MAES implementation in Greece:

integrating ecosystem services in education, policy and decision making

Prof. Panayotis Dimopoulos

& Dr. Ioannis Kokkoris

ESMERALDA

UNIVERSITY OF PATRAS
ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΑΤΡΩΝ

The Greek MAES story

Sep 2014:
Nomination of the MAES national representative and participation in the MAES WG (first participation for Greece)

Oct 2015
Riga

Sep 2016
HESP

Jan 2017
Amsterdam

Oct 2017
Plovdiv

Jan 2018
Trento

2014 2015 2016 2017 P P B P G 2018 W

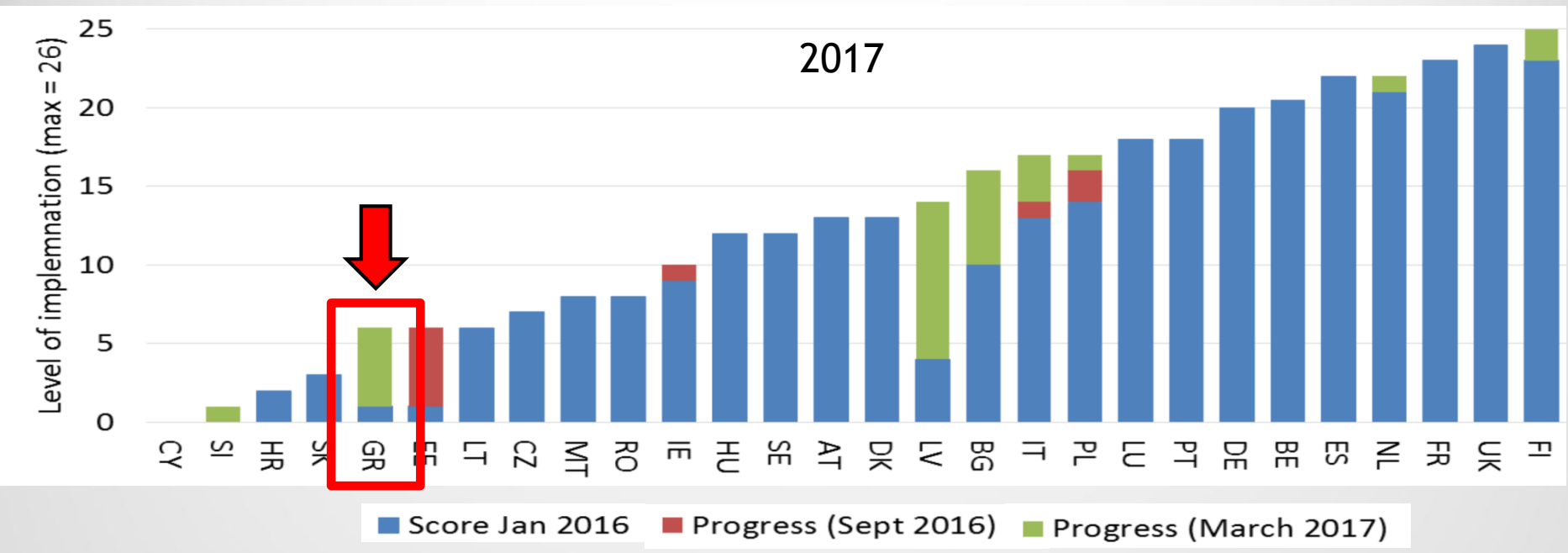
Feb 2015:
TRAIN: MAES Hands-on mapping workshop

Jul 2016
Apply for a Life IP - MAES has been included in the Actions

Apr 2017
Madrid

Dec 2017
Approval of the LifeIP 4 Natura

P Paper
G Guide
B Book
W Workshop


2017
Level of implemnation (max = 26)
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10
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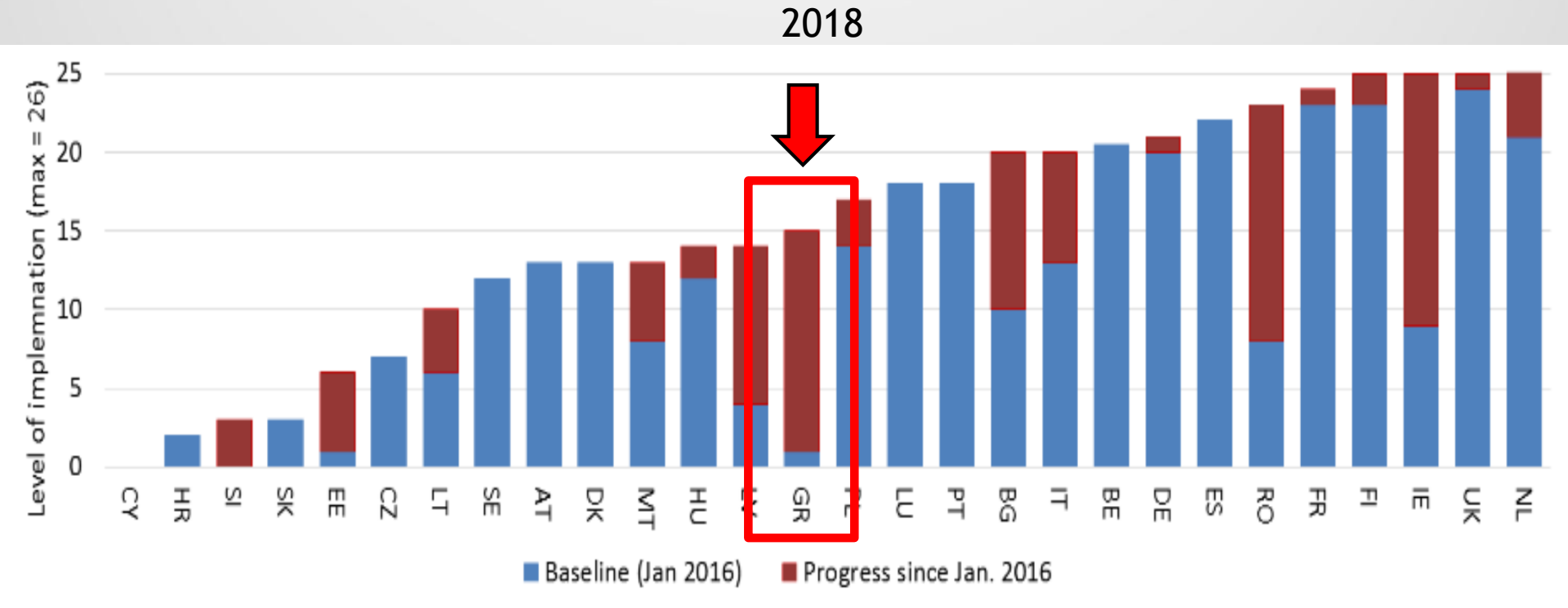
Score Jan 2016
Progress (Sept 2016)
Progress (March 2017)


2018
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UK
NL
Baseline (Jan 2016)
Progress since Jan. 2016

HESP

Establishment of a Scientific - Technical Committee

The committee aims to coordinate Ecosystem Services research and all activities towards the Mapping and Assessment of Ecosystems and their Services (i.e. MAES studies) in Greece.

