



The Vattaja Dunes

Dune Life 2005–2009



Safeguarding the sands of Vattaja

Sweeping sands as far as the eye can see

Vattaja is Europe's largest coastal dune area in the boreal region. The sandy beach sweeps across more than 15 km and the area features several highly representative dune habitat types and species adapted to them. The area's natural and landscape values are well-known and recognised. In Finland's national conservation programmes the dune habitat types are included in the coastal, esker and groundwater protection programmes. Since 2002 the Vattaja dunes and the Lohtaja live fire and military exercise area have also been included in the EU's Natura 2000 network of nature protection sites. The dunes are also classified as a regionally significant landscape area in the Regional Land Use Plan of Central Ostrobothnia.

A key site for national defence preparedness

Located on Cape Vattajanniemi, the Lohtaja live fire and military exercise area is the only site in Finland where the Defence Forces can practice using most of its weapons systems. The shape of the coastal headland enables a wide enough firing sector towards the sea, and the easy-to-monitor island-free waters ensure the safety of

live firing exercises. Vattaja is classified as a nationally important firing and exercise area. The training area was acquired by the Defence Forces in the early 1950s.

Vattaja Dune Life 2005–2009

Vattaja Dune Life is a joint project of the Finnish state forest enterprise, Metsähallitus, the Defence Forces and the West Finland Regional Environment Centre. It aims to reconcile the needs of environmental conservation, national defence and recreational use – with the ultimate goal being to safeguard Vattaja's unique natural environment. The project has directed activity that degrades vegetation and causes erosion away from the most sensitive areas. At the same time damage already caused has been repaired and habitat types weakened by human activity restored. The adverse effects of military activities have been reduced by relocating functions away from sensitive habitat types and managing those still taking place there. Disturbance caused by recreational use has been reduced by directing visitor access with signs and service structures. The conservation measures and the production of this brochure were enabled by funding from the EU Life fund.



