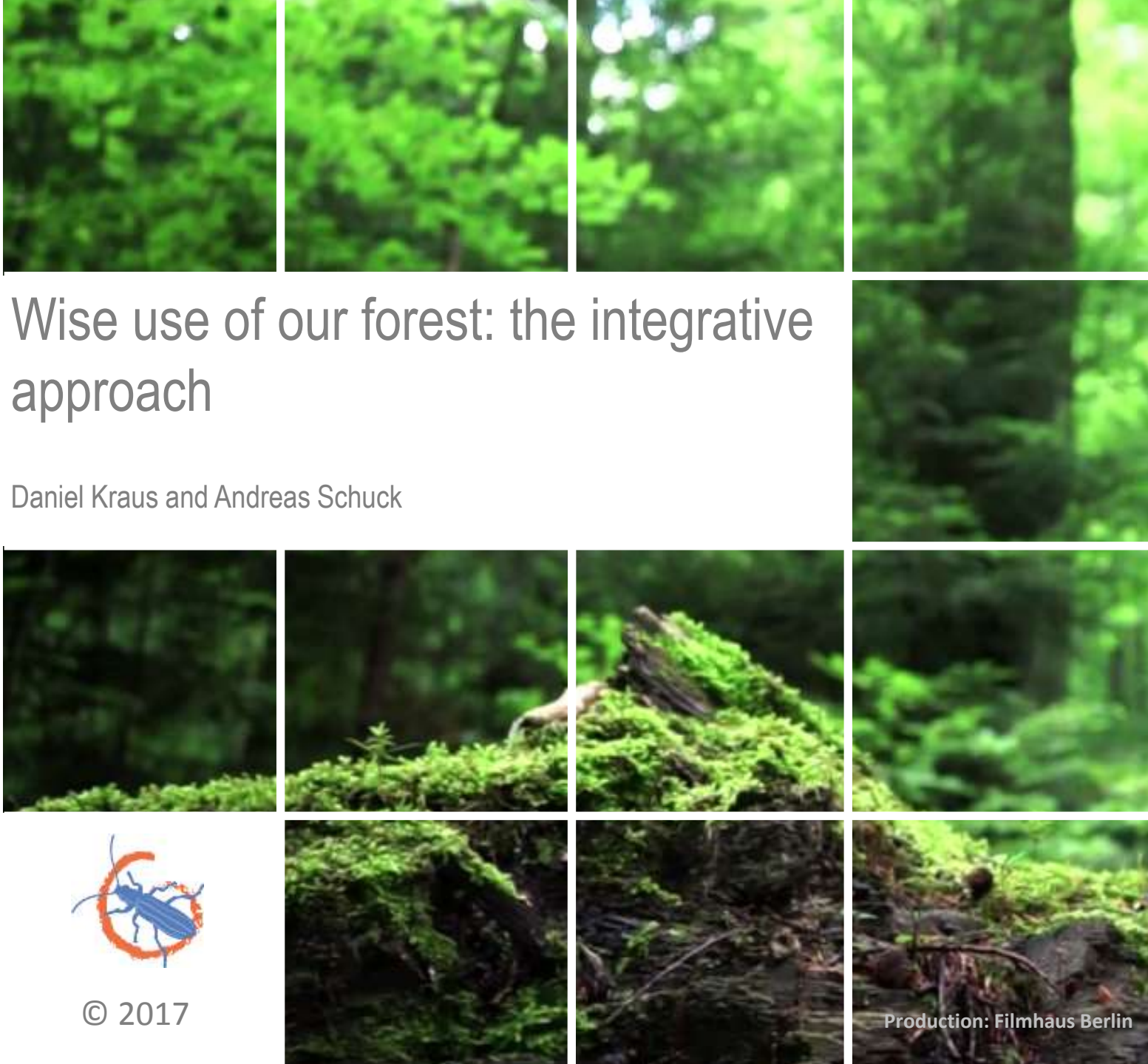
Wise use of our forest: the integrative approach

Daniel Kraus and Andreas Schuck



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Production: Filmhaus Berlin

The Integrate film can be viewed at:
integrateplus.org

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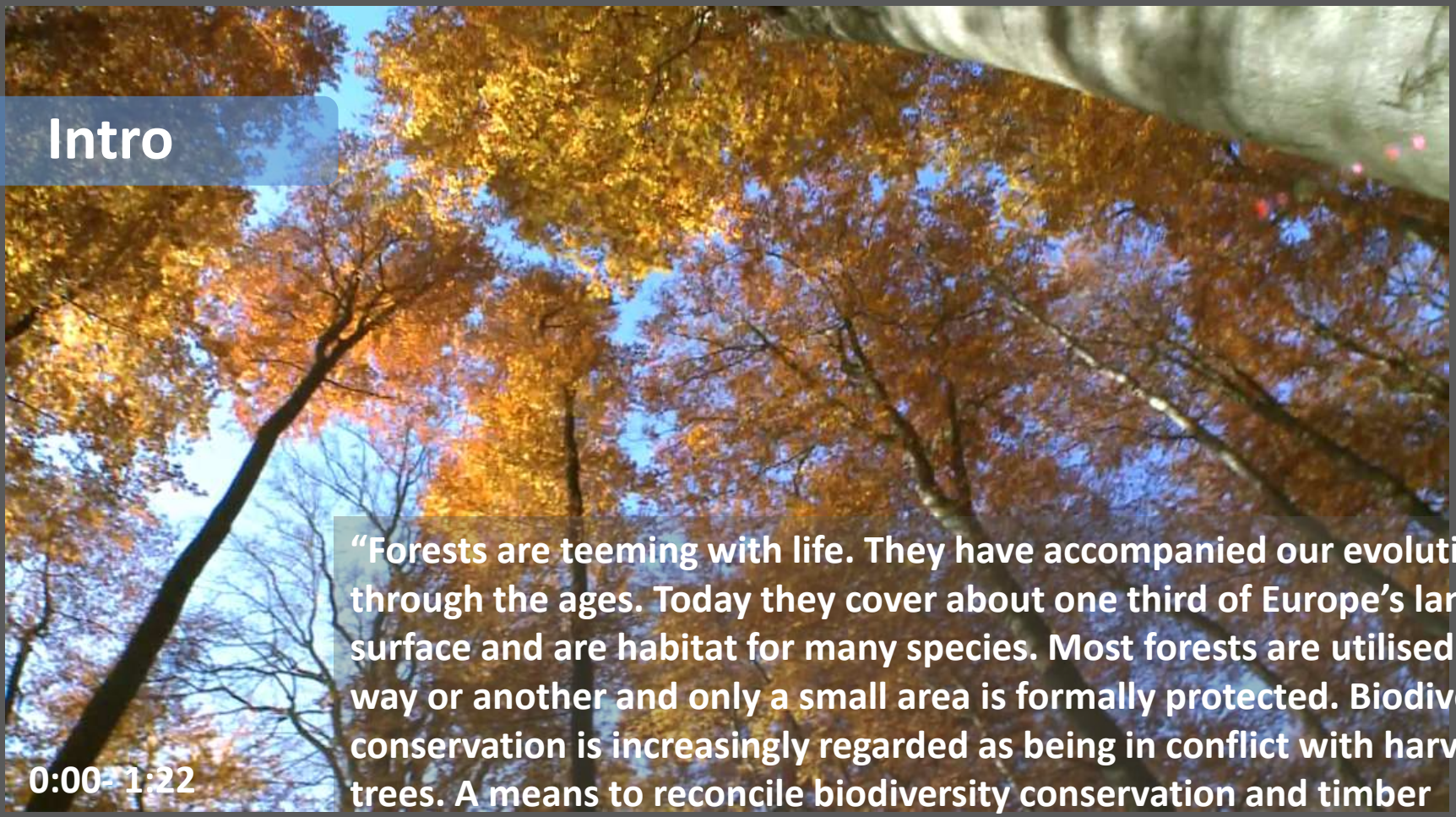
European Forest Institute, 2017

Intro



0:00- 1:22

“Forests are teeming with life. They have accompanied our evolution through the ages. Today they cover about one third of Europe’s land surface and are habitat for many species. Most forests are utilised in one way or another and only a small area is formally protected. Biodiversity conservation is increasingly regarded as being in conflict with harvesting trees. A means to reconcile biodiversity conservation and timber production is the concept of integrative, multifunctional forest management. We share a great responsibility for the wise use of our forest ecosystems. .”

