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WG 5 – Mammals
CASE STUDY 6
Macaca mulatta
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CITES NON-DETRIMENTAL FINDING FOR EXPORTING RHESUS MONKEY (*MACACA MULATTA*) FROM CHINA

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I. BACKGROUND INFORMATION ON THE TAXA

1. BIOLOGICAL DATA

1.1. Scientific and common names

Scientific name: *Macaca mulatta* (Zimmermann, 1780).

Common name: rhesus monkey, rhesus macaque.

Chinese name: Mihou (phoneticizing Chinese name), (original Chinese name).

1.2. Distribution

Macaca mulatta is native to Bangladesh, Bhutan, China, Hong Kong, India, Lao People's Democratic Republic, Myanmar, Nepal, Pakistan, Thailand and Viet Nam in Asia (IUCN, 2007, Fig. 1). Distribution range of *Macaca mulatta* is overlapped with the range of broad leaf forests in China, distribution center of *Macaca mulatta* is located in ever-green broadleaf forest area in southern China (Fig. 2).



Fig. 1 World *Macaca mulatta* distribution. (From Cawthon), 2005.



Fig. 2 *Macaca mulatta* distribution in China. (From Zhang, 1997)

There used to be an isolated *Macaca mulatta* population located at the northern edge of the distribution range of *M. mulatta* near Beijing in China (Fig. 2). The *Macaca mulatta* there were once classified as an independent species, *Macaca tcheliensis*, but most of researchers consider the population of rhesus monkey as a subspecies of *Macaca mulatta*. Quan *et al.* (1993) questioned whether the *Macaca mulatta* was native inhabitants to the place, or it might be introduced to that place by people.

The known introduced countries of *Macaca mulatta* including Brazil, Cook Islands, Mexico, Puerto Rico and United States (Felix, 2007)

1.3. Biological characteristics

1.3.1. Summary of general biology

Macaca mulatta is a median size primate, which weighs about 7-12 kg (males) or 4-7 kg (females) (Zeng *et al.*, 1983). *M. mulatta* lives in highly socialized groups normally containing 4-60 monkeys, occasionally the troop size may be up to 150 monkeys (Jiang *et al.*, 1989; Zheng *et al.*, 1993). The proportion of adult male and female in rhesus monkey troops varies between 1:1 to 1:5, and males born in the group used to leave the origin troop at about 2 years old and become solitary males until they find other *Macaca mulatta* troops (Jiang *et al.*, 1989; Qu *et al.*, 1993). Female reaches the sexual maturity at 3-5 years old whereas males at 3-6 years old (Zeng *et al.*, 1983; Qu *et al.*, 1993). The rhesus monkeys mate year around. Normally, one infant is born after a pregnancy of about 160 days (Zeng *et al.*, 1983; Wang *et al.*, 1992; Qu *et al.*, 1993; Jiang *et al.*, 1995; Hou *et al.*, 1998).

1.3.2. *Habitat types*

Macaca mulatta has the largest range compare to any primate species, thus it is an "ecologically diverse" species in China as *Macaca fascicularis* in Southeast Asia. *Macaca mulatta* is found in primary broadleaf forests and secondary broadleaf forests below altitude of 3,000 meters (Ma and Wang, 1988; Jiang *et al.*, 1989; Wang *et al.*, 1992; Zheng *et al.*, 1994; Quan *et al.*, 1993; Jiang *et al.*, 1995). *Macaca mulatta* lives well in zoos, crowded parks and other recreational places (Zhou *et al.*, 1993).

Macaca mulatta is the most popular primate in Chinese zoos; almost all zoos in China keep *Macaca mulatta* according to our recent investigation in Chinese zoos during 2007-2008. Of 55 zoos only 3 did not keep *Macaca mulatta*. The average *Macaca mulatta* population size is 39 ± 17 monkeys, altogether, more than 7900 rhesus monkeys live in the 52 zoos. 98% of the *Macaca mulatta* herds in Chinese zoos were capable of breeding without further catch of *Macaca mulatta* from wild (Jiang, unpublished data).

