North American Journal of Fisheries Management 11:241–252, 1991

Are U.S. Regulations on Tuna-Dolphin Fishing Driving U.S. Seiners to Foreign-Flag Registry?

GARY T. SAKAGAWA

National Marine Fisheries Service
Southwest Fisheries Science Center
Post Office Box 271, La Jolla, California 92038, USA

Abstract.—From 1979 to 1988, the number of large purse-seiners (>400-tonne carrying capacity) in the U.S. tropical tuna fleet decreased by 35%, largely through sale and transfer of vessels to foreign registration. The U.S. regulations that protect mammalian dolphins associated with harvested schools of tuna are thought to be responsible for this switch to foreign-flag registration. A review of information on U.S. tuna–dolphin regulations, developments in the tuna industry, and dolphin kill data indicates that economic forces have been largely responsible for the reduction in the fleet and for vessels switching to foreign ownership and registration. The U.S. tuna–dolphin regulations played only a minor role, if any, and for the most part were not circumvented by vessels registering under flags of convenience.

Several species of dolphin, marine mammals sometimes called porpoises, associate with schooling tuna. Many dolphins have been killed when trapped in purse seines set around the tuna schools. The U.S. Government has regulated tuna fisheries since the early 1970s in an effort to reduce dolphin mortality. The press periodically prints claims that these regulations cause U.S. tuna seiners hardship and force them to register their vessels under foreign flags to stay in business. According to the press, this results both in less effective protection for dolphins of the eastern tropical Pacific Ocean (ETP) and in destruction of a healthy tuna industry.

Newspaper stories linking applications for foreign registry of U.S. tuna seiners to U.S. tuna–dolphin regulations have been widely circulated (Miller 1978; Griffin 1980). An American Tunaboat Association official, commenting on the switch of three U.S. seiners to foreign registry in April 1980, said that ". . . he believes government tuna–porpoise regulations and the growth of 200-mile limits in the tuna fishing grounds are big factors in the three boats leaving the U.S. fleet" (Griffin 1980).

The San Diego Tribune, in an editorial ("Shooting from the Hip," April 1, 1980) noted that ". . . clippers are switching to foreign registry to escape the restrictions [tuna–dolphin regulations] that the government already imposes on the American fleet but has no power to impose on competing foreign vessels."

Some researchers also have assumed that switching of registration is linked to restrictive measures on tuna–dolphin fishing. Andersen et al. (1978) examined the question of whether vessel transfers threatened the success of the U.S. dolphin protection efforts. However, they found a very low rate of purse-seine transfers from 1975 through 1977 and concluded that vessel transfers did not pose a threat.

