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THE SEA TURTLE: AN ANIMAL OF DIVISIBLE PARTS

International Trade in Sea Turtle Products

by

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REPORT

1



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TURTLE PRODUCTS

ERRATA

PAGE

- 7 World total figure for 1976 should be 249,172 kg (not 249 160 kg).
- 8 Table 2: Taiwan imports for 1976 should be 52,427 kg (not 46,652 kg; thus making the total for Asia in 1976, 152 329 kg (not 146,554 kg) and making the World Total for that year 202,324 kg (not 196,549 kg)
- 9 1976 World Total Value should be \$621,747 (not \$615,306).
- 14 Table 9: 1976 Philippines exports to Japan should be 13,972 kg (not 15,706 kg).
- 15 Table 10: 1972 Total Exports should be 57,905 kg (not 57,794 kg).
- 22 Table 17: 1976 Taiwan imports from Other countries should be 22,184 kg (not 16,419 kg), and thus the total export for that year should be 52,427 kg (not 46,652 kg).
- 23 Table 18: 1977 Taiwan total re-exports should be 448 kg (not 338).
- 33 Malaysia , 2nd sentence: should read: "From 1975 to 1977 Malaysia imported between US \$5000 and US \$9000 worth"
- 33 Table 28: 1975 Total Malaysian Imports should be \$8640 (not \$8068).
- 34 Fiji, 3rd sentence should read: "Imports from the Philippines have increased most over this period - from US \$ 383 in 1972 to over US \$41,000 in 1978."
- 38 Table 34: Under the 1978 column of Los Angeles Imports, the 1 ct (H) should be removed from the CTF Imports and placed under the quantities seized for that year; thus, the total number of cartons (ct) seized in 1978 should be 4 ct (not 3 ct), and the total number of seizures should be 345 (not 344). The number of cartons imported from the CTF should be 15 ct (not 16).
- 38 Table 34: The total number of Imports from CTF in 1979 should be 1777 pieces (pc), not 1804 pc, and the (9H,18G) should be removed.
- 40 3rd Sentence should read: "Japan imported farmed green turtle skins from the Cayman Turtle Farm in 1979 for US \$6.54/kg."
- 41 Ecuador, 3rd Sentence to end of paragraph should read: "In 1977 Ecuador exported 110,150 kg of raw skins representing between 55,080 and 61,194 olive ridley turtles (Green and Ortiz, this volume; of this and Hong Kong (2,000 kg). In 1978 Ecuador exported 161,070 kg (representing 80,535 to 89,483 turtles), and 139,900 kg (representing 69,950 to 77,722 turtles) in the first six months of 1979 (Green and Ortiz, 1979). Since Japan imported only"
- 39 2nd Paragraph, 1st Sentence should read: "Mexico and Ecuador are in the New World; between them they captured over 130 000 olive ridleys in 1977 and over 150,000 ridleys in 1978 (see below).

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- 45 European Countries, 4th Sentence should read: "Spain and France
..... skin and leather; in 1976 Mexico exported 2700 kg of
leather to Spain and Italy."

- 46 Costa Rica, 1st Sentence should read: "Until 1972, the United
States imported, on average 10,000 kg"

- 47 Ecuador, Last sentence on page should read "There is a large
discrepancy between these official export figures (Table 40)
and those given by the Instituto Nacional de Pesca and Direccion
General de Pesca for the commercial turtle companies (Green
and Ortiz, this volume)."

- 48 2nd Paragraph 1st sentence should read: "Ecuador actually
exported 122,000 kg"

- 48 2nd Paragraph, last sentence should read: " In 1978 Ecuador
exported 62,967 kg of meat and 3,230 kg of meat for the first
six months of 1979 - destination unknown (Green and Ortiz,
this volume)."

- 49 3rd Paragraph, 2nd Sentence should read: "Between January and
October 1979 the UK Department of Environment received license
applications for the import of 2186 kg steak, 6803 kg neck/
tail bone, 15,420 kg calipee/calipash and 12,245 kg skinned
flipper from the CTF."

- 50 3rd Paragraph, 2nd Sentence should read: "In 1978
January through May 1979, 68,907 kg."

- 53 1st line should read: "1979 import documents totaled 68,907 kg ...

- 53 Japan, 2nd Sentence should read: "In 1977 for US \$1.00/kg
(Green and Ortiz, this volume)."

- 59 4th Paragraph should read: "In 1975 Mariculture Ltd. was liquidate
and was sold to a consortium of British and West German indus-
trialists; it was renamed the Cayman Turtle Farm, Ltd. To date,
..... in captivity, but it has been independent of eggs since
March 1978."

- 63 Ecuador, 2nd Sentence should read: "In the first half of 1979,
139,900 kg of skins was exported (Green and Ortiz, this volume)."

- 66 2nd Sentence should read: "In 1977 , six party countries
(or governed territories) - India, Ecuador, Australia, Costa
Rica, Belize, and Puerto Rico (where the CITES had already
come into force) - exported an estimated 132,952 kg or 40%
of world exports of raw tortoiseshell (Table 1), and six
party members (or governed territories) - Hong Kong, West
Germany, the United States, Switzerland, the United Kingdom,
and Australia - imported an estimated 63,047 kg or 23% of
world imports of raw tortoiseshell (Table 2)."

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- 70 1st Paragraph should read: "From 1970 to 1977 a minimum of 900,000 olive ridleys were probably taken Skins from an estimated 85,000 ridleys were exported"
- 70 Mexico, 1st paragraph should read: "In Mexico sea turtles are captured by fishermen who belong to fishery cooperatives. Today, Antonio Suarez purchases most of these turtles and processes them at his three plants on the Pacific coast of Mexico: PIOSA"
- 70 Mexico, 2nd paragraph should read: "Table 44 lists the volume and number of turtles captured by legal and illegal fishery cooperatives from 1965 to 1977. In every year there is a large discrepancy between the number of turtles taken (report to Mexico's Department of Fishery) and the number of turtles taken as estimated by Suarez. According to Suarez' estimates from 1966 to 1977 an average 63,333 turtles"
- 71 Table 44: Title should read: "Turtles Captured in Mexico by Fishery Cooperatives." A footnote for the "Total Take" column should read: "Numbers of turtles taken as estimated by Antonio Suarez." The Source of this table should read: "A Report by Antonio Suarez presented to Mexico's Department of Fishery."
- 72 Ecuador, 2nd sentence should read: "In 1978 an estimated 80,000 to 90,000 ridleys were killed which represents a considerable increase compared to the previous year."
- 72 Last Sentence should read: "Fishermen on the Northern and Central coast of Ecuador catch up to 500 turtles per day (Ortiz and Cantos, 1978). One company located in Jaramijo, La Compania Neptuno, exported 6,650 pieces of skin (representing 3325 ridleys) to Italy (Ortiz and Cantos, 1978).

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DAVID MACK and NICOLE DUPLAIX, TRAFFIC (USA)

and SUE WELLS, TRAFFIC (International)

SYNOPSIS

Three species of sea turtle, the hawksbill, olive ridley and green, are exploited for the international trade in tortoiseshell, leather and meat. Over 46 countries export raw tortoiseshell; Indonesia, Thailand, India, the Philippines, and Fiji are the major sources, and the Caribbean and Central America, lesser ones. Japan, Hong Kong and Taiwan are the major importers of raw tortoiseshell.

Most turtle skin and meat is exported from Mexico, Ecuador and the Cayman Turtle Farm; it appears that Southeast Asia may become an important supplier. Japan and several European countries are the main consumers of leather and meat. Prior to 1978, the United States imported large quantities of sea turtle products but current laws have halted this trade.

International commerce figures over the last three years are analyzed and world trade routes traced. The dramatic increases in volume over the last few years (e.g. raw tortoiseshell world exports rose from 250,000 kg in 1976 to 390,000 kg in 1978), are discussed and the values of sea turtle products are listed.

Grave concern is expressed over the take of more than 150,000 olive ridleys in Ecuador and Mexico in 1978, and the fact that the world trade in tortoiseshell represented between 430,000 and 580,000 hawksbills in 1978 (although this number may not have been caught in 1978).

The three species involved in trade are listed on Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which prohibits trade in turtle products by party countries. However better enforcement of CITES legislation by parties is urgently required as a number of countries are still actively involved in this trade.

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INTRODUCTION

Virtually every part of the sea turtle is of commercial value; the shell is used for jewelry and ornaments; the skin of the flippers is tanned; the meat is consumed, and the offal is rendered for soup; the oil is used as a cosmetic base. As sea turtles are easy to catch on their nesting beaches, they have become one of the most exploited and heavily traded species of wildlife today. In contrast to the elephant or rhinoceros of which only a small portion is commercially marketable, the intrinsic value of each part of the sea turtle makes it one of the most profitable wild animals in large scale international trade today. In fact, the value of raw tortoiseshell (US \$89.59/kg) imported by Japan exceeded the value of raw ivory imports (US \$70.67/kg) in 1978 (Japan's published statistics).

There are seven species of sea turtle, but only three are heavily exploited for trade: the green turtle (Chelonia mydas), the olive ridley turtle (Lepidochelys olivacea) and the hawksbill turtle (Eretmochelys imbricata). The green turtle is harvested for its meat, and the calipee/calipash (belly cartilage), neck and tail bones are used in manufacturing turtle soup.

The olive ridley is harvested mainly for its skin and secondarily for meat and oil. Recently, shell and skin from turtles raised in captivity have also entered into the trade. Unlike their wild counterparts, farmed turtles have a virtually flawless and barnacle-free shell and bear fewer scars and lesions on their flippers, thus greatly enhancing their value. In addition, the high protein diet fed the farm-reared greens produces scutes much thicker than those found on wild green turtles and sufficiently thick to be used in the manufacture of jewelry. On the other hand, due to the greater thickness and color pattern on the scute, it is the hawksbill that has the most valuable shell.

Turtles are valuable not only as a commodity on the international market, but also as an important food source in many tropical countries. Turtle eggs and meat are rich in protein. Their use as a food source probably dates back to prehistoric times; fragments of turtle shell have been found among the earliest Australopithecine remains in South Africa. Use of turtles for local consumption has rarely had any major effect on turtle populations; the conflict between man and turtle arose when the products which provided luxury items, such as soup, tortoiseshell, and leather, became so valuable that the turtles were killed for these products alone.

In this report we will present world trade data on sea turtle products and identify major suppliers, importers and trade routes; the impact of the CITES (Convention on International Trade of Endangered Species of Wild Fauna and Flora) on trade will be assessed. All sea turtles (except some Australian populations) were on Appendix I of the Convention by February, 1977, thus curtailing the trade of their products by party nations.

This study is purposefully restricted to quantitative trade statistics over the last few years, providing, in most cases, a compilation rather than an evaluation of existing trade data. Most of the data has been obtained from trade records published by government statistical offices,¹ and from CITES annual reports compiled by party countries. Unfortunately, many countries do not list the import-export of turtle products under separate tariff headings, and therefore, these were inferred when possible from other countries' trade statistics. For example, Cuba does not list export trade statistics for the volume of turtle shell, but this can be deduced, in part, by the amount of shell that Japan reports importing from Cuba.

1. Some countries separate tortoiseshell into a number of categories; most commonly "tortoiseshell" (Bekko in Japan) is listed separately from "claws and waste" of tortoiseshell. To simplify the data, all categories of raw tortoiseshell (BTN tariff heading 05.11 and SITC tariff heading 291.11), and all categories of worked tortoiseshell (BTN tariff heading 95.01 and SITC tariff heading 899.110) have been added together.

Large quantities of worked tortoiseshell are sold as souvenirs in many countries along with stuffed juvenile hawksbills and green turtles. This tourist trade goes unrecorded and it would be difficult to estimate its volume.

A further factor to be considered when interpreting this report is the accuracy of the data used. Large discrepancies exist between the imports and exports recorded by pairs of countries. These are due to a number of factors, including variations in classification of commodities, methods of recording used (e.g. imports may be recorded as country of 'origin' or of 'consignment'), methods of valuation and exchange conversion, time lags between departure and arrival at country of destination, transportation charges, import duties and deliberate falsification such as under-and over-invoicing, and smuggling - to mention but a few (Bhagwati, 1974). A detailed discussion of discrepancies in the sea turtle trade is provided in Appendix I.

INTERNATIONAL IMPORT AND EXPORT: TRADE STATISTICS AND ROUTES

I. TORTOISESHELL TRADE

Most of the tortoiseshell in trade is from the hawksbill sea turtle. Wild green and olive ridley turtle scute is approximately 1/2 mm thick, and while too brittle for producing jewelry or ornaments, it can be used as delicate inlays and veneer on furniture (King, pers. comm.). The intricate design and distinct gradations in color make the carapace the choice part of the hawksbill shell. "The colored carapace of the adult is striking; usually it is amber with streaks and markings of reddish brown, blackish brown, and yellow. The plastron (or underside) is whitish yellow, often with a few black splotches" (Rebel, 1974) while the edge of the shell (referred to as hooves or claws) is thick and irregular. "The shell of the hawksbill turtle consists of scutes or scales that overlap at first but that become juxtaposed in large specimens. The shell is most valuable before juxtaposition occurs." (Rebel, 1974). Shields are removed from the shell by immersing the freshly killed turtle in boiling water. Heat and pressure are applied to flatten the plates before working into jewelry and other objects.

Estimates in the literature vary as to how much shell can be obtained from a hawksbill. The maximum is probable 3.64 kg (Rebel, 1974), but for the purposes of this paper one hawksbill turtle yields, on average, 0.68 kg (Jap. Tort. Soc., 1973) to 0.91 kg of shell (Uchida, 1977).

Since 1976, at least 46 countries within the range of wild Eretmochelys populations exported raw (unworked) tortoiseshell (Table 1). According to government statistics, the major exporters of unworked tortoiseshell in 1978 were Indonesia, Thailand, the Philippines, and Fiji (Table 1)¹. Export statistics are available for very few tropical countries, but the figure estimated from importing countries' data show that the Caribbean and Central America are important sources, as is, to a lesser extent, East

¹ In 1977 India was the major exporter of raw tortoiseshell, but 1978 figures are not available.

Africa. Malaysia and Singapore are major re-exporters of raw tortoiseshell (Table 5).

Japan, Taiwan, and Hong Kong are the largest importers of raw tortoiseshell (Table 2). Raw tortoiseshell is worked (carved) mainly in the Far East and Indonesia, the Philippines, and Taiwan are the major exporters of worked shell (Table 3). Several European countries (France, Italy, Spain, West Germany, the Netherlands and the United Kingdom) are also involved in the import and re-export of raw and worked tortoiseshell. Japan, Italy and West Germany imported over 90 percent of all worked tortoiseshell in 1977 (Table 4). European countries produce hawk-bill jewelry for the high fashion market while the Asian artisans produce lesser quality items for the more traditional markets.

