## THE SPREAD OF INVASIVE PLANT SPECIES IN MINSK

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**Introduction.** The problem of invasive plant species is especially acute in urbanocenoses. On the one hand, there is a weakening of the natural flora under anthropogenic pressure, on the other hand, the concentration and variety of introduced species are capable of exhibiting invasive properties. As a result, settlements and the immediate vicinity act as a springboard for the introduction and subsequent dispersal of invasive plant species.

**Materials and methods.** The studies were carried out in 2016–2020 in Minsk. There are 419 objects of landscape (parks, forest parks, cemeteries, public gardens, street plantings, etc.) were examined by using the standard route method.

**Results.** Total number of places of growth of 46 invasive and potentially invasive species in Minsk during field research 2016–2020 were marked (the occurrence is indicated in brackets): *Acer negundo* L. (44,8 %), *Aesculus hippocastanum* L. (1,9 %), *Amelanchier spicata* (Lam.) K. Koch (3,1%), *Asclepias syriaca* L. (0,7 %), *Conyza canadensis* (L.) Cronquist (23,7 %), *Crataegus sanguinea* Pall. (4,4 %), *Echinocystis lobata* (Michx.) Torr. & A. Gray (5,1 %), *Erigeron annuus* (L.) Pers. (20,6 %), *Geum macrophyllum* Willd. (3,6 %), *Helianthus tuberosus* L. (13,3 %), *Heracleum asperum* (Hoffm.) M. Bieb. (3,9 %), *Heracleum sosnowskyi* Manden. (6,3 %), *Hippophae rhamnoides* L. (2,4 %), *Impatiens glandulifera* Royle (2,2 %), *Impatiens parviflora* DC. (1,9 %), *Juglans mandshurica* Maxim. (2,2 %), *Ligustrum vulgare* L. (1,5 %), *Lupinus polyphyllus* Lindl. (10,4 %), *Mahonia aquifolium* (Pursh) Nutt. (0,5 %), *Medicago sativa* L. (2,9 %), *Oxalis stricta* L. (2,2 %), *Padus serotina* (Ehrh.) Borkh. (1,0 %), *Parthenocissus quinquefolia* (L.) Planch. (23,2 %), *Physocarpus opulifolius* (L.) Maxim. (9,7 %), *Populus alba* L. (1,2 %), *Prunus cerasifera* Ehrh. (5,3 %), *Quercus rubra* L. (2,2 %), *Reynoutria japonica* Houtt. (17,9 %), *Reynoutria sachalinensis* (F. Schmidt) Nakai (0,5 %), *Rhus typhina* L. (7,0 %), *Robinia pseudoacacia* L. (15,3 %), *Rudbeckia hirta* L. (1,0 %), *Rudbeckia laciniata* L. (3,4 %), *Rumex confertus* Willd. (1,0 %), *Sambucus nigra* L. (1,2 %), *Sambucus racemosa* L. (3,1 %), *Saponaria officinalis* L. (4,1 %), *Solidago canadensis* L. (47,0 %), *Solidago gigantea* Aiton (36,6 %), *Sorbaria sorbifolia* (L.) A. Braun (1,2 %), *Swida alba* (L.) Opiz (2,2 %), *Symphoricarpos albus* var. *laevigatus* (Fernald) S.F. Blake (4,8 %), *Symphyotrichum* × *salignum* (Willd.) G.L. Nesom (4,4 %), *Symphytum caucasicum* M. Bieb. (3,6 %), *Thladiantha dubia* Bunge (0,7 %), *Vinca minor* L. (1,9%).

The most common introduced species in the green stands of Minsk were *Acer negundo* L., *Solidago canadensis* L., *Solidago gigantea* Aiton, *Conyza canadensis* (L.) Cronquist, *Erigeron annuus* (L.) Pers., *Parthenocissus quinquefolia* (L.) Planch. A particularly alarming situation was observed with regard to *Solidago canadensis* L. and *Acer negundo* L., since they are common in more than 45 % of all parks and street plantings. The fact of the invasion of *Acer negundo* L., by analogy with *Heracleum*, requires immediate resolution and widespread control.

Generic complex *Heracleum* within *Heracleum asperum* (Hoffm.) M. Bieb. and *Heracleum sosnowskyi* Manden. in urban plantings was distributed on 25–35 % of plantations until 2017, however, the depletion of the soil and seed stock undoubtedly influenced on the nature of their invasion. The expansion of such species as *Solidago gigantea* Aiton, *Conyza canadensis* (L.) Cronquist, *Parthenocissus quinquefolia* (L.) Planch., *Erigeron annuus* (L.) Pers., *Reynoutria japonica* Houtt., *Robinia pseudoacacia* L., *Helianthus tuberosus* L., *Lupinus polyphyllus* Lindl., *Physocarpus opulifolius* (L.) Maxim. requires additional attention, because they were noted in 10–40 % of all plantings.

Separately, a number of species should be noted for which isolated cases of feralization have been noted: *Heliopsis helianthoides* (L.) Sweet, *Coreopsis lanceolata* L., *Cosmos*

*bipinnatus* Cav., *Rubus odoratus* L., *Mahonia aquifolium* (Pursh) Nutt., *Echinops sphaerocephalus* L., *Bryonia alba* L., *Alkekengi officinarum* Moench, *Padus avium* ssp. *pubescens* (Regel & Tiling) Browicz, *Alcea rosea* L., *Hordeum jubatum* L.

**Conclusion.** It was possible to distribute invasive plant species in Minsk according to the gradation of the risk of invasions:

- aggressive invasion was typical of *Acer negundo* L., *Solidago canadensis* L.;

- active invasion was typical of *Reynoutria japonica* Houtt., *Robinia pseudoacacia* L., *Parthenocissus quinquefolia* (L.) Planch., *Helianthus tuberosus* L., *Solidago gigantea* Aiton;

- local invasion was indicative of *Quercus rubra* L., *Physocarpus opulifolius* (L.) Maxim., *Sorbaria sorbifolia* (L.) A. Braun, *Symphytum caucasicum* M. Bieb., *Symphoricarpos albus* var. *laevigatus* (Fernald) S.F. Blake, *Rhus typhina* L., *Lupinus polyphyllus* Lindl., *Rumex confertus* Willd.

It would be advisable to assess in more details the local risk of biological invasions in order to motivate the decision of including species that have the risk of active and aggressive invasion into groups.