

WORLD SHARK CATCH, PRODUCTION & TRADE 1990 – 2003

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Australian Government
**Department of the
Environment and Heritage**

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In response to CITES Decisions 12.47, 13.42 and 13.43, the following paper, “World shark catch, production & trade 1990 – 2003” has been developed by TRAFFIC Oceania, supported by the Australian Government Department of the Environment and Heritage.

The paper recognises the utility of focussing on the top 20 shark fishing States as noted at the 20th Meeting of the Animals Committee (AC20), to most effectively identify data gaps and thus facilitate the implementation of the United Nations Food and Agriculture Organisation’s (FAO) International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks).

This paper examines trends in the catch, production and trade of sharks and shark products. In the main the analysis focuses on the period between 1990 and 2003 although some longer time series are provided for reference purposes. The analysis is based on data obtained from the FAO’s Fishstat Plus databases; *Capture production 1950-2003*; and *Commodities Production and Trade 1976 – 2003* (FAO Fisheries Department, 2000). As at end February 2006 the latest data available from the data base was for the 2003 year. The paper also includes discussion of apparent anomalies in the data, identifies a range of issues requiring further analysis and suggests possible ways to improve the quality and reliability of the data.

For the purposes of this analysis the term ‘shark’ is taken to include species of sharks, rays, chimaera, skates and dogfish. The terms catch, production, exports and imports in this instance imply reported catch, production, exports and imports. Catch data reported by FAO are reported in tonnes as landed weight and then converted to liveweight. Catch data do not include discards. Quantities of traded products reflect product weight.

In considering the data provided here it is important to note that trends in catch, production and trade may be influenced by a range of factors including:

- Abundance
- Market demand

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- Fisheries management and conservation regulations that are imposed on shark species specifically or in fisheries in which shark is taken as bycatch
- Changes in the extent, accuracy and species breakdown of reporting.

This paper makes no attempt to explain the contribution of these factors to the trends indicated by the data. In addition this paper does not attempt to verify the FAO data through the examination of any other sources of data.

TOTAL CATCH

Between 1950 and 2000 there has been more than a fourfold increase (220%) in reported catch of sharks. Catch by the top 20 catching countries between 1950 and 2003 is summarised in Table 1. The period of greatest increase during those 50 years was between 1960 and 1970 (40%). The rate of increase showed a declining trend in the 1970s and 1980s (25 and 15% respectively) but returned to around 25% in the 1990s. Catches trended upwards in the 1990s but the rate of increase slowed in the latter half of the decade. Catch by country by year from 1990 to 2003 is provided in Appendix 1.

Table 1

Capture production by top 20 catching countries 1950-2003 and 1990-2003 (tonnes). Individual year totals and a total for 1950-2003

Country	1950	1960	1970	1980	1990	2000	2001	2002	2003	TOTAL 1950-2003
Top 20 1950-2003										
1. Japan	100 700	83 900	61 544	54 298	32 103	31 873	27 696	32 879	24 906	3 035 820
2. India	30 000	35 600	44 100	49 656	51 230	76 057	67 971	66 923	63 266	2 677 213
3. Indonesia	1000	6100	10 100	42 855	73 272	113 626	110 311	106 398	120 670	2 267 523
4. Taiwan Province of China	9000	17 100	36 300	52 260	75 731	45 923	42 355	44 412	67 432	2 030 447
5. Pakistan	4800	6600	34 300	64 975	40 043	51 170	49 269	49 904	33 248	1 866 822
6. France	17 600	26 300	28 017	35 267	26 310	24 952	25 799	23 136	22 547	1 480 088
7. UK	29 400	29 340	22 400	21 355	21 776	17 389	19 346	16 832	19 581	1 332 363
8. Mexico		4700	9100	26 551	44 880	35 260	32 718	30 888	30 872	1 089 646
9. Norway	12 000	30 000	43546	15 572	11 117	2857	2921	1901	2020	1 033 527
10. Spain	10 800	14 100	7500	2052	14 163	82 349	77 103	62 996	61 613	1 023 565
11. Korea, Republic of	11 500	10 900	16 300	18 029	15 721	15 394	11 131	11 961	12 567	830 862
12. Sri Lanka	500	8100	12 500	14 170	15 263	23 890	24 110	25 340	21 290	787 766
13. USA	2613	2795	1700	11 221	34 576	30 935	22 072	24 076	35 372	750 990
14. Peru	1300	7200	19 000	13 277	12 266	15 405	11 870	16 633	8613	643 689
15. Malaysia	2500	3000	6600	10 855	17 360	24 521	25 209	24 167	27 948	619 672
16. USSR		100	26 376	12 649	-	-	-	-	-	588 017
17. Thailand	2000	4300	11 400	9456	10 950	24 689	24 278	30 208	24 724	580 727
18. Nigeria	1300	2000	8300	21 476	8402	13 238	14 626	13 449	15 179	457 656
19. New Zealand	1000	2000	2600	6590	10 108	17 718	19 796	21 238	18 459	383 979
20. Portugal	3100	2200	1900	4095	26 563	12 783	13 854	14 016	16 999	380 556
TOTAL	241 113	296 335	403 583	486 659	541 834	660 029	622 435	617 357	627 306	

Source: *Capture production 1950-2003*. FAO Fisheries Department 2000

Catch peaked at 869 544 t in 2000. However, catch has been relatively stable since 1997 at an average of around 850 000 t. Catch in 2003 was 856 699 t, down 1.4% from the peak in 2000, but slightly above catches in 2002 and 2001. Indonesia, Taiwan, Province of China and the USA accounted for most of the increased catch in 2003 (see Table 1).

Catch increased by 22% between 1990 and 2003 but there was little change in the countries involved over that period. While the number of countries reporting shark catch increased by nearly 25%, around 20 countries accounted for 80% of the catch over the period (see Table 2). Of those five accounted for over 40%. There was no change in the top three catching countries over the period with Indonesia, Taiwan, Province of China and India together accounting for just under 30% of the world catch at both the beginning and the end of the period. Trends in catch of the top 10 catching countries in 2003 are shown in Figure 1.

Notable points during the 1990-2003 period are:

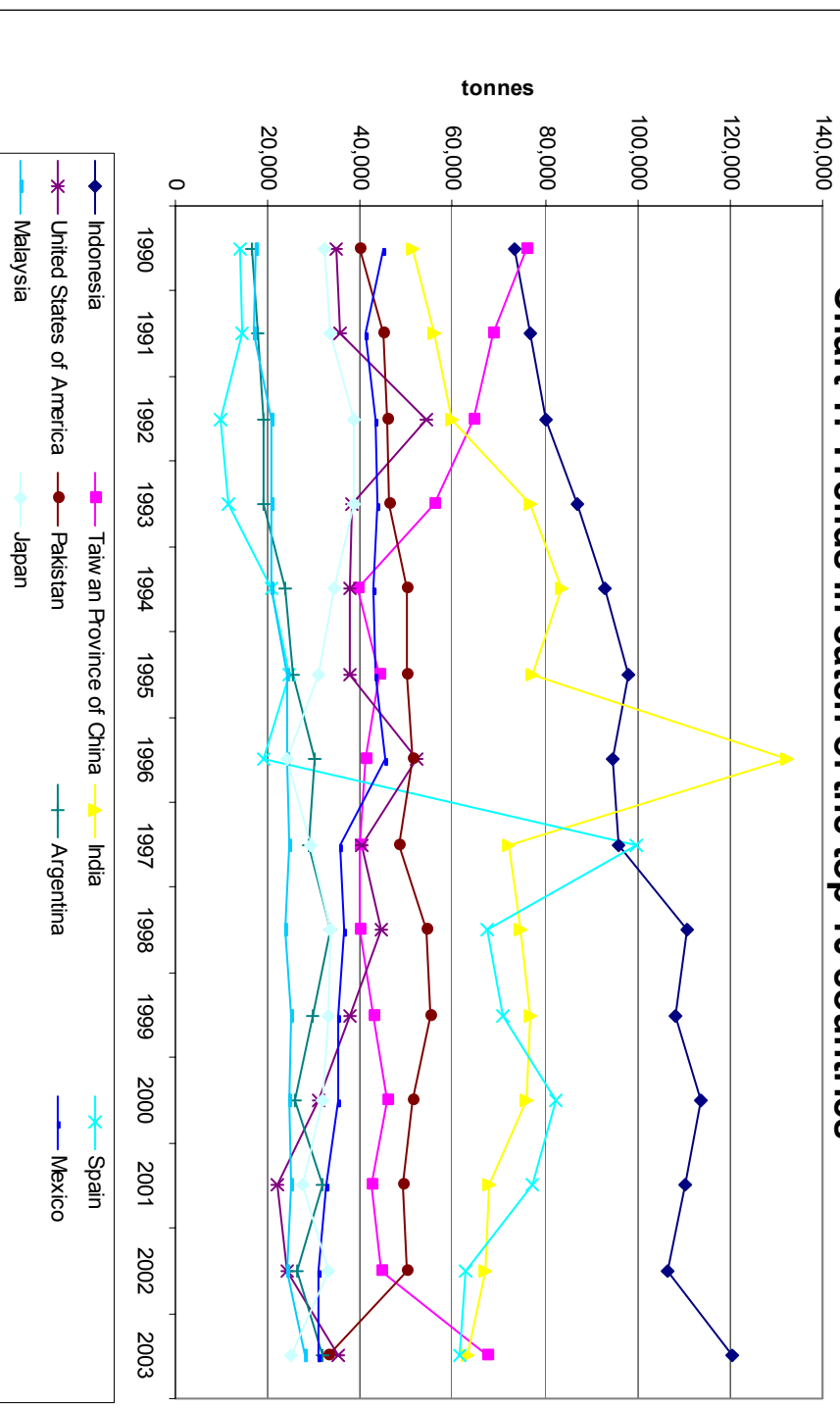
- the increased share of the catch attributable to Indonesia (from 10.5 to 14.1%) and to Spain (from 2.0% to 7.2%)
- Indonesia's 2003 catch of 120 670 t was its highest on record
- Taiwan, Province of China's catch of 67 432 t represented a return to its catch levels of the early 1990s, after being between 40 000 and 45 000 t in the period between 1994 and 2002.
- Catches in Malaysia continue to trend upwards. Its 2003 catch of 27 948 t was its highest over the 1990-2003 period
- Pakistan's 2003 catch of 33 248 t was its lowest over the 1990-2003 period and 40% lower than its peak catch in 1999.

