



«Addressing the Threat of Invasive Alien Species in
North Greece, using Early Warning and Information
systems for mammals»

After - LIFE Plan

September 2024

Συντονιστής



Εταίροι



1. LIFE ATIAS project scope

LIFE ATIAS - LIFE18 NAT/GR/000430 «Addressing the Threat of Invasive Alien Species in North Greece, using Early Warning and Information systems for mammals» με ελληνικό τίτλο «Αντιμετώπιση της απειλής των εισβλητικών ειδών στη Βόρεια Ελλάδα, μέσω της ανάπτυξης συστημάτων έγκαιρης προειδοποίησης και πληροφοριών για θηλαστικά».

Project Coordinator

Aristotle University of Thessaloniki, School of Forestry and Natural Environment/ Lab of Wildlife & Freshwater Fish. LabWild AUTH

Project partners

Aristotle University of Thessaloniki, School of Forestry and Natural Environment, Lab of Forest Management and Remote Sensing	FMRS AUTH
Aristotle University of Thessaloniki, School of Journalism and Mass Communications	SJMC AUTH
Decentralized Administration of Epirus & Western Macedonia	DAEWM
Decentralized Administration of Macedonia & Thrace	DAMT
Democritus University of Thrace, School of forestry and Environmental Management and Natural Resources	DUTH
Hellenic Fur Federation	HFF
Hunting Federation of Macedonia & Thrace	HFMT
HOMEOTECH Co	HOMEO



The project LIFE ATIAS “Addressing the Threat of Invasive Alien Species in North Greece, using Early Warning and Information systems for mammals” (LIFE18/NAT/GR/000430) co-funded by the European Union under the LIFE programme and the Green Fund

Συντονιστής



Εταίροι



Table of contents

1. Introduction	2
2. Aim and Objectives of the After - LIFE Plan	3
3. Monitoring and Research Activities	4
4. Monitoring actions.....	7
5. Communication, Information & Networking actions.....	8
6. Farm Risk Management actions.....	11
7. Funding sources	12
8. Summary of actions & required resources	13

1. Introduction

The LIFE ATIAS project entitled: " Addressing the Threat of Invasive Alien Species in North Greece, using Early Warning and Information systems for mammals " was launched in September 2019 and was the first organized effort to manage an invasive alien mammal species in Greece.

Stakeholders from different backgrounds collaborated in the organized effort to manage a vertebrate invasive alien species in Greece that included: systematic recording of American mink abundance and distribution, reduction of the feral population through captures, assessment of impacts on protected species before and after population reduction actions, development of partnerships, methodologies and tools for future use. LIFE ATIAS shed light on the previously unknown aspects of the distribution, abundance and ecology of the American mink in Greek nature, through its activities. The species was found to be restricted to Western Macedonia, mainly in the region of Kastoria and the border between Kozani and Grevena. The species is most likely to be found in lakes and rivers with dense riparian vegetation and rocks, with most individuals being found within 5 km of a mink farm. Survival of these individuals in the wild is quite difficult, however there appears to be a small population that has successfully established in Lake Kastoria. Based on the data obtained from the floating rafts, which are the most effective means of tracking and trapping, the presence of American mink was most pronounced in the wider area of Kastoria, Argos Orestiko and Mikrocastro, but also in some parts of Ladopotamos. In addition, the trapping actions implemented are estimated to have reduced the population of American mink in the wild by about 80% and had a positive impact on the protected species of the study area.

In addition, LIFE ATIAS created a point of contact for the public and stakeholders for the American mink. The project team received information about the presence of the species almost throughout the project implementation, to which they responded by setting live capture traps. LIFE ATIAS also activated stakeholders on the management of the American mink and raised the issue of invasive alien species in real-life conditions.

2. Aim and Objectives of the After - LIFE Plan

The actions of the After-LIFE plan include:

1. Continued monitoring and research of the American mink population in the wild but also of other invasive alien mammal species.
2. Continued monitoring of the American mink population in the wild and its impact on the ecosystem
3. Continue communication, outreach and networking of the project
4. Enhance biosecurity of farms

The research and actions carried out in the framework of the project have led to useful results, while also contributed significantly to the management of the American mink population and the acquisition of knowledge of their ecology and their habits in a Mediterranean – type environment. Controlling the American mink population is a process that should continue after the project ends, so that the population can be kept at low levels or even eliminated where possible. In addition, cooperation with fur-bearing livestock farmers is essential to inform the appropriate authorities of escapes or releases of individuals from farms in a timely manner and to intervene immediately. Continued analysis of the feeding habits of American mink captured or found dead is also considered appropriate in the context of research into the biological parameters of the species and investigation of its impact on the ecosystem.

