LIFE Project Number
LIFE07 NAT/GR/000286

FINAL Report
Covering the project activities from 01/01/2009 to 30/06/2013

Reporting Date
25/09/2013

LIFE+ PROJECT NAME or Acronym
Restoration of the *Pinus nigra* Forests on Mount Parnonas (GR 2520006) through a structured approach (PINUS)

Data Project

Project location	Parnonas mountain, Peloponissos, Greece
Project start date:	01/01/2009
Project end date:	30/06/2013 **Extension date:**
Total Project duration (in months)	54 months **Extension months:** 0
Total budget	3,035,791.00 €
EC contribution:	2,270,468.09 €
(%) of total costs	74.79
(%) of eligible costs	74.79

Data Beneficiary

Name Beneficiary	The Goulandris Natural History Museum/Greek Biotope Wetland Centre
Contact person	Mrs Vasiliki Tsiaoussi
Postal address	14th km Thessaloniki- Mihaniona, 57001, Thermi, Greece
Visit address	14th km Thessaloniki- Mihaniona, 57001, Thermi, Greece
Telephone	+30-2310-473320 + direct n°121
Fax:	+30-2310-471795
E-mail	vasso@ekby.gr
Project Website	www.parnonaslife.gr

List of content

1. List of key-words and abbreviations.

Decentralized Administration of Peloponnese – Western Greece & Ionian Sea (DAP)
Decentralised Administration of Macedonia-Thrace (DAMTH)
EC : European Commission, DC Environment
EEA/EFTA: European Economic Area/European Free Trade Association
EKBY: Greek Biotope/Wetland Centre
FNO: Forest Nursery of Organi, Directorate of Reforestation of the Region of East Macedonia and Thrace
FSS: Forest Service of Sparti
GDF: General Directorate for the Development and Protection of Forests and the Natural Environment
IR: Inception Report of 25/9/2009
MB: Management Body of mount Parnon and Moustos wetland
MinRD: Ministry of Rural Development and Food
MinEnv: Ministry of Environment, Energy and Climate Change
MTR: Midterm Report of 18/10/2011
PR1: 1st Progress Report of 28/2/2010
PR2: 2nd Progress Report 28/2/2011
PR3: 3rd Progress Report of 30/9/2012
REMTH: Region of Eastern Macedonia and Thrace
RP: Region of Peloponissos

2. Executive Summary

The Special Area of Conservation (SAC) GR2520006 "Mount Parnonas (kai periohi Malevis)" and particularly the forests of black pine within the SAC, have been severely damaged in August 2007 by a vast forest fire that spread to 1,921 ha of black pine forest.
Black pine has very low or nil post-fire regeneration. Scattered distribution in Parnonas further increased the danger of local extinction of the priority habitat type, especially in the most isolated areas, where arrival of propagules was almost impossible.

To address the effects of the 2007 fire on black pine forest on Mount Parnonas and to improve the planning of post fire restoration of black pine forests in general, the project LIFE PINUS (LIFE07 NAT/GR/000286 «Restoration of *Pinus nigra* forests in Parnonas (GR2520006) through a structured approach ") was proposed in 2008 and implemented from 2009 to 2013.

The main objectives of the project were:

- the demonstration of the application of a structured approach to restore burnt areas of the priority habitat type "Mediterranean pine forests with endemic black pine" (*9530)
- the restoration of 290 ha of the priority habitat type "Mediterranean pine forests with endemic black pine" in the SCI GR2520006 "Oros Parnonas (kai periochi Malevis)"

To restore the burnt priority habitat type "Mediterranean pine forests with endemic black pine" at the SAC GR2520006 Oros Parnonas (kai periochi Malevis) the project adopted an integrated approach, starting with the assessment of the current situation, carrying through to planning and implementation of measures, and ending in monitoring of their effectiveness.

Preparatory actions, namely actions A.1 (assessment of impact of fires on the target habitat type), A.2 (phase 1: development of the structured approach to restore forests), A.3 (technical studies) and A.4 (phase 1: design of the monitoring system and establishment of monitoring plots) were completed in the first two years of project implementation.

Preparatory actions were followed by restoration actions (Actions C). These included plant production, planting of seedlings and the treatment of plants, all under scientific guidance.

Overall project operation and monitoring as well as public awareness and dissemination of results lasted throughout the project. Monitoring involved both the effectiveness of project implementation (Action E.3a with input from Action E.4) and the success of restoration (phase 2: data collection of Action A4 and Action E.3b with input from Action E.4).

The implementation of restoration (Actions C), in combination with collaboration with networks (Action E.2) and the meeting for the dissemination of project results (Action D.5) provided input on the effectiveness of the structured approach developed during phase 1 of Action A.2, and enabled the completion of this action on project end.

The project partnership comprised the Greek Biotope/Wetland Centre- EKBY, as project beneficiary, and, as associate beneficiaries, the Decentralized Administration of Peloponnese – Western Greece & Ionian Sea- DAP, the Management Body of mount Parnonas and Moustos-MB and the Decentralised Administration of Macedonia-Thrace-DAMTH. The General Directorate for the Development and Protection of Forests and the Natural Environment-GDF of the Ministry of Environment, Energy and Climate Change was the project co-financier.

EKBY implemented preparatory actions A.1 (assessment of impact), A.2 (structured approach) and A.4 (monitoring) and contributed with scientific advice and support to the other tasks. It was further responsible for project management. The DAP, and more specifically its Forest Service of Sparti (FSS), prepared the technical studies for the restoration works (Action A.3) and implemented those works (Action C.1). It further played a significant role in the design, testing and evaluation of the structured approach to restore forests demonstrated in the project, and in monitoring activities. The DAMTH undertook the production of plants for restoration works, in the Forest Nursery of Organi (Action C.1). The MB promoted public awareness and dissemination of the project results. It further provided an informed opinion on the structured approach to restore forests. The contribution of GDF was substantial not only in financial terms, but also in the steering of the project and the dissemination of its results, since the GDF is the central government authority responsible for the conservation and management of forests in Greece and provides guidance to all decentralised forest services.

The project Steering Committee was set up in June 2009, consisting of representatives of the project beneficiaries and the project co-financier. This Committee provided strategic guidance and supported the project team in addressing major issues during project implementation. The project was managed by: a) a Project Manager, appointed by the EKBY, b) the Project Scientific Coordinator also appointed by the EKBY and c) Action leaders for action groups A, C and D, who come from EKBY, the FSS, and the MB respectively. Senior EKBY personnel participated in the project coordination and monitoring tasks. Administration/Financial Officers were included in the project management scheme. In addition to permanent employees of project partners, temporary personnel was appointed at the FSS to enhance the project team Their main tasks were the protection and maintenance of the plants in the restoration areas and support to monitoring actions. The project management scheme proved very effective and the collaboration among partners was excellent.

The Grant agreement between the European Commission- EC and EKBY for the implementation of the project was signed on 26.11.2008. Two project modifications proved necessary: (i) Supplementary Agreement no1 to Grant Agreement, which was signed on 23/07/2009, by which the participation of DAMTH in the project was approved[1] and (ii) the 2nd Amendment to Grant Agreement, which was signed on 21/11/2011 and involved administrative adjustments deriving from the Kallikratis reform in public administration. The project Partnership Agreement was signed among project beneficiaries on 02/02/2009 and was amended on 12/10/2009, following Supplementary Agreement no1 to Grant Agreement.

The major difficulty encountered in project implementation was the delay in hiring temporary personnel at the FSS due to the strict procedures that applied for hiring personnel in the public sector in Greece since the economic crisis. This problem was solved in as late as September 2011. Meanwhile, the FSS permanent personnel undertook to implement actions initially planned for the temporary personnel. Furthermore, the start/end dates of certain actions were rescheduled to better meet the project needs. However, the project managed to deliver all planned outputs and was completed within the original deadline.

Action A.1 deliverable is the "*Report on the assessment of forest impacts to the habitat type "Mediterranean pine forests with endemic black pine" accompanied with detailed GIS mapping of the affected area*". This report includes fire extent, fire severity as it relates to the

[1] DAMTH had not been included in the original project partnership scheme. However, conditions at the forest nurseries of DAP did not prove suitable for the production of plants for the project. Therefore, the Organi Forest Nursery of DAMTH undertook this task and DAMTH became project associated beneficiary.

habitat's area affected, effects on the habitat, location of unburnt patches, effects on protected species, and integrity of the SCI and is accompanied with detailed GIS map of the affected area. The assessment showed that the fire affected 9.6% of the area of the Site of Community Importance (SCI). In regard specifically to the priority habitat type of black pine forests, 1921 ha where burnt, representing 35.91% of the 5,350 ha it occupies in the SCI. However, there remained islands of black pine live trees, totaled 420.1 ha, which serve as seed sources and forest regeneration centers. Finally, there is strong diversification effect by elevation zone from north to south of the burnt area.

The A.2 Action produced two deliverables. The first, "*Guidelines for the application of a structured approach to restore Black pine habitats*", describes a five-steps approach that proposes the use of a mix of criteria, the nature of which are summarised as follows: i) Exclusion criteria (such as natural regeneration potential) supported by literature and expert opinion, including criteria with threshold values; ii) biotic, abiotic and technical criteria that lead to a hierarchical rating of areas to be restored; the criteria are supported by literature and expert opinion and the ratings are mostly supported by expert opinion. In the second deliverable, "*Proposal for the implementation of restoration measures on at least 290 ha of Black pine forests on mount Parnonas*", the project applied the approach proposed in the guidelines and concluded with the identification of the stands to be restored, the restoration objectives and the restoration measures. Based on this, the FSS elaborated the "*Technical implementation study*" for restoration works on the project site (Action A.3 deliverable).

The structured approach was presented in international conferences and received positive comments from experts and practitioners in Greece and other Mediterranean countries.

All steps of the structured approach were implemented with success by the project. In specific, areas were excluded from artificial restoration in order to prevent: a) disruption of desirable post-fire ecological processes, e.g. at patches with abundant natural regeneration and b) selection of patches with disadvantages for artificial restoration (e.g. harsh climatic conditions). The remaining were ranked by attributing priority to forest patches with the best opportunities for: a) successful re-establishment of the black pine trees and b) achievement of the favorable conservation status of the species depending on black pine forests. The most suitable patches were selected covering an area of 498.28 ha. Given the objectives and budget of the LIFE project, from this area, 291.33 ha were proposed for artificial restoration during the period 2009-2013 (duration of the LIFE PINUS project). These patches were verified as suitable with fieldwork. Planting with container seedlings was selected as the most appropriate method for the area. Due to preparatory work the FSS had done (salvage logging, maintenance of road network etc) planting was the only necessary restoration measure.

The production of plants for black pine forest restoration started in spring 2009 and their nursering continued until 2011. Some 800,000 plants were produced. Around 12,000 dried out during transportation, 448,000 were initially planted, 155,000 plants were used for replacements of failures and 185,000 were donated to the FSS in order to be used in the Forest Restoration Works II of the European Economic Area/European Free Trade Association (EEA/EFTA) project "Restoration of the forests on Mount Parnonas and conservation guidelines for Mount Taygetos in Lakonia".

Restoration works started on 17/12/2010 and lasted until 17/5/2012. As a result of Action C.1, the project delivered 290 ha of restored black pine forest. After completion of the works under the restoration contract, the personnel of the FSS, notably the temporary project personnel, regularly visited the project area in order to protect the young plants from fire, illegal grazing, encroachments, and illegal logging.

Action A.4 involved the design and establishment of a monitoring system to evaluate: a) the effectiveness of restoration planning and the success of restoration, and b) the progress of natural regeneration. The design of the monitoring system is presented in deliverable "*Report on the establishment of monitoring plots"*. Monitoring natural regeneration, although not part of the initial project plan, was eventually included in the monitoring plan for gaining a better understanding of the restoration process and for better evaluating and finalising the structured approach demonstrated by the project.

Fieldwork for the collection of monitoring data for natural regeneration took place in 2010, 2011 and 2012 and comprised seedlings' survival and growth from the 13 permanent monitoring plots. Three monitoring reports were delivered respectively. The results showed that there was natural regeneration of the black pine and remarkable natural re-establishment of grassy vegetation in all burnt areas. In lower altitudes sclerophylous evergreen shrubs were also recovering well. Black pine regeneration appeared with different densities depending on the distance from alive trees.

Collection of data from 20 monitoring plots on the progress of artificial restoration, in order to assess its success, took place in 2011 and 2012. This data were taken into account for the replacement of dried plants during winter 2011-2012. Two monitoring reports were delivered respectively. From the analysis of the results, planting success was found to vary significantly depending on the altitudinal zone and reaching a maximum of 76% in the altitudinal zone of 1150-1300 m.

In the context of Action E.3 the project ordered high-resolution satellite images for years 2009 and 2013 in order to detect vegetation changes using the Normalized Difference Vegetation Index- NDVI. However, the NDVI values did not differ significantly except for the case of minimum values between areas artificially restored and naturally regenerated for the year 2013. The reason is that the minimum dimension of the pixels for which NDVI was calculated was much higher than the projection of the crown of the seedlings in the ground, even in the cases of natural regeneration, where plants were older. Taking this into account, it appears that at early stages of plant development, the use of multispectral images using NDVI or similar indicators is not recommended. The results are presented in the deliverable "*Assessment of black pine forest restoration on Mount Parnonas*".

Data collected from monitoring of both natural regeneration and artificial restoration are organised in an "*Electronic database filled in with baseline data*" (Action E.4 deliverable).

The project dissemination actions included: the project web site, a leaflet, a layman's report, notice boards, a documentary film, a conference for the post-fire restoration actions in black pine forests, a meeting for the dissemination of project results, and project presentation through press. The project extended the scope of dissemination activities to include information campaigns and production of promotional in order to enhance the effectiveness of dissemination. Overall, the project communicated and disseminated its objectives, actions and results effectively. In some cases dissemination results exceeded the targets.

There have been considerable environmental benefits from the project. Two hundred and ninety hectares (**290 ha**), i.e. 68% of the burnt area of the priority habitat type "Mediterranean pine forests with endemic black pine" in site GR2520006 was restored by the project. The restoration of another **250 ha** of this habitat type in site GR2520006, though carried out by the EEA/EFTA project, greatly benefited by the structured approach to black pine restoration of the project LIFE PINUS and the plants that the latter donated (Leverage effect). The undisturbed regeneration of another **341 ha** of black pine owes to the grazing ban and the efficient guarding by the project partner FSS (Synergies between recurring and non-recurring

actions). Overall the re-establishment of the black pine forest has begun in approximately 46% of the burnt area of the priority habitat type on on site GR2520006. The benefits from restoration and improved protection of the priority habitat type are underlined by the importance of the black pine forests of Parnonas, which: a) are part of the southern distribution of the habitat type for Greece and all Europe, b) represent around 7% of the total cover of the habitat type in all SCI's in Greece and c) belong to the very few areas (five) where specific habitat features such as representativity, conservation status and global assessment had been assessed as excellent until the fires of 2007.

The long-term conservation objectives that have been formulated in the "*After-LIFE Conservation Plan*" prepared by the project include: (i) Restoration of the mature black pine forest stands in the burnt area on Mount Parnonas (protection of the young trees, maintenance of seed stock, silvicultural treatments to enhance natural seeding effectiveness in re-establishing black pine), (ii) Further dissemination of the structured approach for restoration planning of burnt black pine forests to the Greek Forest Service and (iii) Continuation of the monitoring programme and promotion of the scientific research for the target priority habitat type" (Sub-) Mediterranean pine forests with endemic black pine".

The costs actually incurred by the project were 3.021.355,21 € (or 99,52% of the planned costs). Deviations between planned and actual costs do not exceed the allowed flexibility of 30.000€ and 10% per budget line. EKBY, as the coordinating beneficiary of the project, kept separate accounts for the project as part of the Analytical Cost Accounting System it uses. This system ensures that there is no overcharge or double financing either of the employee's monthly salary cost or any of the other costs allocated to the project. The project income came from the EC (74,79%), the GDF and own contributions of the project beneficiaries.

After completion of the project, an independent auditor, nominated by the coordinating beneficiary, verified the final statement of expenditure and income provided to the EC using the standard audit report form.

In conclusion, the LIFE PINUS project was implemented in accordance with its time plan, budget and specifications; it delivered its expected results and in some cases it exceeded its objectives. The project succeeded in demonstrating the structured approach and in disseminating it in Greece and abroad not only to experts and pertinent authorities, but also to the general public. The project, the structured approach and the other project results were widely presented in European and national meetings, were included in a special publication regarding the post-fire management and restoration of Southern European forests (Moreira κ. ά. 2012a) and has received several encouraging comments from European and Greek experts. Also the project received remarkable publicity by national and local media.

The project was successful not only in delivering results, but also in establishing close and smooth working relations among the project partners. The continuation of conservation actions after the end of the LIFE PINUS project will greatly benefit from this achievement.

3. Introduction

The project targeted the priority habitat type *9530 "Mediterranean pine forests with endemic black pine" at the SCI GR2520006 Oros Parnonas (kai periochi Malevis). Some 88% of the site is covered by forests, of which 38% are conifers (*Pinus nigra*, *Abies cephallonica*). Forests belong to the Greek State and are managed by the forest service. The project area lies within the area of jurisdiction of the Management Body of mount Parnon and Moustos wetland.
Black pine forests on Parnonas cover 3,845 ha, thus representing 6,9% of the total cover of the habitat type in all SCI's in Greece. Until 2007, the target priority habitat type had been assessed as having excellent representativity, conservation status and overall global conservation status. However, it was severely affected by the devastating wildfires that burst out in summer 2007 throughout Greece, but mainly on the Peloponnisos.
Black pine has very low or nil post-fire regeneration. Scattered distribution in Parnonas further increased the danger of local extinction of the priority habitat type, especially in the most isolated areas, where arrival of propagules was almost impossible. This threat became evident in August 2007 when 11.09% of the habitat type in the project area and in particular its southernmost was burnt.
There is growing consensus that insights from ecology and economy as well as social awareness factors should be brought together, if restoration efforts are to succeed. In Parnonas, the project addressed the need to restore the priority habitat with the demonstration of a structured, scientifically robust step-by-step approach, in order to plan accurately and restore effectively the burnt priority habitat type "Mediterranean pine forests with endemic black pine", taking into account its conservation requirements. Key stakeholders were involved in the endeavor.
The project objectives were:
a) Demonstration of the application of a structured approach to restore burnt areas of the priority habitat type "Mediterranean pine forests with endemic black pine" and
b) restoration of 290 ha of the priority habitat type 9530 "Mediterranean pine forests with endemic black pine" in the SCI GR2520006 "Oros Parnonas (kai periochi Malevis)".

4. Administrative part

4.1 Description of the management system

4.1.1. Working method

To restore the burnt priority habitat type "Mediterranean pine forests with endemic black pine" at the SCI GR2520006 Oros Parnonas (kai periochi Malevis) the project adopted an integrated approach, starting with the assessment of the current situation, carrying through to planning and implementation of measures, and ending in monitoring of their effectiveness. The working method is outlined in Figure 1.

Preparatory actions, namely actions A.1a & b (assessment of impact of fires on the target habitat type), A.2a & b (phase 1: development of the structured approach to restore forests), A.3 (technical studies) and A.4 (phase 1: design of the monitoring system and establishment of monitoring plots) were completed in the first two years of project implementation.

Preparatory actions were followed by restoration actions (Actions C).

