WORLD TRADE IN CROCODILIAN SKINS 2009-2011

Prepared as part of the International Alligator and Crocodile Trade Study

by

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Introduction

This report, the twentieth produced by UNEP-WCMC for the International Alligator and Crocodile Trade Study (IACTS), examines the international trade in crocodilian skins with a particular focus on the years 2009 to 2011. It also attempts to identify and highlight problem areas such as apparent discrepancies in reporting and to recommend, where possible, workable solutions. The data used have been obtained from the CITES Trade Database maintained by UNEP-WCMC on behalf of the CITES Secretariat, with additional information provided by the Crocodile Farmers Association of Zimbabwe, the Ethiopian Wildlife Conservation Organisation and the United Nations Food and Agriculture Organisation (FAO).

As in previous IACTS reports, this report presents an overview of global trade levels in classic skins (alligators and true crocodiles) and caimans, a detailed species-by-species analysis of the trade in skins and also of trade in other products such as live animals and meat. All species within the order Crocodylia are listed in either Appendix I or II of CITES. Of those species specifically mentioned in this report, the following are listed in Appendix I: *Crocodylus acutus, C. moreletii, C. niloticus, C. porosus, C. rhombifer, C. siamensis, Osteolaemus tetraspis, Caiman latirostris* and *Melanosuchus niger;* although some of these species have populations listed in Appendix II.

Data included

This report is based on an analysis of the annual reports submitted by the Parties to CITES for the years 2002-2011 and, if available, 2012, with a focus on the years 2009-2011. A list of annual reports for 2009-2011 that had been received by the CITES Secretariat at the time of writing (September 2013) is provided (Table 1).

All direct commercial trade in whole skins and sides of crocodilian species has been analysed, with two sides being considered to be equivalent to one skin. Trade in skins reported in units of weight, area, length or in sub-units, such as 'tails', has been excluded. Wherever possible, data reported by the producer countries have been used in preference to that reported by importing countries because the time lag between the export and the import being reported may lead to double-counting and therefore an overestimation of trade volume. However, where producer countries have failed to submit annual reports, or where exporter data is substantially less than importer data, importers' data have been used. Many of the transactions have been analysed at the export permit level. Re-export trade has not been included in the estimation of annual production.

The report discusses the key species in trade in taxonomic order, reviewing global trade trends before focussing on trends in trade from individual exporting countries. The figures and tables contain information on trade from all sources, including captive-bred, ranched and wild specimens, unless otherwise specified.

Table 1. CITES annual reports for 2009-2011 available for analysis as of 31 August 2013

Country	2009	2010	2011
Afghanistan	–	–	–
Albania	✓	✓	–
Algeria	✓	✓	✓
Antigua and Barbuda	✓	✓	-
Argentina	✓	✓	✓
Armenia	–	✓	✓
Australia	✓	✓	-
Austria	✓	✓	✓
Azerbaijan	–	✓	✓
Bahamas	✓	–	✓
Bangladesh	✓	✓	✓
Barbados	✓	✓	✓
Belarus	✓	✓	✓
Belgium	✓	✓	✓
Belize	✓	–	–
Benin	✓	✓	✓
Bhutan	✓	✓	–
Bolivia	–	✓	✓
Bosnia and Herzegovina	–	–	–
Botswana	✓	✓	–
Brazil	✓	✓	✓
Brunei Darussalam	✓	✓	✓
Bulgaria	✓	✓	✓
Burkina Faso	✓	✓	–
Burundi	✓	✓	✓
Cambodia	✓	✓	✓
Cameroon	✓	–	–
Canada	✓	–	–
Cape Verde	✓	✓	–
Central African Republic	✓	✓	–
Chad	–	✓	✓
Chile	✓	✓	✓
China	✓	✓	✓
Colombia	✓	✓	✓
Comoros	✓	–	–
Congo	✓	✓	–
Costa Rica	✓	✓	✓
Côte d'Ivoire	✓	–	✓
Croatia	✓	✓	✓
Cuba	✓	✓	–
Cyprus	✓	✓	✓
Czech Republic	✓	✓	✓
Democratic Republic of the Congo	✓	–	–
Denmark	✓	✓	✓
Dominica	✓	✓	✓
Dominican Republic	✓	✓	✓

Country	2009	2010	2011
Ecuador	✓	✓	–
Egypt	✓	✓	–
El Salvador	✓	✓	✓
Equatorial Guinea	✓	✓	✓
Eritrea	✓	✓	✓
Estonia	✓	✓	✓
Ethiopia	–	✓	✓
Fiji	✓	✓	–
Finland	✓	✓	✓
France	✓	✓	✓
Gabon	✓	✓	–
Gambia	✓	–	–
Georgia	✓	✓	✓
Germany	✓	✓	✓
Ghana	✓	✓	✓
Greece	✓	✓	✓
Grenada	✓	✓	✓
Guatemala	✓	✓	✓
Guinea	–	✓	–
Guinea Bissau	✓	✓	✓
Guyana	✓	✓	✓
Honduras	✓	✓	-
Hong Kong, SAR	✓	✓	✓
Hungary	✓	✓	✓
Iceland	✓	✓	✓
India	✓	✓	-
Indonesia	✓	✓	✓
Iran, Islamic Republic of	✓	✓	✓
Ireland	✓	✓	✓
Israel	✓	✓	✓
Italy	✓	✓	✓
Jamaica	✓	✓	✓
Japan	✓	✓	✓
Jordan	✓	✓	✓
Kazakhstan	✓	✓	-
Kenya	✓	✓	✓
Kuwait	✓	✓	✓
Kyrgyzstan	✓	✓	✓
Lao P.D.R.	✓	–	-
Latvia	✓	✓	✓
Lesotho	–	–	-
Liberia	✓	✓	✓
Libyan Arab Jamahiriya	✓	✓	-
Liechtenstein	✓	-	-
Lithuania	✓	✓	✓
Luxembourg	✓	✓	✓

Country	2009	2010	2011
Macao, SAR	✓	✓	✓
Macedonia, Former Yugoslav Republic of	✓	✓	✓
Madagascar	✓	✓	✓
Malawi	✓	–	-
Malaysia	✓	✓	✓
Mali	✓	✓	✓
Malta	✓	✓	✓
Mauritania	✓	-	-
Mauritius	✓	✓	✓
Mexico	✓	✓	✓
Moldova	✓	✓	-
Monaco	–	✓	✓
Mongolia	✓	✓	-
Montenegro	✓	✓	✓
Morocco	✓	✓	✓
Mozambique	✓	✓	-
Myanmar	–	✓	✓
Namibia	✓	✓	✓
Nepal	✓	✓	✓
Netherlands	✓	✓	✓
New Caledonia	✓	-	-
New Zealand	✓	✓	✓
Nicaragua	✓	–	-
Niger	✓	✓	-
Nigeria	✓	–	-
Norway	✓	✓	✓
Oman	–	✓	✓
Pakistan	✓	✓	✓
Palau	✓	✓	✓
Panama	–	✓	✓
Papua New Guinea	✓	✓	✓
Paraguay	✓	✓	✓
Peru	✓	✓	✓
Philippines	✓	–	-
Poland	✓	✓	✓
Portugal	✓	✓	✓
Qatar	✓	✓	✓
Republic of Korea	–	✓	-
Romania	✓	✓	✓
Russian Federation	✓	✓	✓
Rwanda	✓	✓	✓
Saint Kitts and Nevis	✓	✓	✓
Saint Lucia	✓	✓	✓
Saint Vincent and the Grenadines	✓	-	-
Samoa	✓	–	-

Country	2009	2010	2011
San Marino	✓	✓	-
Sao Tome and Principe	✓	✓	-
Saudi Arabia	✓	–	-
Senegal	✓	✓	-
Serbia	✓	✓	✓
Seychelles	✓	✓	✓
Sierra Leone	✓	✓	✓
Singapore	✓	✓	✓
Slovakia	✓	✓	✓
Slovenia	✓	✓	✓
Solomon Islands	✓	✓	-
Somalia	–	–	-
South Africa	✓	✓	✓
Spain	✓	✓	✓
Sri Lanka	✓	✓	✓
Sudan	–	✓	-
Suriname	✓	✓	✓
Swaziland	✓	✓	✓
Sweden	✓	✓	✓
Switzerland	✓	✓	✓
Syria	✓	✓	✓
Thailand	✓	✓	✓
Togo	✓	✓	✓
Trinidad and Tobago	✓	✓	✓
Tunisia	✓	–	✓
Turkey	✓	✓	✓
Uganda	✓	–	-
Ukraine	✓	✓	-
United Arab Emirates	✓	✓	✓
United Kingdom	✓	✓	✓
United Republic of Tanzania	✓	✓	✓
United States of America	✓	✓	✓
Uruguay	✓	✓	✓
Uzbekistan	✓	✓	✓
Vanuatu	✓	✓	✓
Venezuela, Bolivarian Republic of	✓	✓	✓
Viet Nam	✓	✓	✓
Yemen	✓	✓	-
Zambia	✓	✓	✓
Zimbabwe	✓	✓	✓

Key: ✓ = report available; – = report not received

Data limitations

Incomplete data due to late submission of, or failure to submit, CITES annual reports remains an impediment to conducting trade studies using CITES trade data. Measures have been taken by the CITES Standing Committee to improve compliance with the reporting provisions of the Convention. These include reminders being sent by the Secretariat on behalf of the Standing Committee and a recommendation to suspend trade in CITES-listed species should a Party fail, without providing sufficient justification, to submit reports for three consecutive years (Resolution Conf. 11.17 (Rev. CoP16)). Despite these efforts, some Parties fail to submit annual reports on a regular basis.

According to Resolution Conf. 11.17 (Rev. CoP16), annual reports for trade in 2011 should have been submitted by 31 October 2012. However, at the time of writing (September 2013), several reports that might contain important crocodilian data had still not been received by the CITES Secretariat. These include Australia (2011), Bolivia (2009), Botswana (2011), Cuba (2011), Egypt (2011), Ethiopia (2009), Honduras (2011), Malawi (2010 and 2011), Mozambique (2011), Nicaragua (2010 and 2011), Panama (2009) and Uganda (2010 and 2011) among the range States, and the Republic of Korea (2009 and 2011) amongst the importing countries.

