

# Domestic and CITES regulations controlling the international snake trade in China

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**Abstract** Trade records show that since the 1990s China has changed from a net exporting to a net importing country with respect to some species of snakes. Imports of snakes to China increased up to 2002, when the National Wildlife Management Authority imposed a suspension of international trade in snakes. We investigated the impact of the ban using the same methods as an earlier study of this trade for the period 1990–2001. We found that both imports and exports of snakes recorded in the CITES Trade Database and the Wild Animal and Plant International Trade Database of China have decreased markedly since 2004. The combination of national-level control measures and CITES regulations appear to have controlled the previously unsustainable utilization of snakes in China.

**Keywords** China, CITES, international trade, *Ptyas mucosus*, snake

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Unregulated international trade not only devastates ecosystems but also poses a threat to the survival of individual species (Gibbons et al., 2000). CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) is an international agreement between governments, currently with 178 signatories (CITES, 2013), which aims to ensure that international trade in wild animals and plants does not threaten their survival. It is widely accepted that the treaty provides a suitable international legal framework for global

collaboration on species conservation (Apensperg-Traun, 2009; Wells & Barzdo, 1991).

China has a long history of dependence on wildlife. Snakes, for example, are used in traditional medicine and as food. Overexploitation and habitat loss have, however, resulted in a decline in snake populations in the country (Zhao, 1998) although some species have been listed as China National Key Protected Wild Animals since 1989 and all snakes were brought under state protection in 2000.

However, as the human population expands and the economy grows, the impacts of China's consumption lie far beyond its boundaries (Liu & Raven, 2010), and consequently the oriental rat snake *Ptyas mucosus*, Chinese cobra *Naja atra*, monocled cobra *Naja kaouthia*, king cobra *Ophiophagus hannah*, Orsini's viper *Vipera ursine* and species of the family Pythonidae are listed in the CITES Appendices. But during the last decade of the 20th century China changed from a snake exporting to a snake importing country, probably driven by the expansion of domestic markets as the consumer power of citizens increased (Zhou & Jiang, 2004, 2005). Since 2000 208 snake species have been listed as National Protected Terrestrial Wild Animals (State Forestry Administration, 2000), which means that capture of, and trade in, these species requires approval from the provincial wildlife management authority. Additionally, the national CITES management authority in China has banned both domestic and international trade in live pythons since 2000. In 2003 the State Forestry Administration announced a ban on the capture of terrestrial wild animals, including snakes, for food during the SARS (Severe Acute Respiratory Syndrome) outbreak. Since 2009 national authorities have regulated the use of snakes in traditional medicine, and for nationally protected snake species a permit has to be obtained from the national Wildlife Management Authority. Trade is dynamic, and to examine whether these measures are controlling international trade in snakes in China we conducted a follow-up to the study of Zhou & Jiang (2004), who examined this trade for 1990–2001, using the same methods and the same database, with updated information.

Of the five snake species and pythons listed in the CITES Appendices, only the oriental rat snake was affected by international trade of live specimens and this species was subjected to a significant trade review by CITES in 2011. Trade in this species has been suspended since 1995 and all trade in CITES-listed species is strictly controlled by the

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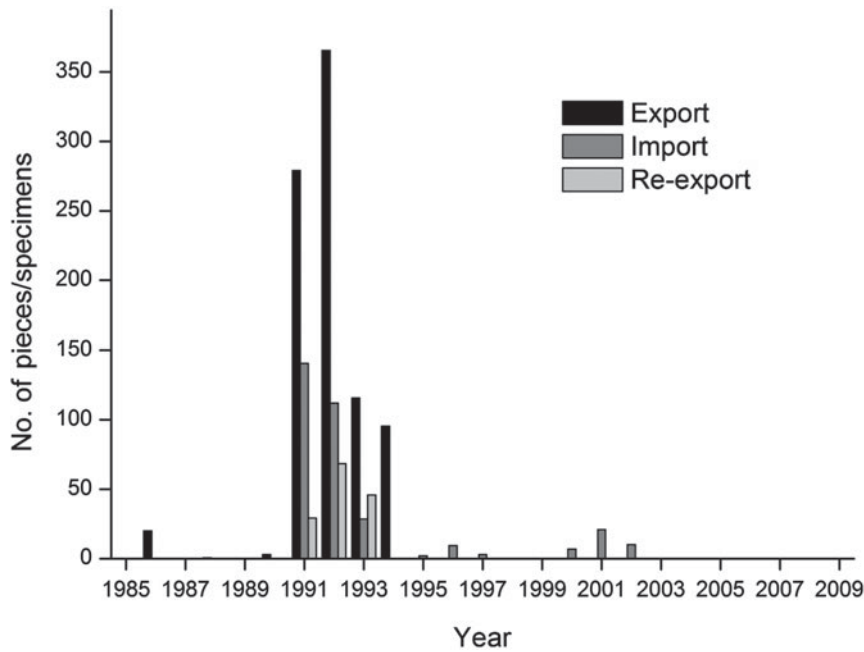


FIG. 1 International trade (number of pieces and/or specimens) in the Oriental rat snake *Ptyas mucosus* in China from 1985 to 2010. Source: CITES Trade Database, maintained by the UN Environment Programme–World Conservation Monitoring Centre.