Although these claims are generally accepted as

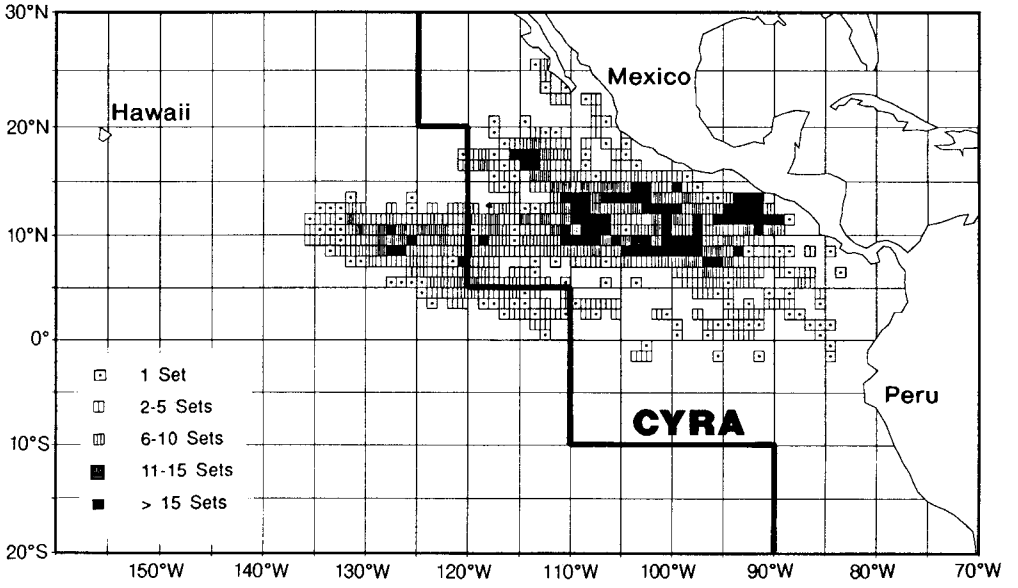

FIGURE 1.—Location and number of sets made on tuna–dolphin aggregations by U.S. purse-seiners in the eastern tropical Pacific Ocean in 1987, and the boundary of the Inter-American Tropical Tuna Commission's regulatory area (CYRA).

fact, they have not been substantiated with data. In this report I examine the claim that stringent U.S. tuna–dolphin regulations have been responsible for U.S. vessel transfers to foreign registry, particularly as a means for vessel owners to circumvent the regulations. My analysis is based principally on data accumulated through 1988.

The Record

Yellowfin tuna *Thunnus albacares* and skipjack tuna *Katsuwonus pelamis* occur in large schools, often together, in tropical and subtropical regions of the world oceans. They are caught with purse seines deployed by large, specially designed vessels. The catch, about 2.5 million tonnes in 1989, is used primarily in the international, multibillion-dollar tuna-canning trade (King 1987). Both species are canned as light-meat tuna, often commingled. However, yellowfin tuna is the premium light-meat species for canning because of its lighter color and larger size. Annually, the USA consumes 49% of the total world production of canned tuna, followed by western Europe (34%), Japan (7%), and other nations (10%).

Of the six principal tuna species in the world, only the yellowfin tuna is found to form close associations with dolphins (spotted dolphin *Stenella attenuata* and spinner dolphin *S. longirostris* primarily, but also common dolphin *Delphinus delphis*, striped dolphin *S. coeruleoalba*, and others). This symbiotic association usually involves large yellowfin tuna and dolphins. Only in the ETP is the association common and the bond so tight that herding the dolphins does not disrupt it—that is, the tuna continue to follow the surface-swimming dolphins (Perrin 1969; Green et al. 1971). Purse-seiners have used this bond in the ETP for catching yellowfin tuna since about 1959. Currently, fishing on tuna–dolphin schools produces about 70% of the total yellowfin tuna catch from the ETP (Figure 1).

The fishing process involves herding dolphins and yellowfin tuna with speedboats and helicopters, encircling the aggregation with a purse seine, releasing the dolphins from the net, and brailing the tuna aboard the vessel. In the process, some dolphins get entangled in the net and drown before they can be released (Barham et al. 1977). Dolphins most frequently killed by this fishery are the spotted and spinner dolphins (Smith 1983).

The incidental kill of dolphins by the ETP tuna fishery amounted to over 500,000 animals annually in the early 1960s and slightly less by the

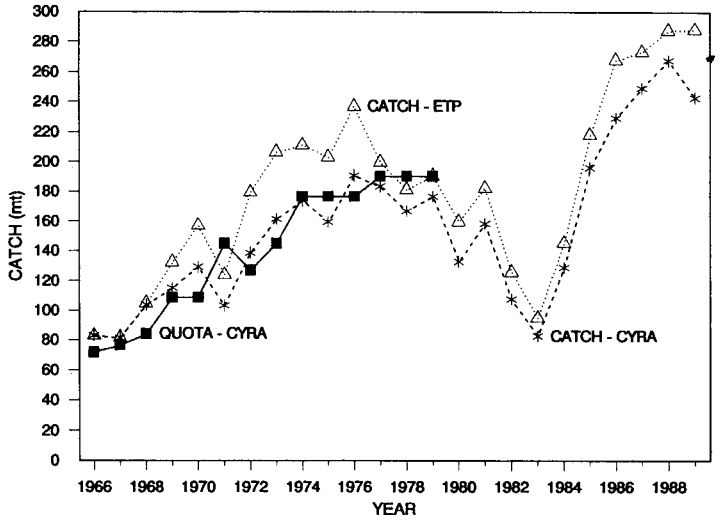

FIGURE 2.—Yellowfin tuna catch (metric tonnes) and quota for the regulatory area CYRA and for the eastern tropical Pacific (ETP) fishery. Since 1980, the fishery has not been under quota regulation.