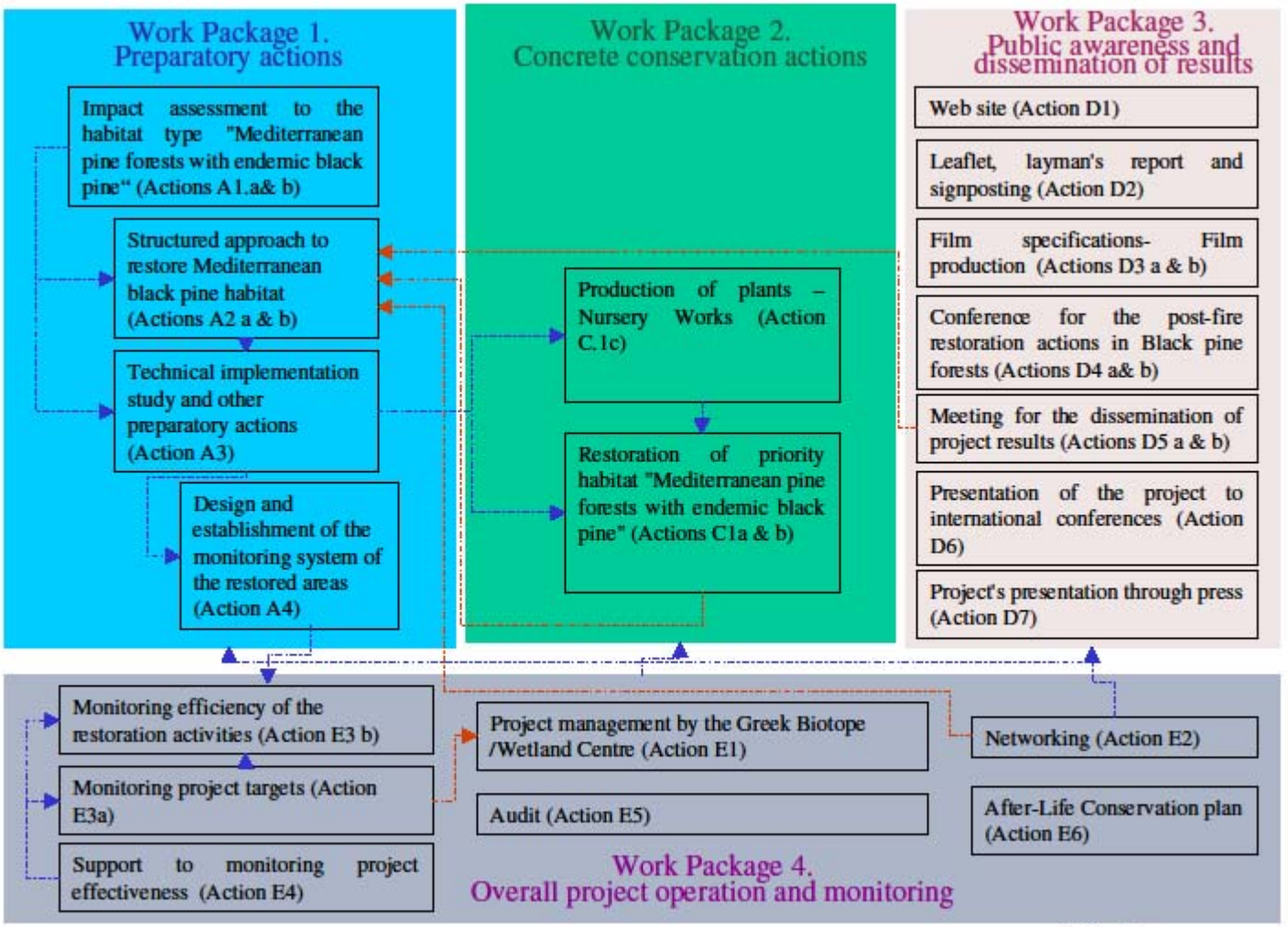


Figure 1. Schematic presentation of working method

Overall project operation and monitoring as well as public awareness and dissemination of results lasted throughout the project. Monitoring involved both the effectiveness of project implementation (Action E.3a with input from Action E.4) and the success of restoration (phase 2: data collection of Action A4 and Action E.3b with input from Action E.4).

The implementation of restoration (Actions C), in combination with collaboration with networks (Action E.2) and the meeting for the dissemination of project results (Actions D.5a & b) provided input on the effectiveness of the structured approach developed during phase 1 of Action A.2, and enabled the completion of this action on project end.

The potential for the continuation of conservation actions in SCI GR2520006 and for the application of the structured approach in other areas in the future was the subject of the After-Life Conservation plan (Action E.6).

4.1.2. Project partners and organisation

The project partnership initially comprised the Greek Biotope/Wetland Centre- EKBY, as project beneficiary, and as associate beneficiaries the Region of Peloponissos-RP and the Management Body of mount Parnonas and Moustos-MB. The General Directorate for the Development and Protection of Forests and the Natural Environment-GDF of the Ministry of Environment, Energy and Climate Change was the project co-financier. A Partnership Agreement was signed among them on 02/02/2009. A copy was included in Annex 1 of the Inception Report-IR (see also Annex 7.1).

Two modifications of this partnership scheme proved necessary during the project implementation:

- For technical reasons relating to the suitability of conditions (availability of water and plant health conditions) in forest nurseries in the RP, the plants used for reforestation could not be produced by the RP. Instead, they had to be produced at the Organi Forest Nursery of the Region of East of Macedonia & Thrace-REMTH. The latter had been found appropriate to undertake the plant production, since they had suitable conditions and applied techniques that enhanced the potential of plants to adapt prior to planting. For this reason, REMTH was included as project associate beneficiary through Supplementary Agreement no1 to Grant Agreement, which was signed on 23/07/2009. Following the latter, project partners signed a revised Partnership Agreement. A copy of this was given in Annex 1 of the 1st Progress Report-R1.

- Later on, in the context of the new regional administrative structure of Greece put in place by the Kallikratis reform (Law 3852/2010) since 1/1/2011 the Decentralized Administration of Peloponnese – Western Greece & Ionian Sea- DAP and the Decentralised Administration of Macedonia-Thrace-DAMTH replaced the RP and the REMTH respectively. The above developments were reflected in the 2nd Amendment to the Grant Agreement. In accordance with Greek law no modification to the partnership agreement was needed as the new bodies undertook the commitments of their predecessors automatically.

Therefore, the project partners finally were: EKBY, DAP, DAMTH and MD. Each project partner provided valuable inputs to the project in accordance with their expertise and competence. EKBY implemented preparatory actions A.1a, A.2a and A.4 and contributed with scientific advice and support to the other tasks. It was further responsible for project management. The DAP, and more specifically its Forest Service of Sparti (FSS), prepared the technical studies for the restoration works (Action A.3) and implemented those works (Action C.1.a). It further played a significant role in the design, testing and evaluation of the

structured approach to restore forests demonstrated in the project, and in monitoring activities. The DAMTH undertook the production of plants for restoration works, in the Forest Nursery of Organi (Action C.1.c). The MB promoted public awareness and dissemination of the project results. It further provided an informed opinion on the structured approach to restore forests. The contribution of GDF was substantial not only in financial terms, but also in the steering of the project and the dissemination of its results, since the GDF is the central government authority responsible for the conservation and management of forests in Greece and provides guidance to all decentralised forest services.

The project organisation chart and personnel are presented in Figure 2. The project Steering Committee was set up in June 2009, consisting of representatives of the project beneficiaries and the project co-financier. This Committee provided strategic guidance and supported the project team in addressing major issues during project implementation. The project was managed by: a) a Project Manager, appointed by the EKBY, b) the Project Scientific Coordinator also appointed by the EKBY and c) Action leaders for action groups A, C and D, who come from EKBY, the FSS, and the MB respectively. Senior EKBY personnel participated in the project coordination and monitoring tasks. Administration/Financial Officers were included in the project management scheme. In addition to permanent employees of project partners, temporary personnel was appointed at the FSS to enhance the project team Their main tasks were the protection and maintenance of the plants in the restoration areas and support to monitoring actions.

There have been several meetings of the Steering Committee, where project progress was assessed, corrective actions were decided and future actions were planned. Meetings of the project team took place at regular intervals. During those meetings, the following, inter alia, were examined: project progress, quality of the work, adoption of appropriate actions in order to address deviations from project planning, submission of project reports, site visits of the external monitoring team. Furthermore, there was frequent communication among project team members through e-mails and telephone. The project manager had also frequent communication with the GDF as the national competent authority for forest restoration policies and guidelines. Project personnel participated in a LIEF kick-off meeting organised by the EC as well as in a working meeting for the development of guidelines for managing forests in N200 sites, organised by the EC, in Brussels on 22/5/2013. Finally, there have been site meetings of the external monitoring team, which were accompanied by the project manager and team members. All these meetings are detailed in Annex 7.1 of the present report.

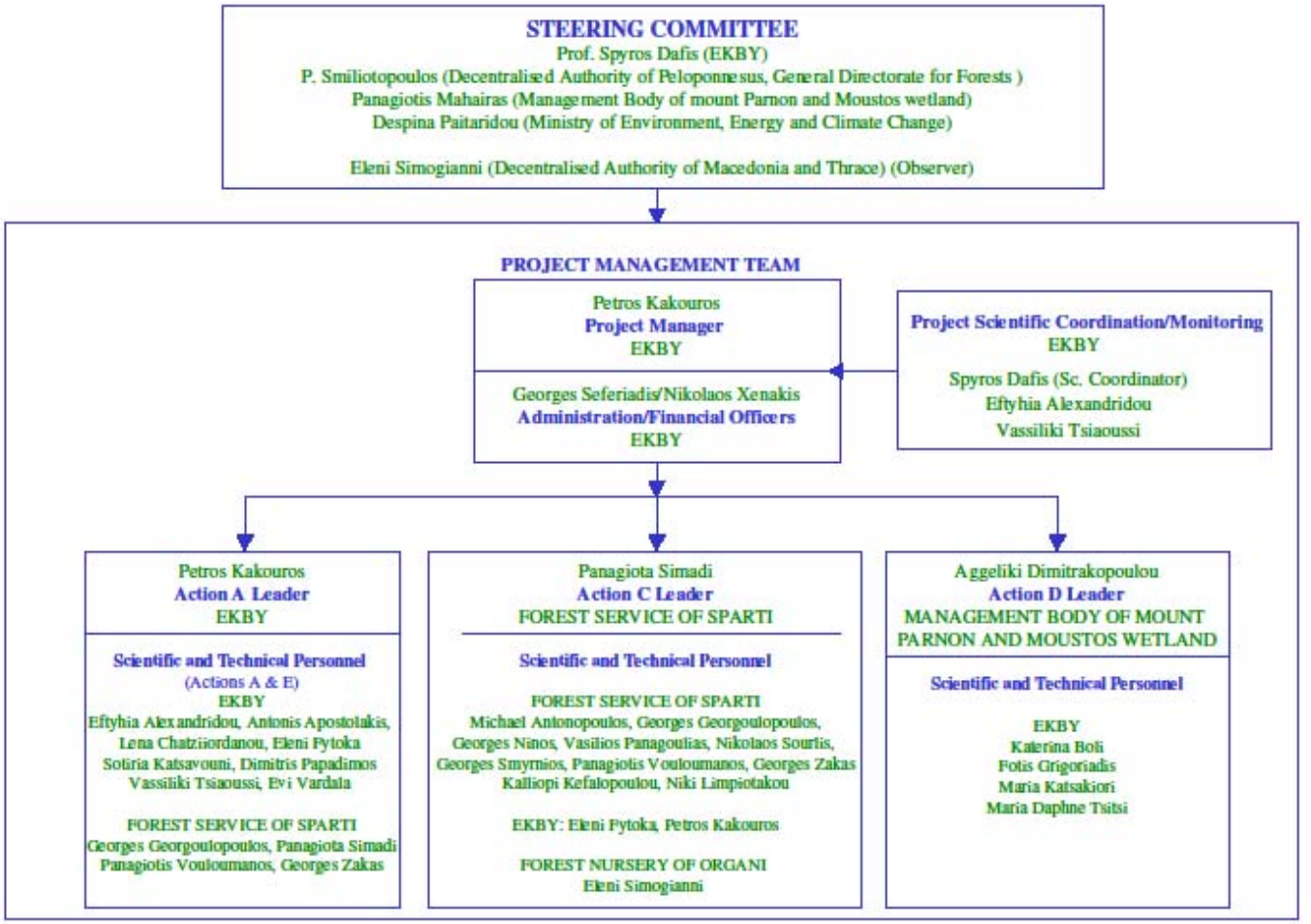


Figure 2. Project organisation chart

Version: Final report

4.2 Evaluation of the management system

The project was managed in accordance with the Quality Management System of EKBY, which is certified according to the ISO 9001:2000 standard for Quality Management Systems. Key components of the project management process under this system are sound planning, the monitoring of project targets, and the undertaking of preventive and corrective action when there is risk of reduced performance/deviations from the plan.

The project management scheme proved very effective and the collaboration among partners was excellent. The major difficulty encountered was the delay in hiring temporary personnel at the FSS due to the strict procedures that applied for hiring personnel in the public sector in Greece since the economic crisis. This problem was solved in as late as September 2011. However, thanks to the remarkable sense of commitment to the project shown by the FSS personnel, who undertook to implement actions initially planned for the temporary personnel, the project managed to observe deadlines.
The accomplishment of the project objectives and the successful delivery of planned outputs are documented through the project output indicators (see Final indicators tables in Annex 7.2). In specific, all project objectives were met within the planned deadlines and at the agreed cost. The project delivered both a restored area of 290 ha of priority habitat type *9530 and a structured approach for the restoration of *black pine* forests to be implemented in other areas in the future. The potential for a wider application of this approach is documented by the positive opinion of academics and practitioners and its successful implementation during the project.

The structured approach demonstrated by the project is applicable by the agencies pertinent for forest restoration, i.e. forest services. These were targeted through the dissemination actions of the project, such as presentations in conferences and organization of project meetings. Details are given in section 5.4 of this report. The After-Life Conservation Plan provides for the systematic promotion of the structured approach after project completion. The GDF and EKBY have key roles to play in this. In specific, the GDF as the supervising authority of all forest services in the country will actively seek to introduce this method to other restoration areas in Greece. Furthermore, EKBY will disseminate results and lessons from the project in conferences, meetings and other events, in Greece and abroad. Dissemination of the project results will be further pursued through websites of the project partners.

Making use of the project results in the project area will continue after the end of the project. Specifically, the FSS will inspect restored areas at regular intervals to protect from vandalism, illegal action or destruction from natural causes. Furthermore, the FSS, EKBY and the MB will seek opportunities to collaborate on the evaluation of the project results on the basis of the results of future monitoring as foreseen in the After-Life Conservation Plan.

5. Technical part

5.1. Task by task - description

5.1.1. ACTION A.1a: Impact assessment to the habitat type "Mediterranean pine forests with endemic black pine"

What and how

In order to assess impacts from fires to the habitat type "Mediterranean pine forests with endemic black pine" satellite imagery, existing data and fieldwork were used. More particularly, regarding satellite imagery, the burn scar mapping after the fire was produced at very high resolution (pixel resolution equal to 4m, spatial accuracy less than 5m). The assessment was based on IKONOS satellite imagery of 4m resolution (1m in panchromatic) and existing cartographic material. The nominal cartographic scale of the output products is 1:5.000 to 1:10.000. A Digital Elevation Model (DEM) of the study area was created using digitised elevation data from 1:5000 scale maps and used for satellite image ortho-rectification. The forest maps of the area were also used as ancillary data. These ancillary data were not all of the same accuracy, scale and production time and therefore they were used only at a pre-processing stage to guide the works and to minimise the effort required at data processing stage. Moreover existing reports and data on forest fire occurrence were collected (Action A1b). The work was focused on the detection of the burnt areas and the identification of impacts from fire to the vegetation using specifically developed change detection tools relying on the CVA (Change Vector Analysis) and NDVI (Normalized Difference Vegetation Index). The data derived from the burn scar mapping were validated with fieldwork. Validation focused on the mapping of forest fire extension at the habitat type and on the identification and mapping of any isolated surviving patches present within the burnt area (‘‘green islands’’) or those on the unburnt edges. Furthermore the impacts on the habitat and on the presence of species of Community interest were investigated.
The major difficulty encountered was that the delivery of satellite images was delayed due to meteorological conditions (cloud coverage of the area was above the acceptable 5%). The images were made available only in June 2009. To overcome this difficulty, the project team extended the duration of fieldwork for the verification of data derived from satellite images and for the assessment of impacts on the habitat type structure until September 2009.
The report produced includes fire extent, fire severity as it relates to the habitat’s area affected, effects on the habitat, location of unburnt patches, effects on protected species, and integrity of the SCI and is accompanied with detailed GIS map of the affected area. The assessment showed that the fire affected 9.6% of the area of the Site of Community Importance (SCI). In regard specifically to the priority habitat type of black pine forests, 1921 ha where burnt, representing 35.91% of the 5,350 ha it occupies in the SCI. However, there remained islands of black pine live trees, totaled 420.1 ha, which, as seed sources, serve as forest regeneration centers (Figure 3).

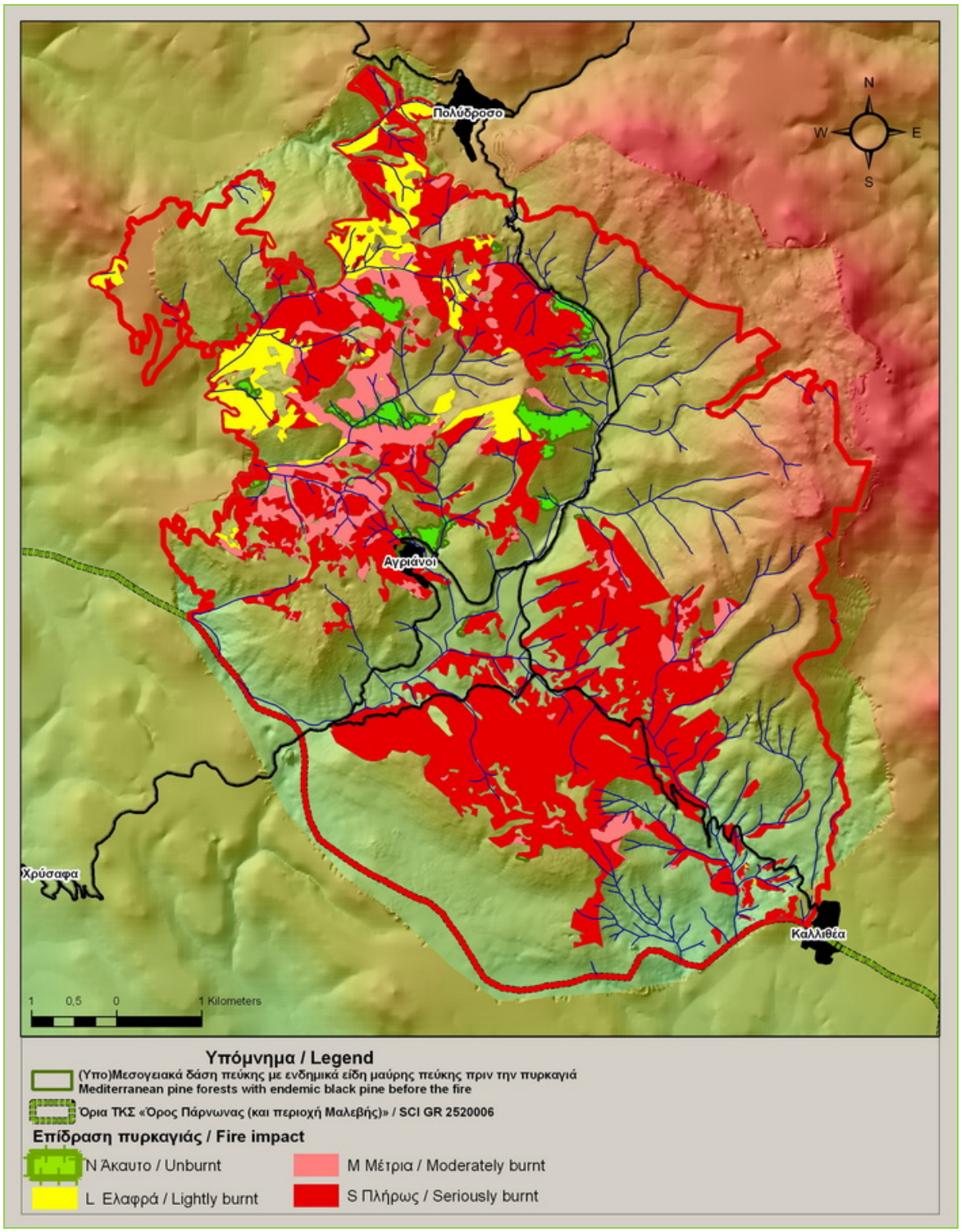


Figure 3. Impact of the 2007 fire on pinus nigra in SCI GR 2520006

Overall one could argue that the effect of fire on the habitat type "(Sub-) Mediterranean pine forests with endemic black pine" on Parnonas had two dominant aspects: (i) the burnt forest area was large and (ii) there was strong diversification by elevation zone of the burnt area; in the lower altitudes few trees survived compared to the higher altitudes where more scattered trees survived and more and larger islands of alive trees were present. The plant and animal species of Community interest do not seem to have faced irreversible consequences of the fire except the turtles that have been strongly affected. The size of the area burned in relation to the size of the SCI, and the fact that no type of habitat or habitat of a species have been affected in an irreversible manner leads to the conclusion that the fire on 23/8/2007 has not affected its integrity irreversibly. However, any new fire before continuing the recovery of the forest especially in southern and lower elevation area could cause serious harm to the integrity of the area.

