

ON THE PAST DISTRIBUTION OF THE GOLDEN JACKAL CANIS AUREUS IN GREECE

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3RD INTERNATIONAL JACKAL SYMPOSIUM
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GÖDÖLLÖ, HUNGARY

FIRST APPEARANCE

5,000 - 4,500 BC

The oldest Golden Jackal finds in Europe have been excavated in **Kitsos** and **Delphi** and date to 5000-4500 BC. (*Yiannouli, 2003; Sommer & Benecke, 2004*). But there are scholars who believe that a review of these samples is needed (*Spassov & Acosta-Pankov, 2019*). Nevertheless, the absence of jackal remains may be due to the fact that it was a species without economic importance, which was not hunted (*Spassov & Acosta-Pankov, 2019*). It could easily have colonized Europe by swimming even after the rise of sea level and the fill of the Bosphorus (<0.7km) (*Spassov, 1989*), or the Hellespont (1.3km) straits, as the species is capable swimmer (*Spassov, 1989*).



Through Bosphorus

Expédition Scientifique de Morée noticed that the historical distribution of the Golden Jackal and the modern Lion coincided to a considerable extent (*Geoffroy Saint-Hilaire, 1833*), a fact which may indicate that after lions colonized Europe around 4,500 BC (*Bartosiewicz, L. 2009*), the jackals could have followed them as kleptoparasites.



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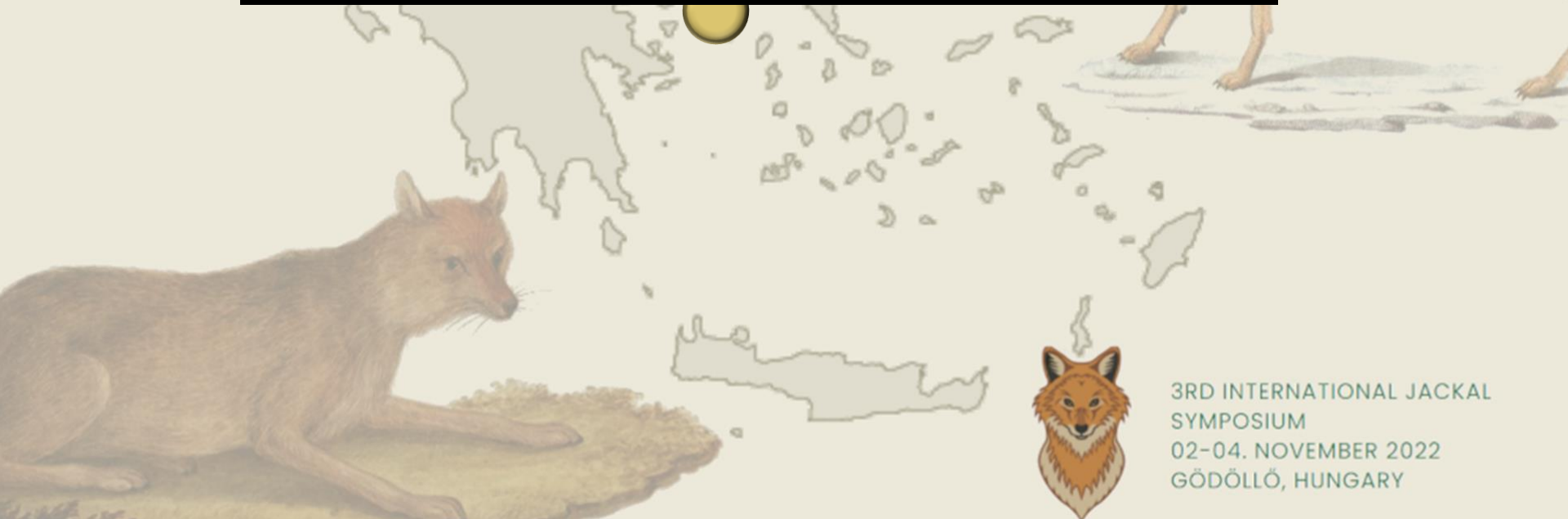
FIRST APPEARANCE

5,000 – 4,500 BC

The Golden Jackal arrives in Greece probably around 5,000 – 4,500 BC. Though the Bosphorus Strait has flooded it was and still is very narrow giving easy access to Europe for many animals that are decent swimmers like the jackal.

Expédition Scientifique de Morée connected the jackal presence with that of the lion that recent data indicate that arrived in the Balkans almost at the same period.

Bosphorus



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NAME ISSUE 'ANCIENT GREECE – BYZANTINE ERA'

Before the arrival of the Ottomans in Greece, the word 'ῥακάλι' – 'jackal' was unknown. But several elements contribute to the fact that the word used by most Greeks and Greek-speakers for the animal was 'θως' - 'thos'.

