

UDC 502.7: 581.5:631.95:632.51

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EUROPEAN POLICY ON INVASIVE ALIEN PLANT SPECIES AND THE PROSPECTS OF ITS IMPLEMENTATION IN UKRAINE

A brief overview of the European regulatory and recommendatory documents on invasive alien species (IAS) adopted under the UN Convention on Biological Diversity and the Bern Convention (Directives, Decisions, Codes of Conduct, etc.) is presented. The opportunities for implementation of the European policy on IAS in Ukraine are discussed. It is proposed to adopt a national strategy on IAS, compose a national checklist of IAS, as well as regional and field-specific checklists, and to establish recommendatory codes of conduct on IAS for biosphere reserves, nature reserves, national parks, botanical gardens and arboretums.

Keywords: *biodiversity, invasive alien species, risk assessment of plant invasions, preventive measures, Ukraine*

Introduction. The main feature of the global policy on invasive alien species (IAS) is its focus on biodiversity conservation. This policy is specified in the UN Convention on Biodiversity, 1992, ratified by Ukraine in 1994 [1]. The Convention calls upon the Parties to prevent the introduction of, control or eradicate those alien species. The concept of “invasive alien species” is defined by the Convention as species which threaten ecosystems, habitats, communities or species (Article 8, h). The Conference of the Parties of the UN Convention introduced a number of regulatory and recommendatory documents, which outline the global policy on IAS. Biodiversity issues are under the Convention on the Conservation of European Wildlife and Natural Habitats, 1979 (Berne Convention), ratified by Ukraine in 1999 [2]. The problems on prevention of the introduction, control or eradication of IAS are considered in the framework of the Berne Convention by its Standing Committee. This article aims at drawing attention of the scientific community to the current problem of biological invasions worldwide and the need for implementation of a national policy on IAS on the basis of the European practice.

Materials and methods. The methodology is based on a brief review of the existing European documents adopted by the Standing Committee of the Bern Convention and the experience of the European case-studies. We made a brief survey of the current state of the problem in Ukraine. Additionally, the review includes a number of directives and decisions of the Conference of the Parties of the UN Convention on Biodiversity and the examples of their practical application. Furthermore, we consistently prove the urgent need for involvement of the international experience on the policy on IAS in the context of biodiversity conservation in Ukraine.

Results and discussion.

European practice on invasive alien plant species. The European Strategy on Invasive Alien Species [3] adopted in 2003, sets out the priorities and key actions to prevent or minimize the adverse impacts of IAS. The document provides guidelines for recovering species and restoring habitats that were affected by biological invasions. Established in 1993 under the Bern Convention, the Group of Experts on the analysis of impacts of IAS on biodiversity in Europe are obligated to propose guidelines for governments regarding the measures to prevent new biological invasions. It is a set of challenges and its solution requires the cooperation of different actors that constantly deal with organisms and living material or keep live collections of alien species (ornamental horticulture, pet trade, botanical gardens, zoos, aquariums, etc.). The Conference of the Parties, recognizing

increasing risks of IAS associated with increase of global trade, transport, tourism and climate change, reaffirmed that the effective implementation of Article 8 (h) is a priority, and called upon the Parties to fulfil the COP 6 Decision VI/23 [4]. The main principle of this document is the notion that preventive measures are more cost efficient and environmentally sound than post-invasion control measures. The issues on the control of IAS in the context of the management of nature protected areas were discussed at the 10th meeting of the Conference of the Parties in 2010. The Decisions X/31 “Nature Protected Areas” [5] and X/38 “Invasions of alien species” [6] were adopted. According to these documents, it is suggested to incorporate the management of alien species into the management programs in protected areas.

