
Internship report

4th year

Research project on the distribution of the golden jackal on the island of Samos (Greece)

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Contents

List of tables and figures.....	3
Discovery of Archipelagos.....	5
Samos Island	5
The institute.....	6
My missions	7
Literature review.....	8
Introduction	8
<i>Study context</i>	8
<i>Objectives and methods</i>	9
A highly adaptable species	10
<i>The diversity of golden jackals' habitats</i>	10
<i>Golden jackals' flexibility regarding altitude</i>	13
Golden jackals and humans' tense relationship	14
<i>The anthropogenic concerns about the species</i>	14
<i>The anthropogenic threats to the species</i>	14
Conclusion.....	15
Research proposal.....	15
Identification of areas of interest.....	15
Camera traps plans	18
Research project	23
Camera traps plans' implementation, adjustments and observations.....	23
Results and discussion.....	28
Conclusion	34
Appendices	35
Bibliography.....	52

Please note that all the maps in this report are available in a larger format in the Appendices section, for a better overview of their content and details.

List of tables and figures

Table 1: Links between the habitats of the literature review and the CORINE 2018 layer (CORINE 2018).....	15
Table 2: Recorded characteristics (seasonality, temporality, temperature variations) on the footage with golden jackal's presence from 2012-2013, 2018-2019 and 2021-2024 by habitat types	29
Figure 1: Samos' habitats and land-use (Lambert, 2025).....	5
Figure 2: Samos' topography (Lambert, 2025).....	6
Figure 3: Samos' natural areas protection measures (Lambert, 2025).....	6
Figures 4 and 5: Photographs of a golden jackal and a golden jackal's pawprint (Archipelagos, 2023 and Lambert, 2025)	8
Figure 6: Proportion relationship between jackal's positive answers and sample vegetation type in a 2014-2017 study in Bulgaria (Acosta-Pankov and Spassov, 2019).....	10
Figure 7: Proportion relationship between jackal's positive answers and sample water source in a 2014-2017 study in Bulgaria (Acosta-Pankov and Spassov, 2019).....	10
Figure 8: Proportion relationship between jackal's positive answers and sample anthropogenic activity in a 2014-2017 study in Bulgaria (Acosta-Pankov and Spassov, 2019)	11
Figures 9, 10 and 11: Proportion relationship between jackal's positive answers and sample human settlements with various distances in a 2014-2017 study in Bulgaria (Acosta-Pankov and Spassov, 2019).....	11
Figure 12: Records of golden jackals at different habitat types in Greece in 2022 (Bukas et al., 2022).....	12
Figure 13: Proportion relationship between jackal's positive answers and sample altitude in a 2014-2017 study in Bulgaria (Acosta-Pankov and Spassov, 2019)	13
Figure 14: Records of golden jackals at different altitudes in Greece in 2022 (Bukas et al., 2022).....	13
Figure 15: Golden jackals' sightings in Samos between 2012-2013, 2018-2019 and 2021-2024 (Lambert, 2025)	16
Figure 16: Golden jackals' distribution regarding different habitat types in Samos between 2012-2013, 2018-2019 and 2021-2024 (Lambert, 2025)	17
Figure 17: Camera traps – Agios Konstantinos Route 1 (Lambert, 2025)	18
Figure 18: Camera traps – Agios Konstantinos Route 2 (Lambert, 2025)	19
Figure 19: Camera traps – Kampos Route 1 (Lambert, 2025)	19
Figure 20: Camera traps – Kampos Route 2 (Lambert, 2025)	20
Figure 21: Camera traps – Wetlands Route 1 Version 1 (Lambert, 2025)	20
Figure 22: Camera traps – Wetlands Route 1 Version 2 (Lambert, 2025)	21
Figure 23: Camera traps – Wetlands Route 2 Version 1 (Lambert, 2025)	21
Figure 24: Wetlands Route 2 Version 2 (Lambert, 2025)	22
Figure 25: Camera traps – Updated Agios Konstantinos Route 1 (Lambert, 2025)	23
Figures 26 and 27: Photographs of the recording area, where the position and angle of the camera are indicated respectively by the red circle and arrow (Lambert, 2025).....	24
Figure 28: Golden jackal's sighting on point (2) – 16/05/2025 (Lambert, 2025)	24

Figure 29: Photograph of the recording area, where the position and angle of the camera are indicated respectively by the red circle and arrow (Lambert, 2025).....	25
Figures 30 and 31: Golden jackal's sightings on point (3) – 28/05/2025 and 06/06/2025 (Lambert, 2025).....	25
Figure 32: Camera traps – Updated Kampos Route 1 (Lambert, 2025)	26
Figures 33 and 34: Photographs of the recording area, where the position and angle of the camera are indicated respectively by the red circle and arrow (Lambert, 2025).....	26
Figures 35 and 36: Golden jackal's sightings on point (2) – 07/06/2025 and 08/06/2025 (Lambert, 2025).....	27
Figures 37 and 38: Golden jackal's sightings on point (2) – 21/06/2025 and 26/06/2025 (Lambert, 2025).....	27
Figure 39: Golden jackal's sighting – 26/04/2025 (Lambert, 2025)	28
Figures 40 and 41: Golden jackal's sightings – 25/04/2025 and 28/04/2025 (Lambert, 2025).....	28
Figures 42, 43, 44 and 45: Sightings of a domestic dog, a wild boar, a beech marten and a wild cat at the same location – 12/04/2025, 12/04/2025, 24/04/2025 and 25/04/2025 (Lambert, 2025).....	29
Figures 46 and 47: Golden jackal's sighting – 29/03/2018 and 26/06/2022 (Lambert, 2025)	30
Figures 48 and 49: Golden jackal's sighting – 28/09/2024 and 06/09/2024 (Lambert, 2025)	30
Figure 50: Golden jackals' distribution regarding different habitat types in Samos in spring between 2012-2013, 2018 and 2023-2025 (Lambert, 2025)	32
Figure 51: Golden jackals' distribution regarding different habitat types in Samos in summer between 2012-2013, 2018 and 2022-2024 (Lambert, 2025)	32
Figure 52: Golden jackals' distribution regarding different habitat types in Samos in autumn between 2012, 2018 and 2022-2024 (Lambert, 2025).....	32
Figure 53: Golden jackals' distribution regarding different habitat types in Samos in winter between 2012, 2018-2019 and 2022-2024 (Lambert, 2025)	33

Discovery of Archipelagos

Samos Island

Samos is a Greek island located in the eastern Aegean Sea, an elongated embayment of the Mediterranean Sea. It falls into a warm Mediterranean climate, characterized by hot dry summers and mild rainy winters, with a relatively low rainfall and strong winds year-round ([Wikipedia, 2025](#)). Samos reported a population density of 68 inhabitants per square kilometres in 2021, against an average of 82 inhabitants per square kilometres in mainland Greece in the same year ([Wikipedia, 2025](#)).

Here are some maps of the island depicting general information on land-use, key environmental factors and legislation that should prove useful throughout my project.

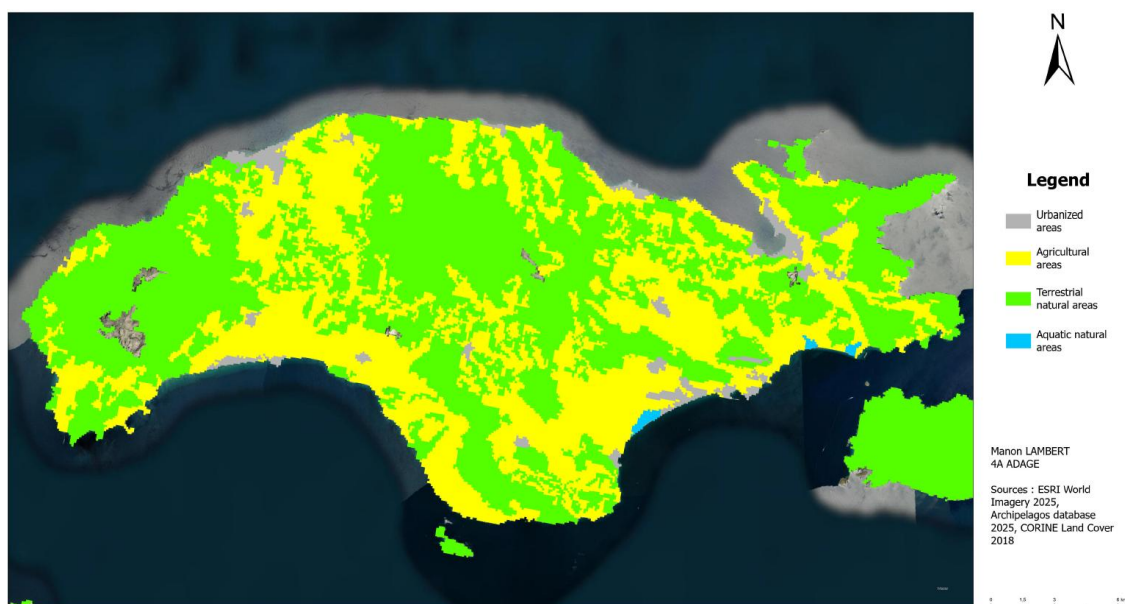


Figure 1: Samos' habitats and land-use (Lambert, 2025)

The vast majority of the island is covered by natural and agricultural areas, leaving limited and discontinuous spaces to urbanization (Figure 1). Natural areas include bushy and herbaceous vegetation with dispersed adult trees, along forests with broad-leaved and/or coniferous species, all adapted to the dryness and heat of Samos' climate, as well as marshes and other water bodies. Arable lands, some of which are permanently irrigated, consists mostly of fruit trees, berry plantations, olive groves, vineyards and grasslands. Certain plots encompass agro-forestry methods with the inclusion of natural vegetation on the parcels.

Samos' topography reveals an average elevation of 78 meters above sea level, with an altitude scale between -10 and 1,400 meters (Figure 2). Natura 2000 protected areas extend over 21,015 hectares (Figure 3), meaning that 44% of the island was registered as protected natural areas in 2024. For comparison, 13% of the French terrestrial territory is registered in the Natura 2000 network ([Office français de la biodiversité, 2025](#)).

Samos is a key biodiversity hotspot due to its mild climate, proximity to the Anatolian mainland and its heterogeneous landscapes. Indeed, the island is occupied by over 1,500 plant species and serves as a *"key stopover for over 200 migratory bird species"* ([Archipelagos Institute of Marine Conservation, 2025](#)). It also hosts golden jackals, a diverse herpetofauna including the last Greek population of Mediterranean chameleons, and many other species.

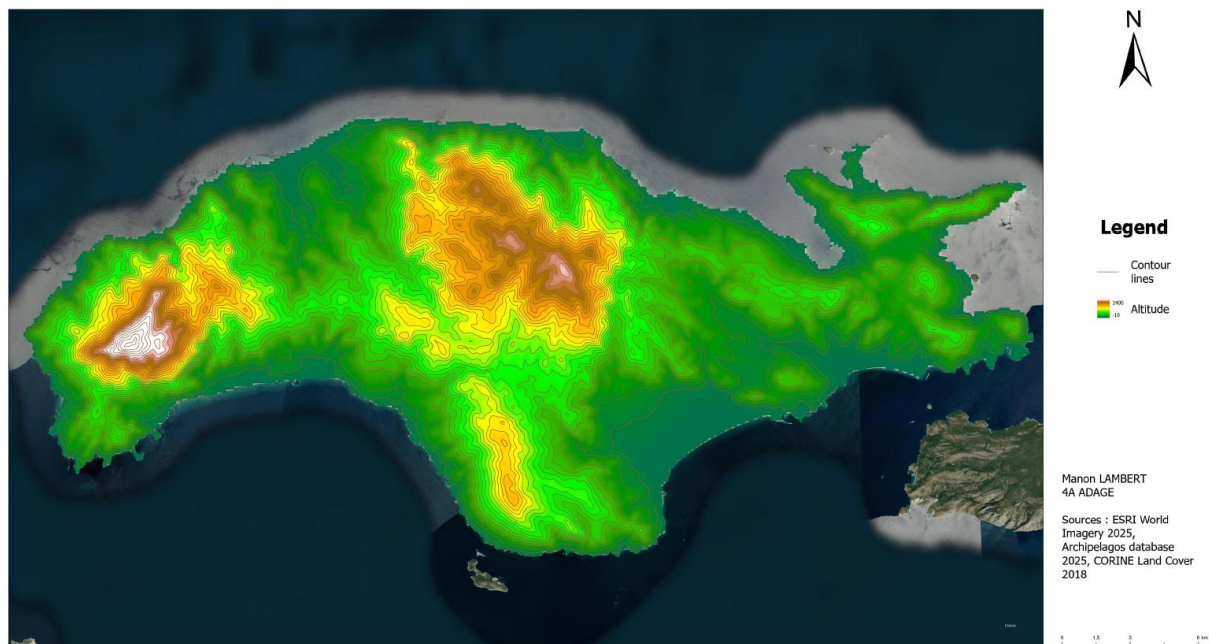


Figure 2: Samos' topography (Lambert, 2025)



Figure 3: Samos' natural areas protection measures (Lambert, 2025)

Despite such a rich terrestrial biodiversity, many of the species mentioned before are understudied and some are constantly threatened (herbicides, wildfires, road accidents, etc.). My internship's purpose is to expand the knowledge on Samos' wildlife, in the hope of a better understanding, protection and cohabitation on the long term in the future.

The institute

The Archipelagos Institute of Marine Conservation is an NGO founded in 1998 in Samos, Greece. Its main goal is to *"defend and protect the biodiversity of the northeastern Mediterranean, with an emphasis on the Greek seas and islands, through a combination of applied scientific research, education, conservation actions and community engagement."* (Archipelagos Institute of Marine Conservation, 2025).

With 15 scientists and staff members present year-round on the bases and on the field, backed up by many associates, interns and technological equipment (2 research bases, 5 research vessels, sonars, echosounders, ADCPs, ROVs, drones, etc.), Archipelagos' mission is the protection of the Mediterranean marine and island ecosystems, whether it is at a local, national or international level.

The searchers and interns are divided into teams: Marine Mammal Research, Marine Ecology Research, GIS & Remote Sensing and Terrestrial Research, just to cite a few. I myself enrolled, in adequation to my studies, in the Terrestrial Team, dedicated to the research and conservation of terrestrial ecosystems. Its objectives are the study of the key species and habitats of the island, their interactions with each other, and the sharing of this knowledge to the general public and the local communities. Acoustic recorders, camera traps, light traps and other equipment allow the good conduct of this research, as well as weekly surveys for efficient and constant data collection.

My missions

As Archipelagos focuses on research on marine and terrestrial flora, fauna and ecosystems, the organization entrusts research subjects to its interns according to their personal interests and skills. Once the subject is determined, the interns are tasked with the realization of three reports, under the direction of a supervisor: a literature review, a research proposal and finally the research project itself.

My 16-week internship therefore led to the production of a literature review, a research proposal and a research project on Samos' golden jackals populations (*Canis aureus*), more precisely on their distribution across the island. This subject, proposed by my supervisor after having both attended a presentation by a researcher specialized in the study of this species, is part of the continuation of the Golden Jackal Project led by Archipelagos over the last fifteen years. Those deliverables are available directly in the following sections of this report.

As such, I was first tasked to find out whether studies have previously been conducted regarding the species' preferences in habitats and altitudes. Through the setting up of camera traps plans and presence data collection, the main goal of the project is to determine whether the insular populations share these preferences with the mainland populations, with Greece as the country of reference for this comparison.

Given the size of the project, the equipment available and the time allocated, I was asked to focus on the creation of the camera traps plans, which could then be used by the Terrestrial Team in their ongoing data collection well after my departure. The first results obtained over such a short period will still be subject to interpretation and analysis but will need to be taken in perspective and require a long-term study to properly validate or refute any hypothesis on golden jackals' distribution.

My missions also included the complete supervision of the organization's camera trapping, where I was responsible for the management of the Terrestrial Team's cameras, ranging from recharging batteries to reviewing videos, labelling and sorting footage and entering information into the databases.

Literature review

Introduction

Study context

The following literature review focuses on golden jackals (*Canis aureus*), notably on their ecology, distribution and habitats, and will serve as a foundation for the ensuing project.

Golden jackals are medium-sized canids (Cunze and Klimpel, 2022), recognizable by their long and coarse fur, whose coloration ranges from yellow to pale gold with a brown tip (Figure 4), as well as by their long fluffy tail and their long pointed ears (Archipelagos Institute of Marine Conservation, 2023). Weighting between 10 kilograms for the females and 12,5 kilograms for the males on average, sexual dimorphism can be determined by the skull, as males' canines have a generally larger and broader diameter (J. Hatlauf, 2025, Pers. Comm.). Their paws are merged on top (Figure 5), and the tails' patterns can be used to identify and distinguish individuals (Custers et al., 2024).



Figures 4 and 5: Photographs of a golden jackal and a golden jackal's pawprint (Archipelagos Institute of Marine Conservation, 2023 and Lambert, 2025)

Golden jackals are found in a multitude of environmental conditions, primarily in heterogeneous agricultural and human-dominated landscapes along with wetlands (Heikkinen et al., 2023). Their long-distance dispersal capacity led them to colonize Africa, Asia and Europe. In the latter is an estimated population of 150,000 individuals (J. Hatlauf, 2025, Pers. Comm.). Golden jackals live in dens that they dig, find or steal, and occupy a territory measuring between 5 and 20 square kilometres. As a canid mesopredator, the species plays a prominent role in its ecosystems, which they can considerably transform: as a matter of fact, golden jackals interact with various species (including prey, competitors and even parasites) and are thus part of complex food webs (Cunze and Klimpel, 2022). Opportunistic and highly adaptable in nature, their generalist and flexible diet includes small mammals (mostly rodents), rabbits, birds, amphibians, reptiles, together with invertebrates, fruits (Cunze and Klimpel, 2022) and dead animals. Therefore, they benefit agriculture by assuring pest control (J. Hatlauf, 2025, Pers. Comm.).

Primarily nocturnal, this species uses its environment at night (Bulmer, 2015). More often than not, golden jackals live in "close family groups": these groups consist of a dominant pair and their offspring (one breeding every year), with occasionally one or more adults called "subordinates" or "helpers", looking after the pups (Custers et al., 2024). Thus, yearlings can either leave the group and disperse as adults, or remain at the nest, assisting their parents in raising the next pups' generations before dispersing. All group members "*cooperatively secure food sources and fend off strangers from their group's territory*" (Custers et al., 2024).

Golden jackals' status in Greece varied drastically over the last five decades: golden jackals were perceived as "vermin" in the seventies (Giannatos et al., 2014) and faced an organized carnivore poisoning campaign (along with numerous species such as wolves, foxes or corvids) implemented by the Ministry of Agriculture. These measures, combined with hunting, led to the death of approximately 1,000 jackals per year up to 1981, amounting to 7,000 individuals in total (Fiori, 2025). These measures also altered the public's perception and attitudes towards the species, fostering a culture of "fear and hostility" regarding this "harmful pest", culture which persists and challenges golden jackals' conservation efforts today (Fiori, 2025).

Nowadays, the golden jackal is neither a game nor a protected species in Greece (Giannatos et al., 2014). It is not currently classified as endangered in the country, though the species is regarded as being at risk and needing "continued conservation efforts" (Fiori, 2025). Even if golden jackals are protected by national and European legislation and listed as Least Concern on the IUCN red list (Fiori, 2025), they are still hunted in some countries like Hungary. Finally, it is worth noting that *"less than a quarter of the critical habitat of golden jackals in the country is formally protected within the N2000"*, a low percentage highlighting the need for the creation of new areas of conservation for this species in Greece (Avgerinou et al., 2023).

Objectives and methods

Samos' golden jackals population is of particular interest: relatively isolated from the mainland, this insular population *"has likely been subjected to several short-term diversification processes caused by reduced rates of colonisation and gene flow"* (Custers et al., 2024) and therefore offers a great potential for scientific research. Even if its origins are not well known, studies show some genetic connections between Samos' and mainland Greece's populations. Nonetheless, the genetic structure of the individuals inhabiting the island is highly differentiated from the others, which stipulates that the sea acted as a geographic barrier and resulted in a clear genetic distinctiveness between the insular and the mainland golden jackals populations (Custers et al., 2024).

The golden jackal poses as the top-predator of the island (devoid of wolves and foxes) and is of ecological importance by its regulation of the ecosystem's trophic structures (Bulmer, 2015). Considering its small size and its fairly higher population density compared to the mainland, the golden jackals' population of Samos is "relatively easy to monitor". Several groups occupy the island, though the exact number of individuals and their distribution are merely estimated and not precisely quantified to this day (Fiori, 2025).

And monitoring Samos' golden jackals is precisely the objective of this project: the aim of this literature review is to formulate a plan regarding the future implementation of camera traps in areas occupied by golden jackals on the island. The main goal is to research the critical habitats and altitudes used by the species, mostly in mainland Greece with complementary information from observations in Europe. Then, the presence or absence of golden jackals in those habitats and altitudes will be determined via camera traps on Samos. Consequently, hypotheses could be formulated on the possible influence of the insular isolation on the populations' behaviour, if changes do occur.

