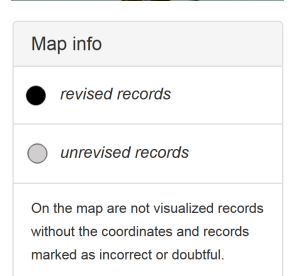
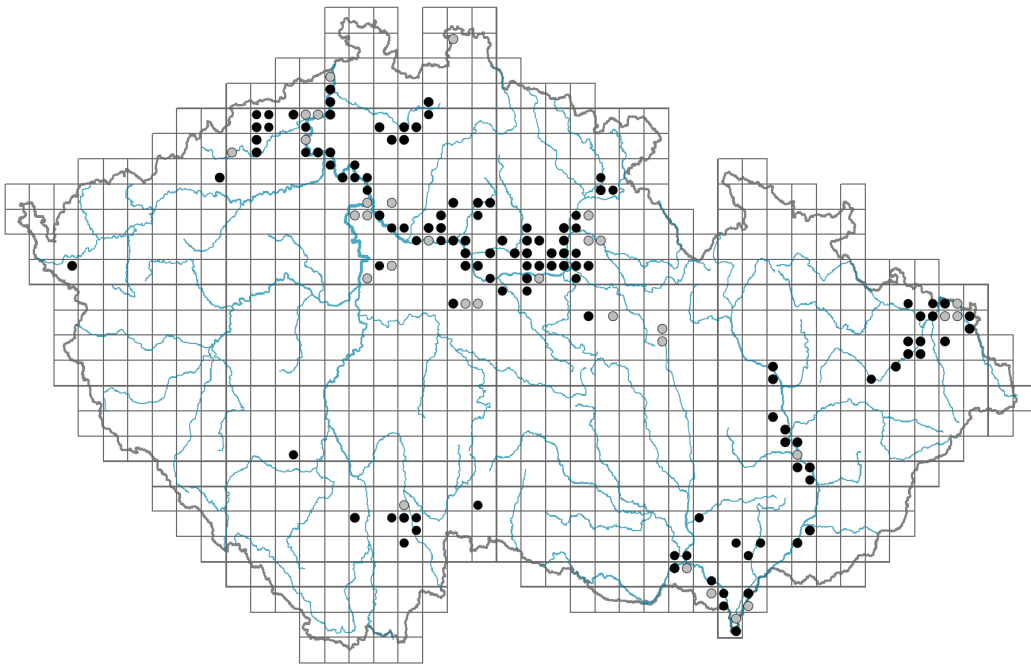


# *Najas marina*

## Distribution



## Habitus and growth type

Height [m]: **0.05-0.7**

Growth form: **clonal herb**

Life form: **hydrophyte**

Life strategy (Pierce method based on leaf traits): **R**

Life strategy (Pierce method, C-score): **2.4 %**

Life strategy (Pierce method, S-score): **0 %**

Life strategy (Pierce method, R-score): **97.6 %**

## Leaf

Leaf presence and metamorphosis: **leaves present, not modified**

Leaf arrangement (phyllotaxis): **opposite, verticillate**

Leaf shape: **simple - entire**

Stipules: **absent**

Petiole: **absent**

Leaf life span: **summer green**

Leaf anatomy: **hydromorphic**

## Flower

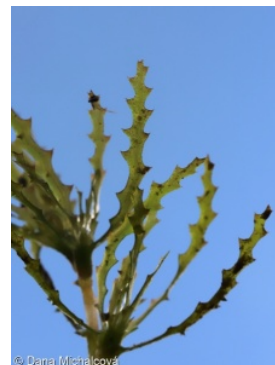
Flowering period [month]: **June-September**

Flower colour: **green**

Perianth type: **flower achlamydeous**  
 Inflorescence type: **flores solitarii**  
 Dicliny: **dioecious**  
 Generative reproduction type: **allogamy**  
 Pollination syndrome: **water-pollination**

### Fruit, seed and dispersal

Fruit type: **dry fruit - achene/cypsela/samara**  
 Reproduction type: **by seed/spores and vegetatively**  
 Dispersal unit (diaspore): **seed, fruit, infrutescence or its part, shoot fragment**  
 Dispersal strategy: **Wolffia (mainly hydrochory)**  
 Myrmecochory: **non-myrmecochorous (b)**



### Belowground organs and clonality

Type of clonal growth organ: **turion**  
 Freely dispersible organs of clonal growth: **present**  
 Shoot life span (cyclicality): **monocyclic shoots prevailing**  
 Branching type of stem-derived organs of clonal growth: **sympodial**  
 Primary root: **absent**  
 Persistence of the clonal growth organ [year]: **1**  
 Number of clonal offspring: **6**  
 Lateral spreading distance by clonal growth [m]: **0**  
 Clonal index: **7**