Table 2

Top 20 catching countries in 1990 and 2003

1990		2003	
Country	%	Country	%
1. Taiwan, Prov. of China	10.83	1. Indonesia	14.09
2. Indonesia	10.48	2. Taiwan, Prov. of China	7.87
3. India	7.33	3. India	7.38
4. Mexico	6.42	4. Spain	7.19
5. Pakistan	5.73	5. USA	4.13
6. USA	4.95	6. Pakistan	3.88
7. Japan	4.59	7. Argentina	3.7
8. Portugal	3.80	8. Mexico	3.6
9. France	3.76	9. Malaysia	3.26
10. Brazil	3.53	10. Japan	2.91
11. United Kingdom	3.12	11. Thailand	2.89
12. Philippines	2.64	12. France	2.63
13. Malaysia	2.48	13. Sri Lanka	2.49
14. Argentina	2.39	14. United Kingdom	2.29
15. Korea, Republic of	2.25	15. New Zealand	2.15
16. Sri Lanka	2.18	16. Portugal	1.98
17. Spain	2.03	17. Iran	1.86
18. Peru	1.75	18. Nigeria	1.77
19. Norway	1.59	19. Brazil	1.47
20. Thailand	1.57	20. Korea	1.47

Chart 1 : Trends in catch of the top 10 countries¹



1. Note: some parts of this graph may not reproduce correctly in black and white print

Source: Capture production 1950-2003. FAO Fisheries Department 2000

AREA OF CATCH

The Pacific Ocean remains the major source of the global shark catch, accounting for 40% and 38% in 1990 and 2003 respectively. The Western and Central Pacific Ocean continues to account for over 20% of the total world catch. The Atlantic Ocean's contribution to global catch fell slightly from 36% in 1990 to 32% in 2003, with most of that catch taken from the Northeast Atlantic. The share of the catch from the Indian Ocean increased from 22 to 29% over the period.

SPECIES CAUGHT

In 2003, 106 categories of shark were identified in FAO Shark Catch Data (Box 1). However, of the catch reported only 15% is recorded by species. There was no improvement in this statistic between 1990 and 2003. This situation makes it virtually impossible to identify catch trends of species which are of special interest due to their inherently higher vulnerability to overfishing.

In 2003, approximately 45% of the total shark catch is categorised as Sharks, rays, skates etc nei⁵; a further 24% as Rays, stingrays, mantas nei; 6% as Raja Rays nei; 4% as Requiem Sharks nei, 4% as Blue Shark and 3% as Piked Dogfish.

The data suggest marked increases in the catch of Blue Shark *Prionace glauca* from around 19 000 t in 1997 to 30 000 t in 2003. Catch of Shortfin Mako *Isurus oxyrinchus* also doubled over that period to peak at 5800 t in 2003. The catch of Rays, stingrays and mantas nei, continues to trend steadily upwards climbing from 130 000 t in 1990 to peak at 207 000 t in 2003.

While the extent of and trends in catch shark species of heightened vulnerability to overfishing is masked by the low level of species-specific reporting, the available data show that between 1990 and 2003 catches of seven species listed as vulnerable on the IUCN Red List and two species listed as Near Threatened (IUCN, 2004) were recorded. Trends in catch of these species are shown in Table 3.

The data indicate that catch of species including Angelshark *Squatina squatina*, Gulper Shark *Centrophorus granulosus* and Giant Guitarfish *Rhynchobatus djiddensis* fell between the late 1990s and 2002 but increased again in 2003. Of more concern is the increasing catch of Leafscale Gulper Shark *Centrophorus squamosus*. Between 1990 and 2001 the annual catch average 1700 t. In 2002 and 2003 catch of this vulnerable species was over 3000 t. Between 1990 and 2001 Portugal caught an average of 1700 t per year of this species. In 2003 Portugal's catch peaked at 2500t but dropped back to 720 t in 2003. Spain and the UK have recorded significant catches only since 2002 (700 and 1400 t respectively in 2003).

An even more dramatic increase in the catch of the Near Threatened Portuguese Dogfish *Centroscyrnus coelolepis* is apparent. Catches averaged 1600t between 1990 and 2000 but have more than doubled since 2001, peaking at 4230 t in 2003. While Portugal's catch has dropped from a peak of

⁵ Nei stands for "not elsewhere included"

1800 t in 1997 to 770 t in 2003, the catch of France, Ireland and the United Kingdom has increased in recent years. The UK catch increased from 54 t in 1996 to 1900 t in 2003.

Box. 1

Shark categories identified in 2003 FAO Shark Catch Data

Angelshark	Angelsharks, sand devils nei	Angular roughshark
Arctic skate	Antarctic starry skate	Argentine angelshark
Basking shark	<i>Bathyraja irrasa</i>	<i>Bathyraja meridionalis</i>
Bathyraja rays nei	Bigeye thresher	Birdbeak dogfish
Black dogfish	Blackmouth catshark	Blacktip shark
Blonde ray	Blue shark	Blue skate
Bluntnose sixgill shark	Broadnose sevengill shark	Brown smooth-hound
Cape elephantfish	Catsharks, nursehounds nei	Chimaeras, etc. nei
Chola guitarfish	Common eagle ray	Common stingray
Copper shark	Cuckoo ray	Dark ghost shark
Dogfish sharks nei	Dogfish sharks, etc. nei	Dogfishes and hounds etc
Dusky catshark	Dusky shark	Dusky smooth-hound
Eagle rays, nei	Eaton's skate	Elephantfishes nei
Giant Guitarfish	Ghost shark	Great white shark
Greenland shark	Guitarfishes, etc. nei	Gulper shark
Hammerhead sharks, etc. nei	Kitefin shark	Lanternsharks nei
Leafscale gulper shark	Little sleeper shark	Longfin mako
Longnose velvet dogfish	Longnosed skate	Mako sharks
Mantas	Murray's skate	Narrownose smooth-hound
Nurse shark	Nursehound	Oceanic whitetip shark
Pacific guitarfish	Pacific sleeper shark	Piked dogfish
Porbeagle	Portuguese dogfish	Rabbit fish
Raja Rays nei	Ratfishes nei	Rays and skates nei
Rays, stingrays, mantas nei	Requiem sharks nei	Sailfin roughshark
Sailray	Sandbar shark	Sand tiger shark
Sandy ray	Sawfishes	Sawsharks nei
Scalloped hammerhead	Shagreen ray	Sharks, rays, skates, etc. nei
Shortfin mako	Silky shark	Small-eyed ray
Small-spotted catshark	Smooth hammerhead	Smooth-hound
Smooth-hounds nei	Spiny butterfly ray	Spot-tail shark
Spotted estuary smooth-hound	Spotted ratfish	Spotted ray
Starry ray	Stingrays, butterfly rays nei	Stingrays nei
Straightnose rabbitfish	Thornback ray	Thresher
Thresher sharks nei	Tiger shark	Tope shark
Torpedo rays	Various sharks nei	Velvet belly
Whip stingray		

Table 3

Trends in Catch (tonnes) of identifiable ‘Vulnerable’ and ‘Near Threatened’ species as categorized within the IUCN Red List

Species	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Vulnerable														
Angelshark (<i>Squatina squatina</i>)	-	10	10	53	18	35	18	34	44	25	20	22	16	41
Giant guitarfish (<i>Rhinchobatus djiddensis</i>)	.	.	.	.	.	.	.	880	593	110	40	56	44	134
Great white shark (<i>Carcharodon carcharias</i>)	-	-	-	-	-	-	-	-	-	<0.5	2	<0.5	<0.5	4
Gulper shark (<i>Centrophorus granulosus</i>)	3,081	2,196	2,620	2,478	1,028	1,325	716	822	519	256	141	248	402	930
Leafscale gulper shark (<i>Centrophorus squamosus</i>)	1,940	1,485	1,563	1,255	2,131	1,974	1,655	1,547	1,542	1,678	1,965	1,922	3,072	3,024
Sand tiger shark (<i>Carcharias taurus</i>)	-	-	-	-	2	-	-	-	-	-	1	-	-	-
Tope shark (<i>Galeorhinus galeus</i>)	3,049	2,994	2,877	3,160	3,065	4,189	3,595	3,478	3,654	4,259	4,324	4,108	4,211	3,870
Near Threatened														
Copper shark (<i>Carcharhinus brachyurus</i>)	.	.	.	.	.	.	.	.	15	14	25	38	38	27
Portuguese dogfish (<i>Centroscymnus coeleopsis</i>)	1,543	1,389	1,413	1,269	1,223	1,557	1,903	2,154	1,957	1,377	1,868	3,248	3,689	4,230