This literature review followed the reading of a dozen of scientific papers and research articles, found on platforms such as Google Scholar and Research Gate. A first look at the introduction and conclusion of each document led to its full review or sidelining. In the first case, the key points and ideas were synthesized and organized by theme. Those notes were then summarized in the following pages, with a focus on missing information that could require further study on the subject. A discussion on the major observations, along with their relevance and future application in the project, will be mentioned in the conclusion.

A highly adaptable species

The diversity of golden jackals' habitats

Golden jackals' habitat preferences and ecological requirements have been examined in recent years. Studies show that in Europe, golden jackals tend to live in agricultural lands, mixed landscapes and wetlands (Figure 6), if those environments possess an adequate cover (Bulmer, 2015). Woodlands are avoided, the species focusing instead between open areas and scrublands. Additionally, jackals' distribution is connected with the presence of near water sources, mainly in a 1-kilometre radius (Figure 7).

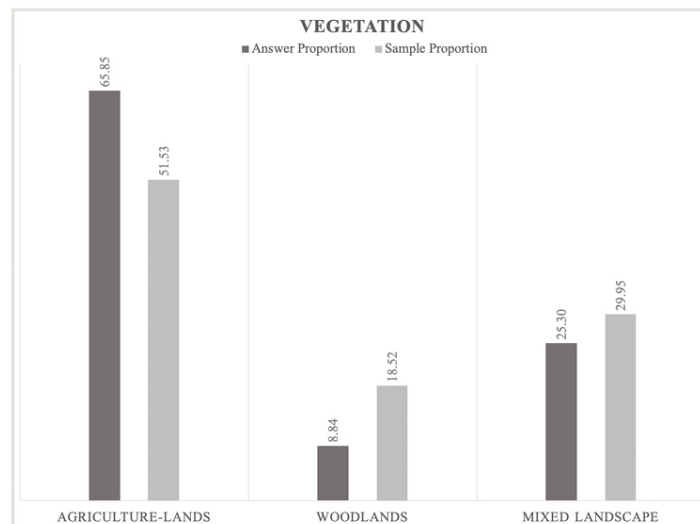


Figure 6: Proportion relationship between jackal's positive answers and sample vegetation type in a 2014-2017 study in Bulgaria (Acosta-Pankov and Spassov, 2019)

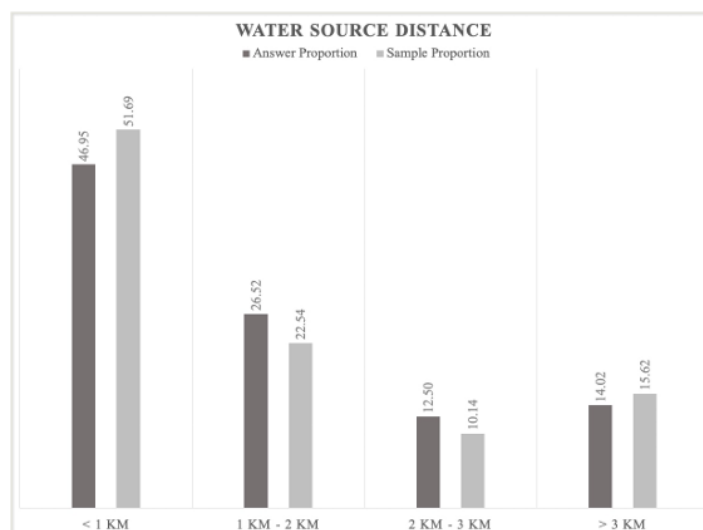


Figure 7: Proportion relationship between jackal's positive answers and sample water source in a 2014-2017 study in Bulgaria (Acosta-Pankov and Spassov, 2019)

A human-dependence in environmental preferences is suggested regarding their inclination for agricultural lands (Acosta-Pankov and Spassov, 2019). This species appears to favour proximity to human settlements, seeing that multiple scavenging opportunities present themselves (Figure 8). However, it is important to note that they avoid areas with a high human population density (around a 1,000 inhabitants) and rather seek areas with a small population density (between 200 and 1,000 inhabitants) like villages (Figures 9, 10 and 11).

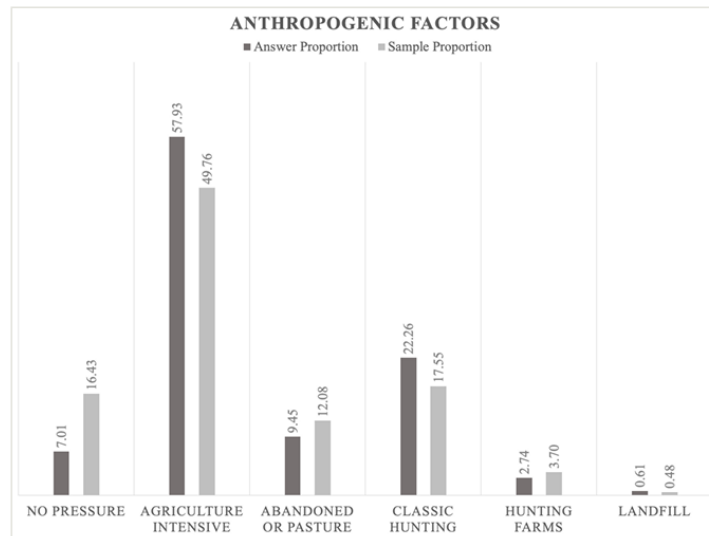
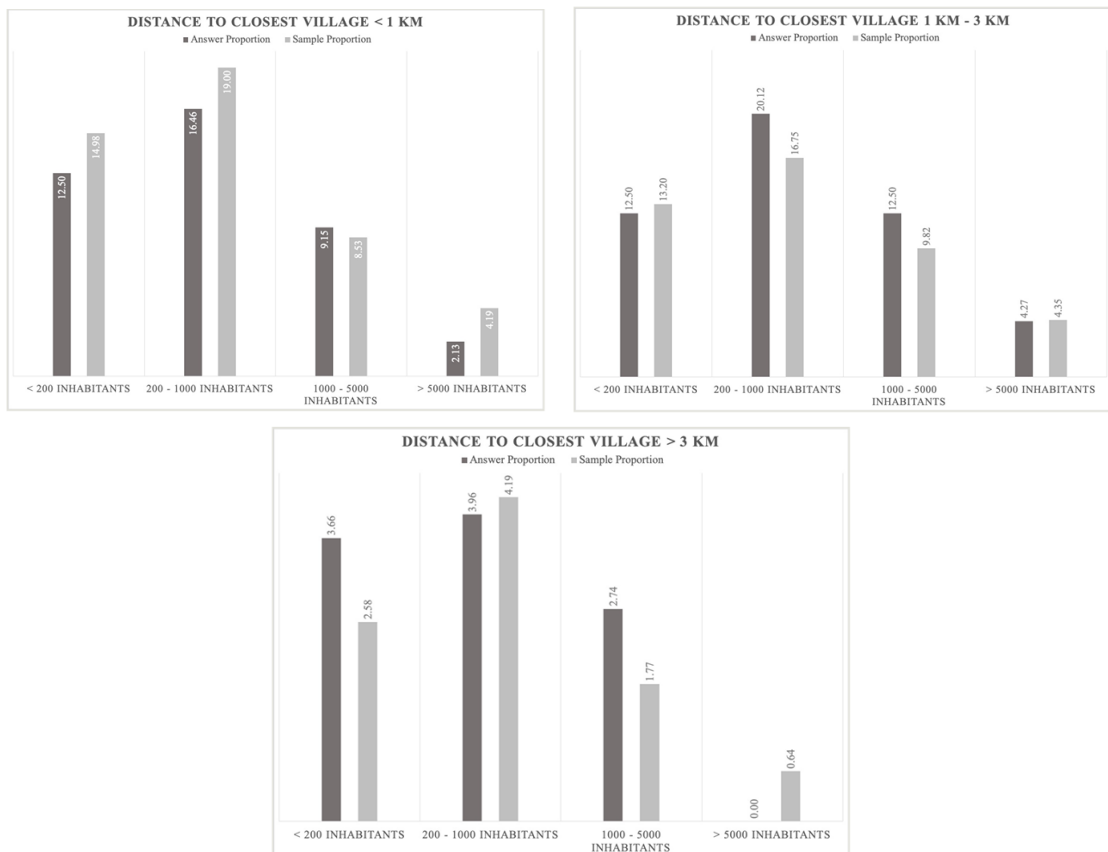


Figure 8: Proportion relationship between jackal's positive answers and sample anthropogenic activity in a 2014-2017 study in Bulgaria (Acosta-Pankov and Spassov, 2019)



Figures 9, 10 and 11: Proportion relationship between jackal's positive answers and sample human settlements with various distances in a 2014-2017 study in Bulgaria (Acosta-Pankov and Spassov, 2019)

Many factors limit their expansion. Amongst those, we can notably notice natural factors such as deep snow and extreme frosts, as well as large forest massifs and heavily intersected/steep relief. Moreover, the presence of other species such as wolves on some areas can deter the presence of golden jackals, though it has been established that these two species can coexist in the same habitats on the condition of disposing of vast territories, with abundant food and hiding spots (Acosta-Pankov and Spassov, 2019).

The golden jackals in Greece share these habitat preferences. Golden jackals populations are found in different habitat types all over the country, being mostly recorded in arable and cultivated lands, wetlands as well as areas with medium and high height shrubby vegetation such as garrigue-maquis habitats (Bukas et al., 2022). They mainly appear in mixed agro-forestry ecosystems, without predisposition regarding the types of crops, as they thrive equally with annual crops and permanent trees. The need for intermediate openings reinforces their absence in forested areas (Bukas et al., 2022). The abandonment of agricultural areas and the transformation of rural land management lead to the emergence of such suitable habitats for this species, which provide better cover and more food sources, essential for their survival (Fiori, 2025). Indeed, heterogeneous agricultural landscapes act as anthropogenic food sources, while also providing an abundance of small mammals upon which golden jackals prey (Avgerinou et al., 2023).

The high behavioural plasticity and adaptability of the golden jackals allow them to inhabit this variety of habitats and to *“utilize a variety of anthropogenic resources and consequently effectively colonize/inhabit human-modified landscapes”* (Avgerinou et al., 2023). Open and human-dominated spaces like arable lands, pastures or even grasslands, especially areas with rough terrain, are favoured by the jackals.

In southern Greece, and notably the islands, the golden jackals are frequently observed in olive groves, vineyards and others annual crops offering bushy hedges (Bukas et al., 2022). Still, in the north of the country, they are recorded in many types of woody vegetation (Figure 12). Finally, in wetlands, jackals usually move close to the riparian vegetation, like reed beds and tamarisks, nearing the water. Wetlands have been identified as an important habitat for golden jackals in Greece, calling attention to the need for protection of this habitat and thus for the survival of the species in the country (Avgerinou et al., 2023).

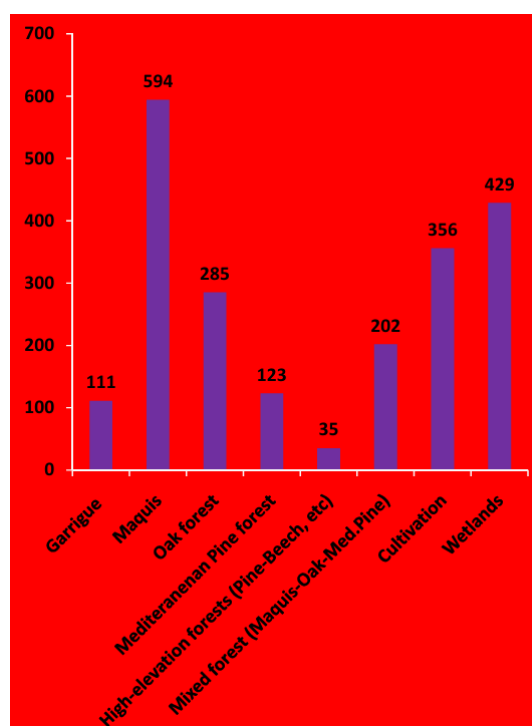


Figure 12: Records of golden jackals at different habitat types in Greece in 2022 (Bukas et al., 2022)

Is it worth noting that annual precipitation, as a “strong predictor of abundance of small mammals”, is an important predictor of the presence of golden jackals in Greece: with higher precipitation comes higher prey availability, therefore higher golden jackals presence seasonally (Avgerinou et al., 2023).

Golden jackals' flexibility regarding altitude

Unlike habitats, few studies have investigated the relation between the presence of golden jackals and altitude. Golden jackals are mostly found at low elevations (Bulmer, 2015), in areas with an altitude less than 500 meters above sea level (Acosta-Pankov and Spassov, 2019). However, some individuals can be located in higher regions, above 500 and 1,000 meters above sea level (Figure 13).

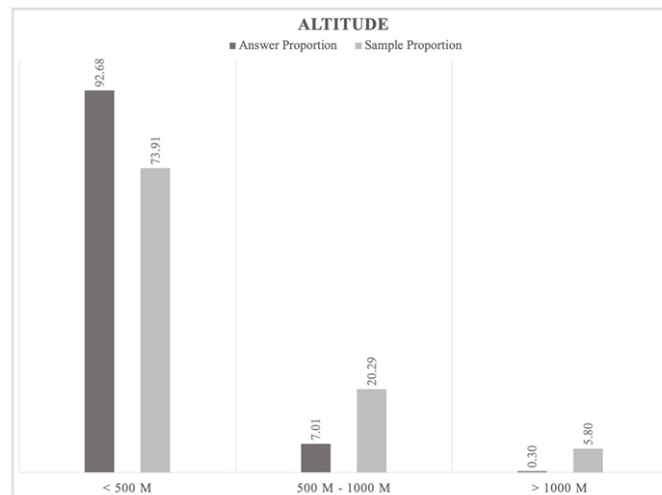


Figure 13: Proportion relationship between jackal's positive answers and sample altitude in a 2014-2017 study in Bulgaria (Acosta-Pankov and Spassov, 2019)

In Greece, golden jackals follow this tendency: the species has been recorded at altitudes lower than 500 meters in half of the records (Bukas et al., 2022). Most of the remaining observations took place at altitudes located between 800 and 1,000 meters, with individuals appearing on very high altitudes, over 1,700 meters (Figure 14), notably in the south and north of the country. The records from 1,000 meters and above occurred in Greek regions where jackal populations are very dense, consequently "*forcing many individuals to move to higher altitudes to occupy new areas*" (Bukas et al., 2022). In northern Greece, golden jackals are spotted mainly on mountainous forest ecosystems with altitudes from 600 meters and above.

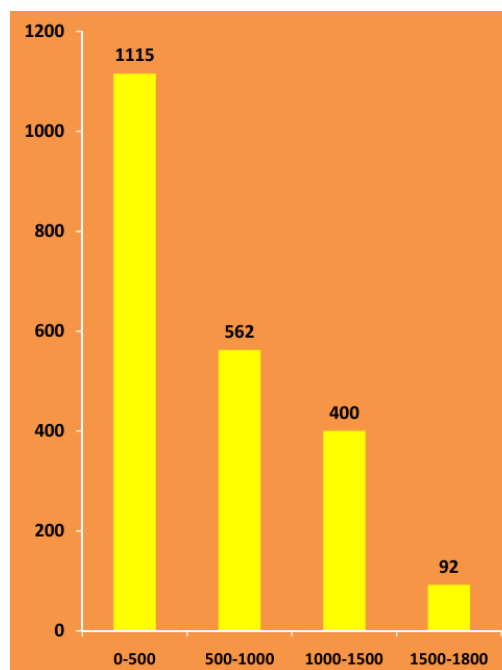


Figure 14: Records of golden jackals at different altitudes in Greece in 2022 (Bukas et al., 2022)

Golden jackals and humans' tense relationship

The anthropogenic concerns about the species

Human-wildlife interactions and coexistence proves to be a challenge, particularly on islands with fragile ecosystems, such as Samos: concerns on resource management and ecological balance are widely spread amongst inhabitants, leading to conflicts. Golden jackals perceived “overabundance”, due to an absence of natural predators on the island, is believed to result in “ecological imbalances” (Fiori, 2025).

Moreover, the expansion of golden jackals across Europe and their increasing presence near urban settlements induce worries about domestic animal predation and livestock depredations (Ćirović and Miha, 2018). If one golden jackal attack on small livestock was reported in mountain habitats in the Peloponnese region, Greece, no livestock predation was documented in areas with high jackal densities in the country (Fiori, 2025). Even if the preventive measures put in place (enclosures, guard dogs) appear to avert potential losses, it is essential to keep track of the evolution of such behaviours.

Other preoccupations are also discussed, like public health: as almost 200 different species of parasites are found in golden jackals, with some shared with domesticated animals such as dogs and cats, their expansion could lead to “*changes in the parasite fauna in the new ecosystems*” (Cunze and Klimpel, 2022). Indeed, the introduction of golden jackals in this new European distribution area could affect biotic interactions, modify biocenoses and alter ecosystems, “*through changed competition situations or predation pressure*” (Cunze and Klimpel, 2022).

On the other hand, their ecological role is not limited to the previous concerns: the presence of golden jackals helps reduce organic waste in urban areas and control invasive rodent populations. By removing garbage and other dead animals, golden jackals benefit human populations through the prevention of disease transmission and damage to crops (Bulmer, 2015).

The anthropogenic threats to the species

Whether it is on Samos, in Greece or across Europe, golden jackals' populations face many threats and challenges. Increased urbanisation, by creating disturbances and the fragmentation and reduction of habitats, represents a major threat to golden jackals' populations (Arnold et al., 2012).

Furthermore, persecution is ongoing (with poisoning), and individuals are under high risk of road kills: the mitigation of the risk of golden jackal-vehicle collisions represents an important issue on Samos, as its road networks overlap with the species' territories (Bulmer, 2015). As roads facilitate golden jackals' movement and provide an easy access to food, the incorporation of protection measures like “*fencing and wildlife underpasses [...] in areas with known jackal presence*” could mitigate this anthropogenic mortality risk (Bulmer, 2015).

What emerges from all these observations is the necessity for effective conservation strategies that consider both the needs of local communities and biodiversity (Fiori, 2025). “*Establishing a long term coexistence between jackals and humans*” is of great importance, along with the understanding of golden jackals behaviours and their potential impact on communities, in order to influence the negative perceptions of the species and ensure “*the long-term success of conservation efforts as jackals continue to adapt to diverse landscapes*” (Fiori, 2025). Determining with precision previously discussed human-animal conflicts allows the crucial development of strategies and management measures (Arnold et al., 2012) which take into account local populations' needs as well as supports golden jackals' ecological roles in their region.

Conclusion

All the previous documented studies gave insight into the preferences of golden jackals when it comes to altitudes and habitats: this species favours lowlands, though also ventures at high altitudes, and predominantly inhabit agricultural lands and wetlands. Along with altitude, factors such as vegetation, water source, human settlements and anthropogenic activity influence golden jackal's distribution. They mostly populate areas with moderate slopes, while avoiding mountainous regions *“with steep terrain, deep snow and covered by dense forest vegetation”* (Acosta-Pankov and Spassov, 2019).

If research has been conducted on golden jackals' habitats and altitudes preferences in some European countries and notably in Greece, no data on the subject is available in Samos' case. We can thus wonder if the island's golden jackals populations share the preferences of mainland's golden jackals populations, and formulate a plan that could reveal potential behavioural differences due to their isolation on the island, for a more effective understanding and protection of the species on Samos.

The aforementioned plan will be developed in the next section of this report, and its results discussed later on.

Research proposal

Identification of areas of interest

The first step for the obtention of a better method of camera trapping is to identify and map key areas on the island, targeting the habitats usually preferred by golden jackals. This will immensely help formulating camera traps plans regarding their ideal locations within those areas, for a greater observation of the species and optimal population monitoring.

Based on the CORINE 2018 GIS layer of the island, Samos was divided into different habitat types. The contour lines shapefile and elevation raster were recovered from Archipelagos' 2024 database and assembled to construct an altitude layer. CORINE's habitats were regrouped in bigger categories corresponding to the literature review's listed habitats (Table 1):

Table 1: Links between the habitats of the literature review and the CORINE 2018 layer (CORINE 2018)

Habitats listed in the literature review	Samos' CORINE 2018 habitats
Human settlements	Discontinuous urban fabric, industrial/commercial units and sport/leisure facilities
Agricultural lands	Complex cultivation patterns, fruit trees and berry plantations, non-irrigated arable land and permanently irrigated land
Agro-forestry ecosystems	Land principally occupied by agriculture with significant areas of natural vegetation
Olive groves	Olive groves
Vineyards	Vineyards

Grasslands	Natural grasslands
Pastures	Pastures
Mixed landscapes	Sparsely vegetated areas and transitional woodland-shrub
Scrublands/Shrubby vegetation	Sclerophyllous vegetation
Woodlands/Forests	Broad-leaved forest, coniferous forest and mixed forest
Wetlands	Inland marshes, salt marshes and water bodies

Based on the literature review, mainland golden jackals' preferred habitats as well as unfavoured ones (such as the woodlands/forests) were accounted for, as they are both necessary to fully compare the possible differences in behaviour between mainland and insular populations.

