



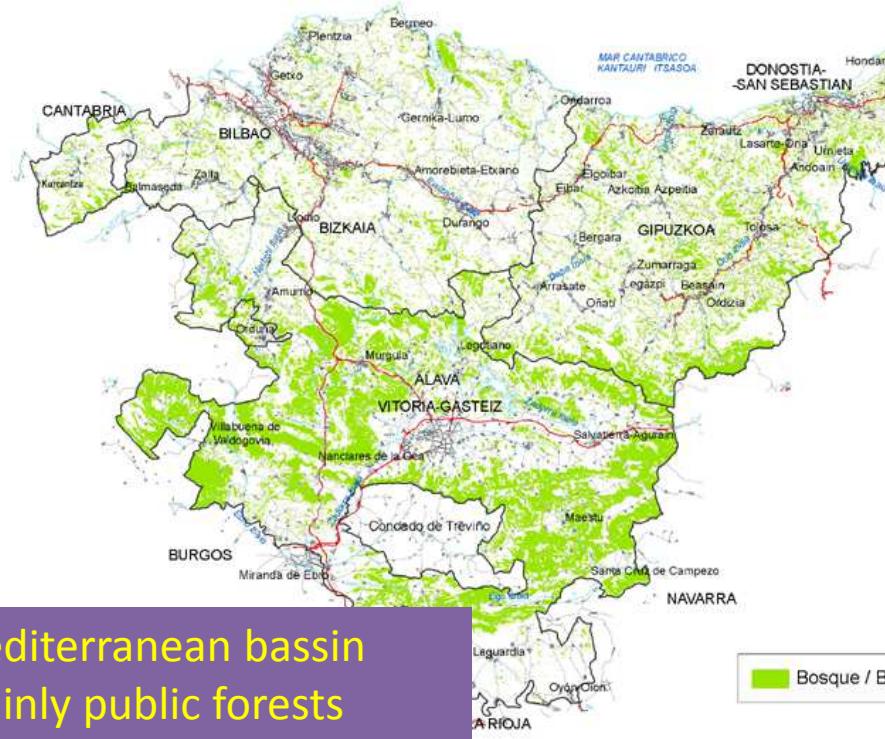
Project LIFE Healthy Forest

EFIATLANTIC AND IEFC ANNUAL MEETING
Scientific Seminar - Open Forum
10th May 2017, Edinburgh

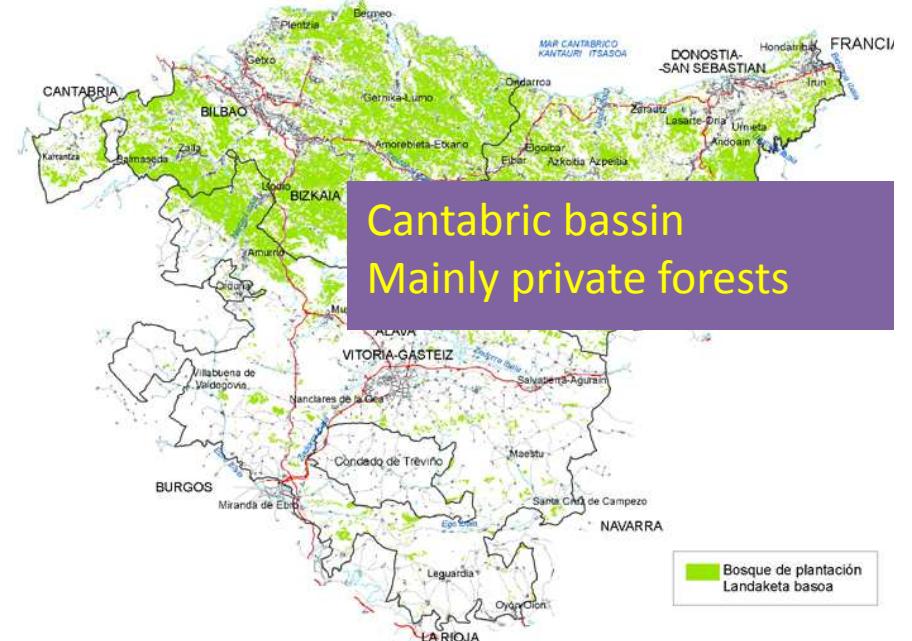




Natural forest (broadleafs)



Mediterranean basin
Mainly public forests



Cantabric basin
Mainly private forests

Forestation stands (conifers)





Project HEALTHY FOREST - LIFE14 ENV/ES/000179

Emerging problems with forest
health

Diplodia pinea (Desm.) Kickx y *Fusarium circinatum* Nirenberg & O'Donnell, principales hongos que atacan las masas forestales de *Pinus radiata* D. Don en el País Vasco.