Board members:

- Prof. Panayotis Dimopoulos (Coordinator) National Representative for the MAES implementation in Greece / University of Patras (Patras)
- Dr. Evangelia Drakou / University of Twente (contact person and link to ESP)
- Assoc. Prof. Stelios Katsanevakis / University of the Aegean (Lesvos)
- Assoc. Prof. Konstantinos Kormas / University of Thessaly (Volos)
- Dr. Maria Tsiafouli / Aristotle University of Thessaloniki (Thessaloniki)

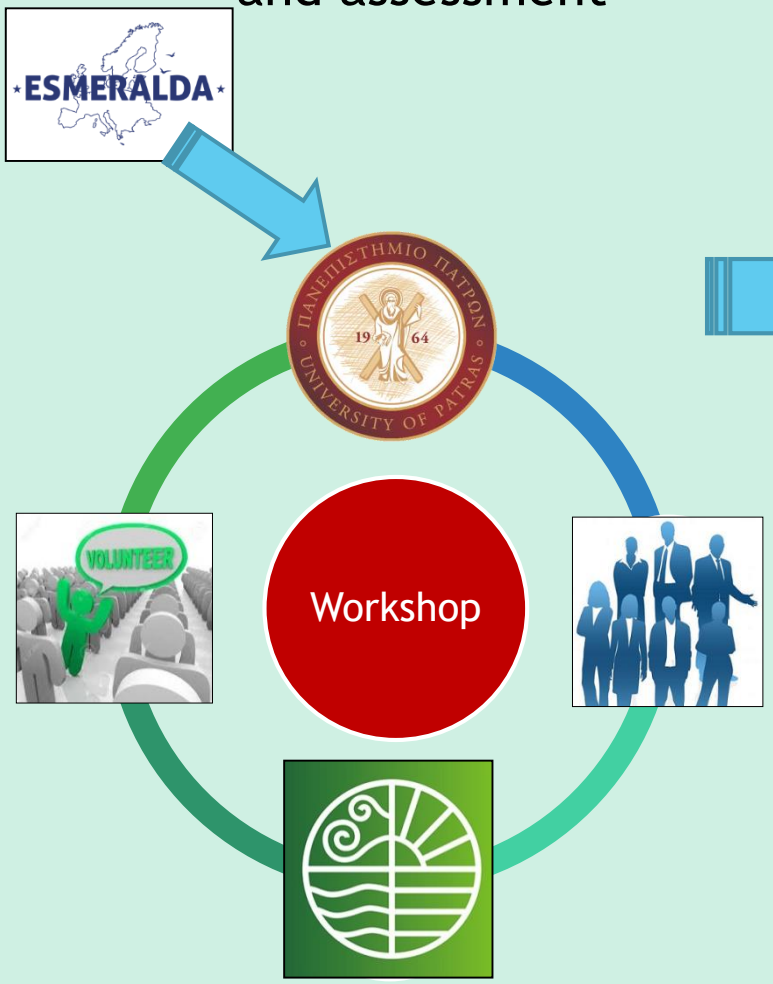
UNIVERSITY OF TWENTE.

UNIVERSITY OF THESSALY

ARISTOTLE UNIVERSITY OF THESSALONIKI

Capacity building for Workshops via ESMERALDA

Training – participatory mapping and assessment



Ministry of Environment & Energy

National level:

National legislation

- Environmental legislation
- Management of Natura 2000 network areas etc.

Regional level:

Regional policy

Local level:

Municipality policy

Day 1st

Time	Wednesday, February 28th, 2018
10:00 – 10:30	**Opening ceremony** *Deputy Minister of Environment & Energy (Mr Sokratis Famellos)* *Chair of the National Center for Environment and Sustainable Development*
10:30 – 10:45	**Introduction - Workshop objectives** *Prof. Panayotis Dimopoulos, Department of Biology, University of Patras*
10:45 – 11:15	**MAES support to EU biodiversity policy** *Anne Teller, Senior Expert European Commission, ENV.B2 – Biodiversity* *Invited speaker*
11:15 – 11:45	**MAES: Identifying the dormant national capital** *Prof. Panayotis Dimopoulos, University of Patras*
11:45 – 12:00	**Coffee break**
12:00 – 12:30	**Ecosystem services and National Capital Accounts** *Prof. Dimitrios Skouras, Department of Economics, University of Patras*
12:30 – 13:00	**Maps' applications and usability in natural capital assessments** *Ass. Prof. Evangelia Drakou, Geo-Information Processing Department, University of Twente*
13:00 – 13: 10	**Summary and Close of Day 1** *Prof. Panayotis Dimopoulos, Department of Biology, University of Patras*
13:10 – 14:00	**Lunch**

Day 2nd

Time	Thursday, March 1st, 2018
10:00 – 10:15	**Welcome and overview of the Day's Objectives** *Prof. Panayotis Dimopoulos, Department of Biology, University of Patras*
10:15– 10:45	**Presentation of two Case Studies: i) Parnitha National Park & ii) Metropolitan Park "Antonis Tritsis"** *Prof. Panayotis Dimopoulos, Department of Biology, University of Patras*
10:45 – 11:15	**The MAES conceptual framework** *Dr. Ioannis Kokkoris, Department of Biology, University of Patras*
11:15 – 11:45	**Data-gaps: an obstacle to reliable large-scale assessments** *Ass. Prof. Evangelia Drakou, Geo-Information Processing Department, University of Twente*
11:45 – 12:00	**Coffee break**
12:00 – 13:45	**Breakout sessions (rotating groups)**
12:00 – 12:45	**Breakout group 1: Ecosystem services identification at the Parnitha National Park** Methods for identifying and assessing ecosystem services in a protected area *Lead: Prof. Panayotis Dimopoulos*
	Breakout group 2: Participatory mapping and assessment of ecosystem services Participatory mapping application using participants expertise *Lead: Ass. Prof. Evangelia Drakou*
12:45 – 13:00	**Coffee brake**
13:00 – 13:45	**Breakout groups rotation**
13:45 – 14:00	**Mapping the road ahead** *Anne Teller, Senior Expert European Commission, ENV.B2 – Biodiversity* *Invited speaker*
14:00 – 14: 10	**Outlook – introduction to the Thessaloniki workshop** *Prof. Panayotis Dimopoulos, Department of Biology, University of Patras*
14:10 –	**Lunch**