TABLE 1 DOMESTIC EXPORTS OF RAW TORTOISESHELL (kg)

COUNTRY	1976	1977	1978
<u>Asia</u>			
Indonesia	71,373	85,577	219,585
Thailand	23,859	37,941	(56,928)
India	21,460	94,773*	(568)
Philippines	15,607	27,905	38,145
Malaysia	7,253	8,879	(9,311)+
Singapore	370	2,501	230
Pakistan	(745)	-	-
Maldives	(625)	(317)	(567)
Sri Lanka	2	-	-
Burma	-	(1,100)	(500)
Bangladesh	-	(4,960)	(4,150)
Vietnam	-	(1,854)	-
Indian Ocean	-	(68)	-
Total	141,294	265,875	329,984
<u>Oceania/Pacific Islands</u>			
Fiji	53,587	362	35,343
Solomon Isl.	(873)	(756)	(528)
Australia	(1,087)	(192)	-
Total	55,547	1,310	36,871
<u>Central and South America</u>			
Ecuador	12,323	37,423	-
Mexico	6,334	-	-
Panama	(5,885)	(4,450)	(6,505)
Nicaragua	(1,446)	(2,573)	(1,014)
Costa Rica	1,390	(260)	(47)
Belize	(12)	(40)	-
Honduras	-	(71)	(9)
Venezuela	(1,000)	-	-
Total	28,390	44,817	7,575
<u>Africa</u>			
Somalia	(5,099)	(236)	(30)
Tanzania	1,813	1,836	1,625
Kenya	1,661	872	761
Mozambique	(463)	(290)	-
Madagascar	(164)	-	-
Seychelles	(106)	(577)	(1,198)
Mauritius	(55)	-	-
Reunion	(377)	-	(46)
Cape Verde	(63)	-	-
Total	9,801	3,811	3,660
<u>Caribbean</u>			
Barbados	22	-	(23)
Cuba	(6,985)	(3,984)	(6,600)
Haiti	(1,219)	(1,173)	(1,004)
Cayman Isl.	(4,002)	(3,875)	(7,500)
Bahamas	(532)	(922)	(1,018)
Dominican Rep.	(367)	(1,000)	(62)
Jamaica	(343)	(1,136)	(128)
Puerto Rico	(262)	(264)	(25)
Fr. W. Indies	(152)	(236)	(276)
St. Vincent	(130)	(230)	(144)
Brit. Dominica	(126)	(507)	-
St. Lucia	-	(489)	(349)
Grenada	-	(59)	-
Total	14,140	13,875	17,129
World Total	249,160	329,688	395,219

()=figures estimated from importing countries' data

Source: published government statistics

* includes January and February 1978

+ may include re-exports

TABLE 2 IMPORTS OF RAW TORTOISESHELL (kg)

COUNTRY	1976	1977	1978
<u>Asia</u>			
Taiwan	46,652	37,704	128,846
Japan ¹	46,060	45,818	44,039
Hong Kong	26,620	42,788	102,275
Malaysia	9,133	30,060	-
Singapore	4,140	21,002	18,469
Korea	6,100	6,100	6,223*
China (M.)	(3,911)	(3,381)	(3,827)
Vietnam	(2,700)	(647)	-
Thailand	1,238	2,231	-
Nepal	-	(1,699)	-
Total	146,554	191,430	303,679
<u>Europe</u>			
W. Germany	3,937	8,281	(9,309)
Netherlands	3,000	3,000	-
Italy	2,500	3,000	(784)
Spain	1,531	824	1,080
France	1,000	1,000	(240)
Belgium	400	100	-
UK	320	26	-
Switzerland	126	39	-
Total	12,814	16,270	11,413
<u>Americas and the Caribbean</u>			
USA	(5,160)	(11,853)	(164)
Mexico	18,021	-	-
Canada	-	-	(50)
Barbados	-	(22)	-
Total	23,181	11,875	194
<u>Pacific</u>			
Fr. Pac. Isl.	(425)	(352)	(150)
New Hebrides	-	-	(102)
New Caledonia	-	(302)	-
Australia	(975)	(60)	-
Kuwait	-	(50,000)	-
Total	14,000	50,714	252
World Total	196,549	270,289	315,538

()=figures estimated from exporting countries' data

Source: published government statistics

*January to November only

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Some of Japan's imports of raw tortoiseshell probably come via Hong Kong (Parker, pers. comm.), but Japanese trade statistics record country of origin, not country of consignment. Any of these Japanese imports which do come via Hong Kong will have also been recorded in Hong Kong's import figures. The subtotals for Asia may therefore be overestimated in certain instances.

TABLE 3. EXPORTS OF WORKED TORTOISESHELL (kg-US\$)

	1976		1977		1978	
	Volume	Value	Volume	Value	Volume	Value
<u>ASIA</u>						
INDONESIA	69,065	396,629	90,792	531,813	92,099	92,099
PHILIPPINES	24,330**	23,630	11,615**	64,306	7,835**	95,524
TAIWAN	6,044	49,868	2,984	48,000	2,218	100,259
JAPAN	40	20,081	91	25,511	37	19,057
KOREA	62	13,027	85	9,138	-	-
THAILAND	27	5,672	3	673	-	-
INDIA	249	4,431	993	10,539	-	-
SINGAPORE*	-	2,092	-	10,356	-	23,063
MALAYSIA*	-	39	-	2,033	-	-
TOTAL	75,487	515,469	94,948	702,369	94,354	330,002
<u>EUROPE</u>						
ITALY	700	41,363	1,400	30,382	-	-
UK	1,725	26,555	525	7,475	-	-
SPAIN	1,000	4,977	1,000	4,265	-	-
W. GERMANY	18	2,383	4,700	1,723	-	-
BELGIUM	500	11,579	0	0	-	-
SWITZERLAND	54	1,440	7	1,004	-	-
NETHERLANDS	0	0	-	1,630	-	-
FRANCE	1,157	11,507	1,071	27,069	-	-
TOTAL	5,208	99,804	8,703	73,548	-	-
<u>MEXICO</u>						
MEXICO	76	1,763	-	-	-	-
FIJI*	-	4,711	-	9,498	-	8,052
TOTAL	76	6,474	-	9,498	-	8,052
WORLD TOTAL	80,771	615,306	103,651	785,415	94,354	338,054

* Only values available for these countries

- Figures not available

** Number of pieces (not included in totals)

Source: published government statistics

TABLE 4. IMPORTS OF WORKED TORTOISESHELL (kg-US\$)

	1976		1977		1978	
	Volume	Value	Volume	Value	Volume	Value
<u>ASIA</u>						
JAPAN	113,286	874,507	101,674	757,462	97,605	847,422
SINGAPORE*	-	15,884	-	13,980	-	17,306
MALAYSIA*	-	5,793	-	8,024	-	-
KOREA	9	1,926	0	0	-	-
THAILAND	905	1,796	0	0	-	-
TAIWAN	0	0	0	0	15	486
INDONESIA	0	0	11	50	-	-
INDIA	-	-	801	2,104	-	-
TOTAL	114,200	899,906	102,486	781,620	97,620	865,214
<u>EUROPE</u>						
ITALY	109,300	19,135	50,200	20,169	-	-
FRANCE	8,125	197,715	2,963	93,418	-	-
W. GERMANY	1,058	26,211	22,434	252,390	-	-
BELGIUM	3,100	24,997	500	7,729	-	-
UK	112	19,872	777	21,100	-	-
SPAIN	25	10,463	1,000	39,175	-	-
SWITZERLAND	359	6,270	51	5,249	-	-
NETHERLANDS	2,000	5,295	2,000	6,519	-	-
MALTA*	-	614	-	1,334	-	-
TOTAL	124,079	310,572	79,925	447,083	-	-
<u>OTHER</u>						
FIJI*	-	29,189	-	44,815	-	62,718
MEXICO	2	257	-	-	-	-
TOTAL	2	29,446	-	44,815	-	62,718
WORLD TOTAL	238,281	1,239,924	182,411	1,273,518	97,620	927,732

Only values available for these countries

- Figures not available

Source: published government statistics

TABLE 5. RE-EXPORTS OF RAW TORTOISESHELL (kg)

	1976	1977	1978
<u>ASIA</u>			
SINGAPORE	20,026	30,014	45,578
MALAYSIA	5,587	46,212	-
HONG KONG	7,497	6,471	10,128
TAIWAN	2,376	338	2,233
JAPAN	24	274	2,258
TOTAL	35,510	83,309	60,197
<u>EUROPE</u>			
NETHERLANDS	64,000	2,000	-
UK	1,742	-	-
PORTUGAL	400	200	-
WEST GERMANY	47	73	-
ITALY	58	-	-
TOTAL	66,247	2,273	-
WORLD TOTAL	101,757	85,582	60,197

Source: published government statistics

- Figures not available

A. RAW TORTOISESHELL

1. RAW TORTOISESHELL EXPORTERS

Indonesia

Raw tortoiseshell exports from Indonesia have increased considerably since the late 1960's (Table 5). From 1967 to 1970 Indonesia exported less than 10,000 kg of raw tortoiseshell per year. In 1978, Indonesia exported 219,585 kg of raw tortoiseshell, more than twice as much as the 1977 exports. More than 95 percent of Indonesia's exports are destined for Hong Kong, Japan, and Singapore. A couple of major discrepancies should be pointed out: while Indonesia reports that over 125,000 kg and 40,000 kg of unworked shell were exported to Hong Kong and Japan, respectively, in 1978, Hong Kong reports receiving only 75,000 kg from Indonesia, and Japan, only 5700 kg.

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
JAPAN	300	900	700	1,304	6,311	8,956	17,371	14,229	6,318	47,221	55,442	40,368
HONG KONG	2,045			4,228	6,887	8,330	6,475	7,116	3,820	5,574	1,127	125,008
SINGAPORE	6,920	5,742	5,915	1,310	9,521	13,871	55,018	48,109	10,038	16,815	27,920	52,313
ITALY	-	-	-	-	-	80	-	100	-	200	95	400
NETHERLANDS	162	-	-	-	200	45	-	-	-	250	-	-
OTHER	-	-	-	-	-	50	-	100	-	1,313	993	1,496
TOTAL	9,427	6,642	6,615	6,842	22,919	31,332	78,864	69,654	20,176	71,373	85,577	219,585

Source - published government statistics

Table 6. Indonesia Imports of Raw Tortoiseshell (kg)

Thailand and India

Thailand and India export vast amounts of unworked tortoiseshell. Little or no raw tortoiseshell is imported by these countries. From 1973 to 1975, Thailand exported less than 15,000 kg of shell annually (Table 6). This jumped to almost 24,000 kg in 1976 and in 1977, Thailand exported 37,941 kg of shell; over 70

percent went to Hong Kong (28,031 kg) and the rest to Singapore and Taiwan. Hong Kong only reports receiving 12,000 kg of unworked shell from Thailand in 1977.

	1973	1974	1975	1976	1977
JAPAN	-	-	33	-	-
HONG KONG	6,250	7,672	9,578	16,859	28,031
SINGAPORE	-	-	-	-	5,000
S. KOREA	200	100	-	-	-
TAIWAN	8,050	6,750	1,000	7,000	4,910
TOTAL	14,500	14,522	10,611	23,859	37,941

Table 7. Thailand Exports of Raw Tortoiseshell (kg)

Source - published government statistics

In 1977, India was the largest exporter of unworked tortoiseshell (Table 1). Even though the export of turtle products was banned in August 1975, (Bhaskar, 1979), India shipped 21,460 kg of raw tortoiseshell in 1976 and almost 95,000 kg in 1977. The main importers in 1976 were Singapore, Hong Kong and the United States (Table 7); in 1977, a large proportion of unworked tortoiseshell also went to Kuwait and West Germany. Neither West Germany nor the United States reported (CITES Reports) importing tortoiseshell from India for those years.

	1973*	1974	1975	1976	1977**
JAPAN	300	20	53	52	8,245
HONG KONG	592	-	25	8,981	1,134
SINGAPORE	-	126	-	10,000	-
W. GERMANY	-	135	10,210	60	20,816
USA	-	1,128	1,086	2,387	11,329
ITALY	615	265	215	-	1,699
KUWAIT	-	-	-	-	50,050
OTHER	508	781	1,640	-	1,500
TOTAL	2,015	2,455	13,229	21,460	94,773

* from April to December only

** Includes Jan. and Feb. 1978

Table 8. India Exports of Raw Tortoiseshell (kg)

Source - published government statistics

Philippines

Both green and hawksbill turtles have declined in population in the Philippines; the green has been exploited for local consumption while the hawksbill is exploited for commercial trade. During the last five years, collectors have had difficulty finding one hawksbill with a 60 cm carapace (the legal limit for capture), whereas they used to capture four a day (DeCelis, this volume). During the 1960s the Philippines exported, on average, less than 5000 kg of raw tortoiseshell annually (Japan Tort. Assoc., 1973), while from 1974 through 1978, they exported approximately 22,000 kg per year (Table 9). These figures refer to domestic exports only; the Philippines have no import or re-export trade. Since 1974, the annual exports of tortoiseshell from the Philippines have represented some 24,000 to 33,000 hawksbills¹, a considerable increase since 1973 when the Japanese Tortoiseshell Association estimated an annual catch of 5000. Exports have steadily increased over the last three years, and the 1978 figures were the highest ever.

	1970	1971	1972	1973	1974	1975	1976	1977	1978
JAPAN	670	548	1,223	7,100	21,363	8,316	15,607	26,259	29,847
SINGAPORE	-	-	-	-	100	-	-	-	-
TAIWAN	-	-	-	-	-	-	-	1,269	7,600
ITALY	-	-	-	-	-	-	740	25	384
FR. PAC. ISL.	-	-	-	-	-	-	425	352	150
USA	-	-	-	-	-	-	470	-	164
TOTAL	670	548	1,223	7,100	21,463	8,316	15,607	27,905	38,145

Table 9. Philippines Exports of Raw Tortoiseshell (kg)

Source - published government statistics

1. Using the estimates for the average yield of tortoiseshell per hawksbill of 0.68 kg and 0.91 kg (see above), the number of turtles represented by the annual exports of a country can be calculated

Other Southeast Asian Countries

Other Asian countries involved in the raw tortoiseshell trade include Malaysia, Singapore, Pakistan, the Maldives, Sri Lanka, Burma, Bangladesh, and Vietnam -- in fact, almost all the coastal Indo-malayan countries exploit sea turtles commercially (Table 1). In addition to the export trade, a large domestic tortoiseshell market exists for the tourist industry.

Oceania and other Pacific Islands

Tortoiseshell is exported from a number of Pacific islands. Japan has regularly imported unworked tortoiseshell from Australia, Fiji, the Solomon Islands, and American Samoa (see Japan, Table 19). Up until 1969, Fiji limited annual exports of hawksbill shell to 227 kg. In 1968, 270 kg of turtle shell was exported, but only 78 kg of it was hawksbill turtle shell (Hirth, 1971). In September 1969, an export ban on all sea turtles was initiated in an effort to encourage local people to produce tortoiseshell souvenirs for the tourist trade. This ban, however, has not been effective since Fiji official statistics show raw tortoiseshell (species not spe-

	1970	1971	1972	1973	1974	1975	1976	1977	1978
JAPAN	2,032	1,016	50,794	183,873	61,996	8,279	12,952	-	16,803
AUSTRALIA	-	-	7,111	-	-	-	-	60	-
CANADA	-	-	-	-	-	-	-	-	50
MEXICO	-	-	-	-	-	813	-	-	-
NEW HEBRIDES	-	-	-	-	-	-	-	-	102
NEW CALEDONIA	-	-	-	-	-	-	-	302	-
UK	-	-	-	-	59,987	27,987	-	-	-
W. GERMANY	-	-	-	-	-	-	10,159	-	9,144
SWITZERLAND	-	-	-	-	-	2,031	-	-	-
SPAIN	-	-	-	-	-	-	10,159	-	9,144
ITALY	-	-	-	-	-	-	20,317	-	-
TOTAL	2,032	1,016	57,794	183,873	121,983	39,110	53,587	362	35,343

Table 10. Fiji Exports of Raw Tortoiseshell (kg)

Source - Bureau of Statistics, Suva

cified) still being exported (Table 10). In 1978, over 35,000 kg were exported to Japan, West Germany, and Spain. It would appear that large quantities of unrecorded tortoiseshell are entering Japan and Europe since no country reports imports of this size from Fiji.

Africa

In 1978, Japan imported 5372 kg of raw tortoiseshell from East Africa (cf. Japan, Table 19). Since the 1960s, Japan has imported 1000 kg to 3000 kg annually from Tanzania. In the first seven months of 1979, Japan imported over 5000 kg from Tanzania; possibly as Tanzania has shown its intention to ratify the CITES shortly, and is therefore unloading its stock on the market.

Japan imported very little raw shell from Kenya in the 1960s, but imports have increased to over 2000 kg in recent years (cf. Japan, Table 19), although Kenya's official export figures are considerably lower (Table 1). Exports from the Seychelles to Japan have also increased in recent years. From 1964 to 1968, no imports from the Seychelles were recorded, but in both 1978 and in the first seven months of 1979, over 1000 kg were imported (cf. Japan, Table 19).

Madagascar captures approximately 13,000 turtles yearly along the Southwest coast, mostly hawksbills; once stuffed, the hawksbills are sold in local markets throughout the country (Hughes, 1979).

Central and South America and the Caribbean

Since 1976 at least 21 countries in the New World have exported raw tortoiseshell (Table 1). The trade mainly involves the hawksbill tortoiseshell although the shell of farmed green turtles is exported by Cayman Turtle Farm (CTF) and Ecuador appears to export olive ridley shell as indicated by the low shell value in comparison to the higher valued hawksbill shell (See Appendix II). Trade

statistics for Ecuador and Mexico show that both these countries were important exporters in 1976 (Table 1). Ecuador exported 10,000 kg to West Germany and over 2000 kg to the USA and Mexico exported 6000 kg to the USA. By 1977, Ecuador's exports had risen to over 37,000 kg, most of which went to Japan and Italy.

In 1978, Japan imported 24,770 kg of raw tortoiseshell from the New World, mainly from the Cayman Turtle Farm, Cuba, Panama, the Bahamas, Nicaragua, and Haiti (cf. Japan, Table 19). This represents between 27,000 and 37,000 hawksbill turtles (CTF figures not included) taken in these waters for trade to Japan alone.