The accuracy of the data is a further limitation to analysis of the trade. The quality of some annual reports was poor as evidenced by comparisons of exporter- and importer-reported data and data obtained from other sources; occasionally skins have been misreported as live animals, while skin pieces, such as back strips, necks, flanks and tails, have often been reported as whole skins. Since the majority of countries trading in crocodilian skins report on a shipment-by-shipment basis, and many importers' reports include the exporters' permit numbers, importer-reported data can be cross-referenced with the original export permit information in order to reduce reporting or typographical errors to a minimum. This type of checking is also useful for cross-referencing end-of-year trade, where an export may be reported in one year and the import of the same shipment reported the following year.

Analysing annual reports is also complicated by the inconsistent way in which the reports are compiled. According to CITES Notification to the Parties No. 2011/019 of 17 February 2011, Parties may report on the basis of the permits and certificates that have been issued if they are unable to report on the actual number of specimens that entered or left the country. However, reporting on the basis of permits issued may lead to overestimates of trade volume as permits are frequently issued for quantities in excess of those actually traded and indeed, some of the permits may expire without being used. Despite reminders from the CITES Secretariat, the majority of Parties still do not provide any details concerning the basis on which their annual reports are compiled.

Significant improvement in the reporting of crocodilian trade continues; however, the absence of annual reports from certain key producer countries continues to be a hindrance to timely analysis of the trade.

Overview of global trade in crocodilian skins

The overall volume of world trade in classic crocodilian and caiman skins has been variable over the ten-year period 2002 to 2011, with an average of 1.3 million skins[1] exported annually (Table 2; Figure 1). The total number of skins entering international trade in 2011 was approximately 1.36 million, similar to the figure in 2010. Trade in skins of *Alligator mississipiensis* from the United States of America (hereafter referred to as the United States) decreased while *Crocodylus niloticus* skins from southern Africa showed an increase. Exports of *Caiman crocodilus* from Colombia decreased slightly compared to the previous year while *Caiman yacare* exports from Bolivia and Brazil showed an increase, as did caiman exports from the Bolivarian Republic of Venezuela (hereafter referred to as Venezuela).

The species composition of the trade in skins varied over the ten year period 2002-2011. Some diversification of the species in trade began at the beginning of this period with two different species entering the market: captive-bred *Crocodylus acutus* from Colombia and Honduras and *Caiman latirostris* from Argentina and Brazil. Trade in these species continues, but in relatively small quantities. The first exports in recent years of wild *Caiman crocodilus crocodilus* skins from Guyana occurred in 2001 and continued through 2011, while 2005 saw the first exports of ranched *Caiman yacare* from Argentina.

Exports of *Crocodylus niloticus* had remained steady at between 140,000 and 170,000 skins per year between 2002 and 2010 with South Africa, Zambia and Zimbabwe being the main suppliers, however 2011 saw an increase from most of the major producers. *Crocodylus novaeguineae* production appears to have declined since 2007 while there has been a steady increase in trade in *C. porosus*, perhaps suggesting a change in market preference. Trade in *C. siamensis* increased steadily over the early part of the decade and peaked at over 60,000 skins in 2008; trade appears to have stabilised at about 35,000 skins annually from 2009 onwards, with most of the skins being produced in Thailand and a smaller proportion in Viet Nam.

The following sections provide a more detailed look at each species and the primary exporter countries involved in the skin trade.

[1] [1] Individual 'Species Accounts' provide details of the source of the data on which the figures for each species and country are based.

Table 2. Reported global commercial exports of crocodilian skins from the main taxa, 2002-2011

Species	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Alligator mississippiensis	237,840	341,734	368,409	356,393	421,220	262,133	230,464	297,187	369,731	310,542
Crocodylus acutus	630	830	227	204	120	404	1,371	1,460	200	1,392
Crocodylus johnstoni	2	0	0	65	0	0	0	0	0	0
Crocodylus moreletii	1,591	997	549	855	158	11	724	485	0	184
Crocodylus niloticus	159,970	148,553	140,497	151,491	168,771	161,185	168,765	149,082	167,992	184,328
Crocodylus novaeguineae	30,749	27,308	39,796	32,002	38,645	28,663	25,638	25,882	24,480	16,632
Crocodylus porosus	24,278	26,564	30,728	37,441	34,152	45,249	52,081	45,565	53,242	53,429
Crocodylus siamensis	3,580	10,982	20,930	31,517	47,972	54,331	63,471	34,373	33,094	35,810
Subtotal of 'classic' skins	**458,640**	**556,968**	**601,136**	**578,451**	**708,574**	**551,976**	**542,514**	**554,034**	**648,739**	**602,317**
Caiman crocodilus crocodilus	22,709	34,636	70,722	65,078	69,574	44,894	36,989	43,638	24,643	44,257
Caiman crocodilus fuscus	552,077	572,059	621,691	603,223	972,941	670,828	533,549	406,381	651,121	634,761
Caiman latirostris	90	165	215	2,752	1,669	1,125	809	394	1,933	2,973
Caiman yacare	78,811	60,288	41,882	53,241	50,499	65,452	61,297	47,208	24,546	45,858
Subtotal of caiman skins	**653,687**	**667,148**	**734,510**	**724,924**	**1,094,683**	**782,299**	**632,644**	**497,621**	**702,243**	**727,849**
Grand total	**1,112,327**	**1,224,116**	**1,335,646**	**1,303,375**	**1,803,257**	**1,334,275**	**1,175,158**	**1,051,655**	**1,350,982**	**1,330,166**

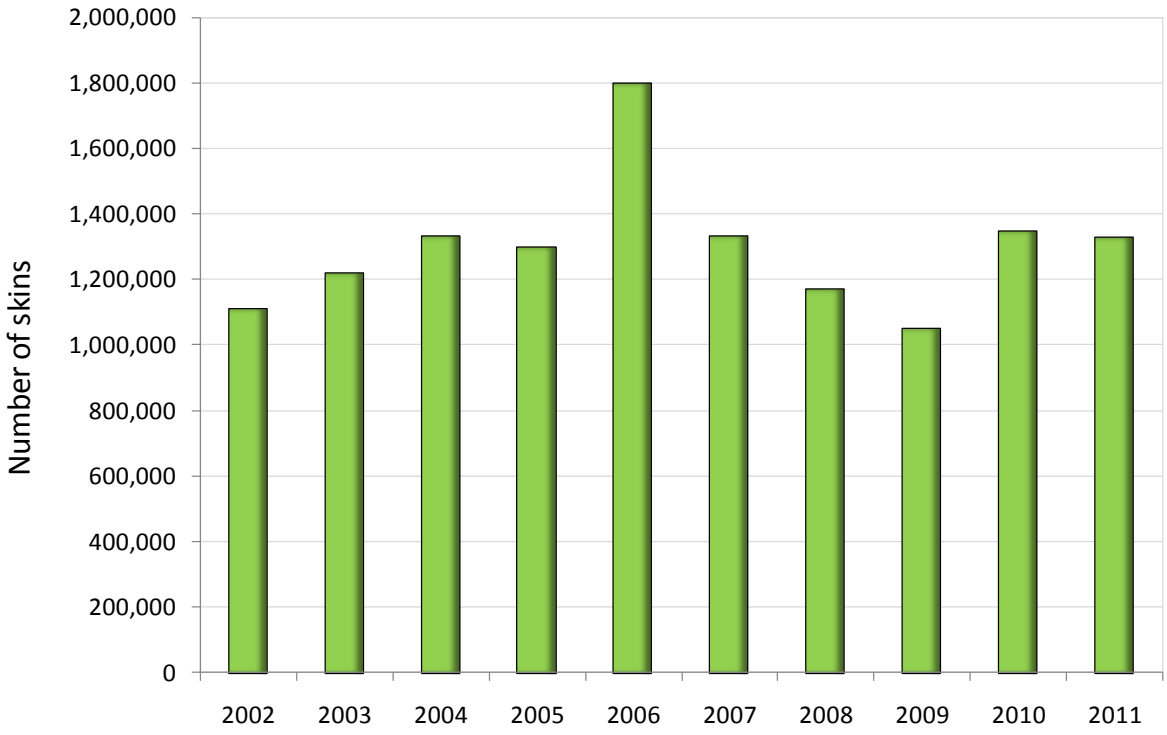


Figure 1. Global commercial exports of crocodilian skins, 2002-2011

Species accounts

Crocodylus acutus American Crocodile

Colombia has six farms registered with CITES for production of this Appendix I species. Skin exports began in 2001 with 100 skins from captive-bred animals going to France. Exports of small numbers of skins have continued, rising to 1192 in 2011. Almost all of the skins exported by Colombia between 2007 and 2009 were imported by Italy, while those exported in 2010 were all imported by France. Both countries were key importers of skins from Colombia in 2011.

Honduras has one registered breeding operation for this species and the first reported trade was 500 skins imported by Japan in 2003. Permits for the export of 1,004 skins were issued in 2008, but these, and a further 86 skins (totalling 1,090 skins) were exported in 2009. However, no exports were reported for 2010 and only 200 skins were exported in 2011. The principal importer over the ten-year period, and the only importer in 2011, was Panama.

Crocodylus johnstoni Australian Freshwater Crocodile

No trade in skins of this species has been reported since 2005. Exports from **Australia**, the only range State, peaked at 3,875 skins in 1993, remained at this level until 1996, and subsequently fell to negligible levels.

Crocodylus moreletii Morelet's Crocodile

Found only in Belize, Guatemala and Mexico, this species was listed in CITES Appendix I until 23 June 2010 when the populations of Belize and Mexico were transferred to Appendix II with a zero quota for wild specimens traded for commercial purposes. **Mexico** has three captive-breeding operations for this species registered with the CITES Secretariat. Exports of skins peaked at 2,430 in 2001 and subsequently decreased, remaining below 1,000 skins per annum from 2003 onwards (Figure 2). In 2008, Mexico reported exporting 704 skins, the majority to the Republic of Korea, and in 2009 485 skins were reportedly exported, mostly to Japan. No exports were reported in 2010 and fewer than 200 in 2011; importers in 2011 were France, Italy and Spain. The Mexican population of this species was listed in CITES Appendix II on 23 June 2010 with a zero quota for wild specimens traded for commercial purposes; all skins reported in trade in 2011 were captive-bred.