MINISTRY OF ENVIRONMENT & ENERGY

NATIONAL CENTER FOR ENVIRONMENT & SUSTAINABLE DEVELOPMENT

UNIVERSITY OF PATRAS
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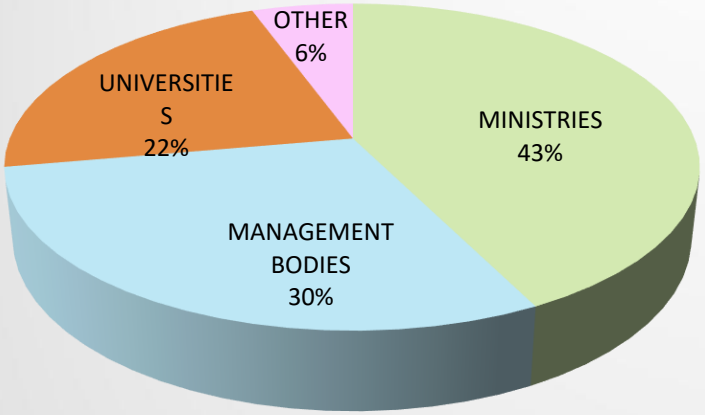
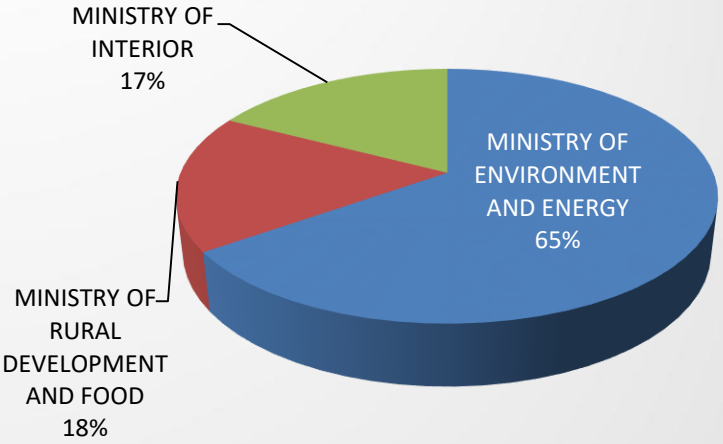
Categories	Agencies	Participants (No)	%	Participants (No)	%
MINISTRIES	MINISTRY OF ENVIRONMENT AND ENERGY	15	28%	23	43%
	MINISTRY OF RURAL DEVELOPMENT AND FOOD	4	7%		
	MINISTRY OF INTERIOR AFFAIRS	4	7%		
MANAGEMENT BODIES	MANAGEMENT BODY OF ITI NATIONAL PARK	2	4%	16	30%
	MANAGEMENT BODY OF PARNASSOS NATIONAL PARK	2	4%		
	MANAGEMENT BODY OF PARNITHA NATIONAL PARK	3	6%		
	MANAGEMENT BODY OF SCHINIAS MARATHON NATIONAL PARK	3	6%		
	MANAGEMENT BODY OF MESSOLONGHI LAGOON	1	2%		
	MANAGEMENT BODY OF MT PARNON AND MOUSTOS WETLANDS	2	4%		
	MANAGEMENT BODY OF ACHERONTAS AND KALAMAS RIVERS AND ESTUARIES	1	2%		
	MANAGEMENT BODY OF CHELMOS - VOURAIKOS	2	4%		
UNIVERSITIES	UNIVERSITIES	12	22%	12	22%
OTHER	E.U.	1	2%	3	6%
	GREEN FUND	1	2%		
	PRIVATE SECTOR	1	2%		

