

# **Global scoping of wildlife crime offences, penalties, and statistics**

Alison Hutchinson, Maria Camino-Troya, and Tanya Wyatt

## **Abstract**

At a time of escalating biodiversity and climate crises, there is an urgent need to effectively respond to harms and crimes toward wildlife and the environment. This study gathers information for a global scoping analysis of wildlife offences and penalties, and of the availability of crime statistics. This is a starting point for assessing the effectiveness of mainstream criminal justice responses (fines and prison) to wildlife crime and a baseline for comparing restorative justice as an alternative approach. We examine 1,256 pieces of legislation from 185 countries to assess the scope of wildlife-related offences and their corresponding penalties. The analysis shows that penalties are highly varied around the globe, although fines and imprisonment are the predominant response. What counts as a wildlife offence is highly variable across wildlife, forestry, fisheries, and environmental legislation. This also makes for differences in the way government departments identify and prosecute wildlife offences. To display the complexity of the data we introduce a publicly available dashboard and database detailing offence types and penalties, including restorative and non-custodial actions. We then make a rapid assessment of the availability of official sources of wildlife crime statistics, highlighting how very few countries make this information publicly available. This limits our ability to assess whether wildlife offences are being sanctioned as the law requires and whether enforcement reduces re-offending. To make wildlife crime prevention and disruption strategies more effective, better data on wildlife law enforcement and its long-term impacts are urgently needed.

## **Key Words**

Data visualisation, Green criminology, Rapid assessment, Restorative Justice, Wildlife crime, Wildlife penalties

## **Acknowledgements**

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## Introduction

Wildlife crime is a global issue impacting the lives of billions of plants and animals who are variously exploited, killed, traded, and either commodified or otherwise abused by humans. As with other crimes, criminal justice systems have relied on prison sentences and fines to counteract wildlife offences. Perhaps because of the emotional response of many people to wildlife crimes, conservation organisations and the public at large have called on governments to increase the severity of penalties for wildlife crimes. However, as also evidenced for other crimes<sup>1</sup>, an increasing body of work within critical and green criminology strongly suggests that harsh penalties consisting of lengthy prison sentences and heavy fines are not as effective in reducing or deterring offending and reoffending as their advocates might imagine<sup>2</sup>. A promising alternative lies in a Restorative Justice (RJ) approach that seeks to repair the relationship between offenders, victims, and the wider community. This may occur through community involvement and communication, where the aim is to forgive, restore and repair harms toward the victim and to reduce further repeat offences<sup>3</sup>. Although RJ has already been adopted for some crimes - in cases of juvenile offending and sexual assault, for example, and on a small number of occasions for environmental crimes<sup>4</sup> the extension of this approach for wildlife crimes has been limited<sup>5</sup>.

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<sup>1</sup> Francis Cullen, Cheryl Lero Jonson, and Daniel S. Nagin, 'Prisons Do Not Reduce Recidivism: The High Cost of Ignoring Science' (2011) 91 *The Prison Journal* 48S; Karen Gelb 'Fitting the punishment to the crime: Do harsh sentences work?' (2017) 29 *Legaldate* 8; Jeff Reiman and Paul Leighton, *The Rich Get Richer and the Poor Get Prison: Thinking Critically About Class and Criminal Justice* (12<sup>th</sup> edn, Taylor and Francis Group 2020).

<sup>2</sup> Gary Kleck and Brion Sever, *Punishment and crime: The limits of punitive crime control* (1<sup>st</sup> edn, Routledge 2017); Justin Marceau, *Beyond Cages: Animal Law and Criminal Punishment* (1<sup>st</sup> edn, University of Denver Press 2019); Lauren Wilson and Rachel Boratto, 'Conservation, wildlife crime, and tough-on-crime policies: Lessons from the criminological literature' (2020) 251 *Biological Conservation*, 108810.

<sup>3</sup> Gerry Johnstone, *Restorative justice: Ideas, values, debates* (2<sup>nd</sup> edn, Routledge, 2011).

<sup>4</sup> Mark Hamilton, 'Restorative justice intervention in an Aboriginal cultural heritage protection context: Conspicuous absences' (2014) 31 *Environmental and Planning Law Journal* 352; Mark Hamilton, *Environmental crime and restorative justice: Justice as meaningful involvement* (1<sup>st</sup> edn, Springer Nature 2021); Mark Hamilton, 'Restorative Justice Conferencing: A Vehicle for Repairing Harm Emanating from Lawful but Awful Activity' in James Gacek and Richard Jochelson (eds.). *Green Criminology and the Law* (1<sup>st</sup> edn, Palgrave Macmillan 2021).

<sup>5</sup> Rika Fajrini, Rebecca M. Nichols, and Jacob Phelps, 'Poacher pays? Judges' liability decisions in a mock trial about environmental harm caused by illegal wildlife trade' (2022) 266 *Biological Conservation* 109445; Jonathan James Fisk 'Care, not incarceration: exploring the carcerality of

To better understand where there may be opportunities to apply RJ approaches to wildlife crime, we first need to understand how wildlife crimes are described in legislation, as well as how they are responded to as a matter of normal law enforcement practice. The approaches taken to legislate against wildlife crime vary globally, both in their comprehensiveness and in the ways they define wildlife. The availability and reporting of wildlife crime related statistics also shows substantial variation by country and there is no readily available overview of public records that show both the prevalence of crimes and the penalties imposed to counteract them. We do not, in other words, have a thorough or reliable global understanding of what penalties are prescribed for wildlife crimes or of how these sanctions are used. This makes it difficult to gauge how and where RJ approaches are or might be applied.

To fill these gaps and expand our understanding of various approaches to legislating against wildlife crime, we present the results of a global legislation data search on wildlife-related crimes and their corresponding penalties. This has allowed us to create a database and map of wildlife offences and penalties that showcase the distribution and treatment of wildlife-related offences on a country-by-country basis. The map of offences is available to the public through Ontario Technology University's Environmental Crime, Human Security, and Biosecurity Database under 'Penalties for Wildlife Offences' (<https://techsb.ca/>). We intend for this database and dashboard to be a living document, in addition to the map, any queries or updates to the underpinning database can be submitted through the authors (<https://www.alisonhutchinson.co.uk/wildlife-crime-penalties>). Our hope is that the availability of this information will help to inform more effective management and intervention measures, including the wider adoption of restorative justice approaches to wildlife crime.

We begin with a brief explanation of restorative justice and its uses. We then describe our methodology for collecting legislation and for conducting a rapid assessment of the availability and accessibility of wildlife crime statistics. Our presentation of

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fisheries enforcement and potential decolonial futures in Hawai'i' (2021) 7 *Heliyon* e06916; Annette Hübschle, Ashleigh Dore, and Harriet Davies-Mostert, 'Focus on victims and the community: applying restorative justice principles to wildlife crime offences in South Africa' (2021) 4 *The International Journal of Restorative Justice* 141.

findings begins with a summary of patterns within the legislation and then turns to an overview of the rapid assessment. We conclude with a discussion analysing the trends we see and what research should take place next.

