

**A REVIEW ON
MONITORING OF TRADE IN IVORY:
FACTS, METHODOLOGY, AND INFORMATION**

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A. FACTS

1. Both legal taking (trophy hunting, culling, problem animal control, and etc.) and illegal killing could significantly and directly drive a continuous decline in elephant population when their combined rate keeps outpacing the natural growth rate in some region.
2. A complicated relationship exists between the trade in ivory and the taking of elephants. The trade relies on ivory while the taking targeting live elephants. Ivory acquired from taking existing elephants is merely one source of ivory in trade.
3. A legal trade in ivory complies with both CITES regulations and domestic laws. While ivory in a legal trade usually comes from legal taking, natural mortality, or pre-Convention stockpiles, it also comes from illegal killing or trade when confiscated ivory from poaching is traded internationally for the purpose of scientific research.
4. An illegal trade in ivory violates either CITES regulations or domestic laws. While ivory in an illegal trade may come from an illegal killing, more often than not, it also comes from natural mortality or pre-Convention stockpiles. Furthermore, ivory from legal taking or legal trade could be involved in an illegal trade when CITES special regulations on Re-export or stricter domestic laws are violated.
5. It is a difficult task to precisely describe the illegal ivory trade, although efforts are made by CITES to determine the origin or age of seized ivory via DNA analysis. However, it is relatively easy to describe legal post-1990 trade in ivory out of Africa, vast of which goes in non-commercial purpose and is relevant to legal taking of existing elephant population.
6. Two one-off sales in ivory, in 1999 and in 2008, are witnessed as exceptions, and thus the effective ban on international commercial trade of ivory since 1990 is not affected by the split-listing of elephant population. It is very clear and should not be ignored that non-commercial purpose legal trade in ivory far exceeded the commercial purpose one, both in terms of frequency and in quantity. However, the accumulated large scale non-commercial legal trade in ivory is not well presented or assessed.
7. Since CITES CoP16, destruction has been one of the major disposal choices of seized ivory, as well as some legal government-owned stockpiles. This should have been a good opportunity to settle discrepancies between recorded seizures and actual seizures. It is especially the case where no or few seizures were reported while a large amount of seized ivory was destroyed.
8. If illegal trade in ivory is regarded as an equivalence to the illegal killing of elephants, the illegal killing rate and its impact on elephant population would be overestimated. If illegal trade is the only focal point, the impact from legal taking on elephant population would be ignored. Only when the legal and illegal trade in ivory is fully demonstrated as possible with the fluctuation of ivory stockpiles at a global level, could a fair research into the trade-related taking of elephants be possible. Then, together with the taking of elephants not involved in any ivory trade, an estimate of overall taking could be reached as a reliable scientific proof to elephant conservation.
9. The ultimate aim of monitoring trade in ivory is to conserve elephants. The Elephant Trade Information System (ETIS) needs a major reform in terms of both METHODOLOGY and INFORMATION to achieve its conservation goal, "measuring and recording levels and trends of trade in ivory". Some SUGGESTIONS are given to consummate ETIS performance in elephant conservation.

B. METHODOLOGY

The error-prone methodology in ETIS report is listed below:

1. An indicator, SEIZUREIN/ (SEIZUREIN+SEIZUREOUT)*, is designed to describe law enforcement efforts and used to adjust the bias. While the indicator could properly describe the law enforcement condition in origin country, it is improper when describing the counterparts in transit or destination country.
2. As a result of the aforementioned, a large amount of double or triple counting of seizures occurs in both TRANSACTION INDEX and WEIGHT INDEX, which amplifying rather than adjusting bias. It should be understood with great caution.
3. Number and quantity of seizures are shown in total, without differentiating seizures made in attempt to export from those in attempt to import. This separation is both basic and important. One one hand, huge ivory inventory held by non-range countries did enter into illegal trade, one the other hand, it is important to show the actual seizure spot.
4. The RAW IVORY EQUIVALENT (RIE) seems to imply that the worked ivory seizure comes from the illegal killing for ivory the same year. Some media did take it for granted. However, it is highly unlikely in the real world simply because it takes time to work ivory.
5. The CLUSTER criteria are biased by average method. It blurred some fundamental information. The absence of large-scale illegal trade in ivory in Southern African countries and the prevalence of that in Eastern African countries together well explain the polarized fate of African elephant in the two regions from the perspective of trade impact. The key to solve the illegal ivory trade issue remains in Africa.
6. Concerned of the PRIORITY of illegal trade in ivory, Parties which met their reporting obligations under the Convention tend to be listed in higher priority, while Parties which did not meet their reporting obligations have a good chance of being listed in lower or no priority. To get a lower priority, Parties may choose to report fewer seizures as a response. It is a typical negative incentive mechanism and lose-lose situation.
7. Base on data and information with at least two-year time lag, ETIS analysis fails to reflect the status of ivory trade at national or global level of the year it is published. ETIS analysis should be adopted with caution and scrutiny when it is taken as a reference to instruct and deploy the tasks of combating illegal trade in ivory.
8. ETIS report is inclined to analyze international illegal ivory trade, to be preciser, the inter-continental one. It did not emphasize the intra-African flow of ivory, nor did it attempt to integrate the legal trade in ivory or the fluctuation of ivory stockpiles. So, ETIS report fails to display the picture of global trade in ivory in a thorough and objective basis.

