Using International Environmental Law to Enhance Biodiversity and Nature Conservation During Armed Conflict

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Abstract

Biodiversity and nature are severely impacted by armed conflict, particularly those fought in biodiversity-rich environments. Whether harm is caused directly by bullets and bombs, through the seepage of toxic chemicals into rivers and soils, the ground-churning tracks of tanks, or the 'conservation vacuum' the result is often the same — severe, possibly permanent, ecological change. International humanitarian law (IHL) has consistently come up short in delivering environmental protection on the battlefield. Can international environmental law (IEL) fare any better? The International Law Commission (ILC) and the International Committee of the Red Cross (ICRC) have both submitted major new guidelines in the last two years, following more than a decade of in-depth analysis of the IHL rules governing protection of the environment in relation to armed conflict. However, neither body was able to analyse the applicability of IEL obligations during armed conflict. Several authors have more recently entered this space, but none have so far undertaken a rule-by-rule analysis and spanning such a range of treaties. This article assesses the potential of the main biodiversity and nature conservation treaties to offer further environmental protection during armed conflict. Identifying complementary IEL obligations, particularly in relation to the conduct of hostilities, could be valuable to both mirror and reinforce IHL protections, and would ensure that IEL treaty bodies and third states have a basis upon which to promote conservation work with the parties to the conflict.

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1. Introduction

All too often it is said that 'nature is a silent victim of war', but is it more accurate to suggest that we largely 'ignore nature's cries in war'? Armed conflict is inherently and deeply destructive of the natural world, with biodiversity 'hotspots' being particularly vulnerable to the outbreak of violence.[1] The toxic legacy of abandoned weapons and vehicles, the crater-ridden landscape, and loss of forests, wildlife and habitats are all too apparent in Ukraine today,[2] as well as Vietnam, Syria, Yemen, Iraq and Colombia — to name just a few.[3] Concurrently, species extinctions are occurring at an unprecedented rate.[4] As climate change impacts exacerbate species extinction further, the vital role of nature conservation treaties is evident now more than ever.

International environmental law (IEL) creates a complex and comprehensive web of protection through obligations of active conservation management for biodiversity,[5] including habitats, species and ecosystems,[6] constituting a 'mutually reinforcing integrated regime' of nature protection.[7] Yet, while those treaty regimes boast near universal acceptance, they do not generally contemplate protection of those vital habitats and species during armed conflict. This situation needs to change. One way for that to happen is to analyse how far IEL obligations in nature conservation treaties can bolster existing protection offered by international humanitarian law (IHL) — which consistently comes up short.[8]

1 T. Hanson et al., 'Warfare in Biodiversity Hotspots', 23 *Conservation Biology* (2009) 578–587.

2 United Nations Environment Programme (UNEP), *The Environmental Impact of the Conflict in Ukraine: A Preliminary Review* (2022), available online at https://www.unep.org/resources/report/environmental-impact-conflict-ukraine-preliminary-review (visited 18 November 2022); E. Graham-Harrison, 'Toxins in Soil, Blasted Forests – Ukraine Counts Cost of Putin's ''ecocide''', *The Observer*, 27 August 2022, available online at https://www.theguardian.com/world/2022/aug/27/destroyed-nature-ukrainians-race-to-gather-evidence-of-putins-ecocide?CMP=share_btn_tw (visited 1 November 2022).

3 See, for example, the post-conflict assessments of UNEP, *Desk Study on the Environment in Iraq* (2003), available online at https://www.unep.org/resources/report/desk-study-environment-iraq (visited 28 July 2022) (hereafter 'UNEP, Iraq'); UNEP and National Environmental Protection Agency of the Islamic Republic of Afghanistan, *Afghanistan's Environment 2008* (2008), available online at http://postconflict.unep.ch/publications/afg_soe_E.pdf (visited 28 July 2022) (hereafter 'UNEP, Afghanistan').

4 J. Rockström et al., 'A Safe Operating Space for Humanity', 461 *Nature* (2009) 472–475; *Global Biodiversity Outlook* 5 (2020), available online at https://www.cbd.int/gbo5 (visited 28 July 2022), at 8.

5 Convention on Biological Diversity (adopted 5 June 1992, entered into force 29 December 1993) 1760 UNTS 69 ('CBD').

6 See, for example, the vast array of nature conservation treaties analysed in P. Sands et al., *Principles of International Environmental Law* (4th edn., Cambridge University Press, 2018), at 21–51 for the history of legal protections.

7 C. Redgwell, 'The World Heritage Convention and Other Conventions Relating to the Protection of the Natural Heritage', in F. Francioni (ed.) with F. Lenzerini, *The 1972 World Heritage Convention: A Commentary* (Oxford University Press, 2008) 377–397, at 394–397.

8 UNEP, *Protecting the Environment During Armed Conflict: An Inventory and Analysis of International Law* (2009); M. Bothe et al., 'International Law Protecting the Environment During Armed Conflict: Gaps and Opportunities', 92 *IRRC* (2010) 569 (hereafter 'Gaps and Opportunities').

Invaluably, the International Law Commission (ILC)[9] and the International Committee of the Red Cross (ICRC),[10] in their recent studies into conflict and environment both acknowledge the continued role of IEL during conflict. Both, however, also recognize that 'the interaction between the two bodies of law remains in need of clarification'.[11] So, while it is now clear that IEL *prima facie* continues to apply during armed conflict,[12] what is not so clear is how it applies in practice. Looking to the vast literature on the co-applicability of human rights and armed conflict,[13] more recent contributions have shifted to tackle co-applicability on a rule-by-rule basis.[14] Examination of the continued applicability of IEL in times of armed conflict is also certainly growing, with some notable approaches emerging.[15] These two bodies of literature share many similar features, yet what is lacking from the literature on the co-applicability of IEL and IHL is that same rule-by-rule examination that we see in the human rights and IHL literature.[16] This contribution, therefore, will fulfil that task. Using the two current theories of interpretation and co-application, particularly focusing on Van Steenberghe's recent coherency-based model,[17] this article demonstrates the added protective capacity of nature

9 *Draft Principles on the Protection of the Environment in Relation to Armed Conflict*, Report of the International Law Commission, Chapter V, A/77/10, 18 April–3 June and 4 July–5 August 2022, available online at https://documents-dds-ny.un.org/doc/UNDOC/GEN/G22/448/48/PDF/G2244848.pdf?OpenElement (visited 6 November 2022) ('ILC PERAC Principles'), at 90–186. Note the UN General Assembly adopted the Principles in GA Res. 77/104, 7 December 2022.

10 ICRC, *Guidelines on the Protection of the Natural Environment in Armed Conflict: Rules and Recommendations Relating to the Protection of the Natural Environment under International Humanitarian Law, with Commentary* (2020) (hereafter '2020 ICRC Guidelines').

11 *Ibid.*, at § 35; ILC PERAC Principles, *supra* note 9, at 150 § 4.

12 *Draft Articles on the Effects of Armed Conflicts on Treaties, with Commentaries* [2011] II:2 YBILC (hereafter 'ILC *Effects of Armed Conflicts on Treaties*').

13 See for example, G. Oberleitner, *Human Rights in Armed Conflict: Law, Practice, Policy* (Cambridge University Press, 2015); R. Kolb and G. Gaggioli (eds), *Research Handbook on Human Rights and Humanitarian Law* (Edward Elgar, 2013).

14 D. Murray, with consulting editors E. Wilmshurst, F. Hampson, C. Garraway, N. Lubell and D. Akande, *Practitioners' Guide to Human Rights Law in Armed Conflict* (Oxford University Press, 2016).

15 B. Sjöstedt, *The Role of Multilateral Environmental Agreements: A Reconciliatory Approach to Environmental Protection in Armed Conflict* (Hart, 2020) (hereafter 'Reconciliatory Approach'); A. Dienelt, *Armed Conflicts and the Environment: Complementing the Laws of Armed Conflict with Human Rights Law and International Environmental Law* (Springer, 2022); R. Van Steenberghe, 'The Interplay Between International Humanitarian Law and International Environmental Law: Towards a Comprehensive Framework for a Better Protection of the Environment in Armed Conflict', current volume, (hereafter 'Interplay'); Bothe et al., Gaps and Opportunities, *supra* note 8, at 581–583; S. Vöneky, 'A New Shield for the Environment: Peacetime Treaties as Legal Restraints of Wartime Damage', 9(1) *RECIEL* (2000) 20; E. Cusato, *The Ecology of War and Peace: Marginalising Slow and Structural Violence in International Law* (Cambridge University Press, 2021).

16 Highlighted as necessary in previous work by this author, K. Hulme, 'Biodiversity and Armed Conflict', in M. Bowman, P. Davies and E. Goodwin (eds), *Research Handbook on Biodiversity and Law* (Edward Elgar, 2016), 245–269, at 260–268 (hereafter 'Biodiversity').

17 R. Van Steenberghe, 'The Impacts of Human Rights Law on the Regulation of Armed Conflict: A Coherency-Based Approach to Dealing with Both the ''interpretation'' and ''application'' Processes', 104 *International Review of the Red Cross* (*IRRC*) (2022) 1345–1396, at 1355–1356 (hereafter 'Coherency-Based Approach').

conservation treaty regimes during armed conflict, to help address IHL gaps and enhance wartime nature protections.

In addition to the Biodiversity Convention ('CBD'),[18] this contribution will analyse obligations in the most important and widely endorsed global treaties, including on wetlands through the Convention on Wetlands of International Importance Especially as Waterfowl Habitat ('Ramsar Convention'),[19] on natural heritage (Convention for the Protection of the World Cultural and Natural Heritage ('WHC')),[20] migratory species (Convention on the Conservation of Migratory Species and of Wild Animals ('CMS')),[21] and trade protections for endangered species (Convention on International Trade in Endangered Species of Wild Fauna and Flora ('CITES')).[22] To exemplify approaches at the regional level, two main treaties will be analysed, namely, the Revised African Convention on the Conservation of Nature and Natural Resources ('African Nature Convention'),[23] and the Bern Convention on the Conservation of European Wildlife and Natural Habitats ('Bern Convention').[24]

After setting out the main challenges for protection of biodiversity and nature in warfare in Part 2, this contribution will analyse how IHL can be interpreted in light of IEL rules (Part 3), before turning to the co-applicability of the two regimes (Part 4). Final thoughts and conclusions will follow in Part 5 on the added value of both approaches for enhancing protection of the natural world during conflict.

2. Mapping the Main Challenges for the Protection of Biodiversity and Nature in Warfare

The first, and clearest, impact on nature is through the direct targeting of the environment as a military objective,[25] such as forests used by combatants as military bases or to provide cover or concealment.[26] Here, the forest itself

18 *Supra* note 5.

19 (Adopted 2 February 1971, entered into force 21 December 1975), as amended, available online at https://www.ramsar.org/sites/default/files/documents/library/current_convention_text_e.pdf (visited 28 July 2022).

20 (Adopted 16 November 1972, entered into force 17 December 1975), 11 *ILM* (1972) 1358.

21 (Adopted 23 June 1979, entered into force 1 November 1983), as amended, 19 *ILM* (1980) 15.

22 (Adopted 3 March 1973, entered into force 1 July 1975), 993 UNTS (1973) 243.

23 (Adopted 11 July 2016, entered into force 23 July 2016), available online at https://au.int/en/treaties/african-convention-conservation-nature-and-natural-resources (visited 28 July 2022).

24 (Adopted 19 September 1979, entered into force 1 June 1982), UKTS (1982) 56, Cmnd. 8738.

25 Art. 52(2) Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (adopted 8 June 1977, entered into force 7 December 1978) 1125 UNTS (1979) 3–608 ('Protocol I'), Protocol I governs warfare in international armed conflicts. For non-international armed conflicts see also Protocol (II) Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of Non-International Armed Conflicts (adopted 8 June 1977, entered into force 7 December 1978) 1125 UNTS (1977) 609–699 ('Protocol II').

