



## Short communication

## Underestimating the illegal wildlife trade: A ton or a tonne of pangolins?

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## ARTICLE INFO

## Keywords:

CITES  
Manis  
Media communications  
Seizures

## ABSTRACT

Analysing seizure data is an important part of understanding the scale of the global wildlife trade and is essential when attempting to detect trends in organised crime activities, success of enforcement efforts and species conservation status. Confusion over the Imperial and metric systems with regards to the units of measurement ton and tonne due to careless reporting or an impression that difference between the two is an issue of American vs British spelling has led to considerable mis-reporting and underestimating of the volumes of pangolins involved in the illegal international wildlife trade. Here we highlight this issue and call upon conservationists, media communications officers and journalists to be more careful and accurate when reporting on tons or tonnes of wildlife in trade.

A ton is a unit of mass. In the United States of America (US) and formerly Canada, a ton, also referred to as a short ton, equals 2000 US pounds or 907.2 kg. In the United Kingdom (UK) and other Commonwealth Nations that continue to use the Imperial system, a ton, or long ton, equals 1016.0 kg (or 160 stone). In most of the rest of the world a ton is written as a tonne, and this equals 1000 kg. Although the tonne (symbol t) is not a SI unit of measurement, it is accepted for use with the SI; a short or a long ton is not. A ton or a tonne is not related to American and British spelling. Conservation is not rocket science (it is more difficult), but the fact that the National Aeronautics and Space Administration lost a US\$190-million Mars Climate Orbiter because of a metric/Imperial system confusion (NASA, 1999), underscores the importance of getting measurements right.

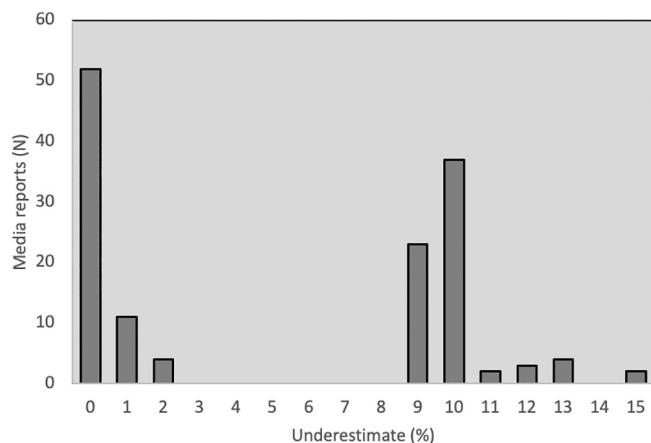
Pangolins make up a small order of mammals (Pholidota), with four extant species occurring in Africa and four in Asia. Both the pangolin and its parts, including the scales that cover large parts of its body, are traded internationally to be used as food and in traditional medicine (Pantel and Chin, 2009; Heinrich et al., 2016; Nijman et al., 2016). All species of pangolin are listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) precluding all international commercial trade. Often stated as the most heavily trafficked CITES-regulated mammal (Challender et al., 2014), pangolins have become a poster child of the illegal wildlife trade. In June and November 2020, we conducted online searches for seizures of pangolins (search terms: seizure/pangolin) made between January 2019 and November 2020 as reported in the media and recorded date,

location and mass of the seizure. Once we had located a seizure for which the seizing authority originally reported the mass in ton, tons or tonnes, we used date and location to search for other reports of this seizure and noted whether there were discrepancies in reporting. Identical reports of the same seizure (by media outlets publishing press releases prepared by NGOs or government agencies verbatim without editing or any additional original reporting) were documented once, with the additional identical reports discarded to avoid duplication in our dataset. We focus only on English language reports, acknowledging that this represents only a part of the total coverage (Nijman, 2015).

We found six large seizures of pangolins in 2019 and 2020, i.e. one seizure of 8.3 tonnes of scales in Hong Kong in January 2019 that was first reported on in February; one seizure of 29.8 tonnes of mainly frozen pangolins in the Malaysian State of Sabah in February 2019; two seizures of 12.9 tonnes and 12.7 tonnes of scales, also reported as one related seizure of 25.6 tonnes, in Singapore in April 2019; one seizure of 9.5 tonnes of scales in a warehouse in Lagos, Nigeria in January 2020 that was firstly reported in February; and one seizure of 6.16 tonnes of scales in Port Klang, Malaysia, in March 2020 and first reported on in April. These events were covered by 139 media reports. Of these, just under half (63/139) reported it correctly, either in the measurement originally presented or using a conversion within 1% accuracy. Only 4% (5/139) reported it correctly in both tons and tonnes. We found two reports where a double conversion took place (29.8 tonnes was converted to 30 tons which was then converted to 27 tonnes) and one where 9504 kg was reported as 9.5 kg (we excluded this from the analysis).

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**Fig. 1.** Reporting on the mass of six large pangolin seizures in 2019 and 2020 in the media, showing that more than half of these reports underestimate the real value due to conversion errors and a misunderstanding of the difference between a ton and a tonne.

Changing the spelling from tonnes to ton was frequent without converting the mass, resulting in a clustering of under reporting of between 9 and 11% (Fig. 1). An underreporting of 3 tonnes of scales represents anything between 830 (giant pangolin *M. gigantea*) and 8300 (Sunda pangolin *M. javanica*) individual pangolins (conversion measurements from Challender and Waterman, 2017). Using seizure data from media outlets does result in errors in assessments of the scale of the trade in the conservation literature. For instance, Mambuya et al. (2018) treated 5.4 tons of pangolin scales seized in Cameroon as 5.4 tonnes, and conversely, Hua et al. (2015) and Nan and Hongxia (2016) treated 24 tonnes and 11.5 tonnes of frozen pangolin from Indonesia seized in Vietnam and China as 24 tons and 11.5 tons, respectively. International trafficking in pangolins and their derivatives between January 2017 and July 2019 involved an estimated equivalent of over 500,000 animals (Challender et al., 2019: p 267): a 5% miscalculation (“half of the media outlets making a 10 percent error”) thus may equal an underestimate of 25,000 pangolins trafficked over this two-and-a-half year period.

For pangolins, where seizures were mostly made in Asian countries that use tonnes, the confusion between tonne and ton led mostly to an underestimate of the number of pangolins in trade. For taxa that are seized in large quantities in countries like the US where seizures are firstly reported in tons, we expect that the poor understanding of the mass associated with tonne and ton, and the resulting confused conversions will lead to overestimates. For instance, in November 2013, the US authorities crushed 6 tons (5.4 tonnes) of confiscated ivory, which outside the US was widely reported as to comprise of 6 tonnes of ivory, an overestimate of more than 10%.

As the confusion between ton and tonnes is unlikely to disappear, we urge conservationists, media communications officers and journalists to be more accurate and explicit when referring to it, possibly by using both units upon first mention.

#### Credit authorship contribution statement

Conception: VN, CRS; Analysis: VN; Writing and reviewing: VN, CSR; all authors agreed to the submission of this manuscript.

#### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

#### Acknowledgements

We thank the reviewer and the associate editor for constructive comments and suggestions for improvement.

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