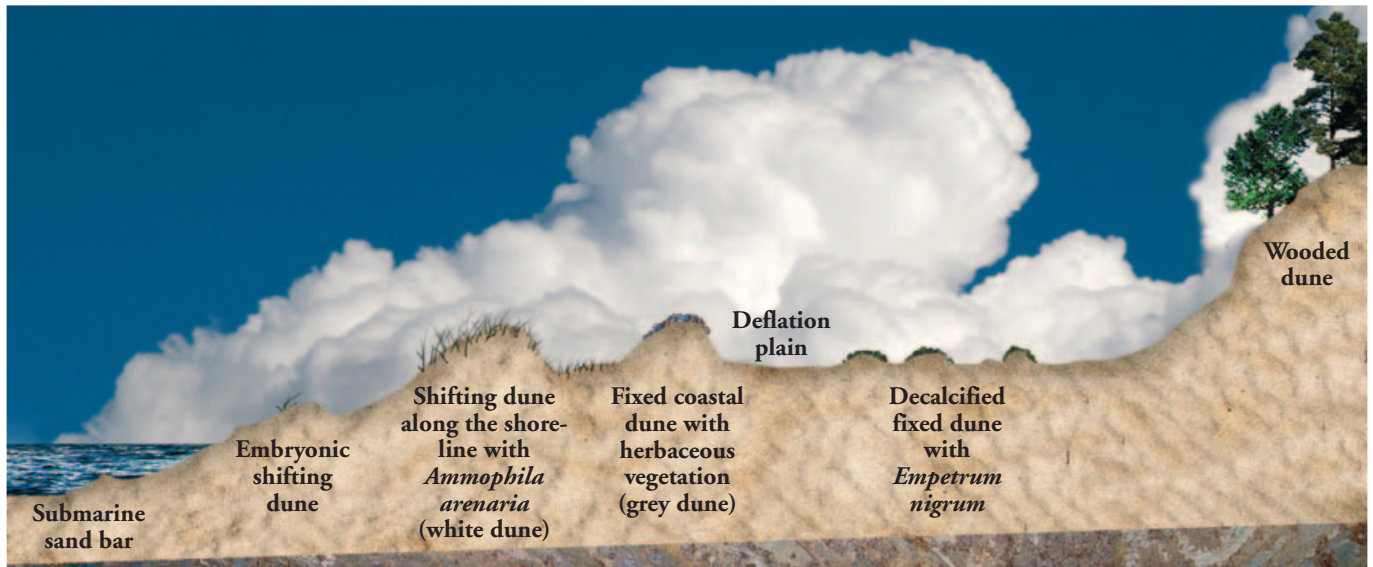
Habitat types sculpted by winds

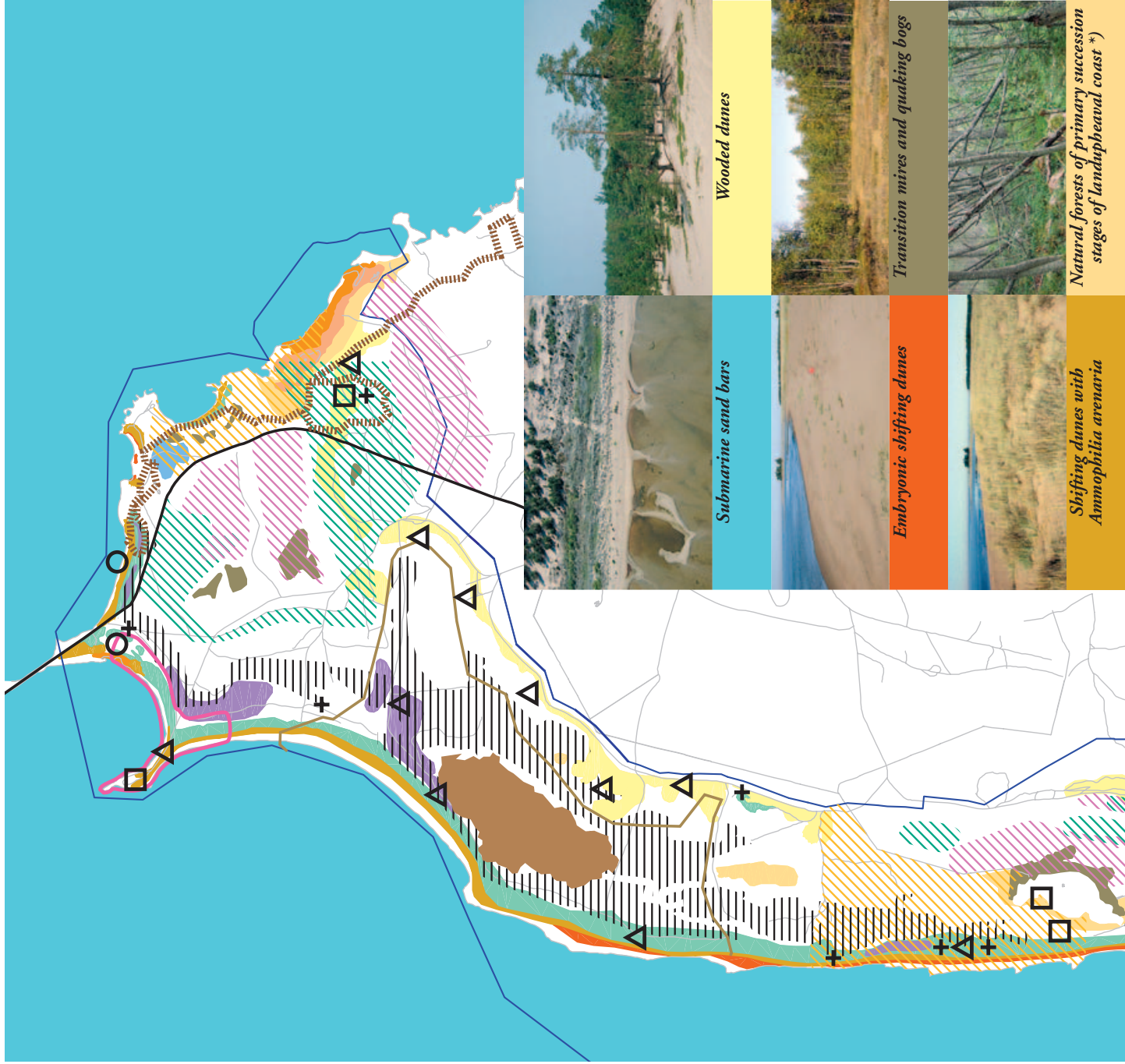
SAND sorted by wave action is easily moved by coastal forces both under water and on dry land. Beneath the surface, waves and near-shore currents create submarine sand bars and low ridges near the beach. When water levels go down, beach ridges lie above the swash zone and the surface of the sand is dried quickly by the breeze. On an unprotected beach grains of sand are caught and transported by the wind. At the same time wind movement is slowed down at ground level by tufts of vegetation grown from seeds washed ashore.