The output of the action was the deliverable "*Report on the assessment of forest impacts to the habitat type "Mediterranean pine forests with endemic black pine" accompanied with detailed GIS mapping of the affected area*". This was submitted with PR1 (Annex 2). It is also on the project website at: http://www.parnonaslife.gr/txt/A1_ImpactAssessment_Sep09.pdf).

- *By whom*

The action was implemented by EKBY.

- *When*

As mentioned before, the project extended the duration of fieldwork for the verification of data derived from satellite images. The duration was therefore as follows:

	2009			
	I	**II**	**III**	**IV**
Baseline	●	●		
Actual	●	●	●	

- *Performance/Results*

The objectives of the action were fully met.

5.1.2. ACTION A.1b: Support to impact assessment to the habitat type "Mediterranean pine forests with endemic black pine"

- *What and how*

This action complemented Action A.1a. It involved input, by the FSS, of: a) data (forest maps of the area, relevant technical studies etc.), b) practical support (personnel, equipment) for fieldwork to validate data derived from the burn scar mapping, and c) experience and local knowledge in the assessment of impacts of fires to the priority habitat type "Mediterranean pine forests with endemic black pine" on Parnonas Mountain.

- *By whom*

The action was implemented by FSS.

- *When*

The duration of Action A.1b was as follows:

	2009			
	I	**II**	**III**	**IV**
Baseline	●	●		
Actual	●	●	●	

- *Performance/Results*

The objectives of this action were fully met.

Actions A.1a and A.1b collectively relate to Output Indicator "Inventories & Studies". This indicator regards *one habitat type* and *one species* of the Habitats Directive and affects 290 ha of *one Natura 2000 site* (SCI GR2520006).

Types of preparatory actions	Related Actions	Type of species	Type of habitats	No. of species	No. of habitats	No. of N2000 sites	Surface involved (ha)	Cost (€)
Inventories & Studies	A.1a, A.1.b	Pinus nigra	"Mediterranean pine forests with endemic black pine"	1	1	1	290	61.133

5.1.3. ACTION A.2a: Demonstration of the application of a structured approach to restore Mediterranean black pine habitat

- *What and how*

The structured approach demonstrated by the project is a step-by-step process, which prioritises burnt forest patches for restoration according to exclusion and ranking criteria.

Action A.2a was carried out in two phases.

Following the elaboration of detailed specifications for the action deliverables, which started on project start and lasted for three months, the first phase of implementation, involved the preparation of the first version of a structured approach to restore Black pine habitats. Existing knowledge and practical experience were used for the development of the method. Some preparatory tasks for the action run concurrently with action A.1. The major difficulty encountered during the first phase was that, although there was extensive literature on restoration of Mediterranean forests, few papers focused on thresholds of criteria for setting restoration objectives and most of them focused on the technical aspects (e.g. information systems to support data processing or decision making). To overcome this difficulty the project team made use of existing quantitative and qualitative ratings, expert judgment, and the practical experience of the FSS and other forest services. Of considerable help in this matter were the results of the international conference *«New approaches for the restoration of Black pine forests»,* which was held in Sparti, on 15-16 October 2009 (Action D.4) and the scientific networking with relevant initiatives and institutions in Greece and other European countries (Action E.2).

The action deliverables, i.e.: a) "*Guidelines for the application of a structured approach to restore Black pine habitats*" (version 1) and b) "*Proposal for the*

implementation of restoration measures on at least 290 ha of Black pine forests on mount Parnonas" were delivered with PR1 (Annexes 3 and 4 respectively). Both deliverables of Action A.2a were revised in order to include an abstract in Greek and English. The revised versions were submitted with PR2 (Annexes I and II).

The first deliverable "*Guidelines for the application of a structured approach to restore Black pine habitats*" describes a five-steps approach that proposes the use of a mix of criteria, the nature of which are summarised as follows: i) Exclusion criteria (such as natural regeneration potential) supported by literature and expert opinion, including criteria with threshold values; ii) biotic, abiotic and technical criteria that lead to a hierarchical rating of areas to be restored; the criteria are supported by literature and expert opinion and the ratings are mostly supported by expert opinion. In the second deliverable "*Proposal for the implementation of restoration measures on at least 290 ha of Black pine forests on mount Parnonas*" the project applied the approach proposed in the guidelines and concluded with the identification of the stands to be restored, the restoration objectives and the restoration measures. Based on this, the FSS elaborated the "*Technical implementation study*" for restoration works on the project site (see Action A.3).

All steps of the structured approach were implemented with success by the project during the second phase. In specific, areas were excluded from artificial restoration in order to prevent: a) disruption of desirable post-fire ecological processes, e.g. at patches with abundant natural regeneration and b) selection of patches with disadvantages for artificial restoration (e.g. harsh climatic conditions). The remaining were ranked by attributing priority to forest patches with the best opportunities for: a) successful re-establishment of the black pine trees and b) achievement of the favorable conservation status of the species depending on black pine forests. In more detail, the areas with natural regeneration were excluded from artificial restoration together with areas with altitude lower than 850 m. The total prospective area for restoration was thus reduced to from 1221,4 to 1,144 ha. Unfortunately, in the case of Parnonas there were no detailed data on the distribution of species with conservation priority (protected, endemic, red-listed etc). For this reason the ranking relied on abiotic conditions and estimated contribution to forest connectivity only. It was thus estimated that from the 1,144 ha only 888.4 ha could contribute to the re-establishing of forest connectivity. These were further ranked by soil depth and aspect and the most suitable patches were selected covering an area of 498.28 ha (Figure 4). Given the objectives and budget of the LIFE project, from this area, 291.33 ha were proposed for artificial restoration during the period 2009-2013 (duration of the LIFE PINUS project). These patches were verified as suitable with fieldwork. Finally, the restoration measures were specified. Planting with container seedlings was selected as the most appropriate method for the area. Due to preparatory work the FSS had done (salvage logging, maintenance of road network etc) planting was the only necessary restoration measure.

The g*uidelines for the application of a structured approach to restore Black pine habitats* were discussed during the Management and Workgroup meeting of the Cost Action FP0701, Post-Fire Forest Management in Southern Europe, on 15-16/4/2010, in Valencia. In order to facilitate the participants in expressing comments on the guidelines, an English summary of the deliverable had been sent prior to the meeting. The response of participants was positive and their oral suggestions were taken into account in the first draft of the guidelines.

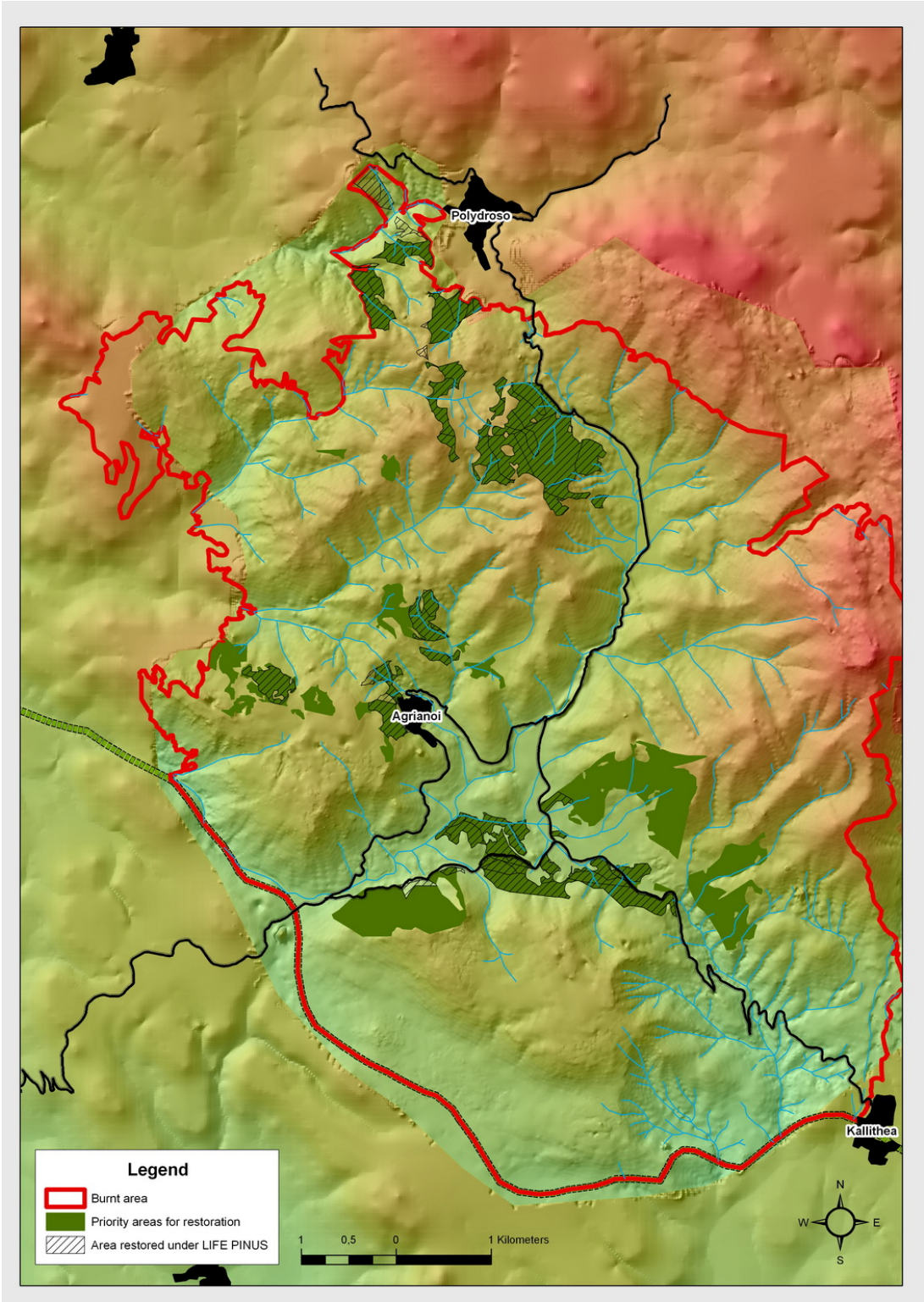


Figure 4. Areas prioritized for restoration (498,28 ha)

Following that the project circulated, in December 2010, the extended English summary to experts on post-fire restoration of pine forests in the Mediterranean and invited them to comment on the structured approach. One expert replied. Other inputs came from: a) an on-line questionnaire targeted to Greek experts and professionals working on post-fire management of black pine forests, b) restoration works, and c) the final project meeting (Action D5a). As concerns inputs from the on-line questionnaire, there were 13 responses, all from foresters involved in forest protection and management. Respondents found the approach comprehensive, appropriate as regards the selection criteria, easy to use but relatively time consuming and demanding in information. For these reasons, they would not recommend its application in the cases of small fires. Most responders requested further demonstration of the approach in order to enhance its application. This was taken into consideration in the after-LIFE conservation plan.

Based on all inputs received, the project produced the final version of the deliverable "*Guidelines for the application of a structured approach to restore Black pine habitats*", which was produced at the end of the project and is attached as Annex 7.3 of this report.

The deliverables of this action can be visited at:
http://www.parnonaslife.gr/txt/Guidelines_Structured_approach_v1finalGR_Dec09.pdf
(1st version of the deliverable)
http://www.parnonaslife.gr/txt/Guidelines_Structured_approach_v2.pdf
(Final version of the deliverable)
http://www.parnonaslife.gr/txt/Restoration-proposal_ParnonasVer4final_Dec09.pdf).

- *By whom*

The action was implemented by EKBY.

- *When*

As mentioned before, the development of the first version of the structured approach was followed by consultation with experts, application in the project area and formulation of the final version of the action deliverable. Since these tasks lasted throughout the project, the duration of Action A.2a was as follows:

	2009				2010				2011				2012				2013	
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II
Baseline		•	•	•												•	•	•
Actual	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

- *Performance/Results*

The objectives of this action were fully met.

5.1.4. ACTION A.2b: Contribution to the demonstration of the application of a structured approach to restore Mediterranean black pine habitat

- *What and how*

This action supplemented Action A2a. It regarded the active involvement, input, contribution and support by the FSS personnel to the development and the application of a structured approach to restore Mediterranean black pine habitat. Details were given under Action A.2a above.

- *By whom*

The action was implemented by FSS.

- *When*

The duration of Action A.2b was as follows:

	2009				2010				2011				2012				2013	
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II
Baseline		•	•	•												•	•	•
Actual		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

- *Performance/Results*

The objectives of this action were fully met.

Actions A.2a and A.2b collectively relate to Output Indicator "Guidelines".
This indicator regards *one habitat type* and *one species* of the Habitats Directive and affects 290 ha of *one Natura 2000 site* (SCI GR2520006).

Types of preparatory actions	Related Actions	Type of species	Type of habitats	No. of species	No. of habitats	No. of N2000 sites	Surface involved (ha)	Cost (€)
Guidelines	2	Pinus nigra	"Mediterranean pine forests with endemic black pine"	1	1	1	290	71.025

5.1.5. ACTION A.3: Technical implementation study and other preparatory actions

- *What and how*

Based on the deliverable "*Proposal for the implementation of restoration measures on at least 290 ha of Black pine forests on mount Parnonas*" (Action A.2a) the FSS elaborated the "*Technical implementation study*" for restoration works on the project site. The deliverable was submitted with PR 2 (Annex III). It can also be visited at: http://www.parnonaslife.gr/txt/Anadasosi_Parnona.pdf.
The study includes a brief description of the project area, the stands to be restored (Figure 5), the technical description of the restoration works and the calculation of the cost of the restoration according to Greek legislation.
The major difficulty encountered for the implementation of the action was the delay in the hiring of temporary personnel at the FSS (see section 4.2 above). To address the problem, permanent personnel of the FSS completed the technical study for restoration works.
Following elaboration of the technical study, the Forest Directorate of Peloponnisos approved the study and the procurement documents (public tender) for restoration works (Ref. 830/14-5-2010 and 1202/13-7-2010).

- *By whom*

The action was implemented by FSS.

- *When*

The duration of Action A.3 was as follows:

2009				2010			
I	II	III	IV	I	II	III	IV
				●	●	●	

- *Performance/Results*

The objectives of this action were fully met.

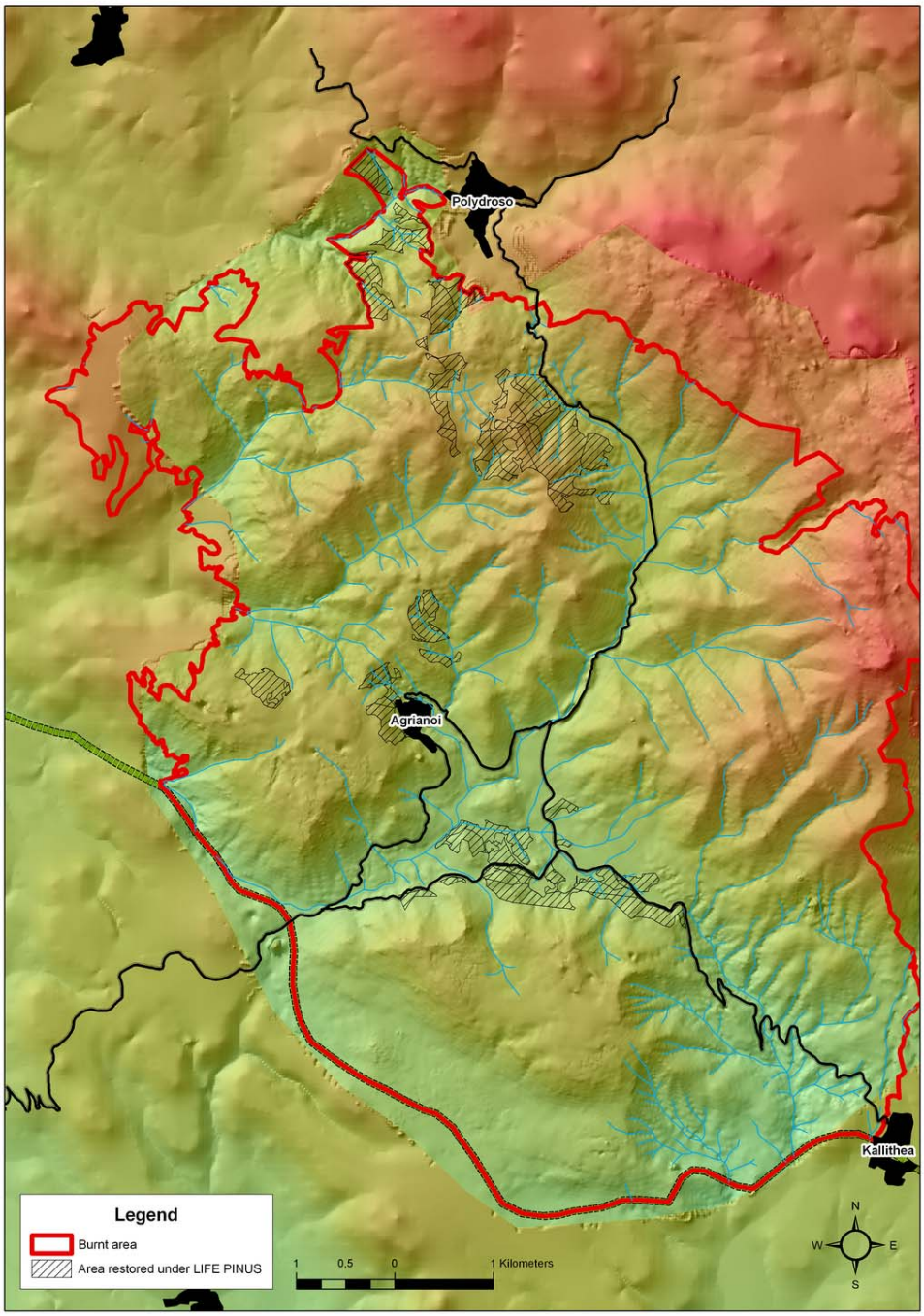


Figure 5. The burnt area and the area under restoration in the context of LIFE PINUS

Action A.3 relates to Output Indicator "Plans of project measures".
This indicator regards *one habitat type* and *one species* of the Habitats Directive and affects 290 ha of *one Natura 2000 site* (SCI GR2520006).