2. RAW TORTOISESHELL RE-EXPORTERS

Singapore, Malaysia and Hong Kong are the major re-exporting countries of raw tortoiseshell (Table 5). Hong Kong imports larger amounts of unworked tortoiseshell than it re-exports and will be discussed in the next section. A few European countries also re-export unworked tortoiseshell.

Singapore

Since 1975, Singapore has consistently re-exported more raw tortoiseshell than it has imported. Singapore's re-exports have doubled in the last two years from 20,000 kg in 1976 to 45,500 kg in 1978. Most of these re-exports went to Taiwan, and a small proportion of them went to Japan and Hong Kong (Table 11).

	1970	1971	1972	1973	1974	1975	1976	1977	1978
JAPAN	7,934	3,627	1,060	2,689	367	2,522	2,688	4,416	1,456
HONG KONG	782	234	12,780	-	30	4,760	800	5,070	872
TAIWAN	14,781	9,031	9,810	22,760	4,196	13,300	13,838	19,701	43,250
THAILAND	-	30	180	-	-	594	-	2,080	-
VIETNAM	122	61	-	-	-	10	2,700	647	-
KOREA	-	-	3,000	-	-	-	-	-	-
CHINA (M)	203	-	61	-	-	-	-	600	-
MALAYSIA	-	102	-	935	10	-	-	-	-
AUSTRALIA	-	-	-	100	-	-	-	-	-
USA	-	-	98	-	-	-	-	-	-
NETHERLANDS	-	-	17,836	-	-	-	-	-	-
ITALY	-	-	-	3,048	-	-	-	-	-
SPAIN	-	-	-	1,000	-	-	-	-	-
TOTAL	23,822	13,085	44,835	30,532	4,603	21,186	20,026	30,014	45,578

Table 11.. Singapore Exports and Re-exports of Raw Tortoiseshell* (kg)

* From 1970 to 1974 domestic exports are included with re-exports. Only re-exports are recorded from 1975 to 1978.

Source - published government statistics

Singapore imported 18,470 kg of raw tortoiseshell in 1978, mainly from Malaysia, Thailand and Bangladesh (Table 12).

	1970	1971	1972	1973	1974	1975	1976	1977	1978
MALAYSIA	2,580	630	712	6,671	5,792	263	20	3,946	6,961
THAILAND	-	5,465	-	-	-	-	-	5,011	5,628
BANGLADESH	-	-	-	-	-	-	-	4,600	4,150
INDIA	51	51	50	214	-	210	40	34	548
CAMBODIA	30,649	-	-	15,900	-	4,000	-	-	-
VIETNAM	-	-	650	1,289	30	-	-	-	-
MOZAMBIQUE	-	-	-	435	120	-	-	290	-
OTHER	10	-	61	3,650	3,853	3,162	4,080	6,761	1,182
TOTAL	33,290	6,146	1,473	28,159	9,795	7,635	4,140	21,002	18,469

Table 12. Singapore Imports of Raw Tortoiseshell (kg)

Source - published government statistics

Small amounts of raw tortoiseshell from domestically caught turtles are also exported from Singapore, i.e. shell from turtles taken in their waters. In 1976, domestic exports totaled 370 kg, in 1977, 2501 kg, and 230 kg in 1978 (Table 1).

Malaysia

Malaysia's domestic exports of raw tortoiseshell are greater than Singapore's. In both 1976 and 1977 Malaysia exported about 8000 kg (Table 1).

In general, Malaysia is a re-exporting country. Malaysia re-exports raw tortoiseshell to Singapore, the same country it imports it from. In 1976 Malaysia re-exported 5600 kg; then in 1977, re-exports jumped to 46,212 kg, all destined for Singapore (Table 13).

From 1973 to 1976, Malaysia imported over 9000 kg of raw shell annually; imports leapt to 30,000 kg in 1977 (Table 14). Most of the shell comes from the Philippines and Singapore.

	1973	1974	1975	1976	1977
SINGAPORE	2,794	2,895	-	5,587	46,212
BRUNEI	-	-	10	-	-
HONG KONG	-	-	1,810	-	-
TOTAL	2,794	2,895	1,820	5,587	46,212

Table 13. Malaysia Exports and Re-exports of Raw Tortoiseshell* (kg)

* Data from 1973 to 1975 reflect mainly domestic exports. Only re-exports are recorded for 1976 and 1977.

Source - published government statistics

	1973	1974	1975	1976	1977
BORNEO	264	140	213	-	-
SUMATRA	335	-	30	-	-
INDONESIA	41	-	-	-	92
PHILIPPINES	3,251	-	1,077	2,474	19,596
SINGAPORE	5,191	7,114	10,159	6,659	10,159
FRANCE	-	9	10	-	-
W.GERMANY	-	-	-	-	213
TOTAL	9,082	7,263	11,489	9,112	30,060

Table 14. Malaysia Imports of Raw Tortoiseshell (kg)

Source - published government statistics

Netherlands

The Netherlands re-exported over 64,000 kg in 1976 (the shell possibly originating from Indonesia), most of which went to West Germany (62,000 kg - this amount does not show up in West Germany's imports for that year). However, official statistics for the Netherlands only record imports of 3000 kg in 1976, from Tanzania, Jamaica and Venezuela; the 64,000 kg may have been in store or in transit.

3. RAW TORTOISESHELL IMPORTERS

The main importers of raw tortoiseshell from 1976 through 1978 were Taiwan, Japan and Hong Kong (Table 2). Earlier in the century Europe and the USA were also major consumers, but changing fashions and recent legislation have changed or closed these markets, and imports have declined considerably.

Hong Kong

In the last three years, imports of raw tortoiseshell by Hong Kong have increased dramatically from 26,622 kg in 1976 to 102,275 kg in 1978 (Table 15). In 1978, most of the shell was imported from Indonesia and Thailand.

	1974	1975	1976	1977	1978
CAMBODIA	8,260	-	-	-	-
INDONESIA	6,483	4,691	3,808	9,198	75,335
THAILAND	3,986	859	11,232	11,959	20,050
PHILIPPINES	375	100	72	-	-
SINGAPORE	12	1,624	405	12,303	1,270
VIETNAM	7	67	-	1,854	-
INDIA	-	-	5,810	2,301	-
MALAYSIA	-	-	3,815	4,161	1,750
JAPAN	-	-	-	-	3,523
KENYA	-	-	-	98	-
TANZANIA	300	1,561	1,478	308	215
COMOROS ISL.	-	-	-	606	-
SEYCHELLES	-	-	-	-	132
TOTAL	19,423	8,902	26,620	42,788	102,275

Source - published government statistics

Table 15. Hong Kong Imports of Raw Tortoiseshell (kg)

Hong Kong also re-exports raw tortoiseshell. According to official statistics, Hong Kong re-exported over 10,000 kg in 1978, mainly to Taiwan, Mainland China, South Korea and Japan. Hong Kong

may re-export much larger quantities to Japan (Parker, pers. comm.)

	1974	1975	1976	1977	1978
CHINA (M)	4,257	5,221	3,902	2,781	3,827
JAPAN	134	1,063	1,400	1,662	881
SINGAPORE	112	100	-	-	-
TAIWAN	-	-	2,195	1,996	4,100
S. KOREA	-	-	-	-	1,300
UK	7	-	-	-	-
FRANCE	-	-	-	33	20
TOTAL	4,510	6,384	7,497	6,472	10,128

Table 16. Hong Kong Re-exports of Raw Tortoiseshell (kg)

Source - published government statistics

Taiwan

Taiwan's imports of unworked tortoiseshell jumped from 2,904 kg in 1974 to 128,846 kg in 1978 (Table 17). The major suppliers in 1978 were Indonesia, Thailand, and Singapore.

	1974	1975	1976	1977	1978	1979 (Jan-May)
JAPAN	69	300	300	253	293	-
SINGAPORE	1,850	2,250	4,200	12,411	26,980	10,800
INDONESIA	19	2,650	12,818	2,780	30,021	8,388
MALAYSIA	22	1,900	-	-	-	-
INDIA	-	45	-	-	-	-
THAILAND	-	1,500	7,450	3,920	29,180	-
VIETNAM	-	1,600	-	-	-	-
HONG KONG	-	-	-	6,490	6,500	-
PHILIPPINES	-	-	5,475	2,230	930	1,524
USA	-	235	-	-	-	-
OTHER	944	9,127	16,419	9,620	34,942	17,953
TOTAL	2,904	19,607	46,652	37,704	128,846	38,665

Table 17. Taiwan Imports of Raw Tortoiseshell (kg)

Source - published government statistics

Taiwan re-exported small quantities of raw tortoiseshell; from 1975 to 1978, it re-exported less than 3000 kg yearly.

	1974	1975	1976	1977	1978
JAPAN	3,688	2,494	1,691	257	233
HONG KONG	-	-	-	-	2,000
AUSTRALIA	-	-	20	-	-
UK	-	80	140	84	-
W. GERMANY	-	30	240	-	-
FRANCE	-	-	23	42	-
ITALY	-	-	-	95	-
SPAIN	-	-	160	60	-
BELGIUM	-	-	102	-	-
TOTAL	3,688	2,604	2,376	338	2,233

Table 18. Taiwan Re-exports of Raw Tortoiseshell (kg)

Source - published government statistics

Japan

From 1964-1972 Japan imported about 35,000 kg of raw tortoiseshell yearly to supply the traditional tortoiseshell craft industry (Table 19). Japanese imports increased dramatically in 1973 to over 90,000 kg, probably as a result of Japanese merchants stockpiling tortoiseshell in anticipation of the introduction of CITES. An average 45,306 kg of raw tortoiseshell was imported annually by Japan between 1976 and 1978 (Table 19).

At present there does not appear to be any decline in Japan's consumption of tortoiseshell. In fact, in the first seven months of 1979, Japan has already imported 46,614 kg of raw tortoiseshell.

Japan records imports from a number of islands in the Caribbean, and although there were suggestions that Atlantic hawksbills would cease as a source (Jap. Tort. Assoc., 1973), there is no evidence for this. Imports from Central America have dropped

slightly since 1975 (Fig. 19), back to the 1960s level. Imports from East Africa have risen slightly. The main trend has been the increase in imports from the Far East which are now higher than imports from the Caribbean and Central America.

	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
(Jan -)																
ASIA																
CHINA	-	-	-	-	-	-	915	750	2,950	2,150	1,410	405	1,851	1,331	240	219
TAIWAN	200	450	300	-	319	-	500	200	34	509	-	130	25	-	150	1,256
HONG KONG	-	-	-	-	-	-	-	39	968	2,124	15	259	46	163	89	1,652
SINGAPORE	2,100	3,283	3,101	4,308	5,961	5,703	4,844	1,274	6,816	13,327	967	2,395	3,129	4,080	1,844	2,338
INDONESIA	980	690	1,967	529	1,082	930	736	3,010	7,197	20,382	2,693	4,328	6,464	10,114	5,735	14,157
PHILIPPINES	-	-	-	187	445	2,329	1,008	583	6,078	13,446	16,922	1,488	3,160	3,313	1,439	2,609
MALAYSIA	697	535	1,384	636	639	1,315	2,544	2,666	108	56	-	-	-	45	-	-
THAILAND	-	-	-	-	-	-	720	200	500	-	-	-	-	200	1,550	1,380
INDIA	628	-	20	29	-	-	591	769	344	1,401	74	150	194	89	20	-
MALDIVES	-	-	-	-	-	-	-	-	-	65	89	340	485	317	567	1,156
OTHER	-	33	-	-	-	448	-	930	-	-	-	-	745	68	-	150
TOTAL	4,605	4,991	6,772	5,749	8,446	10,725	11,858	10,421	24,995	53,460	22,170	9,495	16,099	19,720	11,634	24,913
AFRIC																
AUSTRALIA	563	562	1,128	1,969	1,673	1,657	1,654	894	-	397	364	977	1,087	192	6	-
LIJI	516	341	118	382	136	306	-	-	270	607	131	91	189	82	399	349
OLOMON ISL.	-	-	63	901	1,233	1,213	1,469	816	1,590	378	657	846	873	756	528	784
OTHER	-	-	153	163	-	344	-	-	-	181	-	-	-	-	42	-
TOTAL	1,079	903	1,462	3,415	3,042	3,520	3,123	1,710	1,860	1,563	1,152	1,914	2,149	1,030	975	1,133
AFRICA																
ENYA	81	-	22	44	-	34	12	38	183	1,744	84	1,169	2,712	2,655	2,850	1,155
ANZANIA	3,180	2,506	2,143	2,373	3,559	1,353	2,528	1,921	1,729	2,356	1,688	1,719	2,152	1,474	1,410	5,679
YNHELLES	-	-	-	-	-	22	449	275	-	-	136	177	106	577	1,066	1,054
OTHER	-	200	-	-	420	467	724	453	1,211	1,917	820	700	777	-	46	67
TOTAL	3,261	2,706	2,165	2,417	1,979	1,876	3,703	2,687	3,123	6,017	2,728	3,765	5,747	4,706	5,372	7,886
CARIBBEAN																
HAMAS	425	220	739	694	415	239	136	149	1,474	580	218	449	532	922	1,018	1,290
MAICA	1,631	580	789	1,572	809	776	600	988	1,952	2,521	222	286	343	1,136	128	58
BA	1,303	2,054	3,013	2,146	6,819	7,632	5,435	5,946	5,100	8,300	6,245	6,100	6,985	3,984	6,600	2,350
ITI	698	687	820	1,016	1,468	1,490	1,497	1,983	1,954	2,390	678	831	1,094	1,173	1,004	692
MIN. REP.	1,767	1,594	1,820	1,352	1,178	-	-	-	62	4	11	31	113	507	62	-
ERTO RICO	226	227	-	196	77	612	974	732	498	341	45	165	262	264	25	18
. W. INDIES	183	-	16	-	-	145	266	-	-	-	-	122	152	236	276	25
YMAN ISL.	-	-	-	-	-	-	-	-	78	1,345	1,031	1,083	4,002	3,863	7,500	4,750
. LUCIA	-	-	-	-	-	-	-	-	-	345	288	332	-	489	349	210
. VINCENT	-	-	-	-	-	-	-	-	-	243	250	191	130	230	144	-
HER	412	1,717	712	550	241	672	660	423	355	849	310	163	139	59	23	-
TOTAL	6,655	7,034	7,909	7,526	11,007	11,466	9,568	10,221	11,473	16,918	9,298	9,753	13,752	12,863	17,129	9,393
E AMERICAS																
ARAGUA	-	54	-	234	227	685	798	1,060	1,316	994	2,712	1,632	1,446	1,573	1,014	949
STA RICA	1,039	431	793	-	381	418	360	189	387	265	175	515	170	260	47	89
AMA	12,098	9,362	11,998	9,866	8,259	12,189	10,744	11,981	8,743	9,443	9,350	9,825	5,885	4,450	6,505	694
HER	40	198	523	250	1,397	402	97	235	-	556	396	38	12	111	75	314
TOTAL	13,177	10,045	13,314	10,350	10,254	13,694	11,999	13,465	10,446	11,258	12,513	12,010	7,513	6,354	7,641	2,046
EUROPE																
THE NETHERLANDS	1,391	1,485	821	2,136	1,414	1,626	528	1,370	933	2,014	-	-	536	1,017	1,288	1,170
OTHER	67	57	212	466	167	82	-	26	10	271	207	45	264	88	-	-
TOTAL	1,458	1,542	1,033	2,502	1,581	1,708	528	1,396	943	2,285	207	45	800	1,105	1,288	1,170
TOTAL FOR ALL REGIONS																
	30,235	27,221	32,655	31,959	38,309	42,989	40,779	39,900	52,840	91,501	48,188	36,982	45,260	44,784	42,751	46,614

Table 19. Japan Imports of Raw Tortoiseshell (kg)

Europe

In recent years West Germany has been the largest importer of unworked tortoiseshell in Europe (Table 2). Imports, however, have dropped since 1975 when over 20,000 kg was imported (Table 20); in 1977 over 8000 kg was imported. The Netherlands and Italy have been importing about 3000 kg annually; Spain and France, about 1000 kg per year. The United Kingdom imported over 1000 kg in 1975, mainly from Tanzania, but by 1977 only 22 kg was imported. Unfortunately, in 1978 many European countries ceased listing tortoiseshell under a separate heading in their trade statistics - this will make it very difficult to monitor the effectiveness of the CITES.

United States

Under the U.S. Endangered Species Protection Act of 1969, the hawksbill sea turtle was listed as endangered, and hence, the import of hawksbill tortoiseshell became illegal. However, other countries report exports of tortoiseshell to the United States as late as 1977. In 1976 India exported 2367 kg of unworked shell to the U.S. and 11,329 kg in 1977. We were not able to determine whether this tortoiseshell was from hawksbill or green turtles.