Afterwards, the available database from Archipelagos' hard drives on camera trapping, dating from 2012-2013, 2018-2019 and 2021-2024, was collected. After only selecting the sightings of golden jackals (by removing all other species), the data was exported in ArcGIS Pro to model a map showing all golden jackals' observations for these periods of time on the island, in order to define the habitats and altitudes that have previously been explored (Figure 15):

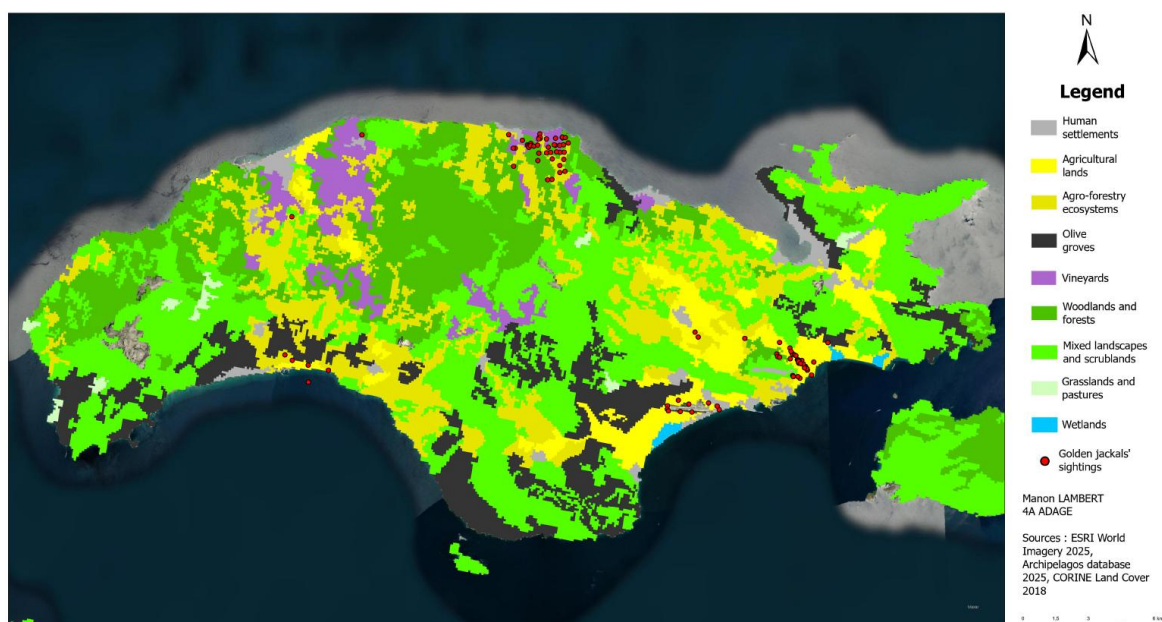


Figure 15: Golden jackals' sightings in Samos between 2012-2013, 2018-2019 and 2021-2024 (Lambert, 2025)

From the 110 golden jackals' observations led by Archipelagos across these periods of time, we can take a first look at the species distribution regarding the diverse island's habitat types (Figure 16). Samos' populations seem to share some behaviours with Greece's and Europe's mainland populations: many golden jackals were spotted in agricultural lands and agro-forestry ecosystems. Vineyards and olive groves, as well as human settlements and scrublands, appear to be used by the species. However, woodlands/forests come across as an important habitat for the insular populations, a behaviour that has mostly been examined in northern Greece populations.

By overlaying the previous map with the elevation raster, we determine that those sightings were all recorded in low elevations, with an altitude between 3 and 350 meters. This, nonetheless, could be explained by the fact that research at higher altitudes has not been performed yet.

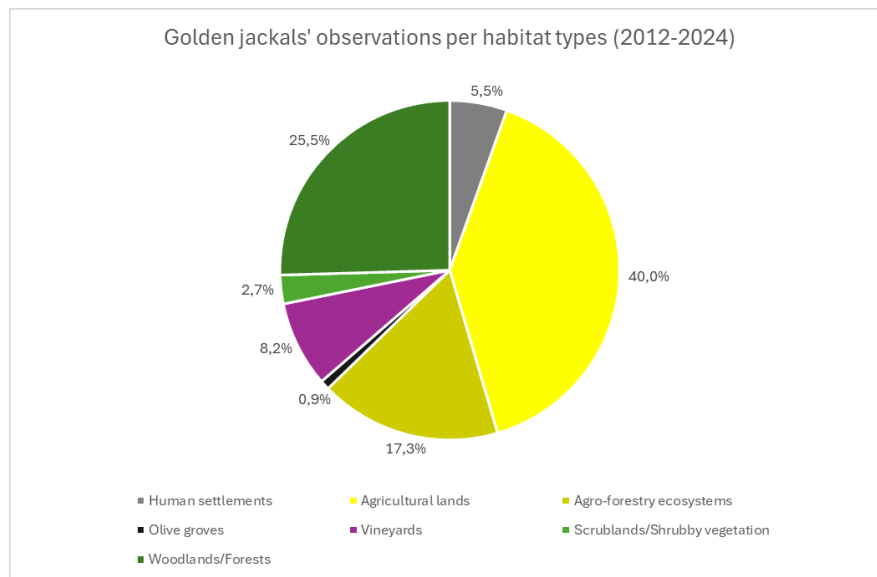


Figure 16: Golden jackals' distribution regarding different habitat types in Samos between 2012-2013, 2018-2019 and 2021-2024 (Lambert, 2025)

It is important to note while reading those results that the available data consisted entirely of presence only data, meaning that the cameras who didn't capture any golden jackals were not entered in the database: it is thus not possible to determine at this stage areas who appear to be devoid of the species.

In conclusion, with all this information, we can establish some objectives that will have to be accounted for in the making of the camera traps plans:

- There is a need for routes focusing on the continuation of regular monitoring of previously established habitats (notably agricultural lands, agro-forestry ecosystems and woodlands/forests), to ensure that the observed habitat preferences do not change over time
- There is a need for routes focusing on habitats that have rarely been explored and where golden jackals are commonly found (such as human settlements, scrublands, olive groves and vineyards), in order to possibly fill any gaps on the subject of Samos' golden jackals behaviours regarding mainland populations' preferences
- There is a need for routes focusing on yet unexplored habitats (especially grasslands, pastures, mixed landscapes and wetlands)
- There is a need for routes focusing on usually avoided habitats (like woodlands/forests) in order to further establish any differences regarding golden jackals' preferences on the island compared to the mainland populations

All these routes should also ensure several variations in altitude as to take as many variables into account to further determine if Samos' golden jackals behave similarly or differently than mainland Greece's golden jackals. We hypothesize that, due to the insular nature of Samos, variations in distribution will occur between the island's golden jackal population and mainland's population.

The analysis of the previous data (2012-2013, 2018-2019 and 2021-2024) in connection with the concordance between habitats and altitudes of the literature review and the field will enable the creation of the camera traps plans, and thus later the analysis of the new data (2025 spring and summer) on the subject.

Camera traps plans

Like presented in the previous section, multiple plans for the installation of camera traps need to be implemented in order to determine Samos' golden jackals distribution preferences in accordance with the literature review. A diversity of routes is required in order to account all precedent conditions (meaning the observation of commonly explored, rarely explored, unexplored and normally avoided habitats at different altitudes) and to maximise the chances of monitoring golden jackals.

The Terrestrial Team disposes of a set of 9 camera traps. 7 of the cameras record 1-minute-long videos following movement detection, while 2 take photographs when a movement is detected.

Considering the transport limitations, as surveys and other fieldworks are mostly accomplished on foot, the designed routes would depart from and go back to the location of one of the two Archipelagos research bases. As the few Samos' wetlands are situated at the south of the island, routes that could potentially be followed if the access to a vehicle was made possible to team members (which is usually limited) were conceived. In this case, these routes would be followed less regularly, only on rarer occasions. Cameras' locations aimed to be as "strategic" as was conceivable while meeting both the project's requirements and the base's limitations regarding equipment, manpower and time.

The routes balance locations where golden jackals' presence is known, or at least was known at a certain time, as well as new locations that have not yet been explored. They cover as many variations of habitats and altitudes as possible. The plans cover habitats where golden jackals were previously sighted, areas where they could be found if they behave similarly to mainland populations, and on the other hand areas where they are less likely to be found in accordance to mainland populations' behaviour.

As golden jackals would only approach human settlements, their cameras are set up at the edge of these settlements, at the intersection of several habitats. Otherwise, for the rest of the studied habitats, the cameras are centered within them, in order to see if golden jackals are actually using the habitat in question and are not simply crossing it to reach another.

Plan 1 – Agios Konstantinos Route 1

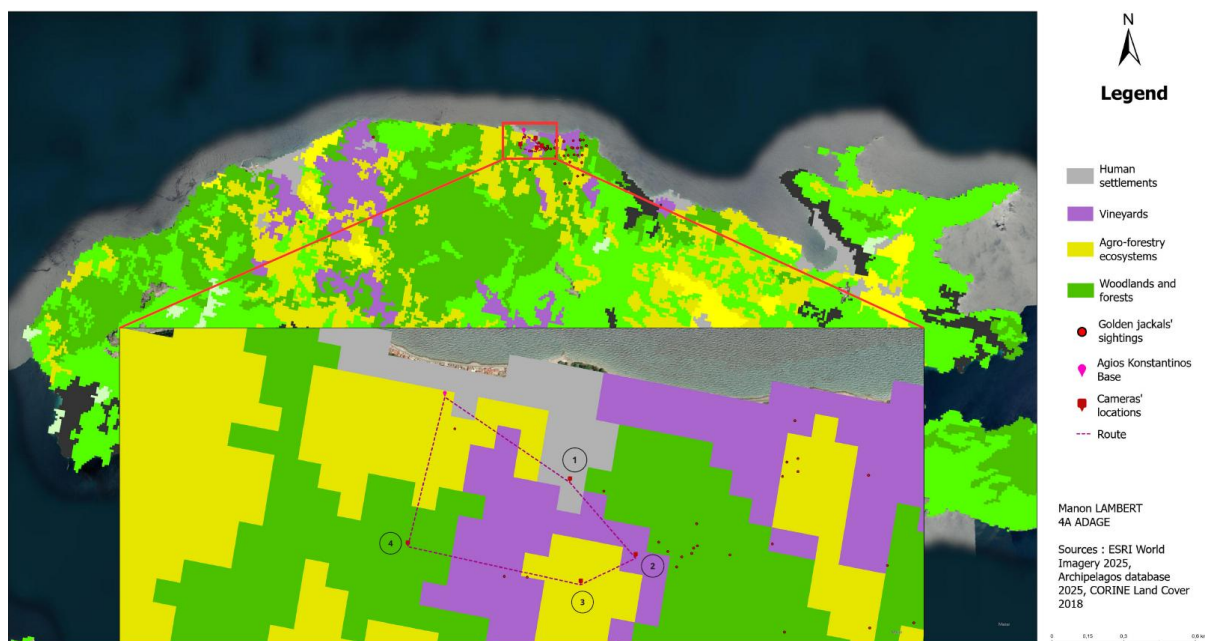


Figure 17: Camera traps – Agios Konstantinos Route 1 (Lambert, 2025)

Agios Konstantinos Route 1 (Figure 17) covers the following habitat types: human settlements (1), vineyards (2), agro-forestry ecosystems (3) and woodlands/forests (4). These habitats are relatively close to human facilities (inside a 600-meters radius from a village with 400 habitants), and the camera locations are found at altitudes between 24 and 205 meters.

Plan 2 – Agios Konstantinos Route 2

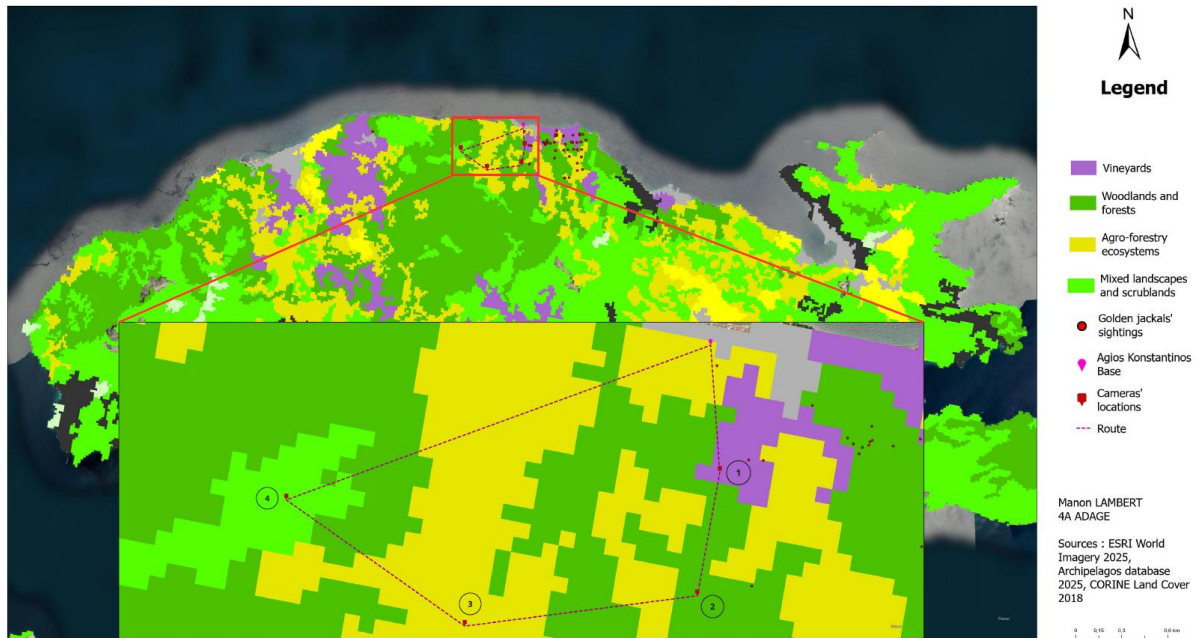


Figure 18: Camera traps – Agios Konstantinos Route 2 (Lambert, 2025)

Agios Konstantinos Route 2 (Figure 18) covers the following habitat types: vineyards (1), woodlands/forests (2), agro-forestry ecosystems (3) and mixed landscapes (4). These habitats are relatively distant from human facilities (mostly outside a 1,000-meters radius from a village with 400 habitants), and the camera locations are found at altitudes between 220 and 749 meters.

Plan 3 – Kampos Route 1

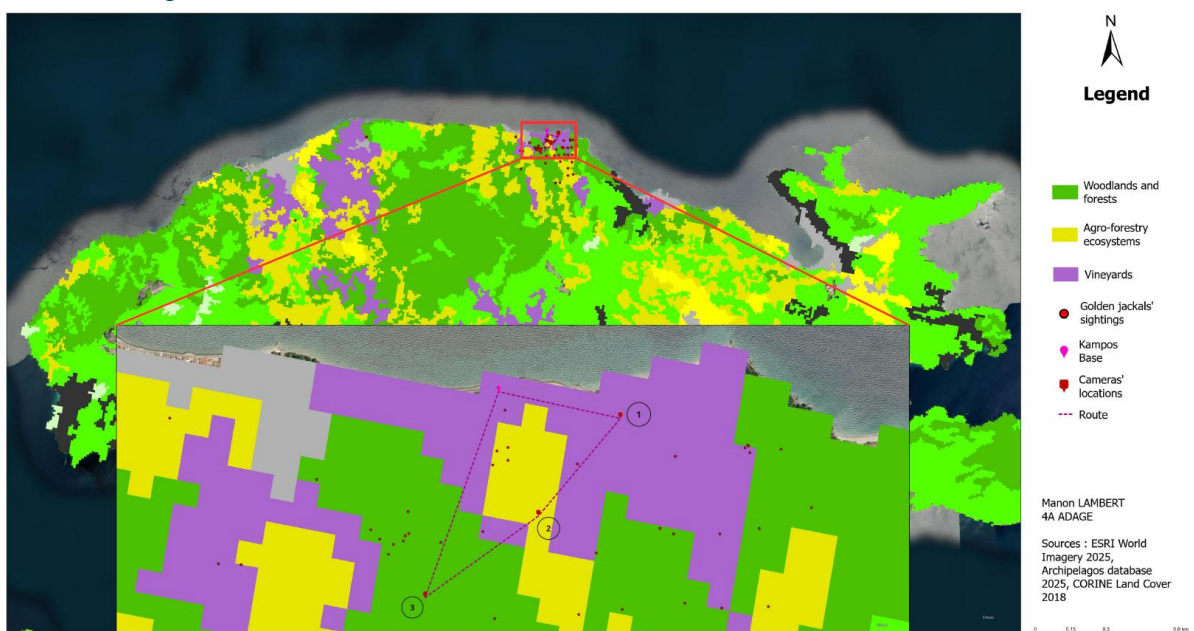


Figure 19: Camera traps – Kampos Route 1 (Lambert, 2025)

Kampos Route 1 (Figure 19) covers the following habitat types: vineyards (1), agro-forestry ecosystems (2) and woodlands/forests (3). These habitats are relatively close to human facilities (inside a 1,200-meters radius from a village with less than 100 habitants), and the camera locations are found at altitudes between 7 and 115 meters.

Plan 4 – Kampos Route 2

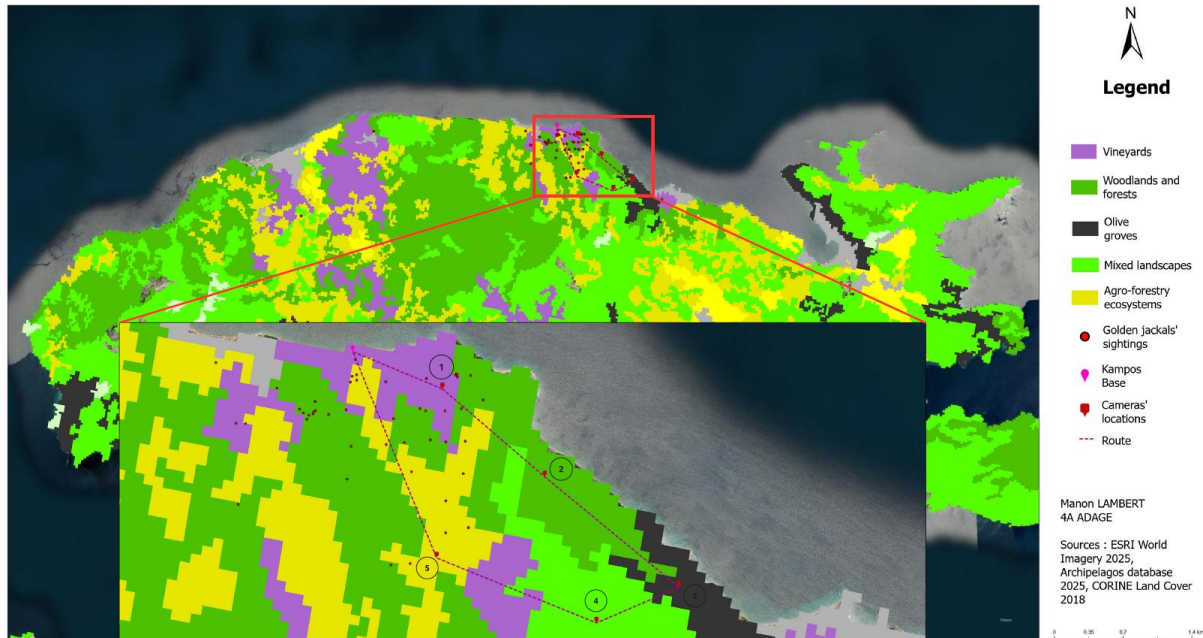


Figure 20: Camera traps – Kampos Route 2 (Lambert, 2025)

Kampos Route 2 (Figure 20) covers the following habitat types: vineyards (1), woodlands/forests (2), olive groves (3), mixed landscapes (4) and agro-forestry ecosystems (5). These habitats are relatively distant from human facilities (outside a 1,500-meters radius from a village with less than 100 habitants), and the camera locations are found at altitudes between 13 and 314 meters.