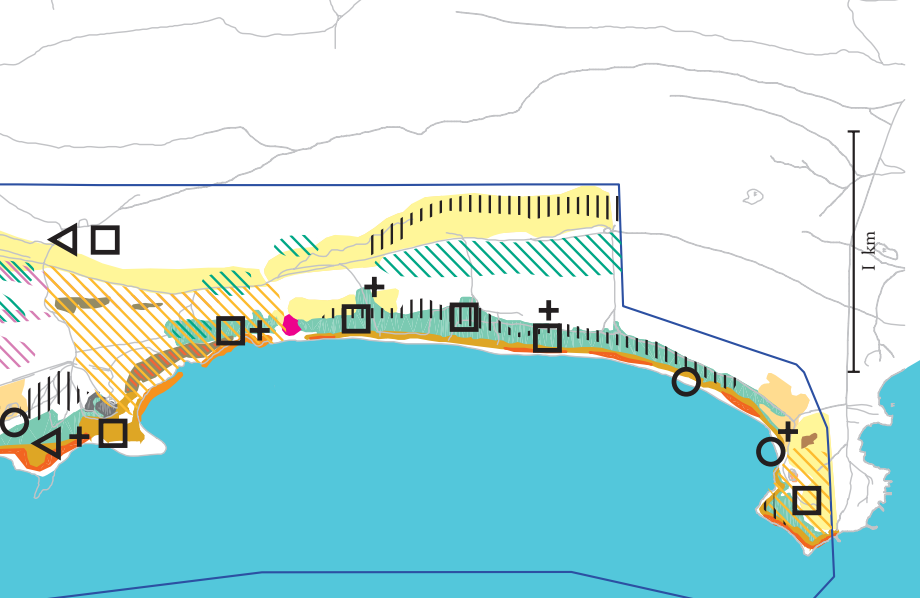
When winds calm down, sand begins to pile up around the plants. This is how the first *embryonic shifting dunes* are formed. A little further inland, in areas hardly ever reached by waves, plants providing more efficient cover against the wind, such as the lyme grass (*Leymus arenarius*), can survive the harsh conditions. Growing in vast populations along the shoreline, the lyme grass efficiently traps sand blown by the wind, creating dune ridges that may rise several metres above sea level. Coastal dune ridges with large unvegetated areas of sand are called *white dunes*. The surface of the dune gradually gains a carpet of vegetation in areas where sand no longer shifts. This creates fixed *grey dunes* with herbaceous vegetation. In places where vegetation in the plains behind the dunes ("deflation

areas") is worn though, sand may begin to migrate again. In such sections of the coast smaller *decalcified fixed dunes with Empetrum nigrum* can be created by small shrubs such as the crowberry (*Empetrum nigrum*).

In sections suffering extensive damage to vegetation or long periods of high wind, sand may be shifted from a vast area and create a dune that migrates to the edge of the forest. As time passes these dunes are usually covered by woodland vegetation and become *wooded dunes*.







VATTAJA DUNE LIFE

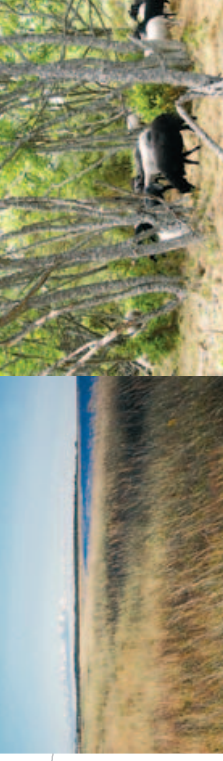
Locations of protected habitat types and measures taken

MEASURES BY THE DEFENCE FORCES:

- Relocation of environmentally degrading activities from the habitat types
- △ Management of firebase and other activity taking place on Natura habitat types to minimise impacts
- Target area (closed area)

ACCESS CONTROL:

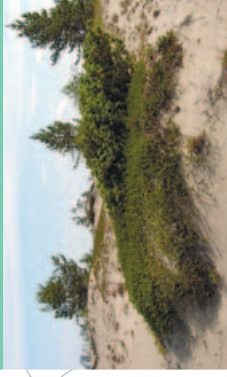
- Recreational access direction using signs and structures
- Recommended access restriction during the nesting season (10 May to 30 July)
- ||||| Nature trails



*Fixed coastal dunes with herbaceous vegetation **



Fennoscandian wooded pastures



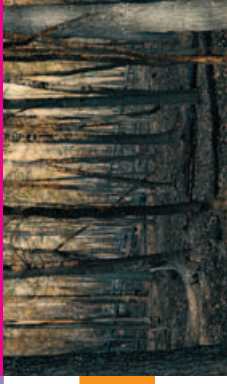
*Decalcified fixed dunes with Empetrum nigrum **