Other Countries

Many other countries import unworked tortoiseshell (Table 2). Mexico, Korea, Mainland China, Vietnam, and Thailand, all imported over 1000 kg in 1976 and/or 1977. In 1976 Mexico imported over 18,000 kg of raw tortoiseshell compared with 246 kg in 1975. However, in 1976, almost all these imports came into the "perimetros libros", three states which possibly have free port status and/or act as transit points.

Since 1974, Korea has imported over 6000 kg of raw tortoiseshell yearly, most of it originating in Indonesia (Table 21).

	1974	1975	1976	1977	1978 (Jan-Nov)
INDONESIA	4,300	4,300	5,500	3,900	4,103
THAILAND	900	900	-	1,100	520
HONG KONG	500	600	-	-	500
MALAYSIA	-	300	-	-	600
BURMA	-	300	-	1,100	500
OTHER	302	605	600	-	-
TOTAL	6,002	7,005	6,100	6,100	6,223

Table 2/. Korea Imports of Raw Tortoiseshell (kg)

Source - published government statistics

WEST GERMANY	1974	1975	1976	1977
CAYMAN IS.	17,633	-	-	-
NETHERLANDS	746	-	693	1,095
USA	-	1,720	-	-
OTHER	10,076	21,415	3,244	7,186
TOTAL	28,455	23,135	3,937	8,281

ITALY	1974	1975	1976	1977
PHILIPPINES	-	320	1,094	1,400
INDONESIA	-	150	363	-
SINGAPORE	-	-	200	-
THAILAND	350	122	79	-
CHINA	50	-	-	-
INDIA	165	177	105	-
MALDIVES	-	235	140	-
SEYCHELLES	35	-	-	-
MOZAMBIQUE	101	100	186	-
SOMALIA	450	200	-	-
MAURITIUS	-	-	55	-
REP.CENT.AFRICA	-	33	-	-
BRAZIL	3,347	-	-	-
EL SALVADOR	76	-	-	-
CUBA	120	350	125	-
HAITI	-	-	90	-
USA	44	9	-	-
NETHERLANDS	1,754	724	49	-
UK	155	169	-	-
W. GERMANY	-	563	-	-
PORTUGAL	-	175	45	-
YUGOSLAVIA	12	-	-	-
OTHER	-	-	-	1,600
TOTAL	6,659	3,327	2,531	3,000

SPAIN	1975	1976	1977	1978
PHILIPPINES	-	660	250	1,000
TAIWAN	-	60	500	80
TANZANIA	63	143	54	-
MADAGASCAR	-	104	10	-
MEXICO	-	310	-	-
DOMINICAN REP.	-	254	-	-
UK	-	-	10	-
TOTAL	63	1,531	824	1,080

Source - published government statistics

Table 20. European Imports of Raw Tortoiseshell (kg)

B. WORKED TORTOISESHELL

Volumes of exports and imports recorded under the tariff heading for 'worked tortoiseshell and articles of tortoiseshell' usually include materials such as metal and wood which may form part of the items. The types are rarely specified under this heading and so data given in this section must be interpreted with considerable care.

The Far East is the main worked tortoiseshell exporting region - Indonesia, the Philippines and Taiwan (Table 3). Singapore and Malaysia may also be important but they only record value of their exports, not the volume. Japan has a long tradition of tortoiseshell carving but most is consumed internally. Although Central America and the Caribbean are important sources of raw tortoiseshell, there are no major carving industries there.

1. WORKED TORTOISESHELL EXPORTERS

Indonesia

Indonesian exports have increased from 23,000 kg in 1975 to over

	1975	1976	1977	1978
JAPAN	10,940	50,773	74,350	47,150
HONG KONG	3,965	2,152	5,810	25,369
SINGAPORE	8,021	14,803	9,688	16,575
CHINA (M)	-	80	-	2,200
MALAYSIA	-	-	140	-
AUSTRALIA	-	274	181	233
CANADA	-	10	-	-
ITALY	240	400	604	200
NETHERLANDS	3	550	-	30
BELGIUM	-	23	19	269
FRANCE	-	-	-	66
W. GERMANY	-	-	-	7
TOTAL	23,159	69,065	90,792	92,099

Table 22. Indonesia Exports of Worked Tortoiseshell (kg)

Source - published government statistics

92,000 kg in 1978; over 50 percent was shipped to Japan and large proportions went to Singapore and Hong Kong (Table 22).

Philippines

Worked tortoiseshell exports from the Philippines have also increased, from 425 pieces in 1974 to over 24,000 in 1976. Since then exports have dropped but in 1978 were still over 7000 pieces (Table 23). Up until 1976 exports went mainly to Japan. In 1977, 3000 pieces went to the USA and large numbers to Belgium to Italy. In 1978 over 1000 pieces went to West Germany.

	1974	1975	1976	1977	1978
JAPAN	425	1,600	22,825	4,058	6,344
FR. PAC. ISL.	-	-	-	264	-
USA	-	-	-	3,000	-
PUERTO RICO	-	-	-	89	-
BELGIUM	-	-	5	2,759	-
ITALY	-	-	-	1,000	155
FRANCE	-	-	-	445	-
W. GERMANY	-	-	1,500	-	1,176
UK	-	-	-	-	100
AUSTRALIA	-	-	-	-	60
TOTAL	425	1,600	24,330	11,615	7,835

Table 23. Philippines Exports of Worked Tortoiseshell (pieces)
Source - published government statistics

Taiwan

Taiwan's exports of worked tortoiseshell have ranged from 2000 kg to 6000 kg, except in 1975, when over 35,000 kg was exported, of which

	1974	1975	1976	1977	1978
JAPAN	3,506	3,969	4,408	79	515
USA	411	30,563	1,265	2,530	337
ITALY	-	5	45	49	18
FRANCE	-	-	14	44	146
W. GERMANY	-	26	6	3	9
SPAIN	-	7	1	9	440
OTHER	49	687	305	270	753
TOTAL	4,486	35,257	6,044	2,984	2,218

Table 24. Taiwan Exports of Worked Tortoiseshell (kg)

30,500 kg went to the United States (Table 24). In 1978, exports went to a number of countries including Japan, the United States, Spain, France, and Mauritius.

Other Asian Countries

India, Sri Lanka, Thailand and Vietnam also export carved tortoiseshell (Table 3). Many of the Pacific Islands have small carving industries that cater to the tourist trade; and throughout the Caribbean and Central America hawksbill curios are sold in most markets.

2. WORKED TORTOISESHELL RE-EXPORTERS

Singapore

Singapore records values, not volumes, of exports and imports of worked tortoiseshell. From 1975 to 1978, Singapore imported US\$ 15,500 worth of worked tortoiseshell yearly, mainly from Japan (not recorded in Japan's statistics), Malaysia, the Philippines and Hong Kong (Table 25).

	1975	1976	1977	1978
JAPAN	5,020	3,762	10,464	883
PHILIPPINES	213	1,854	2,077	3,792
SRI LANKA	4,281	-	-	102
MALAYSIA	1,999	520	1,092	-
VIETNAM	2,076	458	-	-
HONG KONG	611	-	20	880
CHINA (M)	553	1,224	-	-
OTHER	162	8,066	326	11,648
TOTAL	14,915	15,884	13,979	17,305

Table 25. Singapore Imports of Worked Tortoiseshell (US \$)

Source - published government statistics

Re-exports of worked tortoiseshell from Singapore were under US\$ 2000 in 1975 and 1976, but jumped to US\$ 15,500 and US\$ 20,000 in 1977 and 1978, respectively (Table 26). Most of the re-exports went to Japan and Malaysia, and in 1978, over US\$ 15,000 went to the United Arab Emirates.

	1975	1976	1977	1978
JAPAN	1,231	988	9,959	2,206
MALAYSIA	240	77	5,570	2,021
UNITED ARAB EMIRATES	-	-	-	15,755
OTHER	460	895	84	265
TOTAL	1,931	1,960	15,613	20,247

Table 26. Singapore Re-exports of Worked Tortoiseshell (US \$)

Source - published government statistics

Domestic exports (i.e. shell carved in Singapore) have increased from US\$ 5000 in 1975 to US\$ 23,000 in 1978, with over 90% of these exports going to Japan (Table 27).

	1975	1976	1977	1978
JAPAN	5,186	1,538	10,273	22,502
MALAYSIA	-	550	16	-
AUSTRALIA	-	4	-	-
FRANCE	-	-	66	-
OTHER	-	-	-	561
TOTAL	5,186	2,092	10,355	23,063

Table 27. Singapore Domestic Exports of Worked Tortoiseshell (US \$)

Source - published government statistics

Malaysia

Malaysia also reports only values of worked tortoiseshell. From 1975 to 1977 Malaysia imported over US\$ 7000 worth of worked tortoiseshell annually, mostly from the Philippines and Mainland China (Table 28).

	1975	1976	1977
PHILIPPINES	7,369	1,939	5,411
CHINA (M)	-	2,751	2 456
TAIWAN	109	190	-
INDIA	18	899	-
JAPAN	173	-	-
SINGAPORE	5	-	-
HONG KONG	-	14	62
FRANCE	218	-	-
USA	-	-	44
SWEDEN	-	-	15
OTHER	748	-	37
TOTAL	8,068	5,793	8,025

Table 28. Malaysia Imports of Worked Tortoiseshell (US \$)

Source - published government statistics

Malaysian exports of worked tortoiseshell in 1977 were higher than in either 1975 or 1976 (Table 29). In 1977 domestic exports valued at over US\$ 2000 went to West Germany and Singapore.

	1975	1976	1977
SINGAPORE	677	-	758
JAPAN	187	39	-
THAILAND	67	-	-
W. GERMANY	-	-	1,245
AUSTRALIA	-	-	30
TOTAL	931	39	2,033

Table 29. Malaysia Domestic Exports of Worked Tortoiseshell (US \$)

Source - published government statistics

Malaysia re-exports little worked shell, less than US\$ 1000 worth in 1975/1976 and none in 1977 (Table 30).

	1975	1976	1977
BRUNEI	500	275	-
SINGAPORE	-	659	-
TOTAL	500	934	-

Table 30. Malaysia Re-exports of Worked Tortoiseshell (US \$)

Source - published government statistics

Fiji

From the values of worked tortoiseshell available, it appears that Fiji is another center for the worked tortoiseshell trade. Imports have risen ten fold in five years: from US\$ 6000 in 1973 to US\$ 63,000 in 1978 (Table 31). Imports from the Philippines have increased most over this period - from US\$ 52 in 1972 to over US\$ 19,000 in 1978. India, Taiwan and Hong Kong also contributed large amounts of worked tortoiseshell to Fiji through the years.

	1972	1973	1974	1975	1976	1977	1978
PHILIPPINES	383	83	1,243	1,845	9,692	20,762	41,401
INDIA	2,415	1,565	5,691	4,812	6,713	9,524	10,234
TAIWAN	-	10	73	844	4,396	4,210	4,601
HONG KONG	2,553	3,286	3,188	815	3,894	1,908	1,298
ITALY	408	176	631	29	699	1,112	585
AUSTRALIA	4	89	523	1,277	-	47	569
UK	6	-	-	-	114	458	156
THAILAND	-	-	-	-	-	2,005	77
USA	131	-	11	5,732	1,327	1,071	29
OTHER	705	734	370	1,685	2,354	3,401	3,768
TOTAL	6,605	5,943	11,730	17,039	29,189	44,498	62,718

Table 31. Fiji Imports of Worked Tortoiseshell (US \$)

Source - Bureau of Statistics, Suva

Fiji exports less worked tortoiseshell than it imports. Since 1972 between US\$ 4000 and US\$ 10,000 worth of worked tortoiseshell was exported annually (Table 32). In 1977 and 1978 exports went mostly to American Samoa, and to a lesser extent Western Samoa and the United States.

	1972	1973	1974	1975	1976	1977	1978
AMERICAN SAMOA	992	513	30	91	1,656	8,459	7,386
USA	189	1,570	1,797	2,006	428	1,039	477
WEST SAMOA	634	100	-	-	-	-	189
OTHER	2,359	5,124	3,049	1,732	2,627	-	-
TOTAL	4,174	7,307	4,876	3,829	4,711	9,498	8,052

Table 32. Fiji Exports of Worked Tortoiseshell (US \$)

Source - Bureau of Statistics, Suva

Hawksbill souvenirs are sold in a number of Pacific islands including Tahiti, Western Samoa and Tonga, and there is a rapidly increasing tourist trade.

3. WORKED TORTOISESHELL IMPORTERS

Japan

According to available published statistics, Japan is the main importer of worked tortoiseshell (Table 4). Between 1975 and 1978, Japan imported an average of 107,000 kg of worked tortoiseshell annually, most of which came from Indonesia, Singapore, the Philippines and Taiwan (Table 33). In the first seven months of 1979 Japan has already imported over 114,000 kg of worked shell.

	1972	1973	1974	1975	1976	1977	1978	1979 (Jan-Jul)
INDONESIA	41,595	102,750	97,917	80,865	89,194	80,951	55,198	79,424
SINGAPORE	25,735	44,215	27,669	14,354	17,060	11,742	14,896	24,407
TAIWAN	12,212	38,266	34,057	13,378	3,574	1,487	1,284	2,238
PHILIPPINES	157	2,050	9,191	8,469	2,972	7,433	6,181	8,482
HONG KONG	626	2,392	138	276	370	-	27	39
VIETNAM	1	544	668	24	93	4	-	-
OTHER	11,993	1,349	278	20	23	57	19	74
TOTAL	92,319	191,566	169,918	117,386	113,286	101,674	97,605	114,664

Table 33. Japan Imports of Worked Tortoiseshell (kg)

Source- published government statistics

Europe

Italy is the major importer of worked tortoiseshell in Europe (Table 4), and in terms of value is the second largest importer after Japan. Italy's imports rose from nearly 18,000 kg in 1974 to over 109,000 kg in 1976 and 50,000 kg in 1977. West Germany imported just over 1000 kg of worked tortoiseshell, but the amount jumped to 22,000 kg in 1977. France imported 2,000 kg to 8000 kg per year between 1974 and 1977, a small proportion of which came from Vietnam. Spain, the Netherlands, Belgium, the United Kingdom and Switzerland all imported small quantities (≤ 2000 kg) of worked tortoiseshell between 1975 and 1977 (Table 4).

United States

Under the U.S. Endangered Species Protection Act of 1969, the hawksbill, leatherback, and Kemp's ridley sea turtles were listed as endangered, and consequently, the import of hawksbill tortoiseshell became illegal. Furthermore, since February 1977, the United States worked tortoiseshell imports have been limited to farmed green turtle shell from the Cayman Turtle Farm as green and olive ridley turtles were placed on Appendix I of the CITES, banning the commercial trade of these species and their products. However, other countries report large quantities of worked tortoiseshell (Species unspecified) exported to the U.S. since 1977: the Philippines, 3000 pieces in 1977 (Table 23); Taiwan 2530 kg in 1977 and 337 kg in 1978 (Table 24); Fiji, US\$ 871 worth in 1977 and US\$ 342 worth in 1978 (Table 32).

Several shipments of worked tortoiseshell have been seized by U.S. Customs officials since 1977, but we were unable to determine whether the quantities originating from the countries mentioned were the ones seized. The volume of worked tortoiseshell articles imported and seized from 1977 to May 1979 is listed in Table 34. Since 1977, U.S. Customs officials have seized approximately 1000 hawksbill shell articles which were confiscated from tourists returning to the U.S.. In the same period the United States imported 232 kg, 43 cartons or parcels, and almost 2000 pieces of tortoiseshell articles from the Cayman Turtle Farm (CTF). As of June 1979 the import of CTF products was prohibited as a result of listing the green, olive ridley and loggerhead turtles as endangered and/or threatened under the U.S. Endangered Species Act of 1973. The Cayman Turtle Farm, claiming that farmed turtle products should be exempt from this ruling, filed suit against the U.S. Department of Interior. CTF's claim was denied on the basis that farmed turtle products created an

economic incentive to establish similar operations elsewhere using eggs taken from the wild, thereby harming wild populations and stimulating poaching as well as a commercial demand for sea turtle products.