1.3.3. *Role of the species in its ecosystem*

Rhesus monkeys basically are frugivores and folivores, they eat fruits, leaves, mushrooms and although they occasionally prey on bird eggs, insects and snails (Wang *et al.*, 1992; Wang *et al.*, 1999; Wang, 2001). However, *Macaca mulatta* is not an important predator for regulating those animal populations in nature broadleaf forest ecosystems. There are not reports about the negative effects of *Macaca mulatta* in natural ecosystem. Now, the *Macaca mulatta* lives near villages may raid crops, bamboo plantations and fruit gardens (Jiang, 2005).

1.4. **Population:**

1.4.1. *Global Population size*

Although no estimation of its global population size has been reported, considering the census from local and national surveys, *Macaca mulatta* still is abundant in its original habitat. At the end of 20th century, China had about 200,000 wild *Macaca mulatta* (Liu, 1998). Forestry Department of Yunnan Provincial Government (2007) reported that there were 59, 237 rhesus monkeys in the Yunnan Province, China alone. Rhesus monkey's range covers 20 provinces in China. The forested area in China increased from 8.6% in 1949 to 16 % of national land area in 1998. 200,000 rhesus monkeys could be the lower estimate of rhesus monkeys in China. In the State of Himachal Pradesh, North India, another figure of 200,000 rhesus monkeys has been reported (Pirta *et al.*, 1997).

1.4.2 *Current global population trends:*

increasing decreasing stable unknown

Above was the current population status of IUCN recently launched IUCN Red List evaluation for the species on 2008, Nevertheless, wild population trend of Rhesus monkey is increasing in China. Rhesus monkey has been under national protection in China since 1989. Rhesus monkey is a species which adapt to various habitats with relative large population size, once its habitats and populations are protected and the persecution is relaxed, rhesus monkey populations will soon recover. In China, there are many recent reports about restoration of rhesus monkey populations in its original ranges (Xinhua News Agency, 2001; Guo, 2003; Lu, 2003; Yang *et al.*, 2007; Forestry Office of Jiyuan City Government, 2006). Even in the above mentioned isolated former range of rhesus monkey near Beijing where rhesus monkey was extirpated for almost 20 years (Quan *et al.*, 1993), 5-6 rhesus monkeys were seen again by local residents in 2005 (Forestry Department of Hebei Province, 2005). A three-year survey at Shimla of India also discovered an increasing trend in local rhesus populations (Pirta *et al.*, 1997).

1.5. Conservation status

1.5.1. *Global conservation status* (according to IUCN Red List):

Critically endangered Near Threatened
 Endangered Least concern
 Vulnerable Data deficient

1.5.2. *National conservation status for the case study country*

Rhesus monkey is a Class II State Key Protected Wild Animal Species under Wild Animal Protection Law of the People's Republic of China. Wild rhesus monkeys and their habitats are protected nationwide.

The construction of nature reserve system in China was started in 1956, but it experienced a long period of quiescence in 1960s and 1970s. However, the number of nature reserves had started to bloom since 1980s, the total number of nature reserves in China reached 1,551 by the end of 2002, the area of those nature reserves summed up to 1,414,866 km², which accounted for 14.7% of the land territory of China. Most of the natural habitats of rhesus monkeys are now protected by nature reserves or national forest parks in China.

1.5.3. *Main threats within the case study country*

- Habitat Loss/Degradation (human induced)
- Invasive alien species (directly affecting the species)
- Harvesting [hunting/gathering]
- Accidental mortality (e.g. Bycatch)
- Persecution (e.g. Pest control)
- Pollution (affecting habitat and/or species)
- Other _____
- Unknown

2. SPECIES MANAGEMENT WITHIN THE COUNTRY FOR WHICH CASE STUDY IS BEING PRESENTED

2.1. Management measures

2.1.1 *Management history*

Before 1980s, rhesus monkey populations decreased due to the habitats loss and hunting (Ma et al., 1988; State Forestry Administration and the Ministry of Science and Technology, 1983; Zheng *et al.*, 1994). During that period, founders of breeding populations of primates in the country were mostly taken from the wild. For an example, more than 5,000 live rhesus monkeys were harvested in early 1980s (State Forestry Administration and the Ministry of Science and Technology, 1983). Since 1988, since the Wild Animal Protection Law of the People's Republic of China went into effect, as one of the Class II Key Stat Protected Wild Animal Species, rhesus monkey has gained gradually strengthening management in its natural habitats.