*Fennoscandian deciduous swamp woods **



*Borealic Baltic coastal meadows **



Western taiga forest



*Coastal lagoons *
Lahdenkrooppi pond*

**) priority natural habitat type*

ENVIRONMENTAL RESTORATION MEASURES:

- + Restoration of damaged dune type/vegetation
- ▨ Pastured area
- ▨ Area restored as natural forest
- ▨ Area restored as transition mire/waters
- ▨ Clearing of open dunes that are becoming overgrown
- Border of the Natura area



Restoring times past

RESTORATION and maintenance of biodiversity calls for active measures. In Vattaja sites in particular need of care include habitat types created by traditional pasturing. As well as shaping meadows and pastures, centuries of grazing has also played a role in the formation of dunes. Until the mid 1900s, the entire coastal area in Vattaja was used as communal pastureland, with villagers' livestock allowed to graze freely and herds of dozens of horses wandering the sands in the 18th and 19th century. The headcounts of sheep were the largest, totalling hundreds of animals grazing in Vattaja.

The discontinuation of pasturing has resulted in serious overgrowth of the sand dunes. Animal hooves were later followed by soldiers' bootprints, but even this could not totally prevent the process of overgrowing. In the past 60 years unvegetated dunes have rapidly become overgrown in Vattaja. Aerial photos taken in the 1940s show that the area of totally open dunes was considerably larger than it is today, totalling around 470 hectares as opposed to a mere 280 hectares in 2006.

Sheep to the rescue

Sheep have returned to Vattaja dunes. Grazing and clearing helps restore open meadows, pastures and sands. The Life project has established four separate pasture areas covering a total of 100 hectares. Visitors can see these traditional pasturelands in areas such as along the Pitkähauha nature trail.

The Defence Forces have also contributed to environmental restoration in a variety of ways. Many a conscript undergoing training in Vattaja has not only learned national defence skills but also participated in "natural defence" by performing tasks such as clearing dune habitat types suffering from overgrowth.

Diverse restoration efforts

A forest fire in the military target area in 2006 was a stroke of luck for biodiversity in Vattaja as carbonised wood is vital for many species. At times restoration also calls for the use of machinery and can appear quite brutal. Machines have been employed to skilfully restore several hectares of damaged dune types. Felling to create small



glades that imitate damage caused by storms is used to speed up the restoration of natural forests. In total the forest area restored under the Life project is around 140 hectares.