Types of preparatory actions	Related Actions	Type of species	Type of habitats	No. of species	No. of habitats	No. of N2000 sites	Surface involved (ha)	Cost (€)
Plans of project measures	1	Pinus nigra	"Mediterranean pine forests with endemic black pine"	1	1	1	290	38,107

5.1.6. A.4: Establishment of the monitoring system of the restored areas

- *What and how*

This action was implemented in two phases. Its first phase involved the design and establishment of a monitoring system to evaluate: a) the effectiveness of restoration planning and the success of restoration, and b) the progress of natural regeneration. The second phase involved data collection.
The action started earlier than planned. At first the overall requirements for the monitoring programme were examined in depth. Monitoring natural regeneration, although not part of the initial project plan, was eventually included in the monitoring plan for gaining a better understanding of the restoration process and for better evaluating and finalising the approach developed under Action A.2a. Experts from the University of Patras supported the project team in this task. Some non-substantial reallocation of funds was necessary to cover the cost of their services. In specific, following communication with the EC funds from budget categories *Travel, Equipment* and *Consumables* of Action A.4 were transferred to Budget Category *External Assistance*. Details were given in Section 6 of the Midterm report (MTR).
For monitoring the artificial restoration 20 plots were established. With regard to the natural regeneration, in order to assess and monitor the function of green islands and unburnt edges, 13 permanent monitoring plots were established, of which 4 were established in long distance locations from live trees, in order to monitor long distance dispersal[2]. All monitoring plots were permanently marked and sign-posted (Figures 6a-6d).
The deliverable "*Report on the establishment of monitoring plots"* was submitted with PR1 (Annex 5). An updated deliverable, enriched with an abstract in Greek and English, was submitted with PR2 (Annex V). The updated deliverable can be visited at:
http://www.parnonaslife.gr/txt/MonitoringReport_A4_Dec09.pdf.

The second phase of the action involved data collection from the monitoring plots.

[2] A preliminary map had been given in Annex 2 of IR. However, plot E13 was relocated to more suitable area. Plots E2 and 3 and Plots E9 and 10 were examined jointly in terms of vegetation data.

Fieldwork for the collection of data for natural regeneration took place in 2010, 2011 and 2012 and comprised seedlings' survival and growth from the 13 permanent monitoring plots.
The reports on monitoring natural regeneration in 2010, 2011 and 2012 were attached as Annex IV of PR2, Annex 2 of the MTR and Annex 1 of PR3 respectively. The results showed that there was natural regeneration of the black pine (Figure 7) and remarkable natural re-establishment of grassy vegetation in all burnt areas. In lower altitudes sclerophylous evergreen shrubs were also recovering well. Black pine regeneration appeared with different densities depending on the distance from alive trees. The number and height of seedlings measured in 2012 is shown in Table 1 below:

Table 1. Number of seedlings and mean seedling height for each natural regeneration monitoring plot for 2012.

Monitoring plot	Number of plants	Mean seedling height (cm)		
		Saplings	2 years	> 2 years
E1*				
E2*				
E3*				
E4	3			42,67
E5	10			53,08
E6	2			9,00
E8	7			51,67
E9	53			39,42
E10	28			33,85
E11	8			18,89
E12*				
E13	12			47,83
E14	3			8,50
Total	126			
Mean	14			33.88

* Plots for monitoring long distance dispersal

Collection of data from 20 monitoring plots on the progress of artificial restoration, in order to assess its success, took place in 2011 and 2012. This data were taken into account for the replacement of dried plants during winter 2011-2012. The monitoring report on artificial restoration in 2011 was attached as Annex 2 to PR3. The report on monitoring artificial restoration in 2012 is given in Annex 7.3 of this report. From the analysis of the results, planting success was found from 1,5% in the altitudinal zone of 850-1000 m to 76% in the altitudinal zone of 1150-1300 m. Altitude seems to be of profound importance for seedling survival and for mean height of seedlings (Figures 8a and b).
It should be noted here that there was close interrelation between Actions A.4 and E.3 in that data from monitoring plots of Action A.4 provided input for monitoring project targets in the context of Action E.3. For the implementation of this action the project

ordered high-resolution satellite images for years 2009 and 2013 to detect vegetation changes using the Normalized Difference Vegetation Index- NDVI. The satellite image for 2009 was the ICONOS one taken on 7/6/2009. This had also been used for the assessment of fire impact (Action A.1). For 2013, a WorldView 2 image was taken on 1/4/2013. In order to overcome the constraint of the small diameter of the stems of the young plants and reach a distinct pattern or digital signature in the satellite image, a field visit took place. In this field visit we established monitoring plots of characteristic percentages of vegetation and black pine plants, which could provide reference patterns and pixel values. However, the comparison indicators calculated from satellite images did not yield results that could lead to safe conclusions about the success of plantings. In specific, the NDVI values did not differ significantly except for the case of minimum values between areas artificially restored and naturally regenerated for the year 2013. The reason is that the minimum dimension of the pixels for which NDVI was calculated was much higher than the projection of the crown of the seedlings in the ground, even in the cases of natural regeneration, where plants were older. Taking this into account, it appears that at such stages of plant development, the use of multispectral images using NDVI or similar indicators is not recommended. Perhaps after a few years, when the projection of the crown of the seedlings will be close in diameter to 2 m it will be possible to use the images for assessing effectiveness of restoration activities. In conclusion, the assessment of the effectiveness of the restoration activities of the black pine forests and the recovery of vegetation within the project area was based mainly on field data. The above are discussed in detail in the deliverable of Action E.3b which is given in Annex 7.3 of this report. The deliverable of Action E.3b can be visited at the project website (http://www.parnonaslife.gr/txt/E3bReportFinal_na.pdf).

Data collected from monitoring of both natural regeneration and artificial restoration are organised in a GIS database ("*Electronic database filled in with baseline data*"- E4 deliverable). Screenshots of the GIS database developed for the project can be found in Annex 7.3.

a

b

Figures 6a and b. Monitoring plots for natural regeneration

c

d

Figures 6 c and d. Monitoring plots for artificial restoration

Figure 7. Natural regeneration (plot E10)

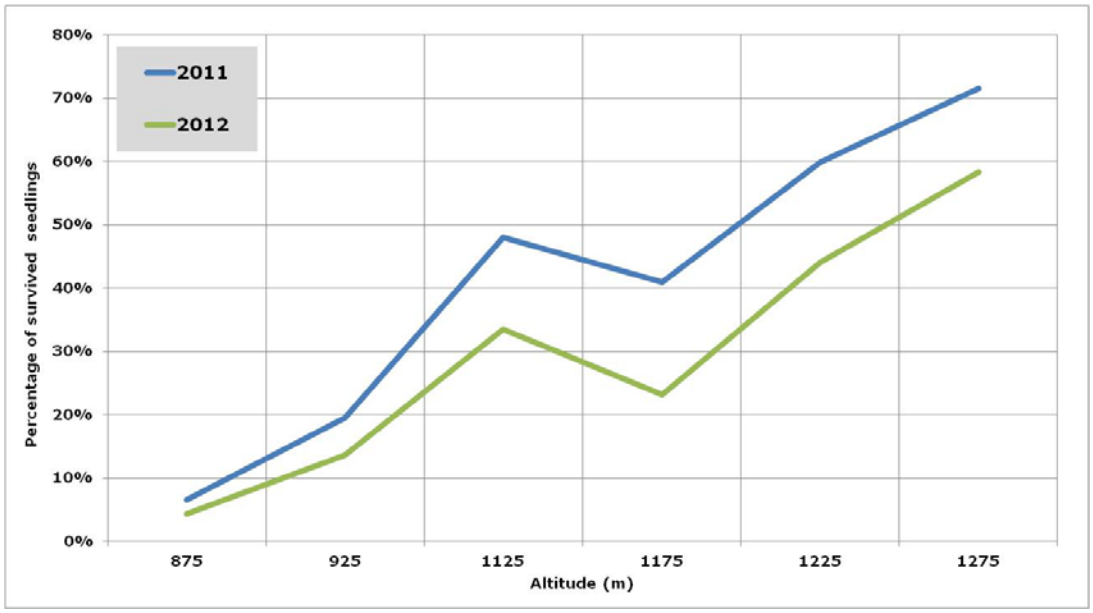


Figure 8a. Survival rates of black pine seedlings planted at the burnt black pine forest of Parnonas by the fire of 23-8-2007, in relation to altitude for 2011 and 2012

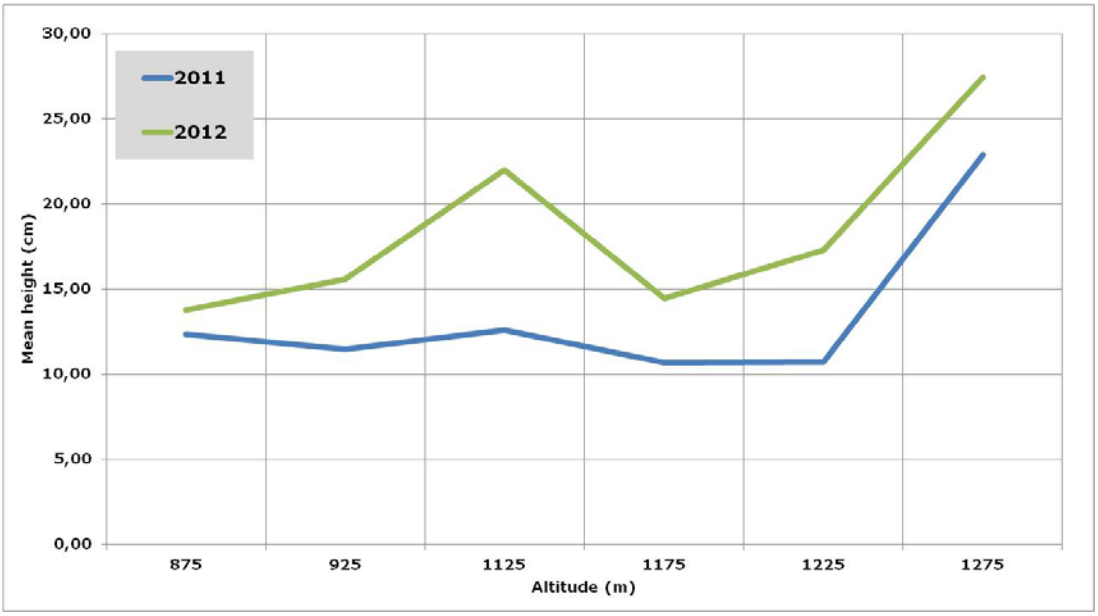


Figure 8b. Height of black pine seedlings planted at the burnt black pine forest of Parnonas by the fire of 23-8-2007, in relation to altitude for 2011 and 2012

- *By whom*

The action was implemented by EKBY.

- *When*

The original timetable of the action was modified in order to enable data collection in 2010, 2011 and 2012. The duration of the action was therefore as follows.

	2009				2010				2011				2012				2013	
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II
Baseline				●													●	●
Actual	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

- *Performance/Results*

The objectives of this action were fully met.

Action A.4 relates to Output Indicator "Ex post monitoring".
This indicator regards *one habitat type* and *one species* of the Habitats Directive and affects 290 ha of *one Natura 2000 site* (SCI GR2520006).

Types of preparatory actions	Related Actions	Type of species	Type of habitats	No. of species	No. of habitats	No. of N2000 sites	Surface involved (ha)	Cost (€)
Ex post monitoring (A4)	1	Pinus nigra	"Mediterranean pine forests with endemic black pine"	1	1	1	290	35,186

5.1.7. ACTION C.1a: Restoration of priority habitat "Mediterranean pine forests with endemic black pine"

- *What and how*

In this action restoration works were executed in 290 ha of the target priority habitat type "Mediterranean pine forests with endemic black pine" (Figures 9a, 9b). More specifically, following completion of Action A.3, FSS published the call for tenders for restoration works. The call was published twice, on 8/7/2010 and 20/9/2010 respectively[3]. The contract for restoration works was signed on 17/12/2010. At the time of implementation of restoration works the weather conditions were favorable and the contractor made available all the necessary resources for the timely completion of planting. Some 460,000 seedlings were planted covering an area of 290 ha. The total contract value for restoration works (2.218.427 € including unforeseen expenses and VAT) exceeded the project budget due to the following developments: a) Raises in cost per unit of work and of λ coefficient to determine payments to subcontractors, which is adapted on a quarterly basis. b) Increase of VAT from 19 to 23%. However, the budget line for unforeseen expenses was not used and the final cost (1.836.979,22 €) was within budget. It should be noted that under the terms of the contract for restoration works, which was provided in Annex IV of the PR3, the tasks of the contractor included both planting and treatment/replacement of plants. Works started on 17/12/2010 and lasted for 17 months, i.e. until 17/5/2012. Some 155,000 plants were used for replacements of failures of the first plantings as part of this contract.

After completion of the works under the restoration contract, the personnel of the FSS regularly visited the project area in order to protect the young plants from fire, illegal grazing, encroachments, and illegal logging that might also harm young plants. It should be noted that, in the vicinity of the burnt area there are a number of small farms with mixed flocks of goats and sheep, and the young plants needed to be protected until they grew.

In these tasks the FSS used the vehicle purchased by the project. Moreover, for fire prevention a brushshredder for clearing roadside vegetation, also purchased by the project, was used (Figure 10).

In order to perform the above tasks, the project maintained the temporary personnel of the FSS until the project end. However, the remaining funds of the FSS personnel budget did not suffice. To overcome this, the FSS increased its personnel budget by transferring funds from the travel budget line (this is further discussed in section 6.1 of this report).

- *By whom*

The action was implemented by FSS.

- *When*

The duration of Action C.1a is shown below. The milestone “Contractor for restoration works completes works” was reached earlier than scheduled.

[3] The FSS had to repeat the call because, in the first time, the call was mistakenly published in one nationwide newspaper instead of the correct two nationwide newspapers as set out in national legislation for the award of public contracts.

	2009				2010				2011				2012				2013	
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II
Baseline								●	●	●	●	●	●	●	●	●		
Actual								●	●	●	●	●	●	●	●	●	●	●

- *Performance/Results*

The objectives of this action were fully met.

a.

b

Figure 9. Restoration works, plantation (a) and planting works (b)

Figure 10. Clearing of roadside vegetation with the brushshredder purchased by LIFE PINUS.

5.1.8. C.1b: Scientific support to the restoration of priority habitat "Mediterranean pine forests with endemic black pine"

- *What and how*

This action was supplementary to Action C.1.a and was implemented concurrently with the later. It involved the transfer of experience and expertise in the implementation of restoration works that were carried out under Action C.1a, taking into account conservation needs, and the scientific support to the venture. Support, in the form of scientific and technical advice, in application of the structured approach was continuous throughout the period of restoration. Finally, an evaluation of the applicability of the structured approach resulting from the implementation of the restoration measures was made.

- *By whom*

The action was implemented by EKBY

- *When*

The duration of Action C.1b was as follows:

	2009				2010				2011				2012				2013	
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II
Baseline								●	●	●	●	●	●	●	●	●		
Actual								●	●	●	●	●	●	●	●	●	●	●

- *Performance/Results*

The objectives of this action were fully met.

5.1.9. ACTION C.1c: Production of plants – Nursery Works

- *What and how*

In the context of this actions 800,000 plants were produced at the FNO from seeds originating from the project area (Figure 11).

The production of plants started in spring 2009 and their nursering continued until 2011. The Directorate of Reforestation, on behalf of the FNO, purchased all the necessary materials (e.g. plastic pots, raw materials used for the soil mix for the production of plants, fertilizers etc.). The nursering works were subcontracted, due to personnel shortages; existing personnel of the FNO closely monitored the subcontractor's works. In particular, the subcontractor undertook the implementation of the following works: the preparation of the soil substrate which was a special mix of sand, organic soil and other soil improving material, the filling of pots, seeding, fertilisation, irrigation and other treatments for the protection of the roots of the young plants, within the FNO. These works were carried out all year round under the close supervision by the scientific personnel of the FNO, which was based close to Komotini, some 42 km away into the Rhodope mountains. Personnel costs were not charged to the project, which only covered: a) the travel of the permanent personnel that supervised the works, b) the necessary supplies, and c) the cost of the subcontractor for the treatment of plant (wages of workers).

Figure 11. Production of plants at the forest nursery of Organi

The plants produced were of excellent quality. These plants were used as follows:

1. 448,488 plants were initially planted (December 2010-March 2011)
2. 11,512 plants dried out during transportation from the FNO
3. 185,000 were donated to the FSS in order to be used in the Forest Restoration Works II of the European Economic Area/European Free Trade Association (EEA/EFTA) project "Restoration of the forests on Mount Parnonas and conservation guidelines for Mount Taygetos in Lakonia". This was done following communication of the project with the EC (our letters ref. No 11341/6.9.2011 and ref. No. 11353/20.9.2011, and EC letter ref no 949470/7.9.2011, and e-mail from 26/9/2011 approving the plant donation)
4. The remaining 155,000 plants were used for replacements of failures of the first plantings. Replacements were done in late 2011 and early 2012

- *By whom*

The action was implemented by DAEMTH

- *Performance/Results*

The objectives of this action were fully met.

- *When*

The duration of Action C.1c was as follows:

	2009				2010				2011			
	I	II	I	II	III	IV	III	IV	I	II	III	IV
Baseline	●	●	●	●	●	●	●	●				
Actual	●	●	●	●	●	●	●	●	●	●	●	●

- *Performance/Results*

The objectives of this action were fully met.

Actions C.1a, C.1b and C.1c collectively relate to Output Indicator "Natura 2000 site restoration/improvement".
This indicator regards *one habitat type* and *one species* of the Habitats Directive and affects 290 ha of *one Natura 2000 site* (SCI GR2520006).

Deliverable	No. of concrete actions	Type of species	Type of habitats	No. of species	No. of habitats	No. of N2000 sites	Surface involved (ha)	Cost (€)
Natura 2000 site restoration/improvement (C1)	3	Pinus nigra	"Mediterranean pine forests with endemic black pine"	1	1	1	290	2,356,467

5.2 Evaluation

The methodology applied by the project enabled the accomplishment of its two key objectives, namely: a) the demonstration of a structured approach for the restoration of black pine forests and b) the restoration of 290 ha of the priority habitat type "Mediterranean pine forests with endemic black pine" in SCI GR2520006 Oros Parnonas (kai periochi Malevis)
In addition to achieving its overall objectives, the project met all the measurable targets set out in the proposal as demonstrated by a of a task-by-task comparison of results achieved against objectives (Table 2).

