



Essential Readings in Environmental Law
IUCN Academy of Environmental Law (www.iucnael.org)

INVASIVE ALIEN SPECIE AND BIODIVERSITY
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LIST OF KEY SCHOLARSHIPS

The Problem of Invasive Alien Species

1. Low, T., *Feral Future: the Untold Story of Australia's Exotic Invaders*, Viking, Australia (Camberwell: Victoria Low, 1999).
2. Sandlund, O. T., *et al* (ed) Proceedings of the Norway/UN Conference on Alien Species: Trondheim, 1-5 July 1996, held at Reso Royal Garden Hotel, Trondheim, Norway, The Institute (1996).

International Obligations and Design of Regimes

3. Convention on Biological Diversity 'Guiding Principles for the Prevention, Introduction and Mitigation of Impacts of Alien Species that Threaten Ecosystems, Habitats or Species' Adopted April 2003 as part of Decision VI/23 of the Conference of the Parties. UNEP/CBD/COP/6/20 (23 September 2002).
4. Shine, C., W. Nattley, and L. Gündling, *A Guide to Designing Legal and Institutional Frameworks on Alien Invasive Species*, (Gland: IUCN, 2000).

Challenges

5. Miller, M., "Does the WTO Substantially Limit the Ability of Countries to Regulate Harmful Non-Indigenous Species?" (2003) 17 Emory International Law Review 100.
6. Perrault, A., and W. C. Muffett, "Turning off the Tap: A strategy to Address International Aspects of Invasive Alien Species" (2002) 11:2 Review of European Community & International Environmental Law 211.
7. Jensen, M. F., "Reviewing the SPS Agreement: A Developing Country Perspective, Centre for Development Research" (2002).
8. Riley, S., "A Weed by any Other Name: Would the Rose Smell as Sweet if it Were a Threat to Biodiversity", (2009) 22:1 Georgetown International Environmental Law Review 157.
9. Jenkins, P., "Paying for Protection from Invasive Species" (2002) Issues in Science and Technology, 67.

Critiques and Appraisals from the Social Sciences

10. Boorse, Dorothy, "Teaching Environmental Ethics: Non-Indigenous Invasive Species as a Study of Human Relationships to Nature", (2004) 8:2-3 *Worldviews* 323.
11. Olwig, R. K., "Natives and Aliens in the National Landscape" (2003) 28:1 *Landscape Research*, 61.
12. Trigger, D., "Indigeneity, Ferality and What 'Belongs' in the Australian Bush: Aboriginal Responses to 'Introduced' Animals and Plants in a Settler-Descendant Society" (2008) 14 *Journal of the Royal Anthropological Institute*, 628.

Background

Invasive alien species (IAS) are alien species that threaten ecosystems, habitats or other species, or to put it succinctly, IAS threaten biodiversity. Such threats have been extensively documented, and include predation on native species, modification of habitat, and the introduction of pests and diseases. The impacts of IAS also manifest in economic ways including losses to agriculture and forestry. The problems posed by IAS are compounded by informational gaps and uncertainty and set to exacerbate with the effects of climate change. Accordingly, developing regimes to deal with the problem of IAS is challenging at both the domestic and international levels.

Article 8(h) of the *1992 Convention on Biological Diversity* calls on the parties to prevent, eradicate and control IAS that threaten biodiversity. However, in practice this obligation may be constrained by lack of resources, lack of knowledge and lack of political will. Given that IAS are introduced species, and more often than not, introduced across international boundaries, IAS regimes will be ineffective without also taking into account the effects of international trade as a pathway of introduction. Consequently, regulators will need to consider how to balance the desire to expand international trade against the need to hinder or restrain trade to prevent entry of IAS.

Overlaying these concerns is a growing movement from the social sciences that has started questioning the appropriateness of key elements of IAS regimes, including: the morality of regulating alien species simply because the species are not native; the fact that regimes may not take indigenous perspectives into account; and the fact that where animal IAS are involved regulators turn to wholesale culling as a first point response. The critiques from the social sciences means that as the discourse on IAS evolves, regulators will need to consider the views of a range of stakeholders in a more holistic manner than currently occurs. The readings outline: the problem of IAS; international obligations with respect to preventing the entry and spread of IAS; how the design and operation of domestic regimes can fulfill international obligations; a synopsis of emerging challenges; and a selection of critiques of the current regime. The readings do not include material on living modified organisms (LMOs) or *the Cartagena Protocol to the Convention on Biological Diversity*. In one sense LMOs are 'alien' species because they have been introduced or engineered by humans. However the topic of LMOs is complex and warrants its own reading guide.

