CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA

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MONITORING INTERNATIONAL WILDLIFE TRADE WITH CODED SPECIES DATA

1. This information document has been submitted by the Canadian Scientific Authority, Canadian Wildlife Service, Environment Canada.

Summary

2. The Canadian Scientific Authority wishes to bring to the attention of Parties a paper recently published in the journal Conservation Biology [2008; Vol. 22(1), p. 4-7] titled "Monitoring international wildlife trade with coded species data".

3. The paper suggests that utilization of the Taxonomic Serial Number (TSN) of the Integrated Taxonomic Information System as a complement to the Harmonized System Codes would increase efficiency in standardizing, organizing and capturing wildlife trade data.

4. This concept was first presented at the ITTO Expert Meeting on the Effective Implementation of the Inclusion of Ramin (*Gonystylus* spp.) in Appendix II of CITES, held in Kuala Lumpur in May 2006.

5. The paper considers ongoing problems faced by customs authorities and other agencies engaged in international wildlife trade regulation. Problems considered include the identification, targeting and monitoring of specific species in trade, as well as difficulties associated with harmonizing trade data internationally.

6. Authorship of the paper involved collaboration between Canada Border Services Agency, Fisheries and Oceans Canada, Environment Canada, Natural Resources Canada (Canadian Forest Service), and Agriculture and Agri-food Canada.

7. The paper is included in this document and is freely available at:
http://www.blackwell-synergy.com/doi/pdf/10.1111/j.1523-1739.2007.00857.x

Monitoring International Wildlife Trade with Coded Species Data

Introduction

International trade in wildlife threatens biodiversity because it can result in habitat destruction, overexploitation of wildlife, and the spread of invasive alien species. Although traders are required to report goods, including wildlife, to border authorities when the goods are moved across international borders, customs authorities do not have mandatory, standardized reporting requirements for species information. Thus, authorities cannot capture species-specific data in a form that is accurate, accessible, standardized, retrievable, or separable from confidential client information.

Accurate wildlife trade data are essential to managing sustainable trade and border biosecurity because the data contribute to intelligence, enforcement, monitoring, and decision making. Although a number of mechanisms exist to capture wildlife trade data (e.g., U.S. Fish and Wildlife Service Law Enforcement Management Information System; United Nations Environment Program—World Conservation Monitoring Centre's Convention on International Trade in Endangered Species of Wild Fauna and Flora [CITES] Trade Database), there is not a single comprehensive, international, harmonized mechanism that captures these data. We reviewed the current customs reporting system for documenting the wildlife trade and propose a complementary coding system whereby customs authorities adopt an existing taxonomic classification system to standardize, organize, and capture wildlife trade data.

Deficiencies of the Harmonized System

In 1983 the World Customs Organization (WCO), along with customs administrations worldwide, established the Harmonized Commodity Description and Coding System, known as the Harmonized System (HS). More than 98% of the international trade of 190 countries is classified in terms of the HS, which is the basis of customs tariffs and facilitates the collection and analysis of international trade statistics. About 5000 commodity groups comprise the HS, and each is identified by a 6-digit code. Individual countries may have additional digits that follow the HS to provide more detail about commodities.

Codes in HS are often used to describe and quantify aspects of the international wildlife trade, usually for broad taxa (e.g., Clarke 2004; Thompson & Alam 2005). Blundell and Mascia (2005) compared U.S. Customs Service HS data with wildlife trade data collected by the U.S. CITES Authority for five taxa—conch, caviar, coral, ginseng, and mahogany. They found major discrepancies between the two databases for all taxa, suggesting significant problems with data collection. In Canada Williams et al. (2000) identified similar discrepancies and major inaccuracies in the use of the HS for mahogany (*Swietenia* spp.) and caviar (Acipenseriformes spp.).