Table 2. Project conservation results against objectives

Task	Objectives foreseen in the revised proposal	Results achieved	Evaluation
A. Preparatory actions, elaboration of management plans and/or of action plans			
A.1a: Impact assessment to the habitat type "Mediterranean pine forests with endemic black pine" A.1b: Support to impact assessment to the habitat type "Mediterranean pine forests with endemic black pine"	To assess the impacts of fires to the priority habitat type	Report on the assessment of impacts to the habitat type accompanied with detailed GIS map of the affected area	100% accomplished The action enabled post fire planning for the restoration of Black pine forests
A.2a: Demonstration of the application of a structured approach to restore Mediterranean black pine habitat A.2b: Contribution to the	To demonstrate a structured, scientifically robust approach to plan accurately	Guidelines for the application of a structured approach to restore Black pine habitats	100% accomplished The structured approach was demonstrated in the

Task	Objectives foreseen in the revised proposal	Results achieved	Evaluation
demonstration of the application of a structured approach to restore Mediterranean black pine habitat	and restore effectively the burnt Black pine habitats	Proposal for the implementation of restoration measures on at least 290 ha of Black pine forests on mount Parnonas	project area
A.3: Technical implementation study and other preparatory actions	To plan and authorise restoration works	Technical study with specifications of works and cost documentation. Call for tenders for restoration works.	100% accomplished The study enabled the sub-contracting of restoration works
A.4: Establishment of the monitoring system of the restored areas	To evaluate the effectiveness of restoration planning and the success of restoration	Establishment of the monitoring system and collection of baseline data on the progress of artificial restoration	165% accomplished In addition to planned results, data were collected on natural regeneration from 13 permanent monitoring plots
			The monitoring system will foster long term monitoring of the priority habitat type in the Natura 2000 site.
C. Concrete conservation actions			
C.1a: Restoration of priority habitat "Mediterranean pine forests with endemic black pine" C.1b: Scientific support to the restoration of priority habitat "Mediterranean pine forests with endemic black pine"	To plant black pine trees in 290 ha and to treat plants	290 ha of restored area of the target habitat type	100% accomplished In addition to evident restoration benefits for the project area, by this action, the demonstration of the application of the structured approach was tested

Task	Objectives foreseen in the revised proposal	Results achieved	Evaluation
C.1c: Production of plants – Nursery Works	To produce necessary plants for the habitat restoration works	Some 800,000 plants were produced, out of which ~11,500 dried out during transportation. The remaining were used for the initial planting (~448,500) and for replacements of failures of the first plantings (~155,000)	100% accomplished Out of the 800,000 plants, 185,000 were used in the forest restoration works of the European Economic Area/European Free Trade Association (EEA/EFTA) project "Restoration of the forests on Mount Parnonas and conservation guidelines for Mount Taygetos in Lakonia"

There have been several successes and certain weakness of the structured approach demonstrated by the project. After six years from the fire of 2007, the natural vegetation has been re-established in all burnt areas that can support vegetation. From the 1,921.02 ha of completely burnt black pine forest an area of 341 ha has been naturally restored with black pine and another 540 ha have been artificially restored (290 ha through LIFE-PINUS and other 250 through the EEA/EFTA project). The remaining areas have been covered mainly with evergreen sclerophyllous vegetation and to a smaller extent with grasses and low shrubs and phrygana. These vegetation types had already been present in the area forming the understorey vegetation layers of the black pine forest. It must be noted that since 2011 natural regeneration has become difficult because understorey vegetation competes the saplings that manage to germinate, while few seeds manage to go beyond the areas where natural regeneration already occurs. When young trees start to produce seeds, big quantities of seeds will disperse, in many cases in areas where planting could not be done due to poor soil conditions (e.g. very poor soils or areas with high percentage of rock in the surface). The production of seeds is expected from 2025 for trees in open stands and from 2030 for trees in more dense stands. Finally, it is expected that after 70-100 years mature black pine stands will be formed in an area of about 880 ha. As a result from the lower survival rates of plantings, in altitudes lower than 1,000 m stands will be probably more open than before the fire, at least for the first decades.

The time needed for the application of the structured approach to plan restoration in the LIFE PINUS project was approximately six months, including the time for detailed ecological assessment of the impact of fire on the habitat type. Taking into account that wildfires at the altitudes where black pine is present usually occur until the end of August and that saplings begin to emerge in March, the approach seems to fit the timing needs for restoration planning. However, it must be noted that time requirements for the approach are strongly affected by the availability and quality of existing data and the time needed for the collection of new data. The personnel involved in the application of the structured approach in the LIFE PINUS project were one forester and one GIS specialist, who consulted regularly the forest managers

from the FSS. The involvement of the GIS expert in the structured approach is optional, since the approach can be applied even without the use of GIS. Nevertheless, the accuracy of steps 2 and 3 will then be reduced.

A weakness in the case of Parnonas was that only some of the necessary data were available in digital form. Furthermore, some digital data were not in adequate format and ready to use. The most important data missing were a soil quality map, geology, and data on the distribution of species. We can therefore recommend these data to be readily available in forest services for use in emergencies, so that the restoration planning process can be carried out quickly and accurately.

One of the great advantages of LIFE PINUS was that the FSS had collected cones on time. These were sent to the GDF Central Seed Storage and were available on time for seedling production. It is strongly advisable that for each *Pinus nigra* forest an adequate quantity of seeds should be available in the Central Seed Storage, because seed collection could be hindered by numerous factors such as low cone production, small number of survived trees, difficulties to reach locations with survived trees, lack of adequate resources etc and their shortage may severely delay the restoration.

The lessons learnt during the application of the structured approach in the project area were taken into account for formulating the final version of the report "*Guidelines for restoration of Pinus nigra forests affected by fires through a structured approach*" produced by the project.

5.3 Analysis of long-term benefits

5.3.1. Environmental benefits achieved

- Two hundred and ninety hectares (**290 ha**), i.e. 68% of the burnt area of the priority habitat type "Mediterranean pine forests with endemic black pine" on site GR2520006 was restored by the project.
- The restoration of another **250 ha** of the priority habitat type "Mediterranean pine forests with endemic black pine" on site GR2520006, though carried out by the EEA/EFTA project greatly benefited by the structured approach to black pine restoration of the project LIFE PINUS and the plants that the latter donated (Leverage effect).
- The undisturbed regeneration of another **341 ha** of black pine owes to the grazing ban and the efficient guarding by the project partner FSS (Synergies between recurring and non-recurring actions).
- Overall the re-establishment of the black pine forest has begun in approximately 46% of the burnt area of the priority habitat type on on site GR2520006.

The benefits from restoration and improved protection of the priority habitat type are underlined by the importance of the black pine forests of Parnonas, which: a) are part of the southern distribution of the habitat type for Greece and all Europe, b) represent around 7% of the total cover of the habitat type in all SCI's in Greece and c) belong to the very few areas (five) where specific habitat features such as representativity, conservation status and global assessment had been assessed as excellent until the fires of 2007.

- The structured approach for the restoration of burnt areas of black pine will benefit the restoration efforts for burnt areas of this habitat type not only in Peloponnisos and Greece but also to all Mediterranean countries that suffer from fires.
- Rural Development funds and LIFE funds may be used for both the application of the project results in other areas and the continuation of the project efforts in the project area.

The benefits from the structured approach demonstrated by the project are important in cases where the available resources for restoration are not enough and ranking of interventions is needed. In such occasions, lack of proper restoration design may cause a miss out of areas that should urgently be restored or an unwise use of resources.

- Equipment purchased by the project contributes to forest management and protection, including fire prevention by the FSS, and to other nature conservation activities by all partners.
- The project contributed to mitigation of climate change through forest restoration of 290 ha.
- The project contributed to water production and flood prevention through restoration of 290 ha of forest and its functions.
- Long-term monitoring using the monitoring programme established by the project will enable assessment of restoration actions and help learning from successes and failures.

5.3.2. Long-term sustainability

Following the project actions, natural regeneration and other interventions by the FSS, the re-establishment of the black pine forest on Mount Parnonas has begun in approximately 46% of the burnt area. The seedlings are well established and no important failures are anticipated unless extreme climate conditions prevail.
When young trees start to produce seeds, big quantities of seeds will disperse, in many cases in areas where planting could not be done due to poor soil conditions (e.g. very poor soils or areas with high percentage of rock in the surface). The production of seeds is expected from 2018-2023 for trees in open stands and from 2028 for trees in more dense stands.
Fires will continue to be the most serious threat. To address this, the FSS has created adequate infrastructure (road network, water tanks, fire-break zones) and is cooperating closely with the Fire Brigade in order to put out fires as fast as possible. Grazing is expected to reduce flammable material, especially evergreen sclerophyllous vegetation, which will continue to prevail in the undestorey vegetation in the perimeter of the forest.

Taking into account the above the following long-term conservation objectives have been formulated:

A. Restoration of the mature black pine forest stands in the burnt area on Mount Parnonas

B. Further dissemination of the structured approach for restoration planning of burnt black pine forests to the Greek Forest Service

C. Continuation of the monitoring programme and promotion of the scientific research for the target priority habitat type" (Sub-) Mediterranean pine forests with endemic black pine".

The actions needed to achieve the long-term objectives of the project, the bodies involved and the funding required are detailed in the After-Life Conservation Plan (Annex 7.4). They are summarized in Table 3.

Table 3. After-LIFE conservation actions

Action	Funding source	Bodies involved
A1. Protection of the young trees	Core budget Green Fund of the Ministry of Environment	FSS in cooperation with EKBY, MB
A2. Maintenance of seed stock	Green Fund of the Ministry of Environment Public Investment Programme	GDF, FSS
A3. Silvicultural treatments of undestorey vegetation	Core budget Rural development funds Green Fund of the Ministry of Environment	FSS with support from EKBY or MB
B1. Continuation of LIFE-PINUS website update	Core budget	MB with contributions from FSS, EKBY
B2. Presentations at the national level	Core budget	EKBY or any other partner
B3. Presentations and publications at the European level	Core budget	EKBY or any other partner
B4. Application of the structured approach by Forest Services	Rural development funds LIFE funds Green fund of the Ministry of Environment	GDF, EKBY
C1. Continuation of the monitoring	Green Fund of the Ministry of Environment.	FFS, MB, EKBY
C2. Continuation of ground photography	Core budget	MB
C3. Maintenance of the meteorological station	Core budget	FSS and the MB
C4. Maintenance of the data gathered, including the ground photographs	Core budget	FSS, EKBY, MB
C5. Promotion of scientific research	Core budget for preparation of proposals	EKBY, GDF

5.4 Dissemination issues

The overall project objective for dissemination actions was the promotion of the project methods and results, including the structured approach to restore burnt areas of the priority habitat type "Mediterranean pine forests with endemic black pine". The results and impact of the effort rested on the effectiveness of the originally planned dissemination activities, which included: web site, leaflet, layman's report, notice boards, documentary film, conference for the post-fire restoration actions in Black pine forests, meeting for the dissemination of project results, and project presentation through press. The project extended the scope of dissemination activities to include information campaigns and production of promotional to enhance the effectiveness of dissemination.

The project communicated and disseminated its objectives, actions and results effectively. The structured approach was presented in international conferences and received positive comments from experts in Greece and other Mediterranean countries. The approach has also been included as an innovative idea by ECOWEB[4]. A future presentation has been arranged for October 2013 in a special meeting organised in Athens by the Ministry of Environment for the preparation of guidelines for the restoration of burnt forests. The dissemination needs to continue after the project end and to target both the practitioners and the scientific community. Finally, the project leaves behind communication tools such as the web site and the documentary film “The traveling seed” that can support future communication and environmental education actions of the MB in the area.

5.4.1 Dissemination: overview per activity

5.4.1.1.ACTION D.1: Web site

- *What and how*

The project web site (http://www.parnonaslife.gr) was the main tool for the communication with the project stakeholders and the dissemination of the project methods and results. The web site presents the target habitat type with photos and maps of the area, the project activities and outcomes. Also it tracks down the restoration process of the target habitat type. Some of the major issues presented in the web site are:

- The scope and an overview of the project
- Status of the target habitat type and objectives for restoration
- Description of the approach to design restoration of the black pine
- The monitoring program, its activities and the results
- The process of restoration
- The results of the project
- Announcements and presentation of the meetings for dissemination of results
- The questionnaire for the evaluation of the structured approach
- Photo archive
- The documentary film entitled "The traveling seed".

[4] http://www.ecoweb.info/1188_2074_restoration-pinus-nigra-forests-mount-parnonas-gr2520006-structured-approach

The services of a sub-contractor were used for the design and development of the web site. For the selection of the sub-contractor the MB published a call for tenders. Since the process took longer that originally anticipated and until the contract for the design and development of the web site were signed, the project had operated a temporary version of the web site created in-house by EKBY. The web page at its final format and content was launched by the MB on 23/12/2009 and was regularly updated with contributions from all partners after its creation. All deliverables that could be presented in digital form have been uploaded to the site. The site also contains a photo archive and links to other relevant sites. The site is available in Greek and English and will be maintained and updated for at least five years by the staff of the MB.
The feedback obtained from the users such as foresters and environmental scientists was positive. The site proved valuable in disseminating the project results especially to Forest Services, which were notified by letter and other means of its existence. Also, the web site was an excellent means for announcing project meetings and events.
Another important use of the web site was the release of an evaluation questionnaire as part of the demonstration of the application of the structured approach for the restoration of black pine forests. The questionnaire was in Greek as it was mainly meant for Greek experts in post-fire management and personnel of Forest Services in order to assess:

- the usefulness of this approach and of the development of such methods
- the applicability of the approach.

The completed questionnaires were used in formulating the final version of the structured approach (Action A.2).

- *By whom*

The action was implemented by the MB.

- *When*

The duration of Action D.1 was as follows:

2009				2010				2011				2012				2013	
I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

- *Performance/Results*

Overall, the objectives of the action were fully met and its implementation was successful and according to the specifications.
Furthermore, the MB launched a Facebook page at 18/01/2013. The page is regularly updated with news and announcements. It can be accessed either through the project website (www.parnonaslife.gr) or directly from the link: https://www.facebook.com/pages/LIFE-PINUS/451674781554933. The project's Facebook page will be maintained for the next years by the staff of the MB and will include not only the project but also environmental issues of mount Parnonas and Greece.

The number of visitors per month is an Output indicator for "Awareness raising and communication". The website reached an average of 112 visits/75 visitors per month, exceeding the expected 50 visits per month.

5.4.1.2.ACTION D.2: Leaflet, layman's report for the presentation of the project and signposting.

- *What and how*

The action involved the creation of a leaflet, notice boards, and a layman's report.

The leaflet presents the objectives of the project, its activities and expected results and the project area. It was produced in 5,000 copies (4,000 in Greek and 1,000 in English) and in electronic format (pdf file). Copies of the leaflet were submitted in Annex 7 of PR1 and they are posted at http://www.parnonaslife.gr/txt/Fylladio-gr.pdf (Greek version) and http://www.parnonaslife.gr/txt/Fylladio-en.pdf (English version).
Until the project end the leaflet had been distributed to visitors to the area (foreigners included), to Forest Services, schools, Environmental Education Centers and to government and non-government organizations. It had also been circulated in three field excursions, five local meetings, eight national and international scientific meetings, and in the meeting for the dissemination of project results. Moreover it was available from the project website to the public. At the end of the project 735 copies in Greek and English were available at the MB that plans to continue their distribution in schools, scientific meetings in Greece and abroad, and other events, until the leaflet becomes out of stock.

The notice boards, three in number, provide general information on the project including its relation to the Natura 2000 network and are placed at key points in the project area, chosen by the MB. Photographs of the notice boards are given in Annex 7.5 and can also be seen at http://www.parnonaslife.gr/en/results.

The layman's report was produced in English and Greek in 200 copies. It includes a brief description of the project and its key achievements and focuses on the advantages of the implementation of the structured approach for the restoration of black pine forests. The report was produced at the end of the project. The report is included in Annex 7.5. It can be visited at http://www.parnonaslife.gr/txt/laymans-report_FINAL.pdf.

- *By whom*

The action was implemented by the MB.

- *When*

The duration of Action D.2 was as follows:

2009				2010				2011				2012				2013	
I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II
	●	●	●												●	●	●

- *Performance/Results*

Overall, the objectives for this action were met and its implementation was successful and according to the specifications.

The leaflet, the layman's report and the notice boards are Output indicators for "Awareness raising and communication".

5.4.1.3.ACTION D.3a): Film specifications

- *What and how*

This action supplemented Action D3b below. It regarded scientific advice and support from EKBY to the MB for the creation of the documentary film "The traveling seed". More specifically, the action involved the selection of the exact features to be filmed, the screenplay (provided in Annex VIII of PR2), the specifications for film production as well as advice and scientific support during film shooting and the preparation. The project manager, together with the film producer, visited the project site to point out the most suitable locations for shooting the black pine forest, restoration areas and monitoring plots and provided directions so that the visual content would be relevant with the script and the whole concept of the film.

- *By whom*

The action was implemented by EKBY.

- *When*

The duration of Action D.3a was as follows:

2009				2010				2011				2012			
I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
			●	●	●	●	●	●	●	●	●	●	●	●	●

- *Performance/Results*

Overall, the objectives for this action were met.

5.4.1.4.ACTION D3 b): Film production

- *What and how*

This action involved the creation of the documentary film "The traveling seed" (Annex 7.5). The film is about black pine forests and their values. It also presents the structured approach that was applied after the fire and illustrates how we can go all the way from the collection of seedlings to the plantation of young plants, in other words "the travelling seed". A sub-contractor produced the film under the guidance of the MB.

The film targets:

- the general public, so that people can learn about the value of this relatively common species in Greece and about the work and time required for restoration of burnt forests in general and of Black pine forests in particular.
- educators as a documentary film about the black pine and the design and implementation of a scientifically sound restoration process
- specialists who can use it as a brief of the structured approach that was developed so that they can get acquainted with it, evaluate and apply it.

The film also, together with the web site (Action D1), was essential in promoting not only the project but also the awareness for Natura 2000 network and the advantages for conservation of nature that Natura 2000 and Life+ offers.

The film was presented:

- On 15/5/2013 at the meeting for the dissemination of project results held at the Museum of the Olive and Greek Olive Oil in Sparti, Laconia.
- On 30.03.2013, as part of the guided tour of Ermioni's nature club at Astros Environmental information Center with about 50 participants.
- On 19.04.2013 at an environmental information visit at Ermioni's Elementary School with 160 student participants, in Argolida.

It was very well received and comments were in some cases enthusiastic.

The producer had initially delivered 200 copies (DVD) in two languages (150 in the Greek and 50 in English). Finally, due to high demand, there was reproduction of the film in 500 copies (400 in Greek and 100 in English). Overall, 184 copies were circulated to forest services, management bodies, NGOs, Environmental Education Centres, academics, research institutes, and other bodies. Another 100 copies were given to participants of the project closing meeting and to the trainees participating in the programme «PARKS PROTECTION II – Management, protection and development of protected areas". The distribution of remaining copies will continue by the MB. The MB will target the local communities and will present the film in information campaigns and in awareness raising events. The film has been transmitted to the AEIDL-LIFE communication team.

By whom

The action was implemented by the MB

When

The duration of Action D.4b was as follows:

2009				2010				2011				2012			
I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
			●	●	●	●	●	●	●	●	●	●	●	●	●

Performance/Results

Overall, the objectives for this action were fully met.

The film is an Output indicator for "Awareness raising and communication".

5.4.1.5. ACTION D.4a): Scientific support to conference on post-fire restoration actions in Black pine forests

What and how

The conference «New approaches for the restoration of black pine forests» was held in Sparti, on 15-16 October 2009 under the scientific guidance of EKBY.

63 participants from forests services, protected areas' management bodies, local authorities, NGOs and other organizations attended it

The conference speakers were:

- Prof. Margarita Arianoutsou, Department of Biology, University of Athens, who chaired the conference
- Emeritus Prof. Spyros Dafis, School of Forestry and Natural Environment (AUTH), scientific coordinator of the project, from EKBY

- Ms Dimitra Paitaridou from the Directorate of Reforestations and Mountain Hydraulics, Ministry of Rural Development and Food
- Ms Panayota Simadi, Head of the Forest Service of Sparti
- Mr Spyros Katsipodas, from the Forest Service of Kalamata
- Mr Petros Kakouros, project manager
- Prof. V. Ramon Vallejo, Department of Biology, University of Barcelona
- Ass. Prof. Peter Ganatsas, School of Forestry and Natural Environment (AUTH) and
- Dr. Nikos Grigoriadis, researcher at the Greek Forest Research Institute-NAGREF.

