

Invasive Alien Species: the Urban Dimension

Strengthening local action in Europe's urban areas

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DBU projects for river restoration) and lastly an on-going project for the risk assessment of the invasiveness of neozoa on the common wall lizard [*Podarcis muralis*], for example, in Germany.

Within the German PhD scholarship programme, the subject of invasive species has also become interesting. Three current dissertations from scholarship holders covering the following topics have been completed:

- the distribution of quagga mussels [*Dreissena rostriformis bugensis*] in Germany,
- the identification of species of invasive types of crabs in the southern North Sea and
- the coexistence between native and imported types of crayfish in Central Europe.

Dissertations on the research of raccoon populations in Germany and the competition between the invasive signal crayfish [*Pacifastacus leniusculus*] and native species of fish have almost been completed.

Invasive alien species, a serious threat to Europe's biodiversity

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roads, in many cases eventually arriving to invade natural areas. On the other hand, urban areas are privileged centres for some of the most prominent pathways and vectors, including trade of pets, ornamental plants, etc. which can increase the propagule pressure that facilitates the invasion processes. Besides, a number of potential pathways concentrate within urban environments, such as botanical gardens and zoos, along with nurseries and private gardens. Not surprisingly, many studies have demonstrated that cities are hotspots of invasions, particularly for plants.

Besides the clear impact on biodiversity (e.g. the threat posed to native wildlife posed by feral cats), alien species may also affect ecosystem services, which in turn can have an impact on human well-being. Some alien species might have an impact on a specific ecosystem service, as in the case of the Spanish slug, which affects provisioning ecosystem services, as it feeds on horticultural plants. Other alien species may affect multiple ecosystem services, as in the case of the Japanese knotweed, which may profoundly change ecosystem functioning by altering species composition, physical habitat components, nutrient cycling, primary production, etc.

There are also IAS acting as vectors of disease (like the Asian tiger mosquito) and affecting human health (like the Common ragweed), as well as IAS causing extensive damage to infrastructures (e.g. the tree of heaven), and the landscape (Red palm weevil). For example the Tiger mosquito is an aggressive daytime-biting insect native to South-East Asia associated with the transmission of more than 20 human pathogens (these include yellow fever, Rift Valley fever, chikungunya, dengue, West Nile and Japanese encephalitis viruses). Another example is the Common ragweed, one of the most pollen-allergenic plants, representing a serious health risk for humans. The pollen of this species native to North America is a potent trigger of hay fever, rhinoconjunctivitis, and may often cause severe asthma-like symptoms. The associated economic costs are estimated to be around 4.5 billion euro per year (e.g. almost 2 million euro per year in the Milan province only).

In relation to damages of infrastructures, the tree of heaven (a pioneer plant native to China and introduced to Europe in the 18th century as an ornamental plant in parks and gardens) can easily grow close to buildings and at road embankments, including in tiny gaps on abandoned buildings and in cracks in street pavements, including historic and archaeological buildings where its extensive root system can cause serious damage, particularly in south Europe (Italy and Portugal).

The Red palm weevil is an Asiatic beetle responsible for significant damage to a wide variety of palm species, and for this reason represents a real threat for all Mediterranean countries which grow palms as amenity trees in the gardens and in the streets of towns and on sea fronts. In fact, because date palms constitute one of the characteristic landscape elements in coastal cities, the death of individual trees can markedly impact the overall landscape perception.

Similarly, the melodious notes of native black birds, wrens and robins are now replaced in some European urban parks by the frequent loud screeching calls of monk parakeets and rose ringed parakeets, which are thus rapidly changing ngingina

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To the contrary, activities related to identification and control of pathways and early detection have only been seldom seen in LIFE. This is clearly an area for improvement, but would require the involvement of different stakeholders than those normally active in nature conservation.

Hardly any project has been financed dealing with IAS activities within urban areas, while many of them deal with the impact on natural areas of IAS coming from urban settlements. Several of those deal with control of reptiles released in the wild by humans living in urban areas, but also plants cultivated in our city

horticulture and invasive alien plants. Furthermore, this Code has led to other Codes of conduct being developed by the Council of Europe: a European Code of conduct on botanic gardens and invasive alien plants, a European Code of conduct on zoological gardens and aquaria and invasive alien species, and a European Code of conduct on recreational fishing and invasive alien species which are under preparation.

Reference

Heywood V & Brunel S (2011) Code of conduct on horticulture and invasive alien plants. Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) Nature and environment, no. 162. 95 p.

http://www.coe.int/t/dg4/cultureheritage/nature/bern/ias/Documents/Publication_Code_en.pdf

The London Invasive Species Initiative

Karen Harper, Manager, London Invasive Species Initiative

London has a long history of human movement both in and out of the capital which has facilitated the transport of plants and animals. In modern times, the development of cheap and accessible transport has seen an increase in both the number of individuals

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studied regions, but the level of propagule pressure is usually unknown. For propagule pressure several proxies are used in invasion biology, but hard data are extremely rare.

undertaken to quantify the potential detrimental impact the New Zealand flatworm might have on agricultural production or below or above ground biodiversity.

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Eradicating American Eastern Grey Squirrels in Genoa Nervi urban park Luc Wauters, Scientist, Department of Theoretical and Applied Sciences University of Insubria, Varese

The target species for this case study is the American Eastern grey squirrel (*Sciurus carolinensis*) present in an urban park in the city of Genoa. This population of grey squirrels originated from five specimens introduced from Norfolk (U.S.A.) in 1966 in Genoa Nervi urban park. Today we estimate 200 (150-300) animals, most of them confined in the urban parks system in the eastern outskirts of Genoa.

The grey squirrel is a North American species that