Plan 5 – Wetlands Route 1

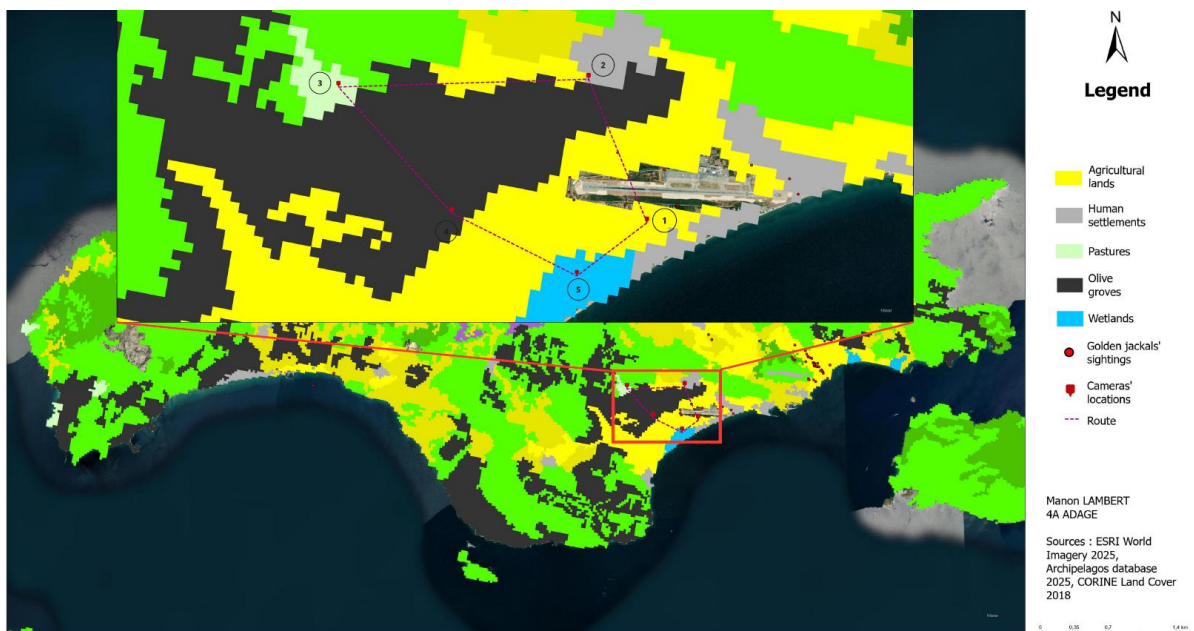


Figure 21: Camera traps – Wetlands Route 1 Version 1 (Lambert, 2025)

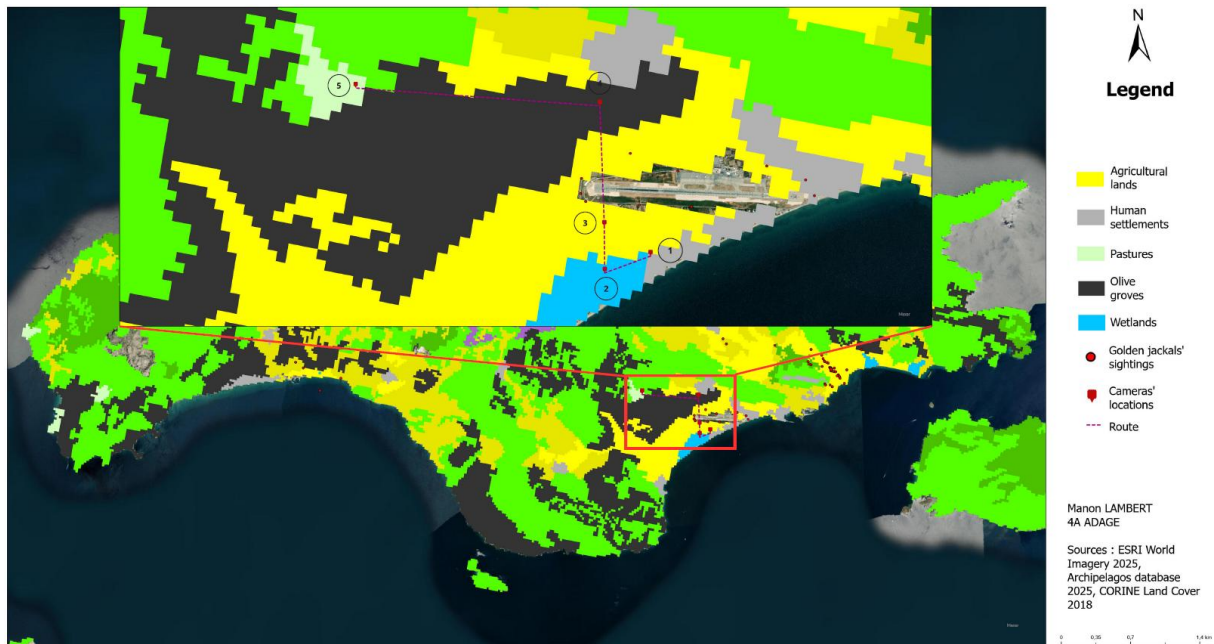


Figure 22: Camera traps – Wetlands Route 1 Version 2 (Lambert, 2025)

Wetlands Route 1 (Figures 21 and 22) covers the following habitat types: agricultural lands (1 or 3), human settlements (2 or 1), pastures (3 or 5), olive groves (4) and wetlands (5 or 2). These habitats are relatively close to human facilities (mostly inside a 1,000-meters radius from villages between 100 and 1,300 habitants), and the camera locations are found at altitudes between 1 and 85 meters.

I imagined two versions of this route, the first one forming a loop in the hypothesis that the team members would park the vehicle in a spot, walk to the locations and come back to the car at the end, and the second one forming a straight line if on the contrary the teams members drive to every location.

Plan 6 – Wetlands Route 2

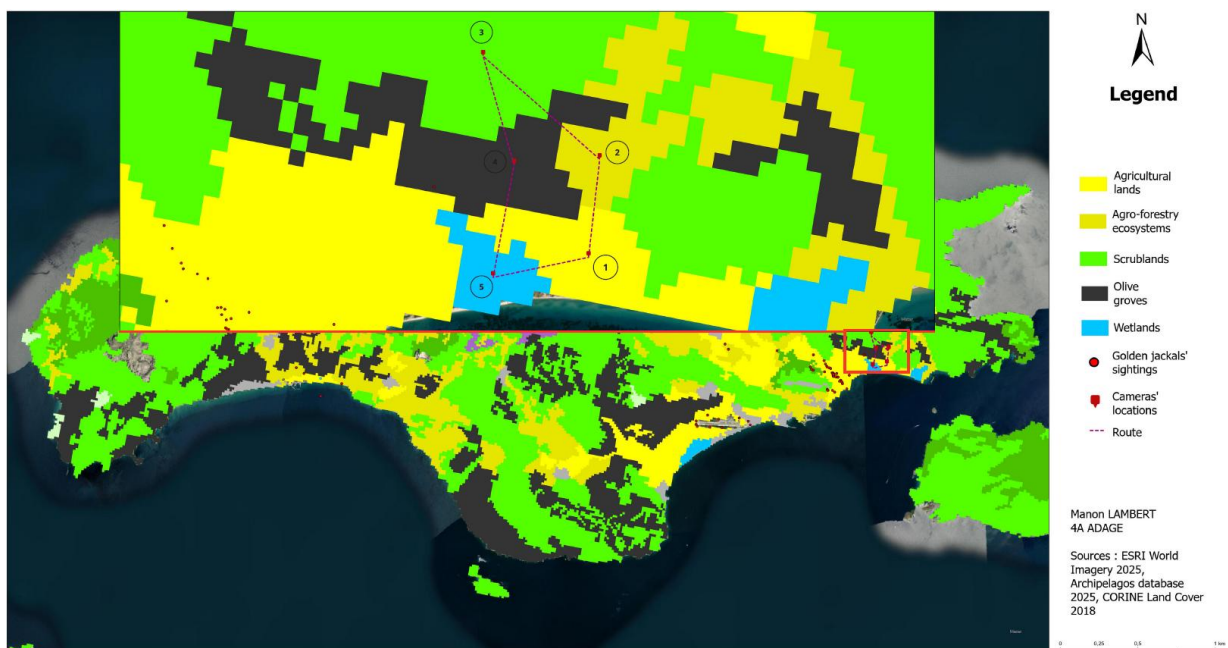


Figure 23: Camera traps – Wetlands Route 2 Version 1 (Lambert, 2025)

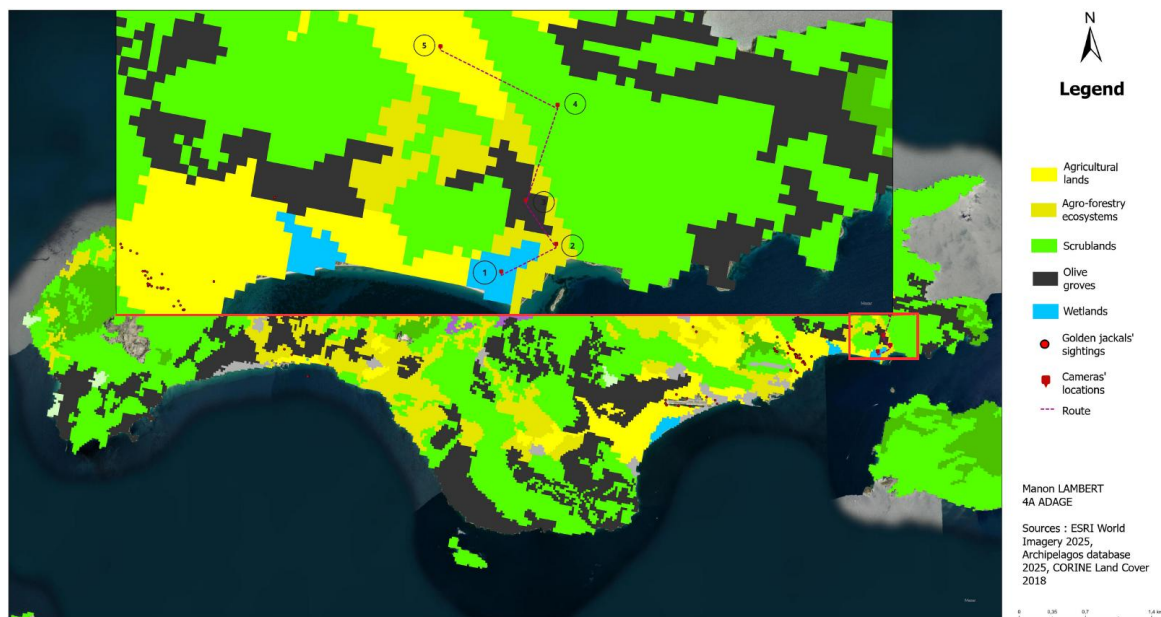


Figure 24: Camera traps – Wetlands Route 2 Version 2 (Lambert, 2025)

Wetlands Route 2 (Figures 23 and 24) covers the following habitat types: agricultural lands (1 or 5), agro-forestry ecosystems (2), scrublands/shrubby vegetation (3 or 4), olive groves (4 or 3) and wetlands (5 or 1). These habitats are relatively distant from human facilities (mostly outside an 1,800-meters radius from a village with 500 habitants), and the camera locations are found at altitudes between 3 and 317 meters.

I imagined two versions of this route, the first one forming a loop in the hypothesis that the team members would park the vehicle in a spot, walk to the locations and come back to the car at the end, and the second one forming a straight line if on the contrary the teams members drive to every location.

Out of the 11 habitat types defined with the CORINE 2018 layer and the literature review, 10 will be accounted for (grasslands will be therefore excluded from the project due to their inaccessibility). Agro-forestry ecosystems, woodlands/forests, vineyards and olive groves will be the primary focus of the project, with additional studies on agricultural lands, human settlements, mixed landscapes, scrublands, pastures and wetlands. However, the camera traps locations' altitudes are, with two exceptions, below the 500-metre mark, limiting the project solely to low altitudes. As it proves difficult to coordinate habitats and altitudes' studies, a separate route dedicated to the latter only could be considered in the future depending on the first results and equipment available.

Golden jackals' absence from the recordings won't be viewed as a failure, as we could deduce that they avoided said habitats, as long as other species are observed. Operational plans could then be used in the long term, as the study of potential seasonal changes in behaviour should prove interesting. However, if the recordings are devoid of any species, other locations for the cameras will have to be found.

It is important to note that these plans are merely theoretical, simple propositions at this stage, and need to be tested for effectiveness. Changes might be needed in the design of the routes after a test round. Therefore, team members' feedback will have to be taken into account, and the plans adjusted in order to obtain clearly defined and practical routes that could be used in the future. The final cameras' coordinates will thus be modified after each plan goes through its "trial". The new, updated and validated routes will be presented in the next section of this report.

The plans will at this point be proposed to the Terrestrial Team and its supervisor to be reviewed, discussed and approved, followed by the application of the selected routes. One should be aware that not all plans might be operated on the duration of my internship: thus, if some routes are not operated during my stay, they could be used later on, to confirm or disprove some hypotheses that will not have been answered at the end of this report.

Research project

The review of my research proposal by the Terrestrial Team supervisor led to the approval of all routes proposed in this said section. The objective of this project is now the implementation of a trial for each of the six routes, or as many as possible before my departure, in order to determine their efficiency for a potential long-term use in Samos' golden jackals supervision.

A trial would consist of the establishment of a route with footage collection over a minimum of 1 week. If signs of golden jackal presence are observed, the same route could be tested over 2 more weeks. Depending on the results, the road in question could be regularly used by the Terrestrial Team for constant data collection: the final objective is the definitive installation of the 9 camera traps on relevant routes where, every two weeks, their SD cards and batteries would be changed.

Camera traps plans' implementation, adjustments and observations

Plan 1 – Agios Konstantinos Route 1

This route (Figure 25) was surveyed over a total period of approximately 4 weeks, separated in two periods of two weeks of data collection (from 13/05/2025 to 27/05/2025 and from 27/05/2025 to 10/06/2025).

The objective was to cover human settlements (1), vineyards (2), agro-forestry ecosystems (3) and woodlands/forests (4). However, the reality of the field led to the coverage of the following habitat types: human settlements (1), mixed landscapes (2), woodlands/forests (3) and agro-forestry ecosystems (4).

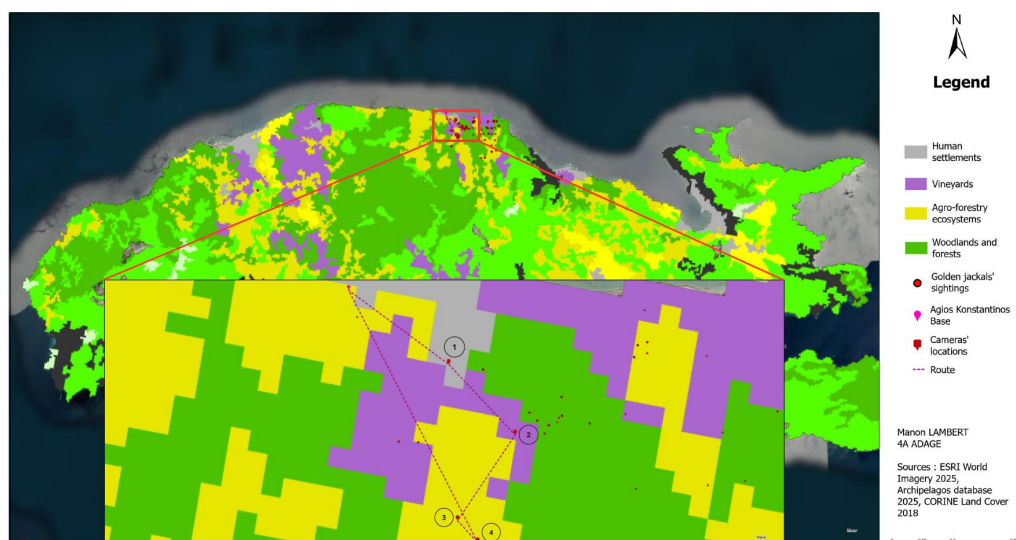


Figure 25: Camera traps – Updated Agios Konstantinos Route 1 (Lambert, 2025)

Unfortunately, points (1) and (4) will not be analysed, as the cameras were not installed correctly and therefore no videos could be extracted from them. It would be interesting in the future to return to these coordinates in order to reinstall camera traps and collect proper footage.

The location (2) appearing as a vineyard on the CORINE 2018 layer turned out as a mixed landscape, with scattered trees (notably fig trees) and shrubs towards which the camera was placed (Figures 26 and 27). The recording area, accessible by a tarred path and in proximity to an operating church, is partially sunny during the day. The altitude is 45 meters.



Figures 26 and 27: Photographs of the recording area, where the position and angle of the camera are indicated respectively by the red circle and arrow (Lambert, 2025)



Figure 28: Golden jackal's sighting on point (2) – 16/05/2025 (Lambert, 2025)

The jackal seen on Figure 28 is walking a path that is, during the day, used by many hikers, motorcycles, cars, as well as many animal species such as birds, cats and snakes. Another sighting of a golden jackal (who could potentially be the same individual) in the same location was recorded on 10/06/2025, during the night. In both recordings, the jackal appears from behind the camera, where olive groves are present, suggesting opportunistic activity in this habitat type.

The location (3) appearing as an agro-forestry ecosystem on the CORINE 2018 layer turned out as a woodland/forest, with important shrub and woody strata, and a stream about fifteen meters below the camera location (Figure 29). The recording area, accessible by a tarred path turning into a gravel path and in proximity to a fairly busy road, is shaded during the day. The altitude is 110 meters.

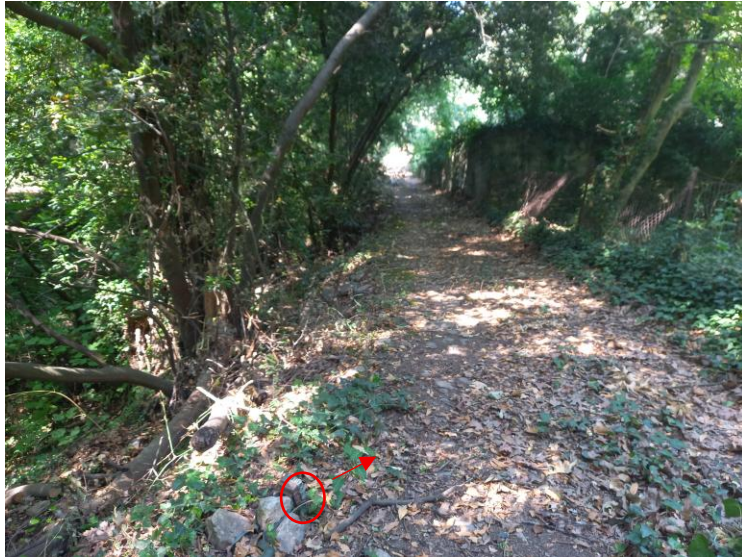


Figure 29: Photograph of the recording area, where the position and angle of the camera are indicated respectively by the red circle and arrow (Lambert, 2025)



Figures 30 and 31: Golden jackal's sightings on point (3) – 28/05/2025 and 06/06/2025 (Lambert, 2025)

The jackal seen on Figure 30 is similarly walking a path in the evening around 5 p.m that is, during the day, used by hikers, some of whom are strolling with their dog. Another sighting, 10 days later, shows a jackal (who could potentially be the same individual) walking during the night in the same direction (Figure 31).

Plan 3 – Kampos Route 1

This route (Figure 32) was surveyed over a total period of approximately 3 weeks, separated in two periods of a week and a half of data collection (from 06/06/2025 to 18/06/2025 and from 18/06/2025 to 27/06/2025).

The objective was to cover vineyards (1), agro-forestry ecosystems (2) and woodlands/forests (3). However, the reality of the field led to the coverage of the following habitat types: olive groves (1), vineyards (2) and agro-forestry ecosystems (3).

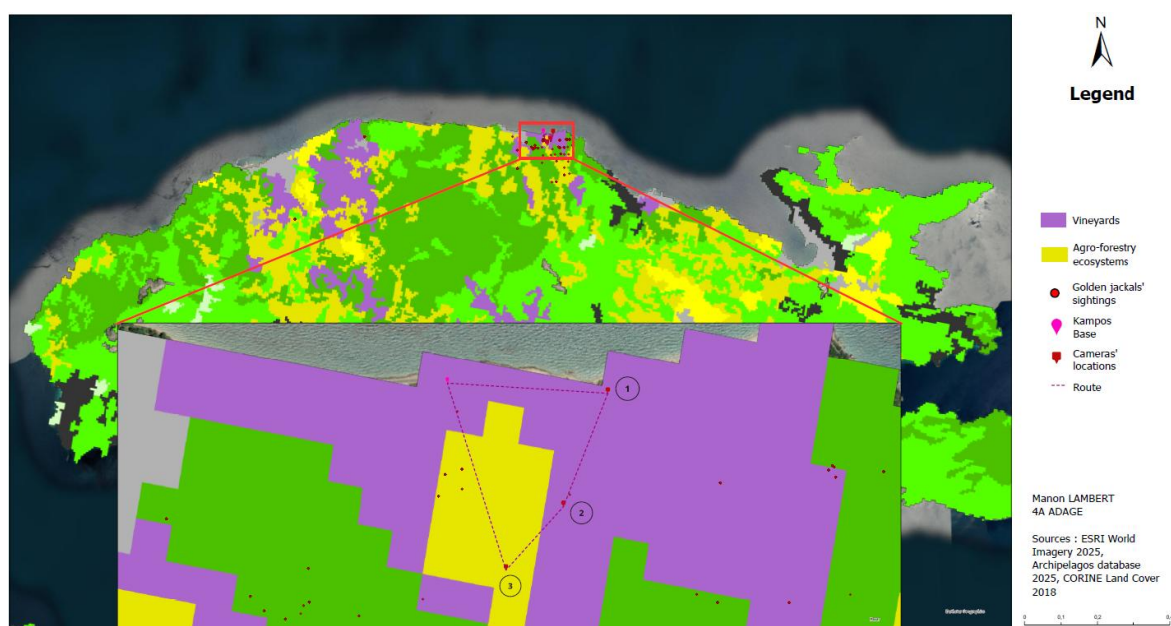


Figure 32: Camera traps – Updated Kampos Route 1 (Lambert, 2025)

Unfortunately, points (1) and (3) will not be analysed, as the cameras installed faced some technical difficulties (calibration and SD card issues) and therefore no videos could be extracted from them. It would be interesting in the future to return to these coordinates in order to reinstall camera traps and collect proper footage.