26 A.H. Westing, *Ecological Consequences of the Second Indochina War* (Almqvist and Wiskell International, 1976).

becomes the military objective, or at least that part of it that provides the cover.[27] Even when it is not the subject of direct attack, nature is still harmed through collateral damage.[28] Air, soil and water are routinely contaminated with dangerous and toxic chemicals leaked from bombed industrial and energy facilities, causing direct mortality of species and destruction of habitats. For example, oil pollution choked the whole 225 kilometres of the Lebanese coastline in 2006 following the bombing of the Lebanese Al Jiyeh power plant and fuel storage towers.[29] Thousands of marine species and birds were consequently killed and harmed, including those within the Palm Islands Nature Reserve.[30] Higher toxicity or bioaccumulative capacity substances present at a targeted site will clearly increase the scale and depth of the impact on nature, as will the closer proximity of the site to fragile ecosystems or faster pathways of transference, such as rivers. Some of these affected environments may also be biodiversity hotspots or protected areas, national parks, wetlands or forests, where the risk factor is undoubtedly much higher. Here, the choice of weaponry will be key to minimizing environmental harm. A poor choice was made by NATO in using cluster bombs in its attack of communications towers inside Serbia's protected areas,[31] during the 1999 Kosovo Conflict. The attack caused massive cratering and damage to rare, endangered orchid species over approximately 30 hectares.[32] Possibly the most harrowing attacks in recent memory, however, were the Russian attacks at Chernobyl and the Zaporizhia nuclear power station.[33]

Secondly, clearly all kinetic weapons impact nature on some scale, particularly large ordinance weapons, weapons with chemically-toxic effects, and weapons that depend on scale for their effectiveness, such as cluster bombs and landmines.[34] Weapons that utilize or release a harmful toxic component present a more obvious, inter-generational biological or ecosystem-level threat through impacts at the genetic level or in the food web.[35] Risks to species survival, however, are also triggered by the inadvertent side-effects of weapons

27 Note the use of the phrase 'part of the natural environment' by the ICRC in its Rule 43A, J. Henckaerts and L. Doswald-Beck, *Customary Humanitarian International Law, Volume I: Rules* (Cambridge University Press, 2005) (hereafter *'Customary Law Study'*); and Rule 5, 2020 ICRC Guidelines.

28 Art. 51(5)(b) Protocol I.

29 UNEP, *Lebanon: Post-Conflict Environmental Assessment* (2007), at 132–143.

30 *Ibid.*

31 UNEP and United Nations Centre for Human Settlements (Habitats), *The Kosovo Conflict: Consequences For the Environment and Human Settlements* (1999), at 66 (hereafter 'UNEP, Kosovo Report').

32 *Ibid.*, at 64.

33 'Russian Forces Seize Chernobyl Nuclear Power Plant', *The Guardian*, 25 February 2022, available online at https://www.bbc.co.uk/news/world-us-canada-60514228 (visited 28 July 2022); 'Ukraine Nuclear Plant: Russia in Control after Shelling', *The Guardian*, 4 March 2022, available online at https://www.bbc.co.uk/news/world-europe-60613438 (visited 28 July 2022).

34 Jurgen Brauer, *War and Nature: The Environmental Consequences of War in a Globalized World* (Altamira Press, 2011).

35 D. Vidosavljević et al., 'Soil Contamination as a Possible Long-Term Consequence of War in Croatia', 63 *Acta Agriculturae Scandinavica, Section B - Soil & Plant Science* (2013) 322.

use, such as the fragmentation of forest habitat, the replacement of rich-diversity flora with diversity-poor grasses,[36] the destruction of 'biodiversity corridors',[37] and the disturbance to breeding by aircraft overflight and weapons noise. Forces of nature themselves have also, on occasion, been harnessed to inflict harm in warfare, such as the deliberate breaching of dam walls to cause flooding,[38] or the deliberate rerouting of rivers. Such actions are particularly dangerous for biodiversity when carried out in industrial areas where flood waters may consequently contain heavy metal and other toxic contaminants. Even low-tech weapons in new hands, such as the proliferation of, and ease of access to, guns and machetes among members of armed groups, leads to greater threats to endangered species, such as the devastation caused to hippos, elephants, buffalo and mountain gorillas in the Virungas forests in the Democratic Republic of the Congo ('DRC')[39] and the Asian elephant and Siamese crocodile of Cambodia.[40]

The 'environmental footprint' of conflict constitutes the third impact pathway for biodiversity harm. Conflicts entail mobilization of people and resources on a massive scale. Yet, such military manoeuvres generally do not respect nature reserves. Even if a nature reserve is not subjected to direct bombardment, it may well be in the path of advancing or defending troops or supply lines, or provide the location for a military base or ammunition store. Heavy vehicles and troop movements both tear up soil and compact it, leaving little room for established flora and fauna to survive.[41]

The fourth causation pathway is the general governance vacuum that accompanies conflict. States in conflict often struggle to cope with new and dangerous conflict debris, including a sudden massive increase in scale and type of waste generated by militaries and warfare. Consequently, abandoned tanks and toxic or hazardous ordnance are left to rot into the environment. A desperate population can also threaten nature conservation during conflict, as, quite understandably, people turn to natural resources for survival. Some 300 kilometres squared of forest were damaged in meeting the survival needs of 850,000 refugees fleeing the 1994 genocide and civil war in Rwanda.[42] And

36 A.H. Westing and E.W. Pfeiffer, 'The Cratering of Indochina', 226 *Scientific American* (1972) 59.

37 L. Gibson et al., 'Near-Complete Extinction of Native Small Mammal Fauna 25 Years After Forest Fragmentation', 341 *Science* (2013) 1508.

38 T. von Lossow, 'Water as Weapon: IS on the Euphrates and Tigris: The Systematic Instrumentalisation of Water Entails Conflicting IS Objectives', *SWP Comments* 3, January 2016, available online at https://www.swp-berlin.org/fileadmin/contents/products/comments/2016C03_lsw.pdf (visited 28 July 2022), at 2–4.

39 A. Plumptre, 'Lessons Learned from On-the-Ground Conservation in Rwanda and the Democratic Republic of the Congo', in S.V. Price (ed.), *War and Tropical Forests: Conservation in Areas of Armed Conflict* (Food Products Press, 2003), at 77–82.

40 C. Loucks et al., 'Wildlife Decline in Cambodia, 1953–2005: Exploring the Legacy of Armed Conflict', 2 *Conservation Letters* (2009) 82.

41 Note the lasting reminders of tank tracks in the Libyan Desert from World War II, see P. Elmer-Dewitt, 'A Man-Made Hell on Earth', *Time Magazine*, 18 March 1992, 22, at 23; F. Pearce, 'Devastation in the Desert', *New Scientist*, 1 April 1995, 40.

42 J.A. McNeely, 'Conserving Forest Biodiversity in Times of Violent Conflict', 37 *Oryx* (2003) 142, at 146; J. Kalpers, *Volcanoes Under Siege: Impact of a Decade of Armed Conflict in the Virungas*,

war-torn Afghanistan, a state listed towards the bottom of the World Development Index for over thirty years,[43] admitted that in their search for food its population had 'no option but to exploit biodiversity unsustainably'.[44] Others, however, might turn to the environment out of greed. For example, many conflicts are fuelled or funded by the unsustainable and methodologically destructive looting of natural resources, such as gold, diamonds, timber and bananas.[45] Often there is also a breakdown or vacuum in conservation management with park staff killed or forced to flee, and the consequent discontinuance or even reversal of their important conservation work.[46] Looting, killing and trafficking of endangered species can also cause serious disturbances within the food web, making local extinctions of fragile species possible.

3. IHL Interpreted in Light of IEL Protecting Biodiversity

Environmental concerns have gradually, but consistently, influenced and inspired IHL norms and interpretations since the adoption of the 1977 first Protocol to the Geneva Convention ('Protocol I').[47] With the Protocol proving to be environmentally-inadequate,[48] and with no new, updated IHL treaty forthcoming, including one specifically on the environment,[49] the last fifty years have witnessed many efforts to interpret or influence a greener path for existing IHL obligations.[50] Principal among these was the fundamental recognition in the 1980s and 1990s that the environment is *prima facie* a civilian object for application of the principles of distinction, proportionality and precautions.[51] Yet, all too often, we still speak of impacts in relation to

Biodiversity Support Program (2001), at 14–17; A. Lanjouw, 'Building Partnerships in the Face of Political and Armed Conflict' in Price, *supra* note 39, 93–114, at 97.

43 United Nations Development Programme, available online at http://hdr.undp.org/en/countries (visited 28 July 2022).

44 Islamic Republic of Afghanistan, 'Afghanistan's Fourth National Report to the Convention on Biological Diversity', 30 March 2009, available online at http://www.cbd.int/doc/world/af/af-nr-04-en.pdf (visited 28 July 2022), at 3.

45 D. Dam-de Jong, *International Law and Governance of Natural Resources in Conflict and Post-Conflict Situations* (Cambridge University Press, 2015).

46 B. Sjöstedt, 'The Role of Multilateral Environmental Agreements in Armed Conflict: ''Green-Keeping'' in Virunga Park, Applying the UNESCO World Heritage Convention in the Armed Conflict of the Democratic Republic of the Congo', 82 *Nordic Journal of International Law* (2013) 129, at 133–134; S.A.S. Omar et al., 'The Gulf War Impact on the Terrestrial Environment of Kuwait: An Overview', in J.E. Austin and C.E. Bruch (eds), *The Environmental Consequences of War: Legal, Economic, and Scientific Perspectives* (Cambridge University Press, 2000), at 329.

47 *Supra* note 25.

48 Note Arts 35(3) and 55 Protocol I.

49 G. Plant (ed.), *Environmental Protection and the Law of War: A Fifth Geneva Convention on the Protection of the Environment in Time of Armed Conflict?* (Belhaven Press, 1992).

50 2020 ICRC Guidelines, *supra* note 10.

51 M. Bothe, 'The Protection of the Environment in Times of Armed Conflict', 34 *German Yearbook of International Law* ('*GYIL*') (1991) 54, at 55.

the overarching concept of the 'environment',[52] rather than to the concepts and language of 'biodiversity' and 'nature'. Indeed, in the most recent incidence of state practice, comments to the ILC for its Principles on Protection of the Environment in relation to Armed Conflict (PERAC) were rather mixed, particularly in relation to any impact on IHL.[53]

Could we gain more nature protection in conflict, therefore, through a rigorous interpretation of the existing rules and language of IHL in light of the approach found in nature conservation and biodiversity treaties? Courts have clearly interpreted undefined IHL concepts through human rights laws, often seeing this as a necessity, suggesting that in some areas the two sets of laws are 'fused'.[54] While human rights and IHL have a recognized close connection,[55] the International Court of Justice has also, of course, in its 1996 Nuclear Weapons Advisory Opinion, held that environmental factors also need to be taken into account in implementing the rules and principles of the laws of armed conflict.[56] Similarly, the ILC has used IEL to interpret shared concepts found in IHL, such as the concept of the 'environment' itself.[57] The ILC[58] and ICRC have also relied,[59] as do others, on the treaty interpretation approach for 'systemic integration', which draws upon other relevant rules of international law in the interpretation exercise.[60] The approach to

52 M.N. Schmitt, 'Green War: An Assessment of the Environmental Law of International Armed Conflict', 22 *Yale Journal of International Law* (1997) 1; Hulme, Biodiversity, *supra* note 16.

53 See comments and discussion in *Third Report on Protection of the Environment in Relation to Armed Conflicts, by Marja Lehto, Special Rapporteur*, A/CN.4/750, 16 March 2022 (hereafter '*ILC Third Report*'); CEOBS, State positions on the draft principles on the Protection of the environment in relation to armed conflicts after first reading, March 2022, available online at https://ceobs.org/state-positions-on-the-ilcs-draft-perac-principles-after-first-reading/ (visited 1 November 2022).

54 ICTY, Judgment, *The Prosecutor v. Dragoljub Kunarac et al.* (IT-96-23-T, IT-96-23/1-T), Trial Chamber, 22 February 2001, § 467; see also Van Steenberghe, Coherency-Based Approach, *supra* note 17, at 1355–1356.

55 Both Article 72 Protocol I and the Preamble of Protocol II refer explicitly to the continuation of human rights obligations in armed conflict, *supra* note 25; *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory*, Advisory Opinion, 9 July 2004, ICJ Reports (2004) 136.

56 *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, 8 July 1996, § 33.

57 Note the comments and discussion in the ILC Third Report, *supra* note 53, at 47–48.

58 Note the concept of 'systemic integration' and Art. 31(3) of the Vienna Convention on the Law of Treaties ('VCLT') (adopted 23 May 1969, entered into force 27 January 1980) 1155 UNTS 331; ILC, *Final Report of the Study Group on Fragmentation of International Law: Difficulties Arising from the Diversification and Expansion of International Law*, U.N. Doc. A/CN.4/L.682, 13 April 2006, 420 (prepared by M. Koskenniemi).

59 The ICRC has relied on systemic integration in its latest commentaries on the Geneva Conventions, see ICRC, *Commentary on the Third Geneva Convention: Convention (III) relative to the Treatment of Prisoners of War*, 2nd edn. (2020), available online at https://ihl-databases.icrc.org/applic/ihl/ihl.nsf/Comment.xsp?action=openDocument&documentId=1B9A4ABF10E7EAD2C1258585004E7F19 § 92; Van Steenberghe, Coherency-Based Approach, *supra* note 17, at 57.

60 Art. 31(3)(c) VCLT, *supra* note 58; See V.P. Tzevelekos, 'The Use of Article 31(3)(c) of the VCLT in the Case Law of the ECtHR: An Effective Anti-fragmentation Tool or a Selective Loophole for the Reinforcement of Human Rights Teleology? Between Evolution and Systemic Integration, 31 *Michigan Journal of International Law* (2010) 621, at 624; and U. Linderfalk, 'Who are ''the

interpretation, therefore, tends to formulate around specific concepts or rules found in IHL, which necessitate recourse to environmental law as an interpretive tool.[61] Yet, admittedly, the treaty interpretation approach is not without its limitations and resulting complexities.[62] Further approaches have focused more on using environmental law to inspire an IHL concept, such as the ICRC inspiration of using the precautionary principle[63] found in environmental law to help interpret the IHL rule on precautions in attack and defence.[64] This Part, therefore, will apply a treaty interpretation approach for specific rules of IHL to see how far such an approach can take us.