Sources: (IUCN, 2004), *Capture production 1950-2003*. FAO Fisheries Department 2000

PRODUCTION OF SHARK PRODUCTS

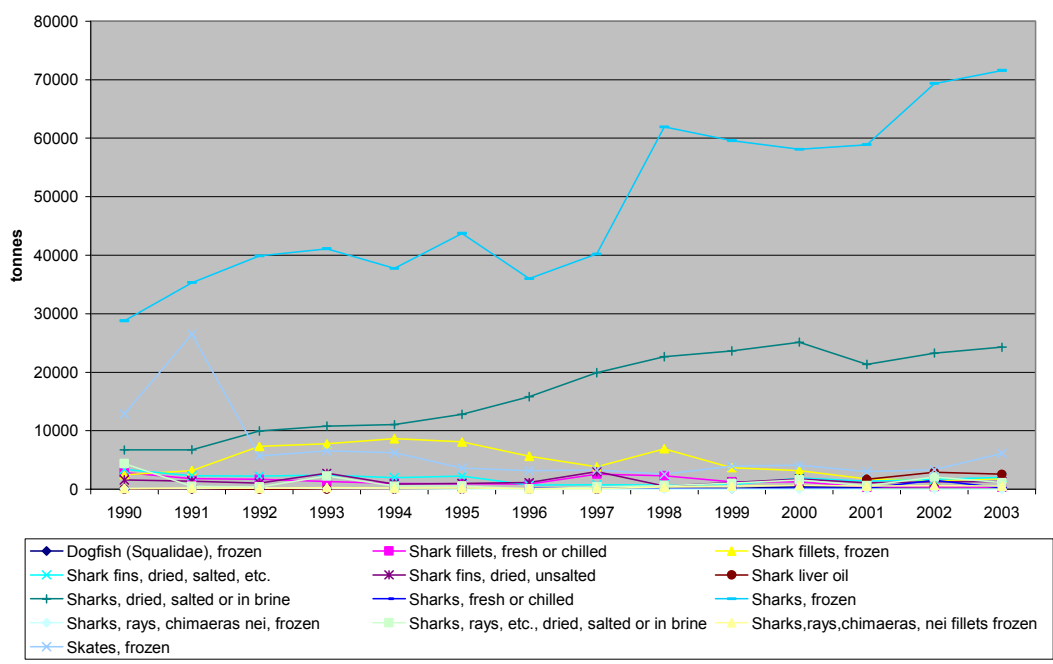
FAO data identified 20 categories of shark products in 2003 (see Box 2).

Shark production peaked at 112 400 t in 2003, an increase of 77% since 1990. Trends in production are shown in Figure 2. The bulk of production by volume (64%) is in the form of ‘Sharks, frozen’ and a further 22% is in the form of Sharks, dried, salted or in brine. The proportion of production comprised of Shark fins, dried, salted etc was down from 5% in 1990 to 2% in 2003 (see Figure 3). Fishstat data on production of shark fins dried and salted has been revised downwards for this product. This resulted for example in production for 2001 being revised from 3054 t to 1370 t. Production of Shark fins, dried, salted etc peaked in 1989 at just over 4000 t. In the latter half of the 1990s production was around 750 t annually but between 2000 and 2003 has increased to an average of around 1700 t per year. Production of shark fins, dried, unsalted peaked at around 4100 t in 1988. It has declined since but continued to average over 1300 t per year between 2000 and 2003.

Box 2
Categories of shark products recorded by FAO

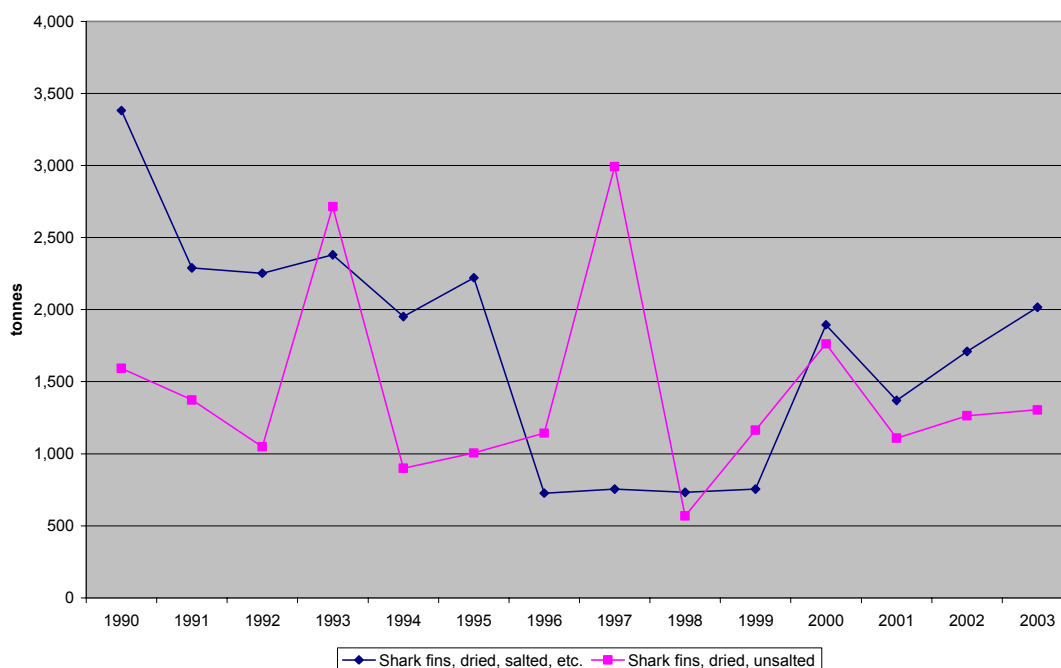
Shark fillets, fresh or chilled	Shark fillets, frozen
Shark fins, dried, salted, etc.	Shark fins, dried, unsalted
Shark liver oil	Shark oil
Sharks, dried, salted or in brine	Sharks, fresh or chilled
Sharks, frozen	Sharks, rays, chimaeras nei, frozen
Sharks, rays, etc., dried, salted or in brine	Sharks, rays, chimaeras, nei fillets frozen
Sharks, rays, chimaeras, nei fillets fresh or chilled	Sharks, rays, skates, fresh or chilled, nei
Skates, frozen	Skates, fresh or chilled
Dogfish (<i>Squalidae</i>), fresh or chilled	Dogfish (<i>Squalidae</i>) and catshark fillets, frozen
Dogfish (<i>Squalidae</i>) and catshark fillets, fresh or chilled	Dogfish (<i>Squalidae</i>), frozen

Figure 2 Production of Shark Products, 1990-2003



Source: *Commodities Production and Trade 1976 – 2003* (FAO Fisheries Department, 2000)

Figure 3 Production of shark fins, 1990-2003



Source: *Commodities Production and Trade 1976 – 2003* (FAO Fisheries Department, 2000)

TRADE IN SHARK PRODUCTS

A summary of world trade in shark products between 1990 and 2003 is provided in Table 4. Figures 4 and 5 depict the trends in exports and imports of shark products in the top 10 trading nations and Figures 6 to 9 depict trends in traded shark products over the 1990 to 2003 period.

Exports

Composition

Exports of shark products doubled between 1990 and 2003. Exports totalled 86 500 t in 2003, an increase of 6% over the previous record set in 2001. Value fell 14% from its peak of US\$293m in 2000 to US\$249m in 2003.

There have been some significant changes in the composition of total exports between 1990 and 2003:

- Exports of frozen shark products (other than fillets) increased from 36% to 57% of total exports by volume
- Shark, fresh or chilled (other than fillets) fell from 43% to 27%
- Shark fillets, frozen, fell from 10% to 8%
- Fresh, chilled dogfish exports declined from 25% to 5%, reflecting the decline in catch identified as dogfish⁶ from 68 000 t to 36 000 t over the period

While exports of shark fin as a proportion of total exports have fallen from 10% to 7% over the period, the quantum of shark fin exports continues to trend upwards. Exports of dried, salted shark fins peaked in 1996 at 4251 t but have continued to average around 3800 t since. After falling for several years after 1996, exports of dried, unsalted shark fins increased since 2000 and peaked in 2003 at 2079 t.

⁶ Includes Portuguese Dogfish, Piked Dogfish, Black Dogfish, Dogfishes and hounds, nei, Dogfish sharks etc., nei and Dogfish sharks nei.

Exporters

There have been some significant changes in major exporters of shark products since 1990 (see Table 4). During that time Taiwan, Province of China, moved from being the sixth largest exporter of shark products to be the largest exporter, accounting for over 20% of total world exports in 2003. A number of other countries joined the top 10 countries in 2003 including Panama, Costa Rica and Spain replacing Denmark, Germany and Norway.

Norway was the leading exporter of shark products in 1990 (16% of global exports) but its share declined to just over 1% in 2003. This is consistent with a gradual decline in Norway's catch of sharks which declined from 11 000 t in 1990 to 2000 t in 2003. In particular, Norway's catch of Piked dogfish (*Squalus acanthias*) in the North East Atlantic and exports of fresh/chilled dogfish have fallen by 86% and 78% respectively over the period. The North East Atlantic population of Piked Dogfish is listed as Endangered in the IUCN 2004 Red List.

Taiwan, Province of China, was the leading exporting country in 2003 accounting for 20% of global exports. Taiwan, Province of China's catch of shark trended downwards from 1990, but rose sharply from 44 000 t in 2002 to 67 000 t in 2003. This was largely accounted for by an increase of 14 000 t of shark catch from the Central and Western Pacific. Exports of fresh/chilled shark more than doubled between 2002 and 2003 and exports of frozen shark increased by 40% in that year.