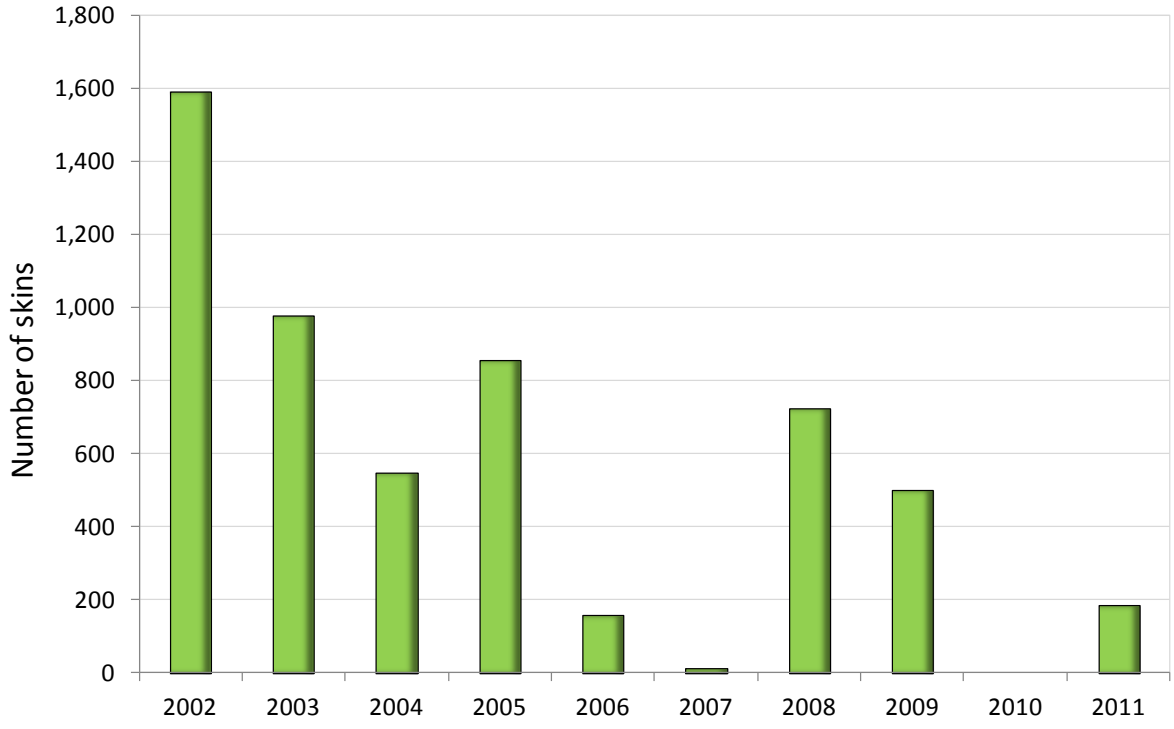


Figure 2. Commercial exports of *Crocodylus moreletii* skins reported by Mexico, 2002–2011

Crocodylus niloticus Nile Crocodile

Over the period 2002-2011, an average of 156,000 *Crocodylus niloticus* skins were exported globally (Table 3). The section that follows summarises information on exports by range States and other countries with farms capable of commercial skin production. Currently, only two countries have captive-breeding operations registered with the CITES Secretariat: Mali and Senegal, each with only one registered operation. *Crocodylus niloticus* is listed in CITES Appendix I except for the populations of Botswana, Egypt, Ethiopia, Kenya, Madagascar,

Malawi, Mozambique, Namibia, South Africa, Uganda, the United Republic of Tanzania (hereafter referred to as Tanzania), Zambia and Zimbabwe, which are included in Appendix II.

Table 3. Reported commercial exports of *Crocodylus niloticus* skins from producer countries, 2002-2011

Country	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Botswana	0	0	0	0	0	*320	*374	*1,626	*1,500	●2,000
Brazil	0	1	44	0	0	0	0	0	0	0
Ethiopia	220	■900	■300	■347	■727	*594	■492	0	4	0
Israel	699	0	0	0	0	0	0	*2	0	0
Kenya	2,317	*1,687	2,850	9,550	8,710	6,354	4,504	4,283	4,309	4,180
Madagascar	6,936	7,300	4,760	4,850	6,660	5,500	2,640	2,450	0	0
Malawi	*120	301	*100	*1,038	698	*1,350	3,370	2,603	*500	2,256
Mali	0	0	0	0	0	0	107	0	0	15
Mauritius	178	118	400	150	184	231	189	100	0	0
Mozambique	293	3,160	0	1,156	2,000	179	566	0	2,449	*17,058
Namibia	0	0	0	400	305	0	0	600	2	200
Senegal	0	0	0	0	2	0	1	0	0	3
South Africa	45,755	31,321	35,760	35,486	34,203	36,014	44,697	25,050	53,329	30,695[2]
Sudan									20	
Uganda	*2	600	600	*600	*300	0	*290	0	*500	0
U.R.Tanzania	*1,259	*1,439	*1,067	*1,584	*1,100	*1,556	*1,784	1,365	601	*475
Zambia	22,259	28,019	26,353	*33,184	*42,266	*44,597	28,197	43,655	23,717	37,584
Zimbabwe	*69,075	70,378	60,185	70,416	80,873	54,810	59,509	939	30,285	22,557
	♦79,932	♦73,707	♦68,263	♦63,146	♦71,616	♦64,490	♦81,554	♦67,350	♦80,995	♦90,533
Total	**159,970**	**148,553**	**140,497**	**151,491**	**168,771**	**161,185**	**168,765**	**149,082**	**167,922**	**184,328**

Key: * Figure derived partly or in full from importer-reported data; ● data supplied by FAO[3]; ♦ Data supplied by CFAZ (the Crocodile Farmers Association of Zimbabwe)[4]; ■ Data supplied from EWCO (the Ethiopian Wildlife Conservation Organisation, the CITES Management Authority of Ethiopia.)[5]

1. Exports by range States

Botswana: No commercial exports of skins were reported by Botswana between 1997 and 2009, despite Botswana submitting annual reports during this period. However, South Africa reported importing skins from individuals captive-bred in Botswana in 2001, 2008, 2009 and 2010, as well as 320 ranched skins in 2007. Although no report has been submitted by Botswana for 2011, data received from FAO suggest that 2000 skins were exported. South

[2] Certain records in South Africa's 2011 annual report are awaiting clarification from the Management Authority
[3] Luca Garibaldi on behalf of FAO, *pers. comm.* 5-12-2012
[4] Sue Childes on behalf of CFAZ, *pers. comm.* 15-06-2012
[5] Kumara on behalf of Arbaminch Crocodile Ranch, *pers. comm.* 20-10-2009

Africa appears to be the only country importing skins for commercial purposes from Botswana.

Central African Republic: No commercial exports of skins from the Central African Republic have been reported since 1986.

Congo: No commercial exports of skins have been reported since 1989.

Ethiopia: Ethiopia's sole crocodile ranching operation (Arba Minch Crocodile Ranch) is owned and managed by the Ethiopian Wildlife Conservation Organisation (EWCO) which also acts as both the CITES Management and Scientific Authorities. The ranch, however, is not currently registered with the CITES Secretariat. Production appears to be erratic and there are discrepancies between the information contained in Ethiopia's annual reports to CITES, data received directly from EWCO, and information from importing countries. Data provided by EWCO have been used in Table 3 for the period 2001 to 2006 and for 2008 in preference to Ethiopian annual report data as they are more comparable with data reported by importers; however, no EWCO data were available for 2007 and the Ethiopian annual report for that year was incomplete so importer-reported data were used. No annual report has been received from Ethiopia for 2009 and no imports of skins were reported. Ethiopia's annual reports for 2010 and 2011 recorded the export of four ranched skins in 2010 and none in 2011, however the import of 77 ranched skins was reported by Japan in 2011.

Guinea: No trade in skins from Guinea has been reported since 1995.

Kenya: Kenya reported exporting 4,281 skins in 2009, 4,309 skins in 2010 and a further 4,180 in 2011; the principal importer was Singapore. In 2006, the skins were reported to be from captive-bred animals and in 2007, skins were roughly half ranched, half captive-bred; in the four subsequent years, all were reported to be ranched.

Liberia: Commercial exports of skins from Liberia have not been reported in trade since 1984.

Madagascar: Madagascar's exports showed an overall decrease from 7,300 skins exported in 2002 to 2,450 skins exported in 2009 (Figure 3), reaching the lowest level since 1995. The situation in Madagascar has long been under review by both the IUCN/SSC Crocodile Specialist Group and the CITES Secretariat. Based on serious concerns raised about the trade, the CITES Standing Committee recommended Parties to suspend trade in *C. niloticus* from Madagascar on 17 June 2010 until further notice (See Notification to the Parties No. 2010/015 and SC63 Doc. 13). No exports of skins were reported in 2010 or 2011; although imports were reported in 2010, the export permits concerned were issued the previous year.



Figure 3. Commercial exports of *Crocodylus niloticus* skins from Madagascar, and CITES export quotas published by Madagascar for wild-sourced and ranched skins, 2002-2011 (no exports were reported in 2010 or 2011)

Malawi: A total of 2,603 skins, the majority ranched, were reportedly exported by Malawi in 2009, 200 of which were from wild-caught animals. No annual report has been received from Malawi for 2010 or 2011; the import of 500 skins was reported by Germany in 2010 (of which 200 were wild-sourced and the remainder ranched), while a total of 2,256 skins were reported by Germany and Singapore in 2011 (of which 96 were wild-sourced and the remainder ranched).

Mali: Mali has one captive-breeding operation registered with the CITES Secretariat - Ets Lassana Diaby Cuirs et Peaux- that was reportedly established in 1978, but was only registered with CITES in May 2008. Mali reported exports of 107 source 'D' skins to France in 2008 and 15 source 'D' skins to the United States in 2011; both importers confirmed the trade, although the United States reported the skins as a seizure/confiscation.

Mozambique: No commercial shipments of skins were reported in 2009 but a total of 2,449 skins were exported in 2010. Of these, 403 were wild-caught skins exported to South Africa, with the remainder of ranched origin destined for Mexico and Singapore. No report has been received from Mozambique for 2011 but Singapore reported importing 17,058 skins from ranched animals.

Namibia: Namibia reported exporting 600 skins from captive-bred animals to South Africa in 2009, two captive-bred skins to Hong Kong in 2010 and 200 ranched belly skins to South Africa in 2011.

Nigeria: No commercial shipments of skins from Nigeria have been reported since 1983, although seizures of items from tourists returning from the country occur regularly according to Customs data included in CITES annual reports.

Senegal: There is one farm registered with the CITES Secretariat for captive-breeding of this species that was established in 1995. The only reported trade appears to have been two skins exported to Ukraine in 2006 and one to France in 2008.