The location (2) is a vineyard, located close to a house, in an estimated 100-meters radius. There is an important low vegetation, offering a relatively covered environment (Figures 33 and 34). The recording area, accessible by a dirt road separated from the fields by a stone wall, is mostly sunny during the day. The altitude is 20 meters.



Figures 33 and 34: Photographs of the recording area, where the position and angle of the camera are indicated respectively by the red circle and arrow (Lambert, 2025)



Figures 35 and 36: Golden jackal's sightings on point (2) – 07/06/2025 and 08/06/2025 (Lambert, 2025)

The jackal seen on Figures 35 and 36 (that we can assume to be the same individual) is walking through the vineyards, in the direction of a slope leading to an agro-forestry ecosystem with olive trees. Some wild cats and mice were recorded at this location in the night, and a farmer as well as a domestic dog are known to wander the fields in the day.

Other sightings of a golden jackal (who could potentially be the same individual) on the same location were recorded two weeks later, during the night, walking in the same direction as before (Figures 37 and 38). All recordings of a jackal activity took place between 1 a.m and 4 a.m.



Figures 37 and 38: Golden jackal's sightings on point (2) – 21/06/2025 and 26/06/2025 (Lambert, 2025)

Results and discussion

Behavioural analysis

This part of the report focuses on the analysis of golden jackals' behaviours observed during this study collecting primary data, as well as secondary data already collected on previous camera traps' recordings, going as far back as 2012.

Primarily nocturnal in nature, golden jackals are mostly active at night (as seen in Figures 28 and 31 for example), though in some occasions individuals were recorded in the evening, before nightfall when it's not yet dark (Figure 39), as well as during the day on older recordings (Table 2).

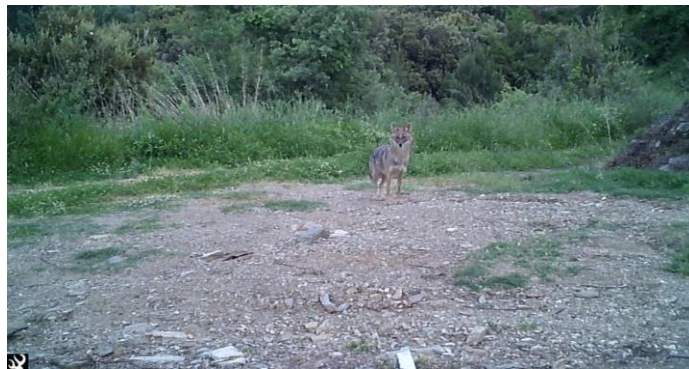


Figure 39: Golden jackal's sighting – 26/04/2025 (Lambert, 2025)

Golden jackals were observed using the same paths several consecutive nights. The species demonstrates a clear tendency to regularly go through the same locations, taking the same paths every night for some undetermined period of time, and sometimes as a group (Figures 39, 40 and 41). Therefore, it could be suggested that the same individual or members of the same family group were recorded, although it was not possible to confirm as individuals were not identifiable based on their fur patterns on the recordings.



Figures 40 and 41: Golden jackal's sightings – 25/04/2025 and 28/04/2025 (Lambert, 2025)

Moreover, golden jackals demonstrate an inclination to use anthropized paths and roads: comparison with previous footage reveals that golden jackals take roads, trails and other paths during the night that are used by people during the day (by foot or with vehicles). The species therefore inhabits, mainly at night, spaces occupied by humans during the day. These paths and roads are not only used by hikers, beekeepers and other farmers, but also by many animal species such as wild cats, domestic dogs, small mammals and even wild boars (Figures 39, 40, 41, 42, 43, 44 and 45).



Figures 42, 43, 44 and 45: Sightings of a domestic dog, a wild boar, a beech marten and a wild cat at the same location – 12/04/2025, 12/04/2025, 24/04/2025 and 25/04/2025 (Lambert, 2025)

Finally, golden jackals avoid open environments during the day, especially environments near anthropized landscapes, with human proximity. However, at nightfall, they venture into these same open environments (Figures 39, 40 and 41), as well as in rather bushy environments.

On the other hand, by examining the behaviours displayed on the footage dating from 2012-2013, 2018-2019 and 2021-2024 based on habitat types, we can make the following observations (Table 2):

Table 2: Recorded characteristics (seasonality, temporality, temperature variations) on the footage with golden jackal's presence from 2012-2013, 2018-2019 and 2021-2024 by habitat types

Habitat type	Observations' seasonality	Observations' temporality	Observations' temperature variations	Observations' notes
Human settlements	Spring, summer, autumn, winter	<u>Night:</u> 20h – 4h <u>Day:</u> 7h – 18h	<u>Night:</u> 0 – 27°C <u>Day:</u> 2 – 44°C	Walking, running, sniffing, foraging Important day activity
Agricultural lands	Spring, summer, autumn, winter	<u>Night:</u> 19h – 6h <u>Day:</u> 7h – 19h	<u>Night:</u> 0 – 30°C <u>Day:</u> 0 – 42°C	Walking, running, sniffing, foraging Important day activity
Agro-forestry ecosystems	Spring, summer, autumn, winter	<u>Night:</u> 19h – 6h <u>Day:</u> 7h – 19h	<u>Night:</u> 0 – 27°C <u>Day:</u> 5 – 42°C	Walking, sniffing BAITED IN SPRING
Olive groves	Autumn, winter	<u>Night:</u> 20h – 4h	<u>Night:</u> 6 – 17°C	Walking, running

Vineyards	Spring, summer, autumn, winter	<u>Night:</u> 19h – 6h <u>Day:</u> 7h – 19h	<u>Night:</u> 3 – 36°C <u>Day:</u> 5 – 25°C	Walking, running, sniffing, exploring
Scrublands/Shrubby vegetation	Summer	<u>Night:</u> 21h – 0h	<i>No record of temperature</i>	Foraging, eating BAITED
Woodlands/Forests	Spring, summer, autumn, winter	<u>Night:</u> 19h – 6h <u>Day:</u> 7h – 19h	<u>Night:</u> 0 – 32°C <u>Day:</u> 5 – 36°C	Walking, running, sniffing, exploring, climbing/jumping, marking territory Some day activity

First and foremost, golden jackals were spotted foraging around human settlements, with one or up to three individuals walking together, mostly in pairs. They got close to urbanized areas, skirting fences and barbed wires, and around water points that they would follow or cross (such as a concrete channel, dried up in summer). Individuals were spotted on three different occasions with a presumed prey in the mouth or an unidentified object. They ventured onto open grounds at night (Figure 46), and sometimes during the day as well.



Figures 46 and 47: Golden jackal's sighting – 29/03/2018 and 26/06/2022 (Lambert, 2025)

The highest number of golden jackals captured on video was in agricultural areas, with nine individuals at the same time, a family group with adults and juveniles moving together through a field. In general, they were seen walking alone or as groups of three jackals. The species was seen a few dozens of meters away from several habitations, passing under and between barbed wires and venturing on slopes and in rocky areas. Golden jackals appeared multiple times to be fighting over food, eating and carrying prey or other unidentified objects in their mouth (for example one was spotted with a cat's carcass in Figure 47, and another with what could be a bowl of cat food).

Golden jackals are present year-round as well in agro-forestry ecosystems, though it is worth noting that baits were used in the spring's recordings. They were mostly active at night, with some day activity, and one to three individuals were seen walking together. One individual was seen exploring and climbing the ruins of an old building, and some jackals ventured near habitations (occupied or not) even during the day (Figure 48). The single location in olive groves did not leave enough data for a behavioural analysis regarding this habitat type. As for vineyards, golden jackals were moving alone or in groups of up to four individuals.



Figures 48 and 49: Golden jackal's sighting – 28/09/2024 and 06/09/2024 (Lambert, 2025)

Lastly, as for natural areas, recordings in scrublands with one or two individuals were all subject to baits (raw chicken and corn), which can imply an occasional, opportunistic use of the habitat. Woodlands/forests appeared as the only habitat where puppies, alone or with an adult, were recorded mostly during the day. At nighttime, golden jackals are often in groups of two individuals. They looked relatively alert, were more easily startled and running away suddenly. At one time, individuals found a water point and returned to it several nights (Figure 49). Moreover, on two separate occasions, cannibalism was observed, as an adult was seen eating an already deceased golden jackal, feeding directly on the body before dragging it and taking it further away.

It is difficult to conclude that the behaviour of golden jackals depends on the habitat type: indeed, the latter is quite similar despite the different environments, which does not allow to state the reasons for which they might or might not be favoured by the species. The choice of habitat does not seem to be influenced by temporality, being used both at night and during the day, nor by temperature, which remains in the same range, on average between 0 and 40° (seasonality will be studied in more detail in the next section of the report). Moreover, the individuals filmed are almost always moving in the recordings, and on rare occasions stop, therefore it is complicated to determine if they are present in a habitat simply because they are crossing it to reach another or not.

Golden jackals, in accordance with the literature review, are found in anthropogenic landscapes, where foraging opportunities present themselves (mostly in human settlements and agricultural lands). The other human-dominated spaces, like agro-forestry ecosystems, olive groves and vineyards are favoured as well.

Their use of woodlands/forests, on the other hand, raises questions and hypotheses: as opposed to mainland's populations, Samos' golden jackals are confined on a single island, which considerably limits the size of the territories of each family group and resources available. This could perhaps explain the insula's population's exploration of woodlands/forests, as they feature similar dominant species and vegetation than mainland Greece's forests. Moreover, as some studies suggest that golden jackals prefer windless conditions (Bosseler et al., 2021) and that strong winds are common in Samos ([Ocea Retreat](#), 2020), it is possible that the species use this habitat since woodlands/forests offer some protection from the wind. The weather could thus partly explain their behaviour, knowing that no jackal was recorded in windy or rainy weather.

Lastly, Samos' lower population density (as described in the section Discovery of Archipelagos) could be a source of the species' spread on the island and diversification of used habitats.

Seasonal variations

As the distribution of Samos' golden jackal populations could be influenced by seasonal variations, the following section focuses on seasonality as a factor in changes in habitats and altitudes inhabited by the species.

Data on golden jackal presence was extracted from Archipelagos' databases, by selecting the records whose coordinates are known, dating from 2012-2013, 2018-2019 and 2021-2024 as well as the beginning of 2025. It is important to note that some years or seasons are devoid of any coordinates, and could thus not be incorporated in this analysis. Moreover, it is crucial to keep in mind that the CORINE 2018 layer is not completely accurate or suitable for categorising micro-habitats, leaving a margin of error regarding the following observations.

Through the 39 locations recorded in spring (2012, 2013, 2018, 2023, 2024 and 2025), golden jackals were spotted in the following habitat types (Figure 50), excluding scrublands and olives groves, at an altitude between 3 and 269 meters above sea level:

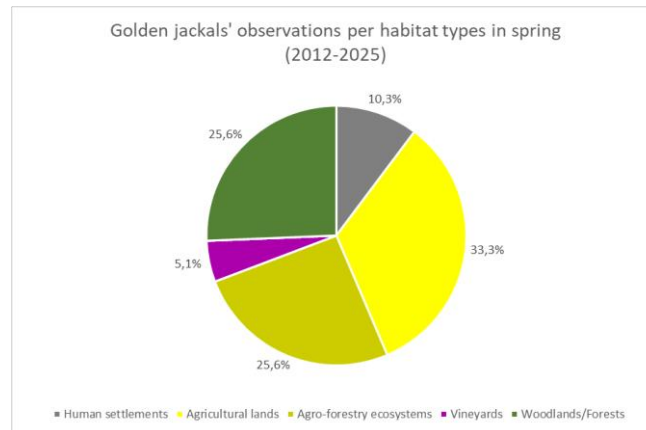


Figure 50: Golden jackals' distribution regarding different habitat types in Samos in spring between 2012-2013, 2018 and 2023-2025 (Lambert, 2025)

Through the 38 locations recorded in summer (2012, 2013, 2018, 2022, 2023 and 2024), golden jackals were spotted in the following habitat types (Figure 51), excluding olives groves, at an altitude between 5 and 144 meters above sea level:

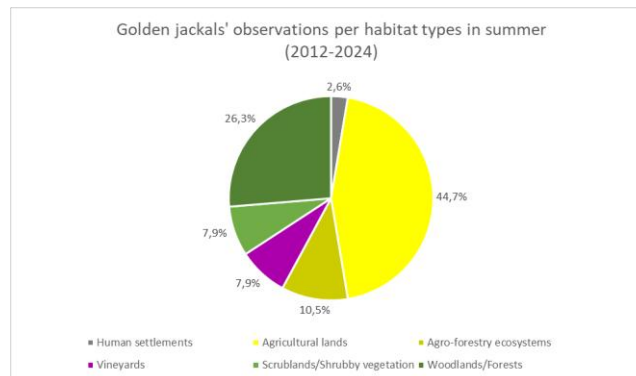


Figure 51: Golden jackals' distribution regarding different habitat types in Samos in summer between 2012-2013, 2018 and 2022-2024 (Lambert, 2025)

Through the 48 locations recorded in autumn (2012, 2018, 2022, 2023 and 2024), golden jackals were spotted in the following habitat types (Figure 52), excluding scrublands, at an altitude between 3 and 348 meters above sea level:

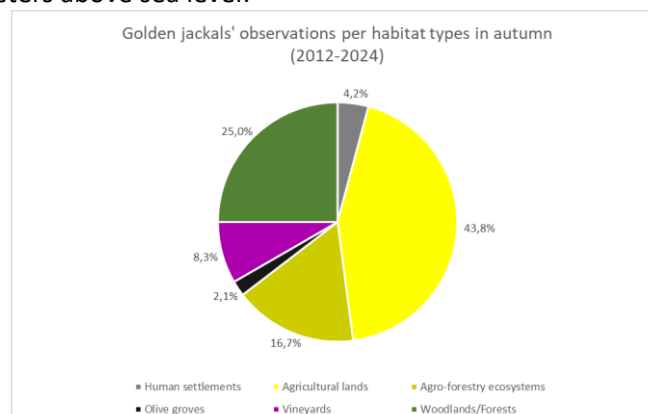


Figure 52: Golden jackals' distribution regarding different habitat types in Samos in autumn between 2012, 2018 and 2022-2024 (Lambert, 2025)

Through the 29 locations recorded in winter (2012, 2018, 2019, 2022, 2023 and 2024), golden jackals were spotted in the following habitat types (Figure 53), excluding scrublands, at an altitude between 3 and 167 meters above sea level:

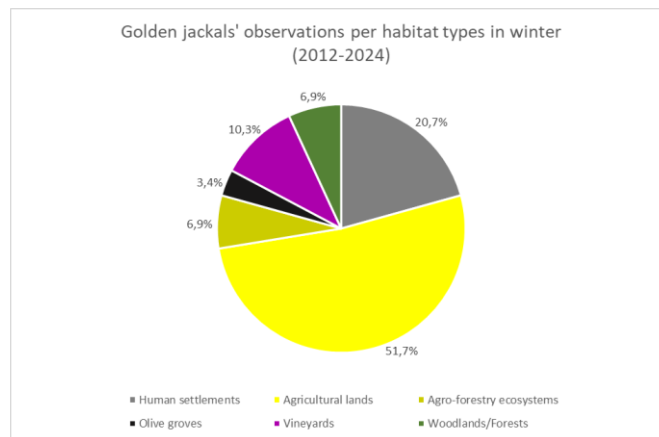


Figure 53: Golden jackals' distribution regarding different habitat types in Samos in winter between 2012, 2018-2019 and 2022-2024 (Lambert, 2025)

The cameras' footage reviewed during my stay in the heart of spring 2025 (April and May), not included in the graph, allowed the observation of a presence of golden jackals in agro-forestry ecosystems and woodlands/forests. In addition, the footage from a part of summer 2025 (June and July) shows activity in mixed landscapes, woodlands/forests and vineyards.

From these statistics, we can clearly observe that agricultural lands are the most important habitats, inhabited in majority no matter the season. This type may be favoured by the species as a reliable food source throughout the year: for example, fruit trees like citrus trees produce mostly in winter and spring, whereas berry plantations are ripe in summer. Agro-forestry ecosystems are more relevant in spring and autumn than in summer and winter. Vineyards also seem to be inhabited every season, with a slight peak in winter. Olive groves are exclusively inhabited in autumn in winter, corresponding to the harvest seasons and thus the edibility of the olives. Human settlements are seemingly avoided in summer and autumn, and inhabited much more in spring and winter. We can hypothesize that this opportunistic species responds to safe scavenging opportunities. Finally, woodlands/forests appear as key habitats, representing around one quarter of golden jackals' distribution in spring, summer and autumn. However, they are significantly less prevalent in winter.

Golden jackals seek higher altitudes in spring and autumn, while getting closer to sea level in summer and winter.

Annual variations

If we now observe the evolution of Samos' golden jackals' distribution per year, changes can be noted over the 12-year study period (2012-2024). In 2012, individuals were spotted in agricultural lands and agro-forestry ecosystems. In 2013, they were recorded in scrublands, and from 2018 and 2019 in human settlements. It is only from 2023 that jackals are observed in olive groves, vineyards, and woodlands/forests, with dozens of significant recordings in these last two habitat types.

It should be emphasized that these observations could be explained by the choice of locations by the members of Archipelagos, having only presence data available. We can also deduce that habitat preferences do not only evolve according to the seasons but also over the years in order to meet new needs. Climate change could also be a factor affecting the species' habitat preferences, as the island's temperature has increased by almost +1°C in just 12 years, with an annual average temperature of 19.8°C in 2012 compared to 20.7° in 2024 (Time and Date, 2025), leading golden jackals to search for shade and lower temperatures in summer in woodlands/forests for instance. Finally, it appears that golden jackals are observed at the same coordinates, therefore in the same habitats, over several seasons and over the years (Appendix 15).

Conclusion

The rapid expansion of the golden jackal in Europe (Acosta-Pankov and Spassov, 2019, Cunze and Klimpel, 2022), whose sightings have been made in Finland (Heikkinen et al., 2023) and recently in France (Mouterde P., 2025), highlights the growing need for a greater and more complete knowledge of the species, in future objectives of monitoring, management and potentially protection of their populations. It is crucial to better understand the behaviour of the golden jackal with its environment, in order to anticipate any conflict or issue (inter-species interactions, ecosystems alterations, public health, livestock depredations, etc.).

A more effective understanding and protection of the species on the territory of Samos was the core of this project, through the study of the island's golden jackals populations' preferred distribution (a final map with every known and updated coordinates of golden jackal presence can be found in Appendix 17). The establishment and application of the camera traps plans proved difficult, having to deal with a lack of numerous coordinates in the databases (NA) and limited equipment (cameras had to be shared with the other interns for their project), which led to prioritizing the study of habitats at the expense of that of altitude. Moreover, some plans could not be tested before the time limit of the internship, and require a longer-term application and follow-up in order to obtain sufficiently detailed results to complete the project in its full scope (with this time a deeper focus on little or not studied habitats like olive groves, grasslands, pastures, mixed landscapes, scrublands and wetlands).