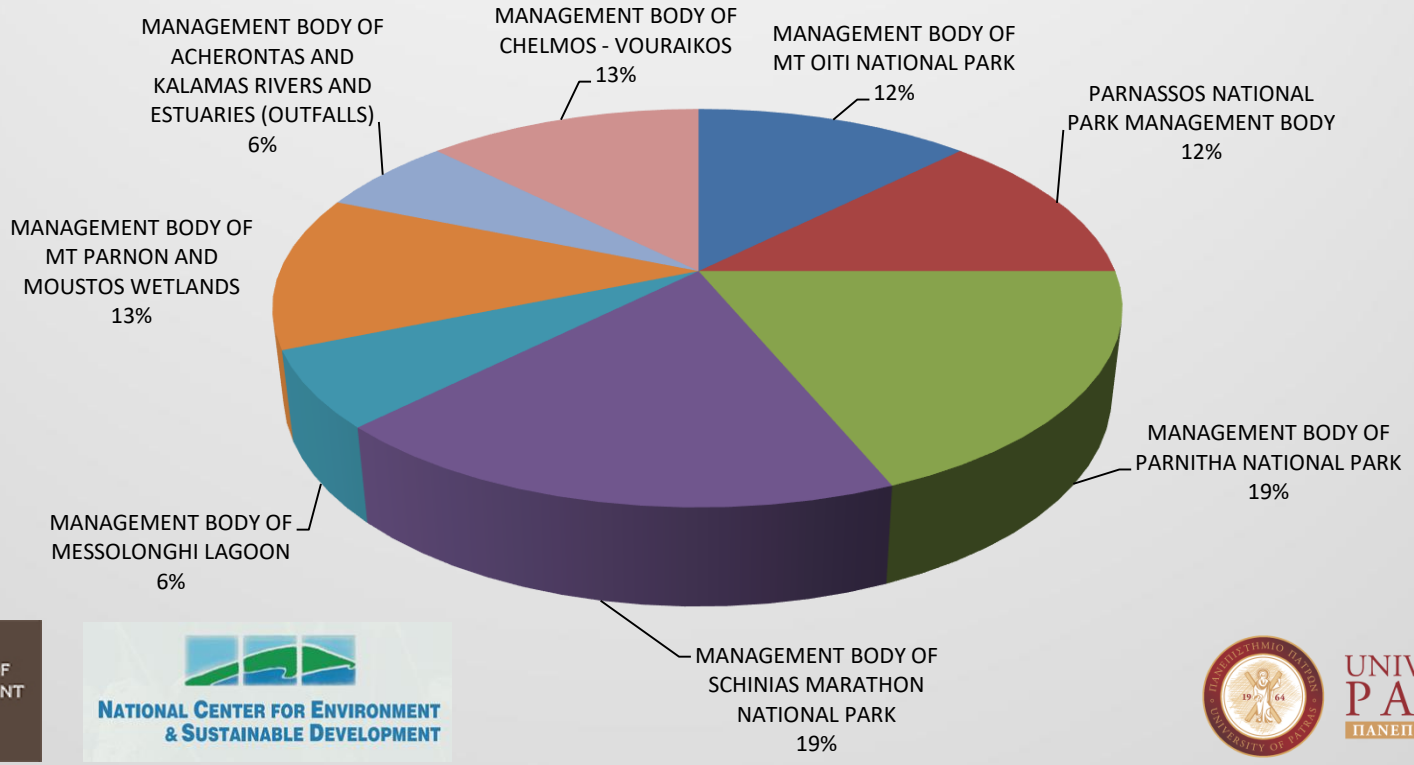
Total



Ministries



Management bodies



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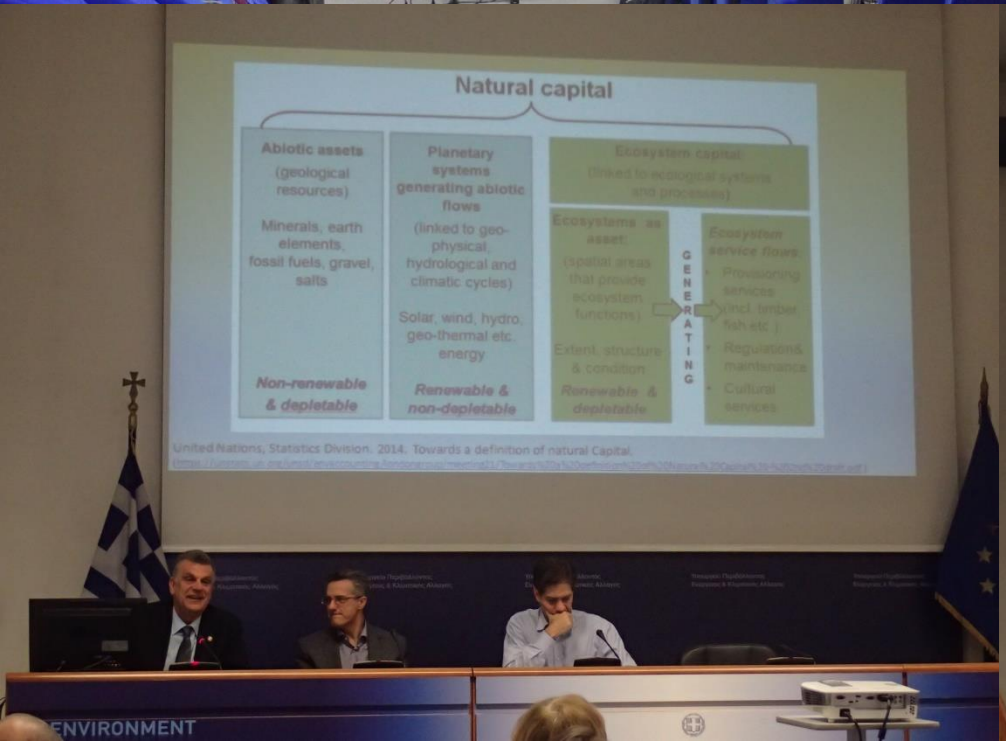
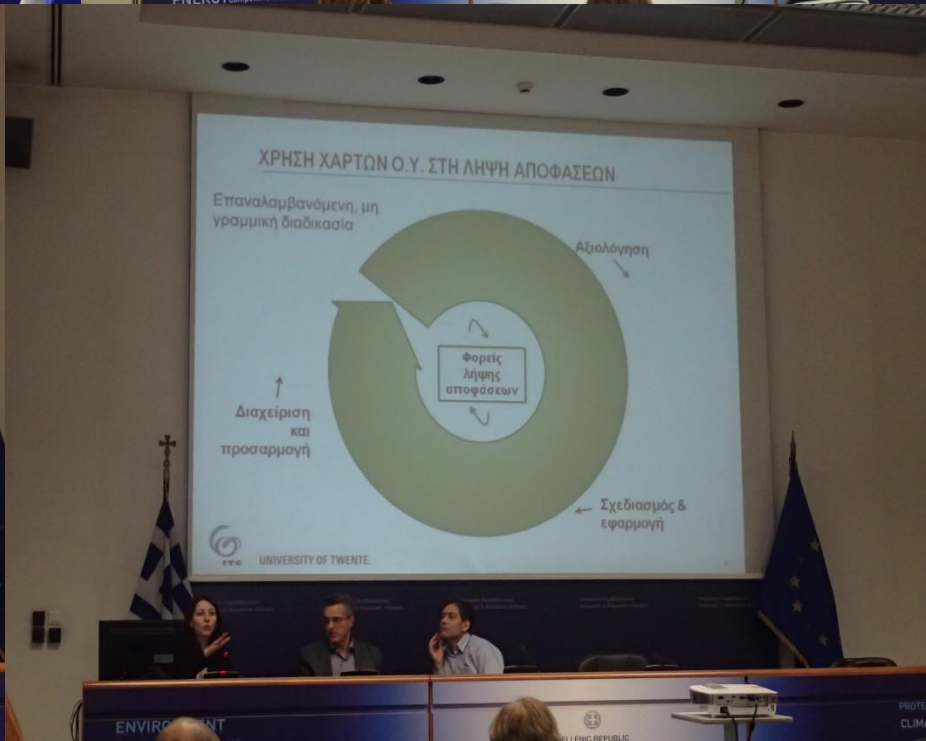
Plenaries (Athens)






TOSHIBA

Plenaries (Thessaloniki)

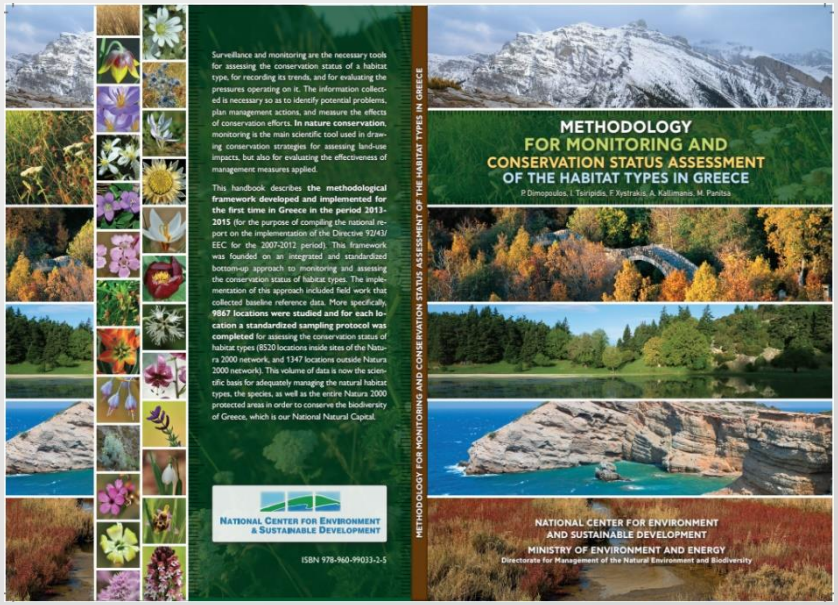

Hands-on

MAES related publications

Mapping and assessment of ecosystems and their services in Greece: technical guide
(P. Dimopoulos, I. Kokkoris, E. Drakou, 2017)

Provided for free to all workshop participants upon registration

Methodology for monitoring and conservation status assessment of the habitat types in Greece
(P. Dimopoulos, I. Tsiripidis, F. Xystsrakis, A. Kallimanis, M. Panitsa, 2018)



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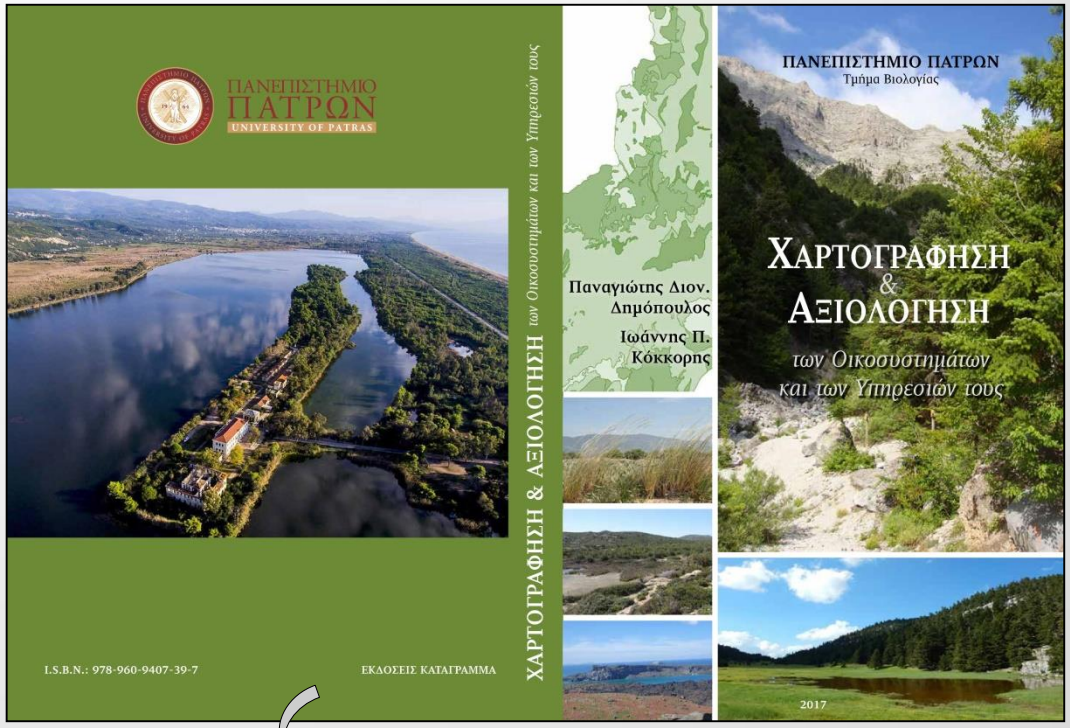
MAES integration in University education

Mapping and Assessment of Ecosystems and their Services
(Dimopoulos P. & I. Kokkoris 2017)

- 1st (and until now, the only) educational, academic book in Greece
- Creation and implementation of the 1st educational course in the department of Biology (UPAT) exclusively on MAES (start 2017-)
- 3 PhD students already applied and have been accepted to conduct research on ES (on regulating and maintenance and cultural services, respectively)