Captive breeding of rhesus monkey as experimental animals was started in early 1980s in China. Rhesus monkey breeds well in captivity; its population increased in breeding centers. Zhou and Yu (1996) reported the breeding of *Macaca mulatta* in a breeding farm with male: female ratios of 1:6-1:10. When the monkeys were grouped *ad hoc*, the birth rate ranged from 53% to 56%, when the breeding male and females were selectively paired, the birth rate ranged from 66-73%. Wei (1998) reported there were about 20,000 *Macaca mulatta* in 15 primate breeding centers in China in 1998. In August 2008, there are 40 primate breeding companies in the country, which keep about 40,000 *Macaca mulatta* mainly for the export as experiment animals.

Now, few live rhesus monkeys are taken from wild for recruitment of new blood in the primate breeding centres in China. Most of live rhesus monkeys exported from the country are come from captive breeding operations. According to a survey by the China Experimental Primates Breeding and Developing Society, more than 40,000 rhesus

monkeys are kept in breeding facilities in China. Of them there are 2,000 breeding males, 15,000 breeding females, and about 10,000 juveniles were born in the Chinese primate breeding centers. Under strict control within the frames of CITES and China national wildlife protection law. Each primate breeding company should apply for a breeding license before its operation. The applications for primate farming license are evaluated before an expert commission panel case by case through rigorously evaluation processes. For better management, the country is implying a microchip labelling system for all primates bred in captivity.

Chinese national CITES authorities set up an import and export quota system for *Macaca mulatta*, annual export quota is discussed and evaluated by the wildlife experts commission. The import quota is to control the inflow of rhesus monkeys even though those rhesus monkeys are legally bred in artificial breeding bases, while the exporting quota is for controlling the sell of artificial bred rhesus monkeys to international market. Both quotas regulate the population size of rhesus monkeys in the primate breeding centres in China. National and provincial CITES authorities and wildlife management authorities also conduct annual or periodic inspections on these primate breeding centers.

2.1.2 *Purpose of the management plan in place*

Purpose of the management of rhesus monkey in the country is to maintain its ecological function and evolutionary potential in natural ecosystems while maintaining a healthy breeding stock for sustainable trade to the international laboratory primate market.

2.1.3 *General elements of the management plan*

The Wild Fauna and Flora Conservation Department of State Forestry Administration administrates the breeding permits, transportation permits, labelling, buying and selling of all terrestrial wild animals, including primates. The national wildlife management authority is also responsible for implication of the annual primate export quota system in the country. CITES national scientific and management authorities actively involved in the annual importing and exporting quota setting process and CITES national management authority is response for issuing export permits for import and export rhesus monkeys. China Experimental Primates Breeding and Developing Society with all primate breeding companies in China as its members, negotiates minimum price, coordinates meetings, and sets up feeding standards and breeding standards and exchanges information. Breeding permit and export quota are decided by an expert commission panel

is called in by the national wildlife management authority. The commission is composed with specialists from the CITES scientific authority, academics and universities, wildlife society, zoos, safaris, and CITES management authority.

According to the Administration Permission Law of PRC which was put into effect in 2005, those who wants to set up a primate breeding company, to import and to sell off artificially propagated primates should first submit applications to the provincial wildlife management authorities, the provincial wildlife management authorities then transfer the applications to the national wildlife management authority. On receiving such applications, the national wildlife management authority will inform the applicant that his/her application has been received and processed, the decision of "Yes" or "No" will be given within 20 working days after receiving his/her application. Then the expert commission meeting, which usually chaired the executive director of the national CITES scientific authority, will be held. The expert commission will review each application from the primate breeding companies case by case. During the evaluation process, applicant will first give an oral presentation of his application before the commissioners. The applicant is asked to present his/her wildlife breeding permits, his/her business operation licenses, certificate of the operational funds, the certificates of the veterinaries and technicians in the primate breeding company, documents of origin of the breeding herds and photos of their breeding facilities. The applicant should also demonstrate his/her company has met the requirements of sanitation and animal welfare. After the presentation and documents checking, the expert panel will discuss the issue in a close door meeting. A notification of "Yes" or "No" decision will be reached after the meeting and the decision will be sent to the applicant with 15 days. When it is "No" decision, reasons for refusing the application will be given in the notification.

2.1.4. *Restoration or alleviation measures*

Besides the general conservation measures, since 2003, harvest of wild animals, including rhesus monkey, have been suspended, except for the purposes of scientific research and education with permits of the national wildlife management authority.

