Book of Abstracts

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NOVEL TOOLS AND METHODS FOR DETECTION, MAPPING, MONITORING AND CONTROL OF INVASIVE ALIEN SPECIES

O15

Automated early warning: a pipeline for feeding headline indicators on the state of invasions and to prioritize emerging alien species

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Abstract

Imagine you're automatically alerted when a new alien species appears in your country, a new introduction pathway opens or an established species jumps out of its lag phase and increases in protected areas. We showcase an operational workflow generating indicators for the state of invasions based on openly published checklist and occurrence data on GBIF using data from the TrIAS project in Belgium. Checklist indicators include headline indicators at country level: the (cumulative) number of new introductions of alien species in time and the pathways associated with alien species introductions. R functions were developed to break this information down to taxa, environments, native ranges and degree of establishment. Indicators can be restricted to the Union Concern species of the EU Regulation. Occurrence based indicators provide information at species level. Pre-processing creates an occurrence cube with data aggregated at 1 km level. From this cube we build indicators of (re)appearing and emerging species in Belgium. Emerging species show a significant increase in their occupancy or number of observations in recent years. Generalized Additive Modeling and simple decision rules were applied to analyse the time series of occupancy and number of observations inside and outside protected areas of the NATURA2000 network. We used all data on alien and native species at the rank of class as a covariate to compensate for survey effort bias. Several ranking procedures were then applied to create a prioritized list of species to inform decision making and provide trend information useful for risk assessment and risk management. The seamless, open data flows and open software tools allow for yearly updates when new checklist information or new datasets are added to GBIF. As such, it can easily be applied to other countries or regions of the world wanting to strengthen their evidence base for IAS policy and management.