffon colony near Delphi, for instance. The species has declined considerably ever since in many parts of the region, notably around Attica where it was common even during the late 1950s. Nevertheless it still maintains itself in good numbers and although the colonies now are small and scattered, B. Hallmann (pers. comm.) counted 64 birds in Akarnania around the carcass of a sheep. In fact this is the biggest group of Griffons recorded in Greece in recent times.

We still do not know the population size in the South Pindus range (Agrapha massif etc.) but according to the latest estimates there are about 100 pairs in all Sterea.

Ionian Islands. Again more numerous in the past, the species has bred in Corfu (Laubmann 1927) and in some small islands off the Akarnanian coast (Reiser 1905). Almost extinct now, except for a small colony of eight to ten pairs on the rocky islet of Oxia, near the mouth of Acheloos river, plus another ten to fifteen birds which have been seen in Kefallinia (Yeroulanos 1980, pers. comm.).

Aegean Islands. More widespread in the nineteenth century (Erhard 1858; Reiser 1905; Bird 1935) especially in the Cyclades. Has also bred in Rhodes and probably Kos (Salvadori & Festa 1913; Ghigi 1929; Wettstein 1938) but present status still unknown. A group of about 15 has been seen recently in Naxos on several occasions (Parashi 1980, pers. comm.) but the nesting place, if it exists on this island, has not been found. There are about 30 birds on the island of Euboea, nesting probably on the NE slopes of Mt Dirphys (Akriotis, pers. comm.) but we do not know if the small colony on Thasos island still exists.

Peloponnese. Quite common in the nineteenth and first half of the present century, but has declined sharply during recent decades, mainly due to human disturbance. A small colony of about ten pairs still exists on Mt Chelmos (Hallmann 1980, pers. comm.) and probably a few birds still survive on Mt Taygetos.

Crete. A traditional stronghold for vultures, Crete still harbours the biggest Griffon population. According to Dr Vagliano (1981), there are about 500 birds well distributed over the island, but mostly on the central plateaux. There, on 3600km^2, there are nine colonies with about 200 birds. Soaring groups of 15–20 birds are not uncommon, and sometimes 30 or more can be seen together. Smaller colonies exist elsewhere on the island.

Status—trends

Indeterminate. Total: about 450 pairs. Still the commonest vulture in Greece, with a very good population in Crete (about 250 pairs). Probably facing food shortage on the mainland (Thrace, Epirus etc.).

BLACK VULTURE (*Aegypius monachus*)

Habitat

The most forest-adapted species of the European vultures. Only a handful of pairs remains in Greece, confined to the lowland Black Pine (*Pinus nigra*) forest of Soufli. Nevertheless their extensive range includes bare country, flat areas and even river deltas. Highest known nest found at about 600m, and all known nests built on the flat tops of Black Pines. Very shy and intolerant towards man, even in areas with little human interference.

Distribution (*Figure 4*)

Thrace. Harrison & Pateff (1937) saw only a few individuals. In the early 1960s Knotzsch reports the species as being rare in this region, while Wittgen (1969) estimates the whole population at a few tens of pairs (Bijleveld 1974).

Today, not more than 15 pairs survive, all in the area west of Soufli, and the very few single birds observed in nearby areas possibly come from this district. The only healthy Greek population, this is also the last remnant of the species in all Eastern Europe, apart from the few pairs remaining in the Crimean Peninsula.

Macedonia—Epirus. Undoubtedly very rare even in the past (Simpson 1860b), it does not exist here anymore.

