The impact of climate change on the phenological stages of forestry species· Preliminary data

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Introduction

Climate change affects bioclimatic conditions during the growing period of trees. Also, it affects the phenological stages such as the beginning and the end of flowering (Meier et. all, 21, Farooq and Meraj, 2016). Temperature is the major abiotic factor that affects phenology (Scranton and Amarasekare, 2017). So, global warming s increasingly disrupting he phenological phases (Paltineau and Chitu, 2020, Scranton and Amarasekare, 2017).

Materials and Methods

Three Phenological Monitoring Areas (PMAs) were created in three urban spaces in Thessaloniki, in December 2020, within the framework of the project LIFE CliVut (Climate Value of Urban Trees) LIFE18 GIC/IT/001217. One in the industrial area TITAN, one in School of Forestry and last one in American Farm School. Each PMA contains 20 species (10 species of trees and 10 species of shrubs), 100 individuals (5 individuals per species). The monitoring of the phenological stages of the forestry species was carried out throughout a year on a weekly basis according to the protocol that was created in the frame of the project taking into consideration BBCH scale. The forest species are presented below:

Table 1. *Species (trees and shrubs in PMAs).*

Species			
Trees		Shrubs	
Acer campestre	*Carpinus betulus*	*Spartium junceum*	*Phillyrea latifolia*
Tilia cordata	*Sorbus domestica*	*Euonymus europaeus*	*Salix caprea*
Quercus pubescnens	*Alnus glutinosa*	*Berberis vulgaris*	*Cornus sanguinea*
Quercus ilex	*Fraxinus angustifolia*	*Corylus avellana*	*Ligustrum vulgare*
Prunus avium	*Populus canescens*	*Sambucus nigra*	*Punica granatum*

http://lifeclivut.treedb.eu/index.php

TITAN

AFS

School of Forestry

Conclusions

According to preliminary data (monitoring for the first year) the below species presented differences on their phenological stages at the three PMAs. The monitoring is ongoing on a weekly basis. The preliminary data are presented in Table 2.

Table 2. *Preliminary data*

Species	School of Forestry			American Farm School			TITAN		
	Leaf development	Flowering	Dormancy	Leaf development	Flowering	Dormancy	Leaf development	Flowering	Dormancy
Prunus avium	29/03/21		13/10/21	20/05/21		09/08/21	30/03/21		12/05/21
Populus canescens	17/05/21			06/04/21			12/04/21		
Fraxinus angustifolia	28/06/21		09/11/21	26/04/21		01/09/21	26/04/21		21/06/21
Punica granatum	28/07/21	28/07/21		24/05/21	21/06/21		01/09/21		
Spartium junceum	28/06/21	28/06/21		31/05/21	31/05/21		31/05/21	31/05/21	
Cornus sanuinea		05/04/21			20/04/21				
Tilia cordata			21/10/21			17/08/21			

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