PORT OF ENTRY	1977			1978			(Jan - May) 1979		
	IMPORTS FROM CTF	SEIZURES No. Quan.		IMPORTS FROM CTF	SEIZURES No. Quan.		IMPORTS FROM CTF	SEIZURES No. Quan.	
MIAMI	232 kg 1 pl 3 pc	64 120 pc (99H, 20G)		15 ct 11 pl 116 pc	228 555 pc (449H, 103G)		14 pl 1777 pc 27 pc* (9H,18G)	86 209 pc (77H, 131G)	
NEW YORK	-	15 12 ct 17 pc (5H)		50 pc	22 3 ct 35 pc (14H, 15G)		-	2 3 pc (3H)	
LOS ANGELES	-	94 5 pl 178 pc (139H, 17G)		2 pl 1 ct (H)	88 177 pc (138H, 26G)		-	16 23 kg 29 pc (22H, 6G)	
SW REGION (BROWNSVILLE, LAREDO, and EL PASO)	-	7 21 pc (16H)		-	6 6 pc (1H, 2G)		-	3 9 pc (8G)	
TOTALS	232 kg 1 pl 3 pc	180 12 ct 5 pl 336 pc (259H, 37G)		16 ct (H) 13 pl 166 pc	344 3 ct 773 pc (602H, 146G)		14 pl 1804 pc (9H,18G)	107 23 kg 250 pc (102H, 145G)	

import allowed into country, not from CTF

CTF Cayman Turtle Farm

ct carton

kg kilogram

pl parcel

pc peice

() - In parenthesis are the number of
hawksbill (H) and green (G) tortoise-
shell items identified.

Source: 3-177 Declaration of Import Permits, courtesy of Law Enforcement,
Fish and Wildlife Service, U.S. Department of Interior

Table 34. U.S. Imports and Seizures of Worked Tortoiseshell from Major Ports
of Entry

II. TURTLE SKIN AND LEATHER TRADE

The recent growth of the turtle skin trade is a typical example of international trade turning to a new species for a product when the traditional source is depleted through over-exploitation. In this case, turtle skin became important when the leather trade found it increasingly difficult to obtain traditional reptiles (such as crocodiles) due to scarcity, bans and better enforcement controls in the 1960s and early 1970s. Olive ridleys from Central America and green turtles from Southeast Asia have been the main source of trade. Very few countries record turtle skin or leather under a separate tariff heading, so the extent of the trade may actually be larger and involve more countries.

Mexico and Ecuador are the main exporters of sea turtle skins in the New World; between them, they captured over 150,000 olive ridley in both 1977 and 1978 (see below). The Cayman Turtle Farm is another exporter of skins in the Caribbean. Japan has steadily increased its imports of farmed CTF green turtle skins but also imports wild turtle skin from the Southeast Asian countries of Pakistan, Singapore, Indonesia, and the Philippines. Besides Japan, the major importers of sea turtle skins and leather are Italy, Spain, and France.

Skin is obtained from two parts of the sea turtle: the hide from the neck and front flippers and the tail and hind flippers; thus, two pieces are equivalent to one turtle. The total raw skin weight from an adult olive ridley averages between 1.8 - 2.0 kg (Green and Ortiz, 1979) and 2.5 kg (Marquez, Villaneuva, and Peñaflores, 1976). On the other hand, once the skin has been tanned it weighs less; in Mexico the leather weighs approximately 0.8 times less than raw skin (Marquez, pers. comm.).

The average value of raw turtle skin imported into Japan in 1976 was US\$ 4.87 (Japan import values). In 1979 values ranged from US\$ 4.74 /kg to US\$ 28.96/kg with an average price of US\$ 11.56/kg (cf. Japan, Table 37). The most expensive skins come from France, Ecuador and Mexico, all imported by Japan at over US\$ 10.00/kg. Japan imported farmed green turtle skins from the Cayman Turtle Farm in 1979 for US\$ 6.94/kg. Mexico produces most of the turtle leather imported by Japan; in 1976 the average value of Japanese imports of turtle leather was US \$50.95/kg, but by July 1979 this had risen to US \$122.03/kg (Table 38).

A. TURTLE SKIN AND LEATHER EXPORTERS

Ecuador

Ecuador is the largest exporter of olive ridley turtle skins. They began exporting skins in 1973 and almost 8500 kg were shipped that first year (Green and Ortiz, this volume). Between 1974 and 1976 exports jumped to 38,000 kg per year. In 1977, Ecuador exported 101,000 kg of raw skins, representing between 40,400 and 56,111 olive ridley turtles (Green and Ortiz, this volume); of this 67,000 kg went to Japan (Japan reports importing 62,073 kg that year), Italy (25,000 kg), Panama (7,000 kg) and Hong Kong (2000 kg). During the first six months of 1978, Ecuador exported 107,714 kg of skin, already exceeding the 1977 total export figure. Since Japan imported only 40,807 kg of skin from Ecuador in all of 1978, large quantities of skin were certainly shipped to other countries. Italy may be responsible for importing many of these skins as Italian manufacturers ~~were~~ ^{probably} stockpiling skins in preparation for Italy's ratification of the CITES.

Mexico

Since 1975 it has been illegal to export raw skin from Mexico (Marquez, pers. comm.), and as a result, most exports are now in the form of leather (Tables 35 and 36). However, there appears to be a large scale illegal raw skin trade; Japan reports over 50,000 kg of raw skins imported from Mexico since 1976 (Table 37).

In 1976 Mexico exported almost 24,000 kg of turtle leather to the United States, Japan (4,500 kg less than what Japan reports receiving),

Spain, France, Italy, and Hong Kong (Table 35). The United States banned imports of all wild sea turtle products in February 1977, and since then, Japan has increased its import of turtle leather from Mexico; over 12,000 kg of leather was imported by Japan during the first seven months of 1979 which is more than it imported from Mexico during 1978.

	1975	1976
VENEZUELA	516	-
NICARAGUA	72	-
HONDURAS	55	-
COSTA RICA	36	-
USA	122	22
TOTAL	801	22

Table 35. Mexico Exports of Turtle Skins (kg)

Source - published government statistics

	1974	1975	1976
JAPAN	5,778	18,448	6,580
HONG KONG	194	66	-
CANADA	41	36	-
USA	575	4,161	14,175
SPAIN	2,447	748	2,303
ITALY	604	224	238
FRANCE	402	444	387
TOTAL	10,041	24,128	23,787

Table 36. Mexico Exports of Turtle Leather (kg)

Source - Published government statistics

Other New World Countries

The Cayman Turtle Farm (CTF) located in the Grand Cayman Islands has quickly become a major exporter of farmed green turtle skins. Japan imported over 23,000 kg of skins from the CTF in 1978 (Table 37). Japan also imports raw skins from both Panama and Nicaragua (Table 37). Pana-

ma most likely re-exports turtle skins from Ecuador as in 1977 Ecuador exported 7000 kg of ridley skins to Panama (Green and Ortiz, this volume). Skins from Nicaragua may be from wild green turtles as they have a lower commercial value than the olive ridleys and the less blemished CTF farmed green turtle skins (Table 37).

Southeast Asia

The Far East is becoming increasingly important as a supplier of turtle skins to Japan (Table 37). It is unclear whether the import of turtle skins is the primary reason for the take of sea turtles in this area; the turtle may be captured initially for local meat consumption.

B. TURTLE SKIN AND LEATHER IMPORTERS

Japan

Japan has been recording imports of turtle skin and leather since 1976 (Tables 37, 38) and it is probably the largest consumer of skins in the world. From 1976 to 1978 Japan imported an average 10,061 kg of leather (98 % from Mexico) and 92,098 kg of skins (over 50% from Ecuador). Already in the first seven months of 1979, nearly 123,000 kg of turtle leather and skin has been imported by Japan. Ecuador is Japan's major supplier of raw skins; Japan imported over 40,000 kg in 1976 and nearly 80,000 kg in the first seven months of 1979.

In Japan sea turtle leather is used primarily for sandals, shoes, and billfolds (Balazs, pers. comm.). Inoue and Co., Ltd. of Tokyo is the main marketing firm for turtle skin in Japan; articles of turtle skin and leather were advertised in their catalogue at the Paris Leather Fair in September 1979.

	1976 (kg)	1977 (kg)	1978 (kg)	1979 (Jan-Jul) (kg)	(US\$/kg)
ECUADOR	40,275	62,073	40,807	79,839	12.23
MEXICO	35,231	5,244	1,061	9,075	13.13
CAYMAN IS.	-	36	23,514	2,824	6.54
NICARAGUA	883	2,322	640	-	-
PANAMA	-	-	2,546	-	-
USA	1,676	-	-	-	-
PHILIPPINES	18,610	6,408	3,857	-	-
SINGAPORE	-	-	9,673	10,981	9.44
INDONESIA	-	145	6,261	3,018	6.08
PAKISTAN	4,648	1,016	5,360	3,248	4.74
TAIWAN	-	-	726	-	-
BELGIUM	3,283	-	-	-	-
FRANCE	-	-	-	480	28.96
TOTAL	104,606	77,244	94,445	109,465	

Table 37. Japan Imports of Turtles Skins

Source - published government statistics

	1976 (kg)	1977 (kg)	1978 (kg)	1979 (Jan-Jul) (kg)	(US\$/kg)
MEXICO	11,065	6,835	11,646	12,445	122.03
SINGAPORE	186	145	154	107	79.57
BELGIUM	-	-	-	875	116.61
W. GERMANY	120	-	-	-	-
NETHERLANDS	-	28	-	-	-
ITALY	-	-	3	-	-
TOTAL	11,371	7,008	11,803	13,427	

Table 38. Japan Imports of Turtle Leather

Source - published government statistics

European countries

In Europe, Italy is probably the major importer of turtle skin and leather. In 1977 Ecuador exported 25,000 kg of skins to Italy (Green and Ortiz, 1979). A turtle processing plant in Ecuador exported 6650 pieces of skin to Italy in June 1978 alone (Ortiz and Cantos, 1978). Spain and France also appear to import turtle skin and leather; in 1975 and 1976 Mexico exported 1200 kg and 2700 kg of leather respectively to these countries. PIOSA, the largest sea turtle fishery in Mexico, still claims to ship many skins to both Spain and France (Cliffon, pers. comm.).

United States

Before CITES and U.S. regulations went into effect, the United States was a major consumer of turtle skins and leather. Over 48,000 kg of turtle skins were imported by the U.S. in 1971, of which more than 44,000 kg were from olive ridleys (CITES Berne Document, 1971). In 1977 the United States imported over 31,000 pieces of olive ridley skins and almost 3000 pairs of turtle skin leather shoes from Mexico (Table 39). The following year the U.S. changed suppliers due to the ban on wild

turtle products and imported 4000 farmed green turtle skins from Cayman Turtle Farm (CTF). The U.S. has already imported approximately 14,000 pieces of skin from CTF during the first five months of 1979. Only a few shipments of wild turtle leather articles have been seized since 1977: 440 items in ten shipments (Table 39).

PORT OF ENTRY	1977			1978			1979 (Jan-May)		
	IMPORTS	SEIZURES No.	Quan.	IMPORTS	SEIZURES No.	Quan.	IMPORTS	SEIZURES No.	Quan.
MIAMI	-	-	-	-	-	-	8,000 pc (CTF) 1 ar	1	18 ar
LOS ANGELES	-	2	88 ar	-	2	2 ar	-	1	1 ar
NEW YORK	-	1	132 ar	-	1	188 ar	-	1	18 ar
SW REGION (BROWNSVILLE, LAREDO, and EL PASO)	21,732 pc* (Mexico) 10,150 sq* (Mexico) 2,987 ar (Mexico)	1	1 ar	5,706 pc* (Mexico) 4,000 pc (CTF)	-	-	6,000 pc (CTF)	-	-
TOTAL	- 21,732 pc 10,150 sq 2,987 ar	4	221 ar	9,706 pc	3	190 ar	14,000 pc 1 ar	3	37 ar

* from olive ridley turtles
pc pieces
ar articles
sq squares

CTF Cayman Turtle Farm
(Country of origin)

Source: 3-177 Declaration of Import Permits, courtesy of Law Enforcement,
Fish and Wildlife Service, U.S. Department of Interior

Table 39. U.S. Imports and Seizures of Turtle Skins and Leather from Major
Ports of Entry

III. SEA TURTLE MEAT TRADE

Few countries, if any, still capture green turtles primarily for the export of meat. Most green turtles taken for their meat are consumed locally, because many foreign markets, as a result of the CITES regulations, have stopped their imports or are restricted to farmed turtle meat. For this reason, the Cayman Turtle Farm is now probably the largest exporter of green turtle meat. Where turtles are exploited for the international trade, the export of meat may be only secondary to the use of their skin (see both Mexico and Ecuador below).

Many New World countries captured green turtles for meat in the early 1970s (Rebel, 1974): Nicaragua, Mexico, Ecuador, and Costa Rica were the largest exporters. Both Nicaragua and Costa Rica have curbed or stopped this trade.

Until 1979, the United States was the major importer of sea turtle meat. A large market for turtle meat probably exists in Japan, but we were unable to establish the volume of this trade. In Europe, the United Kingdom and West Germany are the largest importers of turtle meat and calipee/calipash for the soup industry.

A. SEA TURTLE MEAT EXPORTERS

Costa Rica

Until 1972, the United States imported up to 10,000 kg of turtle products per year from Costa Rica (Table 41); we suspect that most of this was meat. 13,600 kg was imported by the U.S. in 1976. West Germany imported over 12,000 kg of meat and soup from Costa Rica between June and December 1976 and 15,500 kg from Costa Rica via Somalia in 1977 (1976/1977 West Germany CITES Report).

A bill passed by the Costa Rica congress in July 1979 proposed a change in the offshore harvest limit from 19.2 km down to 4.8 km and

allowing the export of turtle meat. This could have had serious consequences for the turtles in Tortuguero National Park, but the bill was vetoed at the last minute by the President (Carr, pers. comm.).

Mexico

In Mexico both green and olive ridley turtles are captured. While much of the meat is consumed locally, between 1966 and 1975, the United States imported over 5000 kg of turtle products (mostly meat) annually from Mexico (Table 41). The import of wild turtle meat to the U.S. has been stopped officially, but illegal shipments and smuggling of Mexican turtle meat into the U.S. continues (see U.S. section).

Ecuador

In Ecuador, where olive ridley skins provide the main revenue for the turtle fisheries, meat is the secondary product, even though it is exported in great abundance. While 99 percent of the catch in Ecuador are olive ridleys, crates improperly labeled "green turtle meat" are exported (Ortiz, pers. comm.).

According to government statistics, Ecuador exported over 27,000 kg in 1973, rising to 107,000 kg in 1974, and then dropping to under 60,000 kg in 1975 and 1976 (Table 40). There is a large discrepancy between these official export figures (Table 40) and those given by the commercial turtle companies (Green and Ortiz, 1979).

	1973	1974	1975	1976	1977
USA	27,580	107,522	58,082	59,331	81,451
JAPAN	-	-	-	-	408
FRANCE	-	-	454	-	-
W. GERMANY	-	-	-	45	-
TOTAL	27,580	107,522	58,536	59,376	81,859

Source: published trade statistics

Table 40. Ecuador Exports of Turtle Meat (kg)

From 1971 to 1973 an average 34,500 kg of meat/year, representing between 5000 and 7500 turtles, was exported (Green and Ortiz, this volume). The export of meat increased to over 100,000 kg per year (i.e. 15,000 to 24,000 turtles) between 1974 and 1977.

Ecuador actually exported 112,000 kg of turtle meat in 1977, (Green and Ortiz, this volume), even though only 81,859 kg was reported officially; 81,000 kg was shipped to the United States and under 100,000 kg to Japan. (Table 40). On 31 May 1977, the Inspector of National Parks and Wildlife reported that 29,545 kg of turtle meat, representing approximately 6500 turtles, was departing monthly from Guayaquil International Airport (Ortiz and Cantos, 1978). During the first six months of 1978, Ecuador exported 62,967 kg of meat - destination unknown.

Three months after the U.S. imposed a ban on wild turtle meat imports, the Fish & Wildlife Office denied an import permit to a U.S. company for 272,727 kg to 409,091 kg of meat from Ecuador (Cato, Prochaska and Pritchard, 1978). Since the United States ban in 1977/1978, Ecuador has warehoused most of its frozen turtle meat and apparently has no buyers.

Cayman Turtle Farm

Today, the Cayman Turtle Farm is probably the largest exporter of green turtle meat in the world. Until June 1979, the United States was probably the main importer of CTF meat. Now, both the United Kingdom and West Germany probably import most turtle meat and calipee from CTF for their soup industries (See below).

B. SEA TURTLE MEAT IMPORTERS

Europe

In Europe, West Germany and the United Kingdom are the largest importers of turtle meat and calipee/calipash for the soup industry, most of it coming from the Cayman Turtle Farm (CTF) since 1977. Switzerland is a minor importer of turtle meat and soup, imports coming via West Germany.

Over 28,000 kg of soup and meat were imported by West Germany in 1976, mainly from Costa Rica via Switzerland (although not recorded in the Costa Rica CITES Report), and a small quantity from Mauritius. In 1977, over 50,000 kg were imported from the CTF and Somalia (West Germany CITES Reports).

