

KRUSTKALNI STRICT NATURE RESERVE

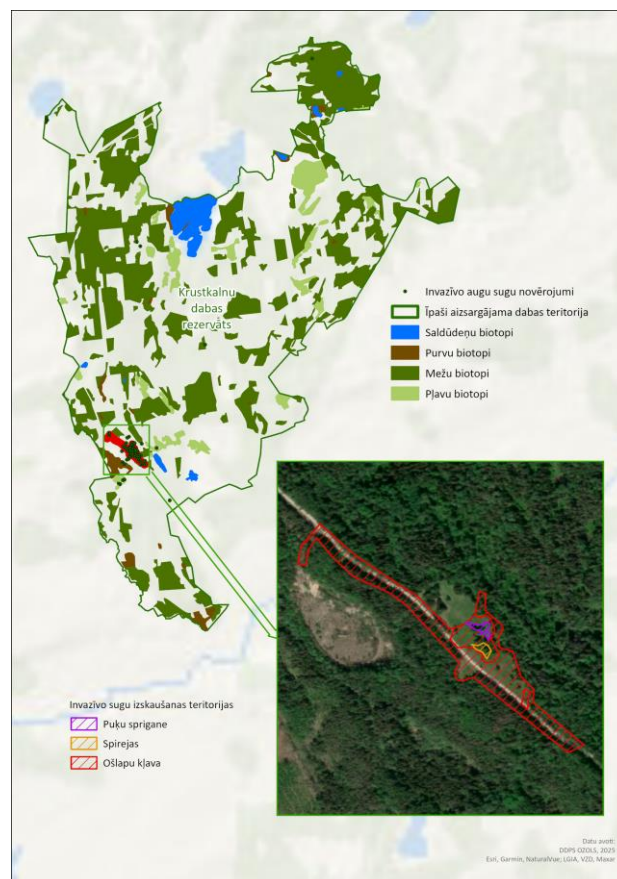
Natura 2000 site since 2004

Krustkalnu dabas rezervāts (LV0100400)

Area: 2978 ha

Established: 1977

Conservation Significance: The habitat complexes in this area are composed of coniferous forests and grasslands situated along the slopes of the Madona–Trepes ridge and the Prauliena elevation system. At the base of the ridge, lime-rich springs emerge, forming small fens or shallow ponds. Of particular conservation value are the calciphilous (lime-loving) habitats and their associated plant species, many of which are otherwise found only in the Coastal Lowland of Latvia. Protected area was established to preserve a naturally diverse landscape characterized by complex topography, a wide range of forest habitat types, and a rich diversity of rare plant species. 20 habitat types of European importance and 1,564 invertebrate species, including 1,210 species of butterflies and moths have been identified. Several invasive plant species have been recorded, including *Impatiens glandulifera* (Himalayan balsam), *Lupinus polyphyllus* (large leaved-lupine), and *Acer negundo* (box elder), among others.



As part of the LIFE-IP LatViaNature project, methods for eradicating the invasive alien species Himalayan balsam (*Impatiens glandulifera*) and Box elder (*Acer negundo*) are currently being tested. Overall, the activity aims to test various eradication methods for invasive species across an area of 110 hectares. The Krustkalni Strict Nature Reserve is one of 13 pilot sites within the LIFE-IP LatViaNature project.

Pilot site area: 6.75 ha

Land ownership: State (Nature Conservation Agency)

Planned implementation period: 2023–2026

Methods:

Box Elder (*Acer negundo*):

Felling, stump grinding, and regular mowing.

Himalayan Balsam (*Impatiens glandulifera*):