Lake Vätunginjärvi glittering again

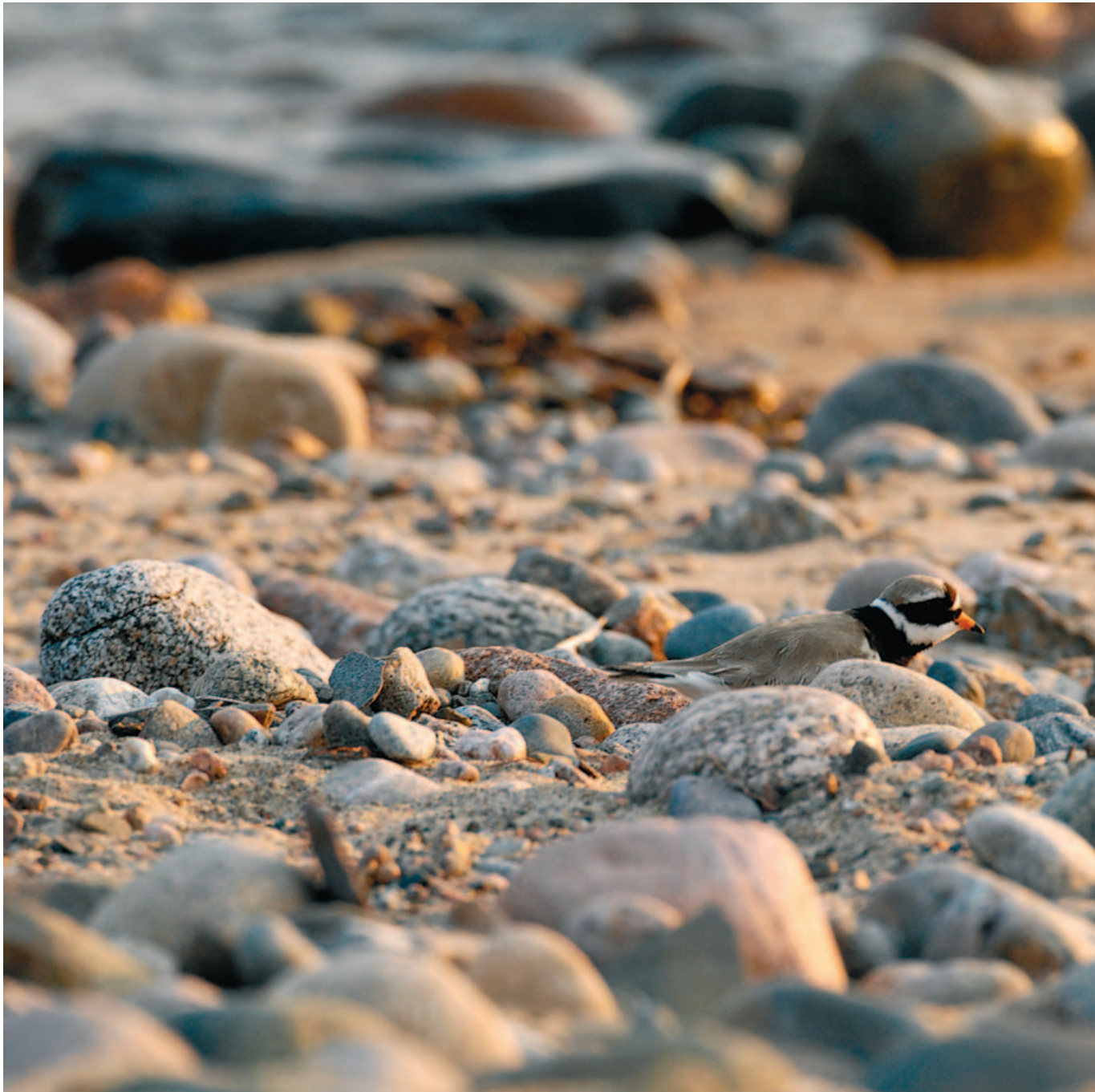
Thanks to restoration work, the waters of Lake Vätunginjärvi are glittering again – after a dry period of 50 years. Dried a long time ago, this gloe lake – originally formed by having naturally become separated from the sea – has now been restored by raising the water level by 1 m with a submerged weir and embankments.

In addition to regular environmental management measures, work in Vattaja has also included efforts to restore habitats closer to their original appearance. Restoration is a tool which aims to speed up the process of an ecosystem affected by human activity returning to its natural state. In conservation areas the restoration of forests, wetlands and small water systems changed by commercial use is justified in cases where their natural recovery would be slow or uncertain.

Researchers monitoring the dunes

The impacts of soldiers' boots, swimmers' flip-flops and sheep's hooves on the dune environment is being studied in Vattaja. The Dune Life project has launched an extensive monitoring programme, with the University of Helsinki and insect researchers studying wear, vegetation and topography on thousands of sample plots. The aim is to gather information about the impact of the management and use of Vattaja's habitats on local dune habitat types and species found in xerothermic habitats and to promote the development of appropriate management and monitoring methods in Finland.





The kingdom of antlions and plovers

Buried alive

Plants growing on open sandy beaches must tolerate harsh conditions: splashes of saltwater, extreme dryness, scorching sunshine and the dehydrating effect of the wind. They must also cope with being buried in the sand. There are only a few species in Finland that can survive such extreme conditions and still proliferate in vast carpets across nutritionally poor expanses of sand.

Sea rocket (1)

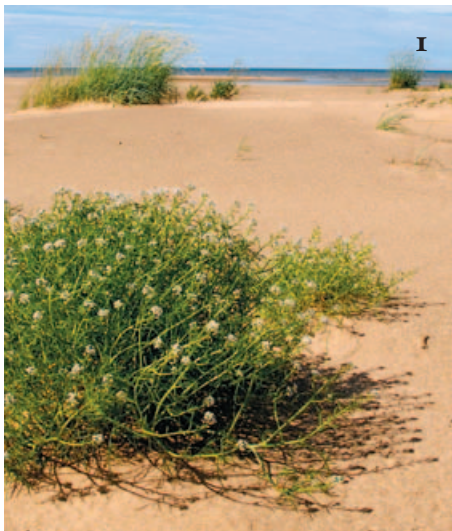
Wherever a seed was brought by a wave the summer before, a small shrub will bloom in late summer with pink or white flowers. This saline specialist is the sea rocket (*Cakile maritima*). Armed against its challenging habitat with fleshy leaves and efficient seed production, it quickly colonises exposed sand in the constantly transforming coastal environment. Barren quartz sand is a poor source of nutrients, but the sea rocket has adapted to use nutrients released from decomposing plant debris buried in the sand.