Panama has emerged as a significant exporter since 2000. Exports, predominantly of frozen product, peaked in 2001 at 7500 t, but had declined to 3800t by 2003. Fishstat hold no shark catch records for Panama.

Canada's exports are comprised of both fresh chilled and frozen product. Total exports were generally between 2500 and 3000t between 1990 and 2000, but have averaged over 4000t between 2001 and 2003. Canada's catch of shark peaked at around 14 000t in 1999 and remains at over 12 000t. Piked dogfish comprised more than half the catch in 2003, most of it taken in the North East Pacific Ocean.

Costa Rica's exports of mostly frozen product increased dramatically from 500t in 1994 to a peak of nearly 8000t in 2001. They have since declined to around 6 000t.

Spain's exports have trended upwards over the period peaking at 18 000t in 1999, before falling to around 12 000t between 2001 and 2003. The trend reflects increased catch rising from around 14 000 t in 1990 to a peak of nearly 100 000 t in 1997 before falling to around 60 000 t in 2003. Around one third of the catch is comprised of Blue Shark (*Prionace glauca*) and a further 20% of Shortfin Mako. Exports are comprised predominantly of frozen shark.

Imports

Composition

Imports of shark products show a steady upward trend, peaking at 107 192 t in 2003, up 5.5% on the previous year. Imports were valued at US\$522m in 2003, 9.5% higher than in 2002 but 11% lower than the peak of US\$589m in 2000. Imports of shark were comprised largely of Frozen Shark (72%), Dried, Salted Shark Fin (15%) and Fresh or Chilled Shark (13%).

There have been some significant changes in the major importers of shark products since 1990 (see Table 5). Spain became the leading importer of shark products accounting for 15% of imports in 2003, up from 5% in 1990. Other importing countries whose share has increased significantly in recent years are Singapore, Brazil, China, Mexico and Republic of Korea.

Singapore's share has varied over the period, peaking at 4% in 1995. The composition of imports has also changed from predominantly dried shark fins in the early 1990s to predominantly frozen shark since 1995. Imports trended downwards between 1995 and 2000 but have trended upwards since then, mainly as a result of increased frozen shark imports. Singapore's catch has declined from 800 t in 1990 to 157 t in 2003.

Brazil's imports have trended upwards over the period, peaking at 5500 t in 2003. As with Singapore, imports are comprised largely of frozen shark. Imports have doubled since 2000. Brazil's catch has declined from around 25 000 t in 1990 to 13 000 t in 2003.

China's imports have generally trended upward since 1990 and have exceeded 500 t each year since 1999, peaking at around 8 500 t in both 2000 and 2003. Imports are comprised largely of Dried, salted shark fins (45% in 2003) and frozen shark (42% in 2003). China's catch over the period increased from 34 to 860t.

Mexico's imports have increased markedly since 1999 rising from 884 t in 1999 to 10 800 t in 2003. In 2003 99% of imports were of frozen shark. Mexico's catch declined from around 44 000 t to around 31 000 t since 1990.

The Republic of Korea's imports have also trended upwards over the period, with the major increase apparent since 1995. Imports peaked at 15 500 t in 2003 well above the level of the previous three years of around 11 500 t. Imports are comprised mainly of frozen shark (81% in 2003). Korea's catch declined from a peak of around 20 000 t in 1993 to 12 000 t in 2003.

Table 4

World Trade in Chondrichthyan Products, 1990-2003 (tonnes)

Imports	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Sharks, fresh or chilled	5,371	5,218	5,979	5,605	6,775	4,459	5,285	5,270	5,126	5,356	7,467	8,339	7,503	8,514
Dogfish (Squalidae), fresh or chilled	11,033	11,930	9,917	9,996	9,553	11,761	11,281	9,888	9,016	7,535	7,718	7,742	6,283	4,999
Skates, fresh or chilled	-	-	-	-	-	1	9	-	1	-	3	-	-	2
Sharks, rays, skates, fresh or chilled, nei	-	-	-	9	16	30	12	20	105	106	54	30	6	8
Total fresh chilled (exc. Fillets)	16,404	17,148	15,896	15,610	16,344	16,251	16,587	15,178	14,248	12,997	15,242	16,111	13,792	13,523
Sharks, frozen	16,861	19,493	19,377	20,495	21,413	28,950	29,892	32,938	37,959	36,868	46,514	58,863	56,163	54,369
Sharks, rays, chimaeras nei, frozen	-	-	-	-	117	20	15	-	-	-	-	-	131	391
Skates, frozen	81	239	1,200	538	148	181	5,785	8,622	5,294	7,173	9,286	8,369	7,554	12,632
Dogfish (Squalidae), frozen	9,559	8,600	8,544	7,524	7,458	6,259	6,555	5,576	5,353	5,733	7,821	5,085	5,606	5,175
Total frozen (exc. Fillets)	26,501	28,332	29,121	28,557	29,136	35,410	42,247	47,136	48,606	49,774	63,621	72,317	69,454	72,567
Shark filets, fresh or chilled	-	-	7	3	56	95	96	35	5	-	-	-	-	-
Shark filets, frozen	1,622	1,088	1,466	544	307	840	523	812	1,382	1,240	1,194	1,353	1,681	1,904
Dogfish (Squalidae) and catshark filets, frozen	197	331	135	298	534	427	397	361	359	650	730	1,371	1,604	2,248
Sharks, rays, chimaeras, nei filets frozen	-	11	33	-	46	3	29	72	80	46	3	45	13	12
Total Fillets	1,819	1,430	1,641	845	943	1,365	1,045	1,280	1,826	1,936	1,927	2,769	3,298	4,164
Shark fins, dried, salted, etc.	5,260	5,791	10,804	10,232	11,001	8,880	13,919	13,396	12,818	13,528	16,533	13,998	14,893	16,586
Shark fins, dried, unsalted	12	2	5	2	4	5	18	109	122	3	133	48	135	206
Shark liver oil	357	699	343	371	391	136	134	38	14	42	84	94	108	102
Shark oil	187	122	59	26	358	312	152	154	22	58	26	46	17	44
Sharks, dried, salted or in brine	-	40	-	-	1	7	-	-	-	-	-	-	-	-
Total Imports	50,540	53,564	57,869	55,643	58,178	62,366	74,102	77,291	77,656	78,338	97,566	105,383	101,697	107,192

Table 4 cont.

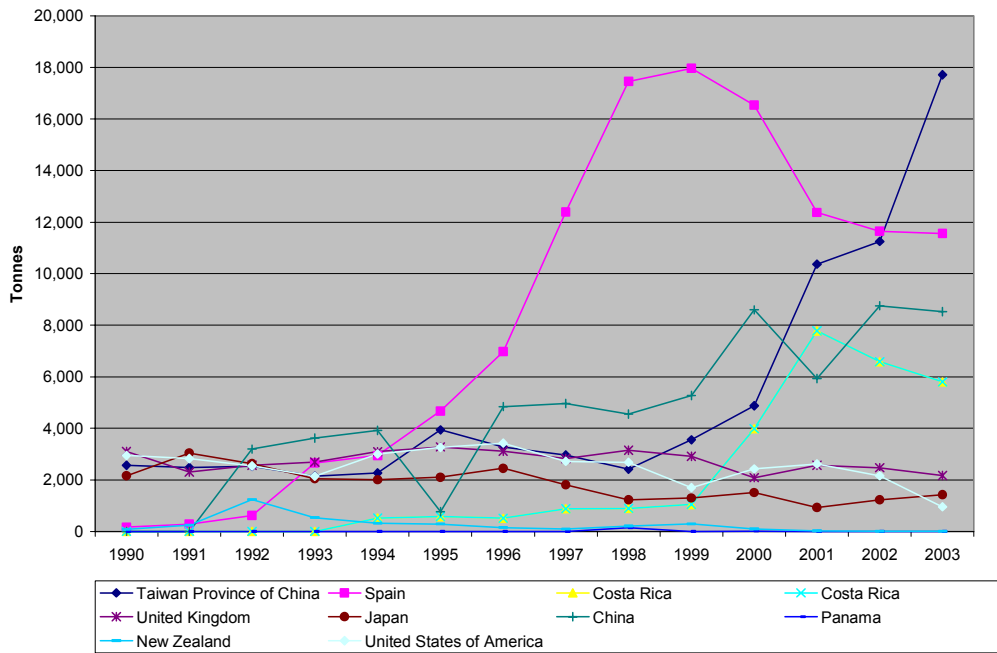
Exports	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Sharks, fresh or chilled	7,609	7,428	7,953	10,578	13,195	7,558	8,616	7,214	10,077	8,513	11,172	15,025	14,589	18,377
Dogfish (Squalidae), fresh or chilled	10,424	11,034	8,573	11,089	7,240	10,421	9,736	8,072	6,394	8,142	9,734	3,864	3,768	3,784
Skates, fresh or chilled	39	40	155	295	440	830	925	927	761	685	1,000	961	713	818
Sharks, rays, skates, fresh or chilled, nei	252	1,563	2,827	1,356	1,128	598	315	627	524	611	965	781	33	89
Total fresh chilled (exc. Fillets)	18,324	20,065	19,508	23,318	22,003	19,407	19,592	16,840	17,756	17,951	22,871	20,631	19,103	23,068
Sharks, frozen	12,447	16,542	19,937	23,935	20,979	26,435	21,051	30,562	34,547	31,943	40,649	44,730	40,248	40,919
Skates, frozen	338	490	383	344	326	275	314	324	163	347	240	268	79	208
Sharks, rays, chimaeras nei, frozen	1,013	1,051	346	143	72	11	24	17	26	57	43	47	45	5,264
Dogfish (Squalidae), frozen	1,550	4,251	1,774	2,268	3,567	8,832	8,965	5,484	3,941	5,203	5,245	3,784	4,383	3,236
Total frozen(exc. Fillets)	15,348	22,334	22,440	26,690	24,944	35,553	30,354	36,387	38,677	37,550	46,177	48,829	44,755	49,627
Shark fillets, fresh or chilled	6	37	66	61	28	19	7	59	29	22	9	29	12	15
Sharks,rays, chimaeras, nei fillets fresh or chilled	2	.	-	-	-	-	1	-	.	1	1	1	-	1
Dogfish (Squalidae) and catshark fillets, fresh or chilled	.	.	.	.	.	.	.	.	.	.	22	-	-	-
Total fillets, fresh/chilled	8	37	66	61	28	19	8	59	29	23	32	30	12	16
Shark fillets, frozen	3,726	3,253	3,274	2,799	2,687	2,263	2,615	2,640	3,073	3,658	3,422	3,366	3,757	3,594
Dogfish (Squalidae) and catshark fillets, frozen	235	179	100	159	176	88	97	84	158	186	95	88	79	55
Sharks,rays, chimaeras, nei fillets frozen	132	299	1,160	839	572	750	641	2,071	5,384	1,588	681	2,930	3,915	3,513
Total Fillets frozen	4,093	3,731	4,534	3,797	3,435	3,101	3,353	4,795	8,615	5,432	4,198	6,384	7,751	7,162