In customs circles there is a tremendous lack of understanding of the proper application and reporting of HS codes for wildlife and a need for better comprehension of the reasons for accurate reporting. In Canada major HS code errors are documented for toothfish (*Dissostichus* spp.; Gerson 1999), shark fin (Gerson 2001), tropical wood (Gerson 2000), and aquatic organisms (Gerson & Cudmore 2006). Ninety-five of 161 (59%) Canadian importers of aquarium species commonly include all amphibians, invertebrates, and aquatic plants imported in a single shipment of mainly aquarium fishes under the HS code for live ornamental fish (HS0301.10) (H.G., B.C., & N.E.M., unpublished data). These errors are of particular concern to federal agencies that regulate the import of plants, CITES-listed species, and potentially invasive invertebrates and amphibians. More than 12 million commercial shipments are imported into Canada annually, and only about 2% of these are physically inspected. Customs border officers are generally not trained to be familiar with species names. The officers have only seconds to review long lists of species identified on customs documentation and decide whether or not to release shipments. Hence, officers rely greatly on HS codes to make these decisions.

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Codes for live animals, meats, skins, and leathers have been created specifically for broad taxa, such as primates, cetaceans, parrots, reptiles, and fishes. At the request of governments and international conservation organizations, HS codes have been created for specific genera or species, such as mahogany (*Swietenia* spp.) and bluefin tuna (*Thunnus thynnus*), but these are exceptions to the rule. A major problem with this approach is that changes to the HS nomenclature, proposed to the WCO, can take 5 or more years to implement. Another problem with this approach is the application of the HS to wildlife products. For most situations in which products of wildlife are traded—for example, picture frames, dowels, furniture, and billiard cues made of ramin (*Gonystylus* spp.) wood (a CITES Appendix II species)—it would not be practical or even possible to create specific, international HS codes for all the numerous products (Gerson et al. 2007). An illustrative example of problems encountered with the use of HS codes for wildlife products is that of dried shark fin. International HS codes exist for fresh (HS0302.65) and frozen (HS0303.75) shark products, but not for dried shark products. As a result, Statistical Services of Fisheries and Oceans Canada (DFO) reported on their Web site values of shark products imported into Canada of $200,000–$700,000 annually based on the HS data collected by customs, which were the only data available to DFO. Gerson (2001) reviewed the detailed customs documentation for dried fish (HS0305.59) and revealed that the actual value of annual imports of shark fin exceeded $10 million.

Even in the rare instances in which HS codes are specific to genera or species, significant coding errors occur. Toothfish stocks are in serious decline because of illegal, unregulated, and unreported fishing (CCAMLR 2007). Importers and customs brokers often confuse common names or use them interchangeably, such as toothfish being sold under the market name of (Chilean) sea bass. This confusion has led to 30–50% of the quantity of frozen toothfish (HS0303.62) imported into Canada being coded as HS0303.77, the code for "Sea bass (*Dicentrarchus labrax*, *Dicentrarchus punctatus*)." This occurs despite national outreach efforts to importers by customs client services officers (Gerson 1999; H.G., unpublished data).

The HS is a complex classification system that was developed for tariff purposes; it was never meant to encompass species-specific or taxonomic information. Customs authorities and agencies regulating the wildlife trade depend largely on HS codes to generate trade statistics and control trade of regulated plants and animals. Because of the significant problems encountered with the application of the HS to the wildlife trade, we believe the HS alone is not suited for these applications. Furthermore, improvements or changes to reporting focused exclusively on the HS nomenclature will not significantly improve the ability to monitor and control the international wildlife trade.

The Taxonomic Serial Number as a Species Code

Aside from the HS, the most useful customs data for species identification are the commodity descriptions required on the customs and/or commercial invoice. The commodity description, however, is a free text field that is not standardized or coded. Requirements for accurate species identifications are lacking; consequently, common names and vague descriptions, such as "mahogany" and "frogs' legs," are frequently reported (Gerson 2000, 2004).

The ability of customs authorities to collect and manage species data necessitates that scientific names be reported electronically as a separate, mandatory data element. Simply switching to electronic reporting of scientific names as a mandatory component of the commodity description will not solve the problems of capturing and organizing species data because of inconsistent data entry and the high frequency of errors in text data (H.G., unpublished data). In contrast, coded data are more resistant to errors in transmission or storage and are better suited for system data validation and verification (WCOOMD 2006). The creation of a coded data element for scientific names is a real possibility in light of recent and proposed trade-facilitation and risk-management initiatives by customs authorities and the WCO (WCOOMD 2006).