1. **T. Low**'s book *Feral Future* is a very readable volume that provides indispensable context to the problem of IAS. The book was inspired by **Low**'s travels to North Australia and his unexpected encounters with introduced plants and animals, in what he had assumed would be a near-pristine environment. **Low** not only details the history of introduced plants and animals in Australia but also explains how Australian plants and animals can become IAS when exported. Although the focus of the book is on Australian IAS, it nevertheless affords a wider perspective, explaining how introduced species, in general, can become invasive and threaten the environment. **Low** also introduces social arguments, exploring how society responds to the challenge of IAS, a theme he develops further, in **The New Nature**, published in 2003 by Penguin.
2. The *Proceedings of the Norway/UN Conference on Alien Species* by **O. T. Sandlund**, **P. Schel** and **A. Viken** comprise a collection of papers presented at a conference held in Trondheim in 1996. The material covers the gamut of issues and challenges relating to IAS, all of which continue to be relevant almost two decades after the conference. The studies include a paper by **P. Jenkins** who foreshadows the importance of the international trade nexus to the introduction and spread of IAS, something that in the years following the establishment of the World Trade Organization in 1995 has generated much discussion. Further contributions include papers from commentators such as **J. McNeely** who evaluates the human motivations for introducing species. This issue remains under-explored to this day. Yet, as **McNeely** cogently points out, without engaging stakeholders, regimes will be less successful than they otherwise could be. The proceedings also contain a seminal article by **L. Glowka** and **C. D. Klemm** who questions whether a separate protocol to the *Convention on Biological Diversity* is necessary to deal with IAS. Their article provides an interesting point of comparison with the 'Guiding Principles for the Prevention, Introduction and Mitigation of Impacts of Alien Species that Threaten Ecosystems, Habitats or Species' that were eventually adopted by the Conference of the Parties to the *Convention on Biological Diversity*.
3. In order to develop an understanding of international obligations with respect to IAS it is essential to read the *Guiding Principles for the Prevention, Introduction and Mitigation of Impacts of Alien Species that Threaten Ecosystems, Habitats*'. The Guiding Principles provide detail to the framework obligation set out in Article 8(h) of the *Convention on Biological Diversity* that indicates members should prevent the introduction of, or control or eradicate IAS. The Article, however, does not provide guidance on how to achieve these aims. The Guiding Principles comprise 15 principles designed to enhance and harmonize state practice and they are underpinned by a three-tiered approach focussed on preventing introductions followed by eradication and control measures. Although the Guiding Principles are a soft law mechanism, they are intended

to guide members who must, at least, consider the principles in the design and operation of their domestic IAS regimes.

4. The collective essays in **C. Shine, W. Nattley, and L. Gündling's** *A Guide to Designing Legal and Institutional Frameworks on Alien Invasive Species* provide a definitive volume to designing policy and regimes with respect to IAS. The authors give examples of regulation and institutional arrangements sourced from across the globe. As such, the book establishes much of the groundwork for regimes. Yet, it is also more than a 'how-to-do' manual. In particular, the Guide canvasses areas of potential tension between IAS regimes and other international regimes, such as those pertaining to international trade. The Guide also highlights the fact that regulators will frequently be working in areas of uncertainty and with incomplete knowledge bases—issues that are becoming increasingly significant as problems such as climate change alter habitats and invasion patterns in unexpected ways.

5. One important challenge to implementing preventative measures by way of border controls stems from the relationship of the rules of the World Trading Organization with domestic biosecurity (or quarantine) measures. A number of writers have identified this as a potential problem, and grapple with the trade-biosecurity links. In his article *Does the WTO Substantially Limit the Ability of Countries to Regulate Harmful Non-Indigenous Species?* **M. Miller** notes that society questions whether globalization and free trade will deliver positive environmental outcomes and uses IAS as a case study. Although the United States of America (US) has not ratified the *Convention on Biological Diversity* and as such is not obligated by duties found in Article 8(h), the activities of the US are consistent with international obligations that are relevant to IAS. **Miller** draws out a number of ways that the rules and Agreements of the WTO can potentially limit States in their establishment of strong environmental regimes. He does not, however, reach an outright conclusion on this point, instead saying that 'important structural limitations on the WTO process... make the answer hard to predict.' **Charnovitz** (see below in further readings) also argues that the *Agreement on the Application of Sanitary and Phytosanitary Measures* (SPS Agreement) has the potential to hinder the capability of members to determine robust policy and establish strong regimes for preventing the entry of unwanted species. In a similar vein to Miller, **Chanovitz** does not call for major amendments to the SPS Agreement, instead calling for closer scrutiny of the impact of that Agreement on biosecurity measures.

