7 Research Unit Forest Health and Biotic Interactions

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Position of the RU / Programme / Centre / Initiative at WSL with respect to Swiss AIM and its starting vision.

The Research Unit Forest Health and Biotic Interactions is interested in the Swiss AIM initiative because forest health monitoring is an integral part of our work and there is much potential for increasing the usefulness of regular monitoring activities in Swiss Forests for our purposes.

In addition, we are interested in relationships between forest diversity and resistance/resilience against biotic disturbances (such as pests and pathogens) and abiotic disturbances (such as climatic extremes and wind storms).

Key scientific questions: current and foreseen for the medium (5–10 yrs) and long term (>10–50 yrs).

Regarding forest health monitoring, our interests include:

- General forest health monitoring (for native pests and pathogens).
- Surveillance for invasive pests and pathogens.

Furthermore, we are interested in:

- Interactions between forest diversity and insect pests, pathogens and their impacts.
- Interactions between forest diversity and invasive species (presence and abundance).
- Interactions between forest diversity and abiotic disturbances.

Scales of interest (spatial, temporal, ecological, environmental) and/or statistical inference.

The scales of interest to us range from the scale of the entirety of Switzerland or larger (including adjacent countries) down to specific forests or a subset of plots. In addition, our interests range from single trees and/or pest/pathogen species to entire communities.

Statistical requirements (if any) in terms of precision of status and change estimates.

Pests and pathogens often occur in patches and typically affect only certain tree species. That is why the LFI plots often miss the occurrence of pest and pathogen problems or they are detected only when large areas are affected. Especially for the purpose of surveillance of recent invasions of non-native pests and pathogens, more frequently assessed plots are of greater interest than the current LFI procedure. However, we appreciate that there are limits to what is realistic.

Also of interest is that the main tree species (and different age classes) are well represented in the monitored plots.

Related data needs: attributes to be measured, plots, instruments, trees, destructive sampling.

In addition to generic descriptions of tree health (such as crown transparency and defoliation), we would be interested in more detailed descriptions of forest health concerns that allow better identification of the responsible agents (pest and pathogen species), which is currently only rarely possible.

Monitoring once per year is often sufficient, although some pests and pathogens can only be encountered or identified during certain times of the year. In this sense, site visits more than once per year would be preferable.

Sampling would not normally be destructive.

A standardised plot size would be ideal. For biodiversity studies, the current plot size is not optimal but should still be manageable.

Support and resource availability.

The Forest Health and Biotic Interactions Research Unit, and in particular the Swiss Forest Protection Group may be able to support the Swiss AIM initiative. For example, we may be able to obtain funding from the cantons or FOEN to allocate to surveillance. We may also be able to assist with the assessment of some parameters in the field, depending on the availability of suitable funding. There is a possibility that WSS staff may be able to do site visits, although not across all LFI plots.