Provided for free to all students

- Website: www.maes.gr
- Establishment of the UPAT_MAES Research Group (RG)

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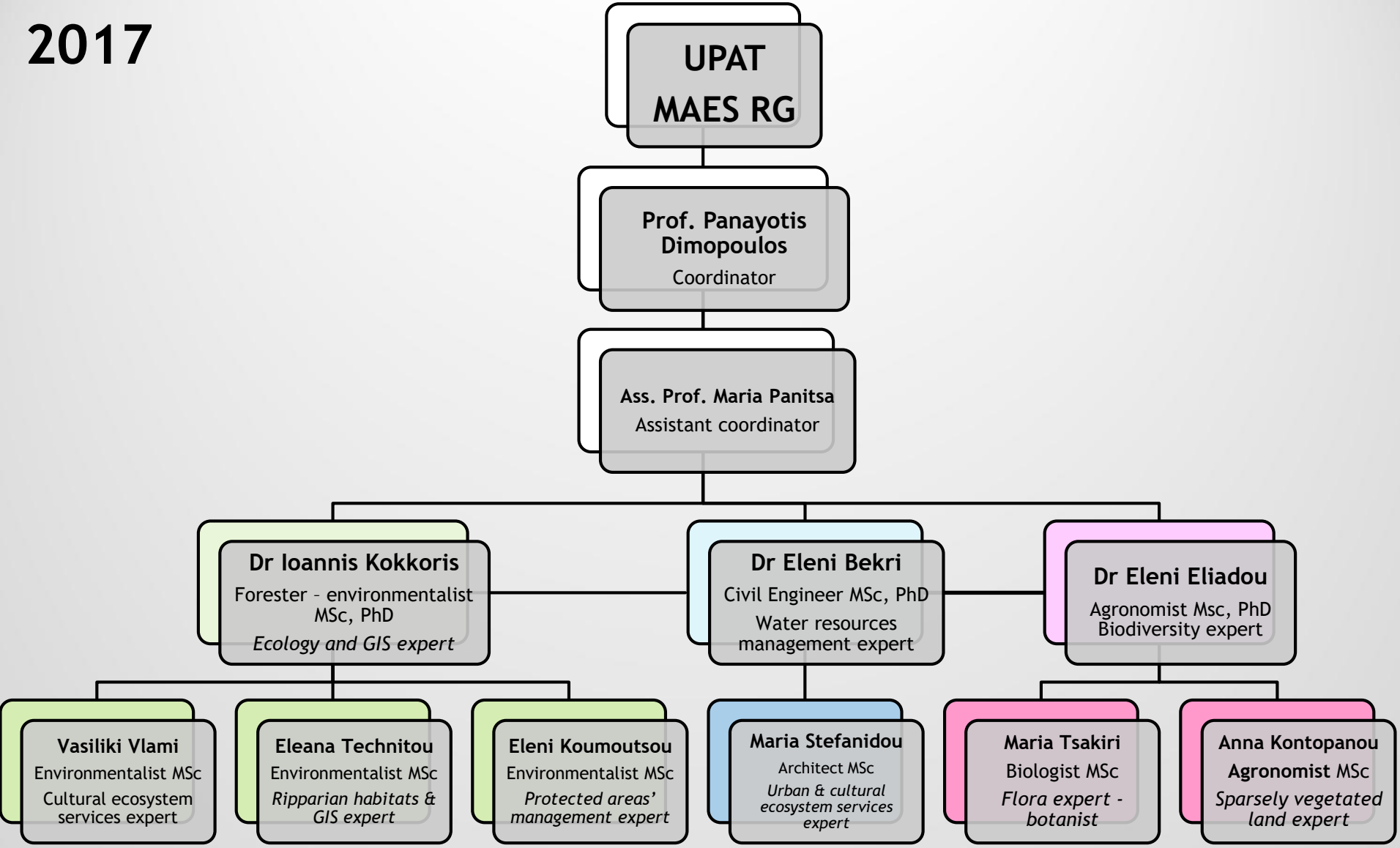
2017



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Peer-reviewed articles

Science of the Total Environment 595 (2017) 229–243

Contents lists available at ScienceDirect

Science of the Total Environment

journal homepage: www.elsevier.com/locate/scitotenv

Cultural landscapes and attributes of "culturalness" in protected areas: An exploratory assessment in Greece

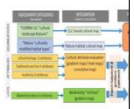
Vassiliki Vlami [a], Ioannis P. Kokkoris [b], Stamatis Zogari
George Kehayias [a], Panayotis Dimopoulos [b,*]

[a] Department of Environmental & Natural Resources Management, University of Patras, G. Sef
[b] Department of Biology, Division of Plant Biology, University of Patras, Rion, Patras GR-26504
[c] Hellenic Centre for Marine Research, Institute of Marine Biological Resources and Inland Wat
[d] Department of Physics, Section of Environmental Physics, National and Kapodistrian Univers
[e] The Piraeus Bank Group Cultural Foundation, 6 Ang. Gerontas St., 105 58 Athens, Greece

HIGHLIGHTS

- A distance-based assessment provides the first review of cultural landscape features in Greece's protected areas.
- Cultural landscapes and culturally-modified habitat types are prominent in the Natura 2000 protected area network.
- The notion of protected area "culturalness" is introduced for conservation evaluation purposes.
- Assessing cultural attributes of protected areas can be applied even in data-poor regions.

GRAPHICAL ABS



Assessment

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Editor: D. Barcelo

Keywords:
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Biodiversity evaluation
Cultural heritage
Mediterranean
Land use
Natura 2000

ABSTRACT

Cultural landscapes are poorly
cedure to assess cultural land
identifying a set of culturally
2000 protected area network
cultural landscape features. Th
up approximately 50% of the
servation). Moreover, a set of
thetic quality indicators were
express an initial nation-wide
that are in proximity to each
level of "culturalness" of each
view of cultural values in prot
require special attention for
tainties are reviewed. This pr
agement of biodiversity-cente

* Corresponding author at: University of Patras, School of Natural Sciences, Department
E-mail address: pdimopoulos@upatras.gr (P. Dimopoulos).

http://dx.doi.org/10.1016/j.scitotenv.2017.03.211
0048-9697/

2017

One Ecosystem 2: e13714
doi: 10.3897/oneeco.2.e13714

OPEN

Research Article

The need for the implementation of an Ecosys Services assessment in Greece: drafting the national agenda

Panayotis Dimopoulos‡, Evangelia G Drakou§, Ioannis P Kokkoris‡, Stelios Katsanevakis|, Kallimanis¶, Maria Tsiafouli¶, Dimitrios Bormpoudakis#, Konstantinos Kormas¤, Jeroen Aren

‡ University of Patras, Department of Biology, Division of Plant Biology, Botanical Institute, Rion, Patras, GR-26
§ Faculty of Geo-Information Science and Earth Observation (ITC), P.O. Box 6, 7500 AA, Enschede, Netherland
| University of the Aegean, Department of Marine Sciences, Mytilene 81100, Greece
¶ Aristotle University of Thessaloniki, School of Biology, Department of Ecology, Thessaloniki, GR-54124, Gree
# The University of Kent, School of Anthropology and Conservation, Marlowe Building, Canterbury, Kent, CT
Kingdom
¤ Department of Ichthyology & Aquatic Environment, School of Agricultural Sciences, University of Thessaly,
Greece
« South East Europe Development -SEEDEV, Mihajlo Pupin 10d, Belgrade, Serbia