Tesis Doctoral

Ignacio García Serna

Año 2011

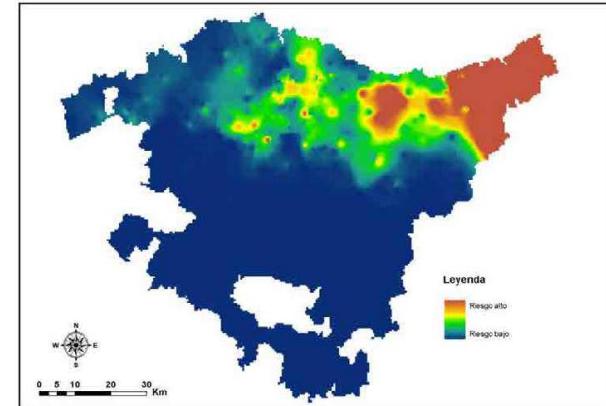
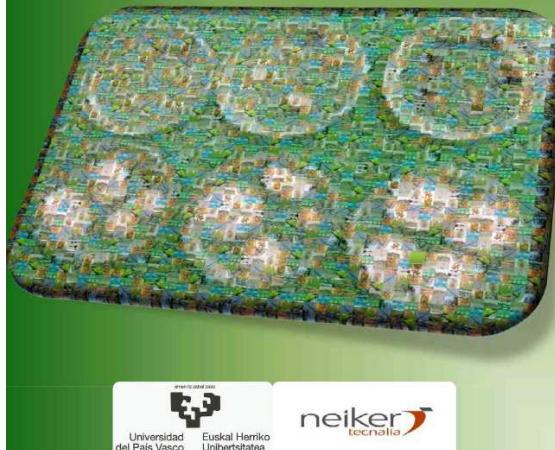
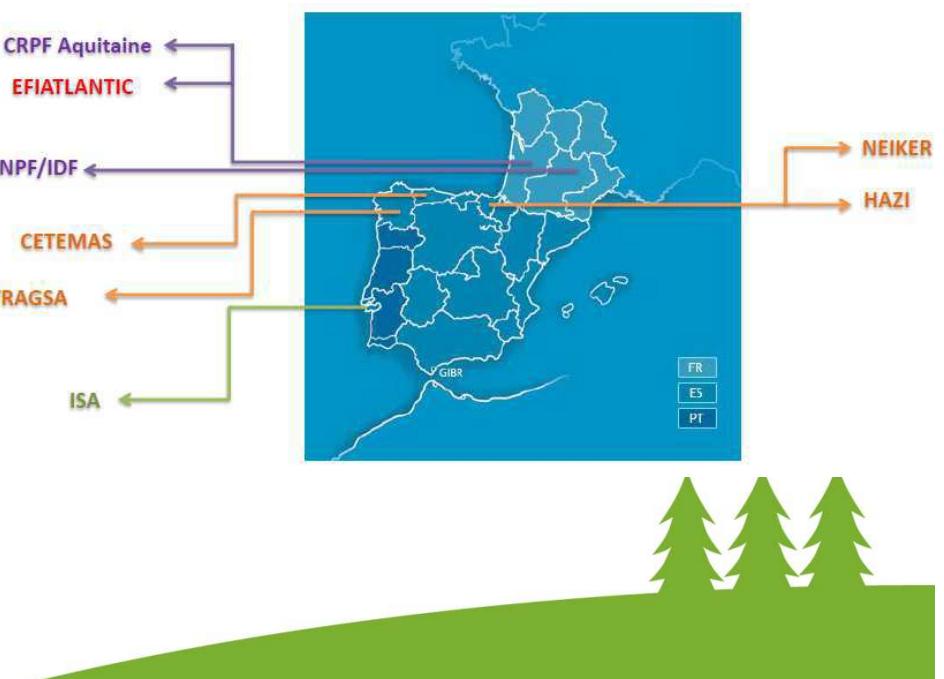
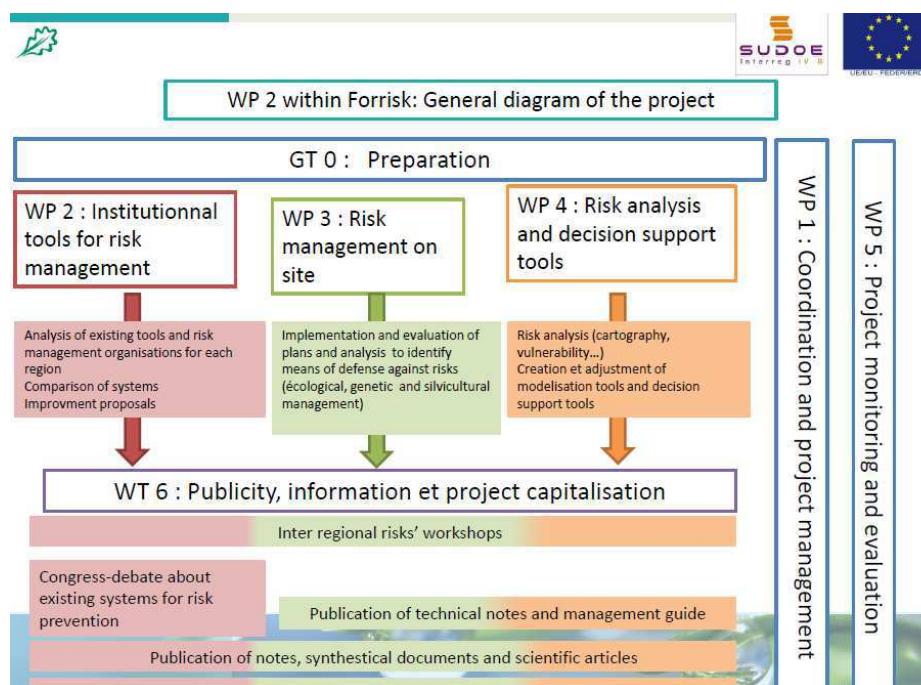


