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Science linking with School
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**Alien Invaders
Alien Plants and their Role
in Reconstructions of River
Banks. A neglected Problem**

LEADING INSTITUTION

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SCHOOL INVOLVED

Private ORG "St. Karl" Volders, Tyrol



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Austrian Federal Ministry of
Science and Research

Eye Restoration of River Banks!

Alien Invaders – Alien Plants and their Role in Reconstructions of River Banks.
 A neglected Problem

Within the scope of the Sparkling Science project “Alien Invaders” 15 restoration sites, most of them located in the central and eastern part of Northern Tyrol, were selected to find answers to several questions dealing with invasive alien plant species (IAS) and restoration sites along rivers and creeks. Therefore, the studies were portioned into three points of interest, as mentioned below.

a) Phytosociological Investigations

Vegetation analysis results in nine different vegetation types, that could be found at least in one of the 15 investigated restoration sites. These types include both, semi-natural to natural types which are characteristic for riverside habitats and anthropogenic plant communities (ruderal vegetation). Absence and presence of semi-natural/natural and anthropogenic vegetation types is used to evaluate the outcome of the restoration measures.

b) What Factors affect Alien Plant Invasions at Riverside Restoration Sites?

The focus was on the three invasive alien taxa *Solidago canadensis*, *Fallopia spp.* and *Impatiens glandulifera*. All of them colonised the selected restoration sites and form dense stands and dominate the vegetation, at least partly.

c) What is the Impact of *Solidago canadensis* L. and *Impatiens glandulifera* Royle on Phytodiversity of Riverside Restoration Sites?

For both species a prominent impact at the affected sites was found, when forming dense stands. The effects are different for both species and depend on the vegetation type.

Cooperation with Pupils

Two classes of the private grammar school PORG Volders took part in the project. Thus, a number of more than 50 pupils were involved at the project's start. It was the aim of the scientists to communicate the project's topics as a whole.

This means introductions to several themes like neophytes, riverine flora and vegetation and dynamics, *Impatiens glandulifera*, *Solidago canadensis* and project development were necessary. Trips to riverside areas and restoration sites as well as additional experiments (germination experiment of *Impatiens glandulifera*, competition experiment with *Solidago canadensis* and *Urtica dioica*) carried out in school, gave a basis to understand the project aims.



In return, ideas of the pupils have been incorporated into the project as far as possible. As a consequence the evaluation of management measurement for *Solidago canadensis* at site Völs was added to the project.

After several methodical introductions collecting and analysing data started. Data collecting at site Völs was done by the pupils under the supervision of up to eleven scientists and teachers. The data is incorporated into the analysis of all sites studied in the course of the project. Investigations done exclusively at Volders are analysed separately with the pupils.

To conclude, a power point presentation of the results was prepared together with six pupils. The results were already presented together with scientists at the PORG Volders. A second presentation took place in line of the “Botanical Colloquium” at the Institute of Botany at the University of Innsbruck.

It has to be pointed out that results of the project’s first year already have been used in the course of a huge building project, when the river Inn was redirected nearby Innsbruck/Völs.

Science Education Research Outcomes

Regarding to scientists’ and teachers’ estimations pupils have gained a variety of skills. Empirical data show that some students improved their scientific and technical knowledge. Some gained a better understanding of selected aspects regarding the Nature of Science.

Participating in a two year science project seems to have no positive effect on student’s interest in science but we do see a tendency in pupils to develop a more realistic perception of science research and the full panoply of scientific work.

However, as far as the development of interests and skills is concerned, one needs to keep in mind that a follow up survey may come up with more significant results.

All partners joined the partnership with particularly high expectations and had to scale down these expectations in the course of the project. But all in all, partners are satisfied with the experiences they gained.

Pupils’ Quotations


“The practical work was great and that should surely be expanded – being outside the whole day is better than sitting in school.”

“We learned various things that one cannot learn anywhere else.”

“At the beginning, we thought we would learn how to do something against alien plants but until now we did only enquire, analyze and think about it but never did anything against it.”

“Yes, I simply expected research to be different. Until then, if I had wanted to study Biology, I would have chosen to go for a laboratory centered work afterwards. But now I would go for field work.”





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