### **Why Restorative Justice is a useful approach for wildlife offences**

As mentioned, criminologists have known and argued for some time that harsh penalties and the criminalisation of offenders are limited in their effectiveness - particularly as a prophylactic against reoffending. Typical criminal justice processes also frequently discriminate against minoritised and disadvantaged social groups and have limited success in preventing harms or restoring damage<sup>6</sup>. While highly varied, wildlife crimes have a substantial corporate element (i.e., wildlife trafficking, illegal, unreported, and unregulated fishing, illegal deforestation and logging), which further complicates prosecutions and makes applying effective fines and deterrents a challenge for authorities<sup>7</sup>. Considering these shortcomings, alternative responses to crime – including restorative justice – are increasingly being looked at to address more directly the harms inflicted on victims and to ensure that offenders are made aware of and responsible for repairing the damage they inflict<sup>8</sup>. Limited and anecdotal evidence indicates such approaches hold promise. For instance, a man who killed manatees in the Amazon opted for one year volunteering at a manatee rehabilitation centre rather than one year in prison. Upon completion of the year with the manatees, he became a strong advocate for their protection<sup>9</sup>. However, as noted above, such approaches have not been extensively applied to wildlife-related crimes<sup>10</sup>.

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<sup>6</sup> Darrell Steffensmeier and Stephen Demuth, 'Ethnicity and Judges' sentencing decisions: Hispanic-Black-White comparisons' (2001) 39 *Criminology* 145; Jeff Reiman and Paul Leighton, *The Rich Get Richer and the Poor Get Prison: Thinking Critically About Class and Criminal Justice* (12th Edition, Taylor and Francis Group 2020).

<sup>7</sup> Tanya Wyatt, Daan Van Uhm, and Angus Nurse, 'Differentiating criminal networks in the illegal wildlife trade: organized, corporate and disorganized crime' (2020) 23 *Trends in Organised Crime* 350.

<sup>8</sup> Mark Hamilton, 'Restorative Justice Conferencing: A Vehicle for Repairing Harm Emanating from Lawful but Awful Activity' in James Gacek and Richard Jochelson (eds.). *Green Criminology and the Law* (1st edn, Palgrave Macmillan 2021).

<sup>9</sup> Asian Development Bank, 'Natural Capital and the Rule of Law: Proceedings of the ADB Second Asian Judges Symposium on Environment 2013' (Mandaluyong City, Philippines, Asian Development Bank, 2016).

<sup>10</sup> Tanya Wyatt, Ros Walling-Wefelmeyer, and Alice Weedy, 'Restorative justice and empathy-based interventions for animal welfare and wildlife crimes' (Scottish Government, 17<sup>th</sup> January 2022).

More information is needed on the effectiveness of non-custodial interventions for reducing wildlife-related offences particularly because wildlife are not typically recognised as the direct victims of their exploitation. In determining how best to restore and repair wildlife harms it is also difficult to know how to speak for and represent wildlife in ways that appropriately recognise their victimhood<sup>11</sup>. To address these challenges first requires that we understand how wildlife crimes are currently defined and what penalties are prescribed. We next explain how we approached these problems.

### **Methods: Data search and analysis**

We undertook a two-part desk-based analysis. The first part expanded the legislative content analysis undertaken by Wyatt<sup>12</sup> of the national legislation transposing the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The expansion involved adding forestry and fishery legislation as well as wildlife legislation beyond CITES, so as to include species of wildlife beyond just terrestrial non-human animals. Legislation was identified in multiple online databases (ECOLEX, FAOLEX, and ODIHR Legislationonline). Legal definitions of wildlife can be highly variable. In some cases, fish, invertebrates, plants, and timber are not legally considered to be wildlife. Our analysis tried to incorporate wildlife in the fullest sense, to include all non-domesticated animals and plants. The legislation we gathered is, therefore, specific to wild species and ecosystems, to fisheries and aquaculture and to forestry and plants following existing search terms in ECOLEX and FAOLEX. In some cases, when limited information was available for a country, environmental legislation or penal and criminal codes were also reviewed. In total, 1,256 pieces of legislation from 185 countries were analyzed. This yielded just over three thousand (3,081) wildlife-related offences and corresponding penalties. We categorised the offences

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<sup>11</sup> Brunilda Pali, and Ivo Aertsen, 'Inhabiting a vulnerable and wounded earth: restoring response-ability' (2021) 4 *The International Journal of Restorative Justice* 3; Gema Varona, 'Why an atmosphere of transhumanism undermines green restorative justice concepts and tenets' (2021) 4 *The International Journal of Restorative Justice* 41; Tanya Wyatt, Ros Walling-Wefelmeyer, and Alice Weedy, 'Restorative justice and empathy-based interventions for animal welfare and wildlife crimes' (Scottish Government, 17<sup>th</sup> January 2022).

<sup>12</sup> Tanya Wyatt, *Is CITES Protecting Wildlife? Assessing implementation and compliance* (1<sup>st</sup> edn. Earthscan 2021).

into three groups: those involving wild animals, those involving specifically marine wild animals, and those involving wild plants. To allow comparisons to be made between countries, the offences were further consolidated into common offence groups. A list of these appears in Table 1 below, in the Findings section. To standardise comparisons between countries imprisonment times were adjusted to months and financial penalties were converted into US dollars at the exchange rate prevailing in June 2022.

The second part of our analysis involved a rapid assessment of wildlife crime data from 185 countries to assess the availability, accessibility, and robustness of such data. We used an open-source search of government websites, CITES compliance databases, and information compiled and published by intergovernmental law enforcement agencies, such as EUROPOL and INTERPOL. We relied on official data sources provided by government agencies in each jurisdiction (such as environment ministries and law enforcement agencies) and screened out data from non-official sources, such as media reports and non-governmental organisations. Sources were recorded in the master spreadsheet on a sheet separate to the legislation.

### *Limitations and considerations*

As discussed above, there are numerous and dispersed sources of legislation specifying wildlife offences (laws dealing, for example, with fish and game, forestry, environmental management, as well as various penal and criminal codes). The information we gathered is the legislation we were able to access and review, but there may be cases where this is outdated, has since been repealed, or has been re-written but without the changes being made available online. So, our search may have missed some data points. And in countries where wildlife legislation has multiple variations by region, state, or province the picture we present of offences and penalties may be incomplete.

We used Google translate to read legislation where necessary. There were, however, instances where the text was illegible, and translations were not possible. In addition, legislation specific to one of the common offence groups we created (wildlife, marine, plants) was either illegible or not found for ten countries (Bahrain, Cambodia, Egypt,

Greece, Haiti, Libya, Morocco, the Netherlands, Saudi Arabia, and Togo). Although offences were generally well outlined, forty-two countries had legislation that indicated the possibility of imposing a penalty via a fine but left out the details of exactly how these would be calibrated and exacted. Similarly, seventeen countries referred to imprisonment as a penalty but did not define the terms of this further.

The unit of currency in legislation to calibrate fines raises another issue about making comparisons. In many cases fines were stipulated in local currencies. However, nineteen countries<sup>13</sup> specified fines in currencies that are no longer in use. While many of these could be converted to a US dollar equivalent, the outdated nature of the legislation suggests limited oversight. For eight<sup>14</sup> of these countries, currency conversions were not possible. In addition, we found some examples where fines were given in currencies that had since been redenominated (Mozambique, Romania, Türkiye). These were corrected to the current currency valuations, but again reflect the outdated nature of some wildlife legislation. Only the Philippines had legislation which specifically noted that fines would increase to compensate for inflation (increased by at least ten percent every three years) - ‘to maintain the deterrent function of such fines’<sup>15</sup>. Other countries may have similar stipulations for adjusting fines in separate legislation, and it is hoped that any gaps in our findings can be updated by engagement with the online dashboard.