Thessaly. Reported by Bauer *et al.* (1969) from Mts Olympus and Othrys. In more recent years, only individuals have been observed roosting, together with

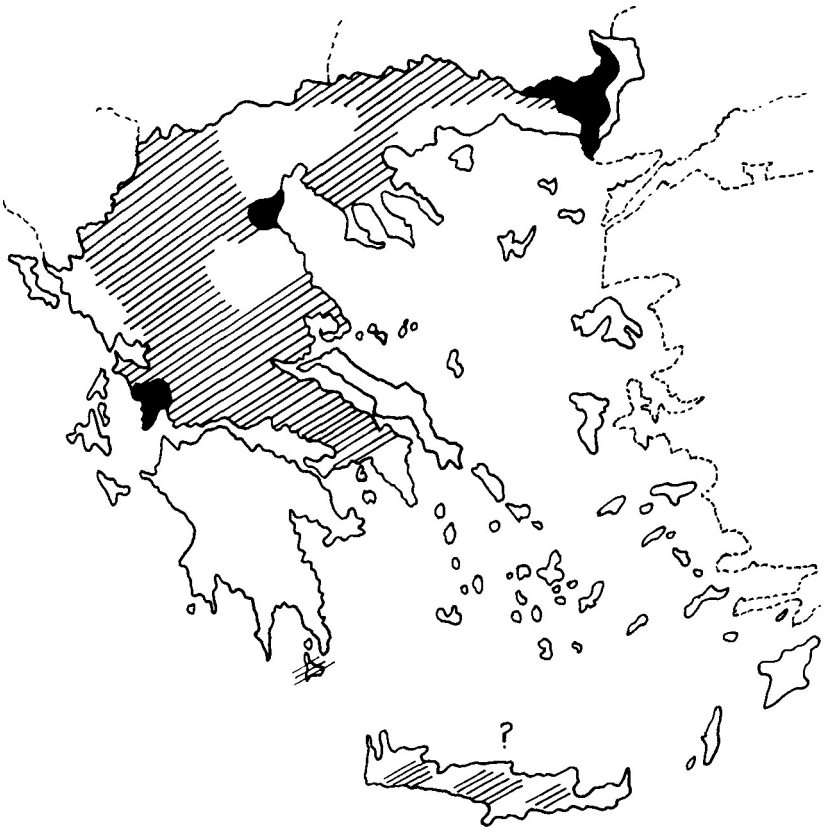

Figure 4: The distribution in Greece of *Aegypius monachus*. Hatched areas show distribution *c.* 1850; solid black areas show distribution in 1980.

the Griffons in the colony on Mt Ossa and these are probably the last birds in the whole region.

Sterea. Perhaps never common, although reported as probably breeding in Attika, Boiotia (Simpson 1860; Reiser 1905) and elsewhere. Bauer *et al.* (1969) mention the species as still surviving on Mts Othrys, Parnassos and Giona, but it probably does not exist there any longer. However, B. Hallmann (1981, pers. comm.) saw two birds in the Acheloos Delta in January 1981 and Ph. Pergantis also two in the same spot in January 1982. We still have no idea where these birds came from, but they give new hope for the survival of the species in western central Greece, particularly Akarnania.

Ionian–Aegean Islands. Although reported by Reiser (1905) for Lefkada and by Salvadori & Festa (1913) for Rhodes, it is very doubtful that Black Vultures ever existed on these islands.

Peloponnese. Mentioned by Drummond (in Rieser 1905) for Kythira islands in 1842, but its existence in the Peloponnese is now doubtful (Niethammer 1943).

Crete. The occurrence of the Black Vulture in Crete is one of the big questions in Greek ornithology. According to Stresemann (1943, 1956) and Koch (in Bauer *et al.* 1969), the species is very rare but occurs in Mts Lefka Ori and Idi.

Stresemann, however, saw only two birds (Bijleveld 1974) and, despite some recent unconfirmed observations, no-one has seen the species since. If Black Vultures ever existed on the island, their disappearance is astonishing, since conditions have changed very little, at least in this century. There is enough suitable habitat, especially on Mt Idi but, unless thorough surveys locate the species again, we regard it as extinct.

Status—trends

Endangered. Total: about 15 pairs. Very small and localized population. Still good breeding success but extremely difficult for it to survive even if negative factors cease to operate.