A. The 'Environment'

Although states included two provisions in the 1977 Protocol I on protection of the 'natural environment' for international armed conflict, they omitted any definition from the treaty text. By necessity, IHL has borrowed the general understanding of the term from environmental law.[65] One confusion has arisen, however, in that negotiating states favoured the rather outdated 1970s division of the 'natural environment' from the 'human environment' — arguing that the latter should not receive protection.[66] The result was the vague proposition that IHL protection was not afforded to man-made environmental surroundings, but this limiting language appears to have finally been excised from the discourse through the ILC's PERAC Principles — which now refer only to the 'environment'.[67] Nevertheless, the Principles still fail to include a definition.[68] With the less limiting terminology adopted, therefore, the PERAC Principles are aligned with modern conceptions[69] of ecological conservation approaches recognizing that biodiversity and nature should be protected wherever it is found, *in situ* or *ex situ*, and whether domesticated or wild.[70] Yet, a more nuanced definition could be drawn from the CBD,[71] to

Parties''? Article 31, Paragraph 3(c) of the 1969 Vienna Convention and the ''Principle of Systemic Integration'' Revisited', 55 *Netherlands International Law Review* (2008) 343.

61 Arts 31 and 32 VCLT, *supra* note 58.

62 Sjöstedt, Reconciliatory Approach, *supra* note 15, at 209–217; Van Steenberghe, Coherency-Based Approach, *supra* note 17, at 1360–1365.

63 Principle 15 Declaration of the United Nations Conference on Environment and Development, (Rio), 31 *ILM* (1992) 874.

64 Rule 44 ICRC Customary Law Study, *supra* note 27, where the authors incorporate the precautionary principle found in environmental law into IHL.

65 Note the approach by the ILC, *Second Report on protection of the environment in relation to armed conflicts by Marja Lehto, Special Rapporteur*, A/CN.4/728, 27 March 2019, § 196.

66 See K. Hulme, *War Torn Environment: Interpreting the Legal Threshold* (Martinus Nijhoff, 2005), at 17–19.

67 ILC Third Report, *supra* note 53, at 47–48.

68 See recommendation by the Special Rapporteur, *ibid.*, at 103–105.

69 See state and other comments, *ibid.*

70 Arts 8 and 9 CBD.

71 And other treaties, such as Art. 5 African Nature Convention; Preamble para. 4 Bern Convention.

ensure recognition of the importance of the maintenance of biodiversity at all three levels of 'within species, between species and of ecosystems'.[72] This would ensure that states are clear on 'what' is to be protected.

Moving to the question of 'why' we protect the environment during conflict, it also seems to be widely accepted today that IHL's Martens Clause[73] includes concern for the environment through the 'dictates of the public conscience'.[74] Revealed in Germany's statements to the ILC, this phrase is understood, by some states at least, as recognizing the 'need to protect the natural environment in and of itself'.[75] Germany's views appear to echo the environment's intrinsic value found most prominently in biodiversity and nature conservation treaties,[76] which often reference their 'irreplaceable'[77] and irreparable character,[78] and their 'outstanding universal value'[79] that 'is so exceptional as to transcend national boundaries'.[80] Despite such promising recognition by Germany, references to the value of nature and biodiversity are, however, disappointingly omitted from the ILC's PERAC Principles. Indeed, only one reference to the term 'biodiversity' itself is found throughout the Principles' text.[81] That reference was made only in a last-minute addition through a Preambular paragraph recognizing armed conflict's potential to exacerbate global environmental challenges such as 'biodiversity loss'.[82] Furthermore, it is quite stark that in such modern deliberations, no single reference is made to the concepts of 'nature', 'species', 'wildlife' or 'habitats' in the Principles themselves. This is even more disappointing as recent developments in other areas

72 Art. 2 CBD.

73 Preamble of the Hague Convention (II) with Respect to the Laws and Customs of War on Land and its Annex: Regulations Concerning the Laws and Customs of War on Land, 29 July 1899 (adopted 29 July 1899, entered into force 4 September 1900) 26 *Martens Nouveau Recueil* (Ser. 2) 949.

74 ICRC, 2020 Guidelines, *supra* note 10, at 80 (Rule 16); ILC, PERAC Principles, *supra* note 9, at Principle 12; see state comments/discussion at ILC Third Report, *supra* note 53, at 48–50; A.L. Bunker, 'Protection of the Environment During Armed Conflict: One Gulf, Two Wars', 13 *Review of European, Comparative & International Environmental Law ('RECIEL')* (2004) 201, at 204.

75 Germany, Written Statement on Draft Principle 12, ILC, *Comments and Observations Received from Governments, International Organizations and Others*, UN Doc. A/CN.4/749, 17 January 2022, at 65 (hereafter 'Comments and Observations').

76 Preamble, para. 4, Bern Convention; Preamble para. 1, CBD; 'Tackling illicit trafficking in wildlife', GA Res. 69/314, A/RES/69/314, 19 August 2015.

77 See for example Preamble, para. 3 CMS; Preamble, para. 1 CITES; Preamble, para. 1 African Nature Convention; Preamble para. 4 Bern Convention.

78 Preamble para. 3 Ramsar Convention.

79 Preamble para. 8 and Art. 2 'definition' WHC.

80 United Nations Educational, Scientific and Cultural Organization (UNESCO), *Operational Guidelines for the Implementation of the World Heritage Convention*, WHC.21/01, 31 July 2021 ('UNESCO, WHC Operational Guidelines'), at § 49.

81 International Union for Nature Conservation (IUCN), *Comments to the ILC by the World Commission on Environmental Law*, available online at https://legal.un.org/ilc/sessions/73/pdfs/english/poe_iucn.pdf (visited 3 November 2022). To note, the Commentary does reference these concepts.

82 ILC PERAC Principles, *supra* note 9.

of law have moved on considerably to include global recognition of a substantive right to a healthy environment,[83] acceptance of 'rights of nature' in many jurisdictions[84] and a growing movement for recognizing the sentience of species.[85]

B. Environment Specific Rules on the Conduct of Hostilities

The main IHL prohibitions specific to environmental damage are those contained in Articles 35(3) and 55 of Additional Protocol I, such that 'widespread, long-term and severe damage' to the natural environment is prohibited. Both the ILC PERAC Principles[86] and the 2020 ICRC Guidelines[87] repeat the cumulative 'widespread, long-term and severe' (WLS) formulation.[88] While left undefined in the treaty, the non-official definitions evident in the *travaux preparatoires* have subsequently proven impossible to change.[89] So we are forced to accept that 'long-term' refers to environmental impacts lasting for 'decades, twenty or thirty years as a minimum',[90] 'widespread' to 'several hundred square kilometres', and 'severe' to 'a *major* interference with human life or natural resources, which *considerably exceeds* the battlefield damage to be regularly expected in a war'.[91] There is no doubt that certain states see those definitions as providing a very low ceiling for wartime environmental damage, preferring a proportionality assessment instead as it allows the damage threshold to shift (i.e. increase) with the value of the target. Working with those early definitions, however, we can take guidance from the biodiversity and nature conservation treaties to identify particular types of harm that risk breaching the threshold. Most obviously, weapons or conflict debris containing

83 GA. Res. 76/300, The human right to a clean, healthy and sustainable environment, 28 July 2022, A/RES/76/300; *Comunidades Indígenas Miembros de la Asociación Lhaka Honhat (Nuestra Tierra) v. Argentina*, Inter-American Court of Human Rights, 6 February 2020, § 203; D.R. Boyd, *The Environmental Rights Revolution: A Global Study of Constitutions, Human Rights and the Environment* (UBC Press, 2012).

84 For a detailed overview of the field, see Y. Epstein and H. Schoukens, 'A Positivist Approach to Rights of Nature in the European Union', 12 *Journal of Human Rights and the Environment* (2021) 205.

85 Report of the Secretary-General, *Harmony with Nature*, UN Doc. A/75/266, 28 July 2020, §§ 41–45.

86 Principle 13(2)(b), *supra* note 9.

87 Rule 2, 2020 ICRC Guidelines, *supra* note 10.

88 The ICRC opined that the rule was customary in 2005 in international armed conflicts and arguably so in non-international armed conflicts, see Rule 45 Customary Law Study, *supra* note 27.

89 Note recourse to the travaux on account of the provision's ambiguity, Art. 32, VCLT, *supra* note 58.

90 *Official Records of the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflicts*, Geneva (1974–1977), CDDH/215/Rev.1, § 27.

91 Emphasis added. Manual of the German Armed Forces, cited in W. Heintschel von Heinegg and M. Donner, 'New Developments in the Protection of the Natural Environment in Naval Armed Conflicts', 37 *GYIL* (1994) 281, at 286. Other proposals suggested destruction or disturbance of the natural or human environment 'in some large degree', Official Records, *ibid.*, § 23.

toxic and environmentally persistent chemicals can cause ecosystem-level damage lasting decades or more by altering its natural conditions — thus endangering biodiversity. Many toxic chemicals used in weaponry, such as lead, mercury and other heavy metals, bioaccumulate in the food web and cause cancers and species mutations, impacting biodiversity as well as ecological health and stability.[92] On a different note, fragmentation of habitats and species populations,[93] harm to breeding grounds, nesting sites and flyways for migratory species, and damage to protected areas, for example, can all cause biodiversity loss and species extinctions and so should be reflected as legal indicators for typology of harm, with the potential to breach the WLS scale.[94] Forest loss, for example, constitutes a 'major global threat to biodiversity and the supply of ecosystem services such as habitat provisioning, clean water, soil conservation and protection, and carbon sequestration'.[95]

In addition to contributing to interpret the threshold terms, nature conservation treaties offer invaluable interpretations of the due diligence obligation[96] included in Article 55(1) of Additional Protocol I, expressed as a mandatory obligation of 'care' to be 'taken in warfare to protect the natural environment against widespread, long-term and severe damage'.[97] The concept of environmental care or regard is reflected in the IEL principles of prevention,[98] conservation and inter-generational equity.[99] More specifically, biodiversity and nature conservation treaties typically interpret such obligations as including duties of education, planning and management of species and their habitats.[100] Interpreting IHL through IEL, therefore, could encompass training obligations for the armed forces to respect nature, including the values inherent in nature conservation, and in the basic concepts of endangered and vulnerable species and habitats, notably to include breeding grounds, including for migratory species, and ecological corridors.[101] Such training could also separately be interpreted through rules requiring states to train their armed forces, including

92 For an indication of types of harm see Brauer, *supra* note 34, at 22–26.

93 Fragmented populations, notably, have a significantly higher risk of extinction than connected populations, see A. Trouwbosrt, 'Countering Fragmentation of Habitats under International Wildlife Regimes', in Bowman et al., *Research Handbook*, *supra* note 16, 219–244, at 223.

94 Note biodiversity harms in Global Biodiversity Outlook 5, *supra* note 4.

95 J. Bélanger and D. Pilling (eds), Food and Agriculture Organisation of the United Nations (FAO), *The State of the World's Biodiversity for Food and Agriculture 2019*, at 4; FAO, *The State of the World's Forests – 2022, Forest Pathways for Green Recovery and Building Inclusive, Resilient and Sustainable Economies*.

96 K. Hulme, 'Taking Care to Protect the Environment against Damage: A Meaningless Obligation?' 92 *IRRC* (2010) 675 (hereafter 'Taking Care').

97 The ILC has included the provision as Principle 13(3) in its PERAC Principles, *supra* note 9, and the ICRC in its 2020 Guidelines as an obligation of 'due regard' at Rule 1, *supra* note 10. Both of these instruments extend this obligation to non-international armed conflicts. See also Hulme, Taking Care, *ibid.*

98 Principle 7 Declaration of the United Nations Conference on the Human Environment, Stockholm, *Yearbook of the United Nations* (1972) 319 ('Stockholm Declaration').

99 Principle 2 Stockholm Declaration, *ibid.*; Art. 4 WHC.

100 E.g. Arts 6, 12-14 CBD; Arts 3 and 4 Bern Convention; Art. 5 WHC.

101 Art. 3 Bern Convention; Art. 5(e) WHC; Art. XX African Nature Convention.

during peacetime.[102] Furthermore, the planning dimension requires states and armed groups to estimate the impacts of attacks, thus the 'environmental impact assessment' (EIA) obligations reflected in Article 14(1)(a) of the CBD could provide a useful starting point — suitably adjusted to a situation of warfare of course.[103]

C. Non-environment Specific Rules on the Conduct of Hostilities

Since the environment is recognized as a *prima facie* civilian object, key protections are without doubt afforded the environment by the rules of distinction, proportionality and precautions.[104] As these rules do not contain interpretive tools specific to application for the environment, there is also a strong, necessity-based argument for using environmental law approaches to help interpret these IHL rules. Again, particularly valuable is the scientific knowledge displayed in IEL about the causes and pathways of environmental damage, and scientific knowledge on scales of harm.