In addition to the above, ninety-four countries had legislation which defined financial penalties in other units (currency points, tax credits, minimum wages), or stipulated that the penalty would be a calculation of value loss or damage caused. There was little consistency here, with countries often having a mixture of penalty types. For example, Germany has some legislation where the penalties are fines (unlawfully keeping a protected species), as well as legislation where the penalty is points-based (fishing without a licence), and others where the penalty is calculated according to the

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<sup>13</sup> Bosnia and Herzegovina, Brunei, Cyprus, Democratic Republic of the Congo, Haiti, Ireland, Israel, Italy, Latvia, Libya, Luxembourg, Malta, Nigeria, Portugal, San Marino, Senegal, Slovakia, Spain, Sudan.

<sup>14</sup> Bosnia and Herzegovina, Brunei, Democratic Republic of the Congo, Libya, Malta, Nigeria, San Marino, Senegal.

<sup>15</sup> [Wildlife Resources Conservation and Protection Act. Republic Act No. 9147](#) 2001.

replacement costs (damage to protected tree species). In cases where other units or calculations are specified, direct comparisons of these penalties with other countries have not been possible.

Regarding the rapid assessment of wildlife crime statistics, data availability is dependent on seizures and interdiction operations, which do not offer a comprehensive picture of the magnitude of wildlife crimes. Furthermore, most data are focused on illegal wildlife trade, and as such offer a limited window on the full variety of wildlife crimes legislated in each corresponding jurisdiction. In the case of the EU, disaggregated data on illegal wildlife trade is limited by the EU single market structure and data are therefore tied to the initial point of entry/interdiction.

## **Findings**

### *Overview of legislative trends*

We found that legislation could be categorised into 14 offence themes. It is important to note that in some countries, offences may or may not be classified as *crimes*. Any form of wildlife exploitation without a licence or in contravention of a licence is by far the most prevalent offence across legislation sources (643 pieces). Specifically for wildlife, trade violations not necessarily tied to CITES are the most prevalent offence theme found in our sample of legislation (365 pieces). The next most prevalent offence is the capture, killing or injuring of a protected species of wildlife (248 pieces) followed by hunting, fishing, logging, exploiting wildlife without a license (243 pieces). We note that there are more offences described here than countries assessed. This is because each country has numerous pieces of legislation, and for each of the consolidated offence themes (Table 1) there are numerous variations and individual offences defined. For example, we counted Canada as having four wildlife-related offences for hunting/exploiting without a licence, because their various legislation texts recognise four separate offences: (1) hunting without a licence, (2) hunting non-excluded wildlife, (3) hunting listed species without a licence, and (4) hunting migratory birds without a permit. Thus, we tallied four offences from multiple pieces of legislation. This speaks to the complexity of wildlife governance, including that related to the management of forestry and fisheries.

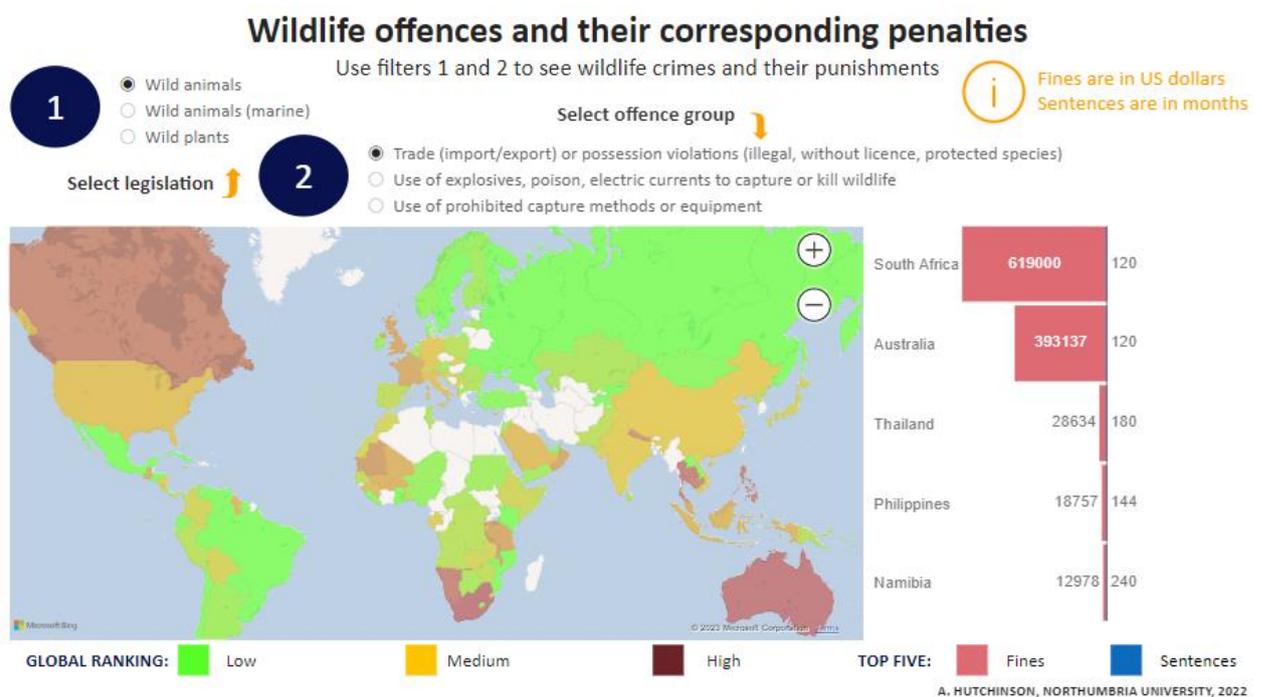
**Table 1: Consolidated wildlife offences** (a note on offence theme terms: ‘wildlife’ includes plants; ‘logging’ broadly encompasses forestry activities such as timber cutting/removal of trees, as well as the removal, uprooting, and picking of other plants and fungi.

<b>Offence themes</b>		 <b>Wildlife</b>	 <b>Marine</b>	 <b>Plants</b>
	Hunting, fishing, logging, exploiting wildlife (capture, injury, killing) <b>without a licence</b> or in contravention of licence.	243	219	181
	Capture, killing or injuring a <b>protected species</b> (without authorisation or in violation of licence).	248	151	145
	<b>Trade</b> (import/export) or possession violations (illegal, without licence, protected species) – not CITES specific.	365	62	71
	Capture, removal, killing or injuring of wildlife in <b>protected or prohibited area</b> .	104	98	94
	Other non-compliance with regulations ( <b>illegal activities</b> generally).	51	98	38
	Capture, killing or injuring wildlife during <b>prohibited time</b> /season.	82	77	3
	Capture, killing, injuring of <b>juveniles</b> (undersized, seedlings), pregnant wildlife, or eggs/breeding sites.	70	70	13
	Use of <b>prohibited capture</b> methods or equipment.	71	74	-
	Use of <b>explosives, poison, electric</b> currents to capture or kill wildlife.	27	66	-
	Causing <b>damage to protected area</b> , habitat, or environment.	19	16	55
	Capture, killing or injuring beyond <b>quota</b> or permitted limits.	18	43	19
	Acts of <b>cruelty</b> , improper treatment, disturbance, or welfare violations.	72	-	-
	Non-compliance with <b>CITES</b> regulations.	49	3	-
	Causing forest <b>fires</b> - damage to flora, fauna, environment.	-	-	37

In most cases, wildlife offences are penalised via the payment of fines or through custodial sentences. While there are some instances where the restoration of damages is also addressed (as when a proportion of fines are designated to the restoration or remediation of damages), these cases are few and far between.