Prof. Margarita Arianoutsou, chaired the conference. Following welcome speeches by the organisers, Emeritus Prof. Spyros Dafis, gave the introductory speech, presenting the problem of rehabilitation of the burnt black pine forests and the principles for forest restoration. Ms Dimitra Paitaridou then took the floor to present the forest policy of the Ministry and their work for the production of forest reproductive material. Ms Panayota Simadi presented the conditions in the Parnonas forests after the fires of 2007 and briefed the participants on the restoration actions they had undertaken in their area of responsibility. Mr Spyros Katsipodas then made a brief presentation on the mountain Taygetos, also affected by the fires of 2007, and described the impacts of these fires and the restoration measures taken. Mr Peter Kakouros, presented the assessment of the effects of fire in black pine forests in Parnonas and the approach adopted by the project for their restoration. Prof. Margarita Arianoutsou then made a presentation on the selection of objectives and measures for post-fire forest management in black pine forests, based on the science of ecology. Prof. V. Ramon Vallejo presented examples of approaches to restoration of black pine forests in Spain. Ass. Prof. Peter Ganatsas discussed the features of black pine forests affecting the choice between natural and artificial regeneration. Last spoke Dr. Nikos Grigoriadis on the handling of forests that facilitates natural regeneration and the techniques for artificial restoration in the framework of decisions regarding post-fire management of black pine ecosystems' restoration.
A very constructive discussion then developed and led to the adoption of conclusions. Dinner followed.
The second day of the conference involved a visit to the affected areas of southern Parnonas, guided by Ms Simadi, Mr Kakouros and staff of the MB. The participants discussed in situ about the necessary actions for the restoration of black pine forests.

The conference fostered scientifically sound restoration practices. The specialized audience, consisting of people working for forest/ nature conservation benefited from the exchange of experiences. For the project, the conference has been useful in the sense that very experienced scientists, specialised in post-fire restoration of Mediterranean forests, presented principles and examples of good practice for forest restoration and expressed their opinion on the restoration approaches developed by the project. Three of these experts came from the Cost Action network, which consolidates Mediterranean wide expertise on the subject. Their opinions on the criteria for developing restoration strategies were especially useful. The deliverable of Action A.2a was refined considering these opinions.

EKBY then prepared the conference proceedings and conclusions, which constitute the technical publication of the project.

- *By whom*

The action was implemented by EKBY.

- *When*

The duration of Action D.3a was as follows:

2009				2010			
I	II	III	IV	I	II	III	IV
	●	●	●	●	●		

- *Performance/Results*

The objectives for this action were fully met.

5.4.1.6.ACTION D.4b): Organization of the conference for the post-fire restoration actions in Black pine forests

- *What and how*

The conference «New approaches for the restoration of black pine forests» was held in Sparti, on 15-16 October 2009. The first day began with the registration of participants, who numbered 63. They came from forests services, protected areas' management bodies, local authorities, NGOs and other organizations. On arrival they received an information package containing the agenda, and information material on the area and on the project; welcome catering was offered.

Details on the programme, participants and results are given under Action D.4a, which is supplementary to the present action. In brief, during the first day, the participants presented experiences and results from post-fire black pine forest restoration. The project personnel presented the assessment of the fire of 2007 in black pine forests at the project site as well as the structured approach developed under Action A.2a for their restoration. Dinner followed. During the second day the participants visited the project area and discussed in situ about the necessary actions for the restoration of black pine forests (details were given in Annex 8 of PR1). The visit covered nearly all of the affected areas up to the village of Polydroso-Tzitzina, where participants had lunch at a traditional restaurant and discussed with locals the problems of the region after the devastating fires.

The feedback obtained on the organisation of the conference was very positive.

The conference proceedings were published in 500 copies (a copy was given in Annex IX of PR2). The publication was circulated to 138 Forest Services and 22 recipients in university forest and biology departments, research institutes and NGOs in Greece and to 21 recipients from other countries in the Mediterranean region. The remaining copies will be distributed by EKBY and the MB at conferences and other events, or to interested bodies and persons on request.

- *By whom*

The action was implemented by the MB.

- *When*

The duration of Action D.3b was as follows:

2009				2010			
I	II	III	IV	I	II	III	IV
	●	●	●	●	●		

- *Performance/Results*

The objectives for this action were fully met.

The international conference and the publication of its proceeding are Output indicators for "Awareness raising and communication".

5.4.1.7.ACTION D.5a: Meeting for the dissemination of project results

- *What and how*

The results of the project were presented at the project closing meeting, held on 15-16/5/2013 in Sparti, at the Museum of the Olive and Greek Olive Oil. The MB organized the meeting, which had 60 participants.
The first day involved presentations by the personnel of the project on the activities and results. Then followed the presentation of the documentary film «The traveling of seed». Finally, academics and practitioners made presentations regarding the post-fire environment and the restoration of mountainous conifer forests in the Mediterranean. On the second day of the meeting about 30 participants boarded a bus provided by the FSS and visited selected restoration areas on Parnons, as well as project monitoring plots and reservoirs of the FSS. The field visit was completed in the Mountain Refuge of the FSS.
The meeting presented successfully the project objectives, outputs, and results to stakeholders. It highlighted the potential for transferring the application of the structured approach to other areas and the future prospects of the habitat type. Also, it was useful in bringing the restoration efforts closer to the inhabitants and users of the area. Finally, the meeting enhanced understanding and awareness of stakeholders and local communities for the restoration of forests, notably in Natura 2000 sites. The agenda, list of participants and presentations of the meeting are given in Annex 7.5.

- *By whom*

The action was implemented by the MB.

- *When*

Initially, the meeting had been planned for late 2012. However, it was deem adequate to transfer it to 2013, in order to include all project results in the presentations of the meeting. The duration of Action D.5a was therefore as follows:

	2012				2013	
	I	II	III	IV	I	II
Baseline			●	●		
Actual					●	●

- *Performance/Results*

The objectives for this action were fully met.

5.4.1.8.ACTION D.5b: Participation in meeting for the dissemination of project results

- *What and how*

This action supplemented Action D.5a above and involved participation in the project closing meeting, held on 15-16/5/2013, in Sparti. In this meeting the project manager presented: a) the structured approach demonstrated by the project and b) the results of monitoring.

.

- *By whom*

The action was implemented by EKBY.

- *When*

The duration of Action D.5b was as follows:

	2012				2013	
	I	**II**	**III**	**IV**	**I**	**II**
Baseline			●	●		
Actual					●	●

- *Performance/Results*

The objectives for this action were fully met.

This meeting is an Output indicator for "Awareness raising and communication"(local/regional conference for very specialized audience).

5.4.1.9.ACTION D.6: Presentation of the project to international conferences

- *What and how*

There have been several occasions when the project was presented to an international audience. These involved:
1) Attendance, by the project manager, of the School on post fire rehabilitation that took place in Valencia, on 13-14/4/2010 and his participation in the Management and Workgroup meeting of the Cost Action FP0701, Post-Fire Forest Management in Southern Europe, on 15-16/4/2010, where the project and the structured approach was presented (details were provided in Annex XI of PR1).
2) Participation in the 8th European Conference on Ecological Restoration, organised on 9-14 September 2012, in Ceske Budejovice, Czech Republic where the project and its results, including results from the monitoring were presented (power point presentation was provided in Annex VI of PR3).

3) Presentation of the project at the "Forests Technical Workshop - Experience Exchange on Habitat Recovery" conference held on 29-31 October 2012 in Las Palmas of the Gran Canaria Islands, in the framework of project LIFE07 NAT/E/000759 INAGUA (Annex 7.5).

- *By whom*

The action was implemented by EKBY.

- *When*

The duration of Action D.6 was as follows:

2009				2010				2011				2012			
I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

- *Performance/Results*

The results exceed the objectives for this action ("*At least one presentation of project results in an international conference*").

This action relates to Output indicator "Presentation of the project to international conferences" for the Awareness raising.

5.4.1.10. ACTION D.7: Project's presentation through press

- *What and how*

This action involved the communication of the project through press releases, interviews, local events, the publication of articles and circulation of promotional material.
In total, 25 press releases were published, instead of six originally planned. Press releases 1-10 were annexed in PR1 and PR2. Press releases 11-13 were given in Annex 5 of the MTR. Press releases 14-18 were included in Annex VII of PR3. The remaining are given in Annex 7.5 of this report together with paper clippings. We should note that releases 21 and 22 differ from the others in that they refer to the project not exclusively but in the context of other information provided. This is why they do not bear the project logo. They are mentioned here because they produced publicity for the project. The clippings mentioned in point 3 of Annex of the EC letter of 10/12/2012 on PR3 relate to the project in that the actions the MB presented in the 1st Marketing and branding conference included the LIPE PINUS dissemination actions. Press releases were sent to 70 - 100 recipients in newspapers, and radio and television stations.

As a result of the project dissemination efforts, the following media published information on the project:

National/ Athens press:
ADESMEFTOS 31/1/2009 & 12/10/2010,
ETHNOS 4/2/2009, 21/10/09 & 14/1/11
EXPRESS 30/1/2009

KATHIMERINI 5/3/2009
LOGOS 1/2/2009
TO VIMA 31/1/2009
VRADINI 14/2/2009

Local press:
ARKADIKES EIDISIS 2/2/09, 9/10/09, 13/10/09, 20/10/09, 3/7/11
PARATIRITIS SPARTIS 29/1/11
I ZOI STIN ARKADIA 25/8/2011
KATHIMERINA NEA 24/8/2011

Radio
Athens radio SKAI 1/03/2009

Nationwide TV channels
SKAI Channel 18/2/2009 and ECONEWS bulletin of 21/1/2011
ET3 Channel on the 18:00 news bulletin of 7/1/2011.

The Internet.
More than 200 articles have been uploaded on the web. These are listed in Annex 7.5.

Information from the project website was also used for the creation of a documentary film for the devastating fire of August 2007. The video can be visited at http://vimeo.com/37606195.

Furthermore, a two-page article on the conference for post-fire restoration actions in black pine forests was published in issue 84 of the specialised newsletter AMFIVION of the project beneficiary, circulated to around 3,000 recipients in Greece (a copy was included in Annex 9 of PR1). Project developments were presented in issues 85 and 90, which were given in Annex 6 of the MTR. Finally, a three-page article on the progress of the project was published in issue 95 (included in Annex VIII of PR3).

Finally, the scope of Action D.7 was extended to include the production of promotion material and the organisation of an information campaign. We administered this as a non-substantial modification in the sense of article 15 of the Common Provisions.

In more detail, through this modification the project deployed an environmental information campaign targeting schools of the area that was affected from the fires of 2007. The campaign included educational games for young students, the projection of the documentary film "The travelling seed" and extensive briefing on the actions of the project LIFE07 NAT/GR/000286, the importance of black pine for the protected area and the devastating effects of fire that burnt the black pine forests. The campaign also included visitors' information at the Environmental Information Centers.
Indicative actions were:

- 26/05/2010 Environmental information visit at Geraki Elementary School (10 students) in Laconia
- 09/08/2011 Project presentation at Kastanitsa's cultural center (50 participants)
- 05/06/2012 Environmental information visit at Sellasia's Elementary School (20 students) in Laconia

- 06/06/2012 Environmental information visit at Leonidio's Elementary School (100 students) in Arcadia
- 30/03/2013 Guided tour of Ermioni's nature club at Astros Environmental information Center. (50 members)
- 19/04/2013 Environmental information visit at Ermioni's Elementary School (160 students) in Argolida.

To support the above and for wider use for the promotion of the project, this action further involved the production of promotional material bearing the logo of the project. More specifically, 270 pieces of baseball hats, 80 pieces of sweatshirts (with hood), 350 pieces of T-shirts, 200 pieces of neckstraps, 100 pieces of fabric mouse pads, 500 pieces of notebooks, 100 pieces of credit card flash disks (4GB) and 100 pieces of flash disks (1GB) were produced (see photos in Annex 7.5). Some of the material has already been used, whereas the items that remain at the MB, will be distributed free of charge to schools and visitors.

- *By whom*

The action was implemented by the MB.

- *When*

The duration of Action D.7 was extended until the project end, in order to cover all major events of the project including its closing meeting. The duration was therefore as follows:

	2009				**2010**				**2011**				**2012**				**2013**	
	I	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**
Baseline	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Actual	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

- *Performance/Results*

The results exceed the objectives for this action.

Overall, this action relates to the following Output indicators for public awareness:

Type of media	Initial Target (IR)	Result achieved
Press releases made by the project	6	25
General public article in national press	7	10
General public article in local press	7	8
Specialised press article	2	4
Internet article	2	>200
TV news/reportage	1	3
Radio news/reportage	1	1

List of deliverables of dissemination activities:

- Three notice boards placed at key points in the project area.
- A web site installed (http://www.parnonaslife.gr) and regularly updated.
- International conference on post – fire interventions.
- Leaflet in 5.000 copies (4.000 in Greek and 1.000 in English).
- Conference proceedings / Technical Publication in 500 English and Greek copies.
- Film in 700 films (DVD) (550 in Greek and 150 in English).
- Layman's report in 200 copies (English and Greek).
- Press releases (25 in total)
- Photographs (Article 12.11 of the common provisions) (Annex 7.5)

All documents and durable goods were bearing LIFE and Natura2000 logos

5.4.2 Layman's report

The layman's report was produced in the context of Action D.2. It contains a short description of the project and its basic achievements and focuses on the advantages of applying the structured approach demonstrated by the project for the restoration of black pine forests. It also contains illustrative photographs of the area before and after restoration. The layman's report was produced in 200 copies at the end of the project. The MB provided copies to the FSS, EKBY and GDF to distribute to pertinent authorities and further disseminated it to local authorities and services. The MB will continue the distribution of the Layman's report to visitors of the area (foreigners included), to government and non-government organizations and also to the general public through the project website.

5.4.3 After-LIFE Communication plan

The after After-LIFE Communication plan sets out how the beneficiary and partners plan to continue applying, disseminating and communicating the results of the project after its end, and in particular how they plan both to continue applying the results themselves and to facilitate / encourage / ensure their wider application by others. The plan was delivered in English, in electronic and in paper form. The plan is given in Annex 7.4 of this report. Its key aspects are outlined in section *5.3.2. Long-term sustainability of this report*.

5.5 Overview of duration of tasks

The progress made against the established time schedule for all project actions is presented in the project Gantt chart (Figure 12). The actual start and end dates by action are summarised in Table 4.

Table 4. Actual start and end dates of project actions

Action	Start	Finish
A1 a and b: Impact assessment	2/1/2009	30/9/2009
A2 a and b: Structured approach	2/1/2009	30/6/2013

Action	Start	Finish
A3: Technical study	1/1/2010	20/9/2010
Call for tenders for restoration works	20/9/2010	20/9/2010
A4: Monitoring the restored areas	2/1/2009	30/6/2013
C1 a and b: Restoration works	17/12/2010	30/6/2013
C1 c: Plant production	2/1/2009	31/12/2011
Contractor completes restoration works	17/5/2012	17/5/2012
D1: Website	9/2/2009	30/6/2013
D2: Communication material	1/4/2009	30/6/2013
D3 a: Scientific support to film production	1/12/2009	31/12/2012
D3 b: Film production	1/10/2009	31/12/2012
D4 a and b: Conference	1/6/2009	30/6/2010
D5 a and b: Closing meeting	1/1/2013	30/6/2013
D6: Presentation to conferences	1/1/2009	31/12/2012
D7: Media work	1/1/2009	30/6/2013
E1: Project management	1/1/2009	30/6/2013
E2: Networking	1/1/2009	31/12/2012
E3 a and b: Project monitoring	1/1/2009	30/6/2013
E4: Support to monitoring	1/1/2009	30/6/2013
E5: Audit	1/7/2013	18/9/2013
E6: After- Life conservation plan	1/4/2013	30/6/2013

Figure 12. Gantt chart

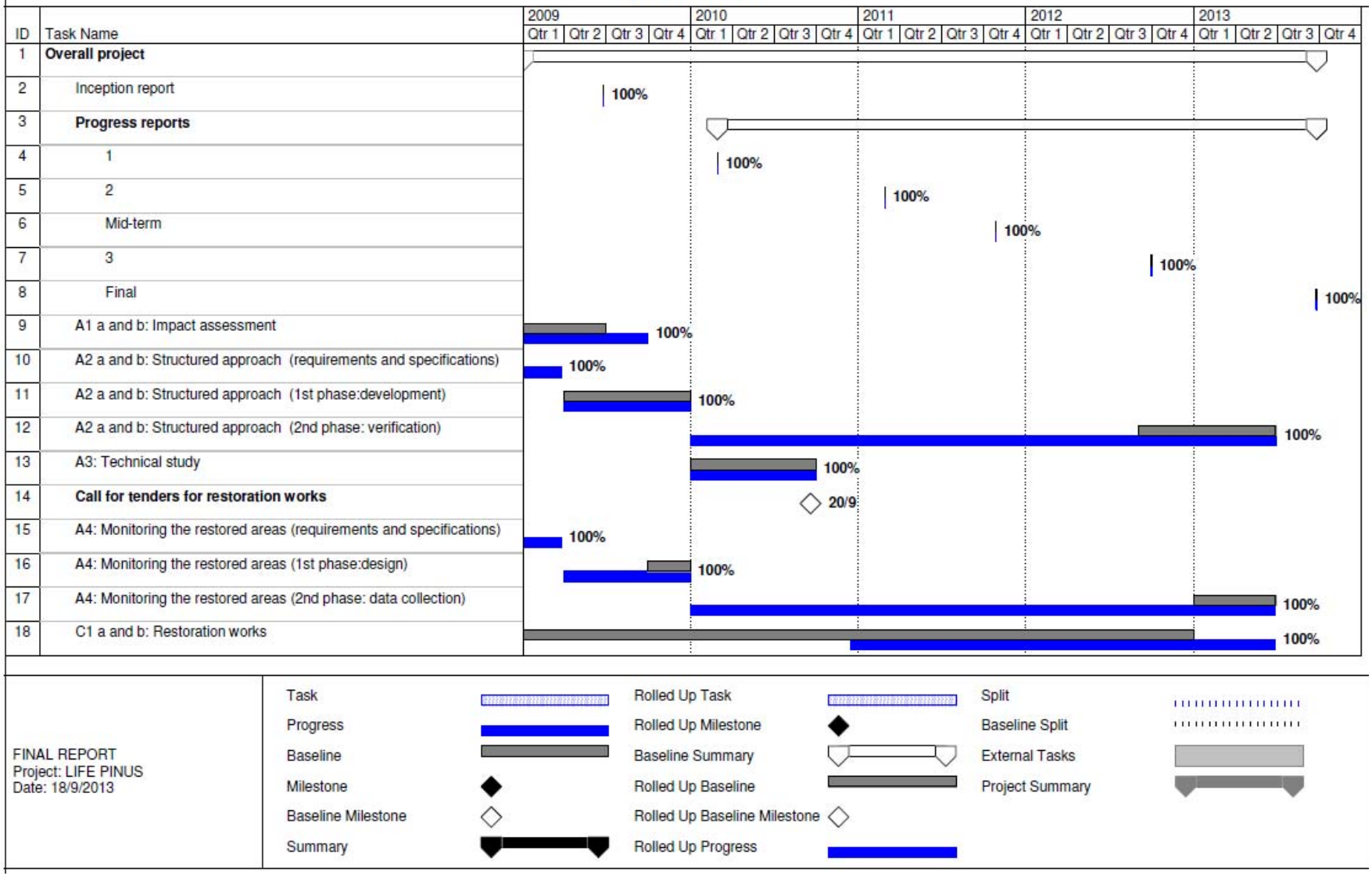
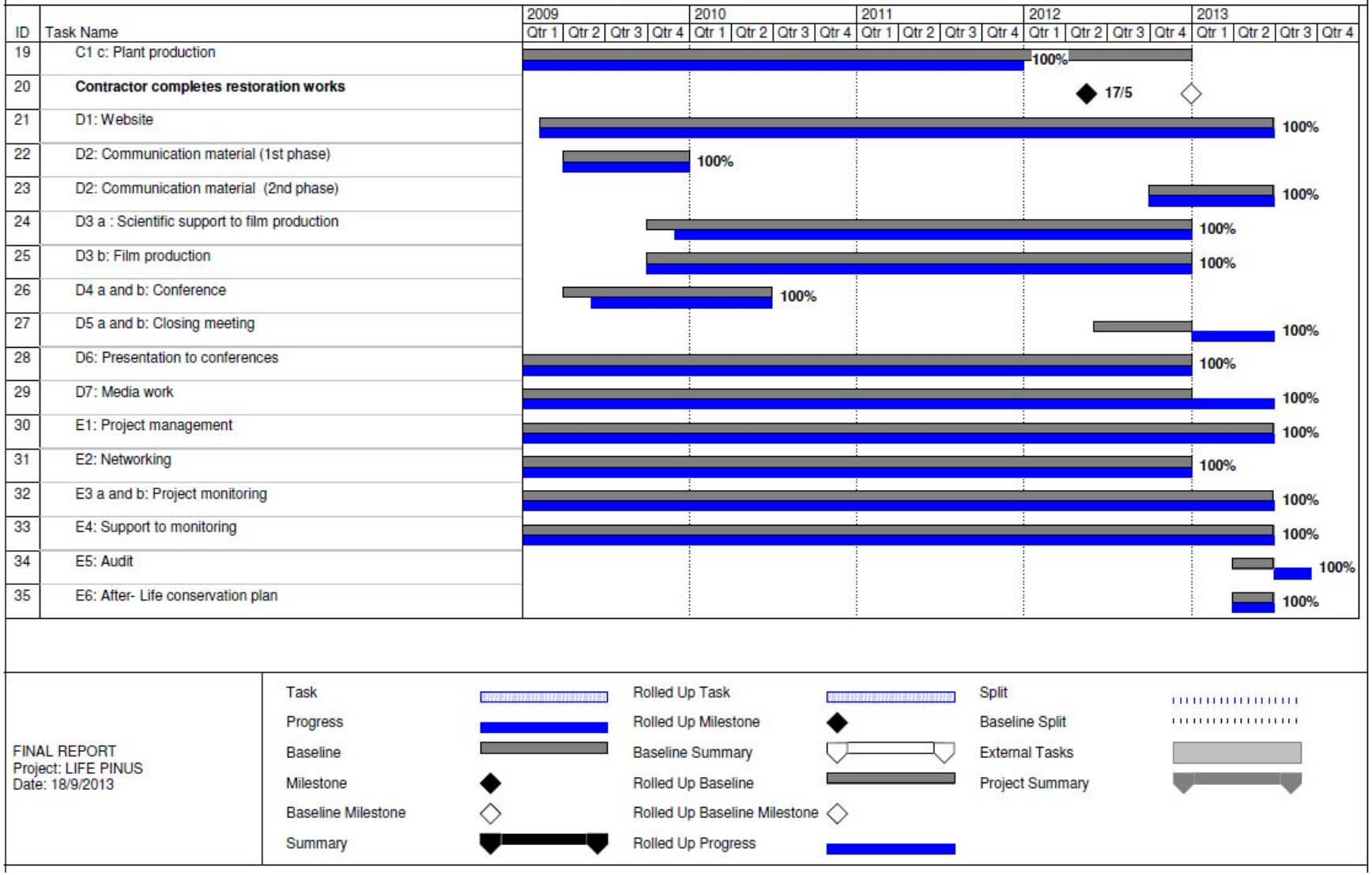