Table 4 cont.

Exports cont.	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Sharks, rays, etc., dried, salted or in brine									44					
Shark fins, dried, salted, etc.	3,250	1,807	3,310	3,480	3,323	2,454	4,251	3,419	3,585	3,908	4,085	3,787	4,165	3,987
Shark fins, dried, unsalted	1,091	1,043	952	936	1,080	954	1,360	1,118	815	1,078	1,793	1,108	1,496	2,079
Shark liver oil	22	214	222	108	52	16	11	5					90	
Shark oil	7		12	5	14	113	89	132	69	55	56	47	57	42
Sharks, dried, salted or in brine	1	17	1					5	784	466	170	444	505	540
Total Exports	42,144	49,248	51,045	58,395	54,879	61,617	59,018	62,760	70,374	66,463	79,382	81,260	77,934	86,521

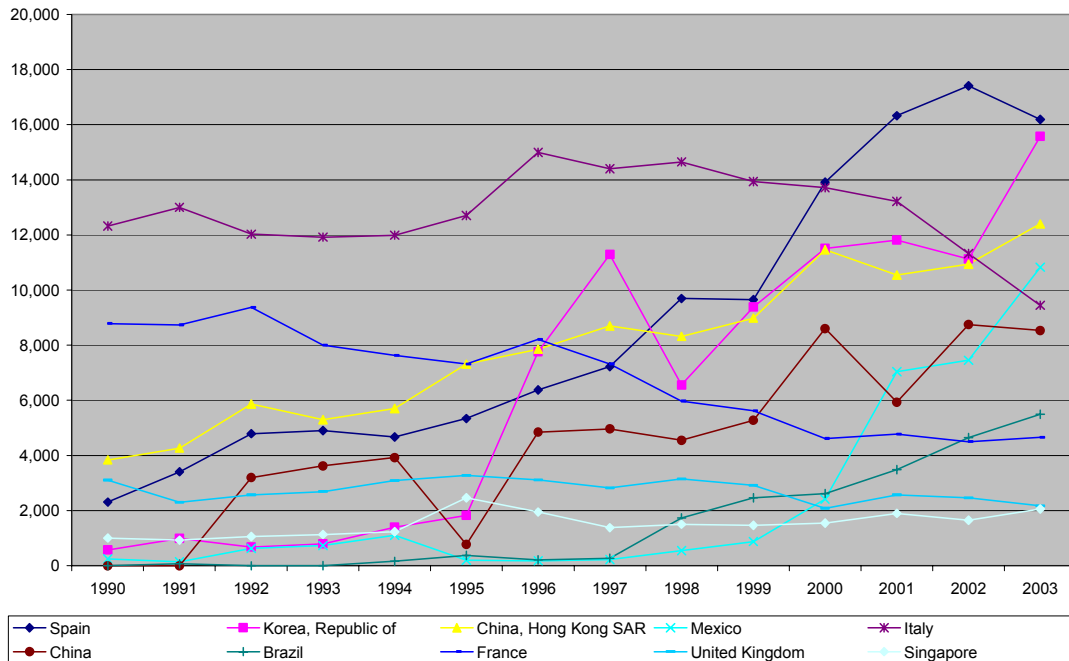
Source: *Commodities Production and Trade 1976 – 2003* (FAO Fisheries Department, 2000)

Figure 4: Top 10 Exporters 2003, Trends 1990-2003



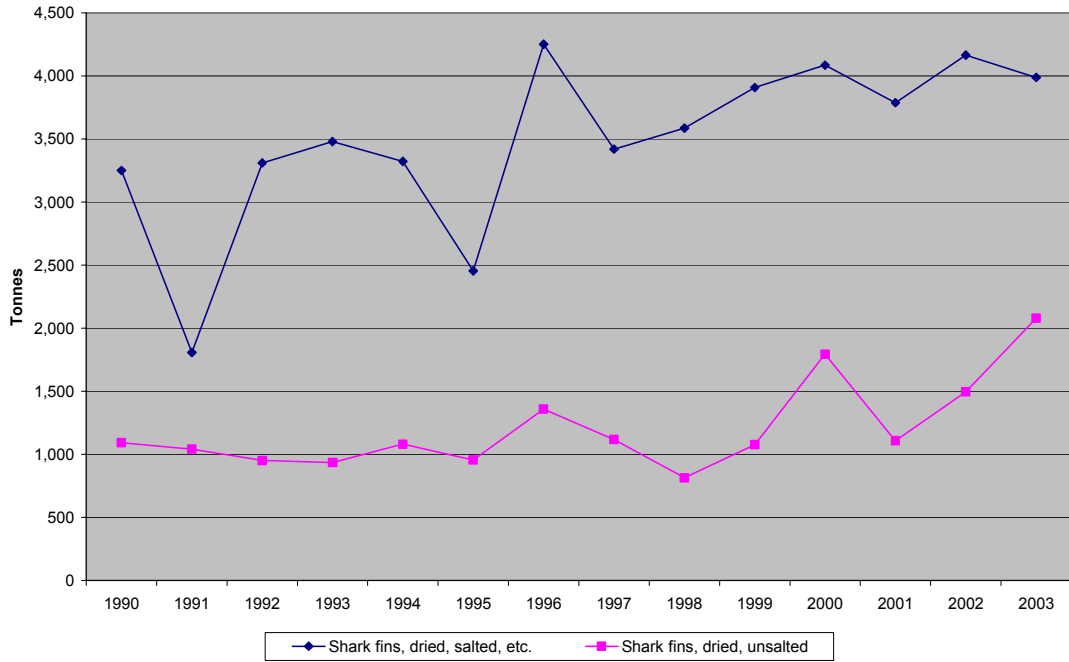
Source: *Commodities Production and Trade 1976 – 2003* (FAO Fisheries Department, 2000)

Figure 5: Top 10 Importing Countries, 2003, Trends 1990-2003



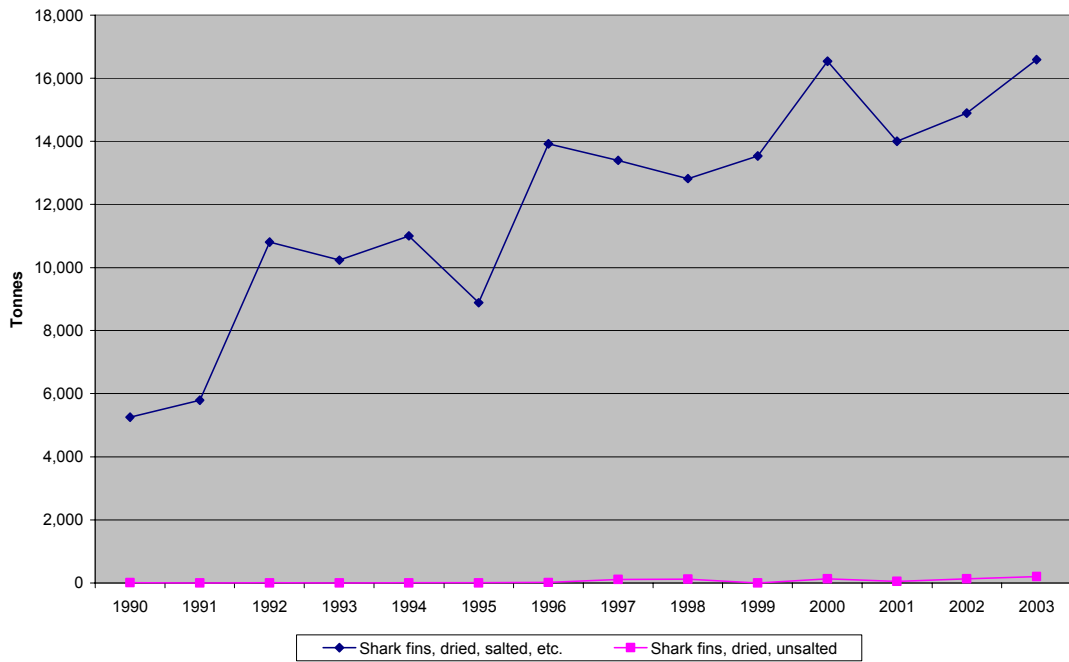
Source: *Commodities Production and Trade 1976 – 2003* (FAO Fisheries Department, 2000)