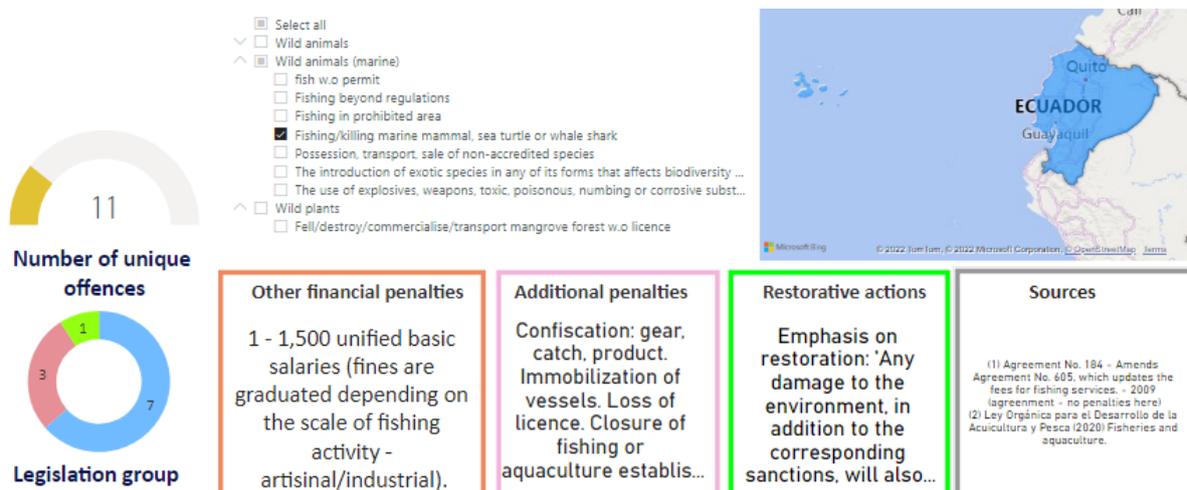
Our database is accompanied by a map that can be filtered according to the consolidated list of offences described in Table 1. Figure 1 shows an example search for the penalties associated with ‘trade (import/export) or possession violations - illegal, without licence, or protected species’ associated with the ‘wildlife’ legislation group. Hovering over individual countries in this map shows details on minimum and maximum sentencing and fines, as well as any details available on restoration action. The top five countries (listed both by lengthiest imprisonment and highest fine penalties) are also shown to the right of the map.

**Figure 1.** Example of the map accompanying the database, showing the results for ‘trade (import/export) or possession violations - illegal, without licence, or protected species’ from the ‘wildlife’ legislation group.

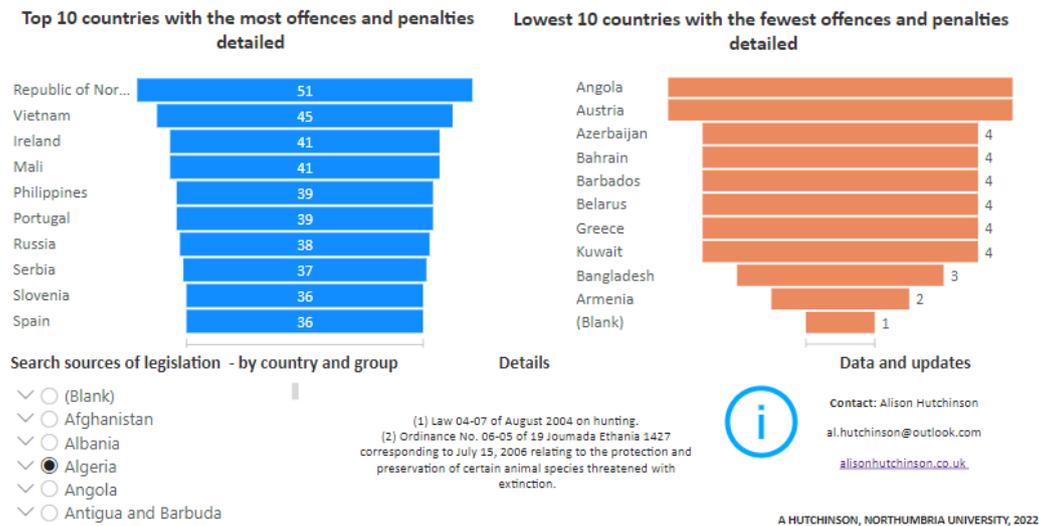


The map also allows investigation of the legislation on a country-by-country basis. Detailed (rather than consolidated) offences can be searched by country. Figure 2 gives an example search from Ecuador (selection 1), and the offence of fishing or killing a marine mammal, sea turtle or whale shark (selection 2). Details on imprisonment and fines are shown within the map view (when hovering over the country), whereas further details on additional penalties, variations of financial penalties, and restorative actions are displayed in the boxes below. The legislation underpinning the database can also be queried using the filter function by country and legislation grouping (see Figure 3).

**Figure 2.** Country focus filter, showing offences for Ecuador and highlighting penalties for fishing or killing marine mammals, sea turtles or whale sharks ('wildlife-marine' legislation group).



**Figure 3.** Data and legislation filter, showing the distribution of individual offences in the top and bottom ten countries, as well as a searchable option to review the legislation.



Penalties for wildlife crimes are typically given in minimum and maximum ranges (or no less than / no more than a specified amount). Following this approach, the minimum and maximum penalties (fines/imprisonment) for the consolidated offences given in Table 1 are displayed in Table 2. In addition, as our focus is on the harshness of penalties, the average of the maximum penalties for offences is also shown.

<b>Table 2.</b> Range of penalties (fines and imprisonment) for wildlife offences.								
<b>Offence themes</b>			<b>Fines (USD)</b>			<b>Imprisonment (months)</b>		
			<b>Minimum</b>	<b>Maximum</b>	<b>Average Max.</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Average Max.</b>
	Hunting, fishing, logging, exploiting wildlife (capture, injury, killing) <b>without a licence</b> or in contravention of licence.		\$0.0009: Venezuela	\$5,330,874: Saudi Arabia	\$79,974	0.25: Canada	120: Bolivia, Guatemala, Namibia	34
			\$0.0076: Sierra Leone	\$500,000 Somalia	\$189,716	0.25: Luxembourg	84: Indonesia, Myanmar	21
			\$0.0076: Sierra Leone	\$798,863 Luxembourg	\$34,614	0.25: Luxembourg	120: Guatemala	29
	Capture, killing or injuring a <b>protected species</b> (without authorisation or in violation of licence).		\$0.0009: Venezuela	\$798,863: Luxembourg	\$44,597	0.25: Belgium, Luxembourg	1000: Uganda	58
			\$0.11: Dominican Republic	\$500,000: Somalia	\$65,251	0.04: Mexico	240: Philippines, Tanzania	35
			\$0.13: Haiti	\$619,000: South Africa	\$38,065	0.3: Philippines	144: Philippines	41
	<b>Trade</b> (import/export) or possession violations (illegal, without licence, protected species) – not CITES specific.		\$0.0076: Sierra Leone	\$9,398,040 Canada	\$183,571	0.25: Belgium, Canada, Luxembourg, Yemen	360: Malawi	42
			\$41: Equatorial Guinea	\$827,661 Equatorial Guinea	\$76,125	0.25: Luxembourg	60: Ethiopia, Mauritius	23
			\$0.44: Sudan	\$207,220 Malta	\$19,392	0.5: Costa Rica	240: Thailand	50