The Council of Europe offers a number of recommendatory codes of conduct in the scope of action of the above-mentioned institutions, designed to ensure that the employees are aware of the risks and challenges for the local biodiversity from IAS. The European Guidelines on Protected Areas and IAS presents a contribution to the progressive development of the EU Strategy on IAS [7]. The draft of this guide was provided at the 33rd Standing Committee Meeting of the Convention on the Conservation of European Wildlife and Natural Habitats, in Strasbourg on 3-6 December 2013 [8]. The Standing Committee accepted Recommendation No. 167 (2013) concerning protected areas and IAS. The Standing Committee recognized the value of nature protected areas as objects for studying, control and prevention of IAS, and with reference to [document T-PVS/Inf (2013) 22] [7] provided a number of recommendations for the Contracting Parties. They include: where necessary, draw up national strategies to control invasive alien species in protected areas taking; instruct managers of protected areas and other appropriate conservation staff to collaborate in the tasks involved in communication and awareness raising, monitoring, prevention and management of IAS; making sure that management plans take due account of the need to deal with IAS in protected areas. It is also recommended to consult, when possible and as appropriate, the actors involved in management and conservation of protected areas, as well as scientific bodies, on the identification of priority IAS in protected areas and in the preparation and the implementation of mandatory measures to tackle the priority IAS in protected areas. This committee provides observer States to take into account Recommendation No. 167 (2013) and implement it as appropriate.

In 2013, there was published a book «Invading Nature. Plant Invasions in Protected Areas. Patterns, Problems and Challenges» [9]. The book outlines some of the main problems in invasive biology. This book is useful for understanding the role of protected areas as leading institutions in global action on IAS and key centers of basic and applied science on invasion ecology. One of the chapters is called «Guidelines for Addressing Invasive Species in Protected Areas». It provides eight components for improving invasive species management in protected areas: raise awareness on biological invasions at all levels; integrate invasive species and protected area management; implementing site-based prevention actions as a priority; develop staff capacity for all aspects of invasive species management; set up rapid detection and prompt response framework; manage invasive species beyond the protected area boundaries; implement surveillance, monitoring and information exchange networks; and lobby with institutions and decision-makers to support stringent policies.

The European policy on IAS looks for a balance between the use of voluntary and mandatory means in order to address the key ways to control IAS in such fields as pet trade, forestry, aquaculture, ornamental gardening, and other. The European Commission emphasizes the role of normative aspects and prepares an instrument concerning the legal aspects of IAS. Currently, the principle of self-regulation is considered as the most successful and most efficient compared to any other legally binding scheme. For this reason, the Berne Convention, with the technical support of the Group of Professionals on IAS from IUCN's work through a number of voluntary instruments (codes of conduct, governing rules, etc.). Their development should play an important role in shaping understanding and awareness among the key actors. The introduction and the use of these instruments correspond to the Strategic Plan for the Conservation of Biodiversity in Europe for 2011-2020.

An example of such instrument is the European Code of Conduct for Botanic Gardens on Invasive Alien Species [10]. It encompasses six Actions: Awareness, Share information, Preventing new invasions, Control measures, Outreach, Forward planning.

According V.H. Heywood [10], there is no reliable mechanism to assess the possible risk of biological invasions, as well as the foolproof way to predict these events. A number of approaches on the analysis and assessment of the risks from IAS have been already proposed. Their principle is as follows: if the species is evaluated as having high invasive potential, its introduction is not acceptable - it is removed from the collection and entered into the list of invasive species. At the same time, the use of risk assessment schemes on IAS not only helps to reduce the risk of introduction, but can detect invasion corridors. A review of existing approaches on regulation of the spread of alien species and the role of risk assessments was presented by Roberts et al. [11]. A comparative analysis of the European risk assessment procedures was presented by Essl et al. [12]. Typically, risk analysis consists of three components: risk assessment - defining of the hazard posed by the type, the degree of severity and the likelihood that they will take place; risk management - practical aspects of risk mitigation; and informing on the risks - interpretation of the results of the analysis and explanation of their meaning in an understandable way [13]. Widely known Australian Weed Risk Assessment System (WRA) [14] was adopted in Europe, Japan, Canada and the United States. At the same time, the U.S. has developed the Invasive Species Assessment Protocol - a tool for creating regional and national lists of invasive non-native plants that negatively impact on biodiversity [15]. The protocol contains 20 questions with multiple choice answers, united in four sections, each of which assesses one important indicator. Section I. Ecological impact (five questions, 50% of I-Rank score). Section II. Current distribution and abundance (four questions; 25% of I-Rank score). Section III. Trends in distribution and abundance (seven questions; 15% of I-Rank score). Section IV. Management difficulty (four questions 10% of I-Rank score). There are five possible answers for each question: A–D and unknown. Answer A carries the maximum number of points and the ratio of values for A, B, C and D is always 3 : 2 : 1 : 0. Combined ratings get the final result - the impact of invasive species rank (high, medium, low or negligible). A non-governmental organization NatureServe uses this protocol for the evaluation of 3500 alien species known as the “invaders”.

