Description of urban biotopes in Helsinki Metropolitan Area included in the expert questionnaire

Open mires

Flooded mires: minerothrophic mires that are influenced by flooding. Many shoreline and marine/aquatic plant species are common. In the Helsinki region, reed dominated shoreline flooded mires are most common.

Hollow bogs: bogs with low vegetation, mainly dominated by sedges. They occur in lake-fills, as small patches in forests, and as parts of larger bog mosaics.

Aquatic biotopes

River ecosystems: the lotic water and floor habitats of rivers.

Stream ecosystems: the lotic water and floor habitats of small streams.

Forested and shrubby riverbanks: riparian biotopes with a distinctively layered vegetation. The tree layer expands at least 3m above ground, and can occur in a narrow zone.

Open & meadow riverbanks: riparian biotopes with no trees or shrubs. Located next to agricultural fields, meadows, or constructed areas.

Lakes and ponds (incl. shores): all fresh-water waterbodies. Furthermore, a shore zone is included to the biotope that can consist from e.g. reed, meadows, or forests. The shore zone may be very narrow.

Springs: sites where groundwater emerges on the ground, characterized by spring vegetation.

Natural marine shores

Natural sandy beaches: beaches that emerge as tides deliver sand especially in sea bays, or that are parts of esker formations. Some gravel or rocks can be found in the biotope.

Gravel & rocky beaches: beaches, in which the particle grain size is 0.2–6cm (gravel beaches) or above 6cm (rocky beaches). Beaches have hardly any vegetation due to the tidal disturbance.

Coastline rocks: rocky shores with zonal vegetation. Rock surface can be bare or covered with sparse mosses or lichens. The biotope is characterized by the tidal disturbances and, occasionally, fertilization effects caused by birds.

Coastal meadows: homogenous shoreline biotopes with no trees or shrubs. Vegetation may be zonal. Coastal meadows may emerge into sand, silt, or clay soils.

Coastal reed beds: homogenous beds of reed (*Phragmites australis*).

Sands and rocks

Natural sands: open sands with at least some direct exposure to sun. They are mainly found in shores and steep erosive slopes. A continuous trampling or other mechanic disturbance prevents overgrowing.

Bare rocks (outcrops, ledges, rocky grounds): can be located in natural green areas as well as in built parks. Mosses and lichens occur in places of low disturbances. In ledges, the slope, orientation, basicity, and water availability have a great effect on the biota.

Calcareous rocks: rock with calcium or other alkaline substrate. Distinctive vegetation. Some calcareous rocks may include old quarries.

Rocky meadows: dry meadows that emerge as small patches in bare rocks. Vegetation may be sparse in bare rocks, more abundant and distinctive in basal rocks.

Forests and forest biotopes

Each of the forests have been divided into two age groups that are:

- 30–100 y.: trees in the forest cover are mainly 30 to 100 years in age.
- 100– y.: trees in the forest cover are mainly older than 100 years.

Forests on rocky substrates: pine forests that grow in rocks. Tree cover is usually low and sparse. Junipers are often found in the shrub layer. *Cladonia* lichens may be found in the floor layer.

Esker forests: forests that grow on esker formations. Especially sun-facing slopes are often classified as a unique biotope, whereas shaded slopes remind more typical heathland forests. Most distinctive esker forests include esker herb-rich forests, and sun-facing slopes that usually have a sparse pine cover and distinctive vegetation.

Heathland forests: most common forest type in Southern Finland. Here the biotope covers spruce dominated mesic and herb-rich heathland forests, as well as pine dominated mesic and dry heathland forests. Forest structure varies a lot, and deciduous forests may be found. Dead wood is common. Humidity varies from dry to humid forests.

Herb-rich forests: spruce, pine, deciduous tree, or broad-leaf deciduous tree dominated forests. They also include herb-rich forests covered by Finnish Nature Protection and Forest Acts. Herbs are common whereas dwarf shrubs and lichens are rare. Typical herb-rich soil is meso- or eutrophic and only mildly acidic (pH 6–7).