REASONS FOR THE DECLINE

The reasons for the decline of vultures in Greece are now well known, since they have also been studied in many other Mediterranean countries. Although there are no long-term statistical studies on the effect on bird populations of particular factors, the most important can be summarized as follows:

Reduction of food supplies

During recent decades, particularly after World War II, Greece developed rapidly. In the course of this economic development traditional or small-scale livestock raising was transformed into larger scale collective methods of animal husbandry.

The shepherds are slowly disappearing from the mountains and the big flocks of sheep and goats, which each year used to move from the upland pastures to the plains, are increasingly being kept in village stables. According to official statistics, in 1938, 60 percent of the total sheep and 37 percent of the total goat population of Greece consisted of nomadic or seasonally moving flocks. In 1978 the numbers were 18.5 percent and 14 percent respectively. Since there are no natural populations of wild ungulates left in Greece, all vulture species are entirely dependent on livestock.

We still do not know how seriously this shortage affects the vulture populations, but no doubt the inconstancy of the food supply affects their breeding, at least in some regions, such as the bigger islands and the Peloponnese. In Crete the situation seems more stable, but it will certainly deteriorate in the near future.

Use of poisons

The use of poisoned baits for killing wolves, jackals and foxes is a very old and easy way of controlling the numbers of these animals. Its effect, however, on many other carnivorous mammals and birds was so great that the Greek authorities finally decided to ban both strychnine and cyanide. Nevertheless, strychnine is still the major factor responsible for the sharp decline of the vulture populations in many regions, especially Thrace, Macedonia, Epirus and Thessaly

Griffons were most affected, but also Blacks and Egyptians, while Bearded Vultures, living in higher and more remote areas, were safer. Even as late as 1980, we found in the Evros Delta three immature and one adult Black Vultures killed by eating the carcasses of two donkeys poisoned by strychnine. On the other hand,

the absence of large mammal predators (wolves and foxes) in Crete has helped the vultures to flourish, since poisoned baits have never been used on the island.

Habitat changes

Vultures may not be immediately threatened by habitat changes in their breeding areas, with the exception of the Black Vulture which is still threatened by forestry operations, even in the protected area of Soufli. Feeding areas, however, being very large, are more affected and more difficult to keep intact. There are many big construction works (irrigation or drainage schemes, dams, electricity cables, roads etc.). Roads are particularly dangerous since in recent years they have penetrated even the most inaccessible parts of Epirus and Macedonia, 'opening up' many intact areas.

Illegal hunting

Shooting of birds of prey in Greece is not as systematic now as it was in the past, but illegal hunting still has some impact on their populations. Nevertheless, vultures are not normally shot, for three main reasons: (a) they are now protected by law, (b) they are more or less difficult to approach, and (c) in most areas the attitude of the people towards them is rather positive (Crete, Sterea) or at least indifferent (Epirus, Macedonia, Thrace). Hunters from big cities are much more negative, however, since they usually shoot at everything. Between 1974 and 1980, one adult Bearded, 16 Egyptian and 39 Griffons were stuffed by various taxidermists in Athens alone.

Disturbance at nest sites

Nest sites of most vulture species in Greece are quite safe, since they are on high and steep cliffs except for those of the Black Vulture, which are much more vulnerable. One factor which has to be emphasized, however, is egg-collecting by foreigners. This hobby, which in the past was catastrophic for many species even in Greece, unfortunately still goes on. Control is difficult but, since legislation is now being improved, we hope that in the near future egg-collecting will cease. Careless photographers and film-makers may also cause direct or indirect harm to sensitive species like the Black Vulture. We also know of one or two cases where Griffon colonies were deliberately disturbed by curious mountaineers.

