

Table D 1. Silvicultural toolbox, showing the different biological/ecological and socio-economic tools, clustered into different spatial scales of application.

Measures Category	Measures Level	Measure/Tool	Rationale and explanation
Biology/Ecology	Landscape	Forest reserves	Network of unmanaged forests as refuge and source areas for certain species.
		Uneven-aged silviculture	Promotion of small-scale vertical and horizontal structures.
		Disturbances	Use disturbances to initiate change. Accept the habitat created by disturbance events to increase biodiversity (e.g. deadwood).
		Promotion of processes leading to disturbances	Promote or indicate processes leading to disturbances (opening water ditches, drainages to stimulate species shifts and according processes).
		Connecting elements	Set aside small forest areas, special/rare biotopes, promote X habitat trees per hectare.
		Restoration of natural site conditions/processes	Refer to natural conditions and the potential natural vegetation in tree species selection, open dams, close ditches, prescribed burning.
		Restore historic woodland pasture	Forest grazing, wood pastures.
		Restore historic forest management	Restore historical land-use practices that favour biodiversity (e.g. coppice, coppice with standards).
		Increase structural diversity	Promote elements that increase structural diversity – forest edges, forest roads, forests along river streams or ponds.
		Natural regeneration	Favour natural regeneration where possible.
Tree and Deadwood	Habitat trees, retention and creation	Old trees (Methuselah trees)	Methuselah concept (e.g. retention of all trees with dbh > 80 cm).
		Habitat trees, retention and creation	Protect habitat trees and or artificially create habitat trees, by girdling, scratching bark/stems, injuring trees on purpose, creating habitats such as tree cavities.
		Deadwood	Leave dead trees standing/lying, old and deadwood concepts, leave cut crowns in the forest, actively create deadwood (e.g. high stumps).
			Retain/favour or plant rare tree species to increase tree species diversity or plant or favour particular species (<i>Quercus</i> , <i>Sorbus</i> , <i>Ulmus</i> , <i>Alnus</i> , etc.) which provide rare habitat.
Species	Hunting	Promotion of rare tree species	Plant or promote rare tree species or species that are not sufficiently represented.
		Increase tree species diversity	Plant or promote local provenances or provenances that fit into the local forest context
		Promotion of genetic diversity	Eliminate non-native and particularly invasive species.
		Reduce invasive tree species	Replace non-native with native tree species.
		Replace non-native tree species	Actively re-introduce or tolerate species like beaver, moose, European bison.
		Promotion of herbivores	Actively introduce or tolerate species like pine marten, lynx, brown bear, wolf.
		Promotion of predators	Actively introduce or tolerate species like capercaillie, black stork, sea eagle.
		Promotion of birds	Hunting to reduce negative effects of high populations of game species on overall diversity.
		Hunting	Reduce certain species with negative impact on diversity (e.g. roe deer, sika deer, red deer).
		Selective hunting	Exclude cattle and goats in case of overusage of forest areas (e.g. Iran).
Socio-Economy	Society	Exclusion of domestic animals	Exclude cattle and goats in case of overusage of forest areas (e.g. Iran).
		Education and training	Special programmes to educate professionals, adults, and students about ecology and management of forests (e.g. using martellosopes).
		Creating awareness of regional production processes	Education of processes that are related to timber production on regional scales, promoting capacities on regional value chains.
		Promotion of forest-related activities - felling trees, usage of forest products	Awareness of human needs and production. Humans as users - creating understanding of necessary processes.
		Promotion of regional value-chain	Supporting local sawmill- and timber-related industry, advertising local products, such as game, meat, and furniture
		Promotion of specific forest products	Produce specific timber assortments, e.g. by aiming for big tree dimensions (veneer), or valuable trees (e.g. oak).
		"CO2 certificates (only OAK Schwyz CH Box C7, Solothurn CH Box C5)"	Compensation payments by the private sector to increase the life span of trees and extend the CO ₂ sink in timber.
		Ecosponsoring	Compensation payments by local industry or private partners.