In the Iliad, which dates to the 8th century BC, there are references to the animals *thoes/lycopanthers* [wolves that hunt everything] which are described as having a reddish-blond/rusty color (distinctive coloration of *Canis aureus moreoticus* subspecies individuals). It is also mentioned that they follow deer injured by hunters, waiting for them to collapse in order to eat them, but also when a lion appears, it eventually steals out their food. The lively descriptions in the Iliad could have originated in experiences from mainland Greece or on the Aegean coast of Asia Minor, or even both.

Aristotle (*Ἀριστοτέλης*, 4th century BC) describes the *thoes*, stating that they avoid dogs and lions, and compete with the latter, but they are not afraid of humans and are friendly to them, and can be tamed. He also mentions how their appearance changes in the winter, when they become shaggy, and in the summer, when they become smoother. Additionally he writes that their inner organs, their mating process and birth-giving are the same as the wolf's, and that their teeth are serrated and many-sided. Aristotle distinguishes the *thos* from its North African relative, which is mentioned as a form of wolves smaller than the Greek ones. Today we know that animals in Africa that resemble Golden Jackals (*C.aureus*) are African Golden Wolves (*C.lupaster/anthus*) (Rueness & al., 2011, et al.). Also in contrast to animals that did not used to exist in the European Greek territory at the time and fact that is usually are stated (e.g. 'the leopard does not exist in Europe'), there is no such reference for the *thos*, which is possibly known in mainland Greece.

Theokritus (*Θεόκριτος*, 3rd century BC) in his work Thyrsis, writes that *thoes* and wolves howl in the woods and mountains.

Aristophanes of Byzantium (*Ἀριστοφάνης ο Βυζάντιος*, 3rd - 2nd century BC) summarizing older scholars writes that according to Timotheus the *thos* is a hybrid of wolf and leopard as while it has the appearance of the wolf, it got the varied color from the leopard.

Pliny the Elder (*Πλίνιος ο Πρεσβύτερος*, 1st century AD) notes that *thoes* are a type of wolf, elongated with short legs that jump rapidly, hunt and are harmless to humans. He distinguishes them too from African Golden Wolves, writing that wolves in Egypt and Africa are smaller than those of colder regions.

Hesychius (*Ἡσύχιος*, 5th - 6th century AD) writes that the *thos* is a kind of beast similar to the wolf.

Efstathios of Thessaloniki in the 12th AD century writes that the *thoes* are wolf-like animals or closely related to the hyena (*Κοραίς*, 1837) (perhaps because both species, i.e. the Golden Jackal and the Striped Hyena, feed on carrion).

Kalliergis (*Καλλιέργης*, 1499) etymologizes *thos*, from theo=run and writes that the *thos* is lively and fast.

Varinos (*Βαρίνος*, 1523) writes in his dictionary, exactly the same as Hesychius, i.e. that the *thos* is a kind of beast similar to the wolf, just as Dinner (1589) writes about the *thos*, 'luporum genus' [belongs to the wolf genus].

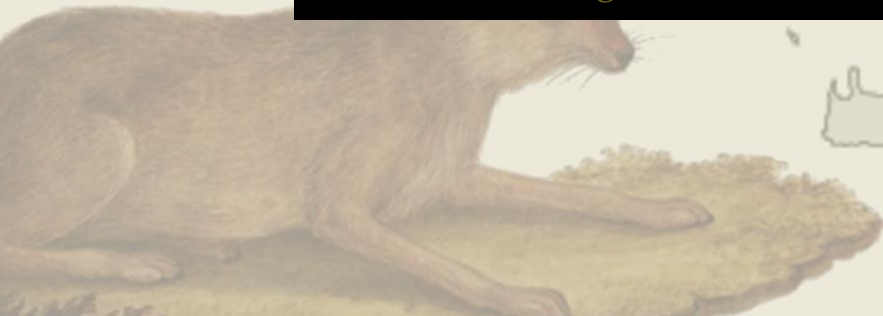


NAME ISSUE 'ANCIENT GREECE - BYZANTINE ERA'

Θως -thos of the ancient Greeks:

- It is also called *λυκοπάνθηρ - lykopanther* [wolf that hunts everything] (so it is an opportunistic animal)
- It is social
- It is rusty colored
- It takes advantage, preying on the injured by hunters animals
- It howls
- Its inner anatomy resembles that of the wolf
- It is harmless to humans
- It can be tamed
- It is a wolf type mammal belonging to the same genus as the wolf
- It is not the Grey Wolf
- It is not the African Golden Wolf
- The way it is presented indicates it is known in European ancient Greek territories

All these clues together fit well only the Golden Jackal



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NAME ISSUE 'THE CASE STUDY OF CORFU ISLAND'

Corfu Isl.



We have no clues when the jackal first appeared on Corfu Island but there is a Byzantine mosaic from c. 450 AD that depicts a canid that strongly resembles a Golden Jackal (Gasteratos & Fondoulakou, 2018).