Figure 6: Exports of Shark Fins, 1990-2003



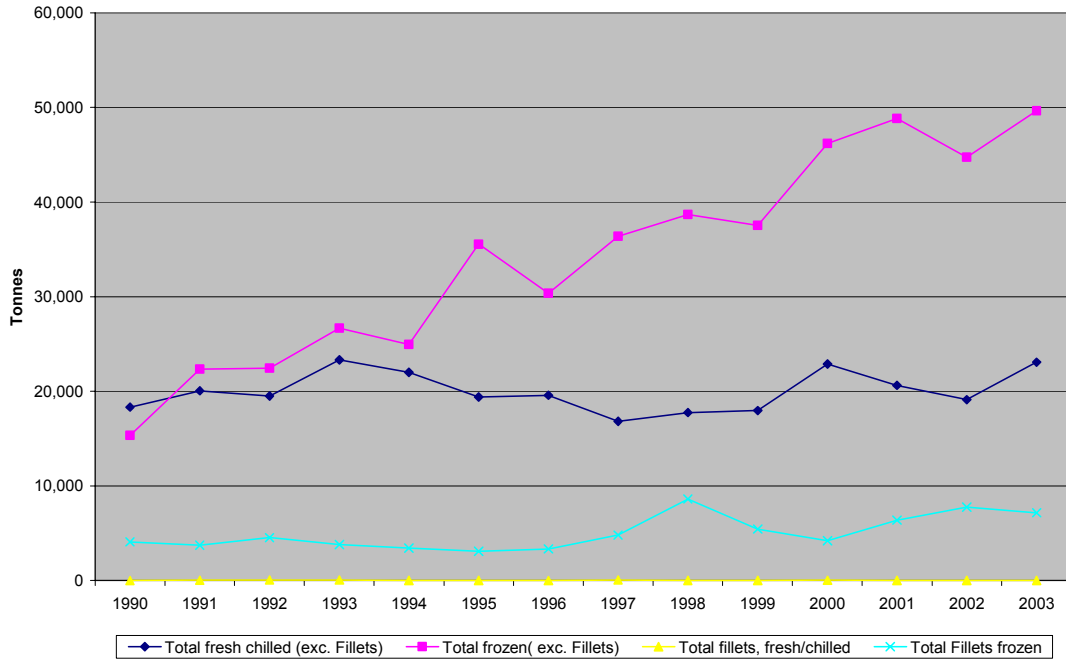
Source: *Commodities Production and Trade 1976 – 2003* (FAO Fisheries Department, 2000)

Figure 7: Imports of Shark Fins, 1990-2003



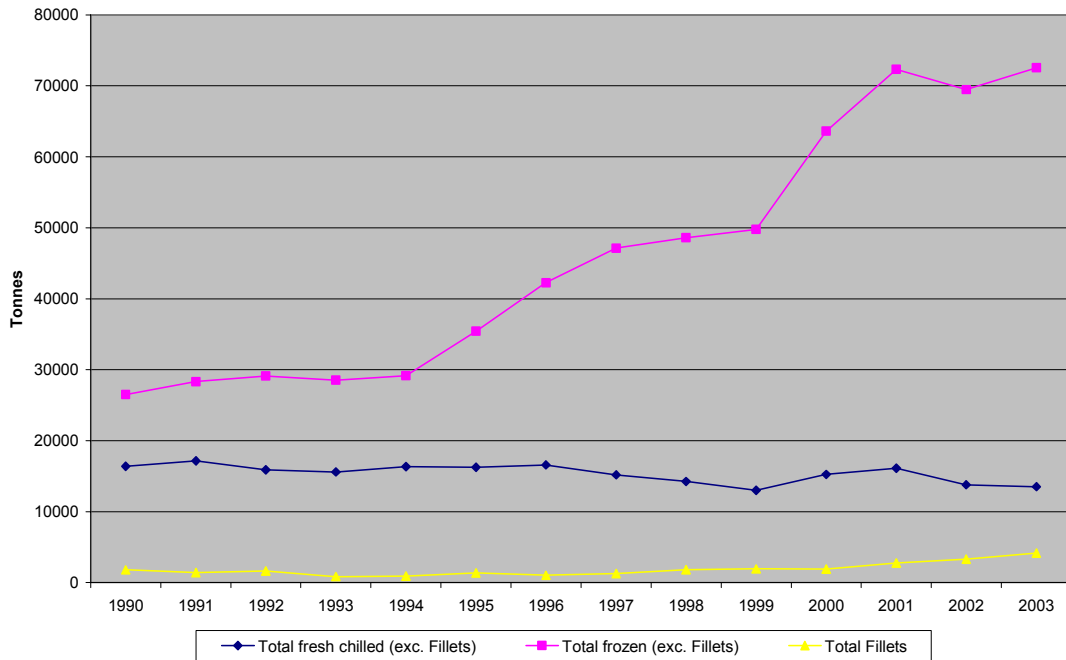
Source: *Commodities Production and Trade 1976 – 2003* (FAO Fisheries Department, 2000)

Figure 8: Exports of Shark Meat Products, 1990-2003



Source: *Commodities Production and Trade 1976 – 2003* (FAO Fisheries Department, 2000)

Figure 9: Imports of Shark Meat Products, 1990-2003



Source: *Commodities Production and Trade 1976 – 2003* (FAO Fisheries Department, 2000)

Table 4 Top 10 Shark product exporting countries

1990		2003	
Country	%	Country	%
1. Norway	15.91	1. Taiwan, Province of China	20.47
2. United Kingdom	11.88	2. Spain	13.36
3. Japan	10.80	3. Costa Rica	6.7
4. Canada	7.36	4. Chile	6.29
5. USA	7.19	5. UK	5.44
6. Taiwan, Province of China	6.11	6. Japan	4.98
7. Germany	5.96	7. Canada	4.85
8. New Zealand	4.62	8. Panama	4.40
9. Denmark	3.99	9. New Zealand	4.04
10. Chile	3.83	10 USA	4.04

Table 5 Top10 Shark product importing countries

1990		2003	
Country	%	Country	%
1. Italy	24.38	1. Spain	15.10
2. France	17.38	2. Republic of Korea	14.53
3. Germany	8.22	3. China, Hong Kong SAR	11.57
4. Denmark	8.20	4. Mexico	10.10
5. China, Hong Kong SAR	7.59	5. Italy	8.81
6. UK	6.14	6. China	7.96
7. USA	5.83	7. Brazil	5.13
8. Spain	4.57	8. France	4.34
9. Japan	4.29	9. UK	2.02
10. Greece	3.46	10. Singapore	1.92

DISCUSSION AND CONCLUSIONS

A summary of key data for 2003 is provided in Table 6.

Table 6

Trends in Shark catch, production and trade, 2003

	2003	Trend 1990-2003	Trend 2000-2003
Catch quantity	856 699 t	Up	Down slightly
Production	112 400 t	Up	Up
Exports, quantity	86 500 t	Up	Up
Exports, value	US\$249m	Up	Down
Imports, quantity	107 192 t	Up	Up
Imports, value	US\$522m	Up	Down slightly

A number of conclusions can be drawn from the analyses of the trends in the catch, production and trade of sharks and shark products in this paper.

Table 7 provides a comparison of contribution to catch, imports and exports by the major catching, exporting and importing countries. The data show that the major players are Indonesia, Spain, the USA, Japan, the UK and New Zealand. These countries are critical to the recording of accurate shark data.

(a) An assessment of catch reporting arrangements and trade codes for shark products would be useful for those countries listed in Table 7.

There are a number of questions raised by the data. Without further analysis of the situation of individual countries it is not possible to determine whether these are in fact errors, arising from the quality of the data, or whether there are feasible explanations. For example, Indonesia accounted for 14% of the global catch in 2003 but only 2.1% of exports. Is this because the domestic market consumes the bulk of the catch or because shark exports are not recorded accurately in export statistics? Alternatively countries such as Chile and Panama appear to account for a disproportionately high proportion of exports in comparison to their catch.

(b) An analysis of the catch, production and markets for shark products in key catching and trading countries would assist in clarifying some of the uncertainties raised by the data.

FAO catch data does not include discards therefore it underestimates total shark mortality arising from discards of whole sharks or finned carcasses. There is a need to examine the extent of this underestimation. This could be undertaken by using existing estimates of shark (discards) in major shark catch areas, e.g. , estimates of shark discards in US fisheries in the Western and Central Pacific Ocean have been made (Standing Committee on Tuna and Billfish 2004). The feasibility of the analysis will depend upon the reliability and comprehensiveness of the discard data available

(c) The extent to which catch records may underestimate shark mortality is an important issue. Further light could be shed on this through the compilation of available information on discards of shark species, if possible, on an individual species basis.

There are significant differences between total production of shark products, total imports of shark products and total exports of shark products (see Table 6).

The difference between reported imports and exports is significant at around 20 000 tonnes. There are a number of possible explanations for this. For example imports and exports recorded in different years or different trade classification systems in place in the major exporting and importing countries. The data might suggest for example, that major importing countries have trade codes more specific to shark while many exporters may include shark in non-shark specific trade codes.