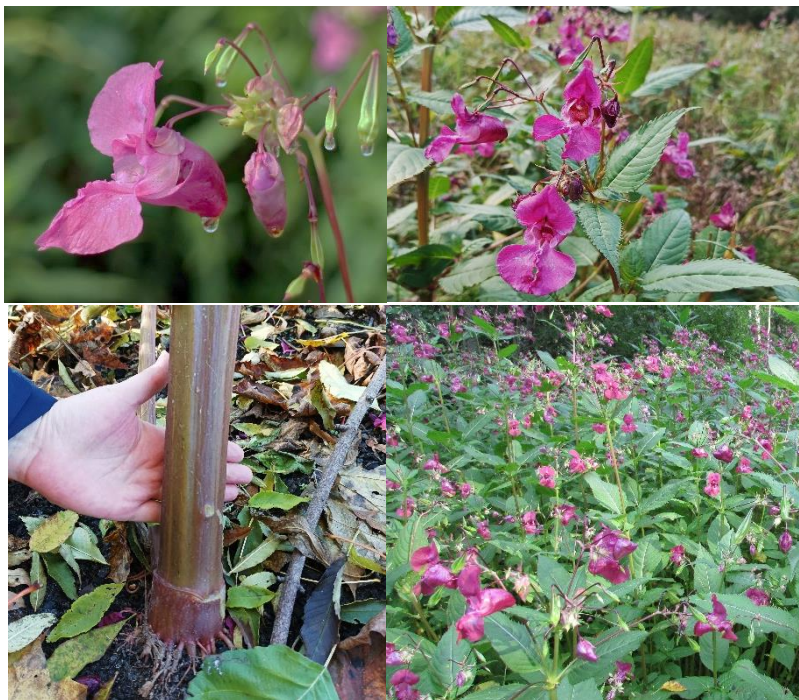
Mulching, overseeding with native competitive species, and mowing.



Himalayan Balsam (*Impatiens glandulifera*)

Description:

- Annual herb, growing 1–2 m, sometimes up to 3 m tall.
- Thick, juicy, reddish stem, hollow and noticeably swollen at the nodes.
- Opposite leaves (sometimes in groups of three), smooth, up to 18 cm long and 7 cm wide, with serrated edges.
- Flowers vary in color, most commonly purple, but can also be pink or white.
- Blooms from June to October.
- Fruit is an elongated capsule (1.5–3.5 cm) that bursts open upon seed ripening, dispersing seeds up to 3.5 m away.



Distribution:

- Native to the Western Himalayas.
- Introduced as an ornamental plant in many regions, including Latvia.
- In Latvia, it thrives in moist, nitrogen-rich soils in well-lit or partially shaded locations near water bodies, forest edges, clearings, rural and landfill sites.

Impact:

- Rapid growth and reproduction
- A single plant can produce up to 2,000 seeds, dispersing them up to 3.5 m
- Adapts to diverse environmental conditions
- Forms dense, tall stands that shade and outcompete native plants
- Attracts pollinators, competing with native plant species
- Hinders forest restoration
- Plants die off in autumn frosts increasing the risk of soil erosion along watercourses

Control Methods:

- 1. Hand-pulling** – Best done in mid-May when plants are young. Regular monitoring is required, as new seedlings will continue to emerge. Once they grow, they should be pulled again. Young plants are easy to remove.
- 2. Cutting or mowing**– Should be done before flowering or at the start of flowering (around early July). Cutting as low as possible is crucial, as otherwise, plants will regrow, requiring 2–3 mowing sessions per summer.
- 3. Grazing** - Sheep and cattle grazing is considered an effective control method.
- 4. Mulching:** Covering the affected area with black plastic. However, this method is costly and recommended only for small, dense stands.

For more information about the **Krustkalni Strict Nature Reserve**, please see the conservation plan
<https://www.daba.gov.lv/lv/krustkalnu-dabas-rezervats>



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Box Elder (*Acer negundo*)

Description:

- A medium-sized tree, typically reaching 12–15 meters.
- Branches are broadly spreading; the bark is grayish-brown and shallowly furrowed. Young shoots have a bluish waxy coating.
- Leaves are compound, consisting of 3 to 7 elongated, ovate, and pointed leaflets; the terminal leaflet is the largest.
- Male flowers appear in panicle-like clusters, while female flowers form drooping racemes.
- Flowers from late April to mid-May.
- Winged seeds are 3–4 cm long and form a narrow angle at the point of attachment (in contrast to the wider angle found in common maple species)



Distribution:

- Native to North America.
- Introduced as a fast-growing ornamental species and spreading in the wild rapidly. It is invasive and known in many European countries

Impact:

- Highly adaptable to a range of environmental conditions.
- Reproduces rapidly via seeds and branch layering; less commonly through roots.
- Uses simple and efficient dispersal mechanisms
- Exhibits rapid early growth.
- Tends to form dense thickets, altering native species composition and limiting access to recreational areas
- Accelerates litter layer mineralization and alters soil structure.

Eradication methods:

- 1. Felling**, followed by regular removal of regrowth. For greater effectiveness, the stump must also be destroyed—depending on the size of the tree, it may be dug out, pulled, or burned.
- 2. Manual uprooting/pulling** – suitable for small and young individuals.

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