



Status of Alien Species Invasion and Trends in Invasive Species Policy

Summary Report for the Global Invasive Species Programme

Centre for Invasion Biology

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Background

Invasive alien species (IAS) are a major threat to global biodiversity. As a result *trends in IAS* has been selected as one of 22 Headline Indicators (HI) to measure progress towards the Convention on Biological Diversity's Target of reducing the rate of loss of biodiversity by 2010¹.

This Target was adopted in 2002 when the Convention on Biological Diversity (CBD) made a commitment *to achieve, by 2010, a significant reduction of the current rate of biodiversity loss at the global, regional and national levels as a contribution to poverty alleviation and to the benefit of all life on earth*². This commitment was endorsed by over 180 countries and has become widely known as the *2010 Biodiversity Target*.

A framework for assessing progress towards meeting this Target, and for communicating the outcome, was adopted in 2004³. This framework has seven 'focal areas' with 'goals and 'sub-targets' for each focal area, as well as a number of Headline Indicators relevant to each focal area. In 2006, 22 of these Headline Indicators were adopted, although it was acknowledged that the specific indicators and how they are measured may change during their development and preparation for 2010¹.

Headline Indicators should be designed to be relevant to the goals and sub-targets of the CBD framework. In the case of IAS, the CBD calls on Parties to, *prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats, or species* (Article 8(h)). Goal 6 of the CBD framework is to *control threats from invasive species*¹, and the targets under this goal are:

- Target 6.1: Pathways for major potential alien invasive species controlled.
- Target 6.2: Management plans in place for major alien species that threaten ecosystems, habitats or species.

In January 2007, an *ad hoc* meeting of Invasive Alien Species data providers and user groups took place in the form of a workshop held at the Centre for Population Biology, Silwood Park, Imperial College, London⁴. The workshop followed on a report by Noëlle F. Kumpel and Jonathan E.M. Baillie⁵. At the workshop, participants

reviewed the report and its findings on prospects for the invasive alien species (IAS) indicator, and developed a plan for IAS indicator development and implementation under the Biodiversity Indicators Partnership (BIP) as follows: *This ad hoc meeting of IAS data providers, IAS data users and experts on indicators evaluated the data availability, necessary processes and feasibility of alternative indicators for measuring trends in IAS by 2010 (with the consideration of scaleable indicators for the longer term) at a national, regional and global level. The meeting participants identified data gaps and developed a framework to be completed that will transform these recommendations into practical, functional indicators*⁴.

Following the establishment during 2007 of a Global Invasive Species Programme (GISP) Expert Working Group to develop the indicators for invasive alien species, a meeting of the Expert Working Group was convened in London, UK, 18th & 19th March 2008⁶. Key outcomes of the meeting included a proposed set of single and composite indicators for further development comprising four measures⁶. A work plan was agreed to, including data provision and broad methodological approaches⁶. The first three measures selected at this meeting included: 1. Number of alien invasive species per country, 2. Number of operational IAS-management plans in place (per country), and 3. Number of countries party to IAS-relevant international agreements⁶. The IAS indicator is thus closely related to other indicators dealing with trends in species, such as *change in status of threatened species*. An additional indicator, i.e. “Red List Index for impacts of alien invasive species” will also be developed.

The Centre for Invasion Biology (C•I•B) was subsequently contracted to produce a Proof of Concept for the Invasive Alien Species (IAS) Indicator, i.e. further developing the first three measures. Work on the Invasive Alien Species Indicator at the Centre for Invasion Biology (C•I•B) (University of Stellenbosch, South Africa) began officially on 1 June 2008 (<http://www.sun.ac.za/CIB/IASI>). Activities over the six months period (June – December 2008) included further development of each of the three measures as indicators, following the principles for sound indicator development outlined in McGeoch *et al.* (2006)⁷, collation of data to populate the indicators, exploration of options for indicator expression, and assessment of the feasibility and scientific validity of the range of measures examined as indicators. The Proof of Concept was delivered to GISP in December 2008, as per agreement, for

review by the GISP Expert Working Group. This document provides a summary of the outcomes of the Proof of Concept.