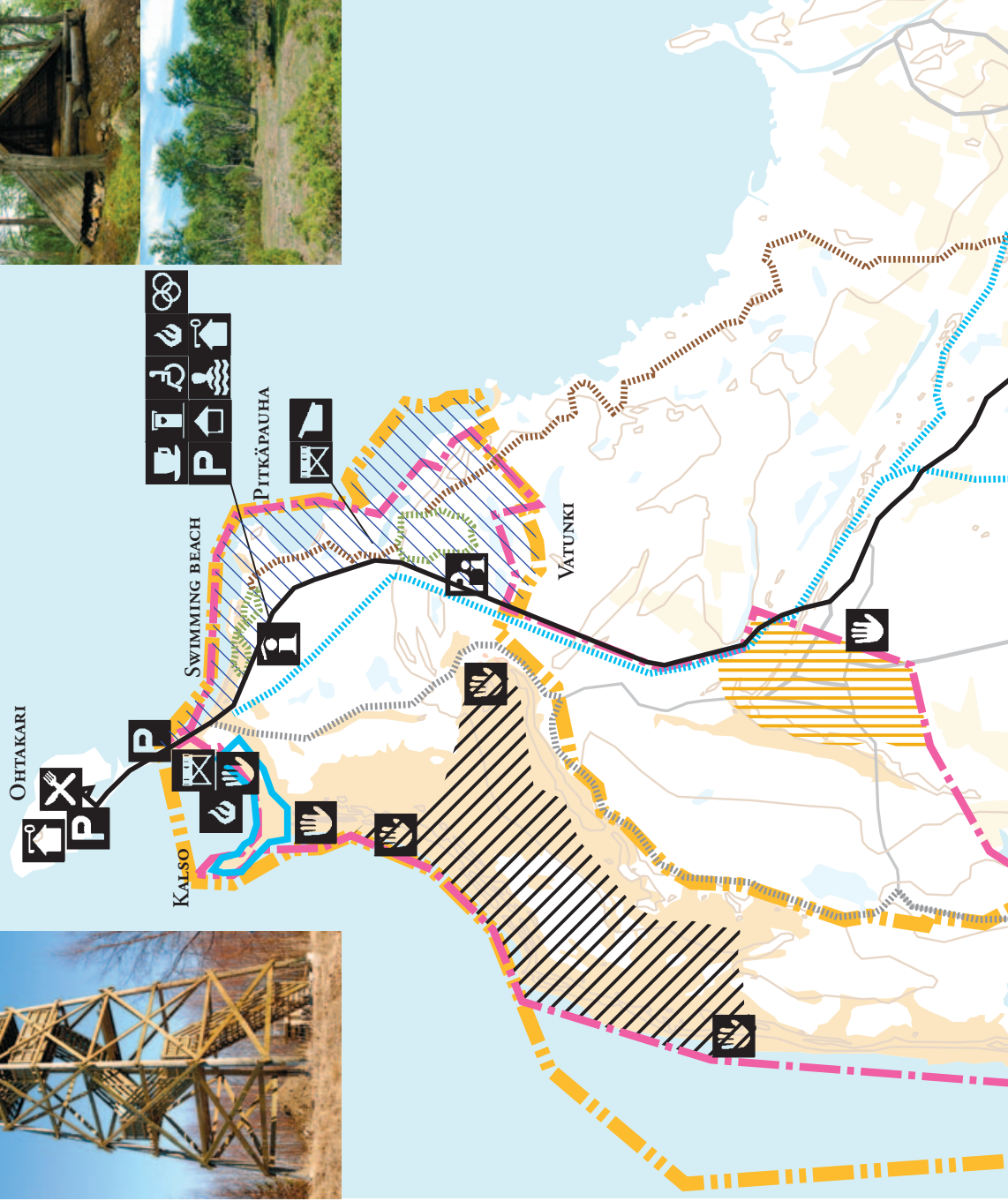
Sea sandwort (2)

A maritime perennial that requires salinity, the sea sandwort (*Honckenya peploides*) faces no height competition from other plants as most other species shun the exposed seafront. The sea sandwort's fleshy leaves minimise dehydration and grow in opposite pairs on the stems. Viewed from above, they are neatly arranged in four rows. Its creeping stems form dense, sprawling mats that trap windblown sand, and its strong roots help it resurface through the sand – only to be buried anew as soon as winds are high again.