The Integrated Taxonomic Information System (ITIS), an online database containing taxonomic information on plants, animals, fungi, and microbes, assigns a unique number to all scientific names from infraspecific levels up to kingdom and thus offers a potential solution for a coded species data element—the taxonomic serial number (TSN). Developed in partnership by federal agencies and other collaborators in the United States, Canada, and Mexico, the ITIS contains (as of June 2007) over 430,000 scientific names, their classification, and use (ITIS 2007). Although usually perceived as a regional system focusing on North America, several taxonomic sectors of the ITIS have worldwide coverage, such as cartilaginous fishes, birds, and several other groups. Species of economic importance, including CITES-listed species, are also well covered.

Within the context of the ITIS, each scientific name receives a unique, numeric identifier, the TSN. A TSN is attributed to each unique combination of kingdom + scientific name + authority + rank, and is persistent. A TSN is never deleted or reassigned to another name. The recommended (accepted or valid) scientific name of a taxon can change, but once attributed, the association between a given TSN and a given name is never removed from the system. Unaccepted (botanical code) or invalid (zoological code) names are simply transferred into synonymy of accepted or valid names so that older names (and their permanent TSNs) are automatically connected to current names. This mechanism ensures that names and TSNs used in the past, or that "legal" names in various national

jurisdictions, can always be traced and associated with current scientific thinking.

The WCO is building a customs data model that will establish a standard, international, harmonized data set to meet customs and government partners' requirements for international cross-border trade. The model allows traders to exchange electronic information only once with a single government agency, preferably customs. This one-time exchange of information will incorporate all necessary data submissions to fulfill all regulatory requirements related to an import or an export (WCOOMD 2006). The WCO expects to complete the model for approval in June 2008. The Canada Border Services Agency (CBSA) has proposed that the WCO and customs authorities adopt the TSN as a harmonized data element in the WCO data model; the WCO is supportive of the proposal (E. Sunstrum, CBSA, personal communication).

Requirement of a species description in the form of a number code (TSN) as a data element on customs electronic documentation would facilitate admissibility screening, generation of statistics, and data collection, storage, and retrieval. Such a code combined with the HS code would indicate the exact species (or other taxonomic rank, such as genus or family, if species information was unavailable) and the form of the product. This would allow exporters, importers, agents, carriers, and customs and other enforcement authorities to flag or target shipments of regulated commodities and enable customs authorities to automatically notify other government agencies of trade in regulated wildlife. An internationally harmonized collection of detailed species information would help reconcile customs trade statistics for wildlife with the CITES and other wildlife trade databases.

We are not advocating the use of the TSN as a method to prevent fraud or misreporting because criminal elements will try to circumvent any system. The implementation of a TSN requirement would involve extensive education and training of both traders and customs officers. Nevertheless, based on our experience with the HS, we believe the TSN concept of reporting is a more straightforward process. Authorities would have to consider the length of time it takes to add organisms to the ITIS, provide support to speed up this process, and allow for the option of traders to provide text names for those species not yet in the ITIS database. We considered other systems, such as the Catalogue of Life, a synonymized checklist of the world's known species published annually in partnership by Species 2000 and ITIS. Starting in 2009, the Catalogue of Life is planning to associate global unique identifiers to species names; however, current discussions suggest that new identifiers will be generated with each new annual edition, somewhat limiting their use for the current purpose (TSNs are permanent). Overall, we believe that the use of the TSN would greatly improve the current border situation and benefit decision makers in areas such as risk analysis.

Reports of discrepancies between customs and CITES data (Blundell & Mascia 2005, 2006; Thomas & Albert 2006) generated considerable attention in wildlife conservation circles, but not, to our knowledge, in customs circles. We agree with Blundell and Mascia (2006) that customs data are underutilized and are potentially useful for many aspects of monitoring and controlling the wildlife trade. Customs authorities have an immense, untapped source of important wildlife trade data that can be accessed in today's age of electronic commerce. We recommend that customs authorities make these data accessible by adopting the TSN developed by the ITIS as a required data element on customs trade documentation for wildlife in trade to complement the HS reporting. We further recommend that the WCO, customs authorities, government agencies regulating the wildlife trade, and the CITES Secretariat and other organizations develop a strategy for implementation of the TSN requirement, including related training, education, and outreach for customs agencies and traders and support the ITIS in adding wildlife species traded to its database.

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