late 1960s (Smith 1983). This high kill generated concern among conservationists and the public, who called for reforms through government regulations. The U.S. Congress responded by passing the Marine Mammal Protection Act (MMPA) in 1972 and reauthorizing the Act since then. Internationally, public concern caused the Inter-American Tropical Tuna Commission (IATTC) to accept responsibility, beginning in 1977, for scientific studies of dolphins and for providing dolphin-saving measures to fishermen involved in the tuna fishery under its authority.

International Tuna-Fishing Regulations

Only in the Atlantic Ocean and the ETP is fishing for yellowfin tuna regulated through international agreements. In the Atlantic, a minimum-size regulation of 3.2 kg has been in effect for yellowfin tuna since 1973. The regulation is administered by the International Commission for the Conservation of Atlantic Tunas (ICCAT), a 23-nation organization. This regulation has not had a significant effect on the conduct of the fishery, because enforcement by the fishing countries has been weak to nonexistent. Instead, canneries have discouraged landings of undersized fish by offering lower prices for small yellowfin tuna, which yield less canned product and cost more to process than large fish.

In the ETP, a more restrictive regulation—an annual catch quota—was used by IATTC to control the conduct of the yellowfin tuna fishery from 1966 through 1979, when it was suspended. The quota in 1966 was 71,900 tonnes for an area that paralleled the Latin American coast and extended several hundred kilometers offshore (Joseph 1970). This area referred to as the commission's regulatory area (CYRA), is shown in Figure 1. In subsequent years the quota gradually increased to a high of 190,500 tonnes (Figure 2) and the regulated area contracted slightly.

Major countries bordering the CYRA became dissatisfied with the IATTC quota system because it gave an advantage to the dominant U.S. fleet. Mexico withdrew from the IATTC in 1978 and Costa Rica followed in 1979. Both countries then took firm actions to restrict access of foreign fishing within their 370-km exclusive economic zones. Consequently, the IATTC management system became ineffectual and was suspended. Since 1979, the fishery has been operating without international controls, and the catch of yellowfin tuna in the CYRA has reached record highs of 268,500 tonnes in 1988 and 242,100 tonnes in 1989 (Figure 2). The yellowfin tuna stock, however, is currently in good condition (IATTC, unpublished data).

In 1977, the IATTC began promoting measures to avoid the needless killing of dolphins in the tuna fishery and to maintain ETP dolphin stocks at a high level in concert with high yield of tuna. So far, the IATTC has not instituted significant management measures to protect dolphins. In-

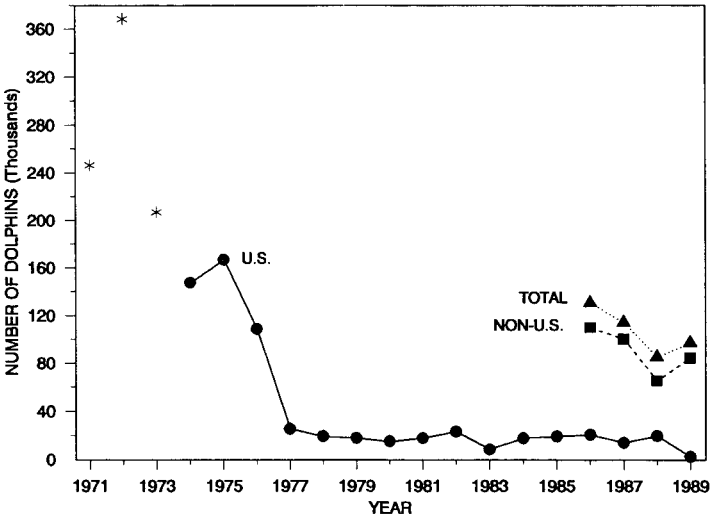

FIGURE 3.—Estimated number of dolphins killed by U.S. and non-U.S. purse-seine vessels participating in the eastern tropical Pacific tuna fishery. Although sampling by observers began in 1971 for the U.S. fleet and in 1983 for the non-U.S. fleet, coverage was not adequate until 1974 and 1986, respectively.

stead, it has concentrated on monitoring the kill with an international observer program that began in 1983, providing advice on available dolphin-saving gear and fishing procedures to fishermen, and conducting research on the condition of dolphin stocks. Despite these efforts, the annual incidental kill of dolphins in the ETP fishery has remained high (Figure 3).