6. The article *Turning off the Tap: A strategy to Address International Aspects of Invasive Alien Species* by **A. Perrault** and **W. C. Muffett** unambiguously attribute the problem of IAS introductions to international trade, including trade in services, such as, transport and tourism. They highlight that deterring introductions of IAS needs to be the prime

regulatory strategy. Moreover, they stress that when making decisions on introducing species, authorities should take into consideration whether measures exist for controlling species should they become invasive. At the IAS-trade interface the question of how stringent standards need to be, must be taken with the environment in mind, rather than focusing predominantly on whether international trade will be disrupted.

7. Still with reference to international trade, developing states face challenges in complying with their international obligations while retaining a market share, particularly in agricultural products. Developing countries have more limited resources than developed countries and even in areas where preventative measures are important, such as border controls in quarantine, lack of funding and trained personnel means that measures may be implemented irregularly, leading to species remaining undetected. Developing states can also be a source of IAS, so resource constraints affect their ability to regulate outgoing trade with potential flow-on effects as developed states seek to stop imports from developing states. Such circumstances are ripe for disputes to be adjudicated within the WTO. **M. Jensen** has addressed these issues in his publication *Reviewing the SPS Agreement: A Developing Country Perspective*. **Jensen** concludes that ‘middle-income’ countries are more likely to see benefits from the SPS Agreement while the least developed countries perceive obligations pursuant to the Agreement as unnecessarily burdensome.
8. Another significant issue stems from the links between IAS regulation and climate change. **S. Riley** in the article titled, *A Weed by any Other Name: Would the Rose Smell as Sweet if it Were a Threat to Biodiversity*, examined the growing use of biofuels. As **Riley** points out, many plant species that are promoted as sources of biofuels are also amongst the world’s worst invasive species. Although definitions of IAS contained in environmental instruments such as the CBD Guiding Principles are wide enough to include species used for biofuels, States have not predominantly embraced this type of approach with biofuels rarely falling within the definition of an IAS at the domestic level. This hesitancy fundamentally reflects a lack of political will on the part of States to regard useful species as an actual or potentially invasive alien species—a situation that requires consistent monitoring in the case of increasing use of biofuels.
9. One under-explored area of IAS scholarship relates to the costs associated with IAS. When introduced species become invasive, their eradication and control invariably falls on the public purse. In *Paying for Protection from Invasive Species*, **P. Jenkins** argues that approaches to funding IAS regulation could be based on a levy system, similar to the types of responses by government when raising money to clean up oil spills. **Jenkins**, however, calls for a levy to target preventing unwarranted introductions. **Jenkins’** framework is based on the polluter-pays principle and incorporates six policy approaches

such as insurance requirements, bonding requirements, civil fines, criminal penalties and fines, fees, and corrective taxes. However, as Jenkins points out, the polluter pays approach suffers from ‘lag problems’—where introduced species may take decades to manifest their invasive qualities. This means that reactive command and control measures tend to catch few operators and may not be appropriate as a base from which to generate sustained funding. **Jenkins**, therefore, argues for internalizing the costs of preventing and eradicating IAS. Later material, emanating from the Conference of the Parties to the *Convention on Biological Diversity*, has broached the ‘user pays’ rather than polluter pays principle. Nevertheless, **Jenkins** work stands out as a thorough, though concise, analysis of the economic issues relating to IAS.

Over the last three decades, the problem of IAS has generated a copious body of literature, including from scientists, ecologists, biologists, lawyers and social scientists. The latter has developed a discourse linking the regulation of IAS with nativism and xenophobia. This discourse has largely developed without adequately engaging with key areas of the wider regulatory debate, including the fact that alien species can, and do, become invasive. Nonetheless, the importance of the social science literature stems from the fact that it challenges the legitimacy of current approaches by questioning the morality of regulation where it is based on dubious values and motives. This complicates the regulatory landscape in a number of ways including by making it incumbent on authorities to balance the relationship between IAS regulation and engagement of stakeholders. With respect to the latter, stakeholders encompass at the very least, those interested in animal welfare or animal rights, those who regard IAS as a resource to Indigenous peoples.