###	Capture, removal, killing or injuring of wildlife in <b>protected or prohibited area.</b>		\$0.001: Venezuela	\$798,863 Luxembourg	\$31,173	0.25: Luxembourg	120: Guatemala, Tanzania	36
			\$1: Madagascar	\$2,880,887 Cape Verde	\$149,249	1: Mali, Yemen	72: Colombia, Philippines	24
			\$0.44: Sudan	\$484,267: Ivory Coast	\$18,864	1: Mali	180: Vietnam	35
	Other non-compliance with regulations ( <b>illegal activities</b> generally).		\$2: Mongolia	\$794,777 Canada	\$35,833	0.3: Mali	60: Canada, Paraguay, Zambia	27
			\$0.89: Haiti	\$5,761,774: Cape Verde	\$204,691	1: Bangladesh, Gabon, Haiti, Libya,	60: Ivory Coast, Paraguay	24
			\$17: Georgia	\$103,842: Slovakia	\$18,661	2: Mauritania	24: Denmark, Finland, Ireland, Senegal	17
	Capture, killing or injuring wildlife during <b>prohibited time/season.</b>		\$0.0009: Venezuela	\$43,213: Cape Verde	\$4,945	0.25: Canada, Luxembourg	84: Vietnam	30
			\$0.11: Dominican Republic	\$817,661: Equatorial Guinea	\$47,769	0.25: Dominican Republic, Luxembourg	72: Philippines	25
			\$3.69: Cambodia	\$36,932: Cambodia	\$22148	3: Ivory Coast	120: Cambodia	72
	Capture, killing, injuring of <b>juveniles</b> (undersized, seedlings),		\$0.0009: Venezuela	\$363,736: Brunei	\$26,678	1: Niger, Togo	60: Comoros, Mauritania, South Sudan, Sri Lanka	21

	pregnant wildlife, or eggs/breeding sites.		\$0.11: Dominican Republic	\$300,000: Madagascar	\$25,361	0.25: Dominican Republic, Luxembourg	60: Peru	17
			\$16: Burkina Faso	\$3,462: Slovakia	\$955	2: Türkiye	24: Niger	18
	Use of <b>prohibited capture</b> methods or equipment.		\$0.22: Vietnam	\$798,863: Luxembourg	\$43,075	0.25: Canada, Luxembourg	144: Mozambique	34
			\$0.11: Dominican Republic	\$2,880,887: Cape Verde	\$143,069	0.25: Dominican Republic	120: Gambia	26
	Use of <b>explosives, poison, electric</b> currents to capture or kill wildlife.		\$0.0009: Venezuela	\$798,863: Luxembourg	\$81,726	0.25: Canada, Luxembourg	60: Uzbekistan	23
			\$32: Togo	\$500,000: Yemen	\$53,533	1: Luxembourg	84: Iraq	29
	Causing <b>damage to protected area,</b> habitat, or environment.		\$0.12: Iran	\$266,544: Saudi Arabia	\$40,435	1: Iran	60: Malaysia	28
			\$129: Vietnam	\$39,943: Portugal	\$13,620	6: Jordan, Vietnam	60: Cambodia, Comoros	41
			\$32: Maldives	\$798,863: Luxembourg	\$48,034	0.25: Luxembourg	180: Vietnam	60
	Capture, killing or injuring beyond <b>quota</b> or permitted limits.		\$0.0009: Venezuela	\$13,691: Mauritania	\$2,414	0.25: Canada	60: DRC, Zambia	28
			\$8: Cuba	\$5,761,774: Cape Verde	\$400,670	24: Peru, Solomon Islands, Tanzania Tanzania Tonga	60: Peru, Tanzania	29

			\$8: Cameroon	\$685,354: Indonesia	\$8,5347	0.75: Cameroon	120: Indonesia	46
	Acts of <b>cruelty</b> , improper treatment, disturbance, welfare violations.		\$19: Philippines	\$26,629 Montenegro	\$3,224	0.2: Monaco	60: Honduras	12
	Non-compliance with <b>CITES</b> regulations.		\$12: Madagascar	\$74,004: St Kitts and Nevis	\$19,110	0.5: Tunisia	\$120: Madagascar	34
			-	\$5,798 Brunei	\$5,642	24: Nicaragua	48: Nicaragua	24
	Causing forest <b>fires</b> - damage to flora, fauna, environment.		\$0.28: Somalia	\$5,326 Ireland	\$2,087	1: Cameroon	168: Cyprus	59

Of the 185 countries whose legislation has been assessed, the highest financial penalty for wildlife offences is from Canada, where the maximum penalty for the possession or trade of wildlife without authorisation (including wildlife that has been obtained in contravention of foreign laws) is \$9,398,040 USD<sup>16</sup>. This is followed by Cape Verde where a range of fishery offences (including fishing without a licence and fishing beyond the catch quota) carry a maximum penalty of \$5,761,774 for industrial fishing vessels<sup>17</sup>. For plant/forestry specific legislation, the highest maximum penalties were from Luxembourg<sup>18</sup>. Here, exploiting forest resources without a licence or causing damage to a Protected Area has a maximum fine of \$798,853. On the other end of the scale, eleven countries (Suriname, Venezuela, Sudan, Burundi, Iraq, Sierra Leone, Haiti, South Sudan, Iran, Nigeria, Uganda) all had maximum penalties of less than one US dollar. A further twenty-two countries issued maximum fines that were less than \$10 US dollars.

When focussing on imprisonment as a penalty, the maximum sentences were found in Uganda, where life sentences can be ordered (shown here as 1000 months) for the hunting or trading of protected, endangered or 'extinct in the wild' species. However, in this case an alternative penalty of between 10,000 – 1,000,000 currency points may be issued instead of imprisonment<sup>19</sup>. The shortest minimum sentence was found in Mexico for the capture of prohibited species which may result in administrative arrest of up to 36 hours<sup>20</sup>.

In addition to fine-based or imprisonment-based penalties, most countries (138 of the 185 assessed) also included further financial or additional sanctions (e.g., the loss of licences, the forfeiture of illegally obtained wildlife, or the confiscation of equipment and vehicles). For example, Monaco's Sovereign Ordinance No. 67<sup>21</sup> specifies that

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<sup>16</sup> [Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act](#) 1992 (Section 22(3)).

<sup>17</sup> [Legislative Decree No. 2/2020 approving the general regime regulating fishing activities in national maritime waters and the high seas](#) 2020 (Chapter VIII).

<sup>18</sup> [Loi du 18 juillet 2018 concernant la protection de la nature et des ressources naturelles](#) 2018.

