



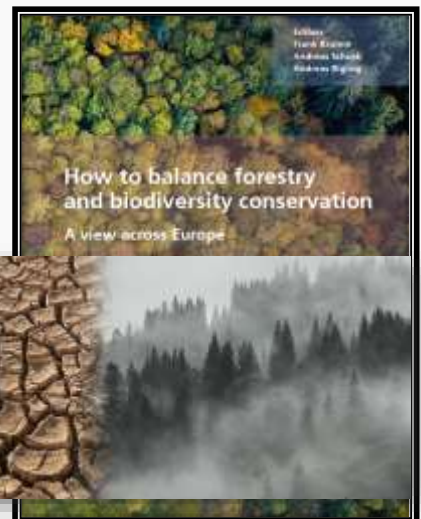
CASE OF SUSA VALLEY (ITALY) AND FUTURE CHALLENGES OF MOUNTAIN FOREST MANAGEMENT WITH SPECIAL EMPHASIS ON BARK BEETLE

Alessandra Bottero



Outline

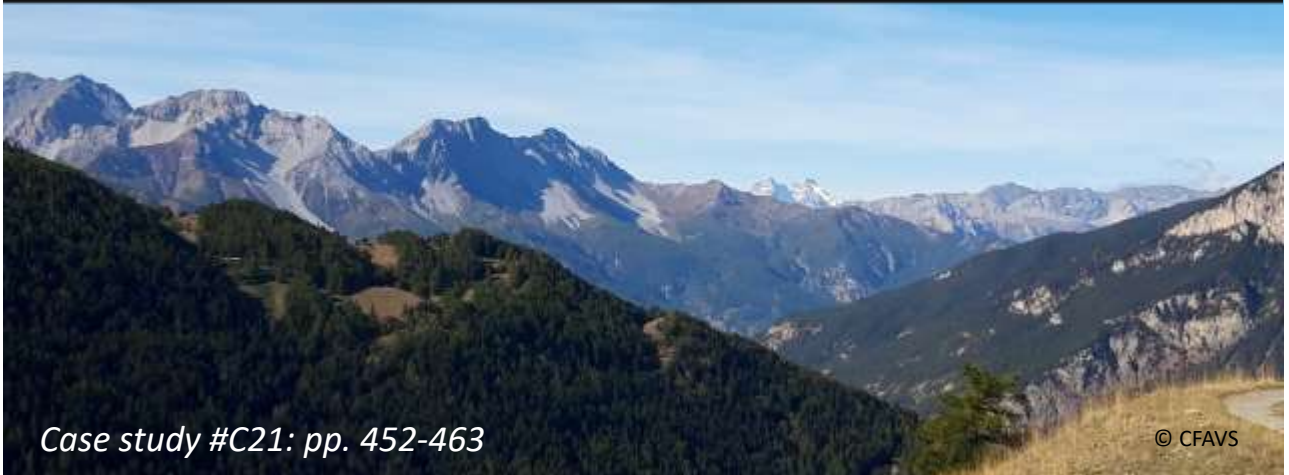
- ★ Case study C21 «Val di Susa – Management of multifunctional forests in the heart of the western Italian Alps»
- ★ Future challenges of mountain forest management



VAL DI SUSA

MANAGEMENT OF MULTIFUNCTIONAL FORESTS IN THE HEART OF THE WESTERN ITALIAN ALPS

Lucia Caffo, Alberto Dotta, Alessandra Bottero



Case study #C21: pp. 452-463

© CFAVS

Location



Total forest area: 18'600 ha PEFC

Ownership: 70% public, 30% private

Forests, pastures, protected areas, protection forests, endangered species,...