Other factors

Some other factors may not be directly connected with the decline of vultures but no doubt pose a serious threat, especially in countries like Greece. The lack of administrative background within the Greek public services, and the consequent bureaucracy, still hampers conservation. We still cannot establish feeding places in Evros or Mt Parnassos because the veterinary services refuse to accept them, putting forward various hygienic or legislative reasons whilst in fact bureaucracy is the main obstacle. Lack of public awareness and environmental education, although improved in recent years, is another difficulty which we must overcome.

CONSERVATION MEASURES

The bird conservation movement in Greece is still in its infancy. The Hellenic Society for the Protection of Nature, with the valuable help of various foreign (mostly German) ornithologists, has contributed greatly towards establishing protected areas or improving the general attitude of the relevant public services

and the general public. However, it is only during recent years that more concrete conservation proposals have been put forward and measures taken.

Legislation

According to Decision No 180755/8.9.79, issued by the Directorate of Game and Fisheries of the Ministry of Agriculture, all vulture species are protected for the next 20 years since their numbers have seriously declined. However, law enforcement is still poor.

A decision on the control of taxidermy and export of bird specimens and eggs is also being formulated. Finally, we hope that after Greece has joined the EEC the latter's Bird Directive will help us to improve the existing legal position.

Special projects

During the past three years IUCN/WWF have played a key role in the conservation of raptors in Greece, with the implementation of two very important projects: (a) Project 1684 'Conservation of birds of prey in N.E. Greece' already completed and (b) Project 1921, 'Conservation of birds of prey in Greece', still continuing. Details of this project have been discussed elsewhere (Handrinos 1981).

Other activities

A guide-book on the birds of prey of Greece has just been printed. It is the first book on raptors ever published in Greek and we hope that it will help people to appreciate the value of these birds.

The new Government of Greece seems to have a positive attitude towards bird conservation matters. It has been already decided to start one TV programme dealing only with nature protection, and the final shape of this programme is now being formulated.

Finally, we believe that the establishment of the 'Hellenic Ornithological Society' will promote bird study and conservation in Greece in many ways.

CONCLUSION

During the ninteenth and twentieth centuries, but particularly after the 1940s, the numbers of vultures in Greece declined alarmingly. This decline, very obvious in the mainland and the islands except for Crete, was due to a combination of various factors, such as direct persecution, strychnine poisoning and lack of food. Destruction of habitat, although of less importance, has been the main reason for the disappearance of the Black Vulture from many regions of Central and Northern Greece.

Detailed counts or population statistics are lacking. Through review of the available literature, and from recent fieldwork for the IUCN/WWF 1921 Project, we estimate the Greek vulture population as:

- Bearded Vulture (*Gypaetus barbatus*): about 35 pairs
- Egyptian Vulture (*Neophron percnopterus*): about 250 pairs
- Griffon Vulture (*Gyps fulvus*): about 450 pairs
- Black Vulture (*Aegypius monachus*): about 15 pairs

It is clear that the Black Vulture has come close to extermination and, if negative factors do not cease, it will not survive. The Bearded Vulture has also become very rare, but ecologically is still stable, especially in Crete. Egyptian and Griffon

Vultures are not threatened at present. In the near future, however, we expect a decline in their population levels due to food shortage. Feeding places, especially in Evros and Central Greece, are badly needed but still not established. Law enforcement is another important requirement for the protection of vultures and other raptors in Greece.

REFERENCES

BAUER, W., HELVERSEN, O., HODGE, M. & MARTENS, J. 1969. *Catalogus Faunae Graeciae. Aves.* Thessaloniki.

BIJLEVELD, M. 1974. *Birds of Prey in Europe.* London.

BIRD, G. 1935. A visit to the Cyclades. *Ibis* **(13) 5**, 336–55

CRAMP, S. & SIMMONS, K. E. L. (EDS) 1979. *The Birds of the Western Palearctic. Vol. 2.* Oxford.

ERHARD. 1858. Katalog der auf den Cykladen einheimischen und überwinternden oder nur durchziehenden Arten von Vögeln. *Naumannia* **8**, 1–26.

