

Invasive alien forest pathogens in Europe: an overview and selected case studies (in Eng.), 916007, VX, Alberto Santini (Guest Professor)

Content

Alien (non-native) pathogens of forest and shade trees often become invasive and can cause severe damage to host trees in the pathogen's exotic ranges. Consequently, they cause economic losses, impair ecosystem services and have negative effects on biodiversity. In this lecture, an overview on the situation of non-native forest pathogens in Europe will be given. How many pathogens have been introduced since 1800? Which temporal trends can be observed? To which taxonomic groups do alien pathogens belong? Where do they originate from? Which are the main pathways of introduction? What are the impacts of invasive alien pathogens? Likewise, strategies of disease management against introduced pathogens (quarantine, eradication, resistance breeding) and problems to implement these strategies will be presented. Besides presenting the general situation, particular aspects will be highlighted with selected case studies of diseases of high impact caused by invasive alien forest pathogens (Dutch elm disease, canker stain of plane, Cypress canker, Chestnut blight, *Xylella fastidiosa* on olive trees, Ash dieback in the Apennine). The excursion will be done in a floodplain area near Vienna which has in the past been impacted by Dutch elm disease (caused by *Ophiostoma novo-ulmi*) and is presently severely affected by ash dieback (caused by *Hymenoscyphus fraxineus*).

Previous knowledge expected

Basic knowledge in forest pathology is desirable (but not obligatory).

Objective (expected results of study and acquired competences)

Students will understand the impact of invasive alien forest pathogens on European forests and the services they provide to humans. They acquire knowledge on the number, taxonomic position, origin and pathways of alien tree pathogens in Europe and on strategies of disease management against these organisms. Besides appraising the general situation, the participants will develop skills to understand selected diseases of high impact caused by invasive alien forest pathogens and will become familiar with strategies to mitigate their impact.

Exam information

Oral exam

Further information and registration for the course in BOKU online:

<https://online.boku.ac.at/BOKUonline/wbLv.wbShowLVDetail?pStpSpNr=277303&pSpracheNr=2&pMUISuche=FALSE>

Program

Lecture or excursion	Date, time and venue	Topics
1	Tuesday, 31.05.2016 09:00 – 11:30 (with a 15 minutes break) Room: SCHW-01/112	The general problem of invasive alien forest pathogens; situation in Europe; global invasive pathogen pathways; hidden pathways
2	Wednesday, 01.06.2016 13:00 – 15:30 (with a 15 minutes break) Room: SCHW-01/113	<u>Case studies:</u> Dutch elm disease (caused by <i>Ophiostoma ulmi</i> and <i>Ophiostoma novo-ulmi</i>); Canker stain of plane (caused by <i>Ceratocystis platani</i>)
3	Thursday, 02.06.2016 13:00 – 15:30 (with a 15 minutes break) Room: SCHW-01/112	<u>Case studies:</u> Cypress canker (caused by <i>Seiridium cardinale</i>); breeding for resistance against invasive alien tree pathogens; Chestnut blight (caused by <i>Cryphonectria parasitica</i> , biological control through hypovirulence)
4	Friday, 03.06.2016 9:00 – 10:30 Room: SCHW-01/113	<u>Case studies:</u> <i>Xylella fastidiosa</i> on olive in Italy; Ash dieback (caused by <i>Hymenoscyphus fraxineus</i>) in the Apennine: the beginning of a new epidemic?
5 (excursion)	Monday, 06.06.2016 9:00 – ~16:00 Floodplain forest along the Danube in Stockerau (near Vienna) Travel by public transport or with a BOKU car	Floodplain forests (general information); Dutch elm disease (its consequences in floodplain areas, small stand of <i>Ulmus minor</i> , mature surviving <i>Ulmus laevis</i>); Ash dieback on <i>Fraxinus excelsior</i> (symptoms, disease cycle, expected consequences); Black walnut (<i>Juglans nigra</i>): discuss threat by the Thousand Cankers Disease (caused by <i>Pityophthorus juglandis</i> and <i>Geosmithia morbida</i>) Possibility to do the oral exam