Somalia: No commercial shipments of skins have been reported from Somalia since 1981. A CITES trade suspension has been in place for all trade from Somalia since 2002 on the basis of lack of submission of annual reports. National legislation suspending all commercial trade was also put in place in 2004.

South Africa: South Africa's annual reports for 2009, 2010 and 2011 indicate the commercial export of 25,050, 53,329 and 30,695 skins respectively, of which all but 600 skins in 2011 were reported to be of South African origin. Although there are no known commercial ranching operations in South Africa, 2,119, 3,418 and 50 skins were reportedly ranched in 2009, 2010 and 2011, respectively. Since South Africa imports hatchling crocodiles from Mozambique, it is likely that the ranched skins originated from Mozambique and were misreported as direct exports.

Sudan: No commercial trade in skins originating in Sudan was reported between 1992 and 2009; in 2010, Sudan reported exporting six skins to Turkey and 14 skins to the United Arab Emirates for commercial purposes. No source for the skins was reported and no further trade has been reported subsequently. Sudan has no captive breeding operations registered with the CITES Secretariat.

Togo: No trade in skins has been reported since the early 1980s.

Uganda: No exports of crocodile skins were reported by Uganda between 2006 and 2009, and no report has been received for 2010 or 2011. However, the Republic of Korea reported imports from Uganda of 300 captive-bred skins in 2006, 290 wild-sourced skins in 2008 and a further 500 captive-bred skins in 2010. No annual report has yet been received from the Republic of Korea for 2011.

Tanzania: Tanzania stated that its annual reports for the years 2002 onwards were compiled on the basis of actual trade; however, exports of skins of this species reported by importers exceed those reported by Tanzania in every year between 2002 and 2008. Therefore, this study uses data taken from the reports of the major importing countries, notably Singapore and Italy, for those years (Table 3). According to importer-reported data, skin exports from Tanzania

increased from 1,100 in 2006 to 1,784 in 2008, all skins being of wild origin. Tanzania reported the commercial export of 1,365 skins in 2009 and 601 skins in 2010, the majority of wild origin and exported to Singapore. In 2011 Tanzania reported no commercial exports of skins but Singapore reported the import of 475 wild-sourced skins.

Zambia: Zambia reported exports of 43,655, 23,717 and 37,584 skins in 2009, 2010 and 2011, respectively, of which the vast majority were ranched and exported to Singapore. Although Zambia reported notable quantities of wild-sourced and captive-bred skins in 2011, importer-reported data suggests that all skins were from ranched animals. In 2011, Botswana reported re-exporting 36,301 skins of ranched, Zambian origin to Singapore, which do not appear in the reports of either the origin or importing country in either 2010 or 2011, so it is likely that the trade did not occur.

Zimbabwe: Exports of skins of this species reported by Zimbabwe in its annual reports are in most years substantially lower than those reported by importers and also the figures supplied by the Crocodile Farmers Association of Zimbabwe (CFAZ); the CFAZ figures have therefore been used in this analysis as a precautionary measure (see Table 3). In 2009, Zimbabwe's annual report recorded the export of 939 skins whereas CFAZ indicates exports of 67,350. Similar discrepancies occurred in both 2010 and 2011. Not all skins exported from Zimbabwe are produced by CFAZ members and therefore it is likely that these data do not reflect a complete record of Zimbabwe's skin exports.

2. Exports from non-range States with commercial crocodile farms

Brazil: No exports have been recorded from Brazil since 2004.

Israel: The only trade from Israel reported since 2002 was the import of two skins reported by Germany in 2009.

Mauritius: Mauritius reported the direct export of 100 skins in 2009, the majority to Zimbabwe, and a further 303 skins to Zimbabwe in 2011; no direct exports were reported in 2010

Crocodylus novaeguineae New Guinea Crocodile

Over the ten-year period 2002 to 2011, the total number of skins of this species exported by the main producers, Indonesia and Papua New Guinea, peaked in 2006 but subsequently decreased (Table 4).

Table 4. Reported commercial exports of *Crocodylus novaeguineae* skins, 2002-2011

Country	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Indonesia	11,951	8,826	10,481	13,585	16,575	12,759	10,588	7,255	7,450	8,846
Papua New Guinea	18,798	18,482	29,315	18,417	22,070	15,904	15,050	18,627	17,030	7,786
Total	**30,749**	**27,308**	**39,796**	**32,002**	**38,645**	**28,663**	**25,638**	**25,882**	**24,480**	**16,632**

Indonesia: Exports decreased steadily from 2006 to 2010, while the proportion of wild-sourced skins increased from approximately 70% in 2008 to 98% in 2010, dropping to 85% in 2011. The main importers of *C. novaeguineae* skins 2009-2011 were Japan and Singapore.

Papua New Guinea: Exports decreased from over 22,000 skins in 2006 to 15,050 skins in 2008. Although the following year showed a slight increase, exports dropped to 17,030 in 2010 and further to 7,786 in 2011. Between 2009 and 2011 the majority of the skins were exported to Japan and Singapore. All skins exported by Papua New Guinea since 2001 were wild-sourced, with the exception of ten skins from animals bred in captivity exported between 2002 and 2004.

Crocodylus porosus Saltwater Crocodile

Crocodylus porosus is listed in Appendix I, except for populations of Australia, Indonesia and Papua New Guinea which are listed in Appendix II. The total number of *C. porosus* skins steadily increased between 2001 and 2008, rising to a total of 53,918 skins in 2008; although there was a decrease to 45,997 skins in 2009, exports subsequently increased to 55,317 skins in 2011 (Table 5).

Table 5. Reported commercial exports of *Crocodylus porosus* skins, 2002-2011

Country	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Australia	*10,423	*14,744	*12,741	*20,409	*16,123	*21,314	28,626	*26,990	30,518	*32,117
Indonesia	3,277	2,732	3,968	4,714	3,825	5,151	5,718	5,967	4,302	7,934
Malaysia	*662	*618	*1,450	*1,058	*1,684	*1,273	*1,043	*587	*861	*436
Papua New Guinea	9,332	8,000	11,043	10,222	10,208	12,675	12,237	9,900	15,787	9,432
Philippines	0	0	0	0	0	34	*20	892	0	*200
Singapore	584	470	*693	538	1,712	1,653	1,877	0	*70	0
Thailand	0	0	300	500	600	3,149	2,560	1,229	1,704	3,310
Total	**24,278**	**26,564**	**30,728**	**37,441**	**34,152**	**45,249**	**52,081**	**45,565**	**53,242**	**53,429**

Key: * Figure wholly or partly derived from importer-reported data

Australia: Comparison of data reported by Australia with that reported by importing countries in certain years suggests that Australia may not have reported the full quantities of skins exported. Therefore, the data for the years 2002 to 2011 provided in Table 5, with the exception of 2010, have been taken from reports of the importing countries less skins imported on export permits issued the previous year. The destinations of the skins exported 2009-2011 were mainly France and Singapore and the vast majority were from either captive-bred or ranched individuals.

Indonesia: Indonesia's exports have shown a relatively steady increase over the last decade, peaking at almost 8,000 skins in 2011. The main importer 2009-2011 was Singapore. From 2006 onwards, all skins were from either captive-bred or ranched animals, with the proportion from captive-bred sources increasing from less than 20 per cent in 2005 to over 80 per cent in 2011.

Malaysia: Data from Malaysia come from at least two separate Management Authorities and appear to be poorly correlated with data reported by importing countries; this study therefore uses importer-reported data (Table 5). On the basis of these data, exports appear to have

peaked at 1,684 skins in 2006 and subsequently declined overall to 436 skins in 2011. There are six CITES-registered captive-breeding operations for this species in Malaysia.

Papua New Guinea: Papua New Guinea's exports peaked at just under 16,000 skins in 2010, of which 32 per cent were from wild caught animals, but decreased to 9,432 skins (28 per cent wild-sourced) in 2011 (Table 5). The increase in exports seen in 2008 was apparently the result of a reduction in breeding stock on the farms[6] .

Singapore: All of Singapore's reported commercial exports of skins 2002-2008 were captive-bred; there are two registered captive-breeding operations in the country. Most of the skins were exported to France, Italy and Japan. No exports have been reported since 2008 (Table 5).

Thailand: Thailand's reported exports of skins showed a notable increase between 2004 and 2007; exports subsequently decreased slightly but returned to similar levels in 2011 (Table 5). All exports were from animals bred in captivity; there are 13 CITES-registered captive-breeding operations for this species in Thailand. The principal importer 2009-2011 was France.

Crocodylus siamensis Siamese Crocodile

Cambodia: Cambodia has not reported any exports of skins since 2008, when 1,300 captive-bred skins were reportedly exported to Thailand. However, Thailand reported the import of 3,700 skins in 2008 and 300 skins in 2009 from Cambodia, all captive-bred. Cambodia has six crocodile farms registered with the CITES Secretariat for the commercial production of this species.

Thailand: There are 23 crocodile farms registered with the CITES Secretariat for commercial production of this species in Thailand; all reported exports of skins were captive-bred. Reported exports were fewer than 6,000 skins annually prior to 2003, but then increased steadily from 10,982 skins in 2003 to 39,109 skins in 2008. Exports decreased in 2009 but increased in both 2010 and 2011 (Figure 4). The main importers 2009-2011 were Japan and Singapore.

Viet Nam: Since the first reported exports of the species in 2004, exports steadily increased, peaking at 23,062 skins in 2008; however, exports decreased in both 2009 and 2010 (Figure 4). Japan, Thailand, China and Singapore were the main destinations of the skins between 2009 and 2011. All skins exported were captive-bred; Viet Nam has seven captive-breeding operations registered with the CITES Secretariat for this species.