There is also a series of risk assessment approaches designed for Central Europe. For example, the German-Austrian Black List Information System (GABLIS) proposed by Essl et al. [12] has been developed as a comprehensive trans-national and taxonomically universal risk assessment system for Central Europe dealing with IAS that pose a risk to biodiversity. It recognizes three categories of lists according to the severity of impacts: a White List of species with no negative impact and are non-invasive, a Grey List of species that probably or possibly threaten biodiversity and a Black List of those species that are invasive and whose negative impact is confirmed.

Botanic gardens should consider adopting the International Standard on Phytosanitary Measures No. 11 on Pest Risk Analysis (ISPM, 2006) as adapted by the European and Mediterranean Plant Protection Organization. This assesses information on: preferred habitats, climatic, soil and water requirements, life history of the plant, natural or human assisted spread, reproduction, intended use, ease of detection of the plant, persistence, competitiveness, possibility to be controlled, and economic, ecological and social impacts [16, 17].

A set of procedures for weed risk assessment has been prepared by FAO (2004). This includes an assessment system in the form of key “for use by countries with limited access to information or resources to undertake weed risk assessments. It embodies the general principles of weed risk assessment used internationally, while requiring the minimum of information for an unequivocal outcome of accept or reject” [18, 19].

V.H. Heywood [10] pays attention to the prompt risk assessment. If the species is considered as a potential invader, one can quickly assess it by a preliminary weed risk assessment [10]. This protocol includes seven steps. Step 1 Determine the correct identity of the species. Step 2 Is the species weedy in the world? Step 3 Has the species become naturalized in Europe? Step 4 Has the

species become naturalized in your country? Step 5 Is the species a known weed in at least one ecosystem in your country or similar ecosystems elsewhere in Europe? Step 6 Does the species have known impacts in your country or similar ecosystems in Europe? Step 7 If the species satisfies most or all of the conditions identified at Steps 1–6 it will be given priority for assessment by a full scale Weed Risk Assessment/Management System [10].

Control of invasive alien plant species in Ukraine and perspectives of implementation of the European practice for conservation of biological diversity. Let us briefly discuss the opportunities for Ukraine to adapt the European rules aimed at improving the management of IAS in protected areas and introduction of Codes of Conduct on IAS for botanical gardens and arboretums. In summary those are: increase of awareness on biological invasions at all levels; integration of the problem of IAS and management practices in protected areas; prevention of new infestations; control measures; rapid detection of IAS and rapid response systems; information and advocacy; strategic planning; implementation of the system of supervision, monitoring and exchange of information and lobbying of institutions and individuals who make the decisions in order to support a stringent policy on IAS.

It must be noted that Ukraine do not fully recognize all the threats and risks associated with IAS. This assertion follows from the first steps that have been already taken towards the control of IAS. The Law of Ukraine “On the Fundamentals (Strategy) of the State Environmental Policy of Ukraine” [20] was adopted in 2010 and it was the first official mentioning of biological invasions in the context of biodiversity conservation. Goal 5 of the Law provides for the establishment of the system of measures against IAS in all types of ecosystems, including marine ecosystems by 2015. However, the National Strategy on invasive alien species has not been accepted yet. Although its draft was prepared following the principles of European Strategy on Invasive Alien Species [3] in 2003 [21]. By the decision of the Conference “Environment – 2010” it is required to monitor IAS in protected areas. As a part of the Committee of Botanical Gardens and Arboretums, the Commission on Plant Invasions was established in 2013 [22].

The growth of awareness of biological invasions at all levels is due to the efforts of the scientists from the institutes of NAS of Ukraine and NAAS of Ukraine, universities, employees of nature reserves and national parks. During 1991-2013 they have published about 550 scientific papers, which cover a variety of issues on biology of IAS and the ability to control and prevent biological invasions [23]. Some of the publications are of scientific-popular character in order to attract the attention of various groups of society [24]. Nevertheless, awareness of the problem remains quite poor. Additionally, we have to recognize insufficient lobbying of institutions and individuals who make the decision to support a stringent policy on IAS.