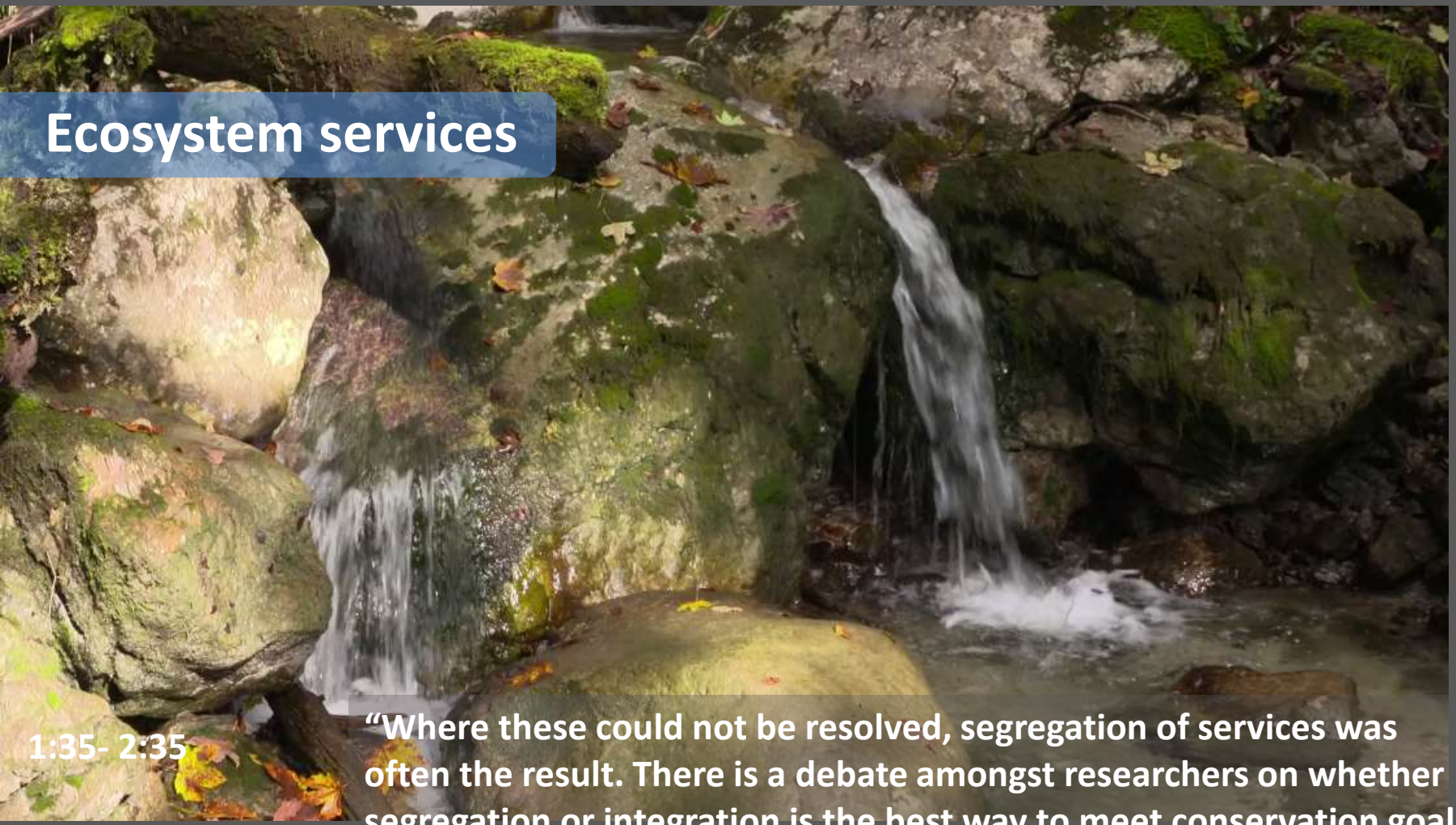
Title
Wise use of our forest:
the integrative approach
1:23 - 1:34

Ecosystem services

1:35- 2:35

"Forest management in Europe has traditionally focused on timber production. Forest ecosystems, however, provide a multitude of services, such as soil protection, clean water, climate regulation, carbon storage and recreation. Such a diversity of services initiated multifunctional forestry, especially where forest area has been limited. Often conflicts arise amongst different interests."

Ecosystem services



1:35- 2:35

"Where these could not be resolved, segregation of services was often the result. There is a debate amongst researchers on whether segregation or integration is the best way to meet conservation goals. Dr. Kurt Bollmann has been working on this topic for many years."

Interview Dr. Kurt Bollmann

WSL, Switzerlnad

2:35- 3:05

“Debate about forest protection has been driven by supporters of segregative and integrative approaches. Segregation sets aside areas throughout the forest landscape while the remaining forest is used for production. Integration uses most of the forest while taking into account small-scale aspects favourable for biodiversity. Recent research results suggest that the approaches complement each other perfectly. We should do both.”

Biodiversity in the forest

3:06 - 3:37

“Ecological processes in forests are driven by their species assemblages. In addition to forest plants, fauna plays a key role. The fauna serves as catalyst in nutrient cycling and provides links between plants, fungi, and micro-organisms. In order to evaluate the role of biodiversity, appropriate indicator species need to be identified. This is a challenge.”

Interview Ulrich Mergner

BAYSF, Germany

3:38 - 4:12

“In this area, 1300 different species have been recorded on only 10 hectares. We foresters aren't able to identify them all. Even in science there are specialists for different species groups. One is a bat expert, another knows birds, a third is an expert on saproxylic beetles while a fourth is an expert on fungi. In forest management, all this needs to be brought together. We need science to tell us which important indicator species occur. Once we know that, we can assume that other species will follow or are already present.”

Biodiversity in the forest

4:12 - 4:45

“The diversity of species in our forests is astounding. But the implications of climate change, landscape and habitat fragmentation, and many other causes are contributing to a decline in forest biodiversity.”

Historic forest use

4:46 - 5:21

"Looking back historically our forests have been utilised for centuries. Mainly grazing, collecting fuelwood and clearing dramatically changed forested landscapes to park-like open woodlands. Although forests ecosystems were altered profoundly, scattered old trees -- remnants of former pristine forests -- contributed to preserving habitats for many forest species."

Historic forest use

5:22 - 6:11

"A continuous increase in demand for timber resources led to industrialized modern forestry. As result, other goods and services provided by forests received less attention. Productive young forests were favoured at the expense of mature stands with old trees. Innovative techniques were developed for moving high quality logs also from more inaccessible forests. Efficiency was increased by using water to transport large amounts of timber for further processing."

Our forests today

6:12 - 7:31

“Even though our forests in Europe are quite different from one region to another they are still the legacy of past management. They are often criticised for their uniformity and lack of old, pristine character. Remnants of natural or old-growth forests have received increased attention due to their high ecological and biodiversity value. They are usually formally protected but are often only small, scattered islands in a landscape of rather young and productive forests. Attention needs to be dedicated to nature conservation in these forests as well.”

Interview Dr. Kurt Bollmann

7:29 - 8:33

“We should aim to integrate small-scale features of biodiversity conservation into forests where human use has been a high priority up to now. Relevant elements are, for example, deadwood, habitat trees, forest gaps and groups of old trees. Large set aside areas like national parks and forest reserves will undoubtedly continue to form a mainstay of nature conservation.”