In relation to the core IHL principles, the main ecological threats are undoubtedly caused in the form of 'collateral damage', such as the release of contaminants into soil, air and water from a bombed industrial facility. Similar to the need to encompass the full range of biodiversity impacts in the environment-specific provisions of IHL, the full spectrum of 'reverberating' ecological impacts needs to be calculated in the proportionality rule.[105] Contamination of the air or a river is an obvious pathway with immediate impacts in bird and fish mortality, but second or third tier effects on the local food web, habitat fragility and migration routes also need to form part of the assessment. This obligation could clearly not require the military to achieve an insurmountable level of ecological knowledge, but it does mean that it is reasonable[106] to require a situational level of awareness[107] relative to their role and level of responsibility of these issues and ensure they have access to sufficient environmental information for the proportionality assessment at the time the decision needs to be taken. On a practical level, it may mean that targeting decisions involving areas containing a major watercourse or fragile

102 Art. 83 Protocol I; Art. 19 Protocol II; Art. 144 Geneva Convention (IV) Relative to the Protection of Civilian Persons in Time of War of August 12, 1949 (adopted 12 August 1949, entered into force 21 October 1950) 75 UNTS (1950) 287–417.

103 E.g. C. Kelly, 'Guidelines for Rapid Environmental Impact Assessment In Disasters', Version 4.4, April 2005, available online at https://www.preventionweb.net/files/8267_bhrcgen30apr1.pdf (visited 28 July 2022).

104 Respectively Arts 48/52, 51(5)(b) and 57/58 Protocol I. See M. Schmitt, 'War and the Environment: Fault Lines in the Prescriptive Landscape', in Austin and Bruch, *supra* note 46, 87–136; Bothe et al., Gaps and Opportunities, *supra* note 8.

105 Schmitt, Green War, *supra* note 52, at 59–61.

106 For the notion of the reasonableness of precautions see M. Schmitt, 'The Law of Targeting', in E. Wilmshurst and S. Breau (eds), *Perspectives on the ICRC Study on Customary International Humanitarian Law* (Cambridge University Press, 2007) 131–168, at 163–164.

107 E.g. United Kingdom Ministry of Defence, *Manual of the Law of Armed Conflict* (Oxford University Press, 2004), § 5.32.9; Schmitt, *ibid.*

habitat, for example, need approval from a high strategic level within the military.

However, there is still much that we do not know about species interaction and the impact of multiple synergistic effects. Thus, following the ICRC's interpretation[108] of the rules on precautions, articulated in Articles 57 and 58 of Additional Protocol I,[109] a lack of scientific certainty of damage should not bar or delay environmental protection measures.[110] This is, of course, reflective of IEL's precautionary principle, which forms a core principle in the CBD,[111] is inherent in both the Ramsar and WHC listing approaches that refer to likely dangers,[112] and remains particularly relevant today as the world stands at the precipice of a dual threat of climate crisis and severe biodiversity decline.[113] Emphasizing the importance of biodiversity as 'maintaining life sustaining systems of the biosphere',[114] in which we also live, it is more important than ever, therefore, to ensure that the military does not delay precautions that might avert serious and irreparable harm to nature. Very practical actions can be taken, for example, to remove, dilute, encase, or mark dangerous chemicals in industrial facilities. During the 1999 Kosovo Conflict, for example, workers at the Pancevo fertilizer plant increased production at the plant, with the intention of reducing the volume of ammonia stored at the site.[115] Unfortunately, they also dumped a further 250 tonnes of ammonia into the Danube.[116]

D. Protected Areas

While the 1972 World Heritage Convention covers both cultural and natural heritage,[117] IHL has tended only to focus on the former. Several attempts have been made to protect cultural heritage, culminating in the creation of a specific regime in 1954, namely the Convention for the Protection of Cultural Property in the Event of Armed Conflict.[118] With the focus of the protection being for religious buildings, works of art and historic monuments,[119] to receive immunity from 'any act of hostility'[120] 'natural' sites must demonstrate 'great

108 *Ibid.*, Rule 44.
109 Applicable in both international and non-international armed conflict, and customary law, see Customary Law Study, *supra* note 27, Rules 15–24.
110 Principle 15 Rio Declaration, *supra* note 63; Sands, *supra* note 6, at 229–240.
111 Preamble, para. 9 CBD; see also Art. IV African Nature Convention.
112 Art. 11(4) WHC; Art. 3(2) Ramsar Convention.
113 Global Biodiversity Outlook 5, *supra* note 4.
114 Preamble para. 2 CBD.
115 UNEP, Kosovo Report, *supra* note 31, at 34.
116 *Ibid.*
117 For the definition see Art. 2 WHC.
118 Convention for the Protection of Cultural Property in the Event of Armed Conflict (adopted 14 May 1954, entered into force 7 August 1956) 249 UNTS (1954) 240-288 ('1954 Cultural Property Convention').
119 Arts 27 and 56 1899 Hague Regulations, *supra* note 73.
120 Art. 4(1) 1954 Cultural Property Convention, *supra* note 118.

importance to the cultural heritage of every people'.[121] This criterion is arguably achieved if sites have passed the rigorous Listing process of the 1972 World Heritage Convention,[122] particularly as the treaty designates such sites as part of the 'world heritage of mankind as a whole'.[123] However, this would arguably constitute a very expansive interpretation, undoubtedly stretching the 1954 Convention's remit further than most states appear to have accepted to date. The alternative formulation of 'cultural or spiritual heritage of peoples', however, found in Article 53 of Additional Protocol I and Article 16 of Additional Protocol II, should cover natural areas that are sacred to indigenous people — but probably do not extend much further.

Moving to nature reserves, valuable protections may be provided through a greening of existing IHL provisions on protected zones. Often referred to as 'humanitarian corridors' for civilians and wounded combatants, designated demilitarized areas benefit from being declared off-limits to all military activities, including by the defending party.[124] Being off limits would be particularly important to help maintain conservation activities in protected areas, especially habitats and biodiversity rich or fragile ecosystems, as it would help remove the threat from the destructive effects of the 'footprint' of conflict. Such an approach would be similar to that envisaged by the soft law San Remo Manual on International Law Applicable to Armed Conflicts at Sea (1994),[125] Article 11 of which specifically recognizes the value of biodiversity by encouraging parties 'to agree that no hostile actions will be conducted in marine areas containing: (a) rare or fragile ecosystems; or (b) the habitat of depleted, threatened or endangered species or other forms of marine life'. Unfortunately, however, there seems to be little evidence to date that land-based demilitarized zones have been designated to provide for environmental protection. The ICRC in its 2020 Guidelines could do little more than reiterate a similar recommendation for parties to agree on the creation of environmentally protected zones in conflict.[126] Consequently, when discussed in the ILC, it was viewed as essential by some states that the new PERAC Principles contain provision for area-based environmental protection,[127] the kind of which is very familiar in the nature conservation treaties.

121 Arts 1(a) and 4(1), *ibid.*

122 UNESCO, WHC Operational Guidelines, *supra* note 80, at §§ 77(vii)–(x), and 78–95.

123 Preambular para.7 WHC.

124 E.g. Art. 60 Protocol I and for neutralized zones see Art. 15 Geneva Convention IV, *supra* note 102. Such designations are available in both international and non-international armed conflicts, the attack of which constitutes a grave breach, see Art. 85(3)(d) Protocol I, and Art. 8(2)(b)(v) Rome Statute of the International Criminal Court (adopted 17 July 1998, entered into force 1 July 2002) 37 *ILM* (1998) 999; Rules 35–37, Customary Law Study, *supra* note 27.

125 L. Doswald-Beck (ed.), *San Remo Manual on International Law Applicable to Armed Conflicts at Sea*, International Institute of Humanitarian Law (Grotius Publications Cambridge University Press, 1995).

126 Recommendation 17 ICRC 2020 Guidelines, *supra* note 10.

127 See the discussion on comments by Cyprus and the Nordic countries, ILC Third Report, *supra* note 53, at § 46 in relation to Draft Principle 4.

The ILC crafted two Principles on environmental zones, one applicable before conflict and one during conflict. Accordingly, Principle 4 encourages states to designate environmentally protected areas in peacetime, and Principle 18 continues that protection during conflict. State opinion was divided, albeit many clearly saw these provisions as progressive development of international law.[128] Principle 18 refers specifically to areas of environmental importance which have been 'designated by agreement as a protected zone' and affords protection 'against any attack, except insofar as it contains a military objective'.[129] The notion of 'environmental importance' is left deliberately flexible, having deleted the threshold requiring 'major' importance, with the main discussion point being the issue of the designation of such zones.[130] Clearly, numerous IEL treaties require states to designate and delimit protected areas in their territory. However, the Special Rapporteur clarified that there needs to be both 'an express agreement' on the designation, and that that agreement must refer specifically to 'protection from attack during an armed conflict'.[131] This approach, therefore, appears to leave little scope for pre-conflict designation. Can IEL, therefore, offer an interpretation or further guidance of the IHL rules?

Clearly, the listed sites under the WHC regime would appear to be the best starting point for such designations, as state parties already undertake in peacetime not to damage natural heritage located on another state's territory (Article 6(3)) and sites go through a rigorous and criteria-driven external validation selection process for listing.[132] The Principle also echoes the World Heritage Committee's approach, for example, in focusing on demilitarization of its listed forest reserves, for example in the DRC.[133] The WHC is the only convention, though, where protection is not based on state unilateral self-designation.

Certainly, the broader biodiversity and nature conservation imperatives specified in the Biodiversity, World Heritage and Ramsar Conventions could certainly help to inform the geographical scope of parties' designations, including to ensure buffer zones around, and sufficient connectivity between, protected zones are created to ensure species survival. Designation of protected zones could also bolster within those areas the customary IHL prohibitions on pillage[134] and

128 ILC Third Report, *ibid.*, § 188; state comments on Draft Principle 4, Comments and Observations, *supra* note 75, at 39–44, and on Draft Principle 17, at 95–99.

129 ILC PERAC Principles, *supra* note 9.

130 ILC Third Report, *supra* note 53, §§ 184–195.

131 *Ibid.*, § 188.

132 Art. 2 WHC; UNESCO, WHC Operational Guidelines, *supra* note 80, at paras 77(vii)–(x), and 78–95.

133 UNESCO, World Heritage Committee, Decision 28 COM 15A.3, Doc.WHC-04/28/COM/26, 29 October 2004, 51–53, at § 7; Sjöstedt, Reconciliatory Approach, *supra* note 15, at 250–252.

134 Arts 28 and 47 Hague Regulations Respecting the Laws and Customs of War on Land, annexed to the Convention (IV) Respecting the Laws and Customs of War on Land (adopted 18 October 1907, entered into force 26 January 1910) *UKTS* (1910) 9, Cd.5030; Art. 33 Geneva Convention IV, *supra* note 102; Art. 4(2)(g) Protocol II, *supra* note 25; and is a war crime at Arts 8(2)(b)(xvi) and 8(2)(e)(v) Rome Statute, *supra* note 124; see also Rule 52 Customary Law Study, *supra* note 27; Judgment, *Armed Activities on the Territory of the Congo (DRC v Uganda)*, ICJ Reports (2005) 168, at §§ 245–250.

wanton destruction[135] of natural resources, including forests and endangered species, such as those listed on the IUCN Red List of Threatened Species,[136] and the Appendices to CITES, CMS and Bern Convention. After all, the decimation of populations of elephant, rhino, buffalo, okapi, gorilla are just some of the results of protected area borders not being observed during armed conflict, as well as the murder of conservation workers and rangers.[137]

Mirroring the customary rules on precautions in attack and defence, and the 1954 Cultural Property Convention, perhaps the new ILC Principle 18 could also be interpreted to include a set of preparatory obligations by states. First, would be the peacetime obligation of preparation to safeguard such environmental zones against the foreseeable effects of armed conflict, to refrain from using such areas for purposes likely to expose it to damage during armed conflict, and to foster in armed forces 'a spirit of respect' for environmental zones.[138] For example, parties would need to avoid siting military or 'dual use' installations, such as communications towers, inside nature reserves or clearly decommission such facilities at the outbreak of hostilities.

4. The Complementary Role of IEL for Biodiversity and Nature Conservation

Having shown the added value of using an IEL lens to interpret the IHL provisions, this Part now shifts focus to the obligations in the IEL treaties themselves, and how far they can be used to complement IHL rules in the three phases of (A) before and after conflict, and (B) during conflict.

