

Stowaways in horticultural plants imported from the Netherlands, Germany and Denmark

MAY-GURI SÆTHRE, ARNSTEIN STAVERLØKK & ELINE BENESTAD HÅGVAR

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A steadily increasing import of horticultural plants to Norway for outdoor use facilitates the entry of organisms as stowaways on these plant commodities. Samples were taken from consignments of newly imported horticultural plants, mainly *Thuja* sp. and *Taxus* sp., from the Netherlands, Germany and Denmark. Three sampling methods were used: shaking the plants, sampling soil and debris from the bottom of the container, and visual inspections of the plants. Insects and spiders were prioritized in the collection process, but also species of Diplopoda, Isopoda, Gastropoda and Oligochaeta were represented in the material collected. The sampling resulted in 157 identified species and 1194 specimens. The three methods used resulted in 85, 93 and 5 species, respectively. 16 of the species found (14 insects, one spider and one diplopode) were at the time of discovery new to the Norwegian fauna, including the invasive alien ladybird *Harmonia axyridis* Pallas, 1773. Their biology, more recent observations and potential for establishment in Norway are discussed. At least 10 of the species are likely to establish in the country. The result of our investigations reveals that the WTO-SPS-Agreement and subsequent control measures are neither sufficient to protect an area against non-quarantine species nor to protect biodiversity.

Key words: Stowaways, species new to Norway, alien species, invasive species, biodiversity, Convention on biological diversity (CBD), WTO-SPS-Agreement

May-Guri Sæthre, Bioforsk Plant Health and Plant Protection Division, Department of Entomology and Nematology, Høgskoleveien 7, NO-1432 Ås, Norway. E-mail: may-guri.saethre@bioforsk.no

Arnstein Staverløkk, Norwegian Institute for Nature Research (NINA), Department of Terrestrial Ecology, NO-7485 Trondheim, Norway.

Eline Benestad Hågvar, The Norwegian University of Life Sciences (UMB), Department of Ecology and Natural Resources Management (INA), Postboks P. O. Box 5003, NO-1432 Ås, Norway.

Introduction

The adverse effects of increasing global trade may cause a decline in biodiversity and a homogenization of the Earth's biota (Wittenberg & Cock 2001, Mooney 2005, Kenis et al. 2009). In Norway, the import of horticultural plants for further cultivation in plant nurseries or for direct sale to consumers for outdoor and private use has doubled between 1997 and 2006 (NGF 2006). One of the driving forces for this steadily growing industry is probably the fact that plants produced

in other countries are more competitive on price compared to the domestic production.

Many of the plants imported for outdoor use have been grown in the field for one or several years in other parts of Europe (or elsewhere), where they serve as host plants or refugee sites for the local fauna. Plants grown directly in the field are in addition imported with a lump of the soil around their roots originating from the production site. Probably soil-living organisms and organisms with stage(s) of its lifecycle in soil