Figure 12. Gantt chart



6. Comments on the financial report

6.1. Costs incurred

The project costs are given in Table 5.

Table 5. Project costs incurred

	Cost category	Total cost according to the Commission's decision	Costs incurred from the start date to 30/6/2013	%
1.	Personnel	564.420,00	604.772,30	107,15
2.	Travel	68.895,00	38.210,94	55,46
3.	Outside assistance	2.139.495,00	2.136.084,44	99,84
4.	Durables: total non-depreciated cost	104.500,00	91.809,39	87,86
	- Infrastructure sub-tot.			
	- Equipment sub-tot.	104.500,00	*91.809,39*	87,86
	- Prototypes sub-tot.			
5.	Consumables	96.000,00	89.955,39	93,70
6.	Other costs	5.000,00	3.315,08	66,30
7.	Overheads	57.481,00	57.207,67	99,52
	TOTAL	3.035.791,00	3.021.355,21	99,52

The deviations between planned and actual costs do not exceed the allowed flexibility of 30.000€ and 10%.

All the equipment foreseen in the project proposal was purchased. This included:
- Two off-road vehicles, plus necessary accessories. The vehicles were used by FSS and EKBY respectively, for fieldwork as well as for several other actions of the project, such as:
    - Monitoring of natural and artificial restoration on Parnonas (Action A4), which lasted until the end of project.
    - Additional visits from project start and until the end of the project for Action E3b, monitoring efficiency of the restoration activities using satellite images.
    - During shootings of the film (Action D3b) where the presence of scientific personnel was necessary in order to indicate suitable locations and shooting scenes. These shootings took place three times in Parnonas and once in the FNO.
    - For regular visits to restoration areas in the context of Action C1, by both the FSS and EKBY.
    - For trips regarding presentations of the project in several areas in Greece aiming at the dissemination of project results and for meetings promoting networking with other Life projects.
- PC Hardware and software and a plotter used for data handling and the compilation of project deliverables.

- A digital SLR camera, used during fieldwork together with a PC Portable with operating system and software for image processing and office application, capable for advanced GIS software and relevant data handling,

Furthermore, a brush shredder was purchased by the project and used by the FSS for clearing of roadside vegetation.

The equipment acquired by the FSS will be later used to monitor and inspect restored areas and to manage the forests of Mount Parnonas (SCI GR 2520006), "Oros Taygetos (SCI GR2550006)" and "Oros Taygetos and Langada Tripis (SPA GR2550009)". The equipment acquired by the EKBY will later be used to actions related to nature conservation, as accrued by the organisation's objectives and activities.

The overall project cost practically equals the budget, since increases in the personnel cost were covered through the transfer of funds from other categories as mentioned above.

We should note that, value for money from the project was higher than planned, since, without any increase in the budget, more work was done. Examples of extra work include: the monitoring of natural regeneration, the purchase of extra equipment (brush shredder) and the production of promotional material used for the information campaigns of the MB (section 5.4.10 of this report). The latter was possible through transfer of funds among dissemination actions. In specific, the unused funds due to rebates of a total of 16,100 €, were transferred to Action D7 to extent its scope.

The project administered all the deviations mentioned before as non-substantial modifications in the sense of article 15 of the Common Provisions. However, there was communication with the external monitoring unit prior to any change of the budget. Moreover, deviations were discussed in the reports that the project submitted, including the MTR.

6.2. Accounting system

EKBY, as the coordinating beneficiary of the project, kept separate accounts for the project as part of the Analytical Cost Accounting System it uses. The Analytical Cost Accounting System used ensures that there is no overcharge or double financing either of the employee's monthly salary cost or any of the other costs allocated to the project.
All the accounting documentation on the expenditure incurred and income received related to the project were filed separately.
Project partners kept separate accounts and reported their project expenditure and income to the coordinating beneficiary. All invoices were stamped in order to show the link to the LIFE+ project.
Personnel costs were allocated to the project on the basis of daily Time Sheets. Time sheets were kept by each beneficiary and were submitted to the coordinating beneficiary for verification and reporting to the EC.

6.3. Partnership arrangements

For the compilation of project reports, each beneficiary had undertaken to provide to the coordinating beneficiary a statement of expenditure and income for the project. In the Partnership Agreement, beneficiaries had agreed to report costs as provided for in Common Provisions. More specifically, each beneficiary had agreed to comply with Part II "financial provisions" of the Common Provisions.
As regards financial transactions, it should be noted that the project income came from the EC, the GDF and own contributions of the partners. The GDF transferred its co-financing directly to partners DAP and DAEMTH. The financial contribution from the EC was paid to the coordinating beneficiary. In accordance with the Partnership Agreement, the EC contribution would be distributed by the coordinating beneficiary to the other beneficiaries in three instalments, following respective reimbursements by the EC. The exact amounts were set out in Article 14 of the Partnership Agreement A copy of this agreement was given in Annex 1 of PR1.

6.4. Auditor's report/declaration

An independent auditor, nominated by the coordinating beneficiary, verified the final statement of expenditure and income provided to the EC using the standard audit report form available on the LIFE website. The report is included in the Financial Report.

7. Annexes

The following Annexes are included in the present report:

7.1. Administrative annex
- 7.1.1. Overview of Partnership agreements
- 7.1.2. Project management meetings

7.2. Final output indicators

7.3: Technical annexes
- 7.3.1. Guidelines for the application of a structured approach to restore Black pine habitats
- 7.3.2. Report on monitoring artificial restoration in 2012
- 7.3.3. Assessment of black pine forest restoration on Mount Parnonas (main text and annex)
- 7.3.4. Screenshots of the GIS database developed for the project

7.4: After-Life Conservation Plan

7.5. Dissemination annexes
- 7.5.1. Photographs produced during the project (Dissemination Meeting Action D5, Dissemination to schools Action D7, International conference Action D4, Networking Action E2)
- 7.5.2. Publications
  - Leaflet (in Greek and English)
  - Notice boards
  - Conference proceedings
  - Documents with LIFE logo (template press release, template cover letter) (digital)
- 7.5.3. Documentary film
- 7.5.4. Project Website pages in html format
- 7.5.5. Standard presentation of the project
- 7.5.6. Press releases - Paper clippings
- 7.5.7. Articles on the web (digital)
- 7.5.8. Agenda and list of participants of the closing meeting (In Greek). For the presentations please visit project's site relevant section
- 7.5.9. Presentation of the project at the "Forests Technical Workshop - Experience Exchange on Habitat Recovery"
- 7.5.10. Layman's report
- 7.5.11. Promotional material

7.1. Administrative annexes

7.1.1. Overview of Partnership agreements

Version	Date of signing	Reports with which the agreement was submitted to the EC
Initial	02/02/2009	Annex 1 of the Inception Report dated 25/9/2009
1st modification	12/10/2009	Annex 1 of the 1st Progress Report dated 28/2/2010

7.1.2. Project management meetings

A project kick-off meeting was organised on 27/01/2009 in Athens. Representatives of the project partners and of the GDF (project co-financier) participated in this meeting and discussed in detail the technical, administrative and financial aspects of project implementation. Among the results of this meeting was the conclusion of the contents of the Partnership Agreement.

In March 2009 the project manager and the administrative/financial officer participated in the LIFE07 kick-off meeting that was organised by the EC and were informed on the requirements of the LIFE+ Programme.

The project Steering Committee met seven times (on 15/10/2009, 20/1/2010, 30/8/2010, 27/1/2011, 26/9/2011, 2/4/2012 and 3/12/2012), in order to review and assess project progress, to discuss difficulties and ways to overcome them and to plan future actions.

Meetings of the project team i.e. between the project manager and personnel from FSS and MB took place on 21/2/2010, 5/6/2010, 6-13/6/2010, 28/11-3/12/2010, 20-24/6/2011 (when a monitoring visit also took place), 25-30/11/2011, 24-25/5/2012, 27-29/3/2013, and on 14/5/2013.

The external monitoring team visited the project area in April 2009, June 2010, June 2011 and July 2013 and discussed with the project partners the project administration and management, its progress and results.

7.2 LIFE+ Nature outcomes indicators

OUTCOMES

Part 1 - Preparatory actions

Table 1 - Types of preparatory actions implemented (A, B actions)

Types of preparatory actions	No. of preparatory actions	Species involved (Latin name)	Type of habitats involved (*)	No. of species involved	No. of habitats involved	No. of N2000 sites involved	Surface involved (ha)	Incurred cost (€)
Plans of project measures	1	Pinus nigra	"Mediterranean pine forests with endemic black pine"	1	1	1	290	38107,38
Action plans								
Management plans								
Guidelines	2	Pinus nigra	"Mediterranean pine forests with endemic black pine"	1	1	1	290	71025,08
Inventories & Studies	2	Pinus nigra	"Mediterranean pine forests with endemic black pine"	1	1	1	290	61132,92
Ex ante monitoring								
Ex post monitoring	1	Pinus nigra	"Mediterranean pine forests with endemic black pine"	1	1	1	290	35186,29
Permit procedures								
New Natura 2000 area								
Land purchased								
Other (please specify)								
Total (Every item counted only once)	6	N/A	N/A	1	1	1	290	205451,67

(*) Identification number and name as in the Directives

OUTCOMESS

Part 2 - Concrete actions

Table 2 - Best practices/concrete techniques/conservation actions/methods implemented (C actions)

Deliverable	No. of concrete actions	Species involved (Latin name)	Type of habitats involved (*)	No. of species involved	No. of habitats involved	No. of N2000 sites involved	Surface involved (ha)	Incurred cost (€)
Natura 2000 site creation								
Natura 2000 site restoration/improvement	3	Pinus nigra	"Mediterranean pine forests with endemic black pine"	1	1	1	290	2.356.467
Conservation actions								
Reintroduction								
Ex situ conservation								
Removal of alien species								
Others (please specify)								
Total (Every item counted only once)	3	N/A	N/A	1	1	1	290	2356467,17

(*) Identification number and name as in the Directives

Table 3 - Training activities

No. of training sessions	Total no.of persons trained	Incurred cost (€)

OUTCOMES

Part 3 - Awareness raising and communication

Table 4 - Workshops, seminars and conferences

Target audience:	General public			Specialised audience (e.g. decision-makers)			Very specialised audience (e.g. experts, academics)		
Number of participants:	Local/ Regional	National	EU/ International	Local/ Regional	National	EU/ International	Local/ Regional	National	Local/ Regional
0-25 participants									
25-75 participants							1		1
75-100 participants									
More than 100 participants									
Total incurred cost (€)	37435,73								

Table 5 - Media and other communication and dissemination work

Type of media	No.
Project website: average number of visitors per month	112
Press releases made by the project	25
General public article in national press	10
General public article in local press	8
Specialised press article	4
Internet article	200
TV news/reportage	3
Radio news/reportage	1
Film produced	1
Film played on TV	
Film presented in events/festivals	
Exhibitions attended	
Information centre/Information kiosk	
Project notice boards	3
Presentation of the project to international conferences	3
Total incurred cost (€)	22664,51

Table 6 - Publications

Type of publication	No. published	No. of copies	Languages (*)
Layman's report	1	200	GR, EN
Manuals			
Leaflets	1	5000	GR, EN
Brochures			
Posters			
Books			
Technical publications	1	500	GR, EN
Copies of documentary film	1	700	GR, EN
Total incurred cost (€)	15179,45		

(*) Please use language acronyms

Table 7 - Educational activities

Establishment involved	No. of students
Kindergartens/Primary schools	
Secondary schools	
Higher education establishments	
Total incurred cost (€)	

7.5.6. Press releases - Paper clippings (Releases 18-25)

The press releases were circulated as follows:

2009

1. "/The beginning of LIFE+ project "Restoration of *Pinus nigra* forests on Mount Parnonas (GR2520006) through a structured approach" (30/1/2009)/"
2. "/International Conference "New approaches for the restoration of Black pine forests" (7/10/2009)/"
3. "/Program of the International Conference (12/10/2009)/"
4. "/Regarding the completion of the International Conference (19/10/2009)/"

2010

5. "/First year of success for the project (11/3/2010)/"
6. "/The Black pine forests of Parnonas celebrate the International Day of Biodiversity (21/5/2010)/"
7. "/Natural regeneration is going well (17/6/2010)/'
8. "/Proceedings of the International Conference "New approaches for the restoration of Black pine forests" have been published (11/8/2010)/"
9. "/The first field shooting began for the film regarding the restoration of burnt Black pine forests (3/12/2010)/"
10. "/The Black Pine forest of Parnonas is being restored (23/12/2010)/"

2011

11. "/Parnon: Reforestation starting point (14/01/2011)/"
12. "/Meeting for reforestation projects (27/01/2011)/"
13. "/World Environment Day (05/06/2011)/"
14. "/The Management Body of Mount Parnon & Moustos Wetland participates in Forest Feast in Kastanitsa Kinourias (21/07/2011)/"
15. "/Management Body of Mount Parnon & Moustos Wetland: Continuing environmental actions (22/08/2011)/"

2012

16. "/Participation of the Management Body in the 1st Pan-Hellenic Conference on Place Marketing and Branding (9/04/2012)/"
17. "/World Environment Day 2012 (13/06/2012)/"

2013

18. "/Creation of social media web page (Facebook) (12/02/2013)/"
    Release 18 and paper clippings

19. "/The documentary film entitled «The travelling seed» (06/03/2013)/"
    Release 18 and paper clippings

20. "/The diachronic role of mount Parnon's ecosystem in society, economy and environment (21/03/2013)/"
Release 18 and paper clippings

21. "/Guided tour of Ermioni's nature club (03/04/2013)/'
Release 18 and paper clippings

22. "/Environmental information visits and guided tours on the occasion of the international Day for the Earth April 22nd 2013 (29/04/2013)/"
Release 18 and paper clippings

23. "/Meeting for the dissemination of project results of LIFE PINUS (30/04/2013)/"
Release 18 and paper clippings

24. "/Structured Approach Evaluation Questionnaire (08/05/2013)/"
Release 18 and paper clippings

25. "/Successful presentation of the project LIFE PINUS results (17/05/2013)/"

7.5.7. Articles on the web

Here follow links to articles on the web referring to the LIFE PINUS project. Since quite some time has elapsed since the uploading of many of them, we are sorry if any links have been broken.