A. Pre- and Post-Conflict

The temporal approach adopted by the ILC in creating its PERAC Principles has revolutionized the way we approach the law in this area. The methodology incorporating the interplay between, or integration of, other regimes of international law, such as human rights law and environmental law, was widely endorsed by states for the pre- and post-conflict phases.[139] Simple planning obligations and education of citizens in peacetime could clearly make a difference to the protection afforded during conflict. Such obligations, indeed, form some of the main mechanisms of protection found in biodiversity and related

135 Art. 23(g) 1907 Hague Regulations, *ibid*; Arts 53 and 147 GCIV, *ibid*; and is a war crime at Arts 8(2)(b)(xiii) and 8(2)(e)(xii) Rome Statute, *ibid*. See also Rules 50 and 51 Customary Law Study, *ibid*.

136 Available online at https://www.iucnredlist.org/ (visited 28 July 2022).

137 Sjöstedt, Reconciliatory Approach, *supra* note 15, at 241–242, A. Dutta, 'Forest Becomes Frontline: Conservation and Counter-insurgency in a Space of Violent Conflict in Assam, Northeast India', 77 *Political Geography* (2020), at 6.

138 See Arts 3, 4 and 7 respectively of the 1954 Cultural Property Convention, *supra* note 118.

139 ILC Third Report, *supra* note 53, at § 19.

nature conservation treaties, and so their strict observance in the pre- and post-conflict periods will be indispensable to nature.

Consequently, this Part will analyse invaluable examples of the complementary role that IEL can make in this area to fill the gaps in IHL and to enhance it. One should also note that many of these IEL obligations should undoubtedly continue to apply for the state party during armed conflict in areas not subject to the actual conduct of hostilities — subject to the scale and intensity of fighting.[140]

1. Nature Conservation Management and Planning

Rigorous observance of the full range of species and habitat protections will be a key complement to IHL in the pre-conflict period by building resilience in species and habitats. Clearly, the central objective of the biodiversity and nature conservation conventions is the protection, conservation, management and sustainable use of species of flora and fauna, wherever found.[141] Active *in situ* conservation is prioritized through the designation of habitats as protected areas,[142] which forms an 'important conservation tool'.[143] Management and conservation require the inclusion of effective boundaries, buffer zones and ongoing monitoring, with concomitant strong legal and administrative measures.[144] More broadly, though, conservation measures stipulated in the Biodiversity Convention and other treaties[145] extend beyond just designated sites to manage all biological resources and, in the words of Article 8(d), 'promote the protection of ecosystems, natural habitats and maintenance of viable populations of species in natural surroundings'. Undoubtedly, the more effectively biodiversity is protected in peacetime, clearly the more resilient the biosphere will be in the face of shocks such as armed conflict.

Equally important for peacetime conservation and complementary to IHL is the obligation of planning that is common to all the biodiversity related conventions.[146] For example, the Biodiversity Convention requires states to

140 Note Draft Art. 6, *ILC Effects of Armed Conflicts on Treaties*, *supra* note 12.

141 § 199 UNESCO, WHC Operational Guidelines, *supra* note 80; Art. 1 CBD; Art. 3 Ramsar Convention.

142 E.g. Art. 8(a) CBD; Art. 2(1) Ramsar Convention; Art. 3 WHC; Art. 1(1) Bern Convention and the Emerald Network of sites created in Resolution No. 1 (1989) of the standing committee on the provisions relating to the conservation of habitats (Adopted by the Standing Committee of 9 June 1989), § 1.2.c; see also the European Union's Natura 2000 system of protected sites in Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora, Official Journal of the European Communities (1992) L206/7.

143 R.G. Tarasofsky, 'Protecting Specially Important Areas During International Armed Conflict: A Critique of the IUCN Draft Convention on the Prohibition of Hostile Military Activities in Protected Areas', in Austin and Bruch, *supra* note 46, 567–578.

144 Art. 5 WHC; Art. 4 Bern Convention.

145 The Ramsar Convention also requires wise use of even non-listed wetlands in a state party's territory 'as far as possible', Art. 3.

146 Arts 6, 8(f), and 14(1)(e) CBD; Art. 5 WHC; Arts 3(2) and 4(2) Bern Convention, and in articles throughout the African Nature Convention.

develop National Biodiversity Strategies and Action Plans (NBSAPs) and to integrate or mainstream the conservation and sustainable use of biodiversity into its plans, programmes and policies.[147] The CMS Resolution 8.18 adds the need for states to specifically integrate migratory species into their NBSAPs.[148] Similarly, before being able to conserve biodiversity, states have the obligation first to identify and monitor components of biodiversity, such as flora, fauna, habitats and ecosystems.[149] The CBD, for example, provides indicative criteria in its Annex I, including highlighting the need to protect ecosystems and habitats of high biodiversity or those containing large numbers of endemic or threatened species; areas of social, economic, cultural or scientific importance, and areas required by migratory species. We can observe much regime interaction here, as the CBD identification criteria notably also complement and reinforce the obligations under the CMS, Ramsar Convention, CITES and WHC. These obligations are, therefore, imperative for pre-conflict planning by states, as well as post-conflict recovery and restoration of damaged areas of biodiversity. They are also complementary to obligations that arise at each stage of conflict, which now have recognition in the ILC PERAC Principles.[150]

It is important that states ensure sufficient geographical scope for protected areas, including through a network of sites as 'connected conservation', such that if one area is damaged the species have access to habitat corridors and so can flee dangers.[151] Similarly, as mentioned above, states are obliged to develop strategies which seek to avoid damage to biodiversity, which could be read as including precautionary measures to plan where to site polluting or harmful facilities, such as power stations, resource extraction industries and military bases. These issues are equally as important in peacetime as they are in conflict to avoid contamination of protected areas by pollution. Finally, emergency or disaster risk reduction forms part of mandatory planning obligations, which arguably should include emergencies such as armed conflict.

2. *Education*

All the nature conservation treaties include mandatory obligations to conduct conservation training and education.[152] The African Nature Convention, for example, requires parties to ensure environmental education and 'capacity-building

147 Art. 6 CBD.

148 UNEP/CMS/Resolution 8.18, Integration of Migratory Species into National Biodiversity Strategies and Action Plans and into On-Going and Future Programmes of Work under the Convention on Biological Diversity; M. Bowman, P. Davies and C. Redgwell, *Lyster's International Wildlife Law* (2nd edn., Cambridge University Press, 2010), at 571 (hereafter 'International Wildlife').

149 Art. 7 CBD.

150 E.g. Principles 3, 4, 17 ILC PERAC Principles, *supra* note 9.

151 J. Oglethorpe, J. Shambaugh and R. Kormos, 'Parks in the Crossfire: Strategies for Effective Conservation in Areas of Armed Conflict', 14 *Parks* (2004) 3, at 4.

152 Arts 12 and 13(a) CBD; Art. 3(3) Bern Convention; Art. 5(e), 22(c), 23, 27–28 WHC; Art. 4(5) Ramsar Convention.

at all levels' (Article XX), while the WHC specifically emphasizes the importance of states undertaking awareness raising of natural heritage to 'strengthen appreciation and respect by their peoples',[153] and to help mobilize the local population to support conservation by appreciating its value.[154] Such awareness raising and local buy-in could prove decisive in protecting endangered species during conflict.[155] Indeed, local education campaigns of the 1980s detailing the iconic nature of the mountain gorilla in the forests of DRC may have contributed to reducing the levels of gorilla killings in some areas.[156] Importantly, states can also seek support of other states and other bodies, such as non-governmental organizations (NGOs), to provide training to conservation personnel.[157] Again, recruiting from within the local communities and providing them with professional training, rather than employing foreign contractors, was seen as the best preparation for nature protection roles in the face of regional instability,[158] and undoubtedly vital on the ground during conflicts in Rwanda and DRC.[159] In the post-conflict period, NGO support and training can also be vital to help restart local conservation projects and tourism, so that the local population can start to restore the environment.[160]

3. *Cooperation*

A cornerstone of IEL is the principle of cooperation and good neighbourliness between states.[161] Likewise, several of the nature conservation treaties require the parties to cooperate on the protection of listed endangered species and habitats.[162] Transboundary or frontier cooperation is particularly important under the CMS, Bern Convention, and the African Nature Convention,[163] including for migratory species' key breeding grounds and stopping off places all along their migration routes — which could span the territories of multiple states.[164] Under the remit of the CMS, states have also worked together on a

153 Art. 27(1) WHC.

154 V. Vujicic-Lugassy and M. Richon, 'Articles 27-28: Educational Programmes' in Francioni, *supra* note 7, 325–334, at 326.

155 Plumptre, *supra* note 39, at 86.

156 *Ibid.*

157 Arts 19–26 WHC.

158 T. Hart et al., 'Conservation and Civil Strife: Two Perspectives from Central Africa', 11 *Conservation Biology* (1997) 308–314, at 309.

159 Hanson, *supra* note 1, at 585; Kalpers, *supra* note 42.

160 Hanson, *ibid.*

161 Notably Principle 27 Rio Declaration, *supra* note 63; Judgment, *Case Concerning the Gabčíkovo-Nagymaros Project (Hungary/Slovakia)*, ICJ Reports (1997) 7, at § 142; Judgment, *Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, ICJ Reports (2010) 14, at §§ 76–77, and § 81.

162 Art. 5 CBD; Art. XXII African Nature Convention; Art. 5 Ramsar Convention; Art. II CMS; Arts 1 and 11 Bern Convention; Arts 4, 6 and 7 WHC.

163 Art. XXII(2)(e) African Nature Convention.

164 Art. 4(4) Bern Convention; note the definition of 'range state' in Art. I(1)(h), and Art. IV CMS; Arts VII(3) and XXII(2)(e) African Nature Convention.

regional or local basis to create international agreements for particular species,[165] such as the Gorilla Agreement in central Africa that helped reinforce CITES provisions, particularly against poaching in conflict areas.[166] These regional actions have proven to be important tools too as dialogue-building platforms, with the theory that states that are used to cooperating across borders in peacetime are also less likely to engage in international armed conflict.[167]

Cooperation also involves obligations on exchange of information, notification and emergency responses,[168] which are also highly relevant issues in the post-conflict phase. For example, Article 17 of the CBD requires the exchange of information, such as results of technical, scientific, and socio-economic research and surveying. Such obligations are mutually reinforcing with IHL and arms control requirements of exchange of information on the location of toxic,[169] hazardous, or explosive remnants of war, including landmines and other debris and their clearance.[170]

4. *Restoration*

All of the biodiversity-related conventions include either explicitly or implicitly the element of restoration and rehabilitation of degraded ecosystems and protected areas, which is clearly very pertinent both before conflict, to ensure comprehensive and effective species and habitat conservation, but also in the post-conflict recovery phase.[171] Note, for example, Article 8(f) of the CBD, which requires states to 'promote the recovery of threatened species', and under Article 2 of the Bern Convention, states are required to create action plans and recovery plans to reach the level of species needed for ecological requirements, among others.[172]

Invaluable in the post-conflict period will be the sampling and monitoring obligations[173] found in the nature conservation treaties to determine the best

165 Art. IV(1) CMS.

166 2007 Agreement on the Conservation of Gorillas and their Habitats, available online at https://www.cms.int/sites/default/files/instrument/Scanned_Agreement_text_E.pdf (visited 28 July 2022).

167 Sjöstedt, *supra* note 15, at 245–247; P. Griffin, 'The Ramsar Convention: A New Window for Environmental Diplomacy?', Institute for Environmental Diplomacy & Security, Research Series, January 2012, available online at https://i.unu.edu/media/ourworld.unu.edu-en/article/4660/Ramsar_IEDSResearchSeries.pdf (visited 28 July 2022).

168 E.g. Art. 14(c)(d)(e) CBD; Art. V(5)(m) CMS.

169 Principles 26 and 27, ILC PERAC Principles, *supra* note 9.

170 E.g. Art. 5 Ottawa Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction (adopted 18 September 1997, entered into force 1 March 1999) 36 ILM (1997) 1507; Art. 4 Convention on Cluster Munitions (adopted 30 May 2008, entered into force 1 August 2010) available online at https://www.clusterconvention.org/convention-text/ (visited 28 July 2022).

171 E.g. Arts 8(f) and 9(c) CBD; Art. III(4)(a) CMS; Arts 11(4) and 5(d) WHC.

172 For thoughts on the extent of this provision, see Bowman et al., *International Wildlife*, *supra* note 148, at 300.

173 Art. 7(c) CBD; Art. 3(2) Ramsar Convention; Art. IX(2)(e) and XIV(2)(c) African Nature Convention.

recovery and restoration approaches, as well as to investigate, identify and evidence potential war crimes. The value of such post-conflict environmental assessments was clearly recognized by the ILC in its Principle 24, which recommends that states cooperate with international organizations on post-conflict assessments and remedial measures.[174] Excellent examples of such assessments are those undertaken by UNEP in Kosovo, Iraq and Afghanistan.[175] Similarly, planning and adapting previous peacetime plans is clearly imperative in the post-conflict phase to help rebuild the state and its environment.[176] With financial assistance likely to be necessary for most post-conflict states to fulfil their environmental restoration obligations, again it is important to note that the nature conservation treaties provide access to a wide range of resources, including financial resources, for restoration projects.[177]

B. During Armed Conflict

In the previous section, we identified numerous IEL obligations in the pre-conflict phase that will help build resilience for nature and biodiversity to help mitigate impacts that might occur during armed conflict. Yet, it is not so clear which obligations may help during the actual conduct of hostilities phase of armed conflict, particularly on enemy territory. Having recognized in Part 2 the main pathways to harming nature to be: targeting; weapons use; the environmental footprint, and the governance vacuum, the most relevant nature-related obligations would appear to be those that specifically prohibit harm to nature, provide for safe areas, or otherwise require nature to be protected.