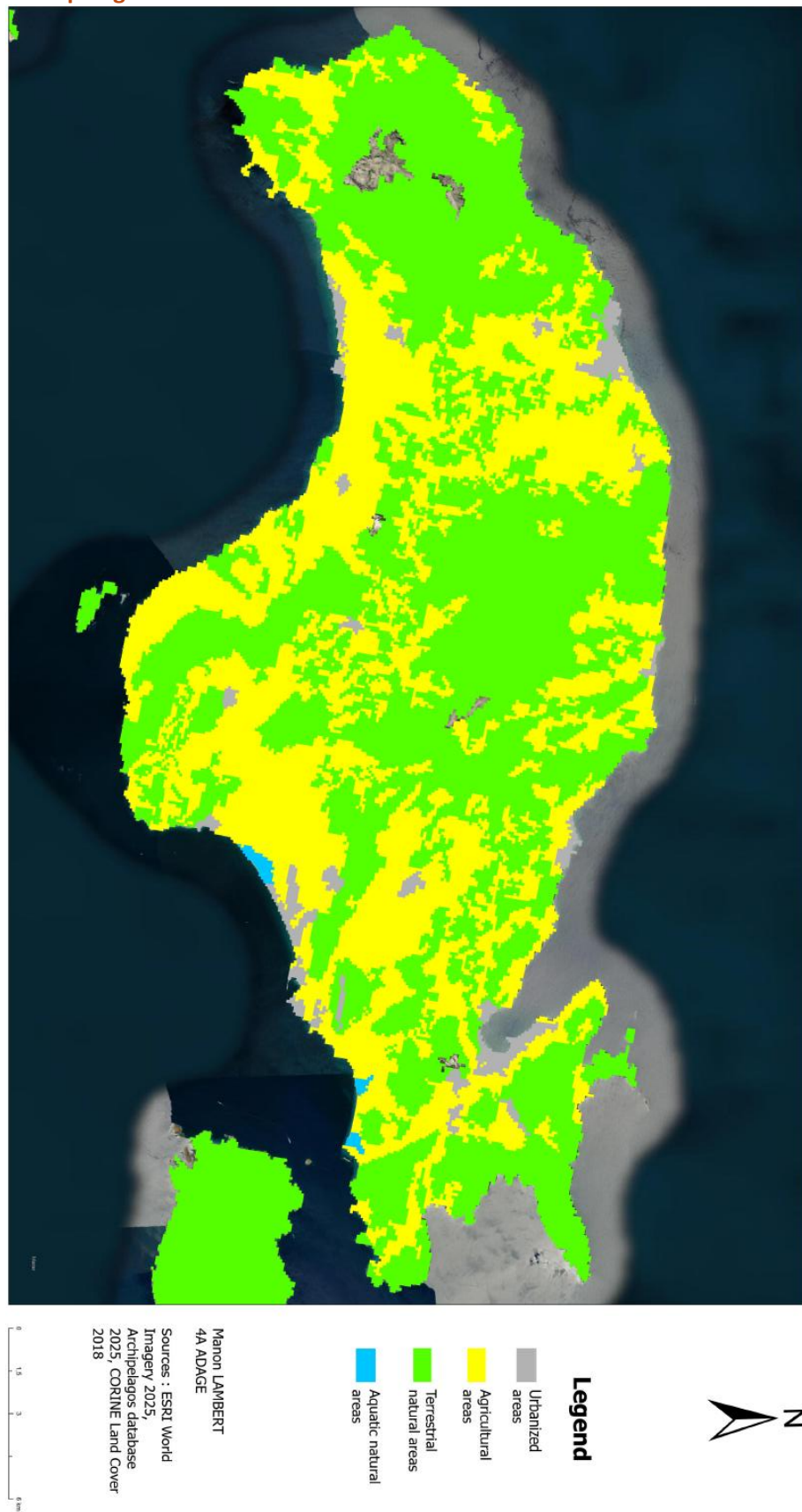
The analysis and interpretation of behaviours by habitat type and their comparison between them suggests a seasonal variation (where some habitats are favoured during one season over others) and a potential evolution through the years. Seasonality therefore appears as an important distribution factor, alongside scavenging opportunities and access to fresh water. Temporality and temperature do not seem to affect this distribution, although at this stage these claims remain only assumptions to be confirmed or refuted in the long term. Samos' golden jackals' populations have few differences in behaviour with mainland Greece's populations: they are mostly found in human-modified landscapes such as agricultural lands (like olive groves and vineyards), but also significantly in woodlands/forests, usually avoided except by northern Greece populations.

My project is the simple beginning of a larger study that can be continued after my departure. Many questions and areas of research remain to be clarified. Thus, it would be interesting to add hydrography to the project (water points and streams, precipitation), and to observe the evolution of the species and its threats under the effect of climate change. A focus on altitude is also required, in scales similar to those presented in the literary review (Figures 13 and 14), to determine a possible 'barrier' altitude or even a link between the altitude reached and temperature (routes focused on altitude can be found in Appendices 16 and 18). Finally, for a study of the golden jackal's multi-factorial dispersion, it is necessary to implement regular monitoring of the species through camera trap monitoring, with observations at the same coordinates across seasons and years, for an optimal behavioural analysis.

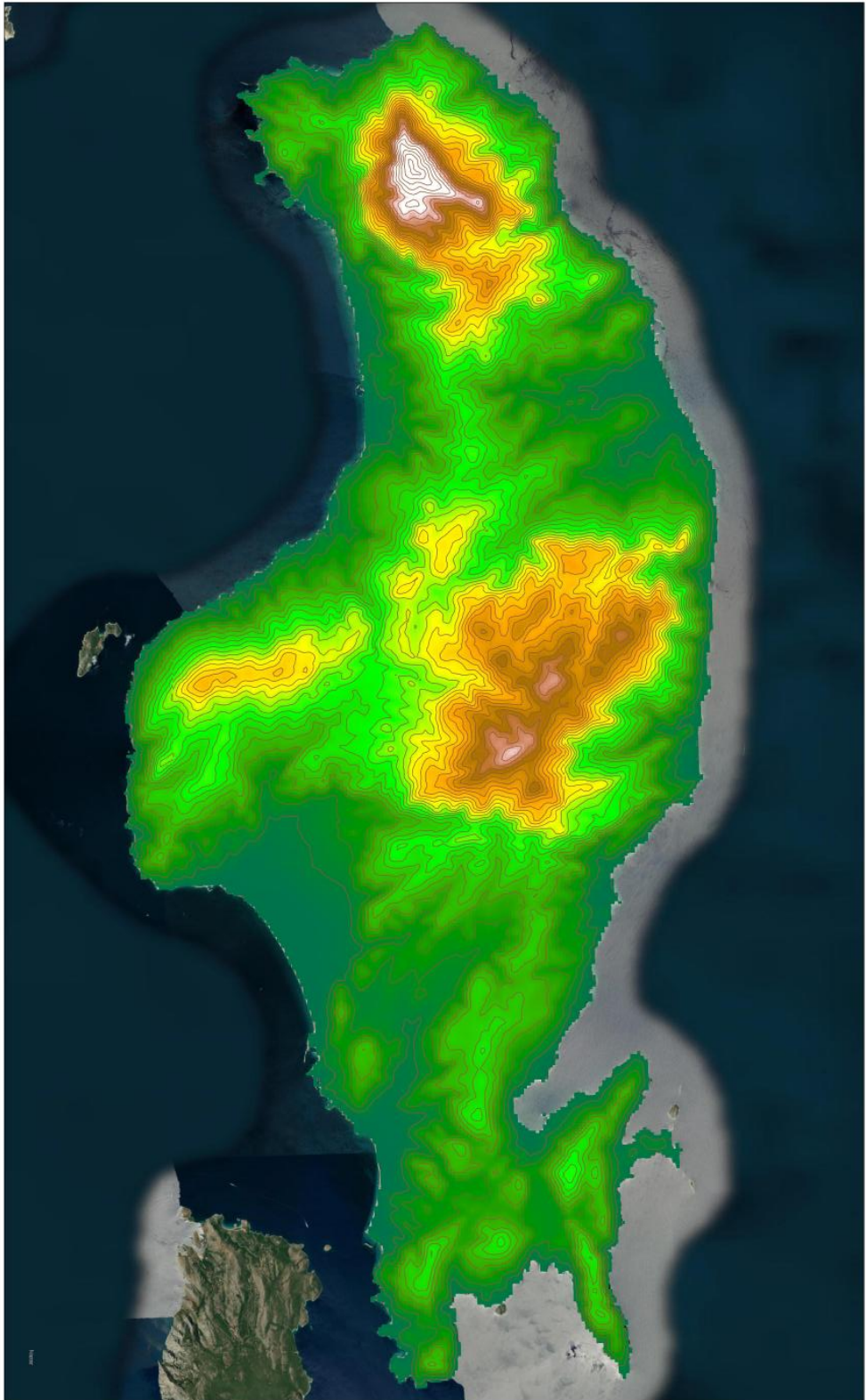
This report only illustrates part of my internship and work done at Archipelagos: besides my project, I also participated in surveys (birds, flamingos) and the sorting, updating and synchronization of the databases of the Terrestrial team for future members. My stay offered me multiple opportunities for learning, open-mindedness and scientific culture: I attended presentations by researchers and interns in a wide range of expertise and varied fields, and had the opportunity to exchange with people of different nationalities and cultures, both in a professional setting and outside of it. To conclude, from a personal point of view, I was able to achieve my goals (writing in English, mapping, field work) and be able to project myself into the profession of researcher, which offered me an enchanting experience that I will not hesitate to repeat.

Appendices

Discovery of Archipelagos



Appendix 1: Samos' habitats and land-use (Lambert, 2025)



Legend

Contour
lines

Altitude

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Sources : ESRI World
Imagery 2025,
Archipelagos database
2025, CORINE Land Cover
2018

0 1,5 3 6 km

Appendix 2: Samos' topography (Lambert, 2025)



Legend

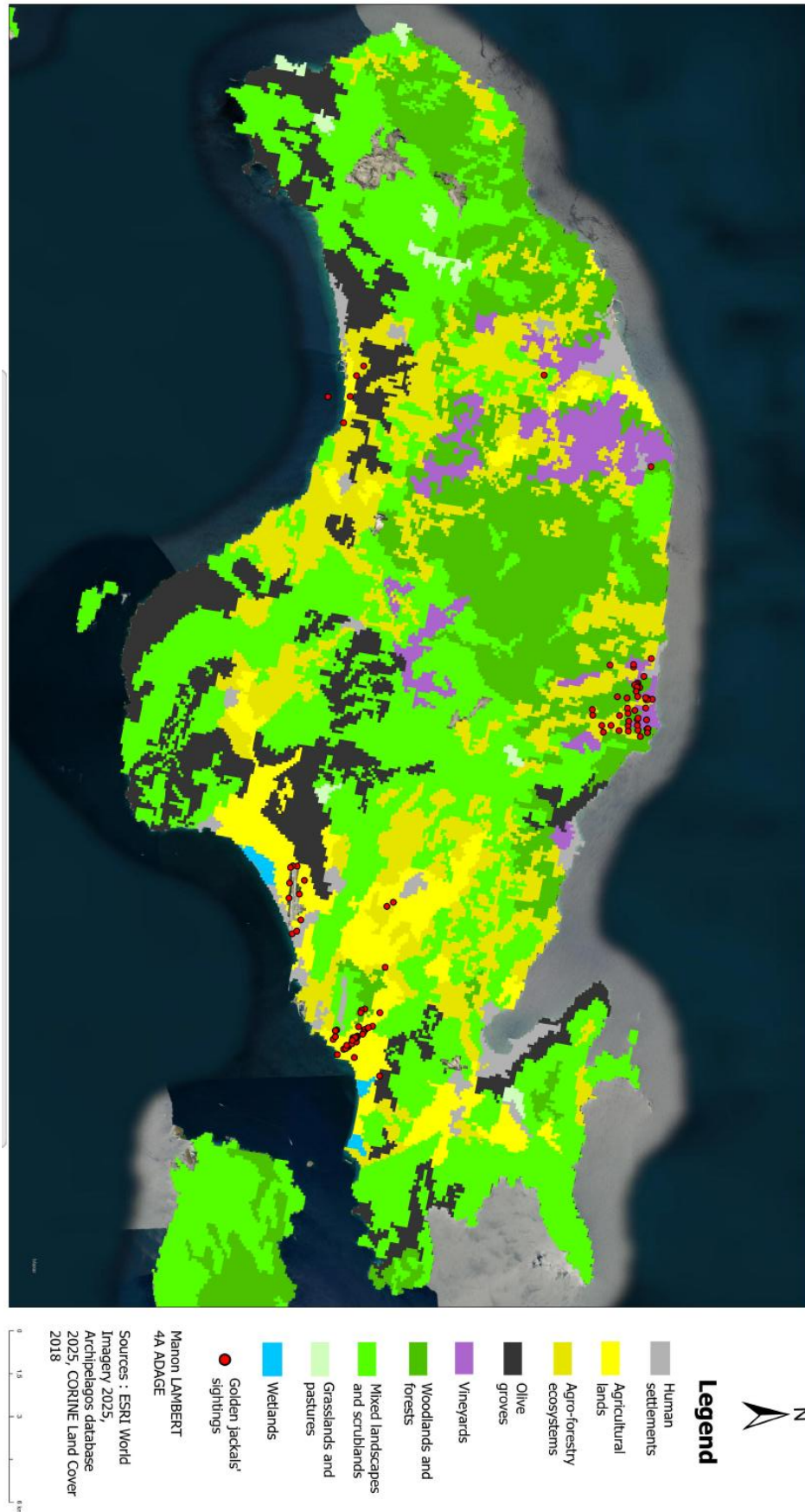
 Natura 2000
protected areas

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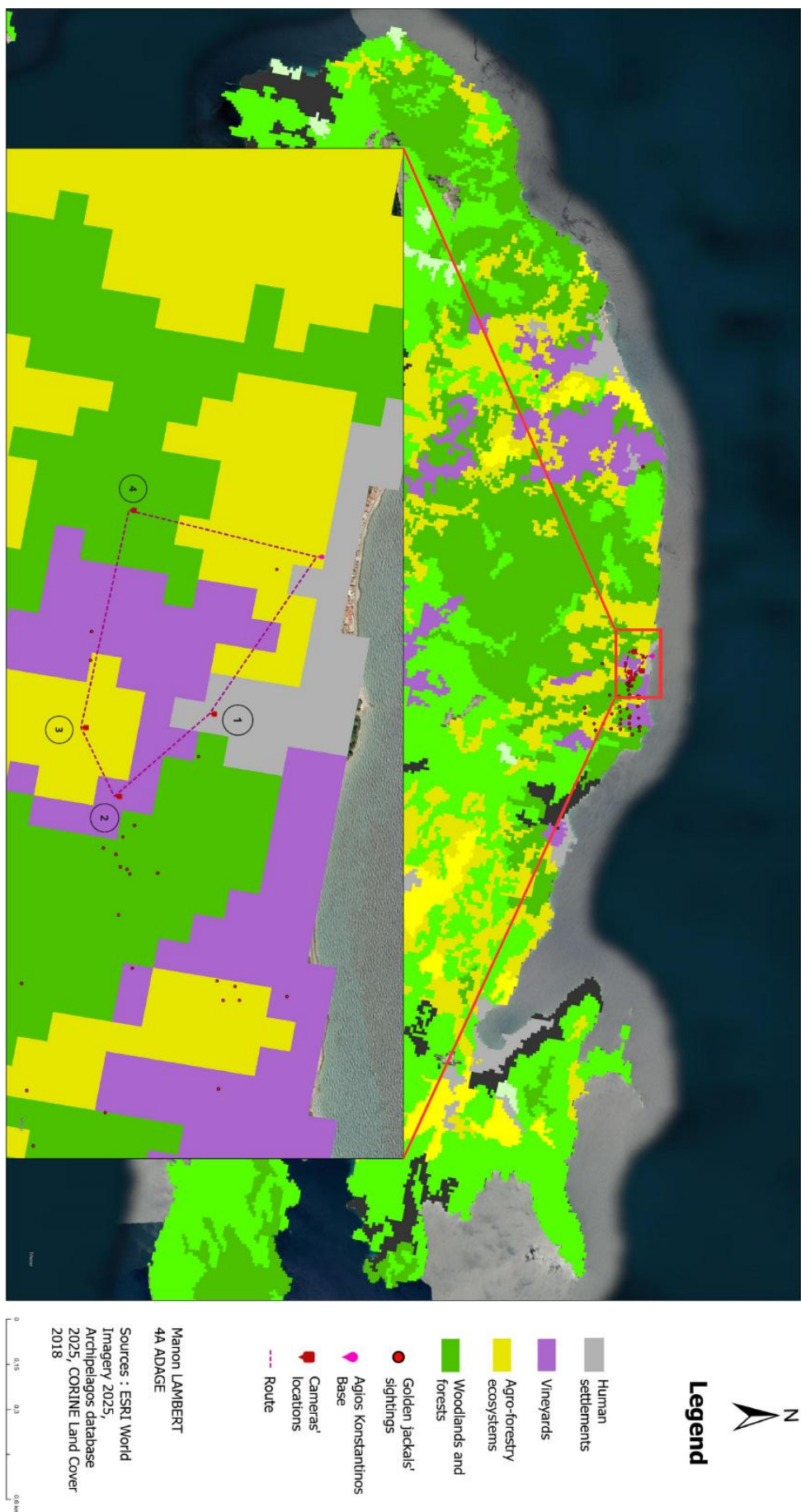
Sources : ESRI World
Imagery 2025,
Archipelagos database
2025, CORINE Land Cover
2018

0 1,5 3 6 km

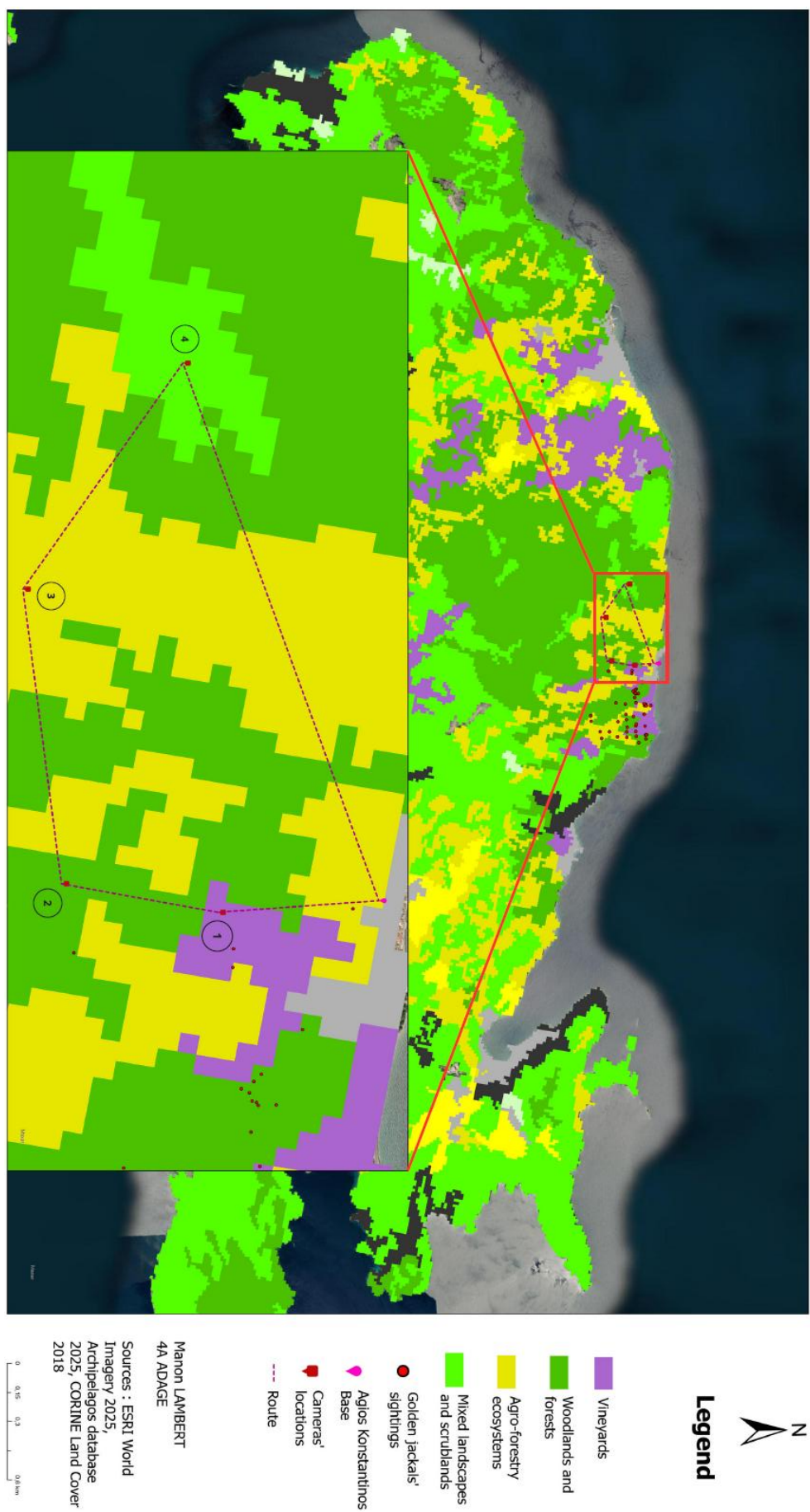
Appendix 3: Samos' natural areas protection measures (Lambert, 2025)