Summary of Proof of Concept

Four Invasive alien species (IAS) indicators were presented, along with supporting documentation describing aspects of their development and population: A. Status of Alien Species Invasion; B. Trend in National Invasive Alien Species Policy; C. Trends in International Invasive Alien Species Policy; D. Global Indicator of Biological Invasion. These indicators were developed and populated to, as far as possible, use existing information, be scientifically sound, transparent, readily interpretable and to address the CBD Framework Goal and Sub-targets for invasive alien species.

The Invasion Status indicator (A) is expressed as the number of *documented* IAS per country. Challenges to the development and interpretation of this indicator include i) the designation of alien species as invasive, ii) geographic and taxonomic bias in data availability, iii) accessibility of data and iv) expert opinion. Nonetheless, a standard process and set of criteria was developed and used to populate the indicator for a stratified-random set of 25 countries. An independent measure of data availability for each country was included in the indicator, and it thus also identifies and highlights the geographic distribution of data gaps and inadequacies. This has significant potential policy value as it may catalyze additional data collection, management and co-ordination of efforts to this end beyond 2010. Furthermore, most often a few key species have extensive literature documentation, possibly because these species pose the greatest threat to biodiversity. If this is indeed the case, then the lists produced as the PoC represent lists of ‘worst’ invasive species. Significant further effort will be required to increase the number of countries represented in this indicator for 2010. We suggest a way forward for this indicator beyond 2010, as it forms a fundamental baseline for any species-based invasion indicator.

The National Policy indicator (B) was developed as an alternative to the originally proposed ‘Management Status’ indicator (number of IAS with operational management plans), because data were inadequate to populate the latter. The indicator clearly demonstrates that the number of national policies on IAS has increased

through time as countries acknowledge the IAS problem and commit to responding to this threat. Moderate effort will be necessary to increase the number of countries represented in this indicator for 2010.

The International Policy indicator (C) demonstrates that both the number of international agreements relevant to controlling IAS has increased through time, as have the number of countries party to these agreements. A unique suite of 10 international agreements relevant to IAS was identified as the basis for this indicator. This indicator is currently populated by the majority of countries signatory to the CBD, and requires little additional effort in preparation for 2010.

The Global Indicator of Biological Invasion (D) is a composite indicator incorporating the above three single indicators (with additional information for the National Policy indicator). This composite indicator simultaneously provides information on both the size of the problem (pressure) of IAS and the policy response to it. It provides a global snapshot (presently for the 25 PoC countries) of the current number and knowledge of invasive alien species and the policy that has been adopted to control them. If the above three indicators are prepared for 2010, then the inclusion of more countries in this indicator will require little additional effort.

The development and population of the indicator for 2010 was strongly directed by considerations of existing and readily available data, rather than primarily on what may be an ideal indicator for reporting on the status and trends in invasive alien species beyond 2010. Nonetheless, we are of the opinion that one of the benefits of doing so (in addition to being able to deliver a populated indicator for 2010), is to draw attention to the divide between information available on IAS and information that is most valuable for policy and management. In doing so our hope is that the indicator will boost efforts to address this gap beyond 2010. In 2009, the Proof of Concept will be expanded by the addition of countries to the indicator as part of the delivery of the Headline Indicator for alien invasive species for the 2010 Biodiversity Target.

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- ⁷ **McGeoch M.A., Chown S.L. and Kalwij J.M.** (2006). A global indicator for biological invasion. *Conservation Biology* **20**, 1635-1646.