http://ecoanimallibrary.wordpress.com/2011/01/05/το-δάσος-μαύρης
http://ellinikifysi.gr/2010/05/parnonas/
http://ellinikifysi.gr/2010/08/parnonas-3/
http://ellinikifysi.gr/2010/12/parnonas-9/
http://ellinikifysi.gr/2011/01/parnonas-12/
http://ellinikifysi.gr/2011/06/parnonas
http://kalimera-arkadia.blogspot.com/2011/06/blog-post_5461.html
http://karyes.blogspot.com/2010/12/first-field-shooting-began-for-film.html
http://sikam.wordpress.com/2010/05/21/μαυρη-πευκη-παρνωνα
http://www.arcadiavoice.gr/arcadia/%CF%80%CE%B5%CF%81%CE%B9%CE%B2%CE%B1%CE%BB%CE%BB%CE%BF%CE%BD%CF%84%CE%B9%CE%BA%CE%AE-%CE%B5%CE%BD%CE%B7%CE%BC%CE%AD%CF%81%CF%89%CF%83%CE%B7-%CE%B3%CE%B9%CE%B1-%CF%84%CE%BF%CE%BD-%CF%80%CE%AC%CF%81/
http://www.boriakinouria.gov.gr/Default.aspx?tabid=261&newid=101
http://www.dete.gr/news.php?article_id=23961[1/2/2011
http://www.econews.gr/14/1/11/news-anadaswsi-parnwnas/
http://www.econews.gr/2010/12/25/news-anadaswsi-parnwnas/
http://www.eleftheriaonline.gr/index.php?option=com_k2&view=item&id=3875:σύσκεψη-για-τα-έργα-αναδάσωσης-στον-πάρνωνα&Itemid=52[1/2/2011
http://www.elladatv.gr/site/index.php?Cat=4&SubCat=28&Caltime=1274821200&articleid=1880
http://www.ethnos.gr/general2.asp?catid=11900&subid=20110&pubid 14/1/11
http://www.fdparnonas.gr/el/press-releases/20
http://www.fdparnonas.gr/el/press-releases/27
http://www.inarcadia.gr/news/arxeio/2010/05/210510-nea.htm
http://www.inarcadia.gr/news/arxeio/kal09/nea191009.htm
http://www.isthmos.gr/article.php?news_id=22356[1/2/2011 28/1/11
http://www.lakonikos.gr/index.php?c_id=7&n_id=3029 1/2/11
http://www.lakonikos.gr/index.php?c_id=7&n_id=366
http://www.newpost.gr/Post-Green/item/15955-Ξεκίνησε-η-αναδάσωση-του-Πάρνωνα 14/1/11
http://www.notospress.gr/index.php?c_id=11&n_id=504[1/2/2011 28/1/11
http://www.oikologio.gr/content/view/2554/111/19/10/09
http://www.parnonas.com/index.php?c_id=23&n_id=63
http://www.report24.gr/siskepsi-gia-ta-erga-anadaswsis-ston-parnwna.htm
http://ellinikifysi.gr/2011/08/parnonas-21/
http://www.news.935radio.gr/λακωνια/Περιβαλλον/8555-ΓΙΟΡΤΗ-ΤΟΥ-ΔΑΣΟΥΣ-2011-στην-Καστάνιτσα-Κυνουρίας.html
http://www.arcadiaportal.gr/news/o-foreas-diaxeirisis-orous-parnona-kai-ugrotopou-moustou-summetexei-stin-giorti-tou-dasous-stin
http://www.eleftheriaonline.gr/...=item&id=9346:ο-φορέας-διαχείρισης-όρους-πάρνωνα-και-υγροτόπου-μουστού-συμμετέχει-στην-γιορτή-δάσους-στην-καστάνιτσα-κυνουρίας
http://ellines.com/newsinfo.php?id=1501067&lang_id=3

http://karyes.blogspot.com/2011/07/blog-post_27.html
http://www.newsbeast.gr/efprattein/arthro/207499/perivallodiki-euaisthitopoiisi-gia-mikrous-kai-megalous
http://leonidiopress.blogspot.com/2011/07/blog-post_6909.html
http://ellinikifysi.gr/2011/08/parnonas-23/
http://astrosnews.gr/?p=19725
http://www.lakonikos.gr/index.php?c_id=7&n_id=5145
http://kalimera-arkadia.blogspot.com/2011/08/blog-post_2309.html
http://www.peloponnisiaki.gr/?p=6319
http://www.myarcadia.gr/...cf%8c-%cf%84%ce%bf-%cf%86%ce%bf%cf%81%ce%ad%ce%b1-%ce%b4%ce%b9%ce%b1%cf%87%ce%b5%ce%af%cf%81
http://www.notospress.gr/index.php?c_id=11&n_id=2738
http://www.news.935radio.gr/λακωνια/Περιβαλλον/11018-Συνέχεια-δράσεων-από-το-Φορέα-Διαχείρισης-Όρους-Πάρνωνα-Υγροτόπου-Μουστού.html
http://www.arcadiaportal.gr/news/sunexeia-draseon-apo-forea-diaxeirisis-orous-parnona-ugrotopou-moustou
http://www.arcadiavoice.gr/arcadia/συνέχεια-δράσεων-για-την-προστασία-το/
http://arcadialife.gr/?page_id=364
http://leonidiopress.blogspot.com/2011/08/blog-post_9506.html
http://www.arcadiaportal.gr/news/foreas-diaxeirisis-orous-parnona-ugrotopou-moustou-pagkosmia-imera-periballontos
http://www.arcadiavoice.gr/21150/arcadia/παγκόσμια-ημέρα-περιβάλλοντος-2012-με-το
http://www.argolidablogs.gr/...08/Επισκέψεις_του_προσωπικού_του_Φορέα_Διαχείρισης_Όρους_Πάρνωνα_και_Υγροτόπου_Μουστού_στα_σχολεία
http://ellinikifysi.gr/2012/06/parnonas-40/
http://ithominews.blogspot.gr/2012/06/blog-post_7583.html
http://www.lakoniaportal.gr/news/1161/o-foreas-diaheirisis-oroys-parnona-ygrotopoy-moystoy-gia-tin-pagkosmia-imera-periballontos
http://www.leonidion.gr/2012/06/5-2012.html
http://www.palo.gr/cluster/blogs/peloponnhsos-nea/27643/?clid=4994313
http://www.peloponnisiaki.gr/?p=30277
http://ns2.pressit.gr/index.php/terms-use/5952-Παγκόσμια-ημέρα-περιβάλλοντος-2012-με-τον-Φορέα-Διαχείρισης-Όρου-Πάρνωνα
http://argolikeseidiseis.blogspot.gr/2012/06/blog-post_1338.html
http://www.astrosparalio.gr/?a=singlearticle&id=4997
http://www.parnonaslife.gr/el/news-announcements/news/52
http://www.arcadiaportal.gr/news/apokatastasi-ton-dason-pinus-nigra-ston-parnona
http://astrosnews.gr/?p=57344
http://www.dou.gr/articlext.php?a=4725655
http://naturahellas.blogspot.gr/2013/02/pinus-nigra.html
http://www.palo.gr/cluster/blogs/eidhseis-ellada/23/?clid=7000549
http://voltastintripoli.blogspot.gr/2013/02/pinus-nigra-gr2520006.html
http://www.astrosparalio.gr/?a=singlearticle&id=9756
http://www.parnonaslife.gr/el/news-announcements/news/53
http://www.fdparnonas.gr/el/press-releases/168
http://ellinikifysi.gr/2013/03/parnonas-64
http://www.agronews.gr/ekmetaleuseis/sitira-kai-sporoi/arthro/93609
http://aliartos-boiotias.blogspot.gr/2013/03/blog-post_9661.html

http://www.apela.gr/newspaper-titles
http://www.arcadiaportal.gr/news/taksidi-tou-sporou
http://www.arcadiavoice.gr/31183/arcadia/φορέας-διαχείρισης-πάρνωνα-το-ταξίδι
http://arkadiapress.gr/το-ταξίδι-του-σπόρου
http://astrosnews.gr/?p=58862
http://www.axortagos.gr/taksidi-tou-sporou-vinteo.html
http://biologikaorganikaproionta.com/blog/oikologika/το-ταξίδι-του-σπόρου-μια-ταινία-για-τ
http://dab-aldb.blogspot.gr/
http://www.dou.gr/articlext.php?a=4937432
http://theopemptou.com/news/index.php/newsites/econews
http://www.econews.gr/2013/03/07/mauri-peuki-tainia-96977
http://www.back-to-nature.gr/2013/03/blog-post_2708.html
http://ithominews.blogspot.gr/2013/03/blog-post_7.html
http://www.kalamatablogs.gr/ITHOMI_NEWS/2013/03/07/Το_ταξίδι_του_σπόρου
http://www.kalimera-arkadia.gr/arkadia/27270-tainia-to-taksidi-tou-sporou-ston-parnona
http://katidiaforetiko.blogspot.gr/2013/03/blog-post_7722.html
http://www.lakonikos.gr/article/33084-mia-tainia-gia-tin-apokatastasi-ton-dason-meta-apo-purkagiabrto-taxidi-tou-sporou-
http://www.moriasnews.gr/2013/03/to-taxidi-tou-sporou/
http://www.moriasnews.gr/2013/03/igrotopos-moustouto-taxidi-tou-sporou/
http://myblogs.gr/article/taxidi-toy-sporoy
http://www.mynews.gr/11/3192869/το-ταξίδι-του-σπόρου-μια-ταινία-για-τα-πολύτιμα-δάση-μαύρης-πεύκης-στον-πάρνωνα
http://www.news123.gr/nea/newsgroup.php/3066715/
http://johntsilai.wordpress.com/2011/11/11/υπουργείο-παιδείας-εγκύκλιος-μεταθέ
http://www.palo.gr/cluster/blogs/peloponnhsos-nea/27643/?clid=7256720
http://www.parapolitika.gr/ArticleDetails/tabid/63/ArticleID/562259/«To-Taxidi-toy-Sporoy»-mia-tainia-ga-ta-polytima-dasi-mavris-pefkis-ston-Parnona.aspx
http://www.peloponnisiaki.gr/?p=40555
http://www.pireasnews.gr/index.php?option=com_content&view=article&id=335455:l---r----------&catid=73:econews
http://www.dailymotion.com/video/xy0to2_yy-yyyyyy-yyy-yyyyyy_lifestyle
http://argolikeseidiseis.blogspot.gr/2013/03/blog-post_3431.htm
http://astegosdiavatis.blogspot.gr/2013/03/To-taksidi-toy-sporoy.html
http://dasamarisos.blogspot.gr/2013/03/blog-post_7.html
http://dasarxeio.wordpress.com/2013/03/07/1053/
http://www.ekby.gr/ekby/el/EKBY_News_Announcements_el.html
http://www.astrosparalio.gr/?a=singlearticle&id=10223
http://www.parnonaslife.gr/el/news-announcements/news/54
http://www.fdparnonas.gr/el/press-releases/172
http://www.arcadiavoice.gr/31747/arcadia/η-21η-μαρτίου-παγκόσμια-ημέρα-δασοπονία/
http://www.arkadianews.gr/...λος-του-οικοσυστήματος-του-πάρνωνα-στην-κοινωνία-στην-οικονομία-και-στο-περιβάλλον-–-η-περίπτωση-του-δάσους-της-μαύρης-πεύκης.html
http://astrosnews.gr/?p=60205
http://www.axortagos.gr/oikosistima-tou-parnona-kai-rolos-tou-koinonia-oikonomia-kai.html

http://dasologoi.gr/arthra-apopseis/1722-to-oikosystima-toy-parnona-kai-o-rolos-toy-se-koinonia-oikonomia-kai-periballon--to-dasos-tis-mayris-peykis.html
http://www.dou.gr/articlext.php?a=5074088
http://www.econews.gr/2013/03/24/parnonas-mauri-peuki-97700
http://www.epathlo.gr/...ωνα-στην-κοινωνία-στην-οικονομία-και-στο-περιβάλλον-–-η-περίπτωση-του-δάσους-της-μαύρης-πεύκης.htm
http://www.geothea.gr/content/oikosustima-tou-parnona-kai-o-rolos-tou-se-koinonia-oikonomia-kai-periba
http://gonevrokopi.gr/το-οικοσύστημα-του-πάρνωνα-και-ο-ρόλος
http://www.gpeppas.gr/periodiko/25-3-2013.html
http://greenplanetgr.blogspot.gr/2013/03/to.html
http://greeneeblog.blogspot.gr/2013/03/to.html
http://www.inout.gr/printthread.php?t=114597
http://ithominews.blogspot.gr/2013/03/blog-post_1980.html
http://www.kalimera-arkadia.gr/~kalimark/arkadia/27723-o-diaxronikos-rolos-tou-oikosystimatos-tou-parnona-stin-koinonia-stin-oikonomia-kai-sto-perivallon
http://www.lakonikos.gr/article/33581-to-oikosustima-tou-parnona-kai-o-rolos-tou-se-koinonia-oikonomia-kai-periballon-brto-dasos-tis-mauris-peukis
http://www.moriasnews.gr/2013/03/pagkosmia-imera-dasoponias
http://myblogs.gr/article/diahronikos-rolos-toy-oikosystimatos-toy-parnona-stin-koinonia-stin-oikonomia-kai-sto
http://naturahellas.blogspot.gr/2013/03/blog-post_9070.html
http://www.newslog.gr/...stima-tou-parnwna-kai-o-rolos-tou-se-koinwnia--oikonomia-kai-periballon--to-dasos-tis-mauris-peukis
http://news-planet.gr/2013/03/27/to-ikosistima-tou-parnona-ke-o-rolos/
http://www.notospress.gr/article.php?id=10901
http://www.palo.gr/cluster/multimedia/peloponnhsos-nea/27643/?clid=7409944&mid=16173969
http://news.launcher.pathfinder.gr/eco-science/scitech/870007.html
http://www.peloponnisiaki.gr/?p=41838
http://www.pelopsnews.gr/news.php?id=6739
http://www.rightnews.gr/blog/2013/03/24/o-ρόλος-του-οικοσυστήματος-του-πάρνων
http://biologikaorganikaproionta.com/topika-nea/news/o-διαχρονικός-ρόλος-του-οικοσυστήματ/
http://arkadikes-eidiseis.blogspot.gr/2013/03/3048-22-2013.html
http://voltastintripoli.blogspot.gr/2013/03/blog-post_83.html
http://ellinikifysi.gr/2013/03/parnonas-66/
http://www.perivallon21.gr/.../item/1513-το-οικοσύστημα-του-πάρνωνα-και-ο-ρόλος-του-σε-κοινωνία,-οικονομία-και-περιβάλλον-–-το-δάσος-της-μαύρης-πεύκης
http://proinosmorias.gr/2013/03/22/pagkosmia-hmera-dasoponias/
http://www.astrosparalio.gr/?a=singlearticle&id=10491
http://www.fdparnonas.gr/el/press-releases/176
http://ellinikifysi.gr/2013/04/parnonas-71
http://www.arcadiaportal.gr/news/episkepseis-periballontikis-enimerosis-kai-ksenagiseis-gia-ti-diethni-imera-tis-gis
http://www.arkadianews.gr/.../αρκαδια-περιβάλλον/item/επισκέψεις-περιβαλλοντικής-ενημέρωσης-και-ξεναγήσεις-με-αφορμή-τη-διεθνή-ημέρα-της-γης-22-απριλίου-2013.html
http://astrosnews.gr/?p=63522

http://www.axortagos.gr/episkepseis-kai-ksenagiseis-aformi-diethni-imera-tis-gis-apo-ton.html
http://www.dou.gr/article.php?a=5413590
http://theopemptou.com/news/index.php/newsites/econews
http://katidiaforetiko.blogspot.gr/2013/05/blog-post_1831.html
http://myblogs.gr/article/episkepseis-perivallontikis-enimerosis-kai-xenagiseis-gia-ti-diethni-imera-tis-gis
http://www.palo.gr/cluster/articles/peloponnhsos-nea/27643/?clid=7779299
http://www.peloponews.gr/index.php?option=com_content&view=article&id=69698:ae373279fc83f6c97029fae0f13fcdfc&catid=51:pellop-arkadia&Itemid=60
http://argolikeseidiseis.blogspot.gr/2013/04/blog-post_1001.html
http://enimerosipeloponnisou.blogspot.gr/2013/04/blog-post_30.html
http://www.astrosparalio.gr/?a=singlearticle&id=11253
http://www.fdparnonas.gr/el/press-releases/190
http://www.arcadiaportal.gr/news/sunantisi-parousiasis-ton-apotelesmaton-tou-ergou-life-pinus
http://www.arcadiavoice.gr/32910/arcadia/συνάντηση-παρουσίασης-των-αποτελεσμ
http://arkadiapress.gr/συνάντηση-παρουσίασης-των-αποτελεσμ
http://astrosnews.gr/?p=63682
http://www.dou.gr/article.php?a=5436554
http://www.inarcadia.gr
http://www.kalimera-arkadia.gr/peloponnisos/29003-synantisi-parousiasis-ton-apotelesmaton-tou-ergou-life-pinus
http://myblogs.gr/article/synantisi-paroysiasis-ton-apotelesmaton-toy-ergoy-life-pinus
http://naturahellas.blogspot.gr
http://www.notospress.gr/article.php?id=11622
http://www.palo.gr/cluster/multimedia/peloponnhsos-nea/27643/?clid=7799945
http://www.peloponnisiaki.gr/?p=43897
http://www.astrosparalio.gr/?a=singlearticle&id=11305
http://www.arcadiaportal.gr/news/sunantisi-parousiasis-ton-apotelesmaton-tou-ergou-life-pinus
http://www.arcadiavoice.gr/32910/arcadia/συνάντηση-παρουσίασης-των-αποτελεσμ/
http://arkadiapress.gr/συνάντηση-παρουσίασης-των-αποτελεσμ/
http://astrosnews.gr/?p=63682
http://www.dou.gr/article.php?a=5436554
http://www.inarcadia.gr/
http://www.kalimera-arkadia.gr/peloponnisos/29003-synantisi-parousiasis-ton-apotelesmaton-tou-ergou-life-pinus
http://myblogs.gr/article/synantisi-paroysiasis-ton-apotelesmaton-toy-ergoy-life-pinus
http://naturahellas.blogspot.gr
http://www.notospress.gr/article.php?id=11622
http://www.palo.gr/cluster/multimedia/peloponnhsos-nea/27643/?clid=7799945
http://www.peloponnisiaki.gr/?p=43897
http://www.astrosparalio.gr/?a=singlearticle&id=11305
http://www.fdparnonas.gr/el/press-releases/191
http://astrosnews.gr/?p=64261
http://www.dou.gr/article.php?a=5551576
http://www.econews.gr/2013/05/15/parnonas-mauri-peuki-erotimatologio-99971
http://www.fdparnonas.gr/el/press-releases/191
http://ithominews.blogspot.gr/2013/05/blog-post_1057.html

http://kalimera-arkadia.gr/arkadia/29159-parnonas-erotimatologio-aksiologisis-domimenis-proseggisis-gia-tin-apokatastasi-dason-mayris-peykis
http://naturahellas.blogspot.gr/2013/05/blog-post_1820.html
http://www.fdparnonas.gr/el/press-releases/192
http://www.agronews.gr/diatrofi-agrotourismos/politismos-tis-upaithrou/arthro/96837/apokatastasi-ton-dason-mauris-peukis-ston-parnona/
http://www.agrotikabook.gr/_____-___-_____-μ_____-_____-____-_____
http://www.arcadiaportal.gr/news/parousiasi-apotelesmaton-tou-ergou-life-pinus
http://www.arcadiavoice.gr/33454/arcadia/m_-_____-_____-__-_____/
http://biologikaorganikaproionta.com/blog/oikologika/_____-__-_____μ___-___-life-pinus-___-__/
http://dasologoi.gr/nea-toy-dasologougr/21-nea-apo-thn-ellada-category/1788-me-epityxia-paroysiastikan-ta-apotelesmata-toy-ergoy-life-pinus.html[28
http://www.dou.gr/article.php?a=5603873
http://www.dou.gr/articlext.php?a=5603873
http://www.econews.gr/2013/05/21/parnonas-life-pinus-100297
http://gonevrokopi.gr/_____-__-_____μ___-___-life-pinus-___-__
http://ithominews.blogspot.gr/2013/05/m-life-pinus.html
http://www.kalimera-arkadia.gr/arkadia/29523-parousiastikan-ta-apotelesmata-tou-life-pinus-gia-tin-apokatastasi-ton-dason-mayris-peykis-ston-parnona-vd
http://katidiaforetiko.blogspot.gr/2013/05/life-pinus-video.html
http://www.moriasnews.gr/2013/05/ta-apotelesmata-tou-life-pinus-gia-ta-dasi-mavris-pefkis-ston-parnona
http://myblogs.gr/article/paroysiasi-apotelesmaton-toy-ergoy-life-pinus
http://www.news123.gr/nea/newsgroup.php/3469150
http://www.palo.gr/search/?kwd=_____+_____&cid=27643
http://www.parapolitika.gr/ArticleDetails/tabid/63/ArticleID/593044/Parnonas-ta-apotelesmata-toy-Life-Pinus-ga-ta-dasi-mavris-pefkis-video.aspx[
http://www.parnonaslife.gr/el/news-announcements/news
http://www.peloponews.gr/index.php?option=com_content&view=article&id=82942:4c1c7bfdbe7129d24046620b08bb9c37&catid=51:pellop-arkadia&Itemid=60
http://www.report24.gr/apokatastasi-twn-daswn-mavris-pefkis-ston-parnwna.htm[
http://www.aixmh.gr/slider-big/η-αποκατάσταση-των-δασών-μαύρης-πεύκη
http://www.axortagos.gr/parousiastikan-apotelesmata-tou-ergou-life-pinus-gia-tin-apokatasta.html[
http://www.notospress.gr/article.php?id=11836
http://www.peloponnisiaki.gr/?p=44665
http://argolikeseidiseis.blogspot.gr/2013/05/life-pinus.html
http://voltastintripoli.blogspot.gr/2013/05/life-pinus_21.html
http://www.rodacino.gr/article.jsf?id=9E0975F2484887D4E04DD240C7ACDB5F
http://www.lakonikos.gr/article/101027-epistimoniki-sunantisi-gia-tin-apokatastasi--ton-kamenon-ektaseon-tou-parnona-br-sto-mouseio-elias-kai-ladiou
http://meli-lithaion.blogspot.gr/2013/05/blog-post_9537.html
http://melissokomika.blogspot.gr
http://www.astrosparalio.gr/?a=singlearticle&id=11662