Sea pea (3)








The sea pea (*Lathyrus japonicus*) bears such striking resemblance to the garden pea that it is obvious they both belong to the legume family (*Fabaceae*). Legumes have a special skill of being able use bacteria in their roots to take nitrogen gas out of the air and therefore grow impressive populations on otherwise barren dunes. The sea pea does not thrive on spots highly exposed to the wind, so it can usually be found on the lee side of dunes among lyme grass (*Leymus arenarius*).























RECREATIONAL USE

-  Natura 2000 area
-  Military area
-  Valuable nesting area, avoid access between 10 May and 30 July
-  Cross-country skiing track
-  Karipolku trail
-  Nature trail
-  Public access road in the military area

-  Recreational zone

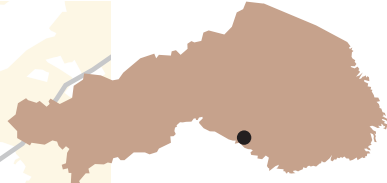
NO PUBLIC ACCESS AREAS:

-  Target area
-  Accommodation, maintenance and storage area

-  Information point
-  Swimming beach
-  Watchtower/bird tower
-  Lean-to shelter
-  Rented cabin
-  Kiosk
-  Dry toilet
-  Changing hut
-  Picnic area
-  Parking
-  Disabled toilet/access route
-  Campfire pit
-  Parking and information
-  Restricted access
-  Sheltered information point
-  Volleyball pitch



1 km



Lyme grass (4)

The lyme grass (*Leymus arenarius*), a large robust perennial with bluish-grey leaves, is the most common grass on sandy shores throughout the Baltic Sea area. Like its relative the common couch (*Elymus repens*), the lyme grass has a vigorous creeping rootstock that helps it survive almost regular burial in the sand. Sweeping populations of lyme grass are essential for the formation of coastal dune ridges in Vattaja. With its spread guaranteed by high seed production, the lyme grass also offers an excellent food source for seed-feeding birds and has even been used by people as emergency nourishment during periods of shortage.

Arctic Tern (5)

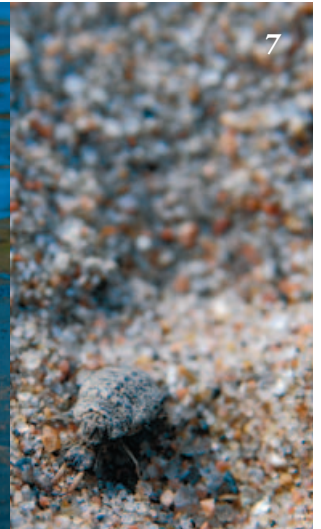
With its white plumage and buoyant, graceful flight, the Arctic Tern (*Sterna paradisaea*) is a much-loved summer resident of the Vattaja beaches. It has a dark red bill which distinguishes it from its cousin the Common Tern (*Sterna hirundo*), which has an orange bill with a black tip. The Arctic Tern may nest on bare sand, which makes its camouflaged eggs hard to spot on the beach. An angry tern above you is often a sign of you having ventured too close to its nest.

Common Ringed Plover (6)

With a grey-brown back and a white belly, the Common Ringed Plover (*Charadrius hiaticula*) is the most numerous wader on Vattaja's open sandy and shingle beaches. It is easy to identify from a distance by its rapid, erratic flight pattern. The Common Ringed Plover also nests on the ground just above the strandline, warning off anyone getting too close by with its repeated 'tee-too-e' and 't'weea-t'.

Antlion (7)

When walking down the Vattaja sands, you often come across tiny funnel-shaped holes that were not made by a Nordic pole walker. These pits are the ingenious method used by the antlion, the larvae of *Myrmeleon formicarius*, to catch insects such as ants, beetles and other small invertebrates. Armed with spiny, pointed jaws, antlions wait at the bottom of the pit for unsuspecting insects to slide down to meet their doom. Eventually they turn into 3–4 cm long winged insects, a little like grey dragonflies, which can be spotted hovering lazily in areas where the larvae were found earlier.





Ensuring military sensitivity to environmental issues

CAPE Vattajanniemi is the site of the Lohtaja live fire and military exercise area, which is being developed by the Defence Forces and sees troops arrive from all over the country for training events. The site is used year round, with the number of days in military use totalling around 220 and those with major access restrictions around 160 a year.

The adaptation measures taken during the Life project ensure that military activities do not cause considerable adverse impacts on the environmental values which led to the area being included in the network of conservation areas.

