



Fig. 2. The five main themes of the Zürich Forest Lab.

of Zürich). The association members include: ETH; the Swiss Federal Institute for Forest, Snow and Landscape Research WSL; Green Stadt Zürich; the Office for Landscape and Nature of the Canton of Zürich; Wald Zürich; and the Association of Zürich Foresters.

Among the existing outdoor forest laboratories (e.g. Köln) the Zürich Forest Lab is distinguished by its size and main focus on managed forests. Special emphasis is given to diverse forest management systems. What further makes it unique is that the initiative originates from forest owners with the intention of uniting the interaction of both practice and research.

A total of CHF 2.7 million has been allocated for the 8-year establishment phase, including contributions from third parties, and financial and in-kind contributions from the sponsors. These figures do not include the expenditure of forest owners for forest management measures. The establishment phase is being financed with the support of the Lottery Fund of the Canton of Zürich, the Federal Office for the Environment, over 60 Zürich municipalities, and contributions from private sponsors.

Objectives and target groups

The forest lab has four objectives:

- The Zürich Forest Lab is an experience-oriented educational and research centre. It is the first such outdoor forest laboratory in Switzerland.

The focus is on forests influenced by humans, also called ‘cultural forests’. Such forests include a wide variety of forest management forms and associated sustainability goals differentiated by forest owner types, and by variations of importance in view of the forest services provided for society.

- The forest lab has been set up to run for 100 years. The different management forms present within the forest lab allow first-hand forest dynamics and visible changes to be observed.
- The forest lab stands at the interface between forestry practice, society, and research; therefore, the lab can be used to investigate a broad range of both practical and research questions.
- The audiences for the forest lab are the public, forest experts, and researchers. The public can be involved in projects and excursions, in field observation (citizen science), and also in practical forest work. Forest experts/practitioners at all levels are encouraged to visit the forest lab during their education and to apply practical training.

In particular, the urban population is a target audience for the forest lab. Increasingly, city dwellers have reacted more sensitively to forest issues and forest uses, and the forest lab seeks to actively engage with this part of the population. Further information about the forest lab can be found at Zürich Forest Lab website (<http://www.waldlabor.ch>).

In the main theme ‘Biodiversity and ecosystem services’, various questions relating to the occurrence and enhancement of animal and plant species as well as habitat occurrence are examined. One focus here is also on the effects of various forms of forest management on biodiversity.

Communication

Communication takes place via the forest lab website and information boards at the main entrance, the specifically designed forest lab App (Waldlabor, Andreas Garzotto GmbH), and flyers. Important platforms for communication are events offered at the forest lab as well as an annual event for all target audiences.

The forest lab distinguishes five main themes (fig. 2): (1) forest management types; (2) society and forests; (3) climate change; (4) biodiversity and ecosystem services; and (5) cross-cutting issues. With the help of a specifically designed colour con-

cept and corresponding pictograms, visitors are guided along the five main themes through the forest lab.

The chosen approach has different communication-oriented principles. Here we highlight them providing an explanation for each (Table 1).

Implementation

Implementation of the project started in early 2019. Currently, 38 projects are listed and are at varying stages of implementation. Among them are research projects and cross-cutting actions such as the establishment of a monitoring database. These will help create new insights and ensure the preservation of knowledge. This is of high importance when it comes to communication with the different target audiences. The first documented silvicultural interventions are expected to take place during the winter of 2020/2021. The following illustrations highlight some of the planned implementation measures (figs 3–4).

The many forms of forest management are characteristic of our 'forest culture'. A distinction can be made between, for example, even-aged and uneven-aged high forest management, coppice, and coppice with standards, as well as other forms, such as agroforestry.

Special attention is given to the promotion and preservation of extraordinary trees (e.g. dead standing trees, ancient trees, tree-related micro-habitats (e.g. polypore fungi, tree cavities) and epiphytic cover of trees (e.g. mosses, lichens, climbing plants, or unusual root forms) (figs 5–6).

Within a short distance from the forest lab there are historically interesting sites including, for example, a burial mound from the Iron Age (Hall-



Fig. 3. Coppice with standards (applied at the forest lab) (Photo: Andreas Bernasconi).



Fig. 4. Different forest management types are shown to convey better understanding of their origin and purpose (Photo: Andreas Bernasconi).

statt period) and the relict of the so-called 'Plan Wahlen' where agricultural production was intensified during World War II.

Table 1. Communication oriented principles of the Zürich Forest lab.

Principles	Explanations
New knowledge regarding forest ecosystem services	The most recent knowledge and findings from practice and research can be observed and experienced in an exciting format on the 150 ha of forest. The results are available online.
Silviculture and forest management	Many visitors to forests are unaware of, or do not understand, the connection between silviculture and the forests they see. In the forest lab, visitors can experience current, historical, and also potential future forms of forest management.
Allow for a travel through time	Forest management choices can have effects that can be seen decades and centuries later. By combining management, and visitor information, such developments become more tangible; forest visitors can in this way travel both back in time and into the future.
Forest owners are trustworthy	Forests in Switzerland are freely accessible; forest owners and forest managers act in the spirit of sustainability; they ensure that numerous objectives and interests are integrated into their management.



Fig. 5. Extraordinary tree trunks (Photo: Andreas Bernasconi).



Fig. 6. Unusual root forms (root buttress cavities) (Photo: Andreas Bernasconi).