Interview Dr. Kurt Bollmann

7:29 - 8:33

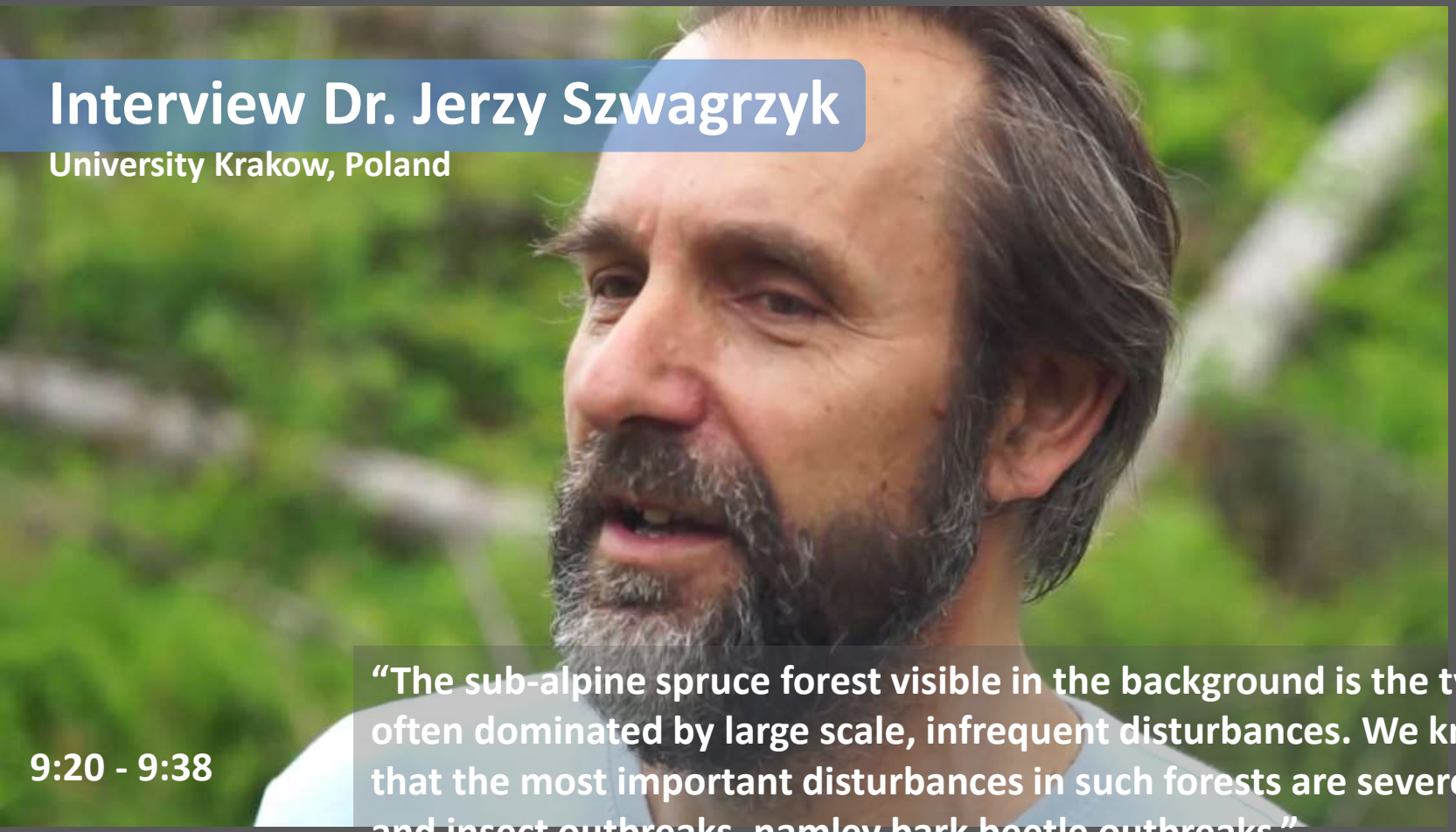
“Without an integrative approach, however, we won't be able to enhance species diversity in all our forests. With dispersed reserves and set-asides, we can create islands and refuges for many endangered species. From a conservation biology standpoint, they will have little chance of survival over time if we fail to provide species like these with suitable habitats across the entire forest area.”

"Old-growth forests do more than serve as donor areas for rare species that rely on uninterrupted development. They are also valuable learning sites in which foresters can observe how woodland develops without any human intervention. They are living laboratories."

Disturbances

8:57- 9:22

“Disturbances like wind storms, for example, are an important element of natural forest development. Although they can disrupt forest management targets and are often seen as harmful, in reality such forests are full of life. So what can we learn from them?”