It seems that the islanders borrowed the name of the jackal's bigger cousin, the Grey Wolf, calling the jackal locally *λόκος -likos* [wolf]. Similar use of the wolf to name the jackal is met and in other parts of Europe too, like in Hungary, where jackals were called Reed Wolves (Tóth, 2009) or when Italians wrote for the Dabube Delta, they mentioned the presence *Lupi Palustri* species [Marsh Wolves] (Boccardo, 1879).

In the archives of the 1502 - 19th century period, with some surviving till now, we find several toponyms around Corfu related to 'wolves' (Παπαρρήγα & al., 1997; Πανατζή, 2007; Γενικά Αρχαία Κράτους; Αρχαία Νομού Κερκύρας a,b,c,d,e; Αρχαία Διεύθυνσης Δασών Κέρκυρας, 2021) and at least two notary contracts mentioning the possibility of damage made by 'wolves', one from 1561 (Τσουγκαράκη & Μανρομάτης, 2007) and one from 16th or 17th century (Poulis, pers.com.).

The reason to exclude the actual Grey Wolf as being involved in this scenario is the fact that many of the Venetian and other foreign authors that describe Corfu in the same era, and which were familiar with the wolf from their homeland [there were common the wolf hunts during this period in northern Italy (Copiatti, 2020)], report that on the island 'qu'il ne s'y ny Ours, ny Loup' 'non vi sono lupi ne orsi' 'non hic Lupi aut Vrvi inveniuntur' [there are neither wolves nor bears] (Münster, 1575; Porcacchi, 1576; Magini, 1597; Matal, 1601; Ens, 1610; Mantegazza, 1616; Doglioni, 1623; Mastraca, 1630; Ortelius, 1655; Caputi, 1716). Of them only Mastraca (1630) writes 'et se bene di raro fu veduto nella parte d'Oros qualche lupo, fu stimato che fusse passato nuotando dalle parti di Albania per la vicinità che è di duoi miglia soli tra l' Isola et Terra ferma come riabbiamo discorso, et fu procurato dai villici per la sua estirpatione' [and it is really rare for a wolf that was estimated to have reached the area of Oros (Northeastern Corfu division), swimming from Albania due to its proximity, which is just two miles between the island and the mainland, as discussed before, mobilizing the villagers for its extermination]. So it would be strange the toponym use of the wolf for the Grey Wolf itself, an animal rarely getting on Corfu, only in the NE and not surviving for long.

Additionally, during the 1537 Ottoman attack on Corfu, there is a description of the aftermath of a battle in the central part of the island, where Griffon Vultures and 'wild animals' ate the dead men leaving only bones behind (Γραμμένος, 2006). Wild animals on Corfu being capable to consume the dead men, before burial, could have been the jackals.

In conclusion we have not negligible indications of Golden Jackal presence on Corfu during the Byzantine and Venetian eras.



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NAME ISSUE 'THE CASE STUDY OF CORFU ISLAND'

On Corfu Island there are indications of Golden Jackal presence since the 5th century AD.

Since 1500 (so possibly also earlier) Corfiots have many wolf toponyms and even notary contracts from 16th - 17th centuries mentioning wolf damage.

Contrary to that, all foreign authors originating from wolf inhabited areas, write that there are no wolves on Corfu during the same period.

The reasonable scenario is that the Corfiots use in the local dialect the word *λόκος* - *likos* [wolf] for the jackal.

Corfu Is



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NAME ISSUE 'JACKAL VS BADGER'

The Greek name *tzakalis* / *tzakali* / *tsakalis* / *tsakalos* / *tsakali* was used during the 18th and 19th centuries for the jackal (*Papadopoulos, 1815; Korais, 1837; Polymeris, 1854*), but locally at least on some Aegean islands also for the badger (*de Somavera & de Parigi, 1709; Georgiou, 1809*). This fact gave rise to the belief that on some of these islands used to be jackals. The confusion becomes evident in cases like that of Tinos Island, where Georgantopoulos (1889) writes in 'Tiniaka' that on the island of wild animals there are only jackals and he was obviously confused by the previous etymologies. Erhard found only the badger on Tinos (*Heldreich, 1878*), but the species there is still named *tsakalos* (*Masseti, 2010; Masseti, 2012*). That's possibly the case with Andros too, where Erhard mentions jackals (*Heldreich, 1878*), but the badger is possibly present (*Masseti, 2010*).



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NAME ISSUE 'JACKAL VS BADGER'

On some Aegean islands the word jackal was and is still used for the European Badger. This caused confusion to early researchers about the Golden Jackal presence in this area.