U.S. Tuna–Dolphin Fishing Regulations

Since enactment of the MMPA in 1972, the U.S. tuna purse-seine fleet has been regulated for the protection of dolphins. Initially, regulations were nominal and consisted primarily of registration or certification requirements. Beginning in 1975, the regulations became more demanding as fishing gear, dolphin-saving procedures, and observer requirements were specified. Lawsuits and hearings delayed full implementation of those regulations until 1976 (Fox 1978). That year, after a judicial decision, the regulations took effect and a U.S. maximum-kill quota of 78,000 animals was added. In 1977, more procedural requirements were imposed, including the stationing of personnel with face masks in a rubber raft to aid in dolphin rescue during backdown and sacking of the net (Coe et al. 1984). Also, the kill quota was reduced to 62,429 animals (Figure 4). For 1978 through 1980, multiyear regulations were adopted. Regulations for this period were basically the same as for 1977 except for greater observer coverage and kill-quota reductions each year (Lo 1983). Starting in 1981, a 5-year requirement went into effect. The total U.S. kill quota was fixed at 20,500 animals per year, with special limits for some species and stocks. All fishing procedural regulations were relaxed to guidelines. In 1986 the regulations were extended for 2 years and observer coverage requirements were strengthened; full coverage (all fishing trips) was tested in 1987. In 1988, a 4-year extension of regulations was instituted. The kill quota of 20,500 animals per year remained, full observer coverage was mandated, restrictions were placed on sundown sets (sets that extend into night) as well as on the use of seal bombs (explosives similar to firecrackers but more powerful) for scaring fish and dolphins, and kill-rate performance standards were mandated for captains.

These measures contributed to a substantial reduction in the incidental dolphin kill. In 1975, the total incidental kill of dolphins by U.S. tuna purse-seiners was estimated at 166,600 animals; by 1977, the total had decreased sharply and was well below the quota (Figure 4). In 1989, an estimated 12,600 dolphins were killed by the U.S. tuna purse-seine fleet in the ETP; in contrast, the non-U.S. fleet killed an estimated 84,300 dolphins (Figure 3).

The MMPA also prescribes requirements that indirectly affect foreign purse-seiners that catch tuna associated with dolphins. The act allows for

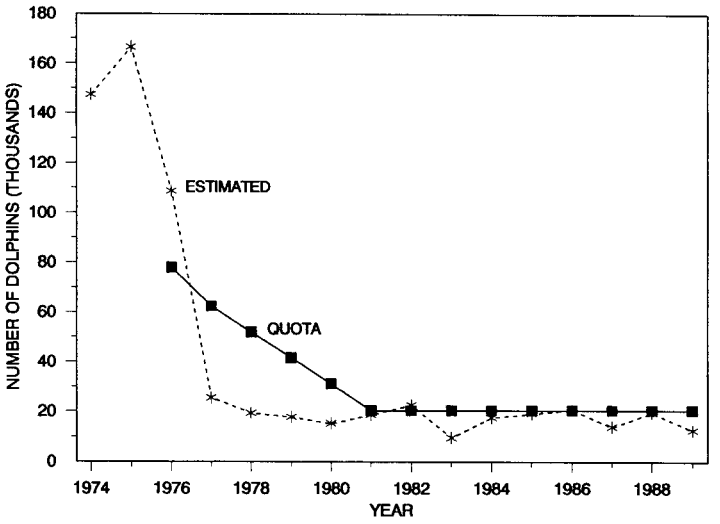

FIGURE 4.—Dolphin kill quota and estimated incidental kill of dolphins by U.S. purse-seiners participating in the eastern tropical Pacific tuna fishery. Annual kill quotas started in 1976.