In particular, there are significant anomalies in the shark fin trade data (see Figures 6 and 7) and between the trade and production data. In 2003 Shark fin imports of dried, salted product were recorded at over 16 000 t compared to exports of 4 000 t. In contrast imports of dried, unsalted product were recorded at 200 t while exports of 2 000 t were recorded.

Table 7: Major Players in catch and/or trade of shark¹

Country	% of catch	% of exports	% of imports
Indonesia	14.2	2.1	0.1
Taiwan, Province of China	7.8	20.5	0.5
India	7.4	0.3	0
Spain	7.2	13.4	15.1
United States	4.1	4.0	0.9
Pakistan	3.9	0.1	0
Argentina	3.7	0.6	0
Mexico	3.6	0.5	10.1
Malaysia	3.3	<0.01	0.1
Japan	2.9	5.0	1.3
Thailand	2.9	0.03	0.2
France	2.6	1.7	4.3
Sri Lanka	2.5	<0.01	0.04
United Kingdom	2.3	5.4	2.0
New Zealand	2.2	4.0	0.0
Portugal	2.0	1.67	1.7
Iran	1.9	0	0
Nigeria	1.8	0	0.03
Brazil	1.5	0	5.1
Korea	1.5	0.6	14.5
Costa Rica	1.4	6.7	1.5
Chile	0.9	6.3	0.4
Canada	1.4	4.9	0.8
Panama	0	4.4	1.2
China, Hong Kong SAR	0.04	0	11.6
Italy	0.11	0.3	8.8
China	0.1	2.8	8.0
Singapore	0.02	1.7	1.9

1. Bold indicates a top 20 catching country or a top 10 exporting or importing country.

Taken over the 14 year period 1990-2003 Fishstat data indicate that exports of dried, salted and dried unsalted shark fin were 66 000 t, compared to imports of 168 000 t. The production data for the same period indicate that total production of dried, salted and dried unsalted shark fin was approximately 44 000 t.

The FAO data does not allow a comparison of recorded exports from country against the recorded imports from that country by all other countries. Such an analysis, for selected countries, may go some way to explaining the differential between imports and exports.

(d) An analysis of trade by major exporting and importing countries may prove useful in explaining the discrepancy between reported exports and imports.

Some trends may suggest that there is cause for concern in relation to the impact of fishing on specific species or in some areas. For example, there have been significant declines in the catch of countries such as Pakistan, Brazil, Mexico and the Republic of Korea and Norway's catch of piked dogfish has declined by

88% since 1990, while increased catches of this species have been recorded in recent years by France, Ireland and the United Kingdom. This may be of concern given the conservation status of the species.

(e) Where significant reductions in catch of shark species are indicated, further analysis may be required to determine the cause of this reduction, e.g., a reduction in abundance, change in pattern of fishing, introduction of management measures.

The elements contained within the FAO International Plan of Action for Sharks (IPOA-Sharks) and implementation as described in FAO Technical Guidelines for Responsible Fisheries. No. 4, Suppl. 1. would go some way to ensuring adequate data is provided and that adequate management has been instigated. However, while the IPOA-Sharks is prescriptive as to what needs to be included within a National Plan of Action (NPOA) it is evident that some NPOA's in place do not necessarily meet the needs that would make them effective. It is also of concern that the implementation of the IPOA-Sharks has been limited. Of the top 20 catching countries from 2003, 5 countries in 2004 had not indicated any move towards implementation and the others varied in their activities from considering it a possibility in the future to having drafted a National Plan of Action (Anon 2004). Concerningly, some of the major shark fishing nations have also stated that they have no intention of developing NPOAs..

(f) The effective implementation of the IPOA-Sharks would contribute significantly to data collection and management intervention. The availability of detailed information on progress towards its implementation by the top 20 catching countries, including a calendar of proposed activities, would provide opportunity to more comprehensively assess its global implementation.

World Capture Production of Shark, by Country, 1990-2003 (tonnes)

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Albania	20	10	10	10	15	88	153	60	129	120	147	45	209	28
Algeria	474	709	751	1,127	1,200	1,124	1,237	535	1,317	1,061	522	977	1,010	1,070
American Samoa	.	.	.	.	2	<0.5	-	4	-	-	-	-	-	-
Angola	500	35	703	889	603	970	400	106	1,126	1,399	750	4,784	5,932	3,079
Antigua and Barbuda	.	.	.	.	.	.	.	.	.	.	.	8	17	36
Argentina	16,687	17,628	18,915	18,933	23,651	25,332	30,163	29,034	33,511	29,485	25,750	31,784	26,251	31,691
Australia	6,682	7,297	8,796	9,928	9,199	8,958	8,718	8,318	6,498	6,328	7,543	9,238	9,674	10,307
Bahamas	-	-	-	37	<0.5	<0.5	5	3	2	1	<0.5	<0.5	<0.5	<0.5
Barbados	18	14	24	18	22	24	25	14	12	10	14	10	9	10
Belgium	1,899	1,729	1,855	1,787	1,726	1,686	1,813	1,722	1,625	1,720	1,647	1,954	2,217	2,317
Belize	-	-	-	-	-	-	-	1	<0.5	521	54	201	15	-
Benin	303	282	227	210	196	174	162	170	140	110	73	126	118	502
Bermuda	12	12	12	14	10	17	13	9	12	24	10	5	5	7
Brazil	24,690	23,730	20,500	18,300	15,800	14,881	14,894	14,941	17,269	18,553	21,585	20,406	21,736	12,824
British Virgin Islands	.	.	.	.	.	.	.	1	1	1	<0.5	<0.5	<0.5	<0.5
Bulgaria	16	21	14	12	12	80	64	40	28	25	102	126	100	51
Cameroon	238	231	234	162	180	219	234	220	216	297	217	276	218	234
Canada	5,835	5,348	4,987	3,791	11,398	12,627	10,759	10,015	8,646	13,979	12,275	13,137	13,144	12,103
Cape Verde	.	.	.	.	1	1	.	.	.	.	.	.	.	.
Channel Islands	166	155	200	202	191	177	230	66	250	284	217	294	290	314
Chile	6,140	6,702	7,326	5,703	5,556	4,269	4,702	4,890	4,327	4,595	5,751	5,636	4,391	7,211
China	-	-	-	34	45	23	27	19	74	473	405	772	628	860
China, Hong Kong SAR	798	1,017	817	848	688	485	456	420	382	300	330	370	350	320
Colombia	618	350	745	623	467	208	1,010	437	363	389	361	302	106	2
Comoros	.	.	58	58	.	.	.	.	.	.	.	.	.	.
Congo, Dem. Rep. of the	-	-	-	-	-	-	-	-	-	-	400	450	450	450
Congo, Republic of	748	580	598	597	445	380	385	410	385	460	945	987	1,040	1,045
Cook Islands	38	35	31	32	30	25	20	20	20	20	20	20	20	20
Costa Rica	1,430	1,519	2,213	2,582	2,866	2,941	3,497	5,549	7,724	7,897	12,901	9,659	9,007	11,558

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Croatia	.	2,017	470	811	541	505	401	358	225	121	107	116	68	64
Cuba	3,129	2,837	2,837	2,847	3,390	3,066	3,415	3,298	4,407	4,199	3,457	3,515	3,622	2,556
Cyprus	11	7	24	30	19	21	14	17	10	12	22	28	22	13
Côte d'Ivoire	255	297	379	335	273	289	623	501	407	540	762	234	372	234
Denmark	1,478	1,387	933	617	372	293	294	317	242	300	362	360	375	335
Dominican Republic	80	85	46	10	18	90	39	96	62	134	518	212	36	236
Egypt	779	616	1,184	1,089	1,295	1,309	1,242	1,809	1,346	1,565	1,441	2,406	2,222	1,604
El Salvador	.	.	620	287	980	759	347	1,186	266	176	364	759	951	964
Equatorial Guinea	370	360	370	330	500	220	490	620	779	910	100	100	100	100
Eritrea	.	.	.	.	16	7	15	19	24	44	130	111	151	123
Estonia	477	-	-	-	-	-	-	-	-	2	240	1,079	588	886
Ethiopia	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Faeroe Islands	708	832	944	697	450	705	569	702	731	726	492	729	417	462
Falkland Is. (Malvinas)	11	5	32	98	63	117	184	204	216	314	353	417	466	320
France	26,310	25,895	24,705	23,064	22,149	21,613	22,447	23,645	21,524	22,941	24,952	25,799	23,136	22,547
French Polynesia	.	.	.	.	420	365	387	367	347	427	609	758	1,104	1,040
Gabon	.	.	.	<0.5	5	55	1,439	799	2,023	1,535	800	463	406	585
Gambia	620	395	194	316	480	498	415	3,223	606	630	720	3,982	6,128	1,085
Georgia	128	33	14	131	45	31	71	1	550	18	21	27	65	40
Germany	83	14	61	161	521	327	393	225	207	382	606	764	667	787
Ghana	1,579	1,140	1,145	2,253	1,467	1,453	1,367	894	1,936	4,867	1,901	2,906	3,420	1,343
Greece	616	797	715	1,029	2,146	1,929	1,844	1,723	1,451	1,625	1,727	1,264	1,157	1,007
Greenland	-	1	5	14	39	67	136	6	-	-	-	-	6	12
Grenada	8	8	7	12	4	14	4	9	18	24	29	29	12	17
Guam	.	.	.	.	5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-
Guatemala	296	372	103	225	225	207	81	146	237	203	151	250	359	11
Guinea	-	-	-	-	-	726	506	505	700	800	969	826	1,396	.
Guinea-Bissau	.	.	.	.	2	12	12	10	10	10	10	10	10	10
Guyana	.	.	.	.	.	765	1,892	.	.	2,175	.	.	953	1,808
Honduras	-	1,388	1,148	1,948	876	615	460	10	4	-	-	85	-	-
Iceland	452	1,198	1,038	730	1,720	2,343	1,942	1,776	1,575	1,218	1,360	1,530	2,206	1,932
India	51,230	55,925	59,730	76,604	83,689	77,078	132,160	71,991	74,704	76,802	76,057	67,971	66,923	63,266
Indonesia	73,272	76,828	80,159	87,138	92,776	98,098	94,396	95,998	110,788	108,393	113,626	110,311	106,398	120,670
Iran (Islamic Rep. of)	.	.	.	.	.	.	.	15,566	11,661	19,185	12,155	11,635	10,619	15,963
Ireland	4,154	3,281	3,653	5,196	5,164	6,249	5,500	5,071	4,694	4,093	3,166	4,871	5,240	6,188