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1500 - 1799 AD



The Ottoman traveler Çelebi when he visited **Acrocorinth** in 1668, wrote that jackals live in the now deserted castle (*MacKay, 1968*). A relative ignorance of early western European naturalists about the jackal is shown by the well-known botanist Tournefort (1717), who visited the wider region in 1700, and when he saw jackals in Constantinople, he wrote that they were wolf-fox hybrids and that they howled in the night like tortured babies. He also wrote about their presence on **Samos Island** and that they are trouble for the island. In Sibthorp's posthumously unpublished *Fauna Graeca* (sister work of *Flora Graeca*) (*Sibthorp & Bauer, 18th century*), which concerns a visit to Greece in 1786-1787, a jackal is depicted and as with Tournefort, the animal is described as a wolf-fox hybrid. Walpole (1817), who visited Greece in the late 1780s and 1790s, writes that the hills of **Marathon** are frequented by jackals. In the 1790s Olivier (1801) describes the jackal as the commonest quadruped in **Thrace** (not only the western part). During the 'Destruction of **Preveza**' in 1798, it was reported that the corpses of Christians were left unburied and were eaten by vultures and jackals (*Pouqueville, 1854*). Pouqueville (1820) also wrote that myriads of jackal howl around **Amvrakikos** and they exist in **Zalongo**. Jauffret (1800) mentions the presence of the jackal in **Greece**.



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1500 - 1799 AD

During the 16th - 18th centuries, information about the local wildlife is scarce. Western Europeans ignoring the presence of the jackal think it is a wolf-fox hybrid. The jackal is present on Samos Island and northeastern Peloponnese and probably on Corfu Island too. It is common in parts of Attica, too common in western Greece and the most common animal in Thrace in total. The lack of wildlife information doesn't mean it is absent in the rest of its later known Greek range, where it could have been even common.

Corfu Isl.

Samos Isl.

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1800 - 1899 AD

In 1809 jackals abound in the forests of **Ksiromero** and howl macabrely at night, according to Leak (1835). In **Arcadia** in 1819, the presence in a tower chamber of 10 jackal skins is reported (Ξένοϋ, 1861). Numerous sources report the presence of the jackal on **Corfu Island**, during the 19th and 20th centuries, from 1820 to 1993 (Gasteratos & Fondoulakou, 2018). Anderson (1830) writes of jackals howling in **Ilia** in 1829 and present in parts of the **Peloponnese**.

Lindermayer in the middle of the 19th century wrote that the Western Rock Nuthatch used jackal hairs for its nest (Reiser, 1905). Bohn (1861), reports the presence of jackals on the **Ionian Islands**. Ansted (1863) writes of jackals on the **Ionian Islands** and that jackals abound in the caves south of the city of **Lefkada Island**. Sperling (1864) in the 1860s found jackals on the south side of **Amvrakikos**. Kavanagh (1865) found jackals, wolves and wild boars on **Liguria peninsula** between Drepanos and Vatatsa, in Igoumenitsa, while he also found jackals throughout **Lorida Sagiadas**, the wider area of **Astakos**, as well as on the island of **Petalas**, where a sandy beach was called the Jackal Parlour and was full with the remains of dead animals. Tozer (1869) writes that the numerous jackals in **Agio Oros** eat the grapes. Kritikidis (1869) writes that on **Samos Island** there is the jackal. At some point after 1870, jackals seem to have disappeared from **Meganisi Island**, a fact that the inhabitants of the island attributed to a miracle (Καββαδά, 2011). Nevertheless, it is reported that group hunts were organized to eradicate the jackals (Φράγκου - Κικίλια). Heldreich (1878) did not encounter jackals in Greece, but he writes about their presence in **Attica**, **Euboea** and the **Peloponnese**.

Corfu Isl.

Lefkada Isl.

Meganisi Isl.

Petalas Isl.

Euboea Isl.

Poros Isl.

Samos Isl.

Expédition Scientifique de Morée described for the first time the subspecies *Canis aureus moreoticus*, reporting that it is extremely common in the **Peloponnese** and that the Greeks use its fur (Geoffroy Saint-Hilaire, 1833). In 1832-33 the jackal is described as being common all over **Greece** (Lacour, 1834). In 1837, jackals were mentioned in **Aliki Trizinias** (Anonymous, 1927). Wordsworth (1841) writes that at night in **Preveza**, nothing could be heard but the howling of jackals. Best (1842) writes of jackals screaming at **Kato Aitos**, in **Sagiada**. Bowen (1852) wrote about jackals near **Litochoro**. Gig (1857) mentions that during battering in **Lorida Sagiadas**, jackals were also hunted. Morier (1857) mentions hundreds of jackals in **Acheron ford**.