Corresponding author: Panayotis Dimopoulos (pdimopoulos@upatras.gr)

Academic editor: Stoyan Nedkov

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Kormas K, Arends J (2017) The need for the implementation of an Ecosystem Services assessment
drafting the national agenda. One Ecosystem 2: e13714. https://doi.org/10.3897/oneeco.2.e13714

Abstract

This paper presents the establishment and the first outcomes of the Hellenic E
Services Partnership (HESP), a scientific-technical committee aiming at the gui
coordination of the Ecosystem Services (ES) assessment in Greece. HESP c
experts from different disciplines (ecology, marine biology, socio-ecologic
science) and aims to: i) coordinate ES assessment efforts under a shared fra
promote the ES approach in Greece; iii) support the European implementation o
national level (Mapping and Assessment of Ecosystem and their Services initiativ
fulfill priority actions regarding the ES implementation and the obligations derive
National Biodiversity Strategy. In this paper, we present the first drafting of th
Agenda including short- and long-term objectives towards the national implementation of

2017

INTERNATIONAL JOURNAL OF BIODIVERSITY SCIENCE, ECOSYSTEM SERVICES & MANAGEMENT, 2017
VOL. 14, NO. 1, 45–59
https://doi.org/10.1080/21513732.2017.1415974

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OPEN ACCESS Check for updates

Ecosystem services supply in protected mountains of Greece: setting the baseline for conservation management

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[a]Department of Biology, Division of Plant Biology, Laboratory of Botany, University of Patras, Patras, Greece; [b]Faculty of Geo-Information Science and Earth Observation (ITC), University of Twente, Enschede, The Netherlands; [c]European Commission, Joint Research Centre (JRC), Ispra, Italy

ABSTRACT

The mapping and assessment of ecosystems and their services, an initiative under the EU Biodiversity Strategy to 2020, sets the basis for national ecosystem assessments in EU Member States, including Greece. The highly diverse and heterogeneous Greek landscape provides multiple ecosystem services (ES) and benefits to society. However, the rich knowledge base corresponds to limited research to support a national ecosystem assessment in Greece. In this paper, we apply a rapid method to map ecosystem types and quantify ES supply provided by mountainous protected areas. Using habitat type level data, we created a detailed ecosystem type map that was used as a baseline to assess the supply of provisioning and regulating and maintenance ES. We also applied a site-oriented approach to record and score the ES supply in each protected area. Summing up individual ES supply resulted in a total ES supply map which was used to identify ES hot spot areas within the Greek Natura 2000 mountainous sites. The results: (1) corroborate the hypothesis that protected areas should be treated as high value bio-physical and social-cultural complexes accounting for a significant part of the national capital; (2) highlight data gaps at the national level and limitations of ES mapping methods under such data restrictions; (3) are intended to provide to stakeholders and decision-makers, baseline information for future applied research and conservation management actions.

ARTICLE HISTORY
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Accepted 2 December 2017

EDITED BY
Matthias Schröter

KEYWORDS
MAES; mapping uncertainty; Natura 2000; national ecosystem assessment; spatial analysis

Introduction

With the adoption of the Habitats (92/43/EEC) and Birds (2009/147/EEC) Directives (Council of the European Communities 1992 and Council of the European Communities 2009, respectively) and the establishment of the Natura 2000 Network of Protected Areas (PA), all EU Member States are conducting surveillance and monitoring programs on the conservation of natural habitats and wild fauna and flora to maintain biodiversity. In the past 25 years, following the obligations of those Directives, a vast amount of ecological data and information has been collected and analyzed on habitat and species conservation status, the habitats' spatial distribution and land cover, and pressures and threats in and around each protected area. Greece is a biodiversity hot spot in the EU within the Mediterranean biogeographical region (Georghiou and Delipetrou 2010; Dimopoulos et al. 2013) and hosts a network of 419 protected Natura 2000 sites (Special Areas for Conservation: SACs and Special Protection Areas: SPAs) covering about 27% of its national land territory. Out of those, 37% of SACs are mountainous PAs.

Mountain landscapes encompass high species diversity (e.g. by providing habitats for different types of species), a high diversity of ecosystem types – natural, semi-natural, and cultivated (e.g. forests, cliffs, grasslands, pastures, and traditional cultivations) – and a remarkable diversity of economic activities (e.g. stock raising, forestry, agriculture, hunting, year-round tourism), which provide a range of ES and benefits to society (Körner and Ohsawa 2005). Mountain ranges rank among the ecosystems supplying a vast variety of ES, globally (Grêt-Regamey et al. 2012) and in Europe (Maes et al. 2011). For instance, the provisioning of wildlife or cultivated products and biofuels are critical ES for human well-being provided by such ecosystems. Mountain landscapes are also critical for the regulation of global climate, soil erosion prevention and are also home to recreational activities, inherent in the culture of many countries (Grêt-Regamey et al. 2012; Egarter Vigl et al. 2016). They are also significant 'science labs,' since mountain ecosystems are highly sensitive to climate change (Beniston 2003; Löffler et al. 2011). For instance, melting glaciers at mountain areas provide strong evidence of climate change (Kohler and Maselli 2009), while rare plants and animals, adapted to specific high-altitude

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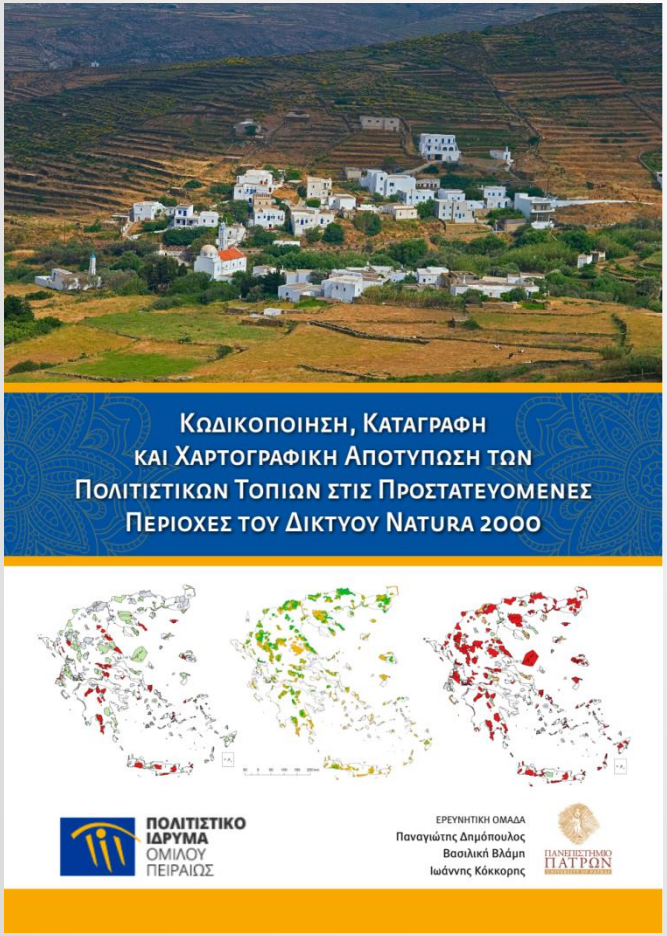
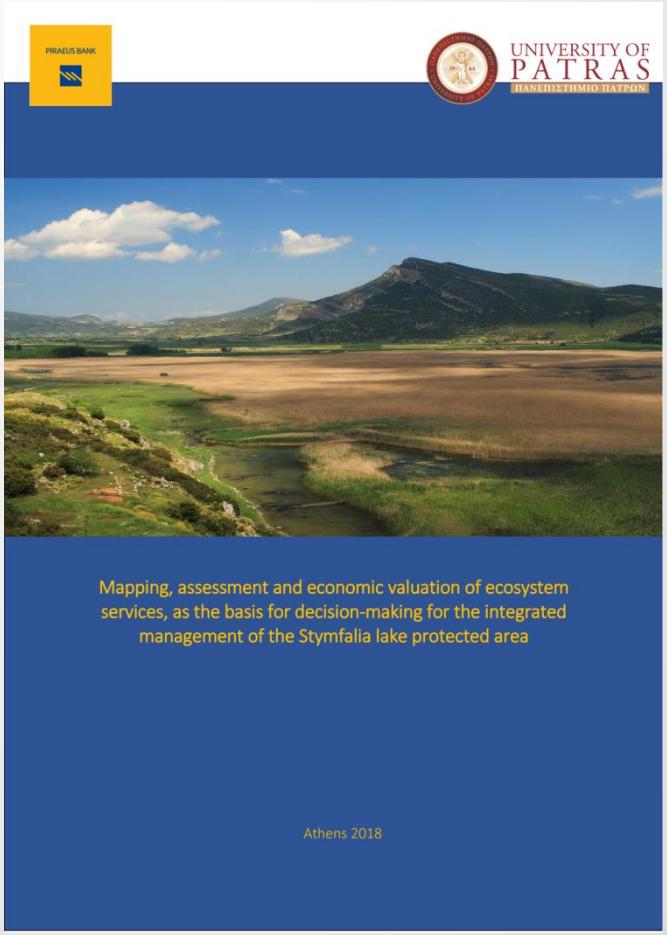
Supplementary material can be accessed here.