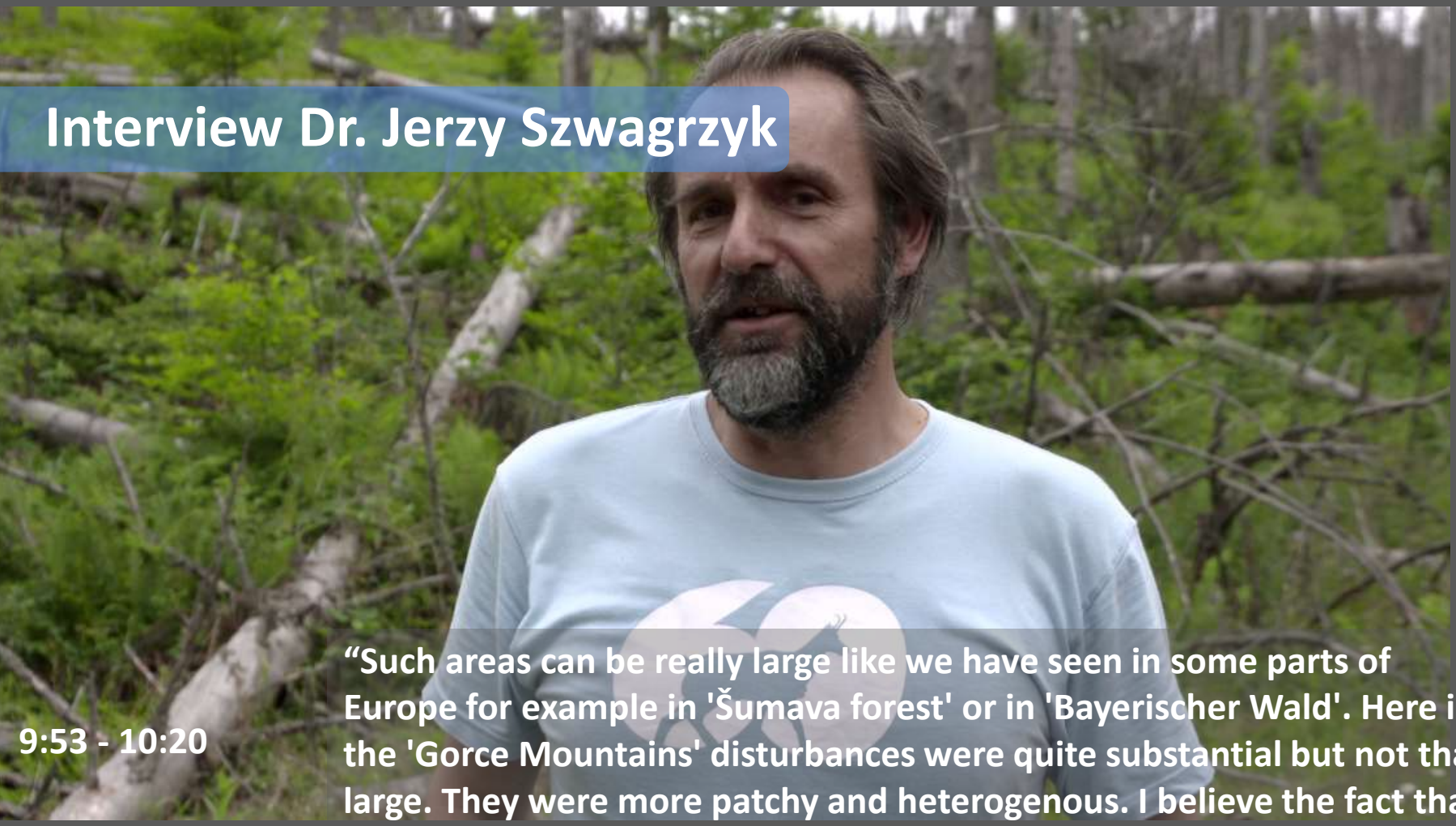
Interview Dr. Jerzy Szwagrzyk

University Krakow, Poland

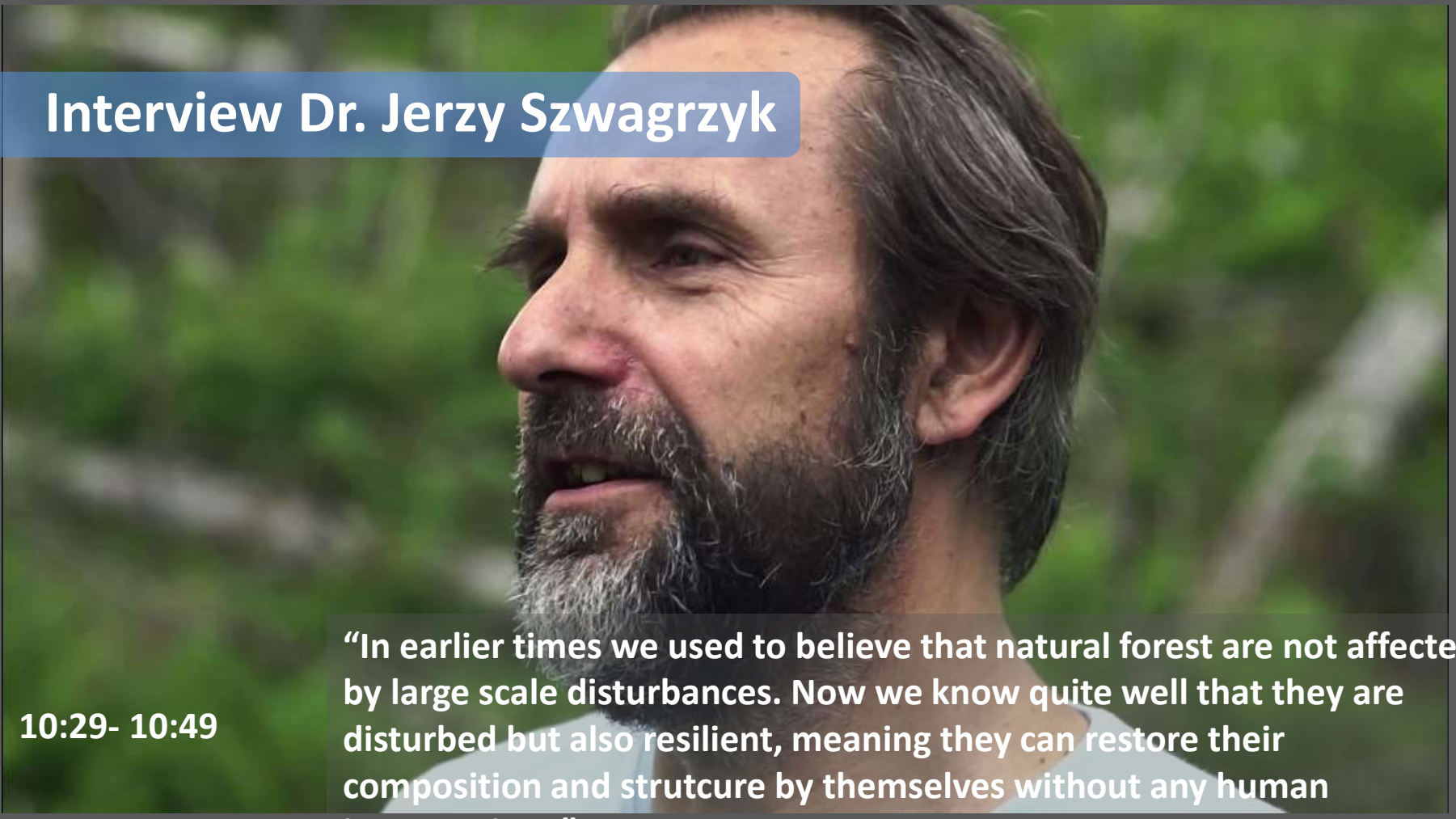
9:20 - 9:38

“The sub-alpine spruce forest visible in the background is the type often dominated by large scale, infrequent disturbances. We know that the most important disturbances in such forests are severe winds and insect outbreaks, namley bark beetle outbreaks.”

Disturbances
9:39 - 9:52


Interview Dr. Jerzy Szwagrzyk
9:53 - 10:20
“Such areas can be really large like we have seen in some parts of Europe for example in 'Šumava forest' or in 'Bayerischer Wald'. Here in the 'Gorce Mountains' disturbances were quite substantial but not that large. They were more patchy and heterogenous. I believe the fact that we are here mostly in near natural spruce forests plays a considerable role in this respect. ”

Disturbances



Interview Dr. Jerzy Szwagrzyk

10:29- 10:49

“In earlier times we used to believe that natural forest are not affected by large scale disturbances. Now we know quite well that they are disturbed but also resilient, meaning they can restore their composition and strutcure by themselves without any human intervention. ”

Disturbances

10:50 - 11:19

“In other parts of Europe forest fires are the dominant disturbance. When burning with low intensity they can create beneficial conditions for many rare and threatened species. Fires usually do not kill all the trees in a forest stand and those that survive frequent forest fires may form the backbone of a fire adapted ecosystem with many specialists amongst their inhabitants.”

Interview Marc Castellnou

Generalitat de Catalunya, Spain

11:20 - 11:47

“Large trees have a basic resistance and resilience against forest fires and other disturbances. There are often only few such trees, but they are well adapted to drought and will hardly be affected by wildfires and endure many of them. Wildfires can alter forest structure, even landscapes, while large trees remain. In this way they have guaranteed the persistence of forest cover over the centuries.”

Disturbances
11:40 - 11:53

Wood resources

11:54 - 12:34

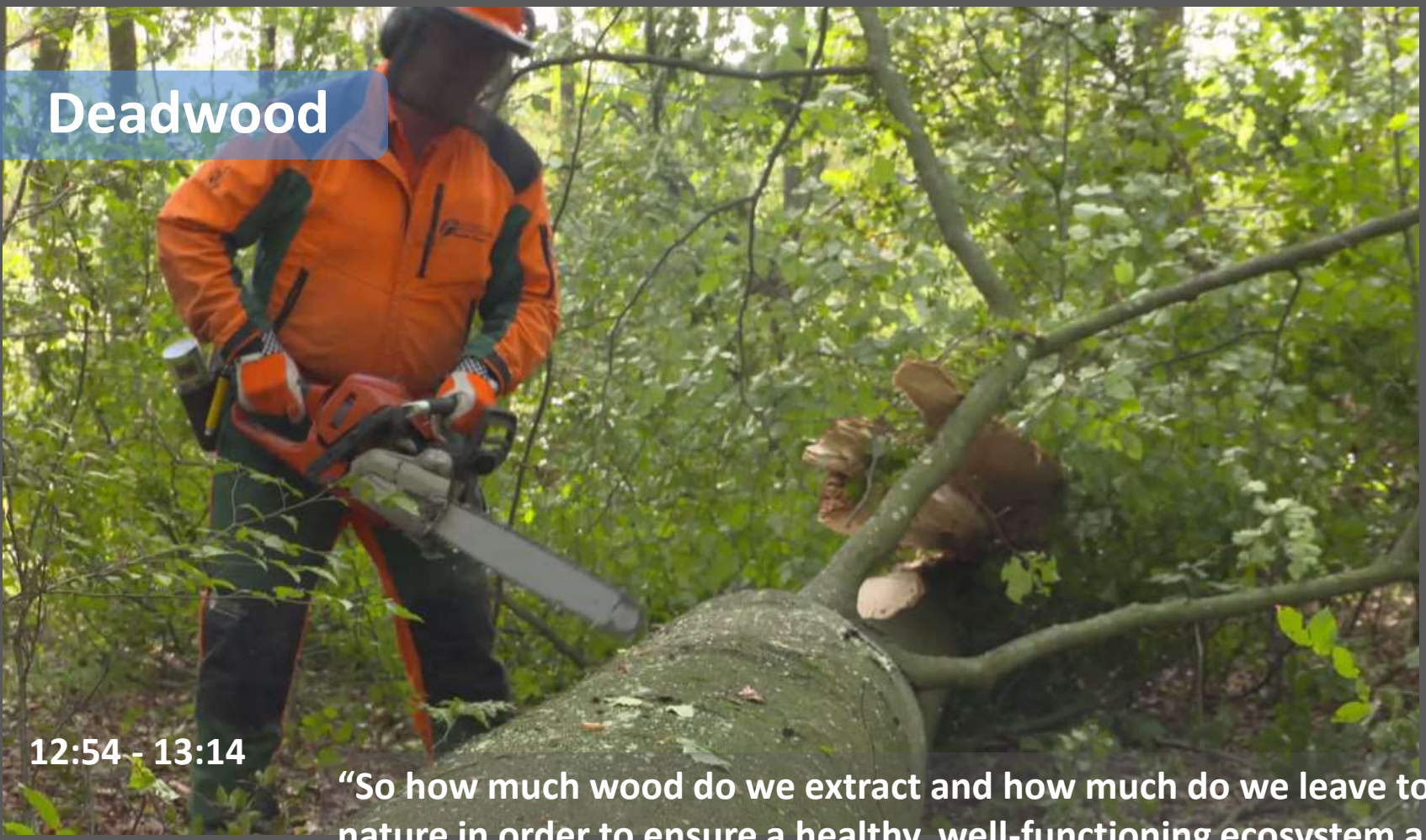
“In a world where demand for natural resources is high, renewables are becoming more and more important. Wood is a fantastic, ecologically sustainable product from our forests. It can be used in construction, to make furniture, and is the basis of all our paper products. It increasingly serves as a source of energy and its fibres are raw material for many new, innovative products. It is a valuable resource supporting us as we strive to promote an emerging bio-economy.”