It now seems clear that IEL *prima facie* continues to apply during armed conflict,[178] and there is a growing body of research on the legal framework for assessing the continued applicability and scope of specific IEL treaties and obligations. Among others, Sjöstedt largely eschews an interpretative approach and focuses instead on a 'reconciliatory approach' between environmental law treaty obligations and the laws of armed conflict.[179] Dienelt explores a multi-layered approach involving IHL, human rights and environmental law,[180] while Van Steenberghe adopts a coherency-based approach.[181] All of the approaches share many common features, although each also has its own

174 ILC PERAC Principles, *supra* note 9.

175 UNEP, Kosovo Report, *supra* note 31; UNEP, Iraq, *supra* note 3; UNEP, Afghanistan, *supra* note 3.

176 Building post-conflict restoration of the environment into peace processes is recognized in ILC Principle 22, *supra* note 9.

177 Art. 15 WHC; Art. 21 CBD and the creation of the Global Environment Facility.

178 ILC Effects of Armed Conflicts on Treaties, *supra* note 12.

179 Sjöstedt, Reconciliatory Approach, *supra* note 15, at 200–236.

180 Dienelt, *supra* note 15, at 257–319.

181 See Van Steenberghe, Coherency-Based Approach, *supra* note 17. See also Bothe et al., Gaps and Opportunities, *supra* note 8, at 581–583.

nuances. This contribution will use Van Steenberghe's recent coherency-based model, which is drawn from legal theories based on the normative coherence of legal systems and legal pluralism.[182] Van Steenberghe's theory addresses the question of how individual environmental law rules could apply as complementary to IHL, importantly ensuring we take into account considerations of 'effectiveness' so that such obligations appreciate the realities of war.[183] Part 4.B.1 will analyse the question of application during armed conflict, therefore, of relevant nature conservation obligations. The IHL prohibition of pillage of natural resources during conflict is already relatively clear, and so this Part will only analyse trade in endangered species very briefly. Part 4.B.2 will proceed to analyse any conflict of norms and Part 4.B.3 any complementary protections.

1. Scope of Application of IEL Treaties Protecting Biodiversity

(a) Continuity of treaty obligations. The starting point in querying the continuity of IEL treaty obligations during conflict remains the question of whether the individual treaty contains a specific stipulation to that effect.[184] According to the ILC's Draft Article 6 test for continuation of obligations in a specific treaty, stage one requires consideration of the usual interpretational tools (notably the nature of the treaty, including its object and purpose and content) to determine if the treaty, or those provisions concerned, are subject to termination, suspension or withdrawal in times of conflict.[185] The test is an objective one, and, thus, cannot be made by particular states seized of conflict. Interpretation to determine continuity should instead be made by the treaty's monitoring body, yet environmental treaty bodies have not undertaken this task. On close analysis, none of the biodiversity and nature conservation conventions explicitly stipulate that the full treaty continues to apply in conflict. Although practice is more inconsistent than one might at first appreciate.

Uniquely, the 2003 African Nature Convention contains a specific provision on the conduct of hostilities. Article XV, entitled 'Military and Hostile Activities', echoes Additional Protocol I provisions, including Article 55(1)'s 'care obligation'[186] and Article 35(3)'s prohibition on using means and methods expected to cause environmental damage. However, for the care obligation, the threefold threshold of harm has been stripped out of the provision, to leave a substantially reduced threshold of harm as well as an enhanced requirement for states to take 'every practical measure' to protect the environment against harm.[187] Article XV(1)(b), which repeats the Protocol's Article 35(3)

182 Van Steenberghe, *ibid.*, at 1365–1370.
183 Van Steenberghe, *ibid.*, at 1366–1372.
184 Bothe et al., Gaps and Opportunities, *supra* note 8, at 581; Hulme, Biodiversity, *supra* note 16, at 261.
185 ILC Effects of Armed Conflicts on Treaties, *supra* note 12, Draft Art. 6(a);
186 Art. 55(1) Protocol I.
187 Art. XV(1)(a) African Nature Convention.

prohibition, sees the threefold cumulative requirement replaced with one based on alternatives (i.e. widespread, long-term OR severe harm). Like many of the IEL instruments, however, the African Nature Convention also contains a general exception clause, referring to the exclusionary bases of *force majeure* and the 'defence of human life'.[188] While there is nothing to indicate that the exception clause would be inapplicable to Article XV, there would surely be a strong argument that it should not — otherwise it risks overriding the whole purpose of Article XV.

It is more common for environmental law treaties to be silent on the issue of continuity in conflict, as is indeed the case for all the other nature conventions under analysis. Two of those treaties, however, do appear to have at least considered the issue at the time of adoption, and have since been active during armed conflict. Since IHL protection for 'cultural property' had been recognized since at least 1899, it is not surprising that the 1972 World Heritage Convention specifically contemplated that armed conflict presented a high risk for listed heritage sites. Consequently, states created a separate listing of 'World Heritage in Danger' under Article 11(4),[189] and evolved quite a far-reaching financial and technical support mechanism for affected sites.[190] Negotiated contemporaneously, the 1971 Ramsar Wetlands Convention also recognizes the potential impact of conflict, but on the more limited basis of allowing the state to 'delete or restrict the boundaries' of its own listed wetlands because of its 'urgent national interests'.[191] The Convention does impose stricter reporting obligations in such cases,[192] and emulating the WHC regime, the treaty bodies created the Montreux Record listing system[193] for wetlands 'facing ecological change' and the Ramsar Advisory Mission (RAM) mechanism. While the Montreux Record provides prioritized conservation attention, the RAM provides for onsite inspection, and remedial advice and assistance.[194] Through the practical measures and tools put in place by these conventions there is, thus, strong evidence to indicate the WHC and Ramsar regimes continue in place during conflict, and, indeed, importantly, that states are aided in doing so by other Member States and the supportive treaty body mechanisms.

188 Art. XXV African Nature Convention.

189 A.F. Vrdoljak, 'Article 13: World Heritage Committee and International Assistance', in Francioni, *supra* note 7, 175–200.

190 A.F. Vrdoljak, 'Article 14: the Secretariat and Support of the World Heritage Committee' in Francioni, *supra* note 7, 243–268; for an excellent analysis of the available support see Sjöstedt, reconciliatory Approaches, *supra* note 15, at Chapter 8.

191 G. Carducci, 'Articles 4–7: National and International Protection of the Cultural and Natural Heritage', in Francioni, *supra* note 7, 103–146, at 126.

192 Art. 3(2) Ramsar Convention, known as an 'Article 3.2 report'.

193 Convention on Wetlands, Resolution VI.1, Working Definitions of Ecological Character, Guidelines for Describing and Maintaining the Ecological Character of Listed Sites, and Guidelines for Operation of the Montreux Record (1996); Resolution XIII.10, Status of Sites in the Ramsar List of Wetlands of International Importance (2018).

194 Ramsar Advisory Missions: Technical Advice on Ramsar Sites, Ramsar Briefing Note 8, available online at https://www.ramsar.org/sites/default/files/documents/library/rbn8_advisory_missions_e.pdf (visited 28 July 2022).

Neither the Bern Convention nor the CMS have a continuity clause, but similar to derogation clauses in human rights treaties they do expressly recognize that *force majeure*, emergency or 'extraordinary' circumstances, or 'overriding public interests' can impact the scope of obligations.[195] In the Bern Convention, since such exceptions include development projects, the margin of discretion is clearly very wide and so would undoubtedly permit exceptions to Convention provisions during armed conflict, albeit with the proviso that 'the exception will not be detrimental to the survival of the [species] population concerned' (Article 9(1)). Perhaps most surprising is that the CBD, as the regime most relevant to the protection and maintenance of species biodiversity, fails completely both in its treaty text and wider practice to recognize that armed conflict might have any impact, including on its protected areas regime.

An intriguing dimension of many of the nature conservation treaties, however, is the 'effect on other conventions' clause (the 'conflict clause'). Seemingly a reference to the intractable negotiations during the 1970s and 1980s for the UN Convention on the Law of the Sea, typical phrasing suggests that the nature convention 'shall in no way affect the rights or obligations of any Party deriving from any existing treaty'.[196] There remains debate as to the effect and extent of the clause, which interpreted literally often negates the later treaty's impact, but the CBD, at least, highlights the key exception 'where the exercise of those [prior treaty's] rights and obligations would cause a *serious damage or threat* to biological diversity'.[197]

(b) Extra-territorial applicability of obligations. The key issue is to discover if IEL can enhance the IHL rules during the conduct of hostilities phase in enemy territory. This is the area least covered by existing contributions in the field. Thus, the question of extra-territorial applicability specifically asks whether the treaty or individual obligations and rights would apply beyond a state's borders, and so whether IEL treaty obligations could be read to impose further limits on what a state could do under IHL during the conduct of hostilities phase. Leaving aside maritime treaties, environmental law obligations tend to be concerned with environmental protection or regulation of activities within a state's own territory, or from vessels registered in the flag state. Thus, the test again requires an interpretative exercise of the treaty, or failing a specific 'scope' clause, a rule-by-rule analysis to see if a particular obligation is limited to the state's national jurisdiction or not.[198] Van Steenberghe also suggests that extra-territorial applicability can be inferred from obligations of a conduct character, such as due diligence.[199]

195 Art. III(5)(2) CMS; Art. 9(1) Bern Convention.

196 Art. XII CMS; Art. XIV CITES; Art. 22 CBD.

197 Emphasis added. Art. 22(1) CBD.

198 Van Steenberghe, Interplay, *supra* note 15, at Part 4.B.1; M. Vordermayer, 'The Extraterritorial Application of Multilateral Environmental Agreements', 59 *Harvard International Law Journal* (2018) 59–124, but note the author does not deal with the context of armed conflict.

199 Van Steenberghe, *ibid.*, at Part 4.B.1, where he refers to the Judgment, *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, ICJ Reports (2010) 14, at 55–56, § 101.

Again, there are a range of approaches found in the treaties. In relation to the scope of applicability, the CBD has a specific provision, mirrored in the African Nature Convention,[200] imposing extra-territorial applicability to 'processes and activities' carried out under the 'jurisdiction or control' of a party.[201] Consequently, the creation of *in situ* protected areas and the conservation of specific components of biodiversity do not appear capable of an extra-territorial reading, whereas the monitoring and identifying of harmful activities (Article 7), implementing EIAs (Article 10) and cooperation in areas beyond national jurisdiction (Article 5) appear to enable extra-territorial applicability. These Conventions, therefore, adopt a jurisdictional approach based on control over harmful activities.[202] Similarly, the Bern Convention, in relation to its Emerald Network of Areas of Special Conservation Interest (ASCI), imposes obligations on the basis of activities, namely requiring 'the control of activities which may indirectly result in the deterioration of such habitats ... even where such areas are outside the jurisdiction of the party in question'.[203]

Indeed, all the nature conservation conventions under discussion have provisions that to a greater or lesser degree hint at extra-territoriality. The Ramsar Convention and CMS have more provisions that could be read to impose extra-territoriality, importantly in relation to their key conservation obligations. Under the Ramsar Convention, for example, Article 3(1), suggests that the duty to 'promote the conservation' of listed wetlands is not limited only to those sites within the state party, and thus could impose an international obligation.[204] Similarly, for the CMS, the requirement to conserve migratory species and their habitats, particularly those in its Appendix I,[205] and to conserve and restore important habitats[206] do not appear to be limited to the state's territory. In relation to minimizing and removing adverse effects and obstacles to migratory species, again Article III(4)(b) of the CMS does not specify that those measures are confined to a state's own territory.[207] However, despite imposing arguably *erga omnes* obligations,[208] the WHC's active conservation obligations do not appear to apply extra-territorially (Articles 4 and 5). The key obligation of the WHC in this regard is Article 6(3), which contains a very strong suggestion of extra-territoriality in its prohibition on states to cause damage to the natural heritage of other states.

200 Art. I(1)(2) African Nature Convention.
201 Art. 4 CBD.
202 Vordermayer, *supra* note 198, at 109.
203 Resolution No. 1, *supra* note 142, at § 1.2.c.
204 Bowman et al., *International Wildlife*, *supra* note 148, at 420, Vordermayer, *supra* note 198, at 98.
205 Art. II(1) CMS.
206 Art. III(4)(a) CMS.
207 Vordermayer, *supra* note 198, at 101–102.
208 G.P. Buzzini and L. Condorelli, 'Article 11: List of World Heritage in Danger and Deletion of a Property from the World Heritage List', in Francioni, *supra* note 7, 175–200, at 178; E. Brown Weiss, 'Opening the Door to the Environment and to Future Generations', in L. Boisson de Chazournes and P. Sands (eds), *International Law, The International Court of Justice and Nuclear Weapons* (Cambridge University Press, 1999) 338–353, at 347.