2.2. Monitoring system

2.2.1 *Methods used to monitor harvest*

The national wildlife management authority of State Forestry Administration (SFA), national CITES management and scientific authorities in the country closely monitor the trade of primates in the

country. Such a monitoring system has several parts: the annual export quota and its modulation, issuing export permits and checking the permits at border control by custom officers, monitoring data base maintained by the national CITES authorities and annual review of the annual export quota, and finally report the export and import quantity, purpose, source and trade destinations of each trade of CITES Appendix species including primates to the CITES Secretariat by the national CITES management authority. Experts are involved in the monitoring of harvest of captive bred rhesus monkeys.

2.2.2 *Confidence in the use of monitoring*

Until now, the country has successfully implemented a primate trade monitoring system. Monitoring of the trade of rhesus monkey in country is conducted by scientists and wildlife professionals. Experts are actively participate in the process of issuing breeding permits, setting up import and export quota, inspection of primate breeding companies. We have confidence in the use of monitoring system of rhesus monkey breeding because rhesus monkeys are in captivity and under man's care.

2.3. Legal framework and law enforcement: Provide details of national and international legislation relating to the conservation of the species.

China ratifies CITES in 1982. In 2005, the State Council of P. R. China proclaimed the Regulations of the People's Republic of China on Administration of Import and Export of Endangered Wild Animals and Plants as a national law for enforcement of CITES. All international trade of endangered species must have CITES permits. All exporting and importing of the CITES Appendix I species and the exporting of the CITES Appendix II species should have a Non Detrimental Finding evaluation by national CITES scientific authority, before the national CITES management authority issuing an export or import permit. The custom officer will check the permits of each wildlife trade. For importing CITES Appendix I species, the exporting permit from the CITES management authority of the country of origin should be obtained first and presented to the national CITES scientific authority of P. R. China before issuing an importing permit.

All primates are protected by the National Wild Animal Protect Law of P. R. China which proclaimed in 1988. It needs permits from the national wildlife management authority to capture, to breed, to transport, to sell and to buy a Class I National Protected Wild Animal. For Class II National Protected Wild Animal, it needs permits from the provincial wildlife management authority. According to the National Wild

Animal Protection Law and Regulations of the People's Republic of China on Administration of Import and Export of Endangered Wild Animals and Plants, exotic wild animals listed in CITES Appendix I, are granted the Class I National Protected Wild Animal status whereas exotic wild animals listed in CITES Appendix II, are granted the Class II National Protected Wild Animal status in the country.

Noticing the increasing demands for primates as laboratory animals in the international laboratories and booming the primate farming business, SFA issued an official notice, the Official Notification No.124, for management of experimental monkeys in 2004. For standardizing the feeding standard of *Macaca* as laboratory animals, SFA also formulated the *Feeding Standards of Macaca as Laboratory Animals* in 2005.

3. UTILIZATION AND TRADE FOR RANGE STATE FOR WHICH CASE STUDY IS BEING PRESENTED

3.1. Type of use (origin) and destinations (purposes) (e.g. commercial, medicinal, subsistence hunting, sport hunting, trophies, pet, and food). Specify the types and extent of all known uses of the species. Indicate the extent to which utilization is from captive-bred, artificially propagated, or wild specimens

Rhesus monkeys were originally used as folk sideshow and occasionally Chinese traditional medicines. Nowadays these rhesus monkeys bred in captivity are used as experimental animals whereas other uses are greatly reduced, compared with the medical experimental uses.

According to the CITES Trade database maintained by WCMC and UNEP (2000-2008), the importing purpose of *Macaca mulatta* from China, 23,429 rhesus monkeys were labelled with code "T", 6669 were labelled with code "S", 4589 were labelled with code "M", 226 were labelled with "B" and only 35 exported rhesus monkeys were not given any importing purpose. Predominately, the exported rhesus monkeys from China were used for scientific and medical research purposes.

3.2. Harvest:

3.2.1. Harvesting regime

Almost all rhesus monkeys for exporting were harvested from captive-bred troops. Age of the export macaques are of range of 2-5 years old. Some customers may have special requirement, such as for using as model of diabetics study, experimenters may want to buy aged macaques.

3.2.2. Harvest management/ control (quotas, seasons, permits, etc.)

Harvest quota and permits are required for harvest rhesus monkeys in China.