<sup>19</sup> [Uganda Wildlife Act](#) 2009.

<sup>20</sup> [Ley General de Vida Silvestre](#) 2000.

<sup>21</sup> [Ordonnance Souveraine n° 67 portant application de la Convention sur le commerce international des espèces de faune et de flore sauvages menacées d'extinction, adoptée à Washington le 3 mars 1973](#) 2005.

violations of CITES or the transport of CITES-listed species with insufficient protections against injury or illness may, in addition to imprisonment and fines, be addressed by confiscating live animals, closing the business responsible for the infraction, and requiring offenders to reimburse the costs of confiscation and to pay for the safekeeping of the seized wildlife.

Some penalties stood out as less conventional and particularly harsh. For example, in Egypt the penalty for uprooting trees or plants, or destroying tree grafts<sup>22</sup> (an offence under the 1937 Penal Code) includes imprisonment with labour. However, the length of this term is not clear. Other countries also stipulate hard labour or work camps within their punishments. For example, in Syria the penalty for intentionally causing forest fires is more than seven years imprisonment with hard labour<sup>23</sup>. In addition, if a person dies as a result of the fire the penalty is increased to the death penalty.

### *Limited focus on wildlife*

Our search found 72 legislative texts concerning animal welfare or cruelty to animals (Table 1). A potent example of this can be found in the Philippines'<sup>24</sup> 'Animal Welfare Act of 1998' (section 7), which expands the definition of animal cruelty to include the destruction of habitats, stating:

'It shall be the duty of every person to protect the natural habitat of the wildlife. The destruction of said habitat shall be considered as a form of cruelty to animals and its preservation is a way of protecting the animals'.

However, in most of the legislation covering animal welfare, wildlife is often specifically excluded or not focussed on in further detail. For example, animal welfare legislation in Chile, France, the Netherlands, and Palau<sup>25</sup> each focus on domesticated animals and pets but exclude wildlife from further discussion on penalties. In addition,

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<sup>22</sup> [Law No 58 01: The year 1937 Promulgating the Penal Code](#) 1937.

<sup>23</sup> [Forestry Law No.6](#) 2018 (Article 29).

<sup>24</sup> [Republic Ac No. 8485 - The Animal Welfare Act](#) 1998 (Section 7).

<sup>25</sup> Chile, [Ley N° 20.380 - Ley sobre protección de animales](#) 2009; France, [Penal Code of France](#) 1992, the Netherlands, [Act amending articles 254 and 455 of the Penal Code and other enactments in the field of animal protection \(Animal Protection Act\)](#) 1961; Palau; [National Code](#) 1966

Poland's<sup>26</sup> 'Animal Protection Act' prohibits cruelty, abuse, and killing except when those acts are directed toward fish or livestock. A similar removal of certain wildlife is found in Czechia<sup>27</sup>. Here cruelty to 'wild' animals is recognised, but this does not apply to a foetus or embryo. As such, this would not recognise crimes involving the destruction of fish or bird eggs as an animal cruelty offence. In contrast Iceland's animal welfare regulations<sup>28</sup> apply to vertebrates, decapods, squid, honeybees, and fetuses - 'from the moment their sensory organs have reached the same stage of development as in living animals'. Although less frequently found, animal cruelty offences appear to be penalised with harsher sentences and fines in comparison to some other wildlife offences (Table 2). San Marino's Act No. 101<sup>29</sup> offers an additional deterrent for cruelty toward animals. Here, the torture of animals as well as the mistreatment of wildlife during trafficking and trade is prohibited and punished with a second-degree arrest or fine (otherwise unspecified). In addition to this, the Act also specifies that offenders must also publicise, at their own expense, their sentence in both a local and foreign newspaper.

### *Non-custodial penalties*

While the focus of penalties toward wildlife-related crimes rests heavily on the issuing of fines, prison sentences and confiscations (of property and licences), other approaches frequently run in parallel to these sentencing structures. These approaches variously include sentences of community service, re-education, restoration and remediation orders, and community involvement in the administrative or penal process. These non-custodial approaches are typically included as an additional or alternative penalty to fines and prison sentences, but their presence within wildlife-related legislation demonstrates an opportunity to expand upon a RJ approach and adjust responses to wildlife crimes.

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<sup>26</sup> [Animal Protection Act](#) 1997.

<sup>27</sup> [Act on the protection of animals against cruelty](#) 1992; [Act amending Act on the protection of animals against cruelty](#) 2020.

<sup>28</sup> [Act No. 55 on animal welfare](#) (2013).

<sup>29</sup> [Act No. 101 laying down penalties as regards animal welfare](#) 2003.

Compensatory work or community service is sometimes but not frequently established as an alternative to fines or imprisonment. For instance, Mozambique's<sup>30</sup> 'Law No. 16/2014 on Protection, Conservation and Sustainable Use of Biodiversity' prohibits the killing or sale of CITES-listed species without authorisation, as well as regulating hunting activities. Article 53.2 of this legislation states that: 'in duly justified cases, an alternative penalty may be applied to the offender, including work to compensate for the conservation effort'. Similarly, Article 267 of Burkina Faso's Forestry Law<sup>31</sup> alludes to community service 'for the purpose of education and taking into account the circumstances of the case, the court may replace the sanctions provided for in the preceding article by work of interest'. In addition, or as an alternative to fines, New Zealand further specifies sentences of community work or service (less than 2 years) for the hunting of wild animals or the sale of wild carcasses without permission or the required licences<sup>32</sup>. Japan also specifies 'work' as a penalty (ranging from 1 to 3 years) for the unauthorised trade in endangered species, for violations of trade regulations (concerning plant quarantines and trade port locations), and for various fishery violations<sup>33</sup>. In each of these cases, fines or imprisonment may also be issued.

Non-custodial penalties are also established in Vietnamese legislation<sup>34</sup>. Here, penalties may either take the form of a fine (ranging from \$216 to \$4,310 US dollars), a prison sentence (ranging from six months to fifteen years) or may include a term of between two and three years of non-custodial reform. Up to two years of non-custodial reform may be applied to offences including the illegal hunting, trade, or transport of rare and endangered wildlife (and wildlife products), as well as the hunting of protected wildlife, hunting during prohibited times, or in prohibited areas. Non-custodial reform penalties increase to up to three years for offences involving marine species and forests (fishing in prohibited areas or times, exploiting rare aquatic species or destroying their habitat, and destroying forests). In addition to this non-custodial

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<sup>30</sup> [Law No. 16/2014 on Protection, Conservation and Sustainable Use of Biodiversity](#) 2014.

<sup>31</sup> [Loi n° 003-2011/AN portant Code forestier au Burkina Faso](#) 2011 (Article 267).

<sup>32</sup> [Wild Animal Control Amendment Act](#) 1997.

<sup>33</sup> [Law No. 97 of 2003: Law Concerning the Conservation and Sustainable Use of Biological Diversity through Regulations on the Use of Living Modified Organisms](#) 2003; [Act No. 313: Act on the Protection of Fishery Resources](#) 1951.

<sup>34</sup> [Decree No. 32/2006/ND-CP on Management of Endangered, Precious and Rare Forest Plants and Animals](#) 2006; [Penal Code \(Order No. 01/L-CTN\)](#) 1999..

focus, offenders are made further responsible for remedying the consequences of the offence, to restore the environment and compensate for the damages.

