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Molecular markers as a tool for studying plant invasions as exemplified by *Acer negundo* and *Padus serotina* case studies – plan of research project

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Invasive plant species are one of the major threats to biodiversity. It is due to the fact that they possess biological attributes (e.g. ability of effective reproduction, ability for massive spread on large areas) which lead to displacement of native flora and disturbance of the functioning of ecosystems. Among more than 70 plant species classified as invasive in Poland, herbaceous plants, shrubs and trees can be distinguished.

Even though the number of invasive woody species is not significant, it is considered that they exert high pressure on native flora and can significantly disturb nutrient dependencies in ecosystems. Such examples in Poland are *Acer negundo* (Boxelder) and *Padus serotina* (Black cherry). Both trees have been deliberately brought to Poland from North America: Boxelder as an ornamental tree and Black cherry as a biocenotic addition and as windbreaks in forests.

The fact that *Acer negundo* and *Padus serotina* are long-lived species makes them perfect objects of observation of the invasion process. Important factors in determining the migration routes and pattern of distribution of invasive species are their genetic variation and biology. The main aim of the presented paper is discussing appropriate methodological assumptions which allow recognition of the course of invasion process for these species.

Genetic analyses with the use of AFLP (*Amplified Fragment Lenght Polymorphism*) will be conducted for this purpose. In the context of the invasion process, modeling by analyzing genetic diversity requires a number of aspects related to the selection of the appropriate population for studying to be taken into account. One of them is age structure of the population. To verify how the genetic variety is trending within various age classes in selected populations of *A. negundo* and *P. serotina*, some samples of plants of various age (seedlings sampling, young trees [up to 50 cm] and mature trees [flowering]) will be collected and subjected to AFLP analysis. It should also be taken under consideration whether the studied populations are located in the vicinity of introduction place or on the edge of the local ranges in our country. Moreover, in our opinion, the planned research should also encompass populations from the native range and from the introduced range in other European countries.

Understanding of the invasion process of *Acer negundo* and *Padus serotina* is essential in the context of their appropriate management. The proposed model of research using the latest molecular techniques (such as AFLP) seems reasonable in determining the level of genetic diversity both in and between individuals and populations of *A. negundo* and *P. serotina*, including various components (differentiation in terms of age and origins of the population).