* SEIZUREIN means seizures which a country made by itself; SEIZUREOUT means seizures in which a country has been implicated as part of the trade chain but did not make the seizure itself

C. INFORMATION

Summaries and aggregations of reported seizure data constitute ETIS information. It is obvious that the report rate and seizure rate are two filters diverting ETIS information from reflecting the actual status of the illegal trade in ivory. While some deficiencies in ETIS information are due to *force majeure*, some avoidable deficiencies are listed below:

1. Number of ivory seizures by country by year has not been shown in ETIS report by TRAFFIC since 2009. According to *CoP15 Doc. 44.1 Annex*, The number of reported seizures in Europe and America is three to four times that in Asia from 1989 to 2009.
2. It is a global commitment and priority to combat illegal ivory trade. There is no evidence that a steep decline in law enforcement efforts occurred in Europe or America since 2010. Also, there is no proof that an abrupt rise in law enforcement efforts occurred in Asia in the same period. Both of two give a rise to concerns about ETIS information credibility.
3. Number of ivory seizures by country by year is a summary or aggregation of data by ETIS, so it is not relevant to data privacy. It is fundamental of ETIS analysis and should be attached as annex to ETIS report, like what was done before 2009.
4. ETIS information has two sources. One is authority reports and the other NGO reports. They are combined without declaring the percentage of both sources. Combating illegal trade is a sort of law enforcement action conducted by authorities. NGO reports highly rely on media or anecdotes. It is determined that authority report is much more reliable than that of NGOs.
5. It is understandable that ETIS information has a lag in time, which is mainly due to the management mechanism of the Parties. However, the lag is not fixed by presenting best information available. For example, it is well-known that two large-scale seizures were made in Thailand in 2015. As if it had not occurred, ETIS report in 2016 insisted in lowering Thailand's priority of illegal trade from Primary Concern to Secondary Concern according to ETIS information in 2012-2014. Meanwhile, ETIS report claimed that this achievement came from the excellent performance of National Ivory Action Plan, which starting from 2014.
6. ETIS information is inconsistent in different reports and papers. For example, in ETIS report to SC66 in JAN 2016, it is claimed that 2013 is the peak year of illegal ivory trade since 1989. In ETIS report to CITES CoP17 in APR 2016, the peak year is switched to 2012. If a large amount of data about seizures in 2012 and 2013 were collected by ETIS during JAN to APR in 2016, explanation should be given in time about the change in result.

In short, it is regrettable that the methodology and information in ETIS amplified rather than adjusted bias in raw data by using wrong indicators, blurred critical factors in cluster analysis, failed to describe the legal trade in ivory, and formed a lose-lose situation in combating illegal ivory trade by adopting a negative incentive system in determining the priority. The ETIS should be improved to fulfill its conservation goal.

SUGGESTIONS

A comprehensive reformation should be taken by ETIS to achieve its conservation goal. Suggestions to ETIS include but not limited to:

1. TO PRESENT ILLEGAL IVORY TRADE by listing the number of seizures by country and by year together with three annotations listed below:
 - a) for self-seizure cases, the percentage of export attempt and import attempt
 - b) for implicated cases, the percentage of being an origin and being a destination
 - c) for information sources, the percentage of authority report and non-authority report
2. TO AVOID RAW DATA NOISE by sticking to officially reported seizure data, making a declaration on why non-authority data should be involved and how to verify it, and notifying the Parties involved whenever a non-authority report is cited.
3. TO IMPROVE DATA-COLLECTING METHOD by establishing a standardized online data collecting form to facilitate reporting and to shorten the time lag of seizure data to an acceptable degree.
4. TO REVIEW SUBSTITUTIVE INDICATORS by applying the indicator of “seizure in/(seizure in + seizure out)” only to origin country in bias adjusting and by removing this indicator from non-origin country.
5. TO LABEL IVORY INVOLVED IN TRADE BUT IRRELEVANT TO ILLEGAL KILLING by fully understanding that some Parties have put in place national laws stricter to CITES regulation and by evaluating its effect on global seizure information.
6. TO INTEGRATE IVORY FLOW DATA by taking the legal trade in ivory and the fluctuation in ivory stockpiles into account to build a systematic thinking about the whole picture of global ivory flow.
7. TO ESTABLISH A ROBUST ANALYTIC MODEL by inviting experts in economics and mathematics to join in the ETIS modelling. It is of crucial importance how to explain the change in output upon uncertainty of data input.
8. TO FACILITATE INDEPENDENT ANALYSIS by outsourcing analysis work or simply offering an online access to raw data to any third party which is interested in ivory trade research, just like the online CITES trade database, and by inviting a third party to evaluate the reliability and effectiveness of ETIS analysis.
9. TO SET POSITIVE INCENTIVE CRITERIA by cracking down the extant negative incentive mechanism, and by shifting to a win-win situation that encouraging those Parties which positively take law enforcement and reporting responsibility and discouraging those Parties which negatively take law enforcement or reporting obligation .