Also, enhancing the security of farms to reduce the risk of mass escapes or releases is necessary and is a priority for the Panhellenic Association of Fur Breeders. The Hellenic Fur Federation will contribute to this process through the educational platform it has developed.

Finally, the continuation of the project's communication is an important part of the After-LIFE project, by maintaining and expanding the communication/information channels created during the project implementation.

The following chapters describe in detail the actions to be implemented in the period after the completion of the project, the beneficiary responsible for their implementation, their objective, the time and spatial framework for their implementation, the estimated costs, the possible sources of funding and which ones should be given higher priority.

3. Monitoring and Research Activities

Targeted trapping actions using floating platforms are the most effective method, both for determining the distribution and size of the American mink population, and for controlling the population and keeping it at low levels, based on the results of Action C1. More specifically, for the next 3 years, a tracking-trapping period will take place each year during the months of September to October, comprising a total of 15 tracking days and 10 trapping days. The actions will involve the monitoring of a total of 74 floating platforms, distributed around the perimeter of Lake Kastoria and Mikri Prespa and along the Ladopotamos River (Figure 1).

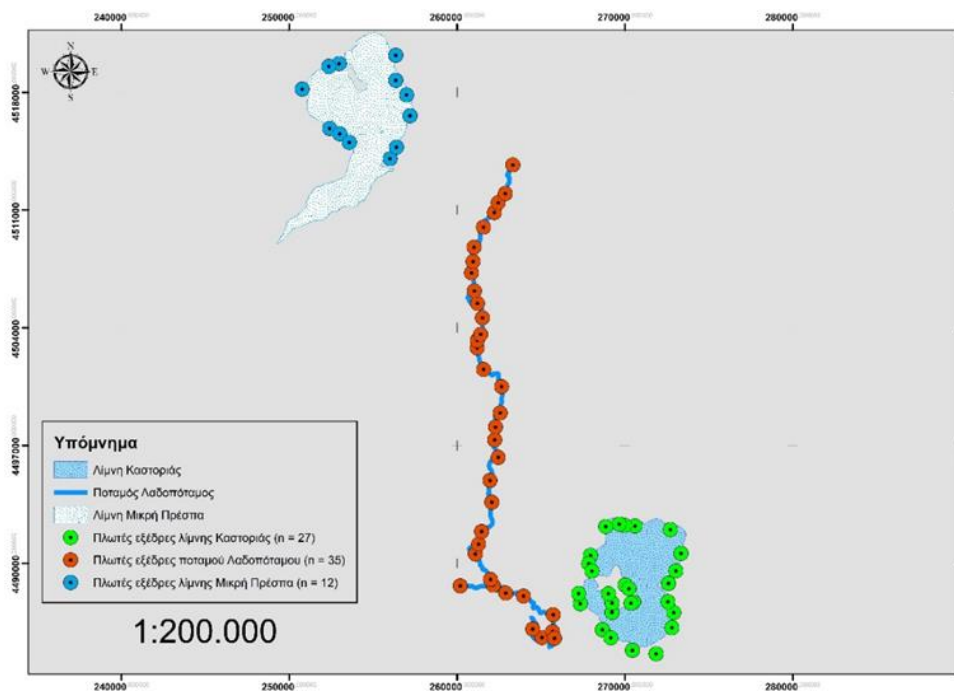


Figure 1. Spatial distribution of the floating platforms ($n = 74$) to be monitored during After - LIFE.

Tracking will be carried out by a team of 3 people, while trapping will be carried out by 1 person, using "smart" control systems (remote monitoring mechanism for activating/deactivating traps). In case of capture of American mink individuals, they will be culled using carbon monoxide mobile units of the Panhellenic Fur Breeders' Association, the terms of cooperation with which will be defined in a Memorandum of Understanding for the After - LIFE period, expected to be signed until September 2024. On the contrary, in case of capture of individuals of other species, they will be released remotely immediately by the operators of the "intelligent" control systems described above.