2018

Implementation projects – national and local scale



2016: Typology, recording and mapping of cultural landscapes at the protected areas of the Natura 2000 Network



2018: Mapping, assessment and economic valuation of ES as a decision-making basis for integrated management in the protected area of Stymfalia lake

Life IP 4 Natura Project

Title:

Integrated actions for the conservation and management of NATURA 2000 sites, species, habitats and ecosystems in Greece (LIFE-IP 4 NATURA)

Total budget: **17,000,000 Euros**

Budget for MAES implementation: 1,100,000 Euros

Partners:

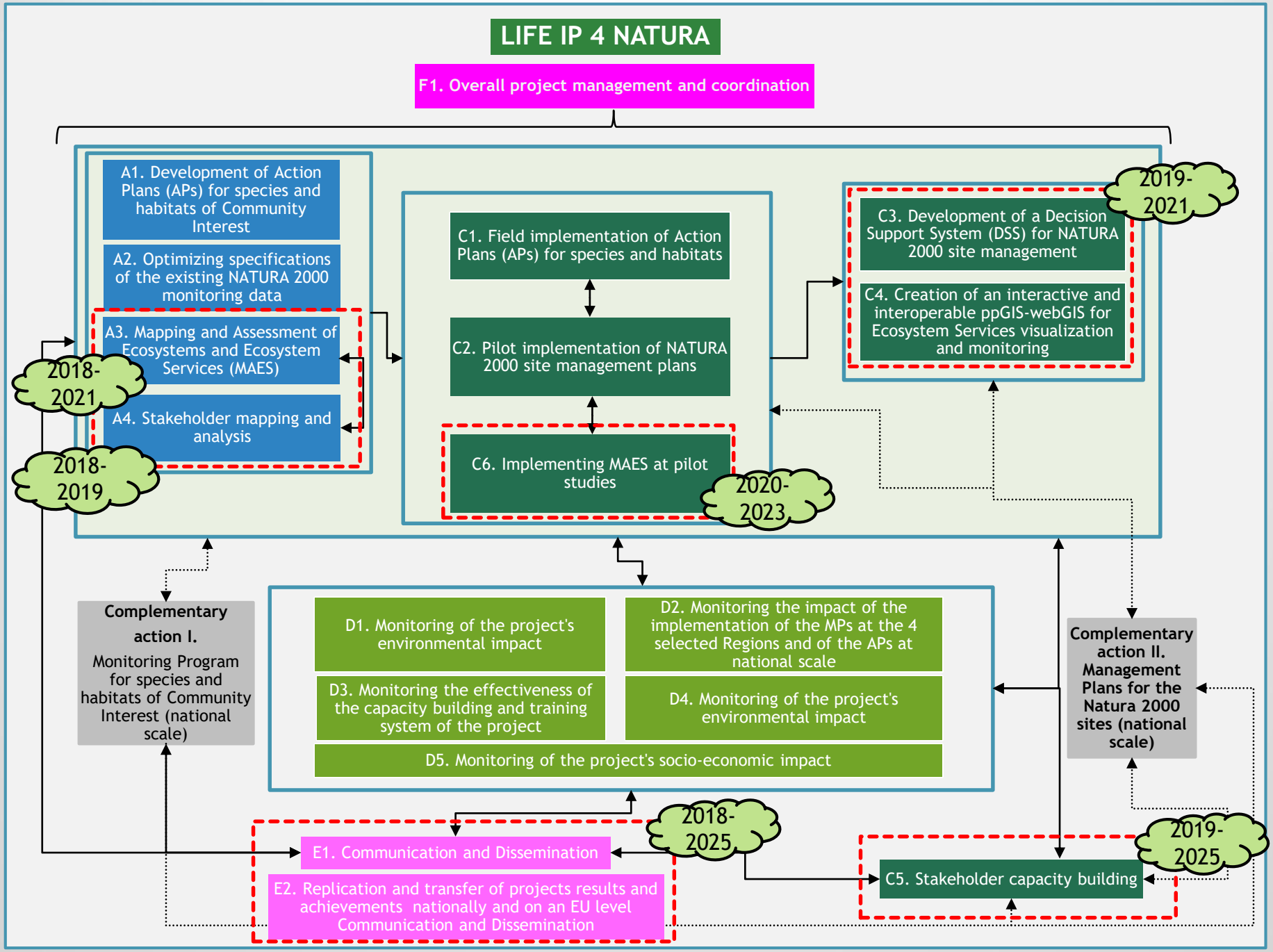
1. Ministry of Environment & Energy
2. University of Patras
3. Democritus University of Thrace
4. Green Fund
5. WWF Hellas
6. Hellenic Ornithological Society
7. Region of Crete
8. Region of East Macedonia and Thrace
9. Region of Attica
10. Decentralized Administration of Epirus and Western Macedonia