3.3. Legal and illegal trade levels: To the extent possible, quantify the level of legal and illegal use nationally and export and describe its nature.

According to outputs from the CITES Trade Database Version 6.0 maintained by UNEP and WCMC, from 1980 to 2006, 45,494 *Macaca mulatta* were exported from China to Britain, Japan and USA etc. Of those monkeys, 28,389 were labeled with "C"; 2,066 of them marked with code "W", 3,920 were not labeled with any code. The truth was UNEP-WCMC CITES Trade Database does not contain source information for most reports prior to 1991 (UNEP-WCMC, 2004). Another 3657 *Macaca mulatta* were re-exported from China to above mentioned primate importing countries for the same purposes "S" or "T". Of those exported *Macaca mulatta*, 2066 were labeled with code "W" whereas 1591 were labeled with "U". We checked the trade records maintained by the Endangered Species Import and Export Management Office of the P.R. China, all traded *Macaca mulatta* from China were from captive bred herds in primate breeding centers.

According to the CITES Trade database maintained by WCMC and UNEP, the export of *Macaca mulatta* from China started in early 1980s. The volume of exporting increased to about 4000 monkeys until 2002. Prior to 2000, trade volume of *Macaca mulatta* was once up to 1000-3500 monkeys per year (export and re-export combined) now the trade is decreasing to a minimal level (Fig. 3). The sharp decline in exporting of *Macaca mulatta* from China probably due to (1) Because of the high cost in maintaining laboratory animals and animal welfare issue, many companies in developed countries transferred their animal experiments overseas, especially to the developing countries, including China; (2) The role as an experimental animal of rhesus monkey had been replaced by Crab-eating monkey since 1990s, due to small body size of the latter and (3) the data for the CITES trade database in 2007 may be not completed yet.

According to the China CITES trade database, only in the year of 2002, 9 wild source rhesus monkeys were imported (Trade id: 2002CN/IC0311/GZ). All exported rhesus monkeys from China during the period from 2000 to 2007 were rhesus monkeys bred in primate captive bred centres in the country.

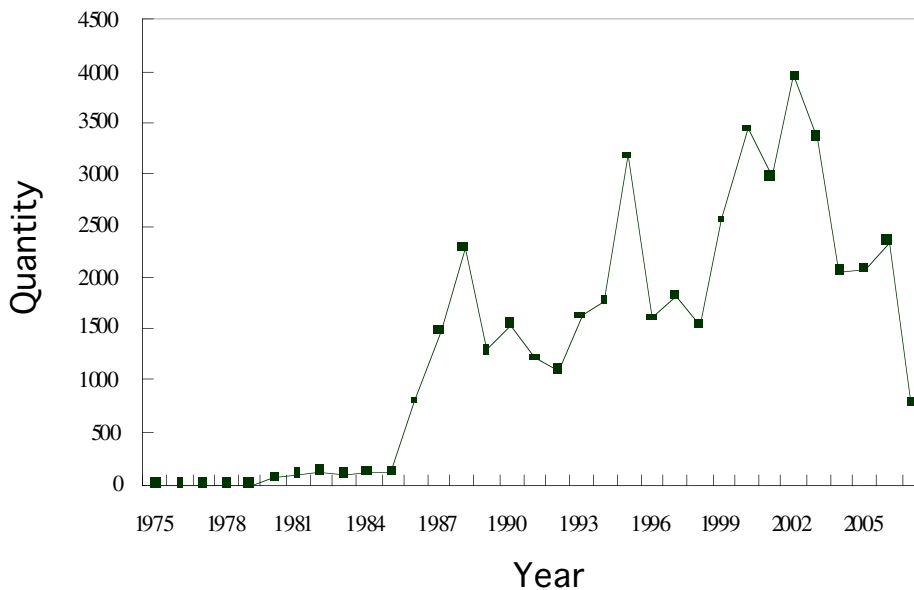


Fig. 3 *Macaca mulatta* exported from China according to the output of UNEP-WCMC CITES Trade data base.