Pine marshes: pine dominated, tussock-covered, oligotrophic marshes with mainly thick peat layer. Here pine marshes include “actual” pine mires such as dwarf shrub pine bogs, as well as semi-open pine or deciduous tree dominated mire combinations such as oligotrophic tall-sedge pine fens. May include ditched or transition-phase marshes. In Helsinki region, a typical pine marsh is the Slåttmossen marsh in Jakomäki district.

Spruce mires: spruce or deciduous tree dominated forests affected by groundwater. They are often found in small mire patches associated with heathland or herb-rich forests and in the fringe of large mire mosaics. Diverse herbaceous vegetation is found in eutrophic spruce mires. Dead wood is common.

Swamp forests: shrubby swaps are common in sea and river shores and can be distinguished as willow, birch, and alder dominated types. Herbaceous and grass vegetation is generally abundant and tall whereas mosses may be very sparse. Furthermore, many shoreline and marine/aquatic plant species are common.

Small deciduous forests: small (<0.5 ha) forest patches. Tree layer expands min. 5m above ground and is often layered. Often found in traffic buffer zones, parks, next to streets, field verges, and late successional wastelands.

Agricultural environments

Agricultural fields: cultivated or fallow fields that are included in the cultivation cycle.

Community gardens: fenceless and cabinless cultivation areas that are associated to allotment gardens or other recreational areas. Used mainly to cultivate ornamental and food plants.

Moist meadows: often emerged in poorly permeable surfaces. Moist meadows do not include shoreline meadows, but they might have similar vegetation: different herbs and/or grasses of moist areas, and sparse or non-existent tree cover. In ground water affected areas, spring associated species are found.

Fresh meadows and pastures: (nearly) treeless biotopes, usually formed by grazing or cutting of unprepared land. Can also emerge, when lawns are left unmowed. Not affected by flooding. The most common meadow type in the Helsinki region. Variable species assemblages.

Dry meadows: dry meadows found in sand, gravel, and morainic soils. Vegetation is low and occasionally patchy.

Moors: born usually to places with frequent anthropogenic disturbances, such as military training areas. Located in sand, gravel, and fine sand soils. Archipelagial moors are often used as pastures and they can be dry meadow-like. Without management, they are often juniper dominated.

Forest pastures: meadow-like biotopes with sparse trees. Characterized by frequent mowing or grazing.

Fortifications and similar cultural areas: old, man-made structures build from different ground substrates. Cultural environments characterized by neophytic plant species.

Wastelands

Anthropogenic wetlands: wetlands, often small in size, generated by e.g. road construction. May be flooded occasionally. *Typha* and other wetland plant species are found, trees include willows and birches.

Open wastelands: (nearly) treeless and shrubless environments born in abandoned lots, roadside verges etc. High richness of herbaceous species. May include some patches bare land. E.g. the Vuosaari landfill in Helsinki.

Shrubby wastelands: developed into man-modified areas or abandoned agricultural fields. Willows and birches are often dominant in the shrub layer. Trees are under 30 y. old. Shrubby roadside verges are a typical example of this biotope.

Parks & gardens

Built parks with trees: parks build for active use or representative purposes. Large, often broad-leave, trees. Canopy cover varies in-between 20 and 70 %. Vegetation is managed and controlled. Lawns and planted ornamental vegetation and shrubs.

Manor gardens: fenced, build parks, usually with trees. Vegetation is managed and controlled. May include avenues and built water and stone elements. May have many broad-leave trees.

Botanical gardens: fenced and built parks with trees that have a high number of planted indigenous and introduced plant species. Vegetation is managed and controlled. May include avenues and built water and stone elements. There are 3 botanical gardens in Helsinki region: Kaisaniemi, Kumpula, and Helsinki Winter Garden.

Pocket parks: small (<0.5ha) parklets. Vegetation is controlled and often quite sparse including some individual trees, bushes, and/or other plantings. E.g. Kolmikulma parklet in the Helsinki city center.