In summary, we would like to emphasize the following. Ukraine as a Contracting Party to the Convention on Biological Diversity and the Bern Convention is imperative to examine the experience of the European policy on IAS, and immediately proceed to its implementation. First of all, a National Strategy on IAS must be adopted, in the context of the relevant European policy. Next, recommendatory documents on IAS as based on Recommendation No. 167 (2013) [8] should be developed and implemented. Furthermore, a Code of Conduct on integration of management of protected areas and IAS policy should be adopted. Each of the 70 units belonging the highest protection categories (biosphere reserves, nature reserves and national parks) have to adapt this Code of Conduct to their natural environment and environmental problems. Within the framework of the Committee of Botanical Gardens and Arboretums of Ukraine, a Code of Conduct for Botanical Gardens and Arboretums IAS to develop. Each of the 52 botanical gardens and arboretums must adopt this Code of Conduct to their natural conditions, major scientific and applied challenges, including public awareness.

For the purpose of preventive measures against new invasions and preserving biodiversity a national system of risk assessment of invasive alien plants should be developed. Moreover, it is important to compose a national list of alien species that negatively affect biodiversity. Based on the “National List ...” and given the natural, economic and social characteristics, regional checklists for administrative regions and the Crimea should be composed. Also, similar lists for botanical gardens

and arboretums, biosphere reserves, nature reserves and national parks should be prepared. In order to prevent economic losses, the institutes and the experimental stations of NAAS of Ukraine, agricultural universities and other higher education institutions related to agriculture have to develop a national risk assessment system of invasive segetal weeds, and compose their checklist. Afterwards, Ukraine as a Contracting Party to the Bern Convention is obligated to inform the Standing Committee of the Bern Convention on the measures taken to prevent, control of alien species that negatively affect biodiversity.

Conclusions. The European policy on IAS is based on the principle of implementation of both recommendatory and regulatory documents. They are based on the principles of raising awareness, information exchange, prevention of new infestations, control measures, public involvement and advocacy of people who make decisions.

In order to fulfil obligations as a Contracting Party to the Convention on Biological Diversity and the Bern Convention and those according to the Law of Ukraine “On the Fundamentals (Strategy) of the State Environmental Policy of Ukraine” on prevention and control of IAS, Ukraine must take a number of immediate organizational and legal measures. It is necessary to develop and implement national and regional documents on regulative policy on alien species as one of the major threats to biodiversity.

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Анотація

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Європейська політика щодо інвазійних чужорідних видів рослин та перспективи її запровадження в Україні

Подано короткий огляд регуляторних та рекомендаційних європейських документів щодо інвазійних чужорідних видів, прийнятих у рамках Конвенції ООН Про біорізноманіття та Бернської Конвенції (Директиви, Рішення, Кодекси поведінки тощо). Розглядаються можливості імплементації європейської політики щодо інвазійних чужорідних видів у найближчий час в Україні. Запропоновано прийняти національну стратегію щодо інвазійних чужорідних видів, укласти національний, регіональні та галузеві їх переліки, а також запровадити рекомендаційні кодекси поведінки щодо інвазійних чужорідних видів для біосферних, природних заповідників, національних природних парків, ботанічних садів і дендропарків.

Ключові слова: біорізноманіття, інвазійні чужорідні види, оцінка ризику фітоінвазій, превентивні заходи, Україна

Аннотация

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Европейская политика по инвазивным чужеродным видам растений и перспективы ее имплементации в Украине

Дан краткий обзор европейских документов по инвазивным чужеродным видам, принятых в рамках Конвенции ООН О биоразнообразии и Бернской Конвенции (Директивы, Решения, Кодексы поведения и пр.). Рассматриваются возможности имплементации европейской политики по инвазивным чужеродным видам в Украине в ближайшее время. Предлагается принять национальную стратегию по инвазивным чужеродным видам, составить национальный, региональные и отраслевые их списки, а также принять рекомендательные кодексы поведения по инвазивным чужеродным видам для биосферных, природных заповедников, национальных природных парков, ботанических садов и дендропарков.

Ключевые слова: биоразнообразие, инвазивные чужеродные виды, оценка риска фитоинвазий, превентивные меры, Украина