[6] Eric Langelet, *pers. comm.* 12-09-2010

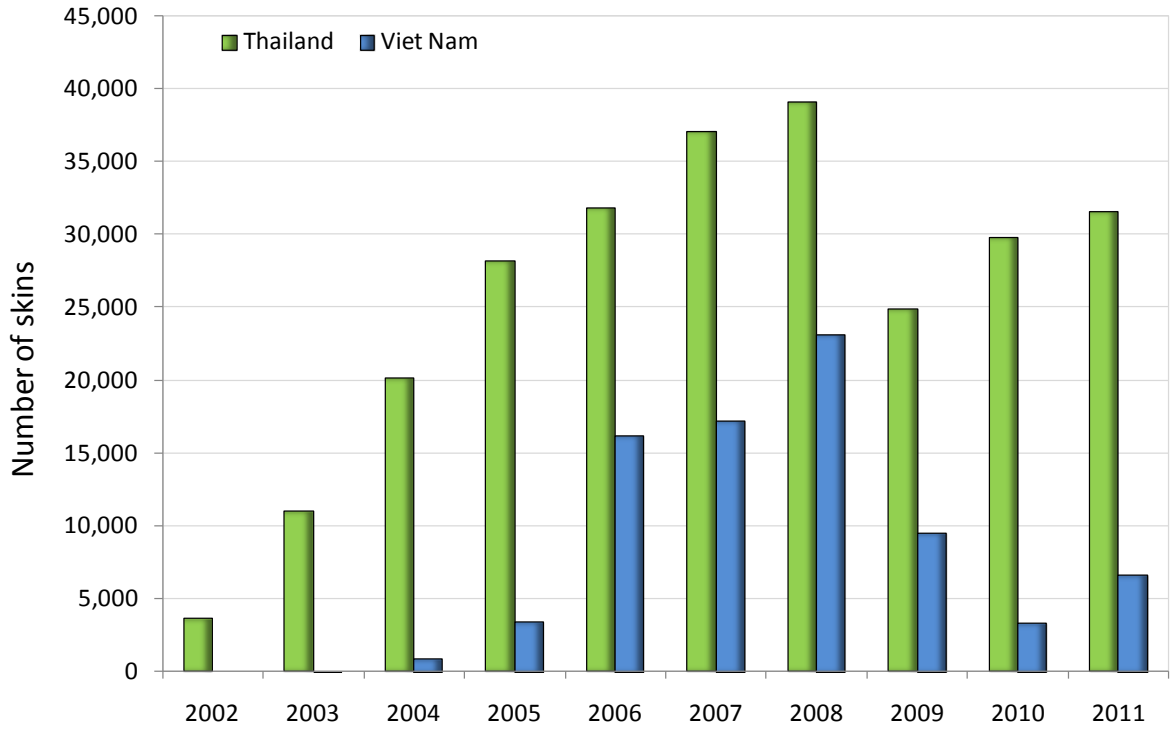


Figure 4. Commercial exports of *Crocodylus siamensis* skins from Thailand and Viet Nam, 2002–2011

Alligator mississippiensis American Alligator

Reported exports of *A. mississippiensis* from the United States increased from around 31,000 skins in 1986 to 421,220 skins in 2006. However, exports declined by 38 per cent in 2007, and fell further in 2008 (Table 6; Figure 5). The source of this dramatic change is unclear, but it may have been the result of a combination of factors including over supply of both caiman and alligator skins in 2006, the effect of two hurricanes on alligator habitat, and the general global financial downturn which may have reduced the demand for luxury leather goods. Exports rose by almost 30% in 2009 and increased further in 2010, but declined slightly in 2011 to around 310,000 skins.

Table 6. Commercial exports of *Alligator mississippiensis* skins reported by the United States, 2002-2011

2002	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
343,110	237,840	341,734	368,409	356,393	421,220	262,133	230,464	297,187	369,731	310,542

Between 2009 and 2011, four countries, France, Germany, Italy and Singapore, together imported 94 per cent of production.

In the CITES annual reports of the United States prior to 2005, the source code 'C' (bred in captivity) was likely to have been used for ranched animals as well as the source code 'R'. However, from 2005 onwards, source code 'W' (wild taken) appears to have been used for

ranched animals; 99.7 per cent of the skins exported in these years were reported as source 'W'. This is the result of the decision by the CITES Management Authority that the code 'R' should only be used in the case of crocodilian populations transferred from Appendix I to Appendix II subject to ranching. Up to 2007, the United States also reported the export of relatively small quantities of source 'F' skins – from animals born in captivity (F1 or subsequent generations that do not fulfil the definition of 'bred in captivity' in Resolution Conf. 10.16 (Rev. CoP15)).

This species is also bred in captivity in Israel, but there have been no reported exports of skins from Israel since 2001.

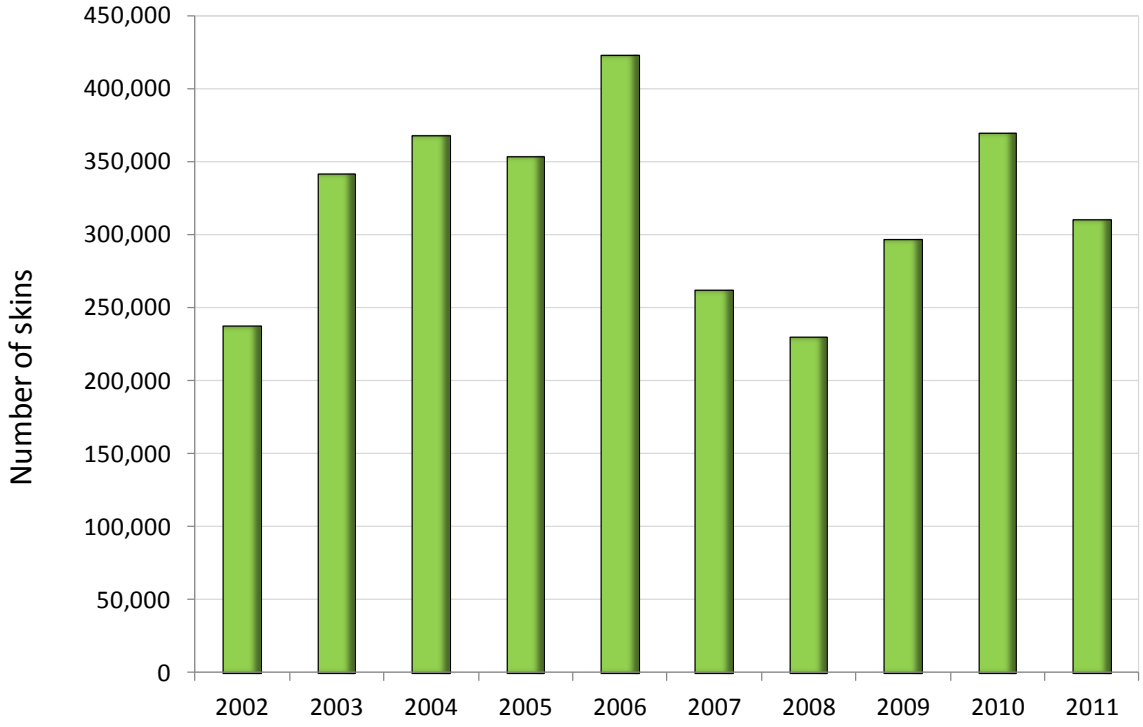


Figure 5. Commercial exports of *Alligator mississippiensis* skins reported by the United States, 2002-2011

Caiman crocodilus crocodilus Spectacled Caiman

Venezuela has historically been the main supplier of skins of this subspecies, almost all from wild-collected animals. Between 2004 and 2006, Venezuela exported around 60,000 skins annually; however, exports declined to less than half that level in 2007 and decreased each year since until 2010 (Figure 6). Data reported by Venezuela for 2011 indicate that exports rose almost three-fold between 2010 and 2011 to 27,811 skins.

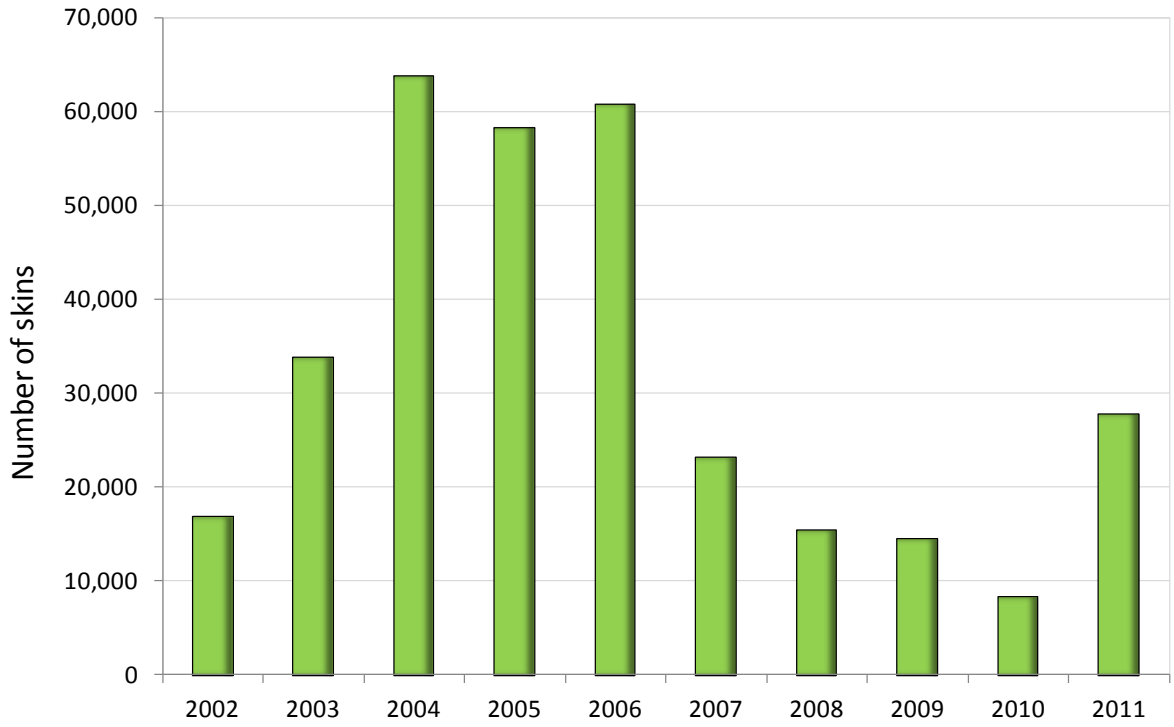


Figure 6. Commercial exports of *Caiman crocodilus crocodilus* skins from Venezuela, 2002-2011

Guyana was a major supplier of this subspecies in the late 1980s, with over 320,000 skins reported by importing countries between 1983 and 1989, but exports dwindled during the 1990s and early 2000s. However, trade has increased in recent years, with importers reporting over 28,000 wild-caught skins in 2009 (no annual report has been received from Guyana for that year). Guyana reported the export of 16,250 skins in 2010 and 16,460 in 2011, all wild-sourced; the majority were exported to Mexico, with smaller quantities exported to Panama, the Republic of Korea and Thailand.