U.S. sanctions against noncomplying countries that export tuna and tuna products to the USA. Before 1986 the requirements were light. Foreign governments only had to certify that dolphin protection measures were practiced by their fleets. Countries were encouraged to participate in the IATTC tuna–dolphin program as a means of satisfying the requirements. In 1988, U.S. regulations were tightened to allow imports of yellowfin tuna and tuna products only if the exporting country documented its fleet's compliance with requirements similar to MMPA requirements for the U.S. fleet. In addition the foreign fleet's average kill rate at the end of 1989 had to be no more than two times the U.S. rate; by 1990, it could be no more than 1.25 times the U.S. rate.

U.S. Tuna-Processing Sector

Since 1972, the U.S. tuna industry has undergone significant changes aside from adjusting to regulations specified by the MMPA. Most significant was the restructuring of the processing sector during 1979–1985. Owing to U.S. consumer resistance to purchases of high-priced canned tuna in 1979–1980 and a change in consumer preference from tuna packed in oil to tuna packed in water, processors pursued means to reduce production costs and modify production capability (Herrick and Koplin 1984). Marginal plants, particularly continental U.S. operations, were closed and offshore capacity was expanded to take advantage of greater resource availability, lower labor costs, and tax benefits (USITC 1986). Labor cost, for example, was substantially lower in Puerto Rico and American Samoa than in California. In 1985, the hourly wage for entry-level tuna cannery workers was US$3.35–4.40 in Puerto Rico and $2.94 in American Samoa (USITC 1986). In contrast, it was $6.63 in California. Tax laws also are more favorable in Puerto Rico and American Samoa than in the continental USA. Both Puerto Rico and American Samoa provide generous special exemptions from their tax laws to tuna canneries. In addition, income derived by canners is exempt from U.S. corporate income tax.

The most publicized cannery closures were the Bumble Bee Seafoods plants in San Diego, California (1982), and Honolulu, Hawaii (1984); the Van Camp Seafoods plant in San Diego (1984); and the Star-Kist Seafoods plant in Terminal Island, California (1984). Expansion or improvements to plants in American Samoa and Puerto Rico were made by Van Camp Seafoods and Star-Kist Seafoods beginning in 1985.

Restructuring of the processing sector also took the form of increased reliance on low-cost foreign sources for preprocessed raw material—that it, tuna loins—and for finished canned products (Doulman 1989). In 1979 the USA imported 2.75 million standard cases (48 6.5-ounce cans per case) of canned tuna from foreign sources. By 1985 the volume had tripled to 10.97 million cases (S. Her-

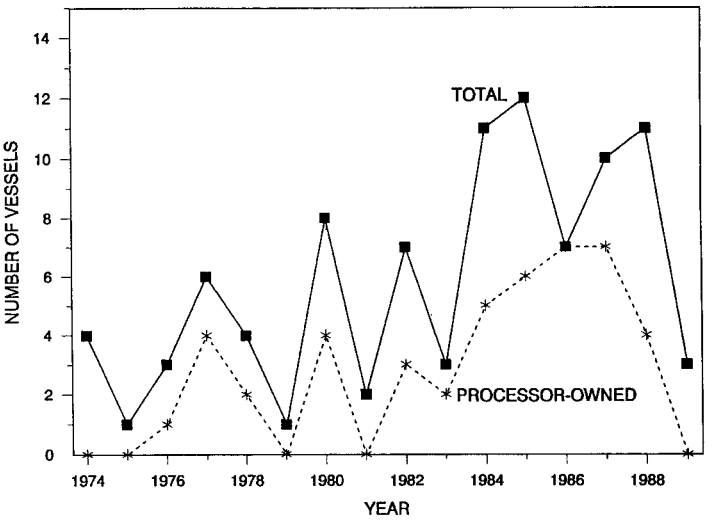

FIGURE 5.—Number of U.S. tuna purse-seiners that transferred to foreign-flag registration, and number owned (majority ownership) by U.S. processors.

rick, Southwest Fisheries Science Center, personal communication), and the trend has continued upward to a record-setting 17.90 million cases in 1989. Restructuring culminated in the sale of Van Camp Seafoods in 1988 and Bumble Bee Seafoods in 1989 to foreign processors, P.T. Mantrust of Indonesia and Unicord Co. of Thailand, respectively.