Military activities have been made sensitive to environmental issues by relocating operations that cause ground damage away

from valuable habitat types and managing and standardising those remaining there. The strictest controls are placed on heavy vehicles, with measures including traffic being standardised on gravel roads, and access paths and vehicle stations indicated with off-road signs. Slope erosion in wooded dunes can also be prevented with the introduction of steps and woodchip cover on paths.

In addition to national defence training, at Vattaja conscripts also learn a lot about the dune environment and its protection. Troops practising in the area are trained to identify the most sensitive sites and operate without damaging habitats, with material used in this including guidelines, maps, signs and DVDs.



Visitors watch out!

NATURE ENTHUSIASTS and other recreational visitors are welcome to Vattaja to enjoy the beautiful scenery. Because of the special sensitivity of the habitats and the military activities taking place, visitors need to take more care than in many other areas.

Public access for recreational purposes is allowed when the area is not used for military training, provided that visitors take the restrictions listed below into consideration. Information about military training schedules and related restrictions is available from the warning signs located along the entrance routes, radio announcements by the Defence Forces, teletext and the Defence Forces website at www.mil.fi.

The perimeter of the firing and training area is marked in the terrain using blue and white painted signs. At times when the site is not used for military training, you can access the area in accordance with the Finnish legal concept of everyman's right. Just make sure you remember the following restrictions.

Restrictions to the use of the military live fire and exercise area:

- Unauthorised access to the Lohtaja live fire and exercise area is prohibited during live firing. Road access to the danger area is blocked during firing practice using bars and warning signs. When firing is in progress red flags by day and red lamps by night are displayed on the sectoral watchtower or the beach.
- Access to the accommodation and maintenance area always requires a permit. The boundaries are marked in the terrain using yellow warning signs.
- The target area located south of Kalsonnokka is dangerous to life and access to it is therefore strictly forbidden at all times. The

boundaries of the target area are marked in the terrain using yellow warning signs. Please note that the entire area, including along the waterline, is a strict no-access zone.

- Unexploded ammunition may be found in the live fire and exercise area. Please do not touch any military debris you may find in the area.
- The viewing of aircraft or aerial targets with optical equipment such as binoculars is forbidden due to potential eye damage.
- Access to the coastal area between Ohtakarintie road and Kalsonnokka must be avoided during the nesting season between 20 May and 30 July. Dogs must be kept on a lead around the year.
- Motor vehicle access to the coastal and off-road areas is prohibited without the landowner's permission. There are designated campfire pits in the Natura area where a fire can be made at times when the Finnish Meteorological Institute has not issued a forest fire warning. Temporary overnight stays in caravans are allowed in parking areas marked on the map in the centrefold of this brochure.







Visiting Vattaja for recreation

THE NATURA AREA is divided into recreational, remote and restricted zones. It is recommended you enjoy Vattaja's natural environment in the Pitkämpauha recreational area located east of the road to Ohtakari. This is where you will find many services and signs introduced by the Life project. You will find the main information points at the parking area of the swimming beach at the tip of the headland. To prevent damage to vegetation, please stick to the wooden walkways that also provide wheelchair access to the coastal dunes.

There is also a dune nature trail on the swimming beach. The ancient Karipolku trail between Lohtaja and Ohtakari will take you to the Vatumginjärvi nature trail located further south. This is where you will find the Pitkämpauha pastureland, the natural forest restoration sites and the restored Lake Vatumginjärvi.

Excluding the military target area, you can enjoy public access to Vattaja, including the remote zone, in accordance with Finnish everyman's rights at times when firing is not in progress. This means you can pick berries and mushrooms and walk along the sides of the Vanha Ohtakarintie and Lahdenkroopintie roads. You will need a permit to access other gravel roads built by the Defence Forces for training use. These roads are blocked with bars or traffic signs.



Natural gems cherished by Natura 2000 and Life

NATURA 2000 is a network of sites which represent areas of the highest value for natural habitats in Europe. It was set up to protect 200 important habitat types and the habitat of around 700 species.

The Finnish Natura network covers around 1,860 sites. The majority, 97%, of these had already been conservation areas estab-

lished under national legislation, covered by national protection programmes or otherwise protected before inclusion in Natura 2000.

The EU's Life funding system allows these gems to be polished to sustain responsible use so that their value can also be enjoyed by future generations.



More information about Vattaja's natural environment, conservation and the reconciliation of the needs of the different user groups is available from:

- the Ohtakarantie swimming beach information point;
- the Life project website at www.metsa.fi -> Projects -> Life Nature Projects;
- Metsähallitus, Kalajoki Sea Life Centre, phone +358 (0)20 564 7007.

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