Colombia reported exports of between 3,000 and 6,200 captive-bred skins every year between 2003 and 2008, primarily to Singapore; no exports were reported in subsequent years.

Caiman crocodilus fuscus Brown Caiman

Reported exports of *Caiman crocodilus fuscus* skins by exporting country between 2002 and 2011 are provided in Table 7.

Table 7. Reported commercial exports of *Caiman crocodilus fuscus* skins, 2002-2011

Exporter	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Colombia	540,579	552,219	605,841	599,527	970,731	668,076	532,394	405,386	647,565	634,401
Panama	11,498	19,840	15,850	*3,696	*2,310	*2,752	*1,155	*995	3,556	300
Total	**552,077**	**572,059**	**621,691**	**603,223**	**972,941**	**670,828**	**533,549**	**406,381**	**651,121**	**634,761**

Key: * Figure derived from importer-reported data.

Colombia remains the major exporter of this subspecies. Exports decreased steadily from the 970,731 skins reported in 2006 to 405,386 skins in 2009, the smallest quantity exported since 1992; however exports increased to 647,565 in 2010 with a similar number exported in 2011 (Figure 7). The proportion of Colombia's skin production exported to Singapore fluctuated between 47 and 56 per cent between 2003 and 2009, and most of the skins were subsequently re-exported. However, since 2010, less than 25 per cent of Colombia's skins were exported to Singapore, with Mexico importing around 30 per cent of production. Other major importers include Thailand and the United States.

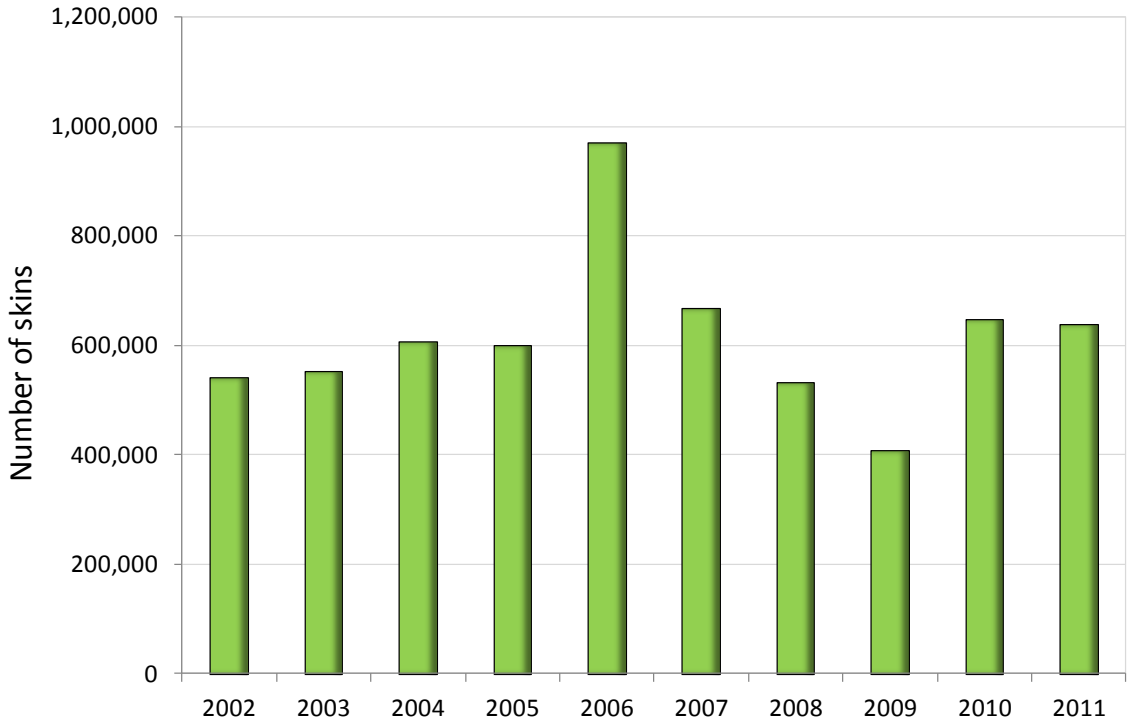


Figure 7. Commercial exports of *Caiman crocodilus fuscus* skins from Colombia, 2002-2011

Other range States: No exports have been reported by Honduras since 1998 or by Nicaragua since 2000. Panama, although an important entrepôt State, clearly distinguishes between exports and re-exports in its annual reports. The first significant direct export of 10,250 skins was reported in 2000 and trade appears to have peaked in 2003 at 19,840 skins. Exports reported by Panama in its annual reports for 2005 to 2008 and 2011 are lower than those reported by importing countries, while the 2009 report has not yet been submitted, so the quantities for those years in Table 7 are those reported by the importing countries (notably Italy, Mexico, Singapore and Spain).

Caiman latirostris Broad-snouted Caiman

The Argentine population of this species was transferred from CITES Appendix I to Appendix II in 1997, and the first exports of skins from ranched animals were reported by

Argentina in 2001. Exports increased subsequently to 2,752 skins in 2005. Exports then decreased every year to 394 skins in 2009, but increased to 1,933 skins in 2010 and further to 2,973 skins in 2011. All skins were reportedly from ranched animals; the principal exporters were Italy and Mexico.

Caiman yacare Yacaré

Exports of *C. yacare* skins from the principal exporter of this species, Bolivia, appear to have decreased notably in 2009 and again in 2010, but increased again in 2011 (Table 8). Captive-bred skins accounted for about 25 per cent of the trade between 2009 and 2011; over half were wild-sourced and the remainder ranched.

Table 8. Reported commercial exports of *Caiman yacare* skins, 2002-2011

Exporter	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Argentina	0	0	1	1,291	2,883	6,083	3,851	10,194	4,391	3,159
Bolivia	63,725	43,028	34,878	51,330	44,443	49,115	*51,618	*27,900	24,192	48,612
Brazil	6,048	12,851	7,004	*620	*3,173	*10,254	5,828	9,114	1,101	*9036
Paraguay	9,038	4,409	0	0	0	0	0	0	0	0
Total	**78,811**	**60,288**	**41,882**	**53,241**	**50,499**	**65,452**	**61,297**	**47,208**	**24,546**	**45,858**

Key: * Figure derived from import data

Argentina: Reported exports increased steadily between 2004 and 2009, peaking at 10,194 skins; exports then declined in both 2010 and 2011 (Table 8). The main destination of the skins was the United States. All of the skins were reported to be from ranching operations.

Bolivia: Reported exports increased from 34,878 to 51,618 between 2004 and 2008 according to data reported by Bolivia, and then reportedly fell in 2009 according to importer-reported data (Bolivia's 2009 annual report has not yet been received). Bolivia's annual reports for 2010 and 2011 indicate exports of wild-sourced skins (traded as flanks) to Europe (Germany, Italy and Spain) and Japan, and captive bred skins (traded as whole skins) to Mexico and the United States with small quantities going to Argentina, Colombia and France. Skins from captive-bred animals made up nearly 40 per cent of the total in 2010 but fell to 35 per cent in 2011.

Brazil: Annual reports from Brazil for the years 2005 to 2007 do not clearly distinguish whole skins, skin pieces and manufactured items. Data for these years have therefore been taken from the reports of the importing countries, notably Mexico and the United States (Table 8). Brazil reported exporting 9,064 skins in 2009, of which the majority were ranched, and 1,101 captive-bred skins in 2011. Mexico reported importing 9,000 ranched and pre-Convention skins in 2011, with smaller quantities of captive-bred skins imported by France and Italy.

Paraguay: Paraguay imposed a moratorium on all exports of wildlife in September 2003 as a result of the findings of a technical mission from the CITES Secretariat. No exports of skins have been reported in trade since.

Melanosuchus niger Black Caiman

The Brazilian population of this species was transferred from CITES Appendix I to Appendix II in 2007. Brazil reported the export of 11 skins in 2008 and six skins in 2009, all of which were wild-sourced. No trade was reported in 2010 or 2011.

All Other Crocodilian Species

There have been no reported commercial exports from range States between 2002 and 2011 of skins of the following taxa: *Crocodylus cataphractus*, *C. intermedius*, *C. palustris, C. rhombifer*, *C. siamensis-porosus* hybrid, *Alligator sinensis*, *Osteolaemus tetraspis*, *Paleosuchus palpebrosus*, *P. trigonatus*, *Gavialis gangeticus* or *Tomistoma schlegelii*.

Trade in Live Animals

The commercial export of live crocodilians outside of their range States poses a potential threat to the natural biological diversity of the importing countries, particularly if naturalized populations become established. Indeed Spectacled Caiman, possibly discarded pet animals, can currently be found in Florida and the Everglades National Park where damage to natural fauna is being reported. The continued growth of the crocodilian farming industry means that such threats are likely to persist and should be guarded against.

Live crocodilians are traded for many purposes. Young animals are frequently kept as personal pets; circuses and zoos regularly exhibit such creatures and there are well-established crocodile breeding establishments in countries such as Denmark, France, Morocco, Spain and Thailand. Crocodile farms and ranches import animals to supplement their gene pool and some animals are imported by range States in order to strengthen wild populations. This variety of use, and the limited number of possible purpose codes used in CITES annual reports, means that some conclusions drawn from analysis of CITES data are only tentative. For example, the purpose code 'T', which indicates a commercial transaction, could apply equally if the animals were destined for either the pet trade or the farming industry. Below we consider the reported trade in live animals on a species by species basis.

Alligator mississippiensis

There have been limited exports of live animals from the United States, mostly destined for circuses and zoos. In 2009, Denmark reported importing 30 wild-sourced specimens from the United States for scientific purposes, but the United States did not confirm the export. The United States reported exporting two animals to France and two to Spain in 2010, all reportedly wild-sourced, and a further two source 'F' animals to Spain in 2011.

Alligator sinensis

In 2009, China exported 26 animals to Denmark, 30 to Spain and 10 to Japan. In 2010 another 10 animals were exported from China to Japan. In 2011, Hong Kong and the United States each

exported two animals to France and Mexico, respectively. All reported exports 2009-2011 were captive-produced and traded for commercial purposes, breeding or zoos.