Before 1981 it was common for processors to own and operate tuna vessels, often in partnership with operating captains. This promoted close captain–processor ties that guaranteed a steady supply of tuna for the processors and operating capital and profit for the captains. However, when foreign countries began expanding their tuna fleets in the late 1970s, U.S. processors recognized that the increased supply of low-cost raw tuna gave foreign processors a competitive edge (USITC 1986; FNI 1988). So U.S. processors bought more raw tuna from foreign sources at low prices and less of the higher-priced domestic supply. Many U.S. vessels had to suspend fishing because the low prices were well below levels that could sustain costs of ownership and operation (Davis 1983). More than 20% of the U.S. fleet was tied up at the docks during all or part of 1982–1984. Many of these vessels were owned entirely or in partnership by the processors, and they went up for sale as the processors began divesting their interest in vessels (Figure 5). Orders for construction of new U.S. tuna seiners also came to a halt.

Foreign investors with lower operating costs (D. Doulman, Forum Fishery Agency, personal communication) and expanding interests in high-valued tuna fisheries for the export market began purchasing used U.S. tuna vessels. From 1978 to 1982, purchases and transfers were principally to Mexican interests (45%). From 1983 to 1987, most (42%) purchases were by Venezuelan interests. Since 1987, Korean investors have been actively involved in purchases and transfers.

Some of these transfers did not meet sales agreements and eventually reverted back to U.S. ownership and registry. However, the net result, including transfers to U.S. non-tuna fisheries and a few new additions, was a reduction in the U.S. fleet from about 101 active large purse-seiners (>400-tonne carrying capacity) in 1979 to 66 vessels in 1988, a 35% decreases.

U.S. Tuna-Harvesting Sector

Closure of major processing plants in the continental USA, as well as changes in availability of tuna and in the Law of the Sea (Joseph and Greenough 1979), also brought about changes in the U.S. tuna-harvesting sector. During the 1970s, the U.S. fleet depended principally on stocks in the ETP and marginally on stocks in the eastern tropical Atlantic (ETA) off Africa. Catches were landed primarily in California and Puerto Rico, where U.S. processors bought virtually all landings for canning purposes.

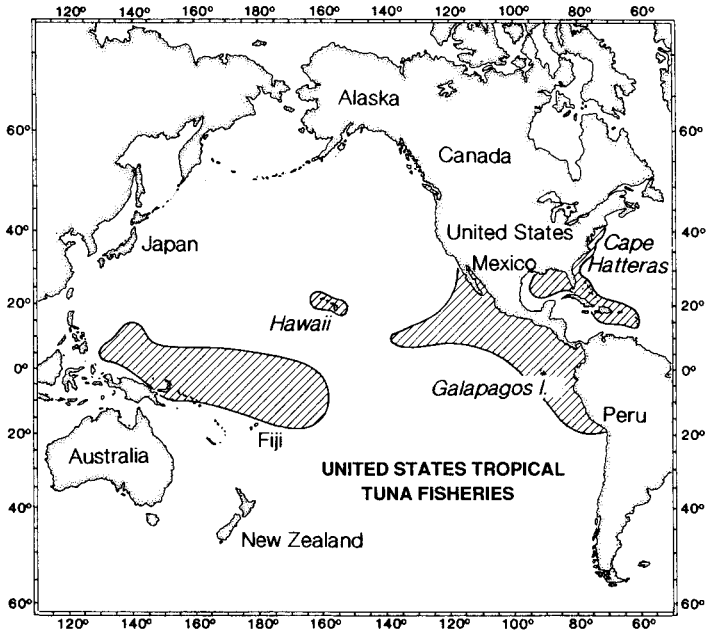

FIGURE 6.—Location of U.S. fisheries for tropical tunas (yellowfin and skipjack). U.S. tuna purse-seiners currently operate in the eastern tropical Pacific off Mexico to Peru and in the central-western Pacific southwest of Hawaii.