The Ramsar Convention's Article 4 is a more complex read. It requires parties to 'promote the conservation of wetlands and waterfowl by establishing nature reserves', which may suggest a possible territorial limitation on the creation of protected wetland areas, although this is not specified. Interpreting it as allowing for extra-territorial applicability through the object and purpose test,[209] as a due diligence obligation, Article 4 could therefore impose an extra-territorial obligation of conservation — or at least the promotion of conservation by creating new reserves on the territory of other states. On the contrary, Ramsar's Article 2 obligation of designating and delimiting suitable wetlands for inclusion on the Convention's List appears to apply only on a territorial basis — as does the similar obligation in the WHC (Article 3) and the obligation to establish protected areas in the CBD (Article 8).

Going much further than most IEL treaties though, Parties to the Bern Convention explicitly recognized in its first session of the Standing Committee that some treaty obligations had extra-territorial effect.[210] Accordingly, the parties have undertaken an extra-territorial interpretation for several provisions — leading them, for example, to question their ability to fund dam-building projects in states that would impact Appendix-listed species.[211] Such extra-territorial obligations might, therefore, include those requiring states to take measures to maintain or enhance wild population levels of flora and fauna (article 2), including the conservation of habitats (Article 4), as well as the special protection of species in the Appendices.

Finally, the trade focus of CITES might be useful to help bolster the IHL rules on transboundary pillage, but it could also more broadly be of value in the measures that states create to secure endangered species. Obligations in CITES inherently rely on actions undertaken in other states, such as the reliance by the importing state on the scientific assessment of an exporting state that such export or re-export will not be detrimental to the survival of the species (Article III(3)), or where states cooperate to prohibit trade in Appendix III species listed purely by another state, as opposed to the other Appendices (Article V). Yet, these seem different, as obligations that do not really have extra-territorial applicability — more an extra-territorial effect. A better example of extra-territoriality of applicability is probably in covering actions involving 'introduction from the sea' of marine species (Article I(e)).[212]

(c) Applicability to armed groups. The imposition of obligations on armed groups has certainly been analysed in the IHL and human rights literature,[213] but not so much in discussions on the continuity of IEL treaties during armed conflict. Van Steenberghe's sliding scale approach,[214] which mirrors the extra-

209 Van Steenberghe, Interplay, *supra* note 15, at Part 4.B.1.

210 See Bowman et al., *International Wildlife*, *supra* note 148, at 325 referencing actions by Germany to ensure it could give effect to the treaty despite this extra-territorial basis. See also Vordermayer, *supra* note 198, at 99–101.

211 Bowman et al., *ibid.*, at 326.

212 Vordermayer, *supra* note 198, at 106.

213 D. Murray, *Human Rights Obligations of Non-State Armed Groups* (Hart, 2016).

214 Van Steenberghe, Interplay, *supra* note 15, at Part 4.B.2.

territoriality test above for states, therefore, presents a valid starting point for analysis. Under this approach, there is a *prima facie* assumption that IEL treaties would impose obligations on the armed groups within a state (or acting against a state) as part of binding law through that state's ratification of a particular treaty or through customary law.[215] In addition, the theory continues that while we should be able to impose prohibitions and conduct-based obligations on armed groups, obligations of result are applicable only if the armed group has sufficient resources.[216] The ILC PERAC Principles also reflect an attempt to expand the environmental protection required by armed groups in armed conflict. However, not all the provisions suggested above, which were read as imposing an extra-territorial obligation on states, can similarly be read as imposing the same obligation on armed groups.

Many of these obligations could be transposed to armed groups, albeit some would require territorial control, such as creating a system of protected areas, as well as quite an advanced level of ecological expertise, training and capacity in ensuring such active conservation and would be dependent on the intensity of the conflict. A good example of the creation of a protected area by an armed group is the Salween Peace Park in Myanmar, created by the Karen National Union (representing the Indigenous Karen Peoples) in 2018, which also exemplifies 'sustainable use'.[217] Clearly, however, any action that helps conserve biodiversity would always be welcome.

The Ramsar Toolkit, for example, suggests that the conservation obligation is one of result, in avoiding detrimental changes to the ecological character of listed sites.[218] Thus, this obligation of active conservation could extend to armed groups, depending on their level of organization, capacity and resources. If we take the view that the obligation imposes, at least, a minimum core requirement[219] that the armed group avoid unnecessary harm to protected sites, this would align with IHL obligations as well as link with the active conservation requirement where the particular group has the necessary resources. While formal designation on the Ramsar List by armed groups is clearly not contemplated by the treaty, similarly for the WHC, a protected wetland area could arguably be informally created by a particularly sophisticated armed group according to its capacities — as with the Salween Peace Park, above. Similarly, the Bern Convention's obligations to conserve habitats (Article 4) and provide special protection of species listed in the Appendices are conduct-based, and so could also be applicable to armed groups.

215 *Ibid.*

216 *Ibid.*, at Part 4.B.2.

217 F. Pearce, 'Amid Tensions in Myanmar, An Indigenous Park of Peace Is Born', *Yale Environment 360*, (2020), available online at https://e360.yale.edu/features/amid-tensions-in-myanmar-an-indigenous-park-of-peace-is-born (visited 28 July 2022).

218 Ramsar Convention Secretariat, *Handbook 3: Laws and Institutions* (4th edn., 2010), available online at https://www.ramsar.org/sites/default/files/documents/pdf/lib/hbk4-03.pdf (visited 28 July 2022), at 25.

219 Van Steenberghe, Coherency-Based Approach, *supra* note 17, at 1378.

In relation to negative duties to prohibit the taking of endangered species (for example those listed on Appendix I of the CMS),[220] there is arguably both a negative obligation on the state in relation to its own actions, but also an obligation of result to ensure harmful activities are prohibited by others. Thus, this latter aspect might require control over territory, which would again limit its applicability to armed groups with sufficient capacities. The same is probably the case for the specific prohibitions under the Bern Convention on the taking of species and indiscriminate methods listed in the Appendices (Articles 5–8). Moving to CITES, clearly this Convention acts as a ban or severe curtailment of trade in endangered species unless the state can comply with very onerous customs obligations. A core requirement, therefore, is a well-functioning authority capable of providing and verifying import and export documentation. Furthermore, due to the illegality of trade generally by armed groups, while technically CITES obligations could apply to armed groups in terms of the small window of legitimate trade in endangered species that CITES allows, compliance would require a very high level of capacity.

2. Co-applicability and Potential Norm Conflicts

Drawing on examples from the previous section, many relevant nature conservation obligations appear to be capable of applicability during armed conflict and provide extra-territorial scope or apply to armed groups. Consequently, this section will now assess the potential for the creation of norm conflicts presented between the two sets of obligations, IHL and IEL, and any consequences. The test is whether the IEL obligations are sufficiently qualified to allow for applicability during hostilities to accommodate or 'co-apply' with IHL rules, otherwise they will be displaced by the IHL rule.[221] Complementary regulation will be analysed in the following section.

First, causing deliberate damage to another state's nature reserves, as might occur in targeting or through the use or transit of forests, for example, appears to run counter to the strongest prohibition of harm that we find in the nature conservation treaties examined — namely, the absolute prohibition contained in Article 6(3) of the WHC. Here states have expressly undertaken 'not to take any deliberate measures which might damage directly or indirectly the [listed] cultural and natural heritage … situated on the territory of other states parties'. Can this absolute prohibition of harm, therefore, be reconciled with a state of armed conflict? Importantly, in practice, states do not appear to have interpreted Article 6(3) as a bar to such military actions. This, despite the fact that in 2015 the WHC adopted a non-binding policy requiring states to refrain from acts of hostility against natural heritage sites during armed conflict.[222]

220 Art. III(5) CMS.

221 Van Steenberghe, Interplay, *supra* note 15, at Part 4.C.2.

222 UNESCO, Policy for the Integration of A Sustainable Development Perspective into the Processes of the World Heritage Convention, WHC-15/20.GA/INF.13, 2015, § 31 (hereafter 'UNESCO, Sustainable Development Policy').

Thus, as an obligation that appears to have extraterritorial applicability, but being an absolute obligation (it does not allow for exceptions), Article 6(3) would be displaced by IHL rules according to Van Steenberghe's theory.[223] As the thrust of the WHC is that respect for heritage should be a strong counterweight at all times, and as Sjöstedt's harmonization approach suggests, parties can always choose not to target military objectives in another party's heritage site,[224] and thus can avoid causing damage to internationally valuable natural heritage. This approach does avoid the norm conflict, but, whilst true, the result still leaves a large measure of discretion to states regarding such sites. Had the 2015 document been binding on the states party to the WHC, this would have produced a very different result.[225]

Some authors have, similarly, read an implicit prohibition on damaging the listed wetlands of other states into the Ramsar Convention.[226] The difficulty in doing so, however, is the vaguely worded obligation in Article 3(1) being only to 'implement planning so as to promote the conservation' of listed wetlands. It does also appear to be an absolute provision, and so whether it contains an implicit prohibition on extra-territorial damage or, more likely, the requirement of conservation measures, it too would appear to be displaced by IHL rules. Ramsar's Article 4(1) also contains the obligation of conservation of wetlands through establishing nature reserves. Such designation of wetland sites would certainly require sufficient control over territory, and prompt observance of the limits of occupation laws for international armed conflict.[227] As far as it also appears to contain an absolute obligation, however, again it is displaced. Consequently, many of the strongest extra-territorial obligations in the Ramsar Convention and WHC from the previous section now appear to be displaced due to their absoluteness of language.

The Bern Convention also contains mandatory language in its positive obligation to 'take requisite measures' to maintain (and increase) populations of wild flora and fauna (Article 2), which, as mentioned, has some measure of support as being an extra-territorial obligation. There is no qualifying clause and so the phrasing could again suggest an absolute obligation to maintain species population levels in areas under attack, for example, and thus would also be displaced. This assessment would also accord with the related view by Bowman et al. that the treaty parties could not in reality be the guardians of all species everywhere — including during armed conflict.[228]

223 Van Steenberghe, Interplay, *supra* note 15, at Part 4.C.2.

224 Sjöstedt, Reconciliatory Approach, *supra* note 15, at 206–208, and 309–310, and the concept of a 'normative tension'.

225 UNESCO, Sustainable Development Policy, *supra* note 222.

226 Bowman et al., *International Wildlife*, *supra* note 148, at 424.

227 E.g. Arts 42–43 1907 Hague Regulations, *supra* note 134.

228 Bowman et al., *International Wildlife*, *supra* note 148, at 325–326, and Vordermayer, *supra* note 198, at 116.

3. Complementary Regulation of IEL

Environmental treaty obligations tend to be drafted in quite a flexible way to allow all states to comply. Such qualification of obligations tends to be concentrated on the extent of the obligations imposed, particularly distinguishing between the contexts of developed and developing states, and the timeframe for their achievement, as opposed to the basic nature or requirements of the obligations. This context-based approach[229] is largely achieved through the use of qualified language. Such qualifying language can also provide the flexibility needed to read the provision in a way that is complementary with IHL and, thus, allow such obligations to continue — at least in theory, during armed conflict.[230] In addition, where a treaty provides a general exclusion or limitation clause based on emergency action being required, this would function as a qualification across all provisions within that treaty, such as with the African Nature Convention.

Starting with substantive obligations of conservation, unfortunately, most of the WHC and Ramsar Convention's conservation obligations have fallen by the wayside up to this point in the analysis. Neither treaty appears to contain extra-territorial conservation obligations that can be read in a complementary way to IHL so as to be able to apply during the conduct of hostilities phase on enemy territory. This result is clearly a very disappointing one, especially in light of potential movements in this direction through policy approaches at the WHC.[231] The CMS, however, seems replete with provisions offering both extra-territoriality of application and flexibility through qualifying clauses to be complementary to IHL. For example, the obligation to minimize adverse effects and obstacles from activities in relation to migratory species in Article III(4)(b), is first qualified by being an obligation to 'endeavour' to so act, and secondly by the phrase 'as appropriate'. Similarly, the obligation to take the necessary steps to conserve migratory species and their habitats, particularly those on Appendix I, in Article II(1), is phrased flexibly to apply 'whenever possible and appropriate'. Finally, the obligation to 'endeavour to conserve' habitats important to migratory species in Article III(4)(a) is arguably sufficiently qualified to enable it to impose a complementary obligation to IHL of habitat conservation. Combined, therefore, these due diligence obligations of active conservation could be a valuable complement to IHL for range states.