10. **D. Boorse**’s article *Teaching Environmental Ethics: Non-Indigenous Invasive Species as a Study of Human Relationships to Nature* is written from a pedagogical viewpoint, but it still clearly encapsulates the ethical dilemmas stemming from decisions humans make that relate to IAS. **Boorse** points out that while conservation biologists and ecologists see IAS as a pressing environmental problem, members of the public have started questioning the need to kill or cull large numbers of animal as IAS. **Boorse** acknowledges that regulation can be informed by a variety of ethical traditions and recommends using case studies to explore ‘basic world-views’ of the relationship of humans to their environment, including IAS.
11. Some discourses from the social sciences take a less forgiving approach to IAS regulation. Typical of this genre is the article by **K. Olwig**, titled *Natives and Aliens in the National Landscape*. **K. Olwig** sees many similarities between policy towards IAS that is based on preventative and control measures and attitudes of racism, nativism and xenophobia. **Olwig** argues that the fixation on native species derives from a ‘post-

Renaissance concept of landscape' that he links with threats of foreign races and cultures. This viewpoint has been criticized by **Simberloff** (see list of representative scholarly literature below) who cogently argues that this type of discourse ignores the differences between alien species and IAS and that regulation targets IAS rather than all alien species.

12. In his article *Indigeneity, Fertility and What 'Belongs' in the Australian Bush: Aboriginal Responses to 'Introduced' Animals and Plants in a Settler-Descendant Society* **D. Trigger** explores Indigenous viewpoints towards introduced plants and animals. **Trigger**'s work is particularly significant for revealing that the attitude of Indigenous peoples towards alien species has changed over time and that these attitudes do not necessarily represent one, single, or unified approach towards alien species. At the same time, Indigenous attitudes provide an additional perspective to the IAS debate, especially with regard to the ethics of eradicating animal IAS. It is particularly telling that in this respect Indigenous peoples do not consider killing or culling as the first regulatory choice.

Discussion Topics and Questions

1. Drivers – Understanding the link between introducing species and international trade; what are the economic drivers and incentives behind introducing species? Is it ethical, or economically sound, that damage to the environment is treated as an externality? How can the rules of international trading organizations be shaped to take into account the problem of IAS?
2. Paying for IAS – Should governments adopt polluter-pays, introducer-pays, or user-pays principles (or combinations of these)? Is it feasible to promote the use of insurance bonds developed by the private sector?
3. Stakeholders – How can engaging stakeholders improve IAS regulation? Rather than focussing on prevention, eradication and control measures, does it make better sense to focus on the reasons why people introduce species and manage behavioural aspects? To what extent should Indigenous perspectives be taken into account and how can their views be better integrated into management regimes?

Appendix I: IAS Terms and definitions

1. Alien Species: an alien species is a species, subspecies or lower taxon, introduced outside its natural past or present distribution; includes any part, gametes, seeds, eggs, or propagules of such species that might survive and subsequently April 2002 as part of Decision VI/23 of the Conference of the Parties, footnote 57(i).
2. Ballast Water means water with its suspended matter taken on board a ship to control trim, list, draught, stability or stresses of the ship. (Article I of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004).