Estimation of the cost of tracking actions:

Staff: $3 \text{ people} \times 250 \text{ €/day} \times 15 \text{ days} = 11.250 \text{ €/year}$ + Transfer: $3 \text{ people} \times 100 \text{ €/day} \times 15 \text{ days} = 4.500 \text{ €/year}$

Total cost for 3 years: $(11.250 + 4.500) \times 3 = 47.250 \text{ €}$

Estimation of the cost of trapping actions:

Staff: $1 \text{ person} \times 250 \text{ €/day} \times 10 \text{ days} = 2.500 \text{ €/year}$ + Transfer: $1 \text{ person} \times 100 \text{ €/day} \times 10 \text{ days} = 1.000 \text{ €/year}$

Total cost for 3 years: $(2.500 + 1.000) \times 3 = 10.500 \text{ €}$

Equipment/consumables (for the whole 3 years):

«Smart» trap control mechanism: $15 \text{ pieces}^* \times 300 \text{ €/piece} = 4.500 \text{ €}$ (*includes accessories such as batteries and annual subscription cost) Floating platforms: $50 \text{ pieces} \times 120 \text{ €/piece} = 6.000 \text{ €}$

Clay/sand/baskets: 500 €

Therefore, the total cost of the above actions for a period of 3 years is estimated to be **68.750 €**.

At the same time, knowledge of the ecological and biological parameters of the species investigated in Action C2 of the project is a basic prerequisite for the design and implementation of targeted management measures. In this context, the After - LIFE period will investigate the factors determining the establishment of new areas by the species (e.g.: water quality, distribution of prey species) and will continue to analyze the stomach contents of captured individuals in order to investigate possible changes in their diet. The analyses of the data from the above actions will be carried out by the Laboratory of Wildlife and Freshwater Fisheries of the Aristotle University of Thessaloniki, with the commissioning of undergraduate and postgraduate projects.

The Early Warning System (EWS) and rapid response platform for the American mink and other invasive mammal species will contribute in the same direction. HOMEOTECH will support the transfer of the platform to the Hellenic Hunters' Confederation (KSE), in order to develop and promote it to directly interested parties (Forest Service, Management Units of Protected Area and fur breeders), but also to the KSE members, which amount to 200,000 hunters and 7 Hunting Federations at national level (scientific staff and gamekeepers), as they have direct contact with nature and are valuable for the use of this platform. The Wildlife Laboratory of the Department of Forestry and Natural Environment of the Aristotle University of Thessaloniki (AUTH) will be scientifically responsible for the platform and will have administrator rights. Citizens and competent bodies will be able to log the presence of a species through the platform, but this will first have to be verified by the AUTH or

another member of the scientific committee that will be appointed to check the validity of the records and determine the plan of action.

The role of KSE and its Hunting Associations includes nature conservation and wildlife management projects, such as swine fever and rabies. In addition, through the management of the platform, KSE could set up rapid response teams in the future to manage invasive alien mammals of community interest, thus facilitating communication and coordination between the stakeholders responsible for recording and controlling populations of species that are dangerous to the ecosystem. The constraints for the implementation of the above actions are related to the need to define responsibilities for KSE and the cooperation with the Forest Services and the Management Units of Protected Areas (NECCA) that will need to be established. Efforts will be made in the next year to issue an administrative act on responsibilities for KSE related to the management of the EWS and a Memorandum of Understanding will be signed between the agencies involved in its implementation. The estimated costs for the maintenance of the platform will be initially undertaken by HOMEOTECH (own resources) and then by KSE. These include hosting, domain and maintenance of the website and additional staff costs for data management, verification and preparation of action plans and task forces in the future.

In addition, the ArcGIS Survey 123 form which was developed by the Forest Management & Remote Sensing Lab will continue to operate, under the management of the Wildlife Lab, in order to utilize the data collected for research purposes. This functionality has no additional cost as it is included in the software license held by AUTH.