Community service of varying lengths is also outlined in wildlife legislation from Kazakhstan, Lithuania, Mexico, Moldova, the Netherlands, and Peru.<sup>35</sup> However, in each of these cases (excluding Peru) community service is an optional penalty alongside other more conventional punishments (fines and imprisonment). Only in Peru's penal code<sup>36</sup> was community service of between 10 – 30 days the sole penalty for offences involving cruelty towards animals or subjecting them to excessive work.

### *Restorative actions*

Our analysis shows that only fifty-four countries have adopted legislation that involves a restorative element, for instance by requiring offenders to take financial responsibility for the restoration of damages caused. This restoration is typically described in the allotment of fines section, whereby a proportion, or all, of the fines associated with the penalty are directed toward restoration or remediation works. However, building on a RJ approach, the payment of fines for the unlawful killing, abuse, and exploitation of wildlife (including plants) does little to repair or remedy the damage or harm directly suffered by wildlife victims. A more comprehensive RJ approach is, thus, largely missing from existing legislation. Various elements relating to restoration and RJ more broadly are discussed below.

### Educational

In Laos, hunting or fishing offences (e.g., without a permit, within conservation zones, during prohibited times, or using prohibited methods) may be punished with a fine (not specified, but calculated according to the species impacted) or a term of imprisonment (generally around 3 months to 5 years)<sup>37</sup>. However, in cases where the offence is considered a minor one and the damage does not exceed 1,000,000 Kip,

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<sup>35</sup> Kazakhstan, [Administrative Offences Code](#) 2001, Lithuania, [Criminal Code of the Republic of Lithuania](#) 2000; Mexico, [Ley General de Vida Silvestre](#) 2000; Moldova, [Criminal Code of the Republic of Moldova](#) 2002, Netherlands, [Wetboek van Strafrech](#) 1994 (amended 2014); Peru, [Código Penal \(Decreto Legislativo N° 635 del 3 de abril de 1991\)](#) 1991.

<sup>36</sup> [Código Penal \(Decreto Legislativo N° 635 del 3 de abril de 1991\)](#) 1991.

<sup>37</sup> [Fisheries Law No. 03/NA](#) 2009.

penalties may take the form of ‘corrective education’. For instance, the Forestry Law<sup>38</sup> notes that when offenders are ‘sincere in confessing and who return all illegal assets, shall be subject only to a warning and corrective education’. Although the ambition here is seemingly to reduce re-offending, the scope of corrective education is generally not defined.

### Return of wildlife

Both Luxembourg, Paraguay and the Netherlands stipulate that the offender shall be responsible for the expense of returning wildlife (both animals and plants) to their natural environment. For example, the Netherlands’ Nature Conservation Act<sup>39</sup> states that wildlife are to be returned to their country of origin (or another suitable place outside of the Netherlands) at the expense of the owner, carrier, importer, or authorised representative. Similarly, Paraguay’s legislation<sup>40</sup> states that ‘expenses related to reintroduction, such as care, food, transportation and release, will be borne by the offender(s)’.

### Restoration of damages

As mentioned earlier, fifty-four countries highlight the need for offenders to restore or compensate for damage caused (reforestation, fines calculated according to the area of forest cleared, or according to the number of wildlife exploited illegally, and restoration activities to previous states more generally). For instance, the Philippines ‘Wildlife Resources and Conservation Act’<sup>41</sup> states that-

‘if the area requires rehabilitation or restoration as determined by the court, the offender should also be required to restore or compensate for the restoration of the damage.’

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<sup>38</sup> [Forestry Law No. 06/NA 2021](#) (Article 168).

<sup>39</sup> [Nature Conservation Act 2015](#).

<sup>40</sup> [Decreto N° 10.655/91 - Crea organismos, asigna funciones, dicta medidas de conservación y regula la caza de las especies incluidas en los apéndices de CITES](#) 1991 (Article 17).

<sup>41</sup> [Wildlife Resources Conservation and Protection Act. \(Republic Act No. 9147\)](#) 2001.

Similarly, Serbia's Environmental Law<sup>42</sup> states that the destruction of trees and plants must be restored with new seedlings. These types of restoration activities were typically found within forestry or environmental legislation, applied to crimes of overharvesting or logging of 'forest resources', or for crimes of environmental pollution and degradation. When restoration sentences are applied to wild animals this typically takes the form of compensatory fines paid to the state (environmental or conservation government branches) or to impacted landowners based on the value of lost wildlife. This approach does little to remedy the direct victimisation of wildlife. Nor does it repair the damaged relationship between victims, offenders, and communities. Perhaps to move beyond the human-centred valuation of wildlife, Moldova's 'Law on Environmental Protection'<sup>43</sup> highlights that: 'the state confirms the right to existence of all kinds of wildlife (regardless of their significance for humans) as an essential element of the planetary circulation of substances, climate formation and restoration potential of natural resources.' However, despite this acknowledgement, penalties for environmental and wildlife offences continue to take the form of compensatory fines according to damage caused.

### Other instances

In some cases, the act of restoring damages may lead to a suspension of other penalties (fines or imprisonment). For example, Portugal's Environmental Offences regulations<sup>44</sup> states that criminal sanctions may be mitigated if the offender has voluntarily repaired and reversed the damage caused, in cases where:

'...there have been acts demonstrating the agent's repentance, namely the repair, as far as possible, of the damage caused and compliance with the rule, violated order or warrant... (among other stipulations)'.

However, this is only applicable if the damage is not considered to be 'serious'. Similar considerations are seen in Spain's hunting and fishing legislation where fines may be withdrawn or commuted for provisions of 'substitute environmental benefit'. Further

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<sup>42</sup> [Environmental Law](#) 1991.

<sup>43</sup> [Law on environmental protection No. 1515 of 16.06](#) 1993 (Article 58).

<sup>44</sup> [Law No. 50: approving the framework of environmental offences](#) 2006 (Article 23-A).

examples are seen in Mexico's wildlife legislation<sup>45</sup> whereby 'the written reprimand, the fine and the administrative arrest may be commuted for community work in activities for the conservation of wildlife and its natural habitat'.

### Community involvement

Of the fifty-four countries that discussed restorative actions, nine<sup>46</sup> made further mention of community involvement. For instance, St Kitts and Nevis' Biodiversity Strategy and Action Plan<sup>47</sup> (p.49) notes the need to –

'facilitate discussion of the value of environmental legislation and standards to local communities and open wider discussion on more culturally appropriate penalties for the contravention of laws and regulations'.

Similar community discussions are also stipulated in Argentina's environmental legislation<sup>48</sup> which states that communities may be involved in planning stages and have a 'duty to actively intervene in the community for the defence and/or conservation of the environment'. Similarly, Bosnia and Herzegovina's legislation<sup>49</sup> notes that compensatory measures can be informed by members of the public. Other mentions of community involvement in determining penalties and remediation were also found in the legislation from Ecuador<sup>50</sup> and The Gambia<sup>51</sup>.

Although not expressly related to decisions about penalties, Japan's Law for the Promotion of Nature Restoration<sup>52</sup> states that 'nature restoration' should include –

'the participation of various actors in the community, including concerned governmental agencies, concerned municipal governments,

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<sup>45</sup> [Ley General de Vida Silvestre](#) 2000

<sup>46</sup> Argentina, Bosnia and Herzegovina, Burkina Faso, Dominican Republic, Ecuador, Gambia, Japan, St Kitts and Nevis, and Thailand.