Timber harvesting

12:35 - 12:53

“To produce and deliver such ecological products wood needs to be harvested.”

Deadwood



12:54 - 13:14

“So how much wood do we extract and how much do we leave to nature in order to ensure a healthy, well-functioning ecosystem and maintain sufficient substrate for biodiversity? ”

Interview Ulrich Mergner

13:13 - 13:34

“High quality, ecological, close-to-nature forest management aims to leave sufficient amounts of deadwood in forests. Deadwood includes branches and whole trees, for example, that have been blown down by wind or felled during timber harvesting. We know that large-sized deadwood is particularly important.”

Deadwood
13:35 - 13:46

Interview Ulrich Mergner

13:47 - 14:39

“Here you see the very impressive coral tooth mushroom. It needs large dead logs to grow. That is why we leave logs like these in managed forests, too. The coral tooth appears only at the final stage of wood decomposition. Before that, many insects and fungi exploit the dead log for nutrients. ”

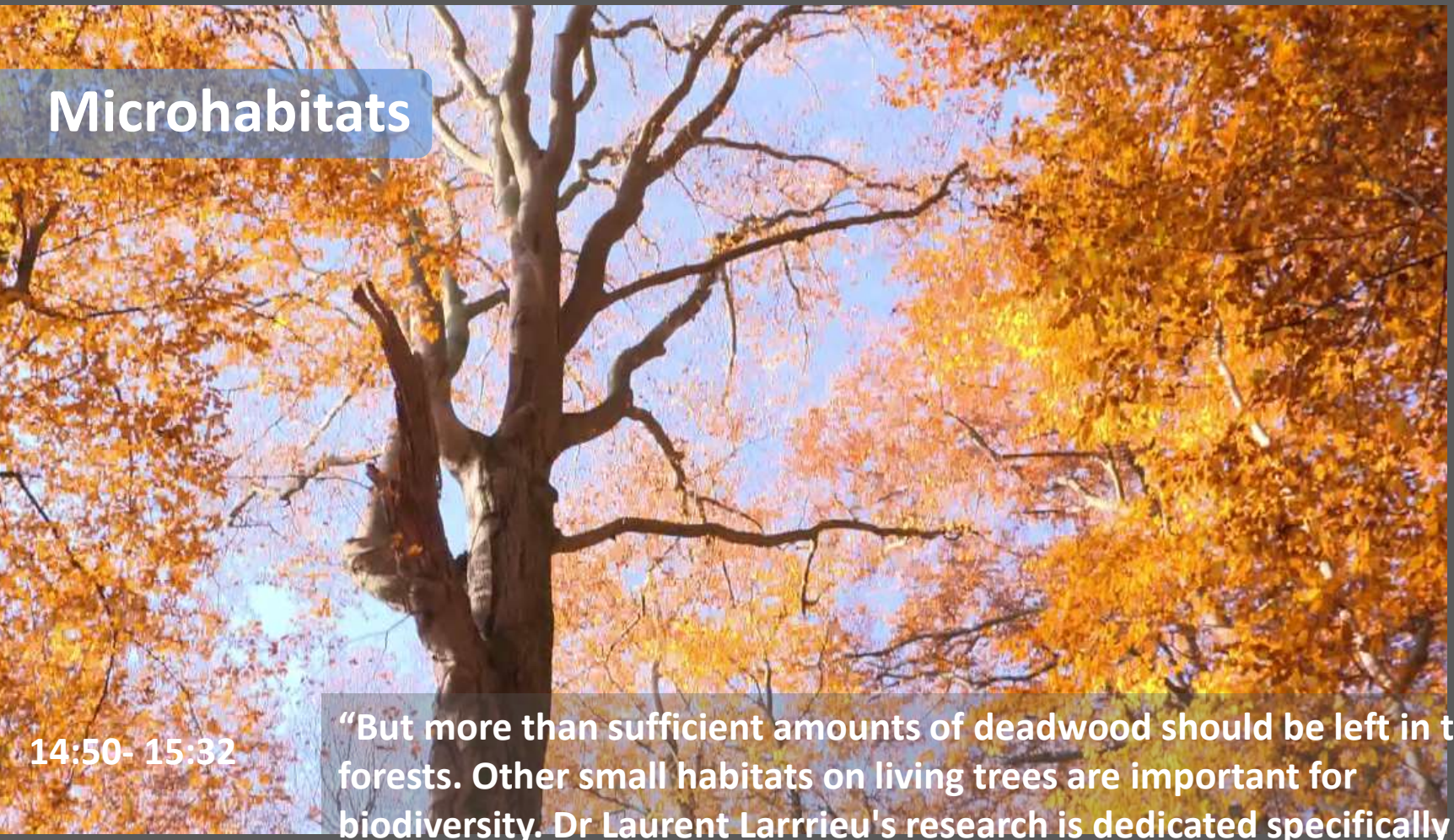
Interview Ulrich Mergner

13:47 - 14:39

“The coral tooth then appears as a specialist for extracting any remaining nutrients from the dead material before it becomes humus. If we continue our programme of increasing the amount of large-sized deadwood, we will not need to classify the coral tooth as rare in 10 - 15 years, because it will find enough of the habitat and substrate it needs. ”

Deadwood
14:40 - 14:49

Microhabitats

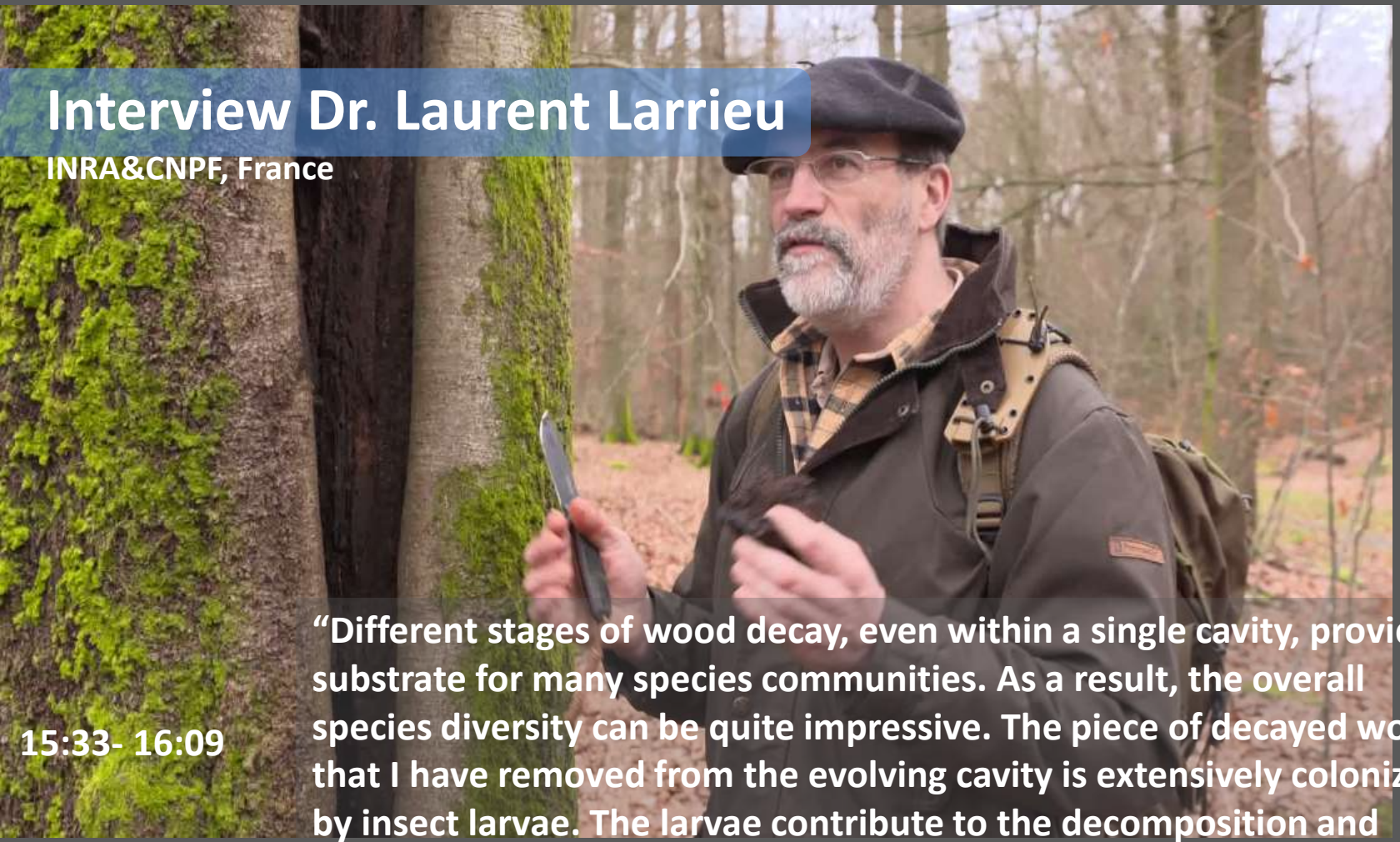


14:50- 15:32

“But more than sufficient amounts of deadwood should be left in the forests. Other small habitats on living trees are important for biodiversity. Dr Laurent Larrrieu's research is dedicated specifically to tree microhabitats and their contribution to biodiversity. ”