The **Upper Susa Valley Forest Consortium (CFAVS)**:

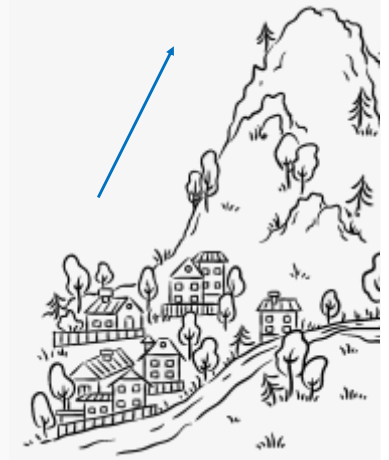
- ★ Established in 1953
- ★ Management of pastures and forests owned by the municipalities in the Upper Susa Valley
- ★ Management of safety and the environment
- ★ Multiple ecosystem services



Forests

Main species:

- ★ European larch 66%, Swiss stone pine
- ★ Scots pine (south-facing slopes)
- ★ Silver fir and Norway spruce
- ★ Maple-Linden-Ash
- ★ Sweet chestnut
- ★ Beech, Alder, oak (*Q. petraea* and *Q. pubescens*)

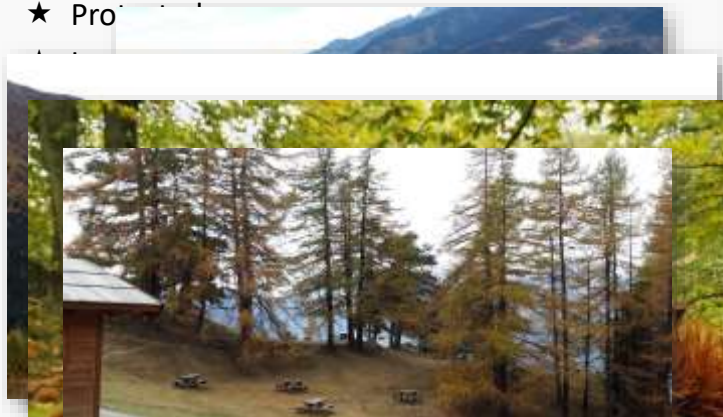


Elevation: 600-2400 m a.s.l.
Precipitation: 960 mm /yr



Main products and ecosystem services

- ★ Wood products:
Larch, Swiss stone pine; Beech, broadleaves
- ★ Protective function vs. avalanches and rockfall
- ★ Pro



The Upper Susa Valley Forest Consortium (CFAVS)



- ★ 3 regional natural parks (Gran Bosco di Salbertrand, Orsiera Rocciavrè, Val Troncea, belonging to the Cottian Alps Protected Areas Management Authority);
- ★ 1 provincial park (Lake Borello – Oulx Pond);
- ★ 15 sites of the Natura 2000 Network;
- ★ 11 veteran trees.

Maintaining and enhancing the **biodiversity and resilience** of forests



Sustainable provision of **ecosystem services**

7

29.10.2021



Challenges

- ★ Changing regulations and technologies
- ★ Socio-economical development and demands
- ★ Climate change and disturbances
- ★ Need to renew and adapt to changing conditions



Challenges that many forest managers and stakeholders face in mountain regions...

8

29.10.2021





FUTURE CHALLENGES OF MOUNTAIN FOREST MANAGEMENT

WITH SPECIAL EMPHASIS ON BARK BEETLE

Alessandra Bottero



Challenges of mountain forests under climate change



Dale et al. 2001, Bottero et al. 2013, Temperli et al. 2013, Weed et al. 2013, Seidl et al. 2017, Dyderski et al. 2018, McDowell et al. 2018, Motta et al. 2018, Sommerfeld et al. 2018, Senf et al. 2020, Bottero et al. 2021, a.o.



Why bark beetle (and spruce)?