Fig. 6.15. Mapa de riesgo de *Fusarium circinatum* en el País Vasco en función de las variables TEMPERATURA, PRECIPITACIÓN y GRANIZO.





Project Interreg SUDOE 2013-2014 FORRISK





Project **HEALTHY FOREST - LIFE14 ENV/ES/000179**

Early detection and advanced management system to reduce forest decline caused by invasive and pathogenic agents

Duration of 42 months: from 02/11/2015 to 30/04/2019

Coordinated by NEIKER-Instituto Vasco de Investigación y Desarrollo Agrario
Three associated beneficiaries: Friedrich-Schiller-Universität Jena, Fundación Hazi
Fundazioa and Grupo DEX (Desarrollo de Estrategias Exteriores, S.A.)





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<http://www.lifehealthyforest.com/>

The website features a main banner with the text "LIFE HEALTHY FOREST" and "EARLY DETECTION AND ADVANCED MANAGEMENT SYSTEMS TO REDUCE FOREST DECLINE CAUSED BY INVASIVE AND PATHOGENIC AGENTS". Below the banner, there's a "KNOW MORE" button and a "CO-FINANCED BY THE EU'S LIFE PROGRAMME" logo.

Objectives section:

The main objective of LIFE HEALTHY FOREST project is the design, application and monitoring of advanced methodologies to achieve a more sustainable forest management at EU level in the field of control and prevention of forest decline caused by invasive and pathogenic agents taking into account both their environmental and socio-economic impact.