Interview Dr. Laurent Larrieu

INRA&CNPF, France



15:33- 16:09

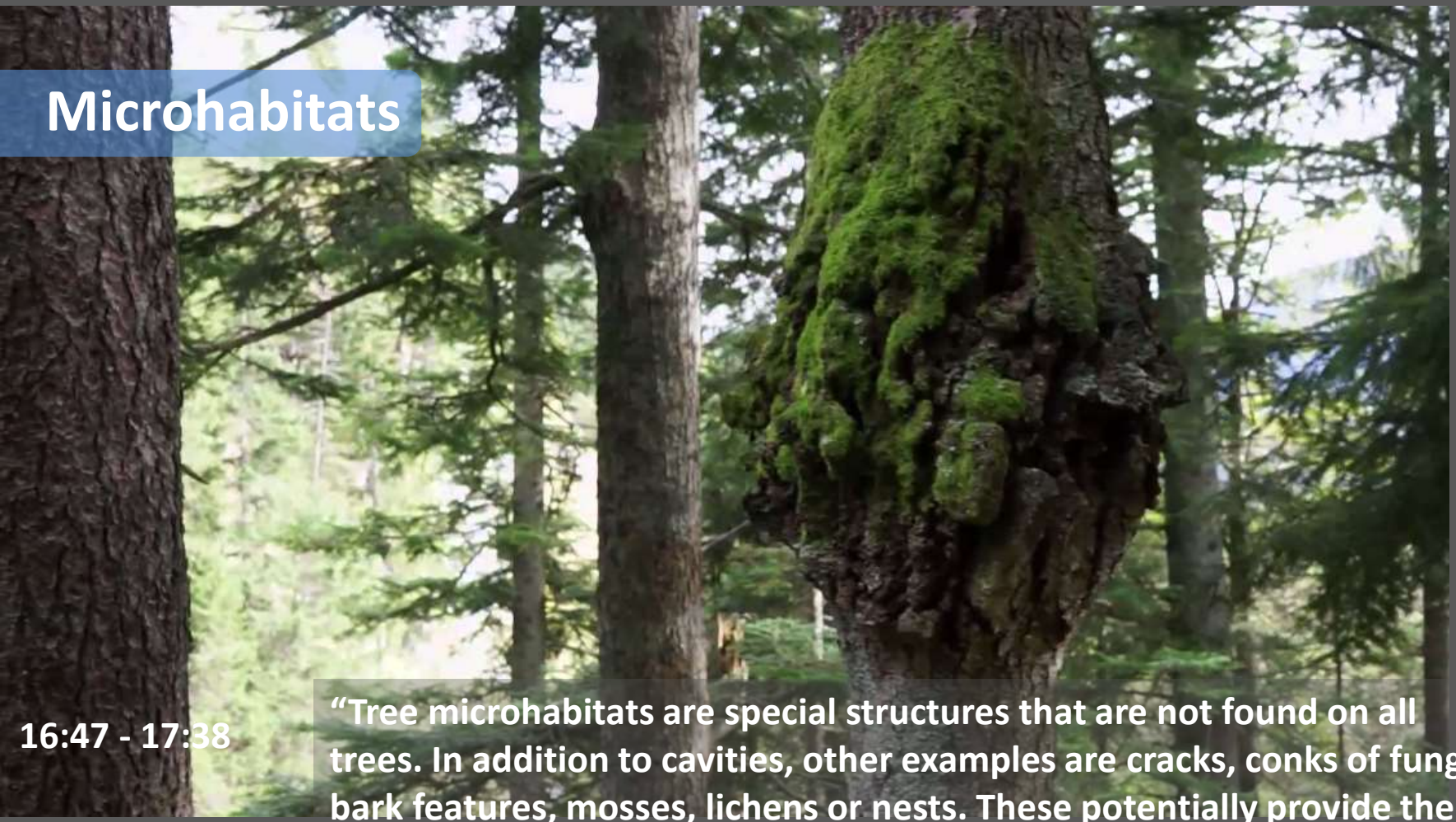
“Different stages of wood decay, even within a single cavity, provide substrate for many species communities. As a result, the overall species diversity can be quite impressive. The piece of decayed wood that I have removed from the evolving cavity is extensively colonized by insect larvae. The larvae contribute to the decomposition and recycling of the wood, and, in doing so, they accelerate the development of the tree cavity.”

Interview Laurent Larrieu

16:10- 16:46

“In our forests, we can find one very important species group living and depending on deadwood. Those are the Coleoptera, or beetles. They are a highly diversified and specialized group. For example, in France, we have identified around 10,000 species to date, of these more than 2,500 species are dependent on decaying wood. Therefore, beetles play a pivotal role in wood decomposition. ”

Microhabitats



16:47 - 17:38

“Tree microhabitats are special structures that are not found on all trees. In addition to cavities, other examples are cracks, conks of fungi, bark features, mosses, lichens or nests. These potentially provide the necessary substrate for certain species during at least part of their life cycle.”

Microhabitats

17:36 - 17:57

“Disturbances can accelerate the formation of microhabitats, such as the fire scars that develop on large trees, for example. There are specialists among fungi and insects that depend fully on the particular substrate that fire scars provide.”

Interview Marc Castellnou

17:58 - 18:43

“After a fire the formation of deadwood and dead branches will support the development of tree related microhabitats. A considerable number of our rare and threatened plant and insect species require such structures. Tree cavities and pine needle accumulation in the tree crowns support the development of organic substrate and attract a variety of species.”

Interview Marc Castellnou

17:58 - 18:43

“Nowadays, especially pine forests are rather dense and have few open spaces. If forest fires occur they will alter the overall structure towards more open woodlands. Such open woodlands will allow birds of prey, like eagles, to again hunt in forests.”

Tree marking

18:44 - 19:07

“So, how can we ensure the retention of such pivotal elements in our daily forest management?”