GHIGI, A. 1929. Ricerche faunistiche nell' isole italiane dell' Egeo—Uccelli. *Arch. Zool. Ital.* **13**, 25–30.

GLEGG, W. E. 1924. A list of the birds of Macedonia. *Ibis* **11**, 46–86.

GLUTZ VON BLOTZHEIM, U. N., BAUER, K. M. & BEZZEL, E. 1975. *Handbuch der Vögel Mitteleuropas. Vol. 4.* Wiesbaden.

HALLMANN, B. 1979. Guidelines for the conservation of birds of prey in Evros. Report IUCN/WWF 1684 Project.

HANDRINOS, G. 1981. Le statut des grandes Falconiformes nicheurs en Grèce. *In:* Cheylan, G. (ed.) *Rapaces Méditérranéens.* 11–13. Aix en Provence.

HARRISON, J. M. & PATEFF, P., 1925. A contribution to the ornithology of Macedonia and the N. Aegean area. *Ibis* **(12) 1**, 422–42.

HARRISON, J. M. & PATEFF, P., 1937. An ornithological survey of Thrace, the islands of Samothraki, Thasos and Thasopulo in the N. Aegean and observations in the Struma Valley and the Rhodope Mts. *Ibis* **(14) 1**, 582–625.

KNÖTZSCH, G. 1965. Ornithologische Beobachtungen des Nordgriechenland. *Orn. Beob.* **62**, 181–376.

KRÜPER, TH. 1862. Aus meine tagebuch. *J. Orn.* **10**, 72–7.

LAUBMANN, A. 1927. Zur ornithologie der Ionische Inseln. *Verh. Orn. Ges. Bayern* **17**, 291–376.

MAKATSCH, W. 1950. *Die Vogelwelt Macedonies.* Leipzig.

NIETHAMMER, G. 1966. Beitrage zur Kenntnis der Brutvögel des Peloponnes. *J. Orn.* **91**, 167–238.

POWYS, H. L. 1860. Notes on the birds observed in the Ionian Islands and the provinces of Albania proper Epirus, Acarnania and Montenegro. *Ibis* **2**, 1–10, 133–40, 228–39, 338–57.

REISER, O. 1905. *Ornis Balcanica—III. Griechenland und die griechischen Inseln.* Vienna.

SALVADORI, T. & FESTA, E. 1913. Escurzioni zoologiche del Dr. E. Festa nell' isola di Rodi. II. Uccelli. *Boll. Mus. Zool. Anat.* Torino. **28**, 1–23.

SIMPSON, W. H. 1860. (a) Ornithological notes from Mesolonghi and south Aetolia. *Ibis* **(1) 2**, 279–96.

SIMPSON, W. H. 1860. (b) Further observations on some of the birds of W. Greece. *Ibis* **(1) 2**, 378–95.

STRESEMANN, E. 1920. *Avifauna Macedonica.* Munich.

STRESEMANN, E. 1943. Überblick über die Vögel Kretas und den Vogelzug in der Aegaeis. *J. Orn.* **91**, 448–514.

STRESEMANN, E. 1956. Bansteine zu einer Ornithologie von Kreta. *J. Orn,* **97**, 44–72.

TORTONESE, E. & MOLTONI, E. 1947. Appunti ornithologici relativi all'isola di Rodi 1942–43. *Riv. Hal. Orn.* **17**, 29–39.

VAGLIANO, CH. 1981. Contribution au statut des rapaces diurnes et nocturnes nicheurs en Crète. *In:* Cheylan, G. (ed.) *Rapaces méditérranéens:* 14–16 Aix-en-Provence.

WETTSTEIN, O. 1938. Die Vogelwelt der Aegäis. *J. orn.* **86**, 9–53.

WHITE, C. 1939. A contribution on the Ornithology of Crete—*Ibis* **(14) 3**, 106–36.