<sup>47</sup> [National Biodiversity Strategy & Action Plan 2014-2020](#) 2014 (p.49).

<sup>48</sup> [Ley N° 7.371 - Ley Provincial de Medio Ambiente](#) 2002 (Article 45).

<sup>49</sup> [Law on nature protection](#) (2013).

<sup>50</sup> [Código Orgánico del Ambiente \(COA\)](#) 2017.

<sup>51</sup> [Forest Act](#) 1998.

<sup>52</sup> [Law No 148: Law for the Promotion of Nature Restoration](#) 2002 (Article 2).

local residents, specified non-profit corporations...and individuals with specialized knowledge of the natural environment, with the objective of recovering the ecosystems and other natural environments that have been damaged or destroyed in the past.'

This wider involvement of interested parties, including residents and those with specialist expertise (environmental, conservation) may be an avenue to bridge the gap between otherwise unrecognised wildlife victims when adopting a RJ approach.

As noted, this is an overview of what is stipulated in legislation. This does not mean, however, that the penalties mentioned are actually being imposed. To get a better handle on that question, the second part of our data collection involved a rapid assessment of whether and where wildlife crime statistics could be gathered from public sources. This is a step towards being able to understand which penalties are being given, when and to whom.

#### *Wildlife Crime statistics*

Our criteria for determining the availability of wildlife crime data were based on reports published by official government sources and complemented by CITES compliance databases. We use the same regional groupings of countries that CITES has adopted. Europe is an interesting case, here, because for the member countries (27) of the European Union and 11 other countries (Iceland, Liechtenstein, North Macedonia, Norway, Monaco, Montenegro, San Marino, Serbia, Switzerland, Türkiye, and Ukraine), data available in the EU-TWIX database are not disaggregated on a country basis, likely due to the structure and oversight of the single market. While the EU-TWIX database is a prominent source of data, these data are aggregated and limited to law enforcement access for the most part. Further research of this approach is warranted as this model is being replicated in various regions of the world. Although our intention was to identify publicly available sources of wildlife crime statistics, very little of the information tallied in the 'Data Available' column of Table 3 is open source. The datasets identified for Africa and Asia (and Europe via EU-TWIX) are only available to law enforcement agencies. Some countries, such as Costa Rica or Canada, produce an annual summary report of wildlife crime offences. And others, such as

Colombia, the UK and the US, have a process for making public information requests. Related to the EU-TWIX type databases are the role of Wildlife Enforcement Networks (WENs). In looking for publicly available wildlife crime datasets, we found reference to WENs at various stages of maturity and sophistication. WENs like ASEAN WEN – the Association of South East Asian Nations – could provide platforms for data collection.

**Table 3 – Results of the Rapid Assessment to find sources of Wildlife Crime Statistics**

<b>Region</b>	<b>Data Available</b>	<b>Data Not Available</b>
Africa	7	47
Asia	7	31
Caribbean, Central America and South America	6	26
Europe	42	7
North America	3	0
Oceania	3	6
<b>TOTAL</b>	<b>68</b>	<b>117</b>

The CITES Annual Illegal Trade Report (AITR) can also be useful. The latest report, for example, compiling incidents of illegal wildlife trade as reported by the parties to CITES, contains data from 2016 through 2020. However, of the 184 parties to CITES, 90 have never reported illegal trade<sup>53</sup>, including parties with known incidents of poaching of elephants and other wildlife. This is, of course, a serious limitation of the data and an indication that much of the wildlife trafficking that occurs is not being reported.

## **Discussion and Conclusion**

Despite the push in the last few years for wildlife trafficking to be prioritised and responded to as a serious offence similar to other crimes, our legislative review shows that the predominant response is fines. We suggest that this is ineffective for several reasons. First, the information we have about the arrest and sanctioning of wildlife

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<sup>53</sup> Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), ‘Annual Illegal Trade Reports’ (Geneva, Switzerland 2021).

crime offenders indicates the people who are arrested and prosecuted are not the ‘kingpins’ or more affluent actors in the supply chain. They are people likely committing wildlife crimes for reasons related to poverty and economic necessity. In these cases, the imposition of fines may be doing more harm than good. Second, and at the other end of the offender spectrum, fines are not likely to be a deterrent for corporations or powerful individuals. They are likely written off as a cost of doing business with little impact on their offending behaviour<sup>54</sup>. Finally, depending on what happens to the money from the fines, financial penalties do little or nothing to repair the damage caused.

Many countries do allow for the possibility of imprisonment for violations of wildlife crime statutes. And some of these prison terms can be considerably lengthy, with life sentences in the most serious cases. Although this signals that wildlife crimes can be penalised with the same severity as other serious crimes<sup>55</sup>, prison, too, is unlikely to be effective. Studies of other crimes show that prison sentences have a limited impact on the probability of reoffending. In many places they also perpetuate discriminatory patterns in the criminal justice system (i.e., overrepresentation of minoritised and marginalised people). Thus, prison is not likely to be effective in tackling wildlife crime even if it were to be used more often.

The legislative review also confirms that non-custodial interventions that are alternatives to fines and/or imprisonment are not prevalent. Although these interventions may hold promise for changing people’s behaviour, they need to be much more widely deployed and much more carefully monitored and evaluated before deciding which might be most effective at protecting wildlife.

Our rapid assessment of wildlife crime datasets also confirms with concrete evidence that wildlife crime statistics continue to be limited, both in their availability and reliability, and this is despite longstanding efforts to improve data related to wildlife and the environment. The United Nations Rio Declaration on Environment and Development, for example, called for civil society to have “appropriate access to

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<sup>54</sup> Angus Nurse and Tanya Wyatt, *Wildlife Criminology* (1<sup>st</sup> edn, Bristol University Press 2020).

<sup>55</sup> Justin Marceau, *Beyond Cages: Animal Law and Criminal Punishment* (1<sup>st</sup> edn, University of Denver Press 2019)

information concerning the environment that is held by public authorities”<sup>56</sup> as long ago as 1992. But much information about wildlife crime is still only available to law enforcement agencies, leaving the rest of us without an accurate, overall picture of where wildlife crime is occurring and what impacts it has. Our understanding of wildlife crime is limited to wildlife trafficking of iconic species and/or to regions that have the interest in as well as the financial and human resources to detect, record, and report these offences.

We cannot design and implement more effective prevention and disruption strategies for dealing with wildlife crimes unless we develop a more accurate picture of why, how and where they are occurring and what responses are now in use. The legislative review and rapid assessment we have undertaken emphasize the need for more countries to collect data and to make that data publicly available. There are also serious gaps in our knowledge about whether and how the penalties provided for in legislation are actually imposed in the various countries of the world, and what impacts they have in turn on the behaviour of offenders. Our hypothesis is that once these knowledge gaps are filled it will be clear for wildlife crimes as it is for other crimes that non-custodial and restorative interventions hold more promise for people and the planet than the standard reliance on fines and imprisonment. And we hope that future research by us and others will address that promise.

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<sup>56</sup> United Nations General Assembly (UNGA). ‘Rio Declaration on Environment and Development’ (A/CONF.151/26 (Vol. I), 12 August 1992) Principle 10, p.2.