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Isle of Man	129	145	81	67	60	33	35	31	18	22	16	4	1	2
Israel	87	73	68	60	50	48	330	49	59	58	-	35	32	28
Italy	9,613	13,746	13,720	11,802	16,473	10,528	4,968	5,946	3,443	1,557	969	924	846	970
Japan	32,103	33,362	38,466	38,539	34,317	31,146	24,206	29,397	33,665	33,034	31,873	27,696	32,879	24,906
Kenya	279	261	173	152	166	176	191	140	134	131	115	175	134	208
Kiribati	1,820	1,857	1,890	1,830	1,800	1,820	1,840	1,830	2,381	3,012	1,581	1,273	2,769	1,334
Korea, Republic of	15,721	21,400	12,250	20,342	17,845	17,938	15,598	15,900	10,305	16,398	15,394	11,131	11,961	12,567
Latvia	810	-	-	-	-	-	-	-	-	-	-	-	-	-
Lebanon	40	50	50	50	50	50	50	50	50	50	60	55	60	60
Liberia	54	43	52	150	365	391	219	472	656	1,599	1,675	647	660	650
Lithuania	507	911	1,289	-	-	-	-	-	-	-	-	18	58	439
Malaysia	17,360	17,161	20,771	20,898	20,889	24,144	24,007	24,765	23,943	25,125	24,521	25,209	24,167	27,948
Maldives	1,783	1,873	6,921	9,168	11,212	11,245	11,856	10,643	10,887	6,883	13,523	11,935	11,498	11,522
Malta	58	44	45	48	45	38	43	43	42	29	41	20	26	17
Martinique	62	114	104	125	125	105	73	95	85	75	55	45	45	45
Mauritania	450	220	180	70	80	90	20	30	530	850	850	850	850	850
Mauritius	19	19	20	18	19	17	19	60	11	11	27	14	50	310
Mayotte	-	-	-	-	-	-	-	-	32	18	-	1	2	2
Mexico	44,880	41,169	43,267	43,603	42,922	43,470	45,205	35,665	36,532	35,239	35,260	32,718	30,888	30,872
Morocco	2,940	2,429	2,330	2,386	2,451	3,306	4,157	2,635	3,453	3,532	5,599	3,708	4,062	4,610
Mozambique	-	-	-	-	-	165	21	-	-	-	-	-	-	-
Namibia	2	4	4	1	4	69	138	198	100	390	1,735	3,079	2,381	3,007
Nauru	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	2
Netherlands	-	-	-	-	-	-	-	-	550	480	659	790	833	733
New Zealand	10,108	9,809	9,617	14,171	12,717	17,766	14,293	22,619	15,840	19,811	17,718	19,796	21,238	18,459
Nicaragua	-	-	38	38	377	292	246	220	215	127	92	211	291	202
Nigeria	8,402	7,229	8,912	5,849	9,053	6,471	8,388	8,821	13,969	15,373	13,238	14,626	13,449	15,179
Norway	11,117	12,317	11,803	10,998	7,393	5,025	5,554	3,335	2,210	2,375	2,857	2,921	1,901	2,020
Oman	2,786	3,355	5,545	4,828	3,691	7,104	6,242	6,701	4,994	4,309	3,891	3,830	4,002	6,089
Other nei	-	-	-	272	189	392	419	308	278	195	183	523	341	341
Pakistan	40,043	45,098	45,745	46,405	50,177	49,964	51,432	48,429	54,497	54,958	51,170	49,269	49,904	33,248
Palestine, Occupied Tr.	-	-	-	-	-	-	53	33	38	38	37	32	31	34
Panama	-	1,962	1,257	611	372	85	170	-	-	202	-	-	-	-
Peru	12,266	5,586	13,571	13,908	5,796	7,070	6,680	6,780	14,295	8,989	15,405	11,870	16,633	8,613
Philippines	18,442	19,049	8,985	10,928	9,081	9,059	8,595	3,815	4,293	4,490	4,328	5,304	5,530	5,858

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Poland	-	-	-	-	1	-	-	-	-	-	-	13	8	8
Portugal	26,563	35,675	18,991	18,690	15,733	14,132	13,138	12,577	12,039	11,343	12,783	13,854	14,016	16,999
Puerto Rico										28	35	32	20	20
Qatar	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-
Romania	59	26	53	6	3	7	-	-	-	-	-	-	-	-
Russian Federation	2,520	1,218	876	541	661	116	54	510	1,073	1,349	5,937	4,876	4,770	4,542
Reunion				36	33	37	46	89	111	81	71	76	68	59
Saint Helena												6	4	2
Saint Lucia		7	12		6	6	11	3	8	6	5	5	10	6
Saint Vincent/Grenadines							2			3		2		
Samoa	60	80	90	110	140	160	180	200	200	230	250	250	250	250
Sao Tome and Principe	305	189	178	221	321	337	247	130	175	190	180	175	170	165
Saudi Arabia	38	38	40	42	125	467	398	543	701	505	653	657	739	1,190
Senegal	4,964	2,792	4,003	3,996	6,233	7,477	6,765	8,985	9,265	8,221	10,757	10,058	6,422	7,816
Serbia and Montenegro			11	11	11	21	22	22	20	21	20	18	18	17
Seychelles	82	86	93	82	117	116	84	61	103	68	152	100	95	284
Sierra Leone	400	1,442	1,424	1,408	1,403	1,403	1,402	1,405	83	51	1,690	164	404	1,250
Singapore	820	835	650	552	535	424	421	401	416	309	304	219	192	157
Slovenia			8	4	2	4	<0.5	<0.5	1	1	2	4	2	5
Solomon Islands	2	3	40	60	140	80	50	4,000	600	310	300	300	300	300
South Africa	2,513	2,476	2,585	2,892	2,132	1,774	1,719	2,273	2,197	1,891	1,800	1,909	2,226	2,679
Spain	14,163	14,578	9,946	11,572	20,827	24,419	19,062	99,641	67,318	70,800	82,349	77,103	62,996	61,613
Sri Lanka	15,263	18,360	18,306	29,111	33,875	28,477	27,954	26,920	28,500	29,360	23,890	24,110	25,340	21,290
St. Pierre and Miquelon	581	642	46	12	4	11	43	16	29	4	44	40	239	84
Sudan									45	56	44	79	79	79
Sweden	404	342	264	222	132	123	164	206	143	118	128	251	278	288
Syrian Arab Republic	32	29	39	40	39	39	50	-	-	-	-	-	182	184
Taiwan Province of China	75,731	68,632	64,512	56,080	39,457	44,064	41,158	40,089	40,025	42,933	45,923	42,355	44,412	67,432
Tanzania, United Rep. of	3,865	4,381	4,500	3,473	3,863	4,510	5,600	5,000	4,675	4,875	5,000	5,000	4,000	4,050
Thailand	10,950	11,056	7,576	8,312	13,229	15,281	17,753	17,969	16,026	22,397	24,689	24,278	30,208	24,724
Togo	11	6	11	44	13	20	213	59	67	232	148	135	256	755
Trinidad and Tobago	873	922	531	440	488	550	624	553	571	712	755	763	998	936
Tunisia	1,697	1,693	3,241	1,792	1,469	1,267	1,202	1,847	1,750	2,018	1,921	2,332	2,375	2,231
Turkey	2,805	3,518	3,974	2,573	4,133	2,151	2,724	2,075	1,975	2,115	4,040	1,575	1,073	966
Ukraine	1,827	934	918	412	152	82	61	30	62	125	99	211	350	496

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Un. Sov. Soc. Rep.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
United Arab Emirates	1,600	1,535	1,581	1,600	1,802	1,553	1,902	1,832	1,881	1,945	1,530	1,762	2,541	3,060
United Kingdom	21,776	20,690	23,412	19,692	18,358	22,155	21,335	21,444	20,081	17,560	17,389	19,346	16,832	19,581
United States of America	34,576	35,510	54,093	38,074	37,764	37,554	52,043	40,425	44,560	37,559	30,935	22,072	24,076	35,372
Uruguay	1,271	1,160	1,198	1,260	2,300	3,332	4,578	4,883	2,998	6,689	3,032	3,032	4,266	5,893
Venezuela	6,762	6,811	7,970	7,849	8,650	9,918	8,791	7,896	6,708	5,260	5,491	4,718	7,619	11,294
Yemen	639	2,749	6,067	6,537	6,455	4,636	4,878	5,100	5,900	5,700	5,100	6,430	7,250	7,250
Yugoslavia SFR	597	341	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	698,988	718,327	733,925	746,932	762,278	768,460	820,647	846,182	833,618	856,848	869,544	842,133	839,138	856,699

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