4. Monitoring actions

As part of the assessment of the changes in the ecosystem and biodiversity caused by the presence of the American mink, surveys of the population of protected bird species and the otter population in the area were carried out. The time period of the surveys of the protected species, and especially of the avifauna, was limited during the project. Furthermore, the conclusions drawn from the surveys were related to the period when the coronavirus was at its peak, when movements were limited and the environment was under less human pressure than normal. Therefore, new data for the study area are likely to arise after the completion of the project. Monitoring of priority species is planned to continue in the After - LIFE period, for three years by the Wildlife Lab at a cost of 6000€/year.

The recording of avifauna will be carried out in Lake Kastoria and Prespes with the methodology followed during the D1 action of the project. Monitoring of Otter and American mink will include Ladopotamos in addition to the above lakes and will be carried out using the line transect method and wildlife cameras. Two visits will be carried out each year, one during the winter season (January-February) and one during the summer season (May-June), for a period of three years. Each visit will last 5 days and field data collection will be carried out by 2 persons. The cost of the above actions is estimated as follows:

Estimated cost

Cost/per visit: 5 days ή 10 person days (5 days × 2 people) × 250€/per day (fee, accommodation, food, transfer) + 100€/day (car rent) = 3000€/visit

Annual cost: 3000€/per visit × 2 visits= 6000€/per year

Therefore, the total cost of the above actions for a period of 3 years is estimated to be **18.000 €**.

5. Communication, Information & Networking actions

The communication activities that took place during the project will continue in the After-LIFE period and will include the maintenance of the project website for at least three years after the completion of the project. Facebook, Instagram and YouTube pages will also continue to be updated by HOMEOTECH, as an additional way of promoting activities and pursuing partnerships. HOMEOTECH will also continue to support the online, educational [Nature protectors](#) game available through the "Citizen Science" section of the website <https://lifeatias.gr>, which will be promoted through the environmental education activities planned by DAEWM and DAMT.

The project partners will seek new collaborations and participation in other relevant environmental projects to further exploit the results of LIFE ATIAS.

In addition, the Decentralized Administrations will help disseminate the results of the project by organizing educational visits and talks to schools and stakeholders. In particular, the LIFE ATIAS project team of DAEWM will continue to organize information events for primary school children. Each event will include a short presentation of the project and at the end of the event a competition will be held. Children will be given blocks and art supplies and will be invited to draw an American mink and the best drawing will win a scholarship or a prize. In addition, the children will be given information material about the project (e.g. a t-shirt or keychain with a lanyard or a bag or a case or a notebook or a scroll or a usb flash drive). The cost (approximately) is €10,000 to organize the events and an additional €10,000 for information material for 1,000 children.

Moreover, DAEWM will network with foreign institutions dealing with invasive and protected species, either plants or animals, as well as with the LIFE IP 4 Natura programme, with the use of funding for the dissemination of the project results in the Region of Western Macedonia. For the implementation of actions in the context of environmental education, equipment for presentations will be needed, which will include a laptop, projector, pointer, mouse, multifunctional machine and portable sound system, with an estimated cost of 3.000 €. Finally, at the entrance of the ZEP building, it is proposed to install a giant LED screen to project the content of all the projects and actions of the DAEWM with videos, presentations and photos, in order to inform the public and present the results of the project, at an estimated cost of €2,000.

The LIFE ATIAS Project Team of DAMT in the framework of the After - LIFE Plan will continue to maintain the information section for the project on the website of the organization and to inform about the LIFE ATIAS project, its deliverables and archives, thus contributing to informing the public about environmental issues and the possible impacts of the presence of alien species in ecosystems.

It will also contribute to communication actions to exploit and disseminate the results of the project by creating synergies with other relevant environmental projects under European and national programmes. Two (2) people from the LIFE ATIAS Project Team of the DAMT will be employed for the above Actions, using own resources of the Agency (travel orders outside the headquarters with official cars).

The promotion of the project to the scientific community for further research and data provision will continue through the publications that will be carried out by the Wildlife Laboratory and the Forest Management & Remote Sensing Laboratory of the Department of Forestry and Natural Environment of the Aristotle University of Thessaloniki. These publications will be promoted in national and international conferences/meetings, increasing the circle of relevant stakeholders.

The Hunting Federation of Macedonia and Thrace (HFMT), as a member of the EUROSITE network and FACE, will continue to raise awareness on management efforts regarding IAS; and also inform all its members and staff about the EWS application and encourage them to use it. This effort is expected to be further supported by the Hunting Confederation, after the finalization of the MoU proposed by the LIFE ATIAS consortium.