Illegal transportation and trades of rhesus monkeys were prosecuted by wildlife law enforcement authority in China. For instances, three men were charged by the Chongqing municipal forest police for illegal transporting 57 rhesus monkeys in March, 2007 (<http://www.china-court.org/html/article/200709/18/265347.shtml>). In 2008, the largest illegal rhesus monkey trade in country was prosecuted in Shaanxi Province. The forest police confiscated 991 rhesus monkeys. Ten people involved in the case were charged for illegal sale and transporting of rhesus monkey. The illegal rhesus monkey dealers were sentenced to 2-15 years in prison (http://www.slga.gov.cn/slga/article_detail.asp?id=543). However, the news did not specify whether the rhesus monkey were from wild source or breeding centers.

II. NON-DETRIMENT FINDING PROCEDURE (NDFs)

Provide detailed information on the procedure used to make the non-detriment finding for the species evaluated.

1. **IS THE METHODOLOGY USED BASED ON THE IUCN CHECKLIST FOR NDFs?**
_yes _no

2. **CRITERIA, PARAMETERS AND/OR INDICATORS USED**
Criteria/parameters are needed to be considered for NDFs of rhesus monkeys:

- a) The *Macaca mulatta* is abundant in wild and artificially bred in large scale in the country.
- b) *Macaca mulatta* breeding companies do not require catching any wild rhesus monkeys for breeding.
- c) The exporting volume of captive breed *Macaca mulatta* is within the annual natural recruitment of *Macaca mulatta* in breeding centers; within the level of sustainable trade of the captive breed population. The maximum export of rhesus monkey from this country was 3,950 in the year of 2002 according to CITES Trade Database, the annual production of rhesus monkey in primate breeding centers in China is about 10,000. Such an exporting level will not hinder the breeding of the population. Few and few wild rhesus monkeys are traded during recent years.

METHODOLOGIES CAN BE IMPLEMENTED TO MEASURE THEM:

We are closely monitoring *Macaca mulatta* population size and other population parameters such as birth rate, mortality, age structure under current import and export quota system.

HOW CAN BE THOSE DATA ANALYZED TO TAKE DECISIONS ON THAT SPECIES USE:

- a) Large wild populations and extensive distribution of *Macaca mulatta* increase the viability of rhesus monkeys.
- a) A large scale artificial propagation of *Macaca mulatta* can meet the demands for medicinal, biological, behavioral and psychological experiments.
- b) The artificial propagation population of *Macaca mulatta* is self sustainable.

3. MAIN SOURCES OF DATA, INCLUDING FIELD EVALUATION OR SAMPLING METHODOLOGIES AND ANALYSIS USED

The data of rhesus monkey in breeding centers or breeding companies were obtained during surveys, from the statistic data of the national CITES trade data base, some of the data were cited from the references.

4. EVALUATION OF DATA QUANTITY AND QUALITY FOR THE ASSESSMENT

The data are collected during investigation to primate breeding companies, provincial wildlife management and national CITES management authority. Data quality was cross checked with investigation records with the quota of national wildlife management, national CITES management and scientific authority. Those trade records of trade permits were cross checked with national custom records by the national CITES management authority. The NDF case study is collaborated with specialists, officers and entrepreneurs.

There are some discrepancy between the data in the CITES Trade Database and the trade database maintained by The Endangered Species Import and Export Management Office of the P. R. China, I compared the data of *Macaca mulatta* export data in both data bases from 2000 to 2007, the figure of the year 2000 in CITES Trade Database was higher than that in the data base of The Endangered Species Import and Export Management Office of the P.R. China, however, the data in former were lower in rest of the years (Table 1). The discrepancy of the two data sets in 2000 was due to The Endangered Species Import and Export Management Office of the P. R. China started to use a new database in 2000, only two months data of trade data were input in the year of 2000. The data of 2006 needs special attention and that of 2007 may be an incomplete record.

Table 1 Comparison of *Macaca mulatta* export data in the CITES Trade Database and the trade database maintained by The Endangered Species Importing and Exporting Office of P. R. China

Year	CITES Trade Database	CN Database	Difference
2000	3437	990	2447
2001	2986	3246	-260
2002	3950	5139	-1189
2003	3362	4139	-777
2004	2055	2180	-125
2005	2077	2306	-229
2006	2352	9052	-6700
2007	793	2199	-1406
Sum	21012	29251	-8239

5. MAIN PROBLEMS, CHALLENGES OR DIFFICULTIES FOUND ON THE ELABORATION OF NDF

We should update of rhesus monkey trade data base in a timing and speedy fashion.

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