#### Bud bank

Number of buds per shoot at the soil surface (root buds excluded): **3**  
 Number of buds per shoot at a depth of 0–10 cm (root buds excluded): **0**  
 Number of buds per shoot at a depth greater than 10 cm (root buds excluded): **0**  
 Size of the belowground bud bank (root buds excluded): **3**  
 Depth of the belowground bud bank (root buds excluded) [cm]: **1**  
 Number of buds per shoot at the soil surface (root buds included): **3**  
 Number of buds per shoot at a depth of 0–10 cm (root buds included): **0**  
 Number of buds per shoot at a depth greater than 10 cm (root buds included): **0**  
 Size of the belowground bud bank (root buds included): **3**  
 Depth of the belowground bud bank (root buds included) [cm]: **1**

### Trophic mode

Parasitism and mycoheterotrophy: **autotrophic**  
 Carnivory: **non-carnivorous**  
 Symbiotic nitrogen fixation: **no nitrogen-fixing symbionts**

### Karyology

Chromosome number (2n): **12**  
 Ploidy level (x): **2**  
 2C genome size [Mbp]: **22798.53**  
 1Cx monoploid genome size [Mbp]: **11399.27**

Genomic GC content: **43.4 %**

## Taxon origin

Origin in the Czech Republic: **native**

## Ecological indicator values

Ellenberg-type indicator values

Light indicator value: **5 - semi-shade plant, only exceptionally occurring in full light, but usually at more than 10% of the diffuse radiation incident in an open area**

Temperature indicator value: **7 - heat indicator, occurring in relatively warm lowlands**

Moisture indicator value: **12 - permanently or almost permanently submerged aquatic plant**

Reaction indicator value: **9 - base and lime indicator, always occurring in calcium-rich conditions**

Nutrient indicator value: **6 - transition between values 5 and 7**

Salinity indicator value: **2 - oligohaline, often on soils with very low salt content**

Indicator values for disturbance

Whole-community disturbance frequency indicator value: **-0.44**

Herb layer disturbance frequency indicator value: **-0.44**

Whole-community disturbance severity indicator value: **0.14**

Herb layer disturbance severity indicator value: **0.18**

Whole-community structure based disturbance indicator value: **0.5**

Herb layer structure-based disturbance indicator value: **0.5**

## Habitat and sociology

Occurrence in habitats

3 Aquatic vegetation

3A Macrophytic vegetation of eutrophic and mesotrophic still waters: **1 - rare occurrence**

4 Wetland and riverine herbaceous vegetation

4A Reed-beds of eutrophic still waters: **1 - rare occurrence**

Affinity to the forest environment

Affinity to the forest environment in Thermophyticum: **0 - taxon that does not spontaneously occur in Czech forests**

Affinity to the forest environment in Mesophyticum and Oreophyticum: **0 - taxon that does not spontaneously occur in Czech forests**

Diagnostic taxon

Diagnostic taxon of associations: [VBA05 \*Trapetum natantis\*](#), [VBB16 \*Najadetum marinae\*](#)

Constant taxon

Constant taxon of associations: [VBB16 \*Najadetum marinae\*](#)

Dominant taxon

Dominant taxon of associations: [VBB16 \*Najadetum marinae\*](#)

## Ecological specialization indices

Ecological specialization index for all vegetation types: **4.9**

Ecological specialization index for non-forest vegetation: **5.1**

## Distribution and frequency

Floristic zone: **northern temperate, southern temperate, submeridional, meridional, subtropical, tropical, austral or antarctic**

Floristic region: **Australia, New Zealand, circumpolar**

Continentality degree: **7**

Distribution range extension along the continentality gradient: **8**

Elevational belt in the Czech Republic: **lowlands, colline belt**

Expansive taxon in the region: **Bohemian Thermophyticum, Bohemian Moravian Mesophyticum, Pannonian Thermophyticum, Carpathian Mesophyticum**

Occurrence frequency in the basic grid mapping cells and quadrants of the basic grid mapping cells: **95**

taxon.data.freq\_in\_quad: **154**

### Commonness in vegetation plots from the Czech Republic

Occurrence frequency in vegetation plots: **0.1 %**

Occurrence frequency in vegetation plots with a cover above 5%: **45 %**

Occurrence frequency in vegetation plots with a cover above 25%: **30 %**

Occurrence frequency in vegetation plots with a cover above 50%: **22.5 %**

Mean percentage cover in vegetation plots: **22.8 %**

Maximum percentage cover in vegetation plots: **88 %**

### Number of habitats with taxon occurrence in the Czech Republic

Number of narrow habitats in which the taxon occurs: **2**

Number of narrow habitats in which the taxon has its optimum: **0**

Number of broad habitats in which the taxon occurs: **2**

Number of broad habitats in which the taxon has its optimum: **0**

## Threats and protection

Red List 2017 (national categories): **C3 - vulnerable taxon**

Red List 2017 (IUCN categories): **NT - near threatened**

Legal protection: **not protected by law**