To this purpose, the specific objectives are:

- Development of an innovative and unique integrated system to the early detection and evaluation of the impact of forest decline through the combination of expertise areas, encompassing from molecular to remote sensing techniques.
- Implementation of the early detection system in large-scale demonstration plots, giving a comprehensive vision of the forest health, a knowledge base for the EU policy.
- Implementation of a more accurate and cost effective sustainable forest management techniques based on the innovative system, adapted to different pathogens, organisms and scenarios of forest decline, in accordance with the perspective of adaptation and improvement to new and sustainable management strategies.
- Development and implementation of a GS-infrastructure for the estimation of economic and environmental impact of forest decline, causal agents and the detailed proposal of forest management actions to reduce the key impacts of forest decline at different levels.
- Provision of baseline data and information database of forest decline at different scales of analysis in relation with main invasive and pathogenic agents in the European Union in order to contribute to the improvement of detection, prevention and control of sustainable management strategies, policy and legislation about invasive and pathogenic species.
- Involvement of public and private stakeholders (both public and private resources) for policy making and forest management, and private organizations (both the forest sector) to enhance responsibility and transparency at EU level, as well as to increase awareness in the general public about the importance of sustainable forests.
- Contribution to the objectives of the New EU Forest Strategy and the EU Biodiversity Strategy to 2020.

About the project section:

The main objective of LIFE HEALTHY FOREST project is the design, application and monitoring of advanced methodologies to achieve a more sustainable forest management at EU level in the field of control and prevention of forest decline caused by invasive and pathogenic agents taking into account both their environmental and socio-economic impact.

News section:

LIFE Healthy Forest brochure

LIFE Healthy Forest Open Info Day 30 June 2016

Life Healthy Forest partnership meets for the second coordination encounter

Life Healthy Forest project kick-off meeting launched in Arkauta



Project HEALTHY FOREST - LIFE14 ENV/ES/000 179

The implementation of the aforementioned actions is expected to produce two main outputs:

- An integrated system of early detection of forest decline that optimizes resources and increases the effectiveness of risk detection and a sustainable management of forest ecosystem. This system encompasses from field monitoring, sampling, morphological, molecular and physiological to remote sensing techniques. The implementation of this system will have a positive effect in the biodiversity by intervening against invasive and pathogenic agents directly related with the forest decline and mortality. The system will be comprehensively materialised in a Guide and accompanied by the socioeconomic and environmental monitoring.
- A GIS infrastructure focused on the combined use of diagnostic methods, remote sensing, silvicultural treatments and biological control to reduce damages caused by invasive and pathogenic organisms and to minimize the potential economic and environmental threat. This infrastructure will consider two environments: the first one, a web allowing access to information to technicians of the Forestry Administration and technical staff of Forest Owners Associations; and a second environment, based on desktop environment tools for forest health researchers.

As a result of the application of the early detection system and the use of the GIS infrastructure, the following achievements are expected:

- An improvement of 10 % of the detection capacity and diagnostic. The combination of optimized techniques and protocols will enable a substantial progress by increasing the capacity of evaluating the impact, identifying the pathogens and define the sustainable management cost per hectare.
- A very significant increase in the production and quality of wood is expected (around 15 %) as well as the botanical and fauna diversity (10-20%) derived of the combination of the detection and management system implementation.
- An improvement in the forest health conditions and management of ≥25% by means of early detection system taking into account the reduction of the environmental and economic impact resulting from both the attack of invasive and pathogenic agents and the inappropriate application of management strategies.
- A reduction of global costs of around 30% and an increase of 25% of the environmental, economic and social benefits due to the implementation of the innovative systems of detection and management of invasive and pathogenic agents.

LIFE HEALTHY FOREST First
Workshop 7-8 November 2016
LIFE HEALTHY FOREST BROCHURE



Project
**HEALTHY
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Landa eta hazi ingurumen
gizartekoak Eusko
Gobernuko Kontseilua
Organismo de Gobierno
Vice para el desarrollo
del medio rural y marino



seit 1558



Desarrollo de Estrategias Exteriores



Field work: health
Laboratory

Field work: measurement
GIS work

Hyperspectral imagery
Statistics

Organisation





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Sources of forest information in the Basque Country

Free Sentinel 1 and 2 images, RGB and IR

Annual ortophotos RGB and IR 2008-2016

Lidar flights: 2008, 2012 and 2017 (in preparation)

Forest map and Field NFI plots : 2005, 2011 and 2017 (in preparation)