Changes in the Law of the Sea prompted coastal states bordering the rich tuna-fishing areas to establish 370-km (200-nautical-mile) extended jurisdiction during the mid-1970s. This made it difficult for the U.S. fleet to gain reasonable access to productive, inshore fishing areas. Also, during the late 1970s, the catch rate for the premium species, yellowfin tuna, was at record low levels in the ETP owing to overexploitation. Logistical support for U.S. vessels in the ETA was hindered by political unrest in Africa and increased competition with foreign fleets, principally of France and Spain. So U.S. vessels withdrew completely from the ETA in 1981 and concentrated their fishing in the ETP. This increased U.S. presence (95 large U.S. vessels in 1981) came at a time when Latin American countries began expanding their fleets in the ETP, which created considerable strain on the resource. An alternative fishing area was needed to draw off some of the fishing capacity.

Exploitation of the central-western Pacific Ocean (Figure 6) with its large stock of skipjack tuna began in earnest during the mid-1970s (Felando 1987). At first, traditional purse-seine fishing techniques did not work. New gear and methods had to be developed and mastered for the region. By 1980 the gear and methods were refined enough for vessels to operate profitably, and participation increased as vessels shifted from the ETP (Figure 7). The most significant shift occurred in 1982–1984, when the ocean condition known as El Niño caused catch rates to plummet in the ETP and to increase in the central-western Pacific. In 1988 slightly less than half of the U.S. fleet (29 of 66

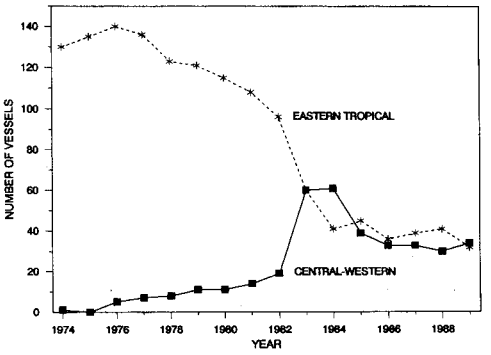

FIGURE 7.—Number of tuna purse-seiners in the eastern tropical and central-western Pacific fisheries by year. Numbers are based on fishery participation during the fourth quarter of each year, so few vessels were double-counted because they fished in both fisheries during a year.

TABLE 1.—Number of vessels by designated country of reregistration for U.S. tuna purse-seiners transferring out of the U.S. fleet. Some vessels reverted back to U.S. registration and were involved in more than one transaction.

Country of reregistration	Year, 19..															Total
	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	
Venezuela							1	1		1	5	2	6	4	1	21
Mexico	2		2		1		5		4		1			1		16
South Korea							1		2					1	7	11
Chile											3	4				7
Vanuatu												3	1	2		6
Cayman Islands							1	1			1	1				4
Panama				2						1				1		4
Philippines	1				1	1			1							4
Costa Rica				2	1											3
Netherlands Antilles				2	1											3
Japan												2				2
Mauritania															2	2
Australia											1					1
Canada		1														1
France															1	1
India														1		1
New Zealand			1													1
Peru	1															1
Taiwan										1						1
Total	4	1	3	6	4	1	8	2	7	3	11	12	7	10	11	90

vessels) operated in the central-western Pacific (Figure 7); their catch was landed or transshipped to canneries principally in American Samoa. The other half operated in the ETP and landed catches for canneries principally in Puerto Rico. In 1988 the U.S. fleet caught 124,600 tonnes of tuna from the central-western Pacific and 123,800 tonnes from the ETP.

The Analysis

Data on transfers of U.S. tuna purse-seiners by year to foreign registry were tabulated from records submitted by vessel owners to the U.S. Coast Guard and from sources in the U.S. tuna industry. The records do not always designate the flag country for reregistration or the exact year of occurrence; consequently, the tabulated data by year and country are approximations (Table 1). Also, two or three vessels were involved in repeat transactions in different years when the original transactions failed.

Information on whether a vessel transfer included flag as well as management control was obtained from industry sources: virtually all transfers included both. Most of the flag countries involved in reregistration required a minimum of 51% ownership and control of the property by their citizens to qualify for flag registration. Furthermore, U.S. tuna vessel owners had no tradition of using flags of convenience. Their vessels were built and financed in the USA, where they qualified for benefits (USITC 1986) that would be forfeited with foreign registration.