The United Kingdom imported almost 4000 kg of meat and 1000 kg of meat from CTF in 1977 and 1978, respectively (UK CITES Reports). Between January and October 1979 the UK Department of Environment received license applications for the import of 36,654 kg of CTF turtle meat. If these license quotas are filled, imports will have increased dramatically. The U.S. ban on CTF products may be responsible for this increase, because the United States used to re-export CTF turtle meat to both the United Kingdom and West Germany.

In 1978, Switzerland imported over 4000 kg of calipee and meat from West Germany (Switzerland CITES Reports). In addition, Switzerland re-exported cartons of canned soup; in 1976, 589 cartons were shipped to a number of countries, and in 1978, 318 cartons were sent to Canada (Switzerland CITES Reports).

In Europe, John Lusty and Bender and Cassell in the United Kingdom and La Croix in West Germany are the largest manufacturers of turtle soup. Based on the above imports, it is likely that all these companies receive turtle meat from the Cayman Turtle Farm.

The United States

Since 1972, the United States has imported over 100,000 kg of meat a year, most of it originating from Nicaragua, Ecuador, Mexico, Costa Rica and the Cayman Island (i.e. CTF) (Table 41 and 42). In February 1977, the United States prohibited the import of wild green and olive ridley meat following the listing of green and olive ridley turtles on Appendix I of the CITES. In June of 1978 the United States took further action to protect sea turtles and listed the green, olive ridley, and loggerhead turtles as endangered and/or threatened under the U.S. Endangered Species Act of 1973.

Since July 1978, over 110,000 kg of wild olive ridley and green turtle meat has been seized in Los Angeles, Brownsville, and Miami (Pritchard, pers. comm.). The meat was entering the country labelled as "Tabasco River Turtle", Dermatemys mawii, a freshwater turtle frequently caught in the Mexican states of Tabasco and Chiapas and sold locally as a gourmet item.

In 1977, the United States imported between 140,000 kg and 152,000 kg of turtle meat (Table 42); over 76,000 kg came from the Cayman Turtle Farm, over 52,000 kg from Ecuador (imported between January and May 1977), 7000 kg to 9000 kg from the French West Indies, and 1477 kg from Costa Rica (not listed in the 1977 Costa Rica CITES Report). In 1978, 49,023 kg of turtle meat was imported from CTF and from January through May 1979, 69,361 kg. The large amounts of farmed turtle meat imported in 1979 reflects the anticipated upcoming ban of CTF turtle products in June 1979.

46,000 kg
WMS

The amount of CTF turtle meat imported into the United States varies somewhat according to the source of information which is used. For instance, our analysis of U.S. Declaration of import permits for 1978 totaled 49,023 kg of meat from CTF, whereas in the same year, Customs import statistics reported 120,874 kg. From January through May

	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
MEXICO	7.0	4.6	-	4.8	13.2	11.2	2.5	10.0	6.9	6.3	-
NICARAGUA	38.3	35.5	-	-	-	-	84.4	72.2	135.9	76.5	1.2
COSTA RICA	11.0	-	4.7	42.7	2.0	-	12.3	-	-	-	13.6
ECUADOR	-	-	-	1.3	-	-	-	12.3	28.3	22.0	19.1
GRAND CAYMAN	-	-	-	-	-	-	-	-	-	9.0	17.6
WEST INDIES	-	-	-	-	-	-	.3	1.4	-	3.6	-
JAMAICA	-	-	-	-	-	-	.1	5.8	-	-	-
BAHAMAS	-	-	-	-	-	-	.4	1.9	-	-	-
COLOMBIA	-	-	-	-	-	.9	-	-	-	-	-
GUATEMALA	-	-	-	3.2	-	-	-	-	-	-	-
HONDURAS	-	-	-	-	-	13.6	3.2	-	-	-	-
DOMINICAN REP.	-	-	-	-	-	-	-	-	-	-	-
VENEZUELA	-	-	-	-	-	-	-	.2	-	-	-
YEMEN	-	-	-	-	-	-	-	.6	-	-	-
HOLLAND	2.0	-	-	-	-	-	-	-	10.9	-	-
TOTAL	58.3	40.1	4.7	52.0	15.2	25.7	103.2	104.4	182.0	117.4	51.5

Table 411. US Imports of Turtle Products by Country of Origin, 1966-1976 (thousand kg)

Derived from the National Marine Fisheries Service, NOAA, Unpublished Statistics.

From Peter Pritchard with permission (in Cato, Prochaska, and Pritchard, Unpublished Report, December, 1978).

PORT OF ENTRY	1977		1978		1979 (Jan-May)	
	QUANTITY	COUNTRY OF ORIGIN	QUANTITY	COUNTRY OF ORIGIN	QUANTITY	COUNTRY OF ORIGIN
MIAMI	6,609 kg	CTF	8,909 kg	CTF	65,498 kg	CTF
	2,230 ct*		1,765 ct*		150 ct*	
	(50,682 kg)		(40,114 kg)		(3,409 kg)	
	18,800 kg	Ecuador				
	1,783 ct**					
	(32,418-40,523 kg)					
	1,477 kg	Costa Rica				
	400 ct	Fr. W. Indies				
	(7,273-9,091 kg)					
WEST PALM BEACH	21,560 kg	CTF				
	114 ct*	Ecuador				
	(2,073-3,182 kg)					
Total	140,892-151,924 kg		49,023 kg		68,907 kg***	

New York, Los Angeles, and the Southwest Region (Brownsville, Laredo, El Paso) did not report turtle meat imports during these years.

A carton of meat from CTF contains 50 lbs. (22.7 kg)

A carton of meat from Ecuador and the French West Indies was estimated to contain between 40 and 50 lbs. (18.2-22.7 kg).

* Of this total, 9,318 kg was re-exported to West Germany and 4,546 kg was re-exported to the United Kingdom.

carton

CF Cayman Turtle Farm

Source: 3-177 Declaration of Import Permits, courtesy of Law Enforcement, Fish and Wildlife Service, U.S. Department of Interior

Table 42. U.S. Imports of Turtle Meat from Major Ports of Entry

1979 import documents totaled 69,361 kg while Customs recorded 106,157 kg. There are three possible explanations:

1) we did not receive all the import documents requested from the U.S. Fish and Wildlife Service (Law Enforcement) (FWS(LE)) based on the major ports of entry, 2) the meat came into ports from which we did not request import documents; possibly in San Juan, Puerto Rico which we are told imports large quantities of turtle meat and shell from the CTF for the tourist trade, or 3) transshipments are included in U.S. Customs import statistics, while FWS(LE) do not include transshipments in their import figures. We suspect this last option; much CTF turtle meat is re-exported from the U.S. to both West Germany and the United Kingdom. If we add 1977 FWS(LE) import figures to both 1977 West Germany and United Kingdom import figures* of CTF turtle meat (most likely transshipped from the U.S.), the total is within 15,000 kg given by 1977 Customs figures.

Japan

Few data are available on the import of turtle meat by Japan. In 1977, Ecuador exported 1000 kg of meat to Japan for US \$1.00/kg (Ortiz and Green, this volume). Since some Southeast Asian countries have cultural, dietary taboos concerning sea turtle meat, and many green turtle skins are imported by Japan from this area (Table 9), it is likely that green turtle meat is also imported.

* from CITES Reports.

IV. OTHER TURTLE PRODUCTS

A. EGGS

Southeast Asia

Large scale collecting of turtle eggs occurs in most Southeast Asian countries. Currently, an estimated one million eggs are collected annually from the East coast of Malaysia (Siow and Moll, this volume); Malaysia exports turtle eggs to Brunei (Table 43). The beaches of Indonesia yield some two million eggs/year for local consumption (Polunin and Naitja, this volume), and Malaysia imports large numbers from Indonesia (Table 43). A decline in the Philippines turtle population is evident from the fewer number of eggs found by collectors; in the early 1970s, between 800 and 1000 eggs/week were collected per individual during the height of the season, and now, only 500 eggs/week can be found (De-Celis, this volume). Imports of turtle eggs into Malaysia from the Philippines have declined since 1974 (Table 43). Turtle eggs are collected on most beaches in India and were sold locally for US \$0.02 to US \$0.03/egg in 1977 (Bhaskar, this volume).

IMPORTS	1974	1975	1976	1977
INDONESIA (imported by Sarawak)	393,450	166,635	334,600	99,800
PHILIPPINES (imported by Sabah)	132,200	113,295	80,800	-
SINGAPORE	300	-	-	-
OTHER	-	-	-	15,900
TOTAL	527,250	279,930	415,400	115,700

EXPORTS	1974	1975	1976	1977
BRUNEI	76,000	22,100	2,000 (re-export)	10,020
SINGAPORE	-	164,700	-	-
TOTAL	76,000	186,800	2,000	10,020

Table 43. Malaysian Turtle Egg Trade

Source - published government statistics

Central America

Turtle egg collecting appears to be a thriving business in Central America (Cornelius, this volume). In 1975, Nicaragua exported 500,000 eggs to Guatemala. In addition, Nicaragua sent 567,000 eggs to El Salvador in 1975 and 648,000 eggs in 1976. Egg collecting is responsible for the decreased number of olive ridleys nesting in Nicaragua. A Legislative Decree published in 1977, prohibits the capture of turtles and their eggs for commercial gain.

El Salvador also plays a role in the international egg trade; it exported 18,956 eggs (at US \$2.50 - \$3.00/dozen) between September and December 1978 (Cornelius, this volume). In Guatemala, eggs are collected and sell in the open markets for US \$1.50/dozen, and egg poaching occurs in both Costa Rica and Panama (Cornelius, this volume).

B. STUFFED TURTLES

The main producers of stuffed turtles are tropical countries with a substantial tourist trade such as the Caribbean, Maldives, Seychelles, and Far East. Japan was reported to be the largest consumer of stuffed hawksbills in 1972 (Jap. Tort. Assoc., 1973). In 1973, the Japan Tortoise Shell Association reported that 60 percent of the turtles stuffed in Singapore were exported to Japan and the remainder were sold in Singapore to Japanese tourists. 1-2 year old hawksbills are captured opposite the Sumatra coast for this industry and the meat is sold to the local Chinese for food. In 1973, there were four or five processing plants in Singapore, each producing 3000-4000 stuffed turtles annually, giving an annual production of 12,000-20,000. Singapore also imported stuffed turtles from Vietnam so the numbers handled may have been even greater.

Indonesia

Turtles are stuffed in Indonesia, but are reported to be of lower quality than those stuffed in Singapore. In 1973, there were also four or five plants in Makassar specializing in hawksbill taxidermy and producing about 2000 per year. Nearly 10,000 turtles are handled a year by Makassar merchants and are sent to Djakarta, Ambon and Bali where they are sold to Japanese tourists and fishermen. (Jap. Tort. Assoc., 1973).

Philippines

A full scale cottage industry for stuffing turtles was started in 1970 in the Philippines, the main processing centres being in Cebu City and Mindoro. Fifty taxidermists each year process an average of 400 hawksbills and 100 green turtles in Cebu City alone. There is a minimum size limit of 30 cm across the plastron but the law is seldom enforced and many smaller ones are seen (Negeri and Tow, 1977).

Estimates for the numbers of turtles being stuffed annually in the

Philippines for the tourist trade vary from 10,000 (Canin, 1978) to 75,000 (Negeri and Tow, 1977). At Sinunoc 'thousands' of stuffed turtles were seen awaiting export destined mainly for Japan (Canopy, 1978).

Maldives and Seychelles

The Maldives and Seychelles in spite of legislation, still sell considerable numbers of stuffed turtles to tourists (Frazer, 1977). In 1978, it was reported that Japanese fishing fleets were capturing turtles in the Maldives and selling stuffed specimens in Japan (TRAFFIC (INT'L) files). The Department of the Environment in Great Britain received applications as recently as September 1979 for licenses to import stuffed turtles from the Seychelles.

Other Countries

Hirth (1971) reported a steadily growing demand by tourists in Hawaii for stuffed green turtles, and stuffed green turtles were seen for sale on Phuket in Thailand in 1975 (J.A. Burton, pers. comm.).

C. TURTLE OIL

The New World appears to be the major supplier of turtle oil today. Costa Rica exported 2400 liters to the United States in 1976 (Costa Rica CITES Report), and the U.S. imported a further 250 kg from the Cayman Turtle Farm in 1979 (TRAFFIC (USA) files).

PIOSA, the largest turtle fishery in Mexico, sells unprocessed turtle oil to Quimica Savel, S.A. for 4 pesos (US \$0.18/liter (1978), which then processes it and sells it for 67 pesos (US \$2.94)/1.5 liters to cosmetic manufacturers (Cliffton, pers. comm.). Most of the beauty cremes manufactured in Mexico are sold locally or exported worldwide. During the first quarter of 1979, Customs at New Orleans (U.S.) have confiscated 107 turtle products from U.S. tourists; over half were turtle cremes. In 1978, three cosmetic firms (Orlane, Estee Lauder, and Personality Beauty Products) sold products containing turtle oil in London (Canin, 1978).

V. TURTLE FARMING

Turtle farming has been considered for many years as a practical way of harvesting turtles commercially. The earliest attempt was made in 1907 (Canin, 1978), and like many subsequent ones, it failed.

In 1968, the first carefully planned sea turtle farm was established by American and British interests under the name of Mariculture, Ltd.. As a "seed" stock, several thousand adult green turtles were raised during the first year (Rebel, 1974). In 1973, 17,000 turtles were killed for the trade, averaging 3 years in age and weighing 45 kg; a turtle yielded approximately the following: 7.3 kg turtle steak, 16.4 kg meat offal for soup, 3.2 kg calipee, 5.0 kg fat (oil), .91 kg leather, and 6.8 kg shell (Rebel, 1974).

Following their first year, Mariculture imported 60,000 "doomed" eggs annually from the beaches of Suriname, and then hatched them in their facilities. These young turtles were either used to supplement the breeding stock or were killed and sold as turtle products. Initially, many yearling turtles were released to compensate for the eggs; it was thought that yearlings would have a better chance of surviving than hatchlings. However, this procedure was abandoned after the first year.

In 1975, Mariculture Ltd. declared bankruptcy and was sold to a West German industrialist, and was renamed the Cayman Turtle Farm. To date, The Cayman Turtle Farm (CTF) is still not self-sufficient, i.e. not all of the green turtle products sold are from turtles bred and hatched in captivity, but it maintains that it plans to be independent of wild eggs by 1980. In fact, this year the CTF has stopped buying green turtle eggs from Suriname (Reichart, pers. comm.).

The United States was the major importer of turtle meat up until June 1979 when the import of farmed CTF turtle products was banned (Tables 41 and 42). Now West Germany and England import most of the meat from CTF. Japan appears to be the major importer of both turtles skins

and shell from CTF (Tables 19 and 37).

Although the Cayman Turtle Farm exports have increased since 1976, there is little evidence that the exploitation of wild turtles is decreasing. For example, Japan's imports of CTF skin and shell have increased over the last few years (Tables 19 and 37), but there is no corresponding decrease in imports from other countries.

The large investment involved in raising captive turtles to a size suitable for exportation means that the retail products are going to be expensive; hence, they are restricted to a luxury market. At present the main criticism of turtle farms is that they encourage and maintain a market for turtle products, and in some cases, cause wild turtle products to be sold under the guise of "farmed" ones, at a time when the world population is seriously threatened by commercial exploitation.

Prior to the U.S. ban of CTF products, in July 1979, the Cayman Turtle Farm was suspected of importing wild turtle products in cartons that were repacked, labelled with the turtle farm emblem, and legally sold and imported into the United States (TRAFFIC(USA) files). The sale of wild turtle products to CTF and subsequent "laundering" may still occur. Both Mexico and Ecuador appear to be searching for buyers of their turtle meat, which has become increasingly difficult to market since the U.S. prohibited imports.

VI. THE EFFECT OF CITES ON THE SEA TURTLE TRADE

A. BACKGROUND AND CITES REGULATIONS

At the time of writing 54 countries have ratified the Convention on International Trade of Endangered Species of Wild Fauna and Flora (CITES). On 1 July, 1975, the CITES came into force. At that time only the hawksbill and Kemp's ridley turtle were listed on Appendix I, and all other marine turtles were included on Appendix II. This meant that although international trade in the Appendix I species was prohibited, the Appendix II species could be traded provided export licenses were issued by the countries of origin.

By the end of the first meeting of the parties in Berne, 1976, all marine turtles (except the flatback, Chelonia depressa, and the Australian population of green turtles), were listed on Appendix I of the Convention. These amendments came into effect on 2 February, 1977, thus, prohibiting commercial export and import of sea turtle products by party members. Currently, France has taken a reservation on the green and hawksbill turtles and Italy has one on the green turtle.

