

## A critical comment to D'Cruze and Macdonald (2016)

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It was with great expectations that we started reading D'Cruze and Macdonald (2016), since the analysis of illicit global wildlife trade (IWT) has strong implications on the evaluation of global trends and the level of commitment of national authorities to this important issue. Therefore, we completely agree with the scope of this article and the option to focus on the IWT of live specimens, due to its pertinence. However, we believe that unintentional biased analysis decisions may have led to erroneous conclusions. Since the subject of the article has a broad conservation audience we think it is important to critically discuss the implications.

Our main comment concerns the queries applied to the original data set, and their implications on the results. The authors used the information publicly available in the CITES Trade Database (CITES 2013). This database lists all records of legal imports and exports of products or specimens of species listed under the CITES convention. It is curated by UNEP-WCMC on behalf of the CITES Secretariat and is based on the reports that are submitted annually by the CITES convention countries (currently 183 countries).

In D'Cruze and Macdonald (2016) the CITES Trade Database was queried for "all live wild animal seizures for the years 2010-2014 inclusive" and "specifically requested data only using the LIVE trade term and the CITES source code I". The authors used this query to select "illegal trade seizure records of live animals as outlined in Notification 2002/022 (UNEP-WCMC 2014)".

In the CITES Trade Database the "source" field presents several codes used to indicate the "original source" (e.g., captive-bred, farmed, wild specimens or those that have been confiscated or seized) of the traded specimens. As the most recent guidelines (distributed with Notification 2017/006) clearly state: "... as well as specimens that were seized or confiscated in a previous shipment, that are now being legally traded for legitimate purposes such as the return of confiscated specimens or a forensic analysis to be done in the importing country, etc. In these cases, source code "I" should be used and these records should be included within the annual report". Therefore, the records used by D'Cruze and Macdonald (2016) are only a small and possibly biased subset of all specimens seized and/or confiscated. When they are not euthanized and survive the confiscation and holding process, many seized specimens are not repatriated and may be resold in the domestic market. On the other hand, many times only valuable specimens will be repatriated or sold to another country and registered on the CITES annual reports. Additionally, the information concerning the history of seizures can be amiss concerning the roles of the importer and exporter countries. If you erroneously interpret these records as seizures and not as trade of seized items, their roles will be reversed. In reality, the exporter will be the country where the seizure took place (only when seizures occur before leaving the country this refers to the country of origin) and the importer will be the country of destination (only when seized specimens are repatriated, this will be the country of origin).

It is easy to understand how this misunderstanding can be made, since the way this information is outlined in older guidelines (latest distributed with Notification 2011/019) can lead to misinterpretations on this subject. In these guidelines for the preparation and submission of CITES annual reports "This column should also be used to indicate specimens seized, confiscated or illegally traded". Records with source "I" may be interpreted not as a trade record but as a seizure record. Therefore, the CITES Trade Database, the only public database on wildlife trade, does not reflect the overall number of seizures concerning traffic of live specimens of CITES listed species.

Some IWT can be detected on this database (Broad et al. 2003) by comparing data from importing and exporting countries or in the case mentioned above (legal trade of specimens that were seized or confiscated in a previous shipment). In the case of the author's own dataset, unfortunately the number of records with both types of information is less than 4% and only in one record the number of specimens does not match between the importer and exporter reports. The authors also state that "currently it is not possible to establish how many seized wild animals have re-entered commercial trade". This is true in the case of domestic resale within the country of seizure, but international resale could be estimated using data from the CITES Trade Database.

We consider this comment very important to aid other researchers willing to use the same kind of data and queries. It is also important for readers not familiar with the CITES Trade Database and its regulations to understand the implications and biases of this approach. To our knowledge, the only similar analysis produced in recent years (UNODC 2016) was performed under the auspices of the UNODC (United Nations Office on Drugs and Crime) that is responsible for the World Wildlife Seizure database (World Wise). This analysis used data from different sources, most of them not avail-

able for public consultation. The reasons for the non-availability of information are multiple, ranging from confidentiality due to pending legal processes to prevention of erroneous conclusions, since seizure statistics can be positively correlated to better law enforcement or to real IWT numbers (Reeve 2002).

In the World Wildlife Seizure database, the information obtained from CITES annual, biennial and special reports constitutes 34% of all data from the 2005-2014 period. Most of this data is compiled from the Biennial Reports, which contain information on efforts to implement the convention, including law enforcement data on seizures. According to UNODC (2016), only some countries include seizure data in their annual reports, as separate tables from the tables of legal trade, that are not included into the CITES Trade Database.

In conclusion, we advise that any analysis based on the CITES Trade Database should take into account that it refers to legal trade and the amount of data concerning illegal trade is limited by the very nature of the database and the main source of data, the annual CITEs reports. To overcome these issues and considering the importance of seizure data to analyze the dynamics of IWT, CITES is performing a major revision on the data that is necessary to be delivered on the annual reports. At its 66<sup>th</sup> meeting (Geneva, January 2016), the CITES Standing Committee adopted a new annual illegal trade report (Notification 2016/007). The first annual illegal trade report is due on 31 October 2017, covering data from 2016 and will provide information on the specimen and also on country of origin and countries of transit. This is a major achievement that will have surely a major impact on the prevention of IWT in the near future.

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