FORRISK plots as Control plots, with Dron, laser 3D and field measurements

Small scale plots by Neiker

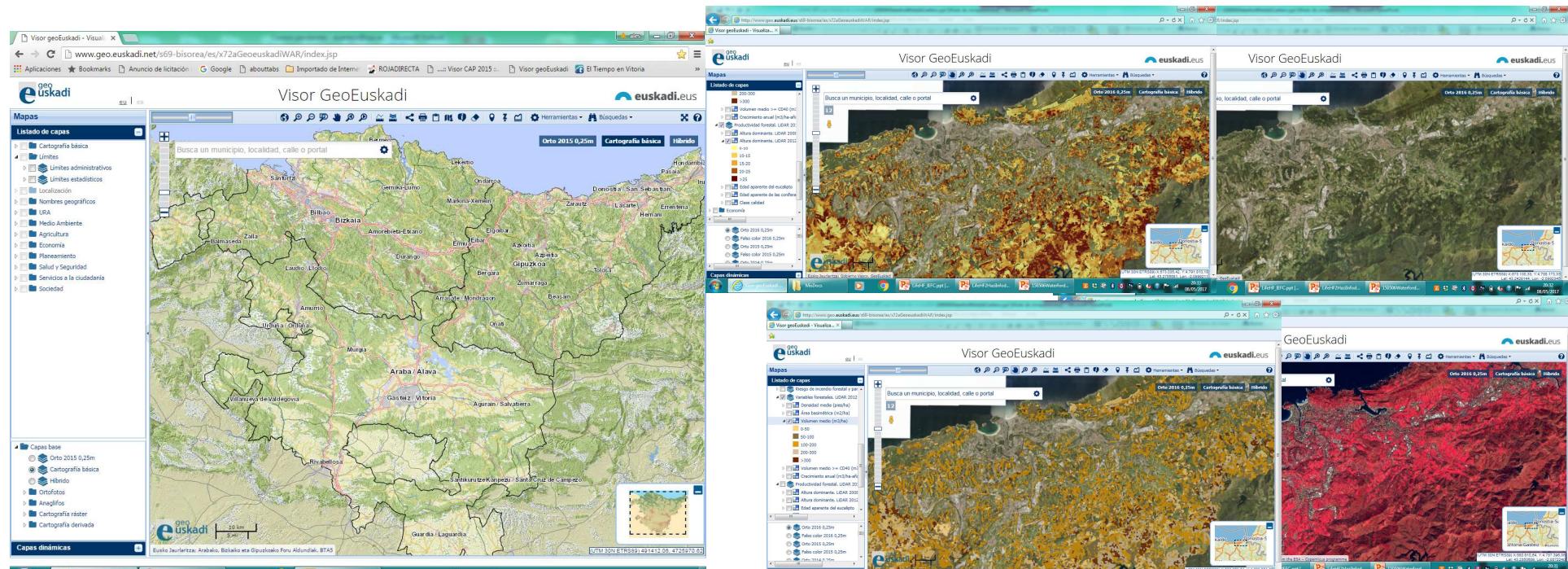
Hyperspectral flight by Jena





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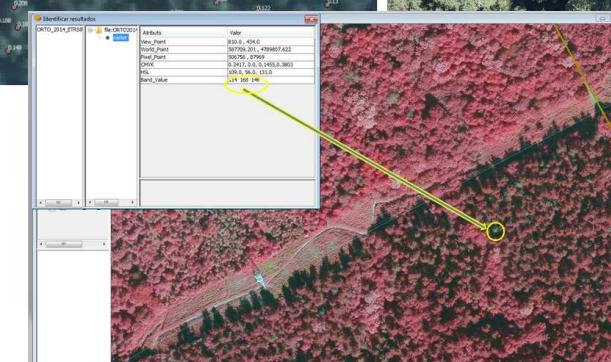
Sources of forest information in the Basque Country: GEOEUSKADI web visor





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Sources of forest information available for LIFE project plots





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Conclusions

- There is a lot of available information
- It is possible to monitor the extent of various forest diseases
- So... It is necessary to analyze the utility of each source of information and the necessary effort for its crossing with the field data
- The first results are encouraging



We keep working...
Thanks very much!