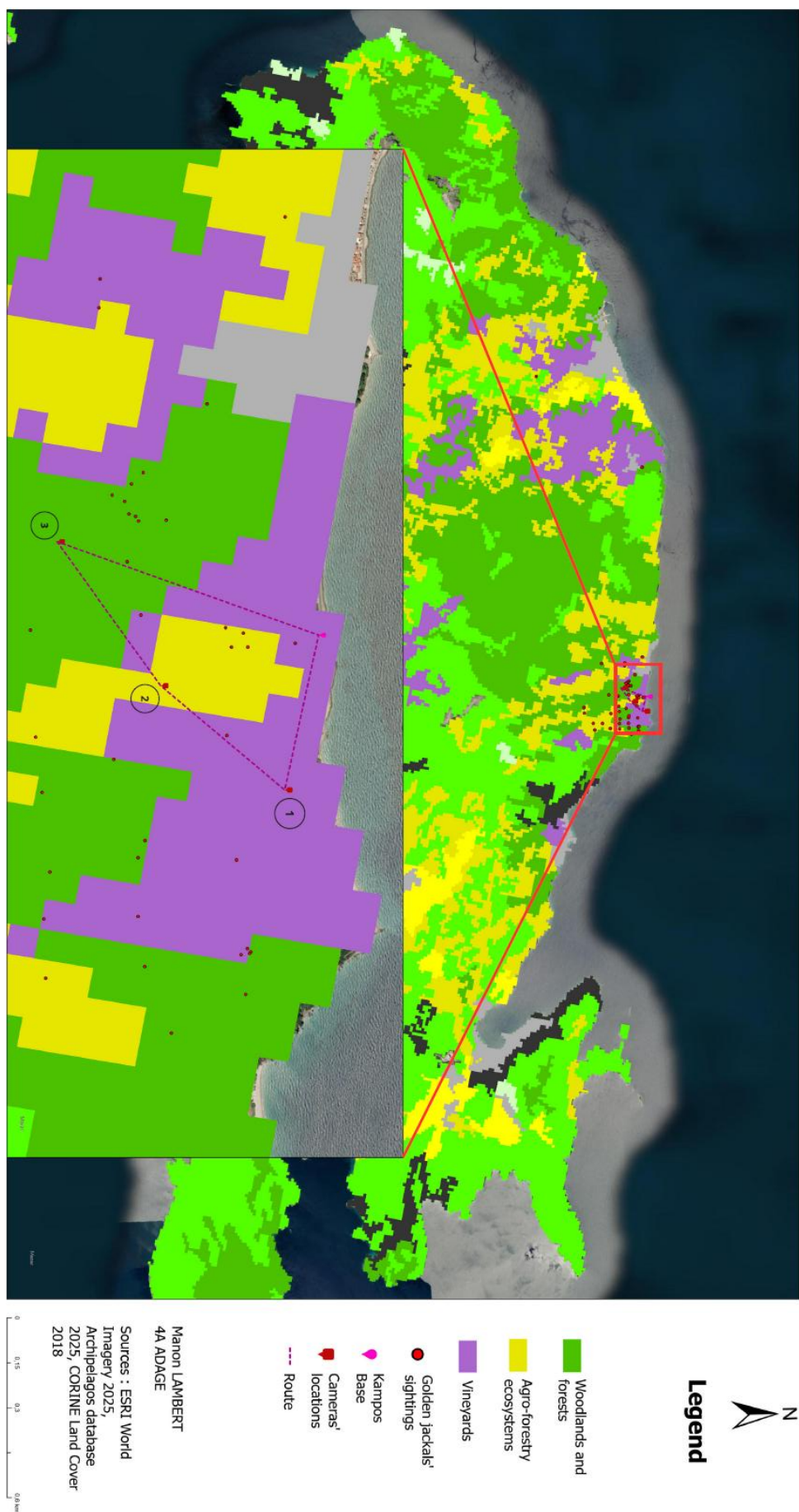
Appendix 4: Golden jackals' sightings in Samos between 2012-2013, 2018-2019 and 2021-2024 (Lambert, 2025)



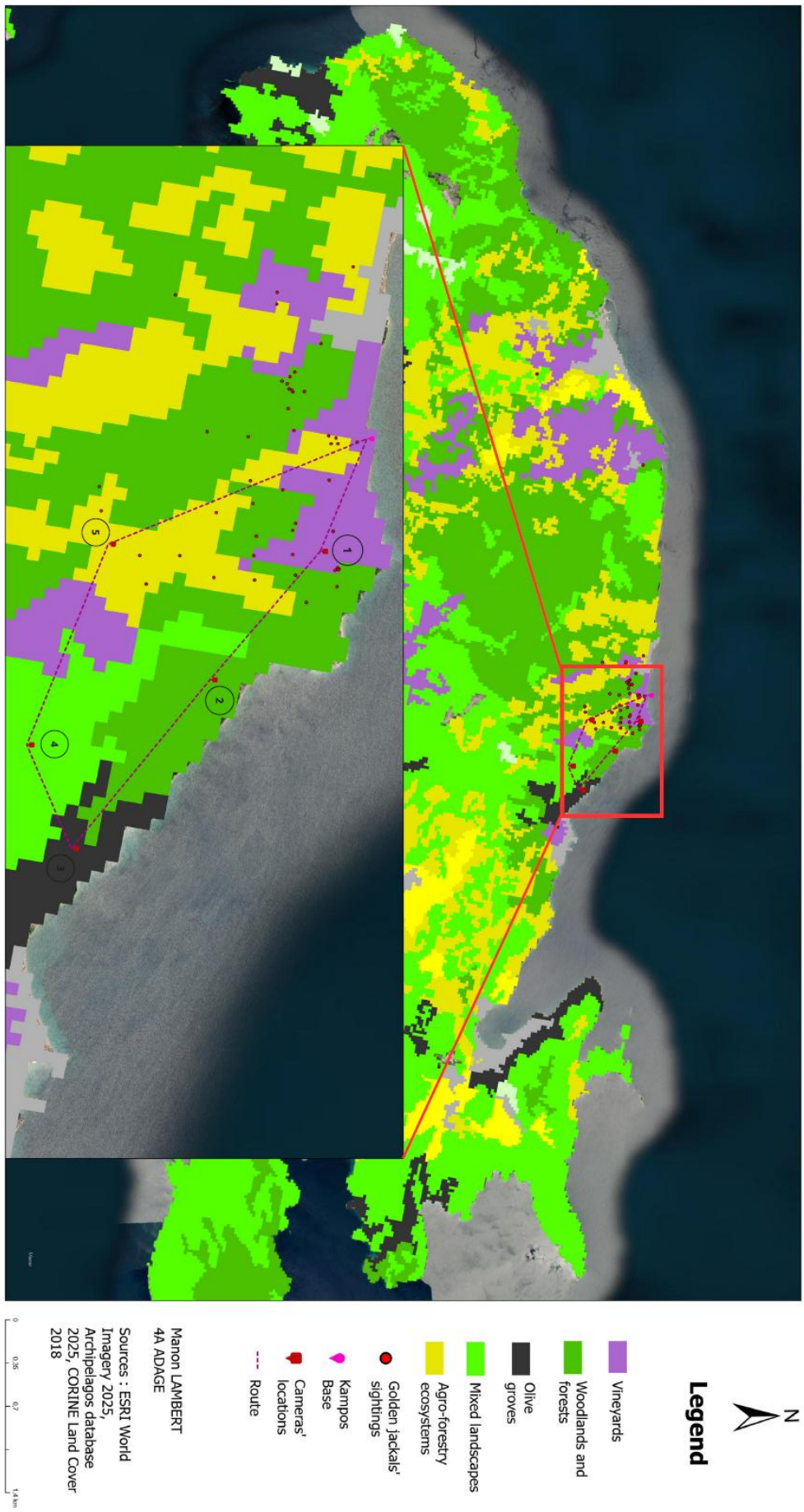
Appendix 5: Camera traps – Agios Konstantinos Route 1 (Lambert, 2025)



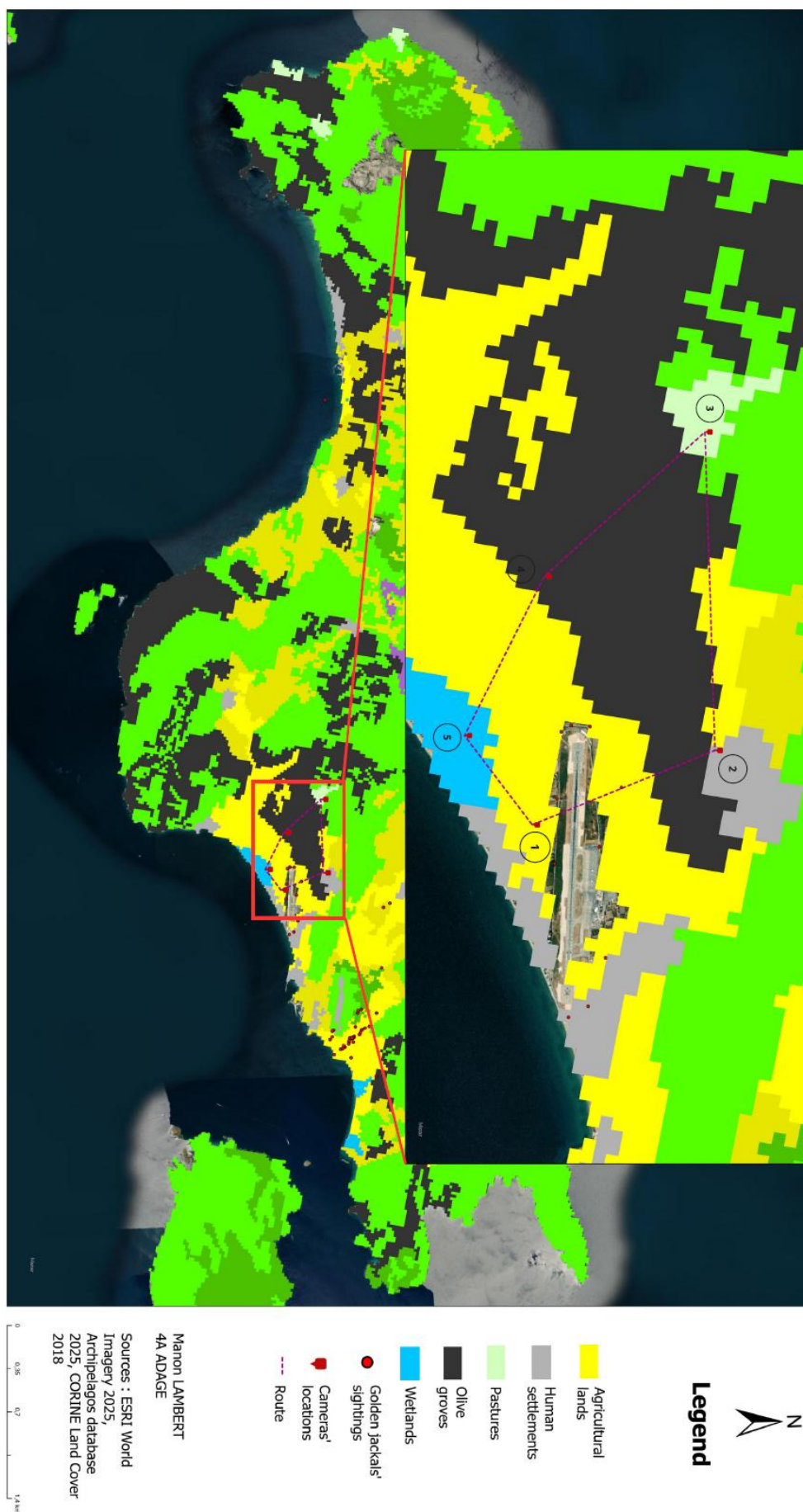
Appendix 6: Camera traps – Agios Konstantinos Route 2 (Lambert, 2025)



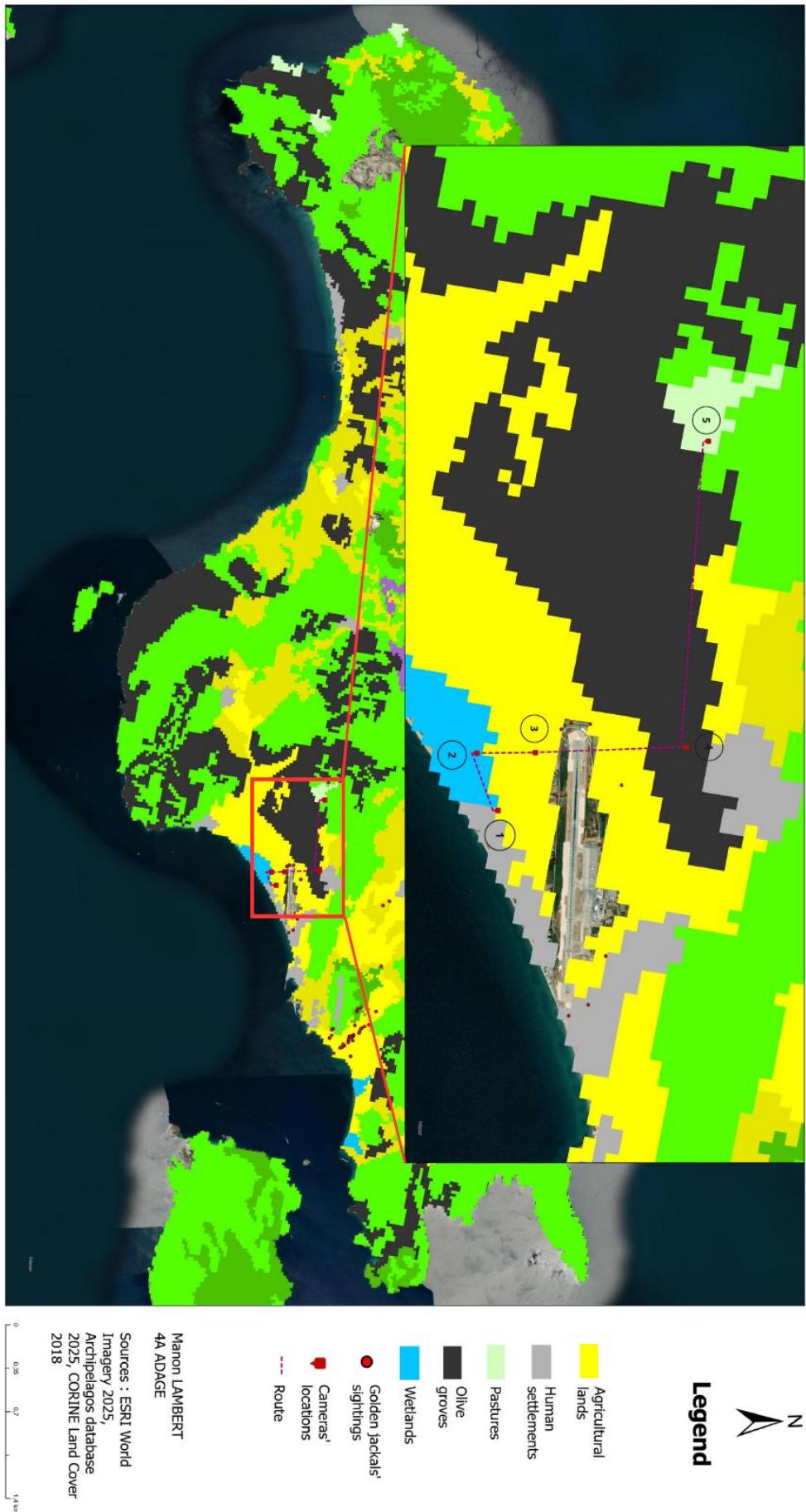
Appendix 7: Camera traps – Kampos Route 1 (Lambert, 2025)



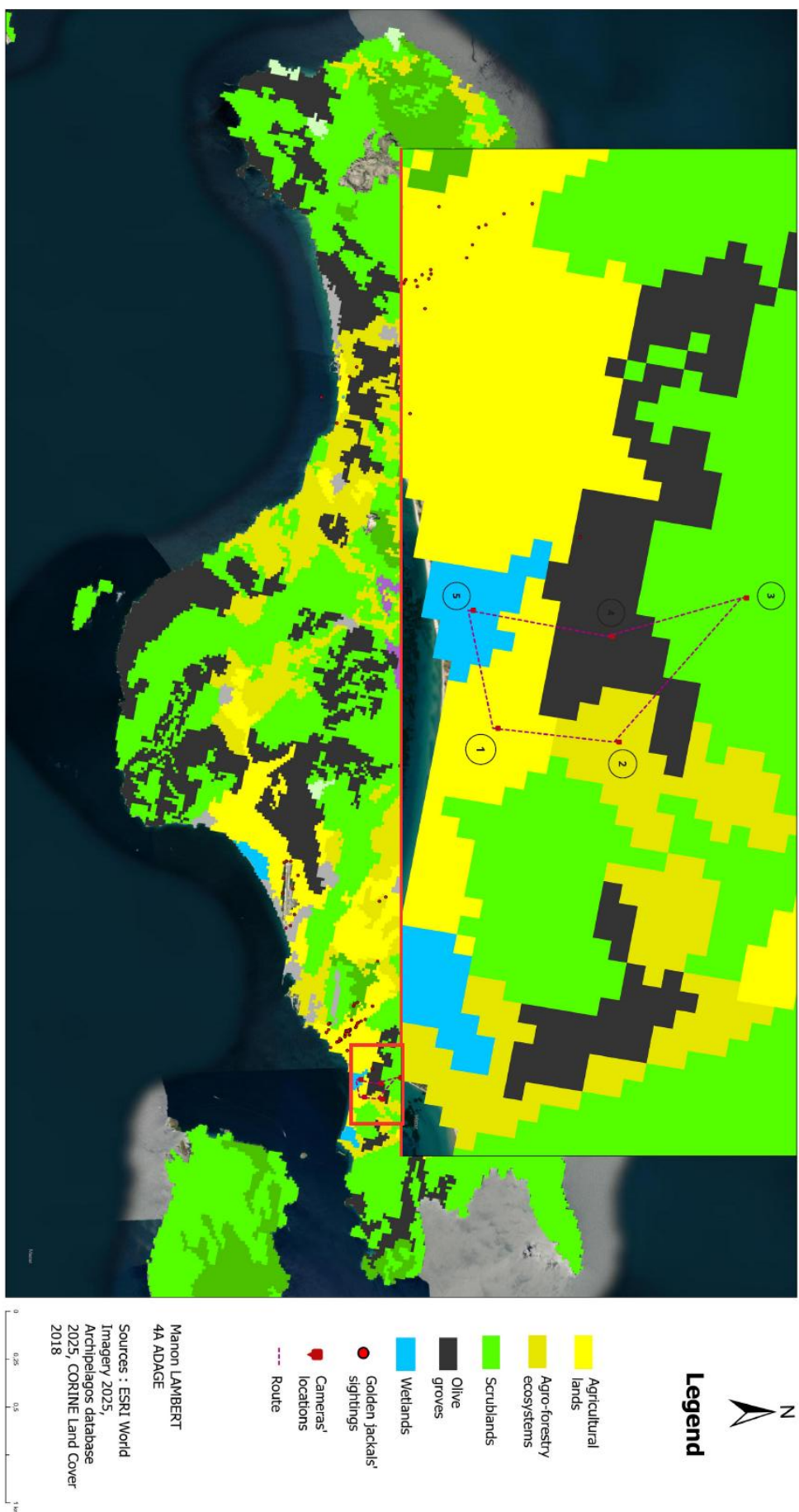
Appendix 8: Camera traps – Kampos Route 2 (Lambert, 2025)