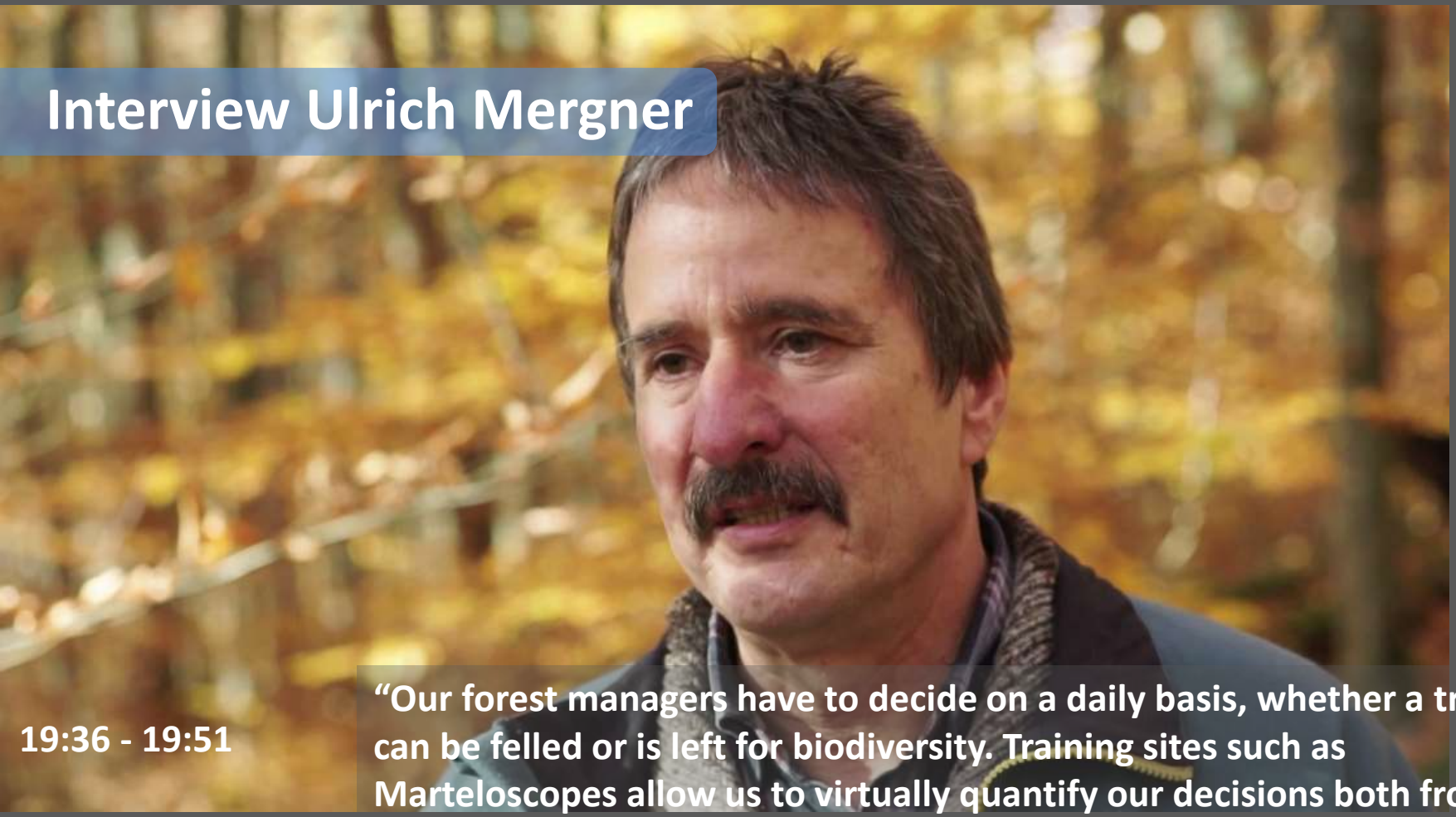
Interview Ulrich Mergner

19:08 - 19:32

“Now, we've implemented a whole set of silvicultural measures to enhance biodiversity in our forests. Besides accumulating deadwood, we preserve habitat trees, reduce tending of young stands, and allow crooked and ramified trees to grow. Such a tree certainly won't find its way to the sawmill, but in future may provide a suitable cavity for the rare hermit beetle, for example.”

Tree marking
19:33 - 19:46

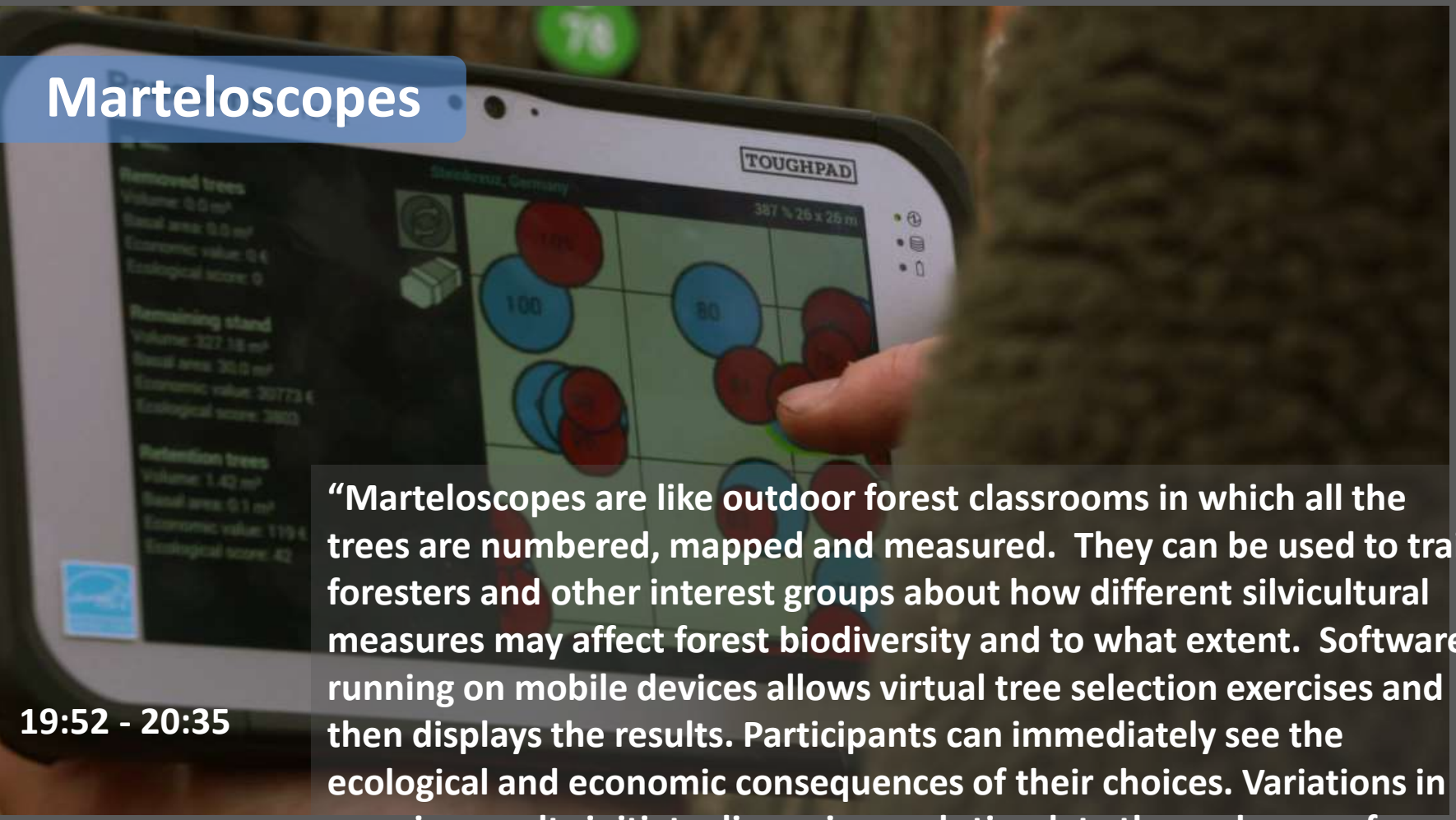
Interview Ulrich Mergner



19:36 - 19:51

“Our forest managers have to decide on a daily basis, whether a tree can be felled or is left for biodiversity. Training sites such as Marteloscopes allow us to virtually quantify our decisions both from an economic and ecological perspective.”