During the March 1979 CITES meeting in Costa Rica, the parties defined the term "farming" as animals both mated and born (hatched) in a captive environment. Under this definition many sea turtle products presently sold by the Cayman Turtle Farm are not farmed since the eggs were taken from wild populations and only hatched in their facilities; however, West Germany, the United Kingdom, and Switzerland, all CITES members, still import green turtle products from the Cayman Turtle Farm for their luxury soup industry, in belief that CTF will become self supporting.

B. IMPLEMENTATION AND NON-COMPLIANCE

At least 23 CITES party states have recently been involved in sea turtle product trade. Many countries have legislation covering marine turtles (see Navid, this volume), but data from official trade statistics and other sources show that domestic or CITES regulations are being enforced in very few countries.* A number of non-party states heavily involved in the trade have recently ratified (e.g. Indonesia, Kenya, Italy) or shown their intention to ratify CITES (Tanzania, Thailand, Mainland China). This may result in panic buying and selling as traders unload stockpiles before legislation comes into effect. This could account for the big increase in tortoiseshell trade on the world market in the last two years, as shown by our analysis of official statistics. While some countries have curbed their exports or imports since ratifying the Convention, other countries have not. There is evidence that the following countries may not be effectively enforcing the CITES: (Brackets refer to date of entry of CITES into force).

Indonesia - (March 1979)

Indonesia ratified CITES in December 1978, which may account for the huge exports that year as traders unloaded their stockpiles of raw tortoiseshell before the CITES came into force (Table 6). However, Japan imported over 2,000 kg of raw shell from Indonesia in July 1979, and has also imported 3,018 kg of turtle skin from Indonesia between January and July 1979 (Tables 19 and 37).

Malaysia - (January 1978)

Malaysia became a party member in January 1978, and yet, Singapore and Hong^{Kong} reported imports of over 9000 kg of raw tortoiseshell from Malaysia in 1978 (Tables 12 and 15).

Pakistan - (July 1976)

Whereas Pakistan once exported hawksbill shell, it now exports skins, probably from green turtles. Japan imported over 3,000 kg from Pakistan in the first seven months of 1979 (Table 37).

* It must be borne in mind when reading this section that even though a country may be party to CITES, its own legislation may not necessarily fulfill the requirements of the Convention.

India - (October 1976)

The CITES came into force in India in 1976, but in 1977 over 94,000 kg of shell was recorded in their exports (Table 8).

Kenya - (March 1979)

Kenya is a recent member to the CITES (1979), and it is still too early to tell if the Convention is being enforced. Previously, Japan imported approximately 2500 kg of tortoiseshell yearly from Kenya (Table 19).

Seychelles - (May 1977)

Japan has increased imports of tortoiseshell from the Seychelles since 1976 and has already imported over 1000 kg from the Seychelles in the first seven months of 1979 (Table 19).

Bahamas - (September 1979)

Japan doubled the amount of raw tortoiseshell it imported from the Bahamas between 1976 and 1978, and imports of shell in just the first seven months of 1979 exceeded total imports for 1978 (Table 19). This increased export to Japan in 1979 may be the result of unloading stockpiles prior to the Convention going into effect.

Panama - (November 1978)

It may be too early to determine whether CITES is being effectively enforced in Panama. Japan imported about 700 kg of raw tortoiseshell in 1979; however, this figure is low compared with the 6500 kg Japan imported from Panama the year before (Table 19).

Ecuador - (July 1975)

Ecuador, a CITES member since 1975, is the world's largest exporter of olive ridley skins. Over 100,000 kg were exported in the first half of 1978 (Green and Ortiz, this volume). Sea turtles are classified as fish in Ecuador and come under the jurisdiction of the Fishery Department. This Department does not feel bound by the rules of the Convention (Ortiz and Cantos, 1978; 1978 Ecuador CITES Report). Presently, the CITES Management Authority in Ecuador is working to solve this problem.

Nicaragua - (November 1977)

In 1978 and the first seven months of 1979, Japan imported about 2000 kg of raw shell and over 600 kg of turtle skins from Nicaragua (Tables 19 and 37).

West Germany - (June 1976)

West Germany, a party state since 1976, imported over 8000 kg of raw shell in 1977 (latest statistics available - Table 20). India exported over 20,000 kg to West Germany in 1977 (Table 8), and Fiji records the export of over 9000 kg of raw tortoiseshell to West Germany in 1978 (Table 10). West Germany also imports large quantities of green turtle meat from the Cayman Turtle Farm (W. Germany CITES Reports).

United Kingdom - (October 1976)

The United Kingdom also imports large quantities of green turtle meat from the Cayman Turtle Farm (UK CITES Reports). The U.K. ratified the CITES in October 1976 and decided that trade in CTF products could continue.

When the Convention first went into effect in the United Kingdom, and in many other countries, controls on worked tortoiseshell were not enforced on the grounds that the worked product was not a "readily recognizable part." In 1978 Friends of the Earth filed a suit against a London shop selling polished tortoiseshells; they lost the suit, but as a result, the U.K. Endangered Species Act was amended to restrict trade in worked products.

The U.K. ratification of the CITES included a number of dependent territories including Hong Kong and Belize, both of which are involved in the turtle product trade. Between January and July 1979 Japan imported 314 kg of raw tortoiseshell from Belize (Table 19). Unworked tortoiseshell trade is controlled in Hong Kong under the 1976 Animals and Plants (Protection of Endangered Species) Bill, and in theory, the import and export of turtle products is banned. Huge quantities of raw shell are still being recorded in their trade statistics however (Tables 15 and 16).

France - (August 1978)

France ratified the Convention in 1978. Prior to that France was a major importer of worked tortoiseshell and regularly imported raw shell (Tables 2 and 4). To ensure that this trade could continue, France placed a reservation on both green and hawksbill turtles. There are reports from Mexico that they still export turtle leather to France; these skins are probably from olive ridleys, a species on which France did not take a reservation.

Italy - (December 1979)

Italy ratified the CITES at the beginning of October 1979 with a reservation on the green turtle. It is a major center for the worked tortoiseshell trade and regularly imports raw tortoiseshell (Tables 4 and 20). Italy is also the European center of the turtle skin and leather trade, most of which is imported from Ecuador. It is difficult to understand why Italy took a reservation on the green turtle since it appears that they import mainly the skins of the olive ridley and the tortoiseshell of the hawksbill.

United States - (July 1975)

Since 1975 the United States has been trying to control imports of turtle products; yet, it appears that some products are still crossing the borders. India exported almost 3,000 kg of raw tortoiseshell to the U.S. in 1976 and 11,000 kg in 1977 (Table 8). Taiwan exported worked tortoiseshell to the U.S. in both 1977 and 1978 (Table 24). The number of turtle shell products seized during these years is not sufficient to account for the above volume (Table 34).

Other Countries

Over the last three years Costa Rica, Brazil, Canada, Sri Lanka Madagascar, Australia, and Papua New Guinea have all either exported or imported small quantities of raw or worked tortoiseshell. In general these amounts are insignificant compared to the volume of the international tortoiseshell trade.

Tanzania, Thailand, and Mainland China have recently expressed their intention to ratify the CITES. Japan's imports of raw tortoiseshell from Tanzania have increased rapidly recently, probably in anticipation of the ratification. If Kenya and Tanzania both enforce the CITES, considerable pressure could be taken off the turtles in the Indian Ocean. Thailand is one of the major exporters of raw tortoiseshell. If it ratifies, much pressure could be removed from the hawksbill turtles in Southeast Asia, especially if Indonesia and India, both CITES members, were to fully enforce the CITES also. Mainland China is involved primarily in the worked tortoiseshell trade, although it supplied raw tortoiseshell to Japan (Table 19). Hong Kong re-exports raw tortoiseshell to Mainland China (Table 16), and Singapore, Malaysia, and Fiji all import worked tortoiseshell from Mainland China (Tables 24, 28, and 31).

C. FUTURE OUTLOOK

Much could be done to reduce the commercial exploitation of marine turtles by improving the enforcement of legislation in countries which are parties to the CITES. In 1977 five party states (where CITES had already come into force) exported an estimated 141,375 kg or 43 percent of world exports of raw tortoiseshell (Table 1), and seven party states imported an estimated 93,107 kg or 34 percent of world imports of raw tortoiseshell (Table 2). Data for fewer countries are available for 1978, but at least five party states exported over 12,000 kg raw tortoiseshell, or 3 percent of world exports. In the first seven months of 1979 at least 10 percent (4752 kg) of Japanese imports of raw tortoiseshell came from CITES parties (Table 19), and over 70 percent of Japanese raw turtle skins were from CITES countries (Ecuador and Pakistan).

The countries least effectively enforcing the CITES appear to be Hong Kong, India, Pakistan, Malaysia, the Seychelles, West Germany, and Ecuador. Hong Kong has recently lifted the reservation it had on ivory and taken firm action controlling this trade. Pressure from the CITES Secretariat might encourage Hong Kong to take similar action over the tortoiseshell trade, particularly since no reservation was taken on sea turtles.

India was the major exporter of raw tortoiseshell in 1977 even though the Convention came into effect in 1976. No further information on turtle exploitation in India was available at the time of this writing. Pakistan has had difficulty in enforcing legislation, and may need assistance; an appeal for help in 1976 provoked little action (TRAFFIC (Int'l) files). The Seychelles have also had dif-

difficulty enforcing legislation and obtaining international support.

The problem of Ecuador was discussed above.

An increasing number of third world countries are ratifying the CITES, and if assistance can be given in enforcing it, the turtle product trade could be reduced considerably. There is little reason why the Convention should not be effectively enforced in the importing European countries. Also, until major consumers such as Japan and Taiwan ratify*, the market will always remain open.

* Countries party to the Convention also need to remove their reservations on sea turtles.

VII. NUMBERS OF TURTLES INVOLVED IN TRADE

Given the inaccuracy of the trade statistics and the fact that in many countries turtle products, such as tortoiseshell, may be stored for long periods before being exported, it is not possible to estimate actual catch numbers from trade data. However, the statistics presented in this paper point to an ever increasing quantity of turtle products on the world market at the same time as scientists report ever declining numbers in most turtle populations. This suggests that the turtle catch is in fact increasing in many areas.

A. HAWKSBILL TURTLES

Although hawksbills have traditionally supplied most tortoiseshell there is increasing evidence that other species may now be being used. The Cayman Turtle Farm (CTF) exports polished green turtle shell, and Ecuador may be exporting shell from olive ridleys. Tortoiseshell trade statistics do not differentiate among the species, and thus, the following estimates of turtles are assumed to be hawksbill:

The Japanese Tortoise Shell Association estimated that 0.68 kg of tortoiseshell is obtained from an adult hawksbill; Dr. Uchida (1977) estimated 0.91 kg per adult hawksbill.

	<u>VOLUME OF RAW TORTOISESHELL EXPORTS (Excluding CTF and Ecuador) from Table I.</u>	<u>NUMBER OF HAWKSBILL</u>
1976	232,835 kg	255,000 - 345,000
1977	288,390 kg	315,000 - 425,000
1978	387,719 kg	425,000 - 575,000

These figures must be interpreted with great care. They are not estimates of annual catches. Exports from a number of countries such as Indonesia, India, and the Philippines may well be tortoiseshell that has been stored; for example, a huge increase in catch effort would have been required to account for the huge increase in Indonesia's exports in 1977 and 1978, and it is more likely that at least part of the increase came from stored tortoiseshell. Catch numbers for Indonesia would have had to increase from 94,000 - 130,000 turtles in 1977 to 240,000 - 320,000 turtles in 1978 (estimated from export figures - Table 1).

The above figures are possibly overestimated, because re-exported tortoiseshell may be included in the total; these have been eliminated wherever possible, but a number of countries do not list these separately. The tariff heading for tortoiseshell includes such things as claws and waste of tortoiseshell, which may alter the weight obtained from a turtle - however, it is probably a small proportion of the total. It is conceivable that some countries record the weight of whole turtle shells under this heading. There is no evidence for this, but if this were to happen, it would greatly lower the number of turtles involved.

The tortoiseshell export for many countries has been calculated from other countries import data, and therefore, the size of the export figure is to some extent dependent on the number of countries for which import figures were available. Statistics for several countries are still not available for 1978, so that the 1978 world export total may be underestimated. The number of hawksbills involved in trade is probably even larger if other aspects of the trade are considered - worked tortoiseshell, stuffed turtles, and the souvenir trade.

B. OLIVE RIDLEY AND GREEN TURTLES

From 1970 to 1977 a minimum of 900,000 olive ridleys were taken on the Eastern Pacific Coast by Mexico and Ecuador to supply the skin and leather trade (Table 44; Green and Ortiz, this volume). Skins from an estimated 100,000 ridleys were exported in 1978 by Ecuador, and during the same year, Mexico captured 50,000 ridley turtles in the state of Oaxaca alone.

Mexico

The Mexican turtle fishing industry is run almost exclusively by Antonio Suarez who owns three processing plants on the Pacific coast: PIOSA (Pesquera Industrial de Oaxaca) at San Augustinillo, Oaxaca; IPOSa (Industria Pesquera Occidental, S.A.) at Barre Navidad, Jalisco; and PROPOSA (Procesador del Pacifico, S.A.) at Lazarro Cardenas, Michoacan.

Table 44 provides the volume and number of turtles purchased from legal and illegal fishery cooperatives by the three plants from 1965 to 1977. In every year there is a large discrepancy between the number of turtles purchased from legal fishery cooperatives (which were reported to Mexico's Department of Fishery) and the actual number of turtles bought. From 1966 to 1977 an average 63,333 turtles, primarily ridleys, were captured in the state of Oaxaca. In the state of Michoacan, 12,692 turtles per year, mainly greens, were captured from 1965 to 1977, and from 1968 to 1976, 53,333 green and olive ridleys were caught annually in the state of Jalisco. The total number of olive ridley and green turtles caught per year in these three states was nearly 130,000 up until 1977.

PIOSA took 50,000 olive ridleys in 1978 at Escobilla (Cliffton, pers. comm.), of which 90 percent were gravid females. In 1977 the catch had been 17,500 over the government quota; in 1978 it was

TABLE 44. TURTLES CAPTURED IN MEXICO BY PIOSA

	OAXACA				MICHUACAN				JALISCO			
	Take reported to govt.	1000 kg	#turtles	Total take 1000 kg	Take reported to govt.	#turtles	1000 kg	Total take 1000 kg	Take reported to govt.	#turtles	1000 kg	Total take 1000 kg
	#turtles											
1965	-	-	-	-	447	17	570	15,000	-	-	-	-
1966	2,737	104	60,000	2,280	26	1	570	15,000	-	-	-	-
1967	84,368	3,206	120,000	4,560	1,447	55	950	25,000	-	-	-	-
1968	9,053	344	65,000	2,470	1,526	58	1,140	30,000	16,687	634.11	150,000	5,700
1969	53,131	2,019	60,000	2,280	684	26	190	5,000	1,037	39.42	10,000	380
1970	41,053	1,560	50,000	1,900	474	18	190	5,000	1,055	40.08	20,000	760
1971	-	-	25,000	950	-	-	570	15,000	-	-	40,000	1,520
1972	-	-	30,000	1,140	-	-	380	10,000	-	-	40,000	1,520
1973	53,046	2,015.74	90,000	3,420	-	-	570	15,000	16,947	643.97	100,000	3,800
1974	25,493	968.73	60,000	2,280	987	37.5	380	10,000	19,830	753.54	40,000	1,520
1975	58,575	2,225.84	70,000	2,660	889	33.79	380	10,000	10,896	414.05	40,000	1,520
1976	40,407	1,535.46	55,000	2,090	1,819	69.11	190	5,000	20,057	762.16	40,000	1,520
1977	56,706	2,154.85	75,000	2,850	575	21.86	190	5,000	-	-	-	-
Total	424,569	16,133.62	760,000	28,880	8,874	337.26	6,270	165,000	86,509	3,287.33	480,000	18,240
Avg./Yr.	35,381	1,344.46	63,333	2,406.66	683	25.943	482.3	12,692	9,612	365.258	53,333	2,207

Note: The conversion factor from volume to number of turtles is 38kg/1 turtle.

Source: PIOSA Official Records.

16,000 over the quota. Suarez has requested government approval for a take of 24,500 ridleys for 1979 (Felger, 1979).

The government quota for green turtles in 1978 was 18,000, but PIOSA only took 5000, mostly adult males (Cliffton, pers. comm.) The 1979 quota had been set at 9000 green turtles, but Suarez has agreed not to harvest them. Instead, he donated US \$30,000 to hire guards to patrol the beaches at Michoacan to discourage poaching of eggs (Felger, 1979).