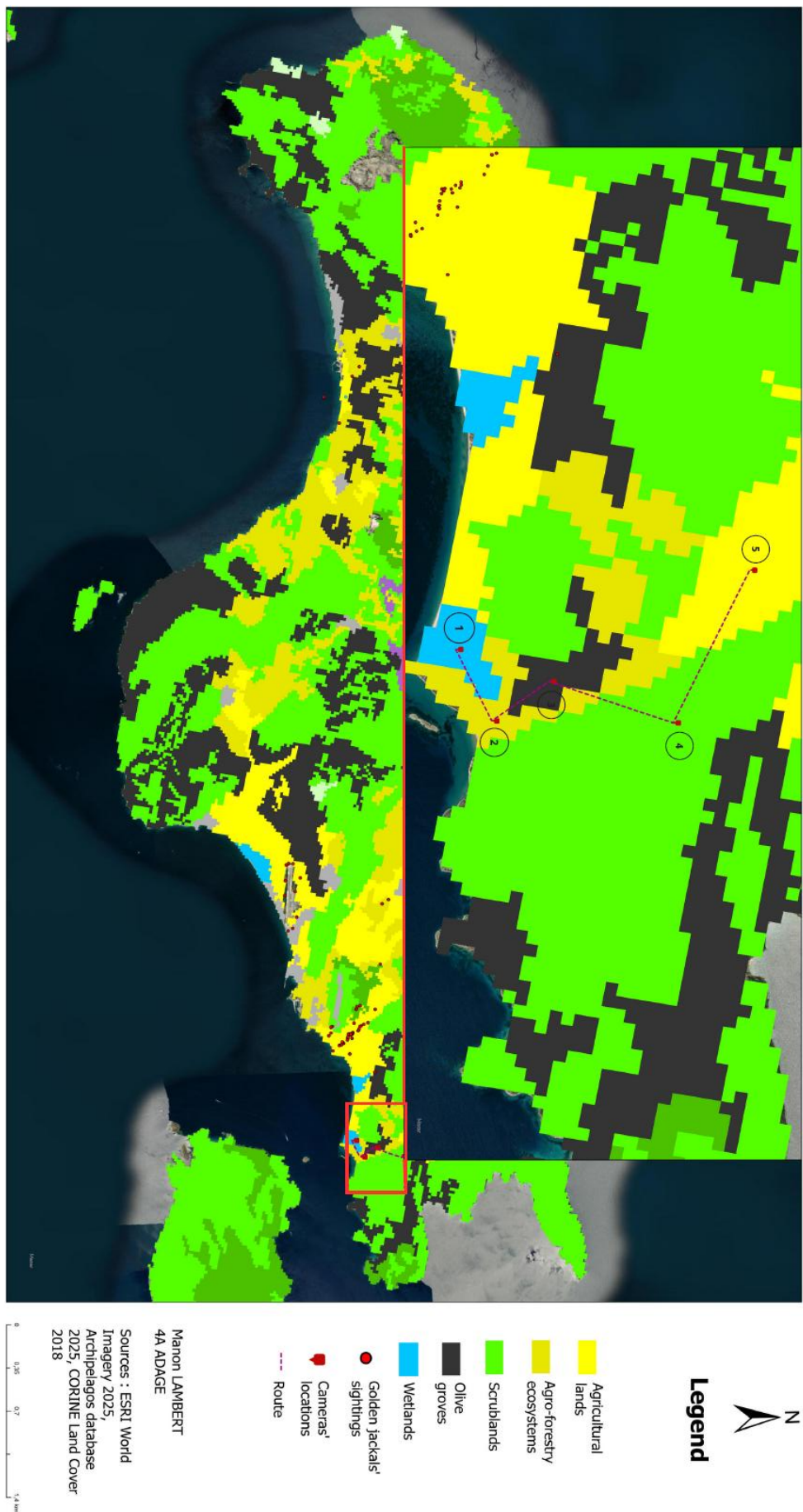
Appendix 9: Camera traps – Wetlands Route 1 Version 1 (Lambert, 2025)



Appendix 10: Camera traps – Wetlands Route 1 Version 2 (Lambert, 2025)

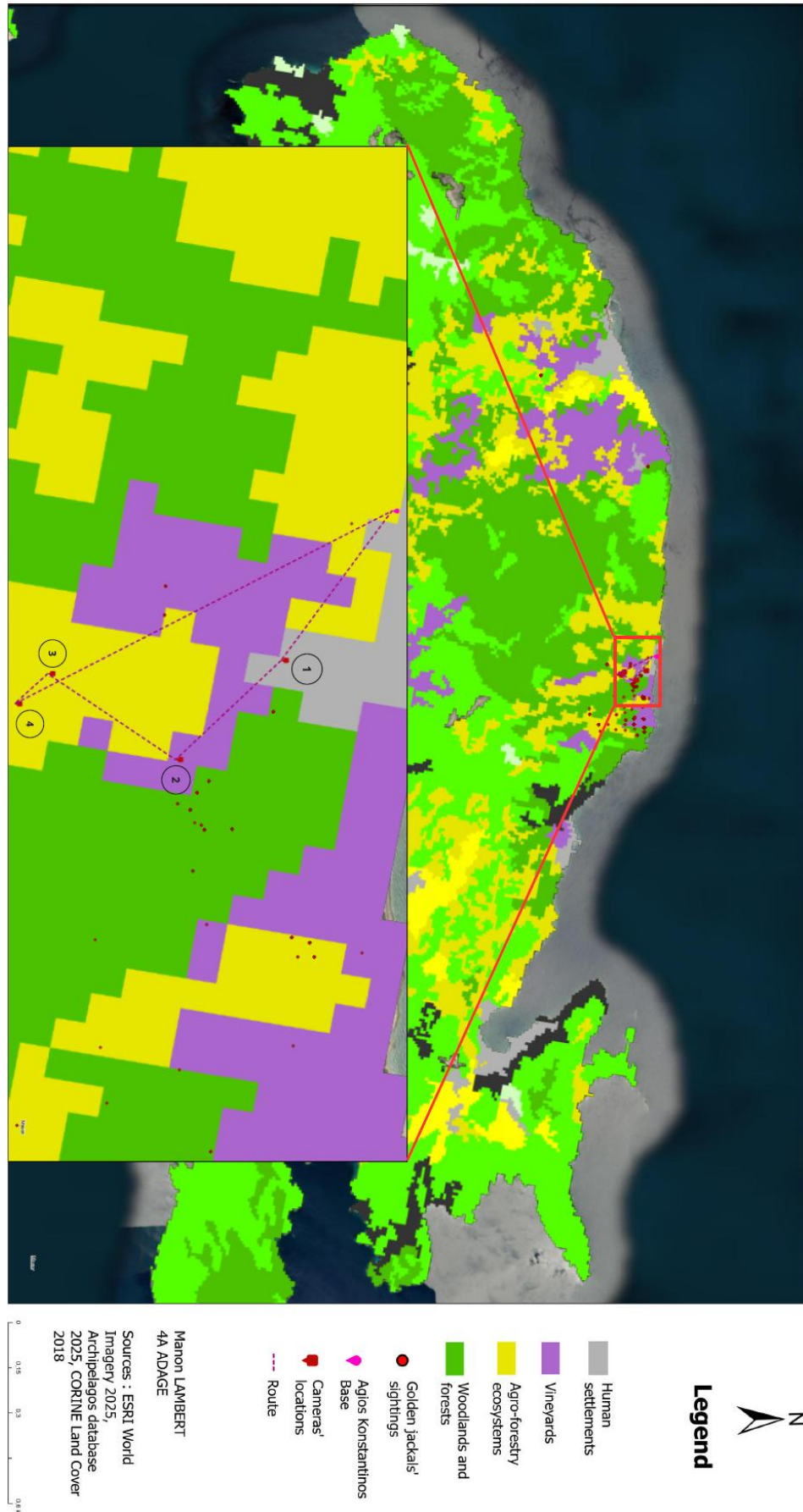


Appendix 11: Camera traps – Wetlands Route 2 Version 1 (Lambert, 2025)

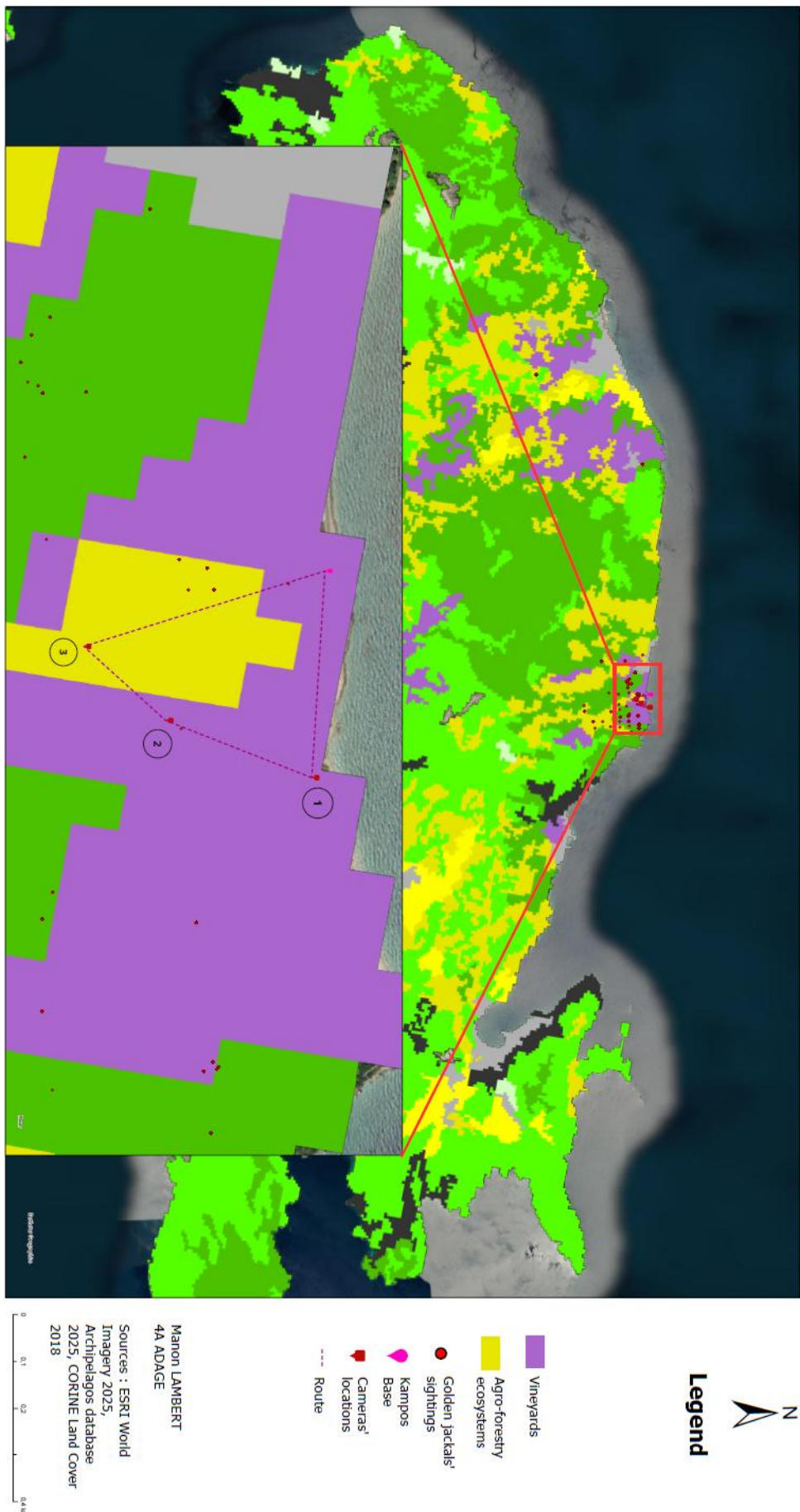


Appendix 12: Camera traps – Wetlands Route 2 Version 2 (Lambert, 2025)

Research project



Appendix 13: Camera traps – Updated Agios Konstantinos Route 1 (Lambert, 2025)



Appendix 14: Camera traps – Updated Kampos Route 1 (Lambert, 2025)

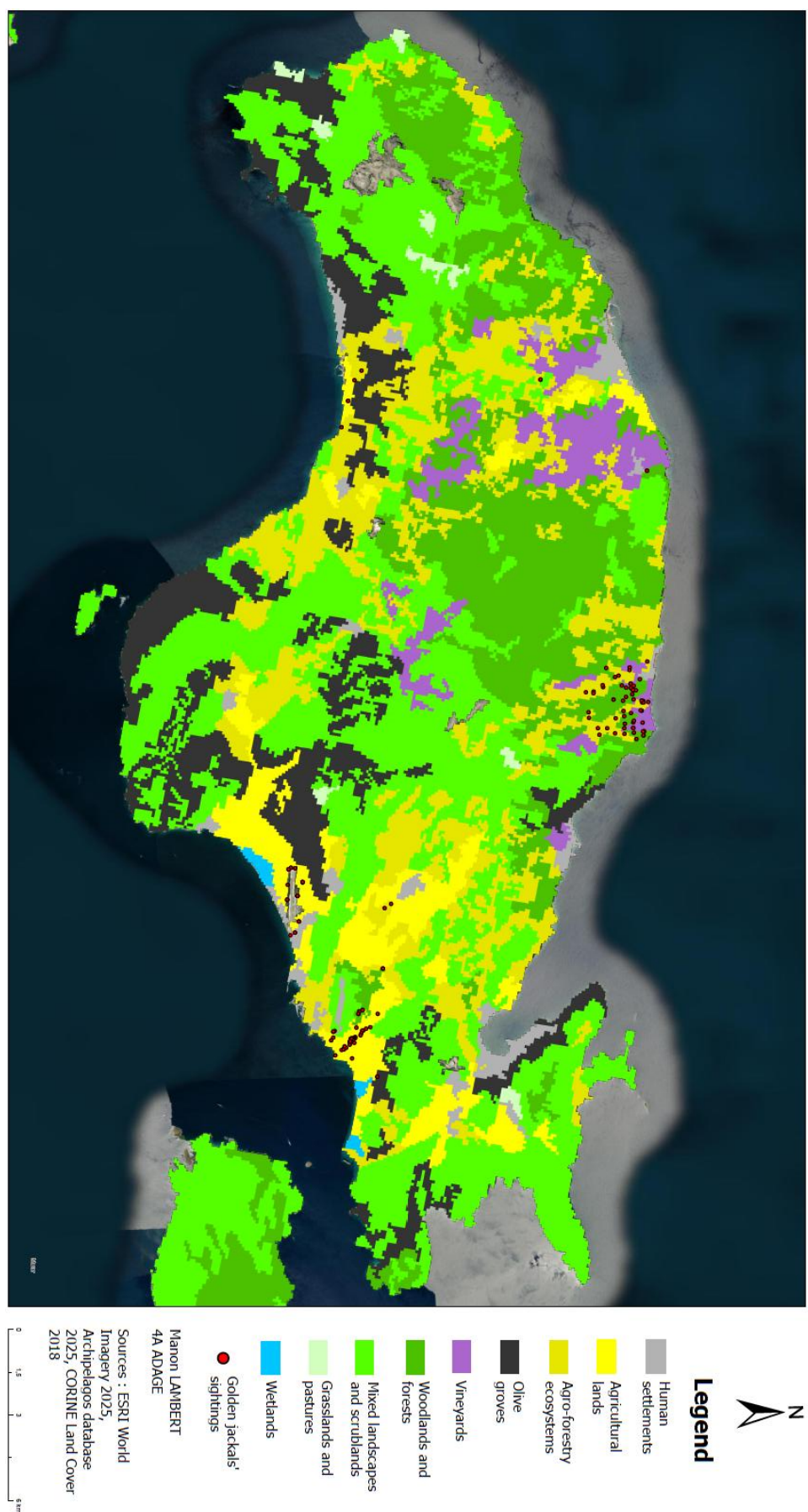
Appendix 15: Table containing golden jackals observations in the same habitat, at the same coordinates, through seasons and years

Habitat types	Seasons and years during which the presence of golden jackals was recorded at the same coordinates
Human settlements	• Spring 2018 – Winter 2018 • Spring 2018 – Summer 2018 – Autumn 2018 – Winter 2018 • Autumn 2018 – Winter 2018 – Winter 2019
Agricultural lands	• Spring 2012 – Winter 2012 • Autumn 2012 – Winter 2012 • Spring 2018 – Winter 2018 • Spring 2018 – Summer 2018 – Autumn 2018 – Winter 2018 • Spring 2018 – Summer 2018 – Autumn 2018 – Winter 2018 – Winter 2019 • Spring 2023 – Winter 2023 • Spring 2023 – Summer 2023 – Winter 2023 • Autumn 2023 – Winter 2023 • Spring 2023 – Summer 2023 – Autumn 2023 – Winter 2023 – Summer 2024 – Autumn 2024
Agro-forestry ecosystems	• Winter 2023 – Winter 2024
Olive groves	• Autumn 2023 – Winter 2023
Vineyards	• Summer 2024 – Autumn 2024
Woodlands/Forests	• Spring 2023 – Summer 2023 • Summer 2023 – Autumn 2023 • Spring 2024 – Summer 2024

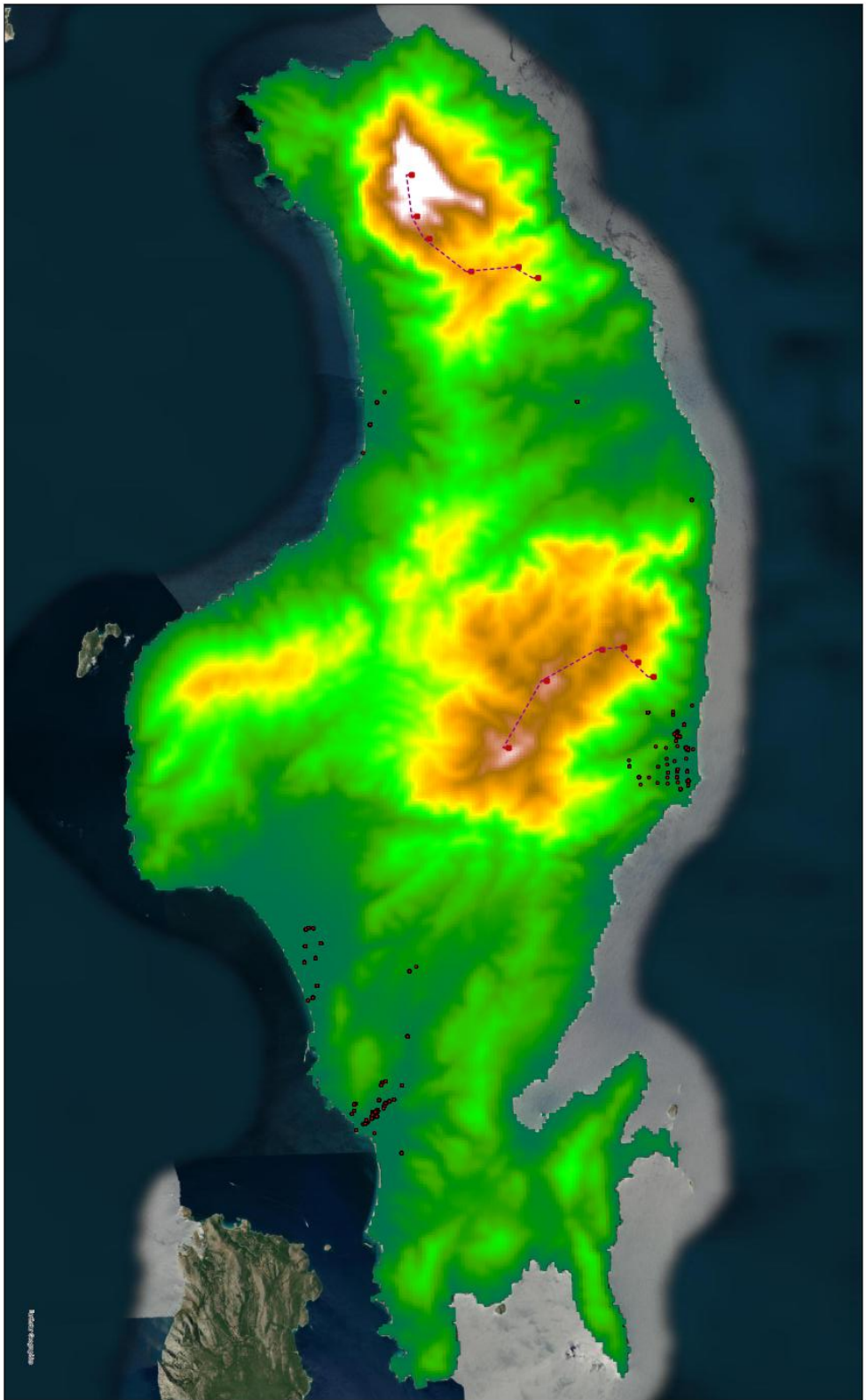
Appendix 16: Altitude scales taken into account in the proposed routes for a future study of the distribution of golden jackals regarding altitude

Route 1 (Ouest)	Latitude	Longitude	Altitude (m)	Altitude scale
Location 1	37,7607952	26,6614425	418	[0-500]
Location 2	37,7551370	26,6571550	600	[500-1000]
Location 3	37,7412180	26,6583391	812	[500-1000]
Location 4	37,7292110	26,6458002	962	[500-1000]
Location 5	37,7257918	26,6374378	1104	[1000-1500]
Location 6	37,7245755	26,6220661	1373	[1000-1500]

Route 2 (Nord)	Latitude	Longitude	Altitude (m)	Altitude scale
Location 1	37,7912218	26,8100795	424	[0-500]
Location 2	37,7868233	26,8045269	667	[500-1000]
Location 3	37,7828542	26,7988340	879	[500-1000]
Location 4	37,7764279	26,7995025	933	[500-1000]
Location 5	37,7598401	26,8103985	1083	[1000-1500]
Location 6	37,7480584	26,8347147	1133	[1000-1500]



Appendix 17: Golden jackals' sightings in Samos between 2012-2013, 2018-2019, 2021-2024 and Spring and Summer 2025 (Lambert, 2025)



Appendix 18: Camera traps – Altitude Routes 1 and 2 (Lambert, 2025)

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Research project on the distribution of the golden jackal on the island of Samos (Greece)

Abstract: This report focuses on the distribution of the insular population of golden jackals of Samos, regarding habitat types. The main objective is to determine if this population share habitats' preferences with European populations, specifically mainland Greece' golden jackal population, as this was never studied before. This report shows that there is some similarities as well as differences between the two populations.

Key words: Animal behaviour, camera trapping, ecology, mapping, population monitoring

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