Γεωργιάδης (1880) writes that jackals are found in the forests of all the **Thessalian mountains**. Κουτσαλέξης (1882) mentions many jackals near **Astakos**. In 1882 it is reported that jackals and wolves abound on the coasts of **Thrace** (Anonymous, 1882). In 1882, the presence of the jackal in **Agio Oros** is mentioned (Βρυνένιος & al., 1885). In 1884 Stéphanos writes that the jackal is quite common in **Attica**, **Euboea** and especially in the **Peloponnese**. Ψαράς (1884) writes that the jackal is very common in **Greece**. The forester Χλωρός, in 1886, writes that there are in **Ossa** area, all the common to all forests animals, such as the jackal (Στεφάνου, 1974). Grosvenor (1895) reports the presence of jackals in **Thrace**. Παπασωτηρίου (1895), describes the jackal and its behavior stating that they offer great benefit by eating carrions, preventing diseases. He also writes that if caught at a young age they can be tamed. In the 19th century, jackals were reported on **Poros Island** (Sidiropoulos & al., 2016). In 1894-1898 Reiser (1905) found jackals, in **Valti**, in **Evinos Estuary** and on **Petalas Island**, where he participated in two hunts, together with the island's shepherds, stating that there jackals fed on lambs and birds.

1800 - 1899 AD

During the 19th century, the jackal is described as extremely common in the Peloponnese, as very common or common in Sterea, Acarnania, Thessaly, Attica, Ipiros, Agio Oros, Thrace, Ossa, Euboea Island, Corfu Island and as being present in many more mainland areas and some more islands.

The lack of information again, it doesn't mean that the jackal is absent in the rest of central and eastern Macedonia, where it could have been even common. In the beginning of the next century, when western Europeans visited this area during the wars, found the animal being very common there.

Corfu Isl.

Lefkada Isl.

Meganisi Isl.

Petalas Isl.

Poros Isl.

Samos Isl.



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1900 - 1970 AD (I)

Αρβανιτόπουλος (1908) writes that near **Mikrothives**, jackals are numerous. Miller (1912) reports the jackal presence in **Piraeus**, as an animal collected there by N.C. Rothschild for the Natural History Museum of London (8.10.2.49-50). During WWI jackals had appeared in **Vermio** area, thought to have been driven out by the fighting from further north (Anonymous, 1948). Before 1913 in **Macedonia** and before 1920 in **Thrace**, it is reported that the Turks were mainly hunting predators such as the jackal (Στάρας, 1933).

Corfu Isl.

As recorded by Frazer (1919), in **Macedonia** there were many jackals which with the war lost many sources of food. Armor (1920) reported that in 1917-1918 in the **swamps of G.A.L.A.** and especially at the mouth of the Gallicus there were innumerable jackals. The zoologist Γερμανός (1920) writes that the fox and the jackal are the most common carnivores in Greece.

Lefkada Isl.

Euboea Isl.

Samos Isl.

Goff & Fawcett (1921) state that one of the most common wild mammals in **Macedonia** is the jackal, which roams the villages at night, being present near **Thessaloniki** and living on rocks and hillsides. In the 1920s, it is reported that on the western shore of **Giannitsa Lake**, there was a large and dense forest, in which there were many jackals (Νόττας & Σταθακόπουλος, 1998). Κυριακίδης (1922) mentions jackals on the banks of **Vistonida Lake**. Herbert (1925) writes that he hunted jackals in the frozen swamps of **Macedonia**. In 1925, the presence of jackals in **Korinos** was mentioned (Τζανακάρης, 2016).

In 1948-1949 jackals were reported in areas of **Attica** such as **Ekali** (Anonymous, 1948), **Ntaou Pentelis**, **Agios Andreas**, **Tymvos**, **Nea Makri** and **Souli** (Anonymous, 1949; Παπαγγ., 1949). Ποιμενίδης (1949a,b; 1950a,b,c,d,e, 1951) makes an extensive description of the jackal, its habits and its presence in **Evros Region**, mentioning that the jackal is the most common wild animal in **coastal Evros**, in the zone **between Alexandroupoli and Evros Delta**, in **Kouri of Anthia**, in **Dadia Forest**, with the center of their distribution and the largest numbers in **Evros Delta**, expanding to **Ismaros** and **Maronia** after the war, but being absent on the interior mountains. He also mentions that the jackal swims very well, but being often partially exterminated by floods in the Evros Delta or sometimes forced to move to the mountains, or getting trapped on small elevated islets, together with wolves etc. In **Plasia-Kalamaki** of Larissa, many jackals are reported (Kar., 1950). In **Vonitsa**, the killing of a jackal is reported in 1950 (Dav., 1950). In 1952-1953 there are reports and photographs of the killing of jackals in **Asvestochori** (Anonymous, 1952a), in **Retziki** and **Hortiatis** (Anonymous, 1952b), in the wider **province of Thessaloniki** (Anonymous, 1952c), in the **Lekatsa forest** in Preveza (Papageorgiou, 1952) and in the **province of Drama** (P., 1953). In **Milina**, in southern Pelion, in 1957, several damages to poultry houses by jackals were reported (Anonymous, 1957).