Ecuador

In 1977 an estimated 59,000 to 67,000 olive ridleys were killed for their skins and secondarily for meat in Ecuador (Green and Ortiz, this volume). In 1978 an estimated 100,000 were killed which represents a considerable increase from the previous year.

Since 1970 at least six companies (Expromar, Neptuno, Exporklore, Inexpac, Shayne, and Songa) have exported turtle products (salted skins and frozen meat). Today, Neptuno, Expromar, and Exporklore still export turtle products, mostly to Japan and Italy (Green and Ortiz, this volume). Expromar is one of the largest commercial enterprises, and buys and processes most of the olive ridleys caught in the San Mateo region. Fishermen receive US \$10.40 per turtle and an additional US \$0.56 is paid to drive the turtles to the factory (Ortiz and Cantos, 1978). At Expromar, an average 150 turtles are processed each day which results in a monthly production of about 9,000 pieces of skin, i.e. 4500 turtles, and 20,455 kg of meat (an estimated 4.55 kg of meat per ridley). La Compania Neptuno, a processing plant in Jaramijó, buys up to 500 turtles per day from fishermen on the Northern coast of Ecuador (Ortiz and Cantos, 1978), and in 1978 alone, Neptuno exported 6,650 pieces of skin (representing 3325 ridleys) to Italy (Ortiz and Cantos, 1978).

Other Countries

The United States imported 94,466 kg of turtle meat in 1977 and 120,874 kg in 1978 (U.S. Customs statistics). An average of 26.9 kg of meat and calipee is obtained from a CTF green turtle (Rebel, 1974); so 3512 and 4493 farmed turtles, respectively, were killed for the meat trade during those two years.

The polished green turtle shell is the most valuable product exported by the Cayman Turtle Farm (Reichart, pers. comm.). In 1978 Japan imported 7500 kg of shell from CTF representing over 1100 green turtles (6.8 kg shell/turtles - Rebel, 1974). Many other countries import CTF turtle shell, but figures are not available.

Based on Japan import data, a number of Southeast Asian countries are beginning to export turtle skins (Table 37). We believe the skins are from green turtles since they have a much lower value than Mexican and Ecuadorian ridley skins and an even lower value than the farmed green turtle skins from the Cayman Turtle Farm.¹ A green turtle skin weighs 3.0 kg to 3.4 kg (Hirth and Hollingworth, 1973); thus, from 1976 to 1978 between 13,833 and 15,677 green turtles were killed in Southeast Asia (excluding Singapore), and the skins imported by Japan. As mentioned earlier, skin may be the secondary product of the green turtle; the turtles killed primarily for meat and locally consumed.

¹ The exception being Singapore whose skins have a value similar to the ridley's.

VIII. CONCLUSIONS

The present size of the international tortoiseshell trade gives considerable cause for alarm. Although European countries may still play an important role in the worked tortoiseshell trade, the Far East, in particular Japan, is the main consumer. The Japan Tortoise Shell Association (JTSA) concluded in their report in 1973 that if Japan lowered its volume of imports, countries doing the exporting would automatically lower their catch of hawksbills. Unfortunately, no attention has been paid to this recommendation.

The annual average exports of tortoiseshell from Indonesia, 1976 to 1978, was 125,512 kg which represents between 130,000 and 180,000 turtles. The Philippines average exports for that period was 15,627 kg which represents 17,000 to 23,000 turtles. Thailand and India also report large volumes of raw tortoiseshell exports in 1976 and 1977, but 1978 figures are not yet available. The status of nesting population of hawksbill in Southeast Asia is virtually unknown (Ross, 1979), but in 1973 the JTSA reported that people involved in the trade claimed signs of hawksbill depletion.

The hawksbill has probably never maintained a high density and not a single large population is known (Ross, 1979). Ross lists a number of priority areas for this species, many of which correspond with the regions of greatest exploitation revealed in this paper: India, Thailand, Indonesia, the Philippines, the Seychelles, and the Caribbean. The flourishing souvenir trade in the Pacific Islands and the large exports of tortoiseshell from Fiji suggest that the Pacific should also be made a priority region. In 1972 Bustard reported that hawksbills were already depleted in Fiji. More effort should be made to inform the public of the detrimental results of buying turtle shell souvenirs when traveling abroad.

The main threats to the hawksbill now are probably the expanding and continuing trade in tortoiseshell in the Far East and the increase in tourism in tropical areas of the world. Data in this paper further stresses the importance of the recommendations made by Ross (1979) for the hawksbill: "An effective ban on international trade in this species is an absolute necessity for its survival. Immediate surveys and rescue programs are needed for the areas of major exploitation."

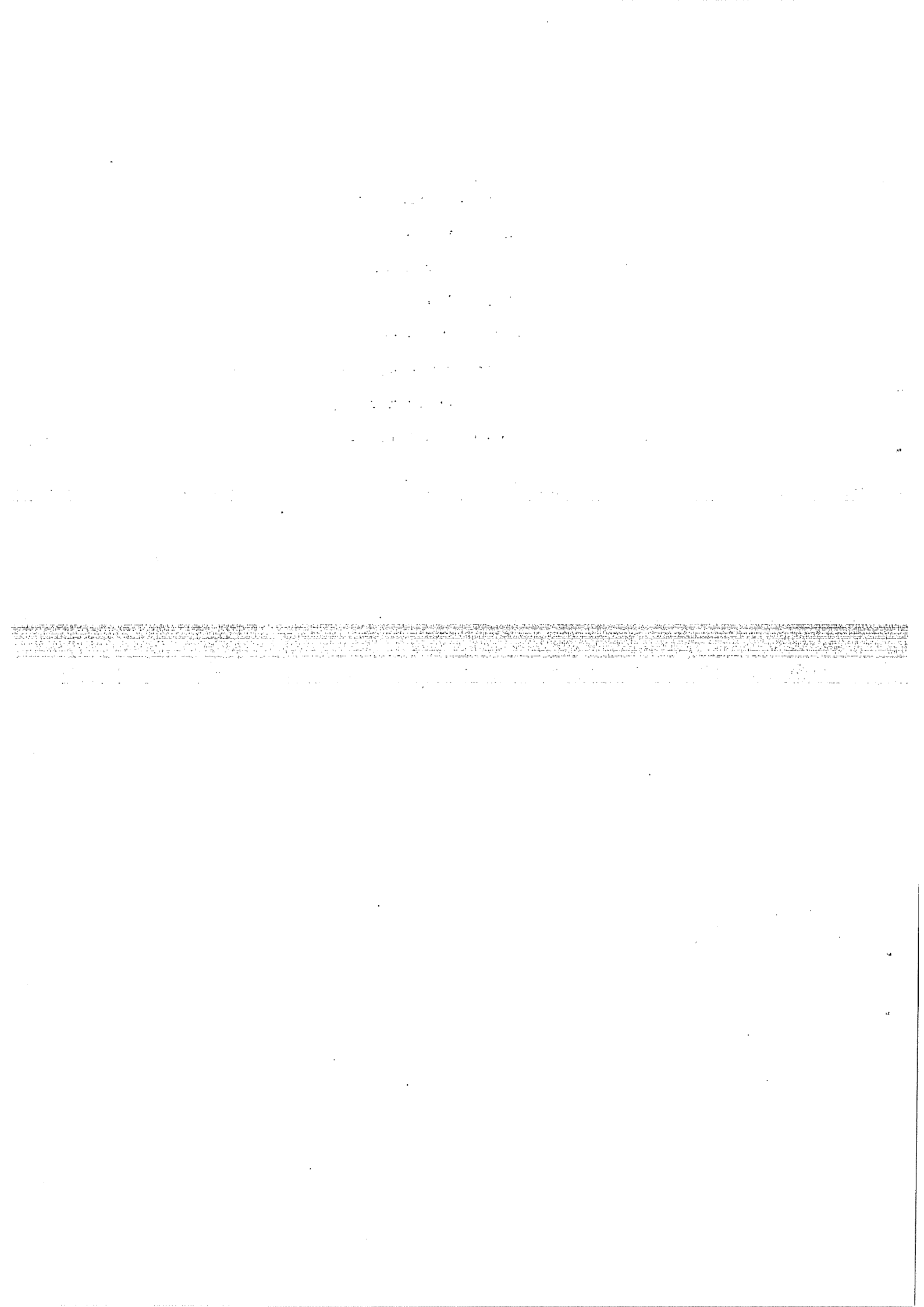
Pacific ridleys are seriously threatened throughout their range. The main pressures from trade are on the East Pacific populations where it is likely that the five nesting areas on the West coast of Central America support the majority of turtles. Their habit of nesting in huge concentrations means that they are particularly vulnerable to intense commercial exploitation.

Mexico had the largest population of olive ridleys: an estimated 485,000 adults in 1978 (Marques, Villanueva, and Peñaflores, 1976), but due to exploitation for commercial trade, the population is decreasing at an alarming rate. It has been estimated that if this take continues unabated, the olive ridley rookery would cease to exist on the Pacific coast of Mexico by 1985 (Felger and Clifton, 1978).

In Ecuador the CITES Management Authority is at odds with the Fishery Department who control legislation of sea turtles. The companies processing turtles feel that the ridleys are a migratory species, and if they do not utilize their products, other neighboring countries will (Green and Ortiz, this volume). While most of the world's attention is focused on Mexico and their large harvest of olive ridleys, Ecuador actually takes more than twice as many.

The major pressure on green turtles may be the take of adults and eggs for local consumption. Although little data is available on international trade in green turtle products, the exploitation

of this species in Central America gives cause for concern. If the commercial take continues unabated, by 1980 the green turtle is likely to be extinct as a nesting population on the Pacific coast of Mexico (Felger and Cliffton, 1978). In Southeast Asia green turtles are threatened by the market in Japan for skin and probably meat. If other areas exporting green turtle products were to close as a result of controls and legislation, Southeast Asia may become a more important supplier for this trade.



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Table 45. Discrepancies between total published export figures and estimated export figures (kg)

Country	1976		1977	
	Published	Estimated	Published	Estimated
Indonesia	71 373	28 590	85 577	26 083
Thailand	23 859	18 496	37 941	21 090
India	21 460	6 044	94 773*	2 424
Philippines	15 607	8 707	27 905	26 789

* = 51,500 kg went to Kuwait for which country import figures are not available

Table 46. Discrepancies between total published import figures and estimated import figures (kg)

Country	1976		1977	
	Published	Estimated	Published	Estimated
Japan	46 060	70 782	45 818	96 281
Singapore	4 140	32 415	21 002	32 920
Fed.Rep.Germany	3 937	82 459	8 281	21 816
Italy	2 500	21 557	3 000	22 775
Spain	1 531	10 159		

Published figures taken from government statistics

Estimated export figures = total of imports from the country, using all importing countries with available figures

Estimated import figures = as for estimated exports but using data for exporting countries

Some of these discrepancies may be explained if Japan records imports of stuffed turtles and polished shells under the worked tortoiseshell tariff heading and the exporting countries record then under the unworked tortoiseshell heading. For example, Japan records

higher volumes of worked tortoiseshell coming from Indonesia than the latter records exporting to Japan (Tables 22 and 33).

In a few cases Japanese imports of raw tortoiseshell are higher than those for the corresponding exporting country. For example, imports of 2850 kg are recorded from Kenya in 1978 but Kenya records exports of only 761 kg to Japan. This could partially be explained if an intermediary transshipment country is involved, which Kenya is recording as country of destination; Japan is known to record country of origin usually rather than country of consignment.

Discrepancies are to be found in statistics for a number of other countries. In 1976 Ecuador recorded exports of 10,000 kg of raw tortoiseshell to West Germany; imports of raw tortoiseshell into West Germany that year totalled only 4000 kg according to their official statistics, and in 1977 only 8000 kg. India recorded enormous exports to West Germany (over 20,000 kg) and Japan (8000 kg) in 1977 which were not recorded by the importing countries. European countries have made no mention of Fiji in their import statistics and yet in 1976 Fiji recorded exports of over 10,000 kg to West Germany, over 20,000 kg to Italy and over 10,000 kg to Spain.

Similar discrepancies are to be found in the data for the turtle skin and leather trade. Mexico records zero exports of raw turtle skin to Japan in 1975 and 1976 (Table 35) but Japan records imports of 35,000 kg in 1976 (Table 37), and considerable volumes in 1977 and 1978. This is almost certainly illegal trade as Mexico has a ban on the export of raw turtle skins.

There is also often very little correlation between published government statistics and the CITES annual reports, the former recording larger figures than the latter. For example in 1977 West Germany recorded the import of 55 kg of turtle shell from the Netherlands in its CITES report. Customs statistics for West Germany recorded the import of 8281 kg of raw

The United Kingdom CITES report for 1976 recorded zero imports of raw tortoiseshell and re-exports of 850 kg. The published government statistics recorded the import of 320 kg and the export of 1742 kg of raw tortoiseshell. In 1977 the US CITES report recorded the import of 138 pairs of turtle leather shoes from Mexico, whereas US Customs recorded the import of 21,732 pieces, 10,150 squares and 2987 articles of turtle leather from Mexico.

2. Values of Tortoiseshell

Although trade statistics record values for the imports and exports of commodities these often do not reflect the real value of the products. This is partly due to the inaccuracy of international trade figures but also to the problem of over- and under-valuing (Bagwhati, 1974). Exports may often be under-valued and imports over-valued in order to illegally transfer capital from one country to another. This has been found to be particularly prevalent in Indonesia. A further problem is that the value of an export from one country may be much lower than its value on importation into another country if transportation costs and taxes are high. As mentioned in the introduction, tortoiseshell varies in value according to the part of the carapace it comes from and the species involved. These factors are not identified in trade statistics but may account for the wide variation to be seen in tortoiseshell values in different countries, and the considerable fluctuations which may occur between years.

Values of exports of raw tortoiseshell from Indonesia and the Philippines are very low and fluctuate considerably, and probably so not represent true values. Exports from Indonesia in 1978 were recorded as being worth US \$1.40; those from the Philippines were worth US \$2.40. Exports of worked tortoiseshell tend to have higher values but as other materials may be included in the volume, the value per kg. may be fairly low. The average value of worked tortoiseshell exports from Indonesia was US \$3.76 and from the Philippines US \$12.20 in 1978. The value of exports of raw tortoiseshell

from Fiji has risen steadily from US \$0.1 in 1974 to US\$0.74 in 1978.

Japanese imports of raw tortoiseshell from Fiji are much higher however, averaging about US \$ 80 per kg since 1972.

Values of imports of tortoiseshell into Japan are considerably higher. The average value of raw tortoiseshell imports has risen from 5000 yen/kg (US \$14) in the 1960s to over 19,000 yen/kg (US \$88) in the first half of 1979 (Table 47).

Table 47 Values of Japanese Imports of Tortoiseshell

1,000 yen / kg

year	Unworked		Worked	
	Bekko*	Claws & waste	Bekko*	Other
1964	5.0	7.1	1.9	1.3
1965	5.3	3.1		
1966	5.4	1.9	2.7	1.4
1967	5.8	13.0		
1968	6.1	3.4	3.0	1.6
1969	7.0	0.6		
1970	7.2	1.0	3.2	1.9
1971	8.8	3.1		
1972	9.3	1.6	2.6	1.6
1973	15.2	8.3	3.0	1.2
1974	16.8	0.8	3.5	1.3
1975	15.5	7.4	3.4	1.3
1976	17.2	2.5	3.6	1.2
1977	17.7	4.4	3.1	1.2
1978	18.4	7.3	2.8	1.1
1979*	19.1	11.4	3.0	0.8

* Jan-Jul only

Values calculated from volumes and values in published government statistics

* Bekko is the shell of the hawksbill turtle

Imports from the Caribbean tend to have the highest value. For example the value of imports from Cuba has risen steadily from 7000 yen/kg (US \$19) in 1964 to 40,000 yen/kg (US \$184) in 1979. In 1977 the value of imports from the Bahamas was the highest ever recorded, 53,400 yen/kg (US \$184). Imports from the Cayman Islands have a lower value than those from other Caribbean islands (US \$94 in 1979) as the shell is green turtle shell rather than hawksbill shell. The value is higher than that for Asian shell however possibly because "farmed" green shell is of a quality approaching that of hawksbill shell.

Imports of Philippine tortoiseshell have the lowest value, averaging about US \$40. Worked tortoiseshell imports into Japan have a lower value than raw tortoiseshell imports (Table 47), and vary according to country of origin. Imports from Europe have the highest value; imports from other Far Eastern countries average about US \$80/kg.