3. Biological Diversity (biodiversity) means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems (Article 2 of the Convention on Biological Diversity, 1992).
4. Biosecurity does not have a settled meaning, hence, is normally given a wider connotation than quarantine. Biosecurity may be defined as the protection of the economy, environment and human health from the negative impacts associated with entry, establishment or spread of exotic pests (including weeds) and diseases. **Beale et al, *One Biosecurity, A Working Partnership: The Independent Review of Australia's Quarantine and Biosecurity Arrangements Report to the Australian Government*, XLVIII.**
5. Invasive Alien Species is a species whose introduction and/or spread threaten biological diversity Guiding Principles for the Prevention, Introduction and Mitigation of Impacts of Alien Species that Threaten Ecosystems, Habitats or Species. Adopted April 2002 as part of Decision VI/23 of the Conference of the Parties, footnote 57(ii).
6. Pest Risk Analysis is the process of evaluating biological or other scientific and economic evidence to determine whether a pest should be regulated and the strength of any phytosanitary measures to be taken against it (International Plant Protection Convention, 1997, Article II).
7. Quarantine (as a noun) (a period of) isolation imposed on persons or animals that have arrived: from elsewhere or been exposed to and might spread, infectious or contagious disease; (as a verb) to impose such isolation on, put in quarantine (Oxford English Dictionary)
8. Quarantine Pest is a pest of potential economic importance that is already present, but not widely distributed and under official control. (International Plant Protection Convention, 1997, Article II).
9. Risk Analysis is a process that evaluates the likelihood of an event occurring and its ramifications in the midst of uncertainty. **J Mumford, 'Environmental Risk Evaluation in Quarantine Decision Making'** in **K Anderson, C McRae and D Wilson** (eds), *The Economics of Quarantine and the SPS Agreement*, (Centre for International Economic Studies Adelaide and AFFA Biosecurity Australia, 2001) 353. It encompasses three stages: risk assessment, which is a scientific evaluation of risk; risk management, which determines the choice of measures to manage the risk and which can also take into account non-scientific considerations, such as policy judgements; and risk communication, which involves making the results of the assessment process publicly available so that decisions receive the widest public support. See **Nunn, Mike**, '*The analytical foundation of quarantine risk analysis*' in **Kym Anderson, Cheryl McRae and David Wilson** (eds), *The Economics of Quarantine and the SPS Agreement*

Centre for International Economic Studies Adelaide and AFFA Biosecurity Australia.
(2001) 29, 30.

10. Environmental Ethics is a reasoned reconsideration of how people should interact with one another and with non-human nature in the light of human created environmental problems. It takes into account the moral relations between humans and the environment. Adapted from Peter Wenz, *Environmental Ethics Today*, Oxford University Press, NY (2001) 292-3.

References

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3. Nunn, M., 'The Analytical Foundation of Quarantine Risk Analysis' in K. Anderson, C. McRae and D. Wilson (eds), *The Economics of Quarantine and the SPS Agreement*, (Centre for International Economic Studies Adelaide and AFFA Biosecurity Australia, 2001) 29.
4. OECD Glossary of Statistical Terms, Organisation for Economic Co-operation and Development (2007). <http://stats.oecd.org/glossary/download.asp> .
5. Wenz, P., *Environmental Ethics Today*, Oxford University Press, NY (2001) 292-3.

Appendix II: Selected Examples of IAS Strategies, Codes, Standards And Management Plans

Year Document Title Details

Pre-1997 to current

1. World Organisation for Animal Health (OIE) Established 1924, the OIE prepares Codes and Manuals to stop the spread of animal diseases in international trade. Codes and Manuals available from: <http://www.oie.int/publications-and-documentation/general-information/>

1997 to current

2. Standards adopted by the International Plant Protection Convention. To date, the *International Plant Protection Convention* has adopted 55 International Standards for Phytosanitary Measures (ISPMs) designed to stop the spread of pests and diseases of plants in international trade. The standards are continuously updated and are available

from: <https://www.ippc.int/core-activities/standards-setting/ispms>

3. 2001 National Invasive Species Council Meeting the Invasive Species Challenge: National Invasive Species Management Plan The Plan sets out nine priority areas for addressing the problem of IAS in the United States of America at the Federal level, including: leadership and coordination, early detection, international cooperation, information management and education. The Plan is available from: http://www.invasivespecies.gov/main_nav/mn_NISC_ManagementPlan.html
4. 2008-12 National Invasive Species Council Management Plan: the 2008 Plan updates the 2001 Plan and emphasises five goals: Prevention; Early Detection and Rapid Response; Control and Management; Restoration; and Organizational Collaboration. The Plan is available from: http://www.invasivespecies.gov/main_nav/mn_NISC_ManagementPlan.html
5. 2003 European Strategy on Invasive Alien Species
Prepared by P Genovesi, and C Shine; Adopted as Strategy on Invasive Alien Species, Standing Committee of the Convention on the Conservation of European Wildlife and Natural Habitats. T-PVS (2003), published 2004. The strategy provides a 'road map' to deal with the problem of IAS and conforms to the CBD Guiding Principles. The strategy is available from: <https://69.90.183.227/doc/external/cop-09/bern-01-en.pdf>
6. 2004 An Invasive Alien Species Strategy for Canada Prepared by a range of departments, including Environment Canada. The Strategy sets out a framework for dealing with IAS and concentrates on strategic challenges such as integrating environmental considerations into decision-making processes; enhancing collaboration, co-ordination and co-operation; protecting natural resources that are under pressure from increased global trade and travel. The Strategy is available from: http://www.ec.gc.ca/eee-ias/98DB3ACF-94FE-4573-AE0F-95133A03C5E9/Final_IAS_Strategic_Plan_smaller_e.pdf
7. 2008 The Invasive Non-Native Species Framework Strategy for Great Britain Prepared by the Department for Environment, Food and Rural Affairs. The strategy provides a framework to coordinate the actions of stakeholders with respect to IAS. The Strategy is accompanied by an Implementation Plan and both are available from: <https://secure.fera.defra.gov.uk/nonnativespecies/index.cfm?sectionid=55>
8. 2011 Australian Ballast Water Management Requirements Version 5
These requirements are the latest version of the Australian requirement. They are designed to reduce the risk of introducing harmful aquatic organisms into Australia's marine environment through ballast water from international vessels. The Requirements are produced under the auspices of the Department of Agriculture, Fisheries and Forestry and are made operational by AQIS, the Australian Quarantine and Inspection Service. Available from:

http://www.daff.gov.au/biosecurity/avm/vessels/quarantine_concerns/ballast/australian-ballast-water-management-requirements

9. 2013 International Maritime Organization, BMW Guidelines The Ballast Water Guidelines are continually being refined as technologies develop and knowledge increases. In 2013, the guidelines were collated into a publication which is available for purchase from the IMO web site:
<http://www.imo.org/OurWork/Environment/BallastWaterManagement/Pages/BWMGuidelines.aspx>

APPENDIX III: FURTHER RECOMMENDED LITERATURE AND RESEARCH SOURCES

Websites:

1. *Convention on Biological Diversity*: <http://www.cbd.int/>
2. Convention on Biological Diversity Cross Cutting Issue of Invasive Alien Species: <http://www.cbd.int/invasive/>
3. European Commission, Invasive Alien Species: <http://ec.europa.eu/environment/nature/invasivealien/>
4. GB Non-Native Species Secretariat: <https://secure.fera.defra.gov.uk/nonnativespecies/factsheet/>
5. *International Plant Protection Convention* (including adopted standards): <https://www.ippc.int/index.php?id=1110673&L=0>
6. International Maritime Organization, Ballast Water: <http://www.imo.org/OurWork/Environment/BallastWaterManagement/Pages/Default.asp>
7. IUCN Invasive Species: http://www.iucn.org/about/union/secretariat/offices/iucnmed/iucn_med_programme/species/invasive_species/
8. IUCN Invasive Species Specialist Group: <http://www.issg.org/publications.htm>
9. National Invasive Species Information Centre (USA) <http://www.invasivespeciesinfo.gov/>
10. NOBANIS, European Network on Invasive Alien Species: <http://www.nobanis.org/>
11. World Organization for Animal Health: <http://www.oie.int/>
12. World Trade Organization: <http://www.wto.org/>
13. See especially, ‘Defending biodiversity from ‘alien species’ — role of trade rules examined’, available from: http://www.wto.org/english/news_e/news12_e/sps_18jul12_e.htm

Specialist journals: (these are mainly science-based)

1. Biological Control: <http://www.sciencedirect.com/science/journal/10499644>
2. Biological Invasions: <http://link.springer.com/journal/10530>
3. Conservation Biology: [http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1523-1739](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1523-1739)

4. Diversity and Distributions: A Journal of Biological Invasions and Biodiversity: <http://au.wiley.com/WileyCDA/WileyTitle/productCd-DDI.html>
5. International Journal of Applied Research on Biological Invasions in Aquatic Ecosystems: <http://www.aquaticinvasions.net/>
6. International Journal of Biodiversity and Conservation: <http://www.academicjournals.org/IJBC/>
7. Management of Biological Invasions: <http://www.reabic.net/journals/mbi/Default.aspx>

Journal Articles

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2. Anderson, T., 'Cartagena Protocol on Biosafety to the Convention on Biological Diversity: Trade liberalisation, the WTO and the environment.' (2002) 7 (1) Asia and Pacific Journal on Environmental Law 1.
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6. Charnovitz, S., 'The Supervision of Health and Biosafety Regulation by World Trade Rules' (1999-2000) 13 Tulane Environmental Law Journal 271.
7. Boisson de Charzournes, L. and M. Mbengue, 'GMOs and Trade: Issues at Stake in the EC Biotech Dispute' (2004) 13 (3) Review of European Community & International Environmental Law 289.
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