Quantitative targets for the After-LIFE plan have been set in the beyond end values of the KPIs (Deliverable D2.1), estimated 3/5 years after the completion of the project, and are summarized in the following table:

Key dissemination actions and Targets

Responsible	Description	Target ¹	Unit	KPI ² code
HOMEOTECH	Project website and YouTube channel update & maintenance	2,463	No. of website unique visits	11.1
HOMEOTECH	New posts regarding the continuation of project actions and their results	25	No of posts	11.2
DAEWM	Environmental education, LIFE ATIAS and Nature protectors' game presentation in primary schools	1,000	students	1.6
AUTH, DUTH	Education of university students and presentation of LIFE ATIAS actions (1 seminar annually)	304	University students overall	12.2

¹ Additional people reached after the end of the project

² Key-project indicator

Responsible	Description	Target¹	Unit	KPI² code
Hellenic Hunters' Confederation (KSE) & Federations	Professional training of scientific staff & game guards	10	No of individuals	12.2
	Promotion of EWS application use to its members	1,000	No of users	-
Panhellenic Fur Breeders' Association	Information on the LIFE ATIAS project and promotion of the use of the EWS to all the members of the association	32	Fur breeders	1.6

In cases that it is not possible to verify the target value (i.e. no of EWS users from hunting federations), no KPI has been set.

6. Farm Risk Management actions

The use of the Early Warning and Rapid Response (EWS) system by authorized users of each farm will facilitate communication between stakeholders and promote transparency and cooperation.

At the same time, the Panhellenic Fur Breeders' Association promotes the creation of a national certification body, following European standards regarding the adoption of measures to avoid incidents that endanger biosecurity and promote animal welfare. Such a protocol is the European WelFur protocol, which is part of a wider Furmark programme, also active in America. Furmark is a certification programme that promotes sustainability and certifies that a product meets national or international standards. This is the basis for a stable certification programme covering all European fur farms and will include not only animal welfare but also the environmental impact of the activity, such as the carbon footprint, and the safety of the farms. The harmonization of Greek farms with international standards is necessary and is an objective of the After-LIFE plan, in order to reduce the risks involved and to comply with all the standards relating to sustainable fur farming and processing.

The Hellenic Fur Federation intends to continue the operation of the educational platform <https://platform.eclasslifeatias.gr/> and the enhancement of its educational and informative material, through the KINSEP "OASIS".

7. Funding sources

European Union Funding Programs

Other research projects, either new or on-going, funded by LIFE (i.e. on-going LIFE IP 4 NATURA project in which the DAEWM is a partner), Interreg, Horizon Europe or the European Regional Development Fund (ERDF)

National and Regional Government Funds

Ministry of Environment and Energy through the Green Fund (Prasino tameio) or the Natural Environment & Climate Change Agency, responsible for overseeing the Management Units of Protected Areas.

Ministry of Rural Development & Food (YPAAT)

Region of Western Macedonia, through the:

- SDAM funding (Just Development Transition to de-lignitization in Greece)
- Partnership Agreement for Regional Development 2021-2027 (ESPA), “Western Macedonia” Programme 2021 – 2027
- National Development Programme (Sectoral & Regional)

Private Sector Partnerships

- Panhellenic Fur Breeders' Association and Hellenic Fur Federation
- Hellenic Hunters' Confederation
- Environmental NGOs and Foundations, that often support ongoing environmental monitoring efforts, such as the Public Power Corporation (DEI)³

The afore-mentioned sources are mostly open for the submission of applications, at least once a year. Currently, partnerships are being built through the MoUs prepared by the LIFE ATIAS consortium, in order to apply jointly for funding.

³ Public Power Corporation

8. Summary of actions & required resources

The table below summarises the actions foreseen to continue after the completion of LIFE ATIAS and the resources needed for their implementation.