Caiman crocodilus

Guyana: No annual report has yet been received from Guyana for 2009 but imports reported by Mexico and the Netherlands amount to 1,150 animals; in 2010, Guyana reported exports of 2,498 animals, mostly destined for the Netherlands, the Russian Federation, Spain and Taiwan, Province of China. Guyana did not report any live exports in 2010; the import of 686 animals was reported in that year by importers. In 2011 Guyana reported exporting 2,648 animals, the majority to the Netherlands. All trade in live animals reported 2009-2011 was wild-sourced; the majority was for commercial purposes.

Suriname regularly exports small numbers of wild-caught animals for the pet industry; between 2009 and 2011, Suriname reported exporting a total of 134 animals. The principal importers were the Netherlands, the Republic of Korea and Germany.

Venezuela reported exporting 4,650 live *Caiman crocodilus crocodilus* in 2006 and 4,500 in 2007. Most went to Taiwan, Province of China, with small numbers going to Japan (2006) and Mexico (2007). All were reported to be of ranched stock or captive-bred. There have been no subsequent reports of live trade from Venezuela.

Caiman yacare

In 2006, Denmark reported importing eight ranched animals from Argentina; no live animals have been reported in trade from range States subsequently.

Melanosuchus niger

In 2009, Denmark reported importing two ranched animals from Ecuador. No live trade was reported in 2010 or 2011.

Paleosuchus palpebrosus

In the years 2009-2011, Guyana published an annual export quota of 500 live, wild-sourced animals. Guyana reported exporting 441 animals in 2009, 359 animals in 2010 and a further 408 in 2011, all of which were wild-sourced. They are all likely to be for the pet industry, the main importing country being the United States.

Paleosuchus trigonatus

In the years 2009-2011, Guyana published an annual export quota of 1,000 live, wild-sourced animals. Guyana reported exports of 369 animals in 2009, 450 animals in 2010 and 344 animals in 2011, all of which were wild-sourced. The main importing country 2009-2011 was the United States.

Crocodylus acutus

El Salvador reported the import of three seized/confiscated animals in 2009 and two in 2010, while Cuba, Ecuador and the United States reported the export of a total of six captive bred individuals for zoos in 2010. No live trade in this species was reported in 2011.

Crocodylus mindorensis

The Philippines reported exporting 10 captive-bred animals to the Czech Republic in 2009 for zoos; the import was confirmed by the Czech Republic. The Czech Republic reported the import of a further six captive-bred animals from the Philippines in 2011.

Crocodylus moreletii

In 2009, Mexico reported the export of 23 captive-bred animals to Japan for zoos; the import was confirmed by Japan. No live exports were reported in 2010; in 2011, the Czech Republic reported importing six captive-bred specimens from India, also for zoos.

Crocodylus niloticus

South Africa is the main importer of live specimens of this species, importing primarily from Mozambique. Mozambique has been exporting hatchlings and juveniles to South Africa since the late 1980s, and more recently to Zimbabwe. Mozambique's reported exports increased from 7,000 in 2002 to 91,000 in 2008 (68 per cent to South Africa and 32 per cent to Zimbabwe). In 2009, however, Mozambique's reported exports fell by 59 per cent to 37,160 (17,160 animals to South Africa and 20,000 to Zimbabwe). Mozambique reported the export of 29,130 live animals in 2010 (4,000 to South Africa, 100 to Zambia and 25,030 to Zimbabwe). Although no report has been received from Mozambique for 2011, South Africa reported imports of 16,000 animals; Zimbabwe, however, did not report any live imports. The majority of the trade was ranched and for commercial purposes.

Crocodylus palustris

No live trade was reported in 2009 or 2010; in 2011, the Czech Republic reported importing two captive-bred specimens from India in for zoos.

Crocodylus porosus

In 2009, one captive-bred animal was exported from Thailand and four wild-sourced animals were exported from Australia. In 2010, 87 captive-bred animals were exported, the majority from Malaysia. In 2011, Thailand reported exporting a further 20 captive-bred animals. The majority of the trade was reportedly for commercial purposes; the principal importers were Bangladesh, Iran and France.

Crocodylus siamensis

China is the principal importer of live specimens of *C. siamensis*. China began importing this species from Thailand in 1997, from Cambodia in 2000 and from Viet Nam in 2003. As shown

in Table 9, China has imported over 465,000 live specimens from these countries in the ten-year period 2002 to 2011, the vast majority captive-bred. Thailand has also exported over 11,000 captive-bred live animals to Cambodia, Egypt, Hong Kong, Japan, Lao P.D.R., Malaysia, Philippines, the Republic of Korea, South Africa, Sweden, Taiwan, Province of China, and Viet Nam since 2005. Cambodia has six crocodile farms, Thailand has 23 farms and Viet Nam has seven farms registered with the CITES Secretariat for the commercial production of this species.

Table 9. Exports of live *Crocodylus siamensis* to China, 2002-2011

Exporter	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Cambodia	26,746	640	5,000	0	0	0	1,500	1,600	0	0
Thailand	10,148	17,300	30,250	23,696	58,793	47,180	23,600	16,600	50,200	10,500
Viet Nam	0	7,700	3,200	9,300	13,000	24,050	41,400	11,137	10,600	12,000
Total	**36,894**	**25,640**	**38,450**	**32,996**	**71,793**	**71,230**	**66,500**	**29,337**	**60,800**	**22,500**

Trade in other by-products

a. Meat

Total world exports of crocodilian meat, as reported in CITES annual reports from 2002 to 2011[7], are provided in Figure 8. Between 1990 and 2002, the quantity traded globally fluctuated at around 400 tonnes per year. Exports began an upward trend in 2003, and in 2006 and 2007 peaked at over 900 t, but subsequently decreased to a little under 500 t in 2008 and remained below 600 t every year 2009-2011. The only caiman meat reported in trade since 2007 was 47 kg of captive-bred *Caiman yacare* meat reportedly exported by Brazil in 2009.

Since 1988, there have been major fluctuations in the countries and species involved in the meat trade. Until 1992, the main species in trade was *Alligator mississippiensis* from the United States, particularly to Taiwan, Province of China, Japan, Canada and the United Kingdom. No exports to Taiwan, Province of China, have been reported since 1994 and exports of meat from this species have fallen since 1995; the only importers in 2009-2011 were Canada and Hong Kong.

Exports of *Crocodylus niloticus* meat, which originate mainly from South Africa and Zimbabwe, increased steadily from less than two tonnes in 1992 to over 475 t in 2007, but then decreased to less than 300 t in 2008 and to below 200 t since then. The main destinations for *C. niloticus* meat 2009-2011 were Europe, Hong Kong and China. It appears that the majority of Zambia's production was exported via South Africa up to 2005; however, since 2006, Zambia has exported *C. niloticus* meat directly to Europe and Hong Kong.

[7] Certain records in South Africa's 2011 annual report are awaiting clarification from the Management Authority

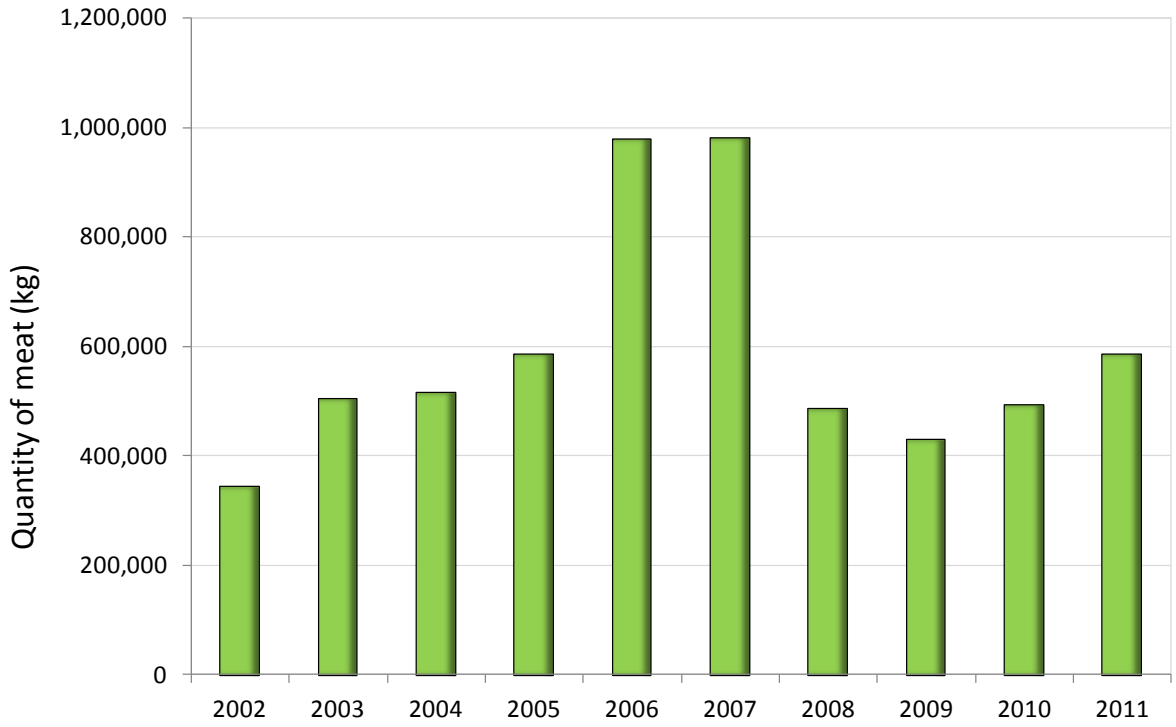


Figure 8. Global exports of crocodilian meat, 2002–2011

Exports of meat of both *Crocodylus novaeguineae* and *C. porosus* from Indonesia increased up to 2000; however, exports have since declined to around 1,500 kg annually between 2005 and 2007. In 2008, 800 kg were exported from Indonesia but this increased to 3,500 kg in 2009; all exports in these years were reported to be from *C. porosus*. In 2010, Indonesia reported exporting 4,100 kg from *C. porosus* and 567 kg from *C novaeguineae*, while in 2011 exports increased to 5,050 kg, from *C. porosus* only. Most of the exports were destined for Hong Kong and Malaysia.

Australia's exports of *Crocodylus porosus* meat increased from 53 t in 2000 to 57 t in both 2001 and 2002, but then fell to below 20 t annually between 2004 and 2009. Exports increased to over 28 t in 2010, although importers reported only 13 t; importers reported the import of 16 t in 2011. It is possible that the decrease may indicate that crocodile meat is becoming more popular for local consumption. The main destinations for Australia's production 2009-2011 were Japan, New Zealand, Malaysia and Hong Kong and Taiwan, Province of China.