Drought

04.2018 (ref. 1981-2010)

dant and
nt tree

Norway spruce (*Picea abies*)

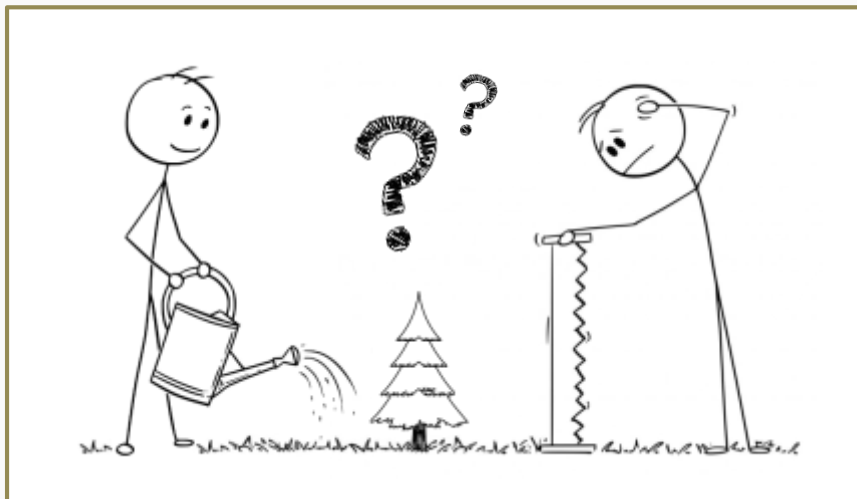
Storm

10.2018

Hanewinkel et al. 2013, San-Miguel-Ayanz et al. 2016, Caudullo et al. 2016, Mina et al. 2017, Motta et al. 2018, Vitasse et al. 2019, Senf et al. 2020, Wermelinger et al. 2020, Bottero et al. 2021, a.o.



What can we do?



Project FORISK (WSL research program CCAMM) 2021-2024



LandClim – model overview

Title

Changing forests and natural hazard risks in Davos (FORISK).

Goal

Analyze risks related to mass movement processes in response to changes in forest composition/structure and climate change (until 2080).

Structure

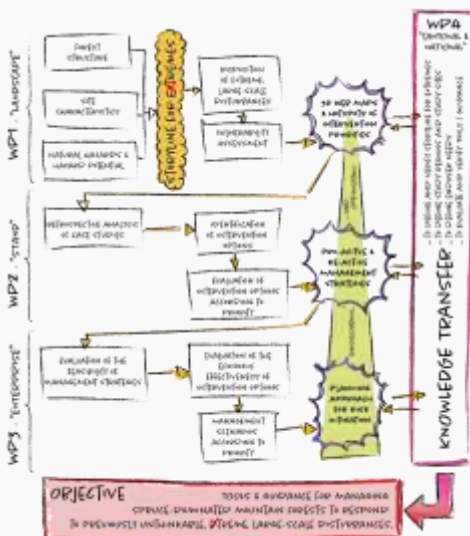
4 work packages (WP): Large-scale hazard models (WP1); Simulation of forest scenarios under climate change, disturbance scenarios (bark beetle and wind) and management (WP2); Risk assessment (WP3); Stakeholder interaction and interactive maps (WP4).

Collaboration

SLF, WSL, ETH, Stakeholders.



Project MountEx (WSL research program eXtremes) 2021-2024



Title

Mountain spruce forests as hotspots for extremes: impacts, resilience and management priorities (MountEx).

Goal

Develop guidance and tools for managing spruce-dominated mountain forests (SMF) under the influence of previously unthinkable, extreme disturbances.

Structure

4 work packages (WP): Spatial modelling and risk quantification (WP1); Management of SMF under multiple risks (WP2); Operational planning and economic assessment (WP3); Stakeholder interaction and knowledge transfer (WP4).

Collaboration

SLF, WSL, Stakeholders.






Thank You

***CASE OF SUSA VALLEY (ITALY) AND FUTURE CHALLENGES OF MOUNTAIN
FOREST MANAGEMENT WITH SPECIAL EMPHASIS ON BARK BEETLE***

Alessandra Bottero (alessandra.bottero@wsl.ch)



The European Integrate Network Meeting | Oct. 29, 2021