ID	Objectives and actions	When/ how often	Area of implementation / Means of implementation	Implementation Manager	Funding sources	Estimated cost	Priority (High, Medium, Low)
1	Actions for the Control and Research of the American mink and other invasive mammal species						
1.1	Use of traps on floating platforms	3 years, every autumn, September-October	Little Prespa, Lake of Kastoria, River Ladopotamos	Department of Forestry and N.E. (Wildlife Laboratory) AUTH, Panhellenic Breeders Association	Region of Western Macedonia, Ministry of Rural Development & Food	22,916 €/year 68,750 €/total (the price refers to the implementation of all actions 1.1-1.2)	High
1.2	Investigation of colonization of new areas by the species						High
1.3	Use of mobile carbon monoxide units	3 years, every autumn, September-October	Little Prespa, Lake of Kastoria, River Ladopotamos	Panhellenic Association of Breeders of Fur-bearing Animals	Region of Western Macedonia, Ministry of Rural Development & Food	1000 €/ year	High
1.4	Stomach content analyses	At the end of each capture period (for 3 years in total)	Prespes/Kastoria	Department of Forestry and Environmental Management and N.E. DUTH	Regular budget of DUTH	300 €/year for consumables	High
1.5	Operation of the EWS Platform	At least for 3 years	Web	Hunting Confederation of Greece - HOMEOTECH	Own resources, Green Fund, Ministry of Environment and Natural Resources	1500 €/ year	High

ID	Objectives and actions	When/ how often	Area of implementation / Means of implementation	Implementation Manager	Funding sources	Estimated cost	Priority (High, Medium, Low)
1.6	Function of ArcGIS 123 form	No limit	Web	Department of Forestry and N.E. (Wildlife Laboratory) Aristotle University of Thessaloniki	Own resources	Not required	Low
2	Monitoring-Mapping actions for priority species and American mink						
2.1	Monitoring of Protected Species: Avifauna	For 3 years, winter (January-February) and spring-summer (May-June)	Prespes, Kastoria	Department of Forestry and N.E. (Wildlife Laboratory) Aristotle University of Thessaloniki	Region of Western Macedonia, Green Fund, YPEN	6,000€/year (the price refers to the implementation of all actions 2.1)	High
2.2	Monitoring of Protected Species: Otter	For 3 years, winter (January-February) and spring-summer (May-June)	Prespes, Kastoria, Ladopotamos	Department of Forestry and N.E. (Wildlife Laboratory) Aristotle University of Thessaloniki	Region of Western Macedonia, Green Fund, YPEN		High
2.3	American mink population monitoring	For 3 years, winter (January-February) and spring-summer (May-June)	Prespes, Kastoria, Ladopotamos	Department of Forestry and N.E. (Wildlife Laboratory) Aristotle University of Thessaloniki	Region of Western Macedonia, Green Fund, YPAAT, SDAM ⁴		High
3	Communication, Information & Networking actions						
3.1	Project Website Maintenance	At least for 5 years	Web	Homeotech	Own resources	500 €/ year	High

⁴ SDAM - Just Development Transition to de-lignitization in Greece

ID	Objectives and actions	When/ how often	Area of implementation / Means of implementation	Implementation Manager	Funding sources	Estimated cost	Priority (High, Medium, Low)
3.2	Maintaining Social Media Accounts	At least for 5 years	Web and apps	Homeotech	Own resources	500 €/ year	High
3.3	Exploitation - dissemination of results through synergies with other projects	No limit	-	All partners	Own resources	-	High
3.4	Educational visits and talks to schools and stakeholders	At least for 2 years	Central and Eastern Macedonia & Thrace	DAMT	Own resources	-	High
3.5	Promotion & dissemination of project results - Environmental education	At least for 2 years	Epirus and Western Macedonia	DAEWM	Green Fund, DEI ⁵ , SDAM, LIFE IP 4 NATURA	25,000€	High
3.6	Presentation of research results - Scientific publications & conferences	No limit	Scientific articles/publications, Presentations at conferences	AUTH	Own resources Other research projects	-	High
3.7	Raising awareness IAS and encouraging the use of the EWS app by its members	After the finalization of the MoU, starting in 2025 and beyond	National wide/ SMS, information events, other internal communication channels	Hellenic Hunting Confederation	Own resources, in synergy with on-going activities	-	High
4	Farm Risk Management Actions						

⁵ Public Power Corporation

ID	Objectives and actions	When/ how often	Area of implementation / Means of implementation	Implementation Manager	Funding sources	Estimated cost	Priority (High, Medium, Low)
4.1	HFF e-learning platform	At least for 3 years	Web	HFF	Own resources	1000 €/ year	High