Ζέρβας (1927) writes that the jackal is considered to be the ancestor of the Greek Hound, and that it is an excellent swimmer, that it lives in wetlands or on slopes close to plains and wet areas, and that if it does much damage poisoned baits must be used to exterminate it. Μισιάρδης (1928) reports that in **Macedonia** jackals cause less damage to livestock than wolves. In the 1930s (Στάρας, 1933) it is reported that in the **Pangeon Region** there are hundreds of jackals appearing in packs and that if the hounds are left free they always find and hunt them. He also writes that they should be hunted down, but not exterminated. Γρανίτοας (1933) mentions jackals on the slopes of **Simvolos**. According to the Great Greek Encyclopedia (Δουσομάνης, 1934), jackals abound in the **prefecture of Rodopi**. Wettstein (1941) reports that according to Serva the jackal is common in **mainland Greece** and according to Dr. M. Beiers is also common in the **Ionian Islands**. In 1944, jackals were reported in the areas west of **Lake Amvrakia** (Αναγνώστου, 2002). During the German occupation, the persecution of jackals and other carnivores stopped, resulting in an increase of rabies (Παπαχριστοφίλου, 1953). Ζέρβας (1947) writes that the jackal lives mainly in wetlands, while he also mentions **Penteli**, **Hymettos** and **Samos**.

1900 - 1970 AD (II)

In the 1950s, jackals were reported in the Yugoslav part of **Lake Doirani** (*Anonymous, 1958b*) and probably also existed in the Greek part too. Τσουτσίνογ (1959) writes that in the swamps of **Arta**, i.e. near the areas of **Chanopoulou**, **Petra**, **Zavaka** and **Strongyli**, there are jackals. In 1959, jackals were reported in smaller numbers than foxes, in **Hymettos**, **Parnitha**, **Penteli**, **Aegaleo**, and their surroundings, and on the cliffs of both the **Euboean** and **Saronic Gulfs** (*Anonymous, 1959*). Fermor (1966) writes that in **Epirus** jackals were dangerous for the goats and lambs of the Sarakatsans.

Corfu Isl.

Lefkada Isl.

Euboea Isl.

Samos Isl.

Αναγνώστου (1968) writes that jackals, which are a problem lowland livestock, are easy to exterminate with the use of poison baits by the Forest Service because they are native animals. In the Forest Chronicles (*Δασικά Χρονικά, 1966; 1974*) the presence of jackals in **Mt.Oeta** is mentioned, as well the concerts of jackals on the coast of **Rafina** during the previous decades. In 1970, a hunter killed 5 jackals with poison in **Polygyros**, while there are photos of killed jackals in **Skafidaki**, Argolida and of a gamekeeper who killed 27 jackals in **Megara** (*Παλιές Κονηγετικές Φωτογραφίες*). A summary of the late 1970s jackal presence and persecution is made by Giannatos (2004; *Γιαννάτος, 2014*). The Igoumenitsa Branch of the Management Unit of the Protected Areas of Epirus (2013) had made synopsis of the jackal presence in **coastal Epirus** since the 1940s (*Συντιχάκη & al. 2016*).

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1900 - 1970 AD (II)

During the 1900 - 1970 period, the jackal is described as the most common animal in coastal Thrace and Macedonia (considered innumerable in the estuaries of Evros, Axios, Gallikos, Loudias and Aliakmonas) and the most common carnivore together with the Red Fox, in Greece in general. It is very common on Corfu Island and present on the islands of Samos, Euboea and Lefkada.

During the 1960s the big decline of its numbers and distribution begins as the state intensifies the fight against the 'pests' and the rabies.

Corfu Isl.

Lefkada Isl.

Euboea Isl.

Samos Isl.



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DOUBTFUL & ERRONEOUS ISLAND RECORDS