DEMOCRITUS UNIVERSITY OF THRACE

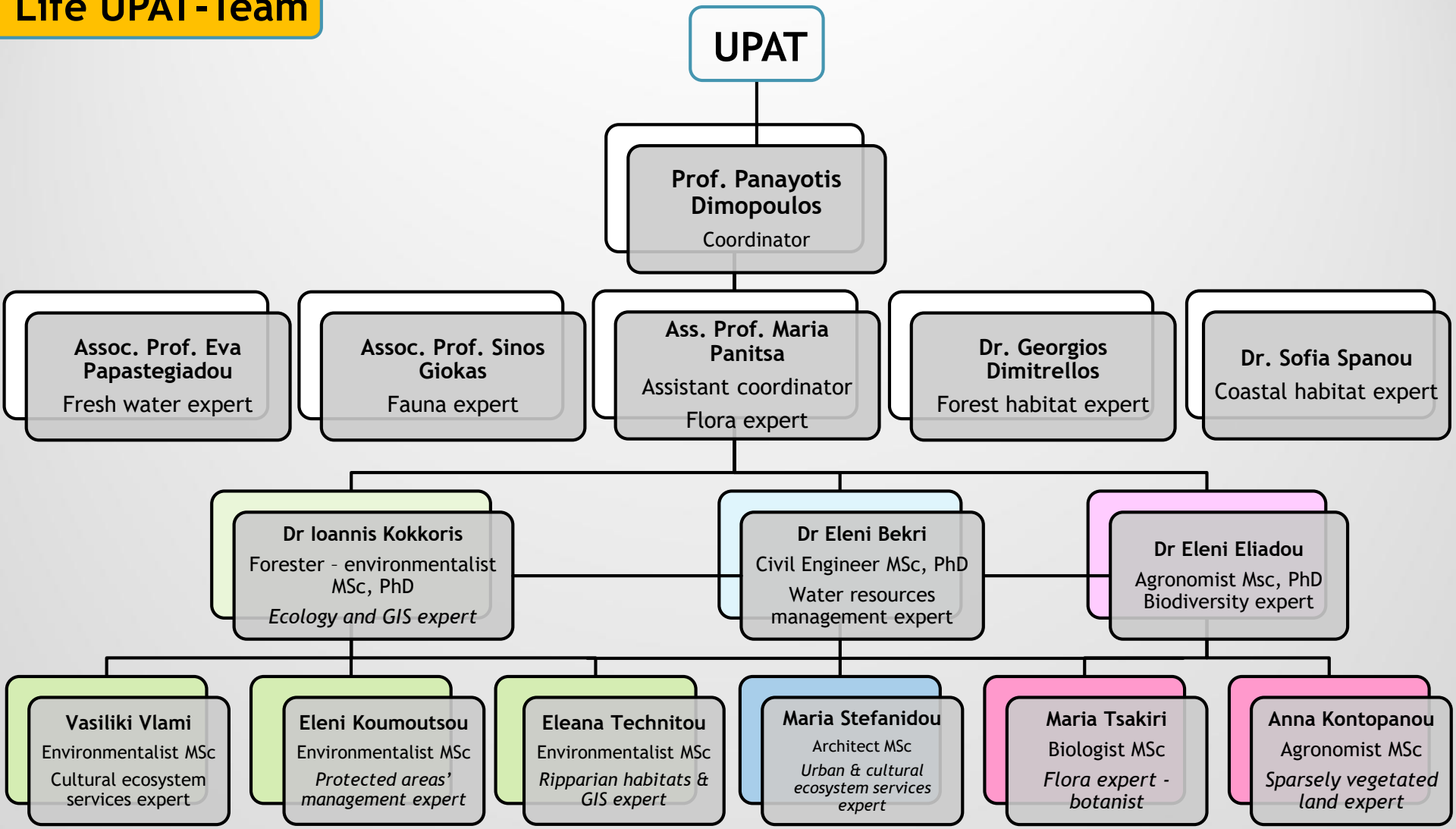
WWF

HELLENIC ORNITHOLOGICAL SOCIETY

Decentralized Administration of Epirus and Western Macedonia
Region of Attica
Region of Crete
Region of East Macedonia and Thrace


LIFE IP 4 NATURA
F1. Overall project management and coordination
A1. Development of Action Plans (APs) for species and habitats of Community Interest
A2. Optimizing specifications of the existing NATURA 2000 monitoring data
A3. Mapping and Assessment of Ecosystems and Ecosystem Services (MAES)
A4. Stakeholder mapping and analysis
2018-2021
2018-2019
C1. Field implementation of Action Plans (APs) for species and habitats
C2. Pilot implementation of NATURA 2000 site management plans
C6. Implementing MAES at pilot studies
2020-2023
C3. Development of a Decision Support System (DSS) for NATURA 2000 site management
C4. Creation of an interactive and interoperable ppGIS-webGIS for Ecosystem Services visualization and monitoring
2019-2021
Complementary action I.
Monitoring Program for species and habitats of Community Interest (national scale)
D1. Monitoring of the project's environmental impact
D2. Monitoring the impact of the implementation of the MPs at the 4 selected Regions and of the APs at national scale
D3. Monitoring the effectiveness of the capacity building and training system of the project
D4. Monitoring of the project's environmental impact
D5. Monitoring of the project's socio-economic impact
Complementary action II. Management Plans for the Natura 2000 sites (national scale)
E1. Communication and Dissemination
E2. Replication and transfer of projects results and achievements nationally and on an EU level Communication and Dissemination
2018-2025
C5. Stakeholder capacity building
2019-2025

Life UPAT-Team



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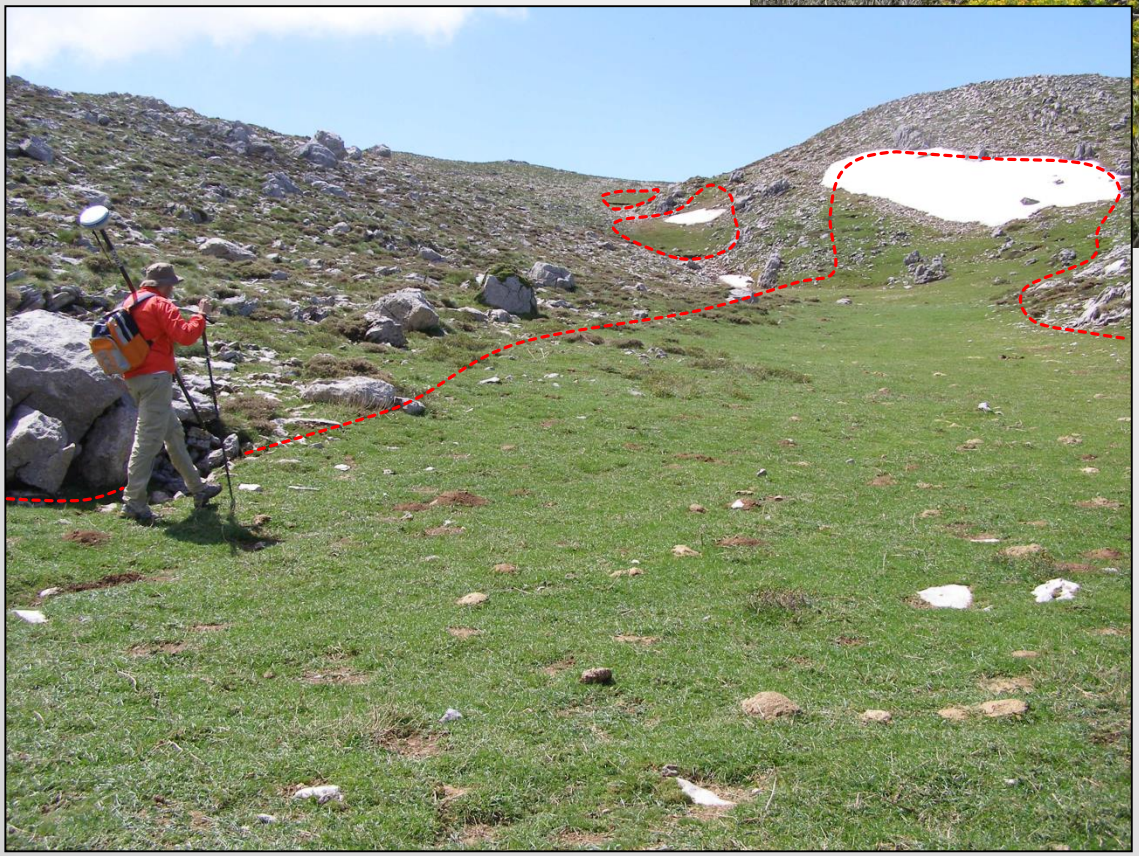
Thank you for your attention



pdimopoulos@upatras.gr