Marteloscopes



19:52 - 20:35

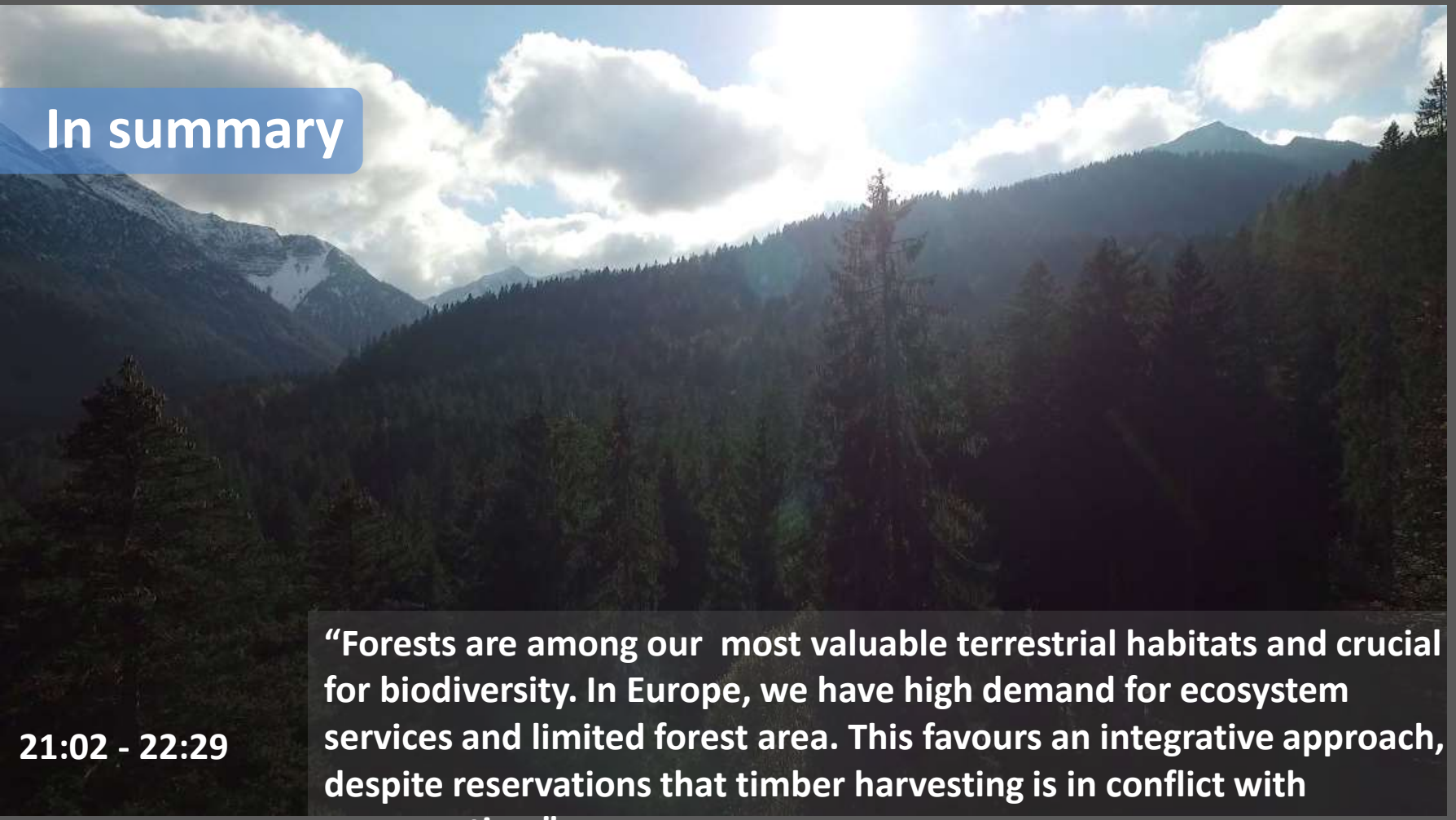
“Marteloscopes are like outdoor forest classrooms in which all the trees are numbered, mapped and measured. They can be used to train foresters and other interest groups about how different silvicultural measures may affect forest biodiversity and to what extent. Software running on mobile devices allows virtual tree selection exercises and then displays the results. Participants can immediately see the ecological and economic consequences of their choices. Variations in exercise results initiate discussion and stimulate the exchange of experiences and learning.”

Interview Daniel Kraus

European Forest Institute

19:36 - 19:51

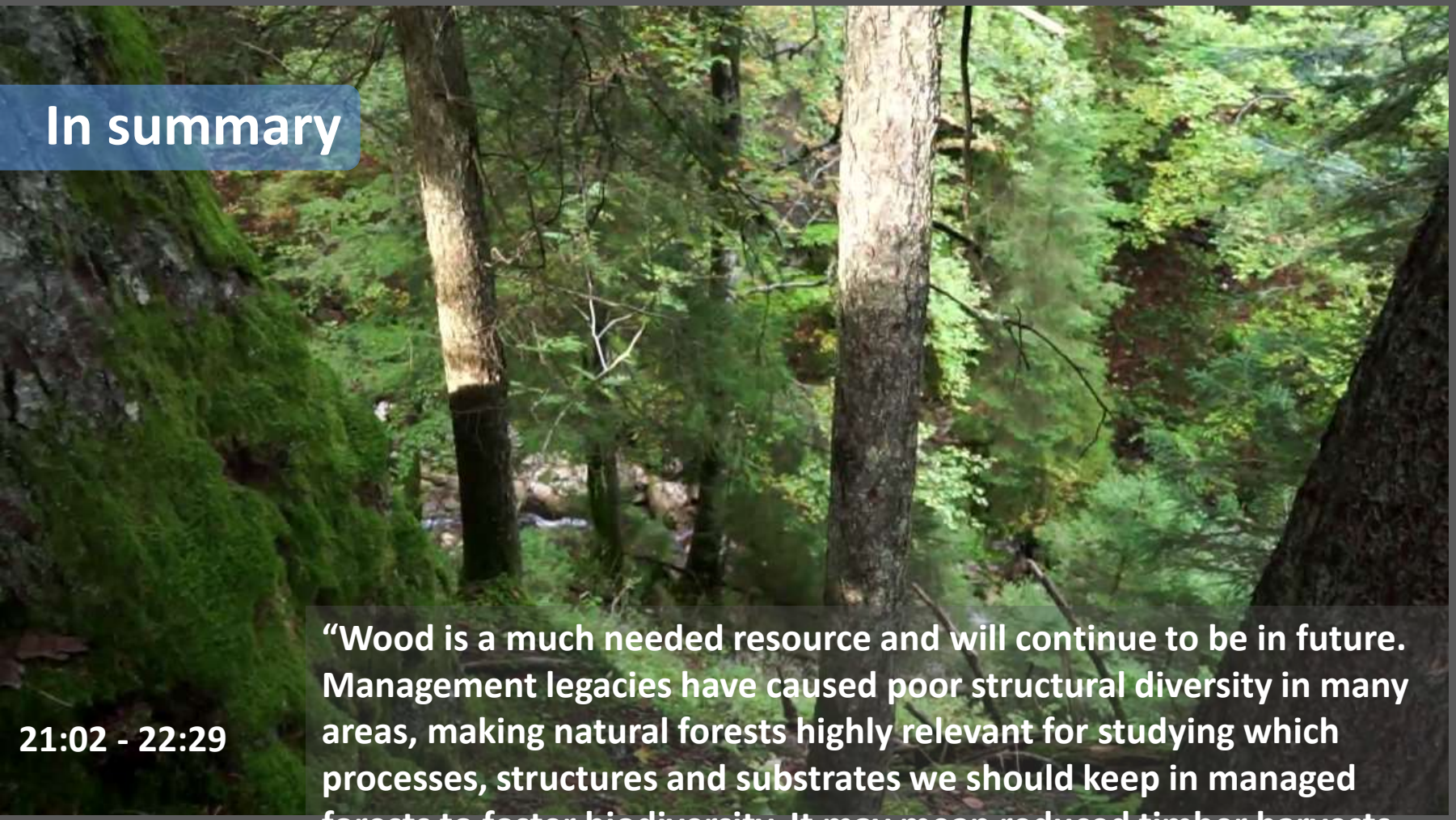
“We strongly believe in the term of "seeing is better understanding". Most foresters are very well trained in estimating the economic value of a tree but many ecologically important features such as tree microhabitat structures are not so well known. In a Marteloscope you can learn to assess and take them into consideration in addition to an economic valuation.”



In summary

21:02 - 22:29

“Forests are among our most valuable terrestrial habitats and crucial for biodiversity. In Europe, we have high demand for ecosystem services and limited forest area. This favours an integrative approach, despite reservations that timber harvesting is in conflict with conservation.”



In summary

21:02 - 22:29

“Wood is a much needed resource and will continue to be in future. Management legacies have caused poor structural diversity in many areas, making natural forests highly relevant for studying which processes, structures and substrates we should keep in managed forests to foster biodiversity. It may mean reduced timber harvests, but it is an investment in more resilient forests for the future.”

In summary
21:02 – 22:29
“Retaining deadwood and tree microhabitats helps provide suitable habitats for many forest dwelling species in a large area. Wise use of our forests will allow them to continue to deliver everything we value now and for generations to come. The choice is in our hands.”

Credits
Wise use of our forests:
the integrative approach

produced by	Filmhaus Berlin
executive editors	Daniel Kraus Andreas Schuck
music	Filmhaus Berlin
Historical footage	Grün Stadt Zürich 'wood harvesting' Holzknechtmuseum Ruhpolding 'wood transport'
Wildlife footage	Gorce National Park 'lynx and wolf' Reinhard Weidlich 'insects, fire salamander and dormouse'

Susanne Hoffmann
'birds'

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"Baumgruppe bei Luzern"

Bayerische Staatsgemäldesammlungen München

J.Brueghel "Belebte Waldstraße"

E F I

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The Integrate+ project runs from December 2013 to December 2016 and builds on a partner network from research and practice with a focus on implementation of integrative management and enhancing transnational exchange of experiences.

www.integrateplus.org