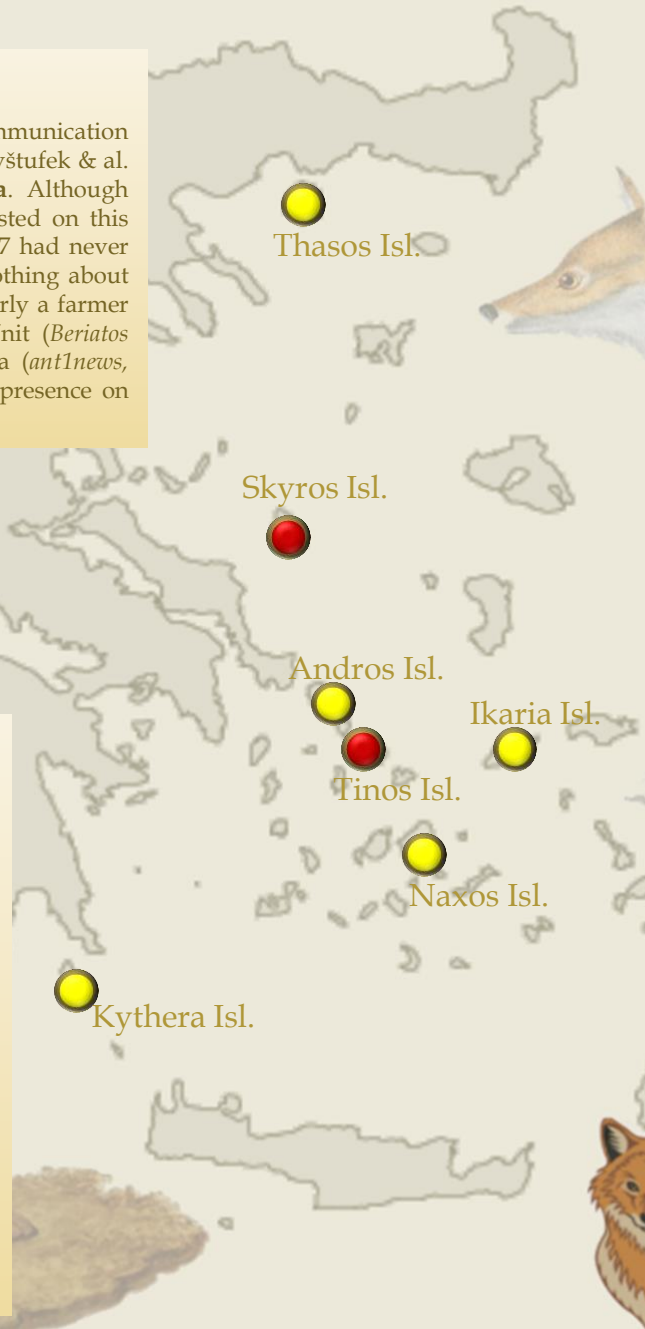
KEFALONIA ISLAND

Demeter & Spasov (1993) note that according to personal communication with Petridou, the jackal has been reported on **Kefalonia**. Kryštufek & al. (1997) summarizing previous data also mention **Kefalonia**. Although these sources mention it, it seems that the jackal never existed on this island. Local hunters from Paliki Unit born in 1926 and 1937 had never experienced jackal presence on the island and had heard nothing about the species from elders (Christoforotou pers.com., 2022). Similarly a farmer born in 1933 and a shepherd born in 1940 in Argostoli Unit (Beriatos pers.com., 2022). A recent claim about a jackal near Mounta (ant1news, 2022), proved to be a Red Fox, a species with well known presence on Kefalonia.

Kefalonia Isl.

CYCLADES ARCHIPELAGOS

The case of **Tinos Island** and Georgantopoulos report (1889), as well this of **Andros** and the badger issue have been discussed earlier. Buondelmonti (1420) writes for **Naxos**, about the 'disgusting' voices of animals, which he mentions as zaialia (jackals?), and which roam in herds in the forests and plains of the island. On **Naxos** the jackal is also mentioned by Erhard (Heldreich, 1878). The elders of Naxos were naming a wild mammal, *λόκος* - *likos* [wolf] and according to them, it was present there until the 1960s (Banakakis, pers.com., 2018). Recently the Red Fox was the only canid seen on Naxos and the European Badger is absent (Banakakis, pers.com., 2018). If the jackal was truly present on Naxos, it could had been introduced for hunting purposes, like the Red Deer that was hunted there during the 16th - 18th centuries (Tournefort, 1717; Slot, 2016). Wettstein (1941) writes that he has not been able to find anything definite about the jackal on the Aegean islands, but in any case it is absent from the Cyclades.



OTHER GREEK ISLANDS

Wettstein (1941) writes that on the Aegean islands, the jackal is said to exist on **Ikaria**. This information is confused by Demeter & Spasov (1993) and state that it exists on **Skyros** instead of maybe existing on Ikaria. But Ikaria is far from Samos (18.7 km) and any other jackal information concerning this island, uses the uncertain Wettstein as a source. In fact Wettstein may had confused Samos with Ikaria as they are related islands. A local born in 1946, had never experienced jackal presence on the island and had heard nothing about the species from elders (Fountoulis pers.com., 2022). On the other hand, two old sepherds mention that the animal got extinct in 1970 (Avramiotis pers.com., 2022).

Jameson in 1837 writes about jackals on **Kythera Island** (Masseti, 2010; Masseti, 2012). Kythera is quite far (13.5 km) from nearest mainland population and 8.4 km from Elafonisos Island if the later was ever colonized by the species.

Kryštufek & al. (1997) mention the jackal being present on **Thasos**, as does *thasosisland.gr* were it states it got extinct during the 1980s wildfires. I.Markianos (pers.com., 2022) living in southern Thasos and hunting there during the 1970s and 1980s, states that never experienced jackal presence and had heard nothing about the species from elders. Karapatakis (pers.com., 2022), born in the WWII states that never experienced jackal presence and had heard nothing about the species from elders. On the other hand there is information about jackal howling on northwestern Thasos in the 1990s.