Similarly, the regional Bern Convention's conservation requirements in Article 4(1), particularly in relation to its Emerald Network sites and species listed in the Appendices, could also provide complementary protection in armed conflict through that provision's qualifier of 'appropriate' measures. The African Nature Convention's widely-phrased exceptions clause (Article XXV) provides a potential path for a complementary reading of most obligations in the African regional nature convention, such as the obligation in Article XIII to prevent environmental damage from radioactive, toxic and

229 Sjöstedt, Reconciliatory Approach, *supra* note 15, at 209–210.
230 Van Steenberghe, Interplay, *supra* note 15, at Part 4.C.3.
231 UNESCO, Sustainable Development Policy, *supra* note 222.

hazardous substances and waste. Reading this provision in a complementary way would clearly be valuable in relation to weapons limitations rules. Yet, the Convention seems to fall short on substantive conservation obligations, however, as these provisions are unfortunately not phrased in a clear enough way that suggests their extra-territorial applicability.

Finally, turning to the CBD, there are again few conservation provisions that appear to pass the extra-territorial application test. The main one would appear to be Article 7(c), which requires the state conducting the extra-territorial 'activity' to identify when such actions might have 'significant adverse impacts on the conservation and sustainable use of biological diversity', and to monitor those effects. The CBD also provides mandatory obligations to create EIA procedures to avoid or minimize the adverse effects of dangers or damage on biodiversity, in Article 14(1)(a), with further requirements in paragraph (d) to immediately notify potentially affected states. Both CBD provisions are suitably qualified as applying 'as far as possible and as appropriate' to leave room for a complementary interpretation with IHL. The notion of using an information gathering and analysis process (or rapid assessment tool) to inform military commanders and armed groups of potential biodiversity risks is not dissimilar to that required as a matter of practicality under IHL's 'care' obligation in Article 55(1) of Protocol I and the proportionality principle. And, clearly, during armed conflict parties will have similar IHL obligations to minimize damage and of undertaking precautions in attack, but generally will want the element of surprise where possible. Due to the provision's qualifier, notably 'as far as possible and as appropriate', it can accommodate such operational needs and remain applicable and complementary to IHL.

Turning specifically to the endangered species aspect contained in several of these instruments, states are frequently under a mandatory obligation to prohibit the taking and killing[232] of such species — often listed in Appendices. The specific prohibitions on the taking of listed species in the Bern Convention (Articles 5–8) are complementary to pillage provisions in IHL, being sufficiently qualified through Article 9, which provides for exceptions to those provisions based on 'other overriding interests' — presumably to include armed conflict. The CMS provisions too appear to be complementary. Here the definition of 'taking' is uniquely phrased in a very broad way, however, to cover more than just deliberate killing but also accidental killing, and also the 'harassing' of such species.[233] In peacetime, such accidental threats to species include the risk of electrocution caused by overhead powerlines and the poisoning of migratory birds through pesticide use.[234] Could it also, therefore, include threats to migratory species through the hazardous pollution caused as collateral damage in conflict, and, as such, provide further limitations on the principle of proportionality? Arguably so, or at least it can be read as complementary to

232 Art. III(5) CMS.

233 Art. I(1)(i) CMS.

234 E.g. Electrocution of Migratory Birds, Resolution 7.4, 18–24 September 2002; Preventing Poisoning of Migratory Birds, UNEP/CMS/Resolution 11.15 (Rev.COP13), February 2020.

IHL, since the provision is open to wide exceptions of 'extraordinary circumstances' (Article (5)(d)). With the additional requirement that any limitations on protection must 'be time and space limited', the provision also appears to reflect the principle of proportionality, highlighting the need to take into account reverberating impacts.

The environmental footprint of conflict, such as the day-to-day environmental grind of heavy vehicles that occurs in many protected areas, indicated as one of the major pathways of wartime environmental damage, is not regulated by IHL. This raises the question of whether Article 6(3), the WHC provision preventing deliberate damage to natural heritage sites, and other conservation obligations in the Ramsar and Bern Conventions can be displaced in relation to such indirect damage caused in this way when there is no rule of IHL. The closest one gets in IHL are the rules preventing wanton destruction and property damage,[235] which are not entirely the same issue as routine destruction caused by manoeuvring heavy vehicles through nature reserves. Furthermore, the conservation obligations in the CMS and Bern Conventions might again help fill a gap by imposing a positive but relative obligation on parties to conserve protected areas 'as far as possible' in this context — one way being to reduce the military footprint on such sites 'as far as possible', including possibly to avoid transgressing them altogether.

Under several of the conventions there is a support system provided by the treaty bodies that may be able to alleviate the governance vacuum that frequently accompanies conflict, and which has devastating impacts on nature. Particularly evident in the WHC and Ramsar Convention regimes, once a danger, such as conflict, is identified to a listed protected site the treaty bodies may commence 'reactive monitoring'.[236] Such mechanisms have opened up a host of priority funding and assistance options, including emergency action plans and fact-finding missions[237] under the WHC, for example, and the provision of expert technical assistance under the Ramsar Convention,[238] and capacity building projects on safeguarding species in war-torn states, including in heritage sites, through CITES.[239] The prohibition in CITES was particularly valuable in the DRC conflict where neighbouring states were asked to take

235 Art. 23(g) 1907 Hague Regulations, *supra* note 134; Arts 53 and 147 Geneva Convention IV, *supra* note 102.

236 § 170, UNESCO, WHC Operational Guidelines, *supra* note 80.

237 § 176(e), *ibid.*, and joint visits have been undertaken through Ramsar and WHC, as well as CITES and WHC, see A. Crawford and J. Bernstein, 'MEAs, Conservation and Conflict: A Case Study of Virunga National Park, DRC', International Institute for Sustainable Development, October 2008, available online at https://central.bac-lac.gc.ca/.item?id=meas_cons_conf_virunga&op=pdf&app=Library (visited 28 July 2022), at 37; *Operational Guidance for Ramsar Advisory Missions, Convention on Wetlands* (2019) available online at https://www.ramsar.org/sites/default/files/documents/library/ram_ogs_2019_e.pdf (visited 28 July 2022).

238 Operational Guidance for Ramsar Advisory Missions, *ibid.*, at §§ 8 and 12.

239 E.g. the project on the Monitoring and Killing of Elephants (MIKE), available online at https://cites.org/eng/prog/mike/index.php/portal (visited 28 July 2022); African Elephant Action Plan and African Elephant Fund, Resolution Conf. 16.9; Sjöstedt, Reconciliatory Approach, *supra* note 15, at 307–309; Oglethorpe *supra* note 151, at 4.

additional measures to prohibit poachers entering the DRC's forests to kill and take endangered species.[240] Illegal exploitation and trade in wildlife in conflict has also engaged the Security Council in monitoring and sanctions.[241]

There is no doubt that ongoing monitoring entails substantial resources.[242] It seems to be generally agreed that the best monitoring of impacts on protected areas is likely to be done by local, trained conservation workers who are employed on-site.[243] Yet, areas in the contact zone will face threats specific to conflict, which the local rangers may not be qualified to handle safely or assess, such as chemical debris from used weapons. Thus, additional training of those personnel could be undertaken in fulfilment of Article 12 of the CBD, among others, by the state. Otherwise, the nature convention treaty bodies often gain the assistance of international organizations and NGOs to help deliver training and provide equipment for local conservation work during conflict.[244] Probably the most well-known example is that of the DRC, where funding, training and equipment was provided to park rangers to help them to continue their conservation duties in the Virungas, along with much-needed moral support.[245]

5. Conclusions

This article analysed the two approaches of interpretation of IHL using IEL treaties, and how IEL obligations can complement IHL rules during the conduct of hostilities phase on enemy territory. The two approaches undoubtedly coalesce around specific obligations, but each also has something distinct to add to current approaches. As a way forward, therefore, such theories definitely have merit.

In relation to the first approach of treaty interpretation through IEL, this has occurred to date out of necessity due to the lack of definitions provided by IHL. Environmental law, thus, fills definitional gaps in IHL, but can also go much further in homing in on what needs to be protected and why, as well as typifying the damage pathways and scale of harm. Especially valuable is the consistent IEL treaty framing around the trio of obligations, namely, education, planning and management of species and their habitats. These elements can

240 Note the Great Ape Enforcement Taskforce established by CITES in 2006, bringing together a consortium of NGOs and international Organizations, C. Nellemann, I. Redmond and J. Refisch (eds), *The Last Stand of the Gorilla – Environmental Crime and Conflict in the Congo Basin, A Rapid Response Assessment*, UNEP (2010) available online at https://www.un-grasp.org/wp-content/uploads/2018/07/GRASP-Last-stand-of-the-Gorilla-min.pdf (visited 28 July 2022); Sjöstedt, Reconciliatory Approach, *supra* note 15, at 309.

241 E.g. SC Res. 2134 (2014) on the Central African Republic, at § 37(d); SC Res. 2136 (2014), on DRC, at § 4(g); see also Dam-de Jong, *supra* note 45.

242 B. Boer, 'Article 29: Reports', in Francioni, *supra* note 7, 335–344, at 339.

243 Hart, *supra* note 158, at 310.

244 World Heritage Papers 17, Promoting and Preserving Congolese (DRC) Heritage: Linking Biological and Cultural Diversity (The World Heritage Centre, 2005).

245 *Ibid.*, at 110–112.

help fill knowledge or communication gaps that exist between environmental experts and the military. Environmental training is vital for militaries if we are to reduce environmental harm in warfare. That training needs to provide a deeper awareness of impact pathways for harm to biodiversity and nature, which clearly the IEL treaties provide. Provision for impact assessment mechanisms could also influence the reverberating effects dimension to the proportionality calculation and ensure compliance with the full remit of the obligations of precautions and care. Wartime protection of environmentally important areas is a complex issue, likely to need bilateral and contemporaneous agreements, but the existing nature conservation treaties can, fundamentally, provide the basis and tools for selecting which areas to prioritize, and a platform for dialogue.

Analysing the continuity and extra-territorial applicability of IEL obligations on biodiversity and nature conservation brought to the fore the enormity and intense activity of these regimes. Most IEL treaties are silent on applicability in armed conflict, or, as we saw with the WHC and Ramsar regimes, where they do recognize the risks from conflict, that recognition functions to enable heightened support mechanisms to be activated. The WHC regime was clearly a forerunner in this area with its 'in danger' listing and conservation support possibilities for sites, but other regimes have also worked in conflict areas on a coordinated basis.

Extra-territorial applicability of IEL obligations has received more academic analysis of late, and the findings here suggest that, in fact, many of the nature conservation obligations are indeed capable of extra-territorial applicability — and thus in the conduct of hostilities phase on enemy territory. Furthermore, the flexible design of most nature conservation obligations is advantageous in aiding their continuity in some modified form in armed conflict. The most valuable ones appear to be those contained in the CMS and Bern Convention, although vague treaty language can also, at times, be problematic for gauging the obligation's scope. Unfortunately, some of the stronger obligations at first sight, such as Article 6(3) of the WHC that prohibits deliberate harm to another state's listed sites, appear to be displaced, according to continuity theories, in armed conflict because they do not contain qualifying clauses or exemptions. This result is particularly frustrating where, as here, there is also inconsistent state action, notably indicating acceptance only at the non-binding policy level for a restraint on military actions in heritage properties during armed conflict, but which is not confirmed with binding obligations and state practice in IHL. That there is a need for states to draft absolutely clear obligations in this area is undoubtedly clear. But, maybe an alternative question could be asked in such situations, notably whether a minimum core of the obligation, or the spirit of the treaty/obligation, remains as an underlying restraint on states. Thus, in such cases, could a qualifier be read into the provision, such that 'as far as possible states must refrain from acts of hostility against natural heritage sites'? At least in that case we do not lose the entirety of the Article 6(3) provision.

The range of obligations identified that could be complementary to IHL, however, are valuable in both mirroring and reinforcing IHL protections. The most valuable instruments appear to be the Bern Convention and the CMS, and the most valuable dimension is their emphasis on safeguarding protected areas and avoiding harm particularly to key habitats and endangered species. Thus, IEL can infuse IHL with this valuable rationale and context of conservation to the overarching need for limitations on warfare in important habitats. It also proffers some concrete goals and actions, especially around ensuring local species populations exist at sufficient scale for species to survive. This is not, however, to demand an unachievable level of ecological knowledge by each soldier deployed into combat. It could require states, for example, to designate, demarcate and detail specific habitats for protection. A due diligence obligation of conservation, therefore, undoubtedly mirrors IHL's environmental 'care' obligation, and reinforces the complementary IEL obligations of training, impact assessment and planning. Ultimately, changing the conflict mindset to be more conservation oriented is pivotal if we are to achieve real change on the ground.

Finally, the fact that such IEL obligations do not fall completely away during armed conflict ensures that the treaty bodies and third states have a basis upon which to promote conservation work with the parties to the conflict — a tool or lever on which to engage in dialogue. The strength of analysing the two approaches (interpretation and co-applicability), therefore, might also be in how they are mutually reinforcing. While recent conflicts are eerily reminiscent of 'total war' policies, the triple threat to the environment means that we must capitalize on the momentum created by the ILC PERAC Principles to drive forward greater environmental protection in armed conflict.