Chinese CITES Authorities. We retrieved the international trade records for this species for 1985–2009 from the CITES Trade Database (2012). For all trade in snakes, including those species not currently listed in the CITES Appendices, we tracked trade data up to 2009 from the Wild Animals and Plants International Trade Database, which is maintained by the Endangered Species Import and Export Management Office of the People's Republic of China (the CITES Management Authority of China).

China exported 944,104 specimens or pieces (the latter is a unit in the CITES database that refers to a live or dried snake, or a skin), imported 339,398 pieces or specimens, and re-exported 154,899 pieces or specimens of the oriental rat snake from 1985 to 2009, with most of the trade occurring before 2004 (Fig. 1). Only 551 imports and 51 re-imports of oriental rat snakes have been recorded since 2003.

The trade in *Python* spp. (Supplementary Table S1) was mainly in the form of python skin, which is used for making a traditional musical instrument, the *erhu*. For the moment no substitute for python skin has been found and artificial breeding of pythons is at an experimental stage (Anon., 2011). The CITES Authorities treat the *erhu* as a personal possession but require persons taking an *erhu* across international borders to carry a CITES permit.

After a surge in snake exports in the first few years of the 21st century, exports of both live snakes and snake skins decreased after 2004, and all trade in snakes except that of python skins decreased (Supplementary Table S1). Following the implementation of international treaties and domestic measures, it appears the international snake trade in China has now greatly decreased.

The oriental rat snake was listed on Appendix III of CITES in 1984 and uplisted to Appendix II in 1990. In China

this species, along with almost all snake species, has been listed as a Terrestrial Wild Animal under State Protection since 2000 (State Forestry Administration, 2000), and the species is also listed as a Provincial Key Protected Wild Animal in Zhejiang, Fujian, Hubei, Hainan and Guangxi provinces. The Wildlife Management Authority banned the use of snakes as food in 2004 and regulated the use of snakes in traditional medicine in 2007. Species listed on CITES Appendix I or II are treated as Category I or II National Key Protected Wild Animal Species in China. Licences are required to harvest, trade, transport and farm such species. Each year the Wildlife Management Authority in China launches special enforcement operations to control illegal harvesting and wildlife trade. Recently, the level of illegal trade in snake species significantly decreased in the Guangxi Autonomous Region, where illegal wildlife trade was once prevalent (Li et al., 2010).

Although it is legal to farm wild snakes in China farmers have to acquire founder stocks legally and apply for a licence before setting up a farm. Snake farming is now extensive in southern China. Chang & Lu (2004) reported that on three farms alone in Guangdong Province in 2004 there were 40,000 captive-bred oriental rat snakes. In 2008 captive-bred snakes were released to reinforce the wild population in a forest park in Fujian Province (Shaowu City Forestry Bureau, 2008). In March 2011 90 live, captive-bred Burmese pythons *Python bivittatus* were reintroduced to the wild in Baoting County, Hainan Province (Anon., 2011). However, field releases of captive-bred snakes to restore or reinforce wild stocks are at an experimental stage.

Snakes were once a local delicacy only in southern China but the dietary habit spread to other parts of the country (Yang et al., 2007). But consumer behaviour is changing

(Fabinyi, 2012). After the SARS epidemic in 2003 the China Wildlife Conservation Association launched a large-scale programme, *One Million Cooks Sign up to not Cook Wild Animal Meat*. Many NGOs and the media also campaigned for protection of wild animals. These measures have had an impact on people's dietary habits. Yang et al. (2007) conducted surveys before and after the SARS epidemic and reported that the number of people who claimed to consume wild animal meat, mainly snakes, decreased by 20% after the epidemic. However, changes in food consumption behaviour will require long-term cultural evolution.

In 2011 a workshop was held by the CITES Secretariat in Guangzhou, China, to discuss snake conservation and management in Asia, and recommendations were proposed for national harvests and trade policies, and possible CITES listings of additional Asian snake species (CITES, 2011). To complement the listing on the CITES Appendices of wild species threatened by international commercial trade, we recommend that the relevant national CITES Authorities should apply domestic measures to control trade, and conduct periodic reviews of those species in significant trade. In this way the CITES Authorities could monitor trade dynamics. At the 16th Convention of Parties (CoP) of CITES a proposal by China to list the Endangered Mangshan pit-viper *Protobothrops mangshanensis* (Gong et al., 2013) on Appendix II was adopted (CITES, 2013).

Effective national laws and enforcement can contribute greatly to wildlife conservation, and a combination of domestic, regional and international measures are needed to control global trade in threatened wild species. We were not able to assess the illegal snake trade in China because of its clandestine nature. However, in contrast to contraband ivory or rhinoceros horns, which have a high value and are smuggled in small quantities, snakes are less valuable and are traded in large quantities, and therefore it is relatively easy for custom officers to detect them. Our findings indicate that the main flow of the international snake trade into and out of China since 2004 appears to have been brought under control by the synergy of CITES and national regulations.

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## Biographical sketches

ZHIGANG JIANG's work focuses on the conservation of wild fauna, particularly the threatened mammals of China. ZHIHUA ZHOU and XIANLIN MENG study the management of CITES. ZHIBIN MENG, LINLIN LI and XIAOGE PING study biodiversity conservation and trade. YAN ZENG studies non-detrimental findings in the international trade in threatened species. DAVID P. MALLON is a conservation biologist mainly working in Asia and Africa.