Allotment gardens: fenced areas, where individual small cabins are separated with hedges or fences. Gardening is controlled, and gardens are used for cultivating ornamental and food plants. Allotment gardens also include open green areas, avenues, and often some water elements (creeks etc.).

Cemeteries: areas circled by stone walls that have many trees and ornamental plants, as well as built stone elements.

Golf courses: areas dedicated to golf. In addition to actual greens, they include different kinds of meadows, tree-covered areas, and sand and water elements.

Open lawns: treeless, wide and consistent lawn areas. Usually associated with built parks with trees or other parts of parks. Lawns are dominated by low grasses. They are managed in built parks, traffic greens, private gardens, and different sport areas.

Avenues: esplanades (park between two streets), boulevards (street between two tree lines) and other planted tree lines and hedges in street areas.

Yards

Apartmentblock yards: yards surrounded by buildings and fences. Vegetation is nearly entirely planted. High portion of impermeable surfaces. Large broad-leave trees are found especially in old block yards in the historic inner city. *Note: in the questionnaire, yards were divided into sealed and bare yards.*

Sealed apartment suburb yards: apartment yards that are built on a concrete cover. May include planted vegetation in separate "containers", trees are sparse. High portion of impermeable surfaces. E.g. Merihaka and Ilmala districts in Helsinki region.

Bare apartment suburb yards: apartment yards that are not built on a cover. Oldest yards have often many trees, planted vegetation and open lawns. E.g. Kontula, Myllypuro, and Matinkylä districts and other old suburbs in the Helsinki region.

Residential gardens: private and shared yards of terraced houses, detached houses and semi-detached houses. Their vegetation varies greatly, but often many planted ornamental plants are used. Amount of trees and shrubs varies. Open lawns are common, as well as different activity areas (e.g. playgrounds) especially in shared yards. Yards are located in properties with plot ratio of 0.1–0.3. E.g. Käpylä, Pakila, Rekola, Vartioharju districts in Helsinki region.

Densely-built residential gardens & townhouse gardens: private and shared gardens of townhouse or other densely-built properties. They have distinctly less vegetation and garden areas than in residential gardens of low density. Properties' plot ratio is above 0.4. E.g. Puu-Vallila district or new residential district in Latokartano in Helsinki region.

Traffic areas

Meadow and shrubby road embankments: build next to traffic areas to reduce noise or for landscaping purposes. Vegetation is consistent and low (mainly <1m) and consists of meadows or planted shrubs.

Forested road embankments: forest patches next to major roads. Age structure of the canopy varies greatly. Powerful edge effect caused by the roads.

Airfields: Malmi and Helsinki-Vantaa airfields, as well as associated open grass/meadow areas.

Other anthropogenic environments

Areas beneath power-lines: canopy is kept low, and trees are frequently removed. Vegetation may include meadow or dry meadow species, based on soil type, nutrient levels, and humidity. Shrubs are common and include junipers.

Constructed ponds & runoff-water pools: constructed ponds that may have e.g. impermeable bottom or artificial brinks. Runoff-water pools are designed especially for runoff-water management and catchment of solid compounds. Ponds and pools may include shoreline or ornamental vegetation and stone elements.

Artificial shores: beaches, canals, terraced embankments, etc. Highly modified shores and canals. Examples in the Helsinki region: Market Square in the Helsinki City Center, Aurinkolahti beach, Kivenlahti district.

Anthropogenic sand and gravelpits: man-made pits that are nearly or completely bare.

Green roofs: roofs covered by living vegetation, that varies according to the thickness and quality of the substrate layer.

Green walls: walls covered by living vegetation. Here it includes both planted green walls as well as green facades covered by climbing plants.

Deadwood gardens are parks and gardens with additional deadwood. They can be open on include trees.

Impermeable surfaces: buildings, roads, pavements, and other covered, impermeable surfaces.