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JACKAL FUR/SKIN TRADE

In the early 20th century a trade and export of jackal fur/skins was developed.

In 1911 jackal furs were exported from Andrianople Vilayet in **Thrace** to France and Germany (*Anonymous, 1913*).

In 1914 each jackal fur from **Macedonia** and **Epirus** that was exported from Thessaloniki to USA, was priced at 0.33\$ per unit (*Kehl, 1917*)

In 1918 it is reported that some **2,000** jackal skins were exported annually from Thessaloniki, originating mostly from **Macedonia** and **Epirus** (*Horton, 1918*).

In 1921 the exportation to USA of **1,042** jackal skins/furs from **Thessaloniki**, is mentioned (*Ehrhardt, 1924*)

During 1923-24 season, **1,500** jackal furs were exported to western Europe and USA, from **Thessaloniki** (*Meadows, 1924*).



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JACKAL PERSECUTION & DECLINE

The formal persecution of the jackal by the Greek state, started at some point in the 1930s, but after 1933 when the target was only the wolf (*Θεοτόκης, 1933; Στάρας, 1933*).

Even if the numbers of killed jackals, presented by the Ministry of Agriculture are not precise and always valid, they are indicative of the sharp jackal's decline at some point, during the 2nd half of 20th century.

In 1952, **3,380** jackals were killed according to Λεγάκις (*Λάσκα, 2012*).

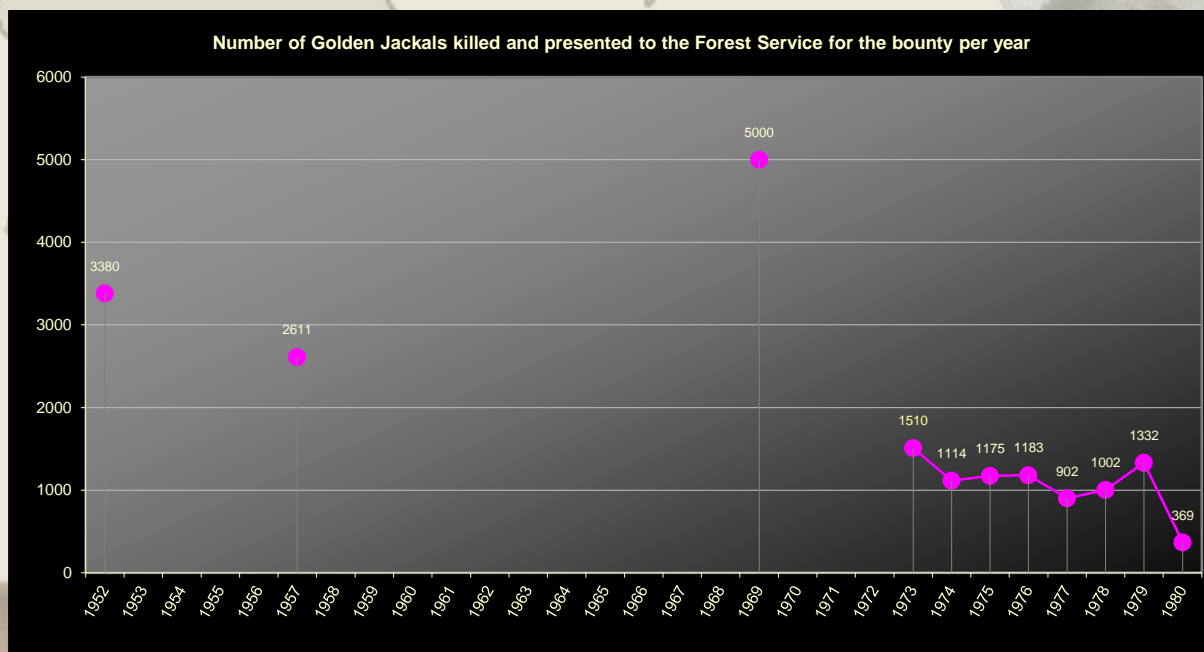
In 1957, **2,611** jackals were killed (*Anonymous, 1958*).

In 1968, **5,000** jackals were killed (*Anonymous, 1969*).

During the 1973-1979 period from **902** up to **1,510** jackals were killed annually (*Δασικά Χρονικά, 1974; Giannatos, 2004; Γιαννάτος, 2014*).

In 1980 only **369** jackals were killed (*Giannatos, 2004; Γιαννάτος, 2014*).

It is more than obvious that the 1970s jackal presence, indicated by Giannatos (*2004; Γιαννάτος, 2014*), was already much smaller and with largely decreased numbers compared to the 1950s and the 1960s. According to the Hellenic Veterinary Society there were **20,000-25,000** jackals in **Greece** (*Βασάλος, 1978*).



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