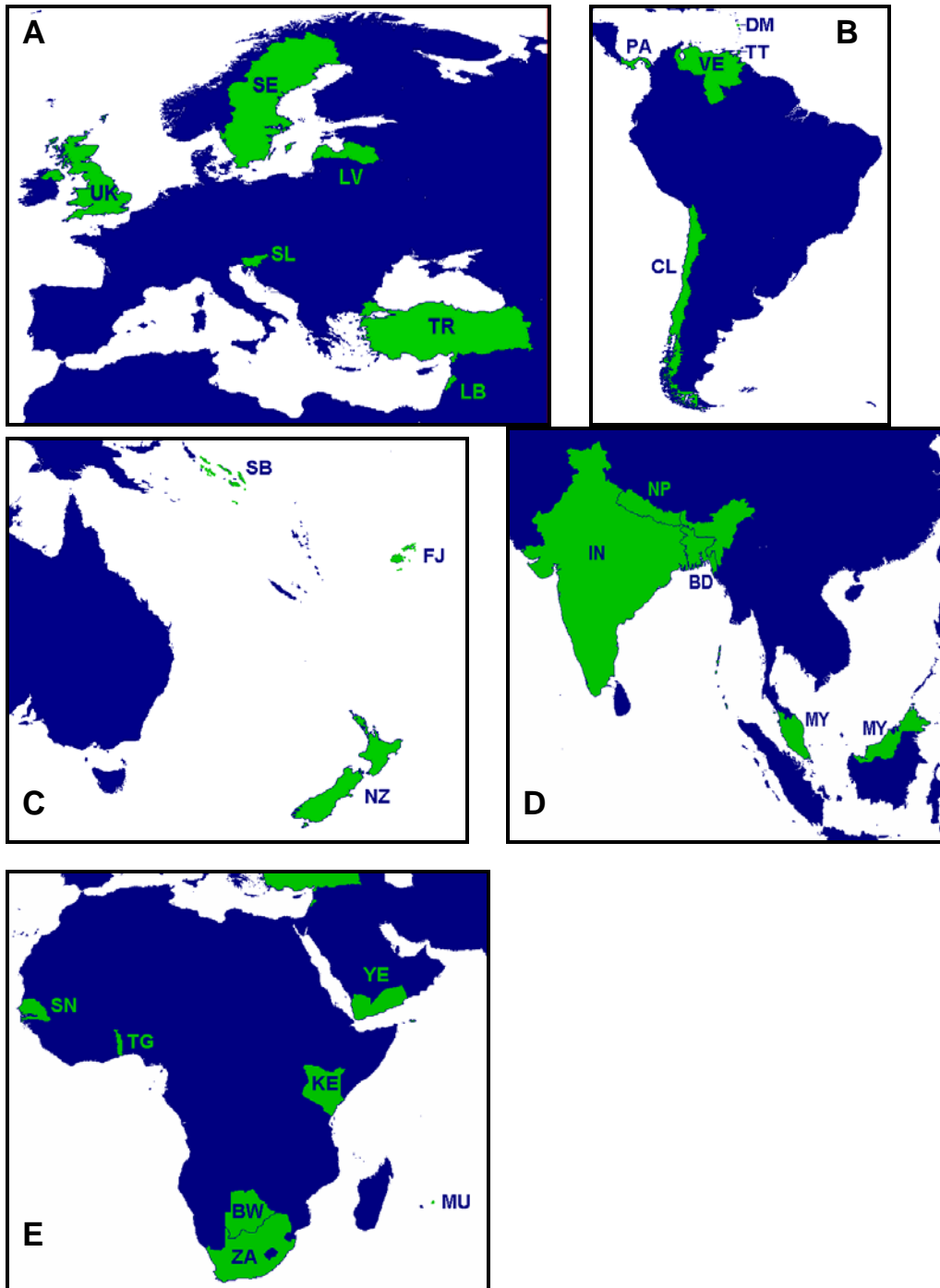


Figure SI 3.1. The 25 Proof of Concept countries are shown in green. A: Sweden (SE), United Kingdom (UK), Latvia (LV), Slovenia (SL), Turkey (TR), Lebanon (LB); B: Chile (CL), Venezuela (VE), Panama (PA), Dominica (DM), Trinidad and Tobago (TT); C: Solomon Islands (SB), New Zealand (NZ), Fiji (FJ); D: India (IN), Nepal (NP), Malaysia (MY), Bangladesh (BD); E: Senegal (SN), Togo (TG), Botswana (BW), South Africa (ZA), Kenya (KE), Yemen (YE).