Singapore exported small quantities of crocodile meat annually to Hong Kong up to 2005, but no trade has been reported since then.

In 2008, Australia reported the import of 30 t of *C. porosus* meat originating in Papua New Guinea, but the exporting country was not specified. It seems likely that these were in fact direct imports from Papua New Guinea. The import of another 15 t meat from Papua New Guinea was reported by Australia in 2009; Australia did not report any imports of *C. porosus*

meat in 2010, and has not yet submitted an annual report for 2011. Papua New Guinea's annual reports only appear to include trade in crocodile skins.

The biggest change in the crocodilian meat trade in recent years has been the expansion of the trade in *Crocodylus siamensis* since 2003. Until 2005, Thailand was the only exporter of *C. siamensis* meat and exports averaged about 35 t annually between 1999 and 2003. Exports increased to almost 400 t in 2006 but declined in the following two years. Exports increased every year 2009-2011 to over 300 t. The Thailand annual reports describe the product as both 'meat' and 'meat and bone'; the main importer 2009-2011 was China, Hong Kong, the Republic of Korea and Taiwan, Province of China. Exports of *C. siamensis* meat from Viet Nam decreased from 5.5 t in 2008 to only 123 kg in 2010; in 2011, Viet Nam exported 850 kg to Germany and the Russian Federation.

With the exception of 1 kg of meat from Belize reported as a seizure/confiscation by the United States in 2009, no exports of meat of *Crocodylus moreletii* have been reported since 2003.

Exports of meat from South American caiman have fluctuated considerably over the past ten years; the only trade in meat of this genus reported 2009-2011 consisted of 47 kg of captive-bred *Caiman yacare* meat exported from Brazil to Japan in 2009, reported by Brazil only.

Figure 9 shows the trends in exports of meat from the three main species in trade between 2002 and 2011.

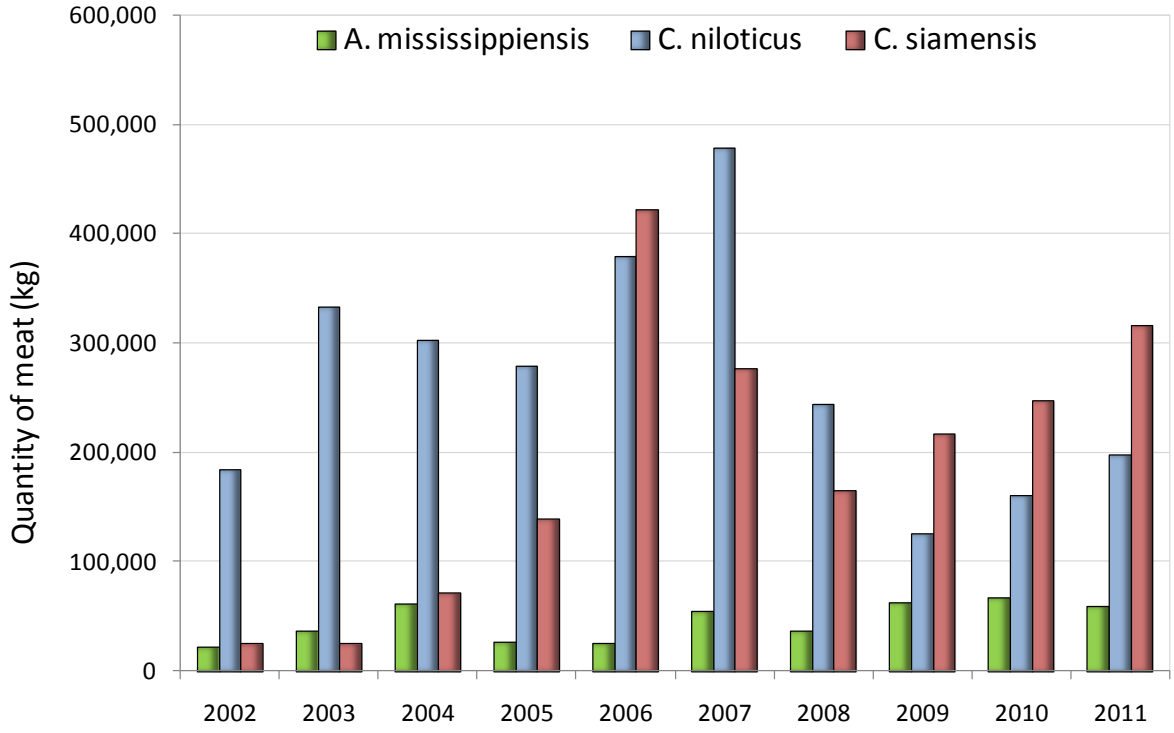


Figure 9. Exports of meat of *Alligator mississippiensis*, *Crocodylus niloticus* and *C. siamensis*, 2002-2011.

b. Teeth

Australia is the world's foremost importer of crocodile teeth and between 2002 and 2010 imported over 222,000 (Australia's annual report for 2011 has not yet been received). Most of the teeth were of *Crocodylus porosus* from the captive-breeding operations in Malaysia, Papua New Guinea and Singapore, but Australia also imported *C. siamensis* teeth from Thailand and alligator teeth from the United States between 2002 and 2010. Since 2005, exports have gradually increased and amounted to over 71,000 in 2010; exports in 2011 consisted of 35,368 teeth and almost 12 t of teeth, the majority of *C. porosus* exported from Papua New Guinea to Australia.

Declared dollar value

Although CITES annual reports do not usually contain information concerning the value of the trade or of individual shipments, the United States has included this information in its annual reports since 1997. There is great fluctuation amongst the reported values and no indication of the size or quality of the skins is provided; indeed, for caiman species flanks may have been reported as whole skins. Values that appear erroneous and are likely to have been the result of typographic errors have been ignored in the analysis below. The average declared value per skin (in US$) of exports of *Alligator mississippiensis* skins and the reported value of re-imports of these skins from Europe, Mexico and Asia after tanning are provided in Table 10. Although the original value of exports fluctuates from year to year, the value of the re-imports has been consistently higher.

Table 10. Reported US dollar value of *Alligator mississippiensis* skins (per skin), 2002-2011

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Exports by USA	101.4	106.4	112.5	142.6	177.9	232.9	242.2	193.3	136.0	167.5
Re-imports by USA	108.6	124.6	144.9	168.3	193.5	253.4	254.8	394.7	236.9	245.7

Source: United States annual reports to CITES

Table 11 compares the average value per skin of Colombian *Caiman crocodilus fuscus* imported directly from Colombia and via third countries, as reported by the United States. The re-exporters of skins vary from year to year, but the majority are imported directly from Colombia or via Singapore. The declared value of the direct imports from Colombia remained at around US$50 per skin between 2002 and 2008 but increased notably in 2009. A slight decrease in 2010 was followed by a further increase to US$73.4 per skin in 2011, the highest value recorded over the decade.

Table 11. Reported US dollar value of *Caiman crocodilus fuscus* skins originating in Colombia (per skin), 2002-2011

(Re-)Exporter	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Colombia	50.7	49.9	46.8	50.6	50.8	54.4	52.5	72.2	65.3	73.4
European Union	63.8	-	-	28.0	34.5	-	-	87.3	54.9	71.0
Mexico	41.5	38.0	-	97.8	31.2	50.0	36.3	38.0	34.5	33.0
Panama	-	54.4	-	-	-	-	-	-	-	-
Singapore	39.9	47.8	43.4	43.1	46.7	46.1	44.3	47.3	50.5	46.2
Switzerland	25.0	-	29.5	33.9	41.3	28.5	-	33.0	-	-
Thailand	56.5	32.6	54.0	53.8	62.0	63.0	-	31.3	-	-

Source: United States annual reports to CITES

Reported seizures

Information on seizures is reported inconsistently in CITES annual reports. Furthermore, the data recorded by Customs rarely allow the goods to be identified at the species level. Most of the seizures that are reported are of tourist items such as dried heads, whole stuffed baby crocodiles, etc., and personal imports of manufactured leather goods. Many of the items seized on import are subsequently released to the importer when adequate permits have been obtained.

Of the more notable seizures reported in the last three years, the United States reported seizures of 178 *Caiman crocodilus crocodilus* skins from Hong Kong (origin Venezuela), 565 *C. yacare* skins from Argentina and 88 *C. yacare* skins from Bolivia in 2009. In 2010, Thailand reported the seizure of 300 *Crocodylus porosus* skins from Japan that had originated in Papua New Guinea and 800 *Caiman crocodilus fuscus* skins from Colombia; the United States seized 337 caiman skins from Colombia, 3395 skins from Italy (originating in Colombia and Venezuela), and 40 skins from Mexico (originating in Colombia). In 2011 the United States reported seizures of 15 *Crocodylus niloticus* skins from Mali, 623 *Alligator mississippiensis* and 2,100 *Caiman crocodilus fuscus* skins from Singapore (originating in the United States and Colombia, respectively), and 1,702 skins of *Caiman crocodilus fuscus* imported directly from Colombia.

Recommendations

The following recommendations made in previous IACTS reports remain valid:

- Countries should, where possible, adopt the CITES standard permit number whose format identifies both the exporting country and the year of permit issuance (see CITES Resolution Conf. 12.3 (Rev. CoP16) on Permits and certificates). This would allow for more accurate cross matching of shipments.
- Standardisation of the terminology used to describe parts of crocodilian skins would reduce the danger of double-counting and subsequent overestimation of trade levels. In

particular, there is confusion between hornbacks and backskins for *Crocodylus niloticus* and between whole skins and sides for caiman.

- As the source of specimens (e.g. wild, captive-bred, etc.) provides critical information for determining the conservation impact of trade, CITES Parties should strive to accurately report the source of crocodilian material as defined in the *Guidelines for the preparation and submission of CITES annual reports* (see CITES Notification No. 2011/019).
- Countries with large-scale farming operations should establish strict monitoring and management programmes for their wild crocodilian populations, and any farming of non-native species should be strictly regulated to ensure there are no escapes into the wild. Although breeding in captivity can alleviate pressure on wild populations, it can also remove the incentive to preserve them.
- It is recommended that the CITES Secretariat and the Chairman of the Standing Committee should contact Parties in June of each year to remind them of their reporting obligations under Article VIII, paragraphs 6 and 7 of the Convention.
- Wherever possible, Parties should report the actual quantities of skins being traded.

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