Transfers of U.S. tuna seiners to foreign registry were no more than six per year from 1974 through 1984 (Table 2; Figure 5). Eight vessels transferred in 1980, when tuna consumption in the USA stalled, prices fell, and restructuring of the U.S. tuna industry commenced. Processors began liquidating their holdings in vessels and initiated other cost-cutting measures. Transfers again became more frequent after 1981, reaching highs of 12 vessels in 1985 and 11 in 1988; most of these vessels were processor-owned.

The U.S. maximum-kill quota for dolphins declined between 1976 and 1981 and remained constant at 20,500 animals thereafter (Figure 4). Fishing procedural regulations were very severe during 1978–1980 but less severe during 1980–1988. Despite these regulations, the U.S. fleet operated within the dolphin quota except for 2 years (Figure 4).

The relationship between the dolphin quota, a nominal measure of severity of tuna–dolphin regulations, and the number of vessel transfers is poor; there is an overall upward trend in number of transfers during 1979–1988 when the quota was constant.

The number of transfers appears to be more directly linked to economic factors. For instance, the upward trend of transfers occurred during a period when overall economic conditions and prof-

TABLE 2.—Statistics on number of U.S. tuna purse-seiners by carrying capacity that transferred to foreign registration, nominal ex-vessel price of yellowfin tuna paid to U.S. fishermen, and average per-vessel profit (loss) for the U.S. tuna purse-seine fleet.

Year	Number of vessels: Small (<400 tonnes)	Number of vessels: Large (>400 tonnes)	Number of vessels: Total	Price of yellowfin tuna[a] (US$/ tonne)	Average profitability[b] (thousands of US$)
1974	3	1	4		
1975	1	0	1		
1976	0	3	3		
1977	0	6	6		
1978	0	4	4		
1979	0	1	1		(202)
1980	0	8	8	1,070	(43)
1981	0	2	2	1,061	(340)
1982	0	7	7	1,018	(691)
1983	0	3	3	936	(463)
1984	3	8	11	891	(111)
1985	4	8	12	744	(588)
1986	0	7	7	674	
1987	0	10	10	809	
1988	0	11	11		

[a] Nominal ex-vessel price per tonne of yellowfin tuna for 1980–1987 from S. Herrick (Southwest Fisheries Science Center, personal communication).

[b] Average profit (loss) per vessel for 1979–1985 from USITC (1986).

itability of U.S. tuna vessels were poor, and when the industry underwent restructuring. During 1982–1984, a significant portion of the U.S. fleet was tied up, primarily because of weak tuna prices and the high cost of servicing capital debt (Davis 1983). Marginal vessels went out of business and the remaining ones reported net losses, on the average (Table 2). The correlation between net losses and number of transfers for 1979 through 1985 is not significant ($r = 0.66$, df = 5; Figure 8). However, the correlation between number of transfers and nominal ex-vessel prices of yellowfin tuna (Table 2) is significant ($r = 0.87$, df = 6; Figure 9). In other words, when the ex-vessel price of yellowfin tuna was high, few vessels switched to foreign flags; when the price was low, many vessels switched. In reality yellowfin tuna prices and other economic factors—including tax incentives and debt service costs—were probably involved in vessel transfer or investment decisions.

Although tuna–dolphin regulations did not appear to play a significant role in vessel transfer decisions, there is a hint that perhaps they played a secondary role in affecting which flag countries were involved in the transfers. Prior to about 1981, Mexico adhered to the IATTC yellowfin tuna quota system, expanding its fleet and freely exporting its catch to the USA. During this period a large proportion (37%) of transfers of U.S. tuna vessels went to Mexico (Table 1). Then, in 1980, Mexico seized a U.S. tuna seiner for fishing in an area not recognized by the United States as belonging to Mexico, and the USA placed an embargo on imports of Mexican tuna. Mexico also declined to participate in the IATTC tuna–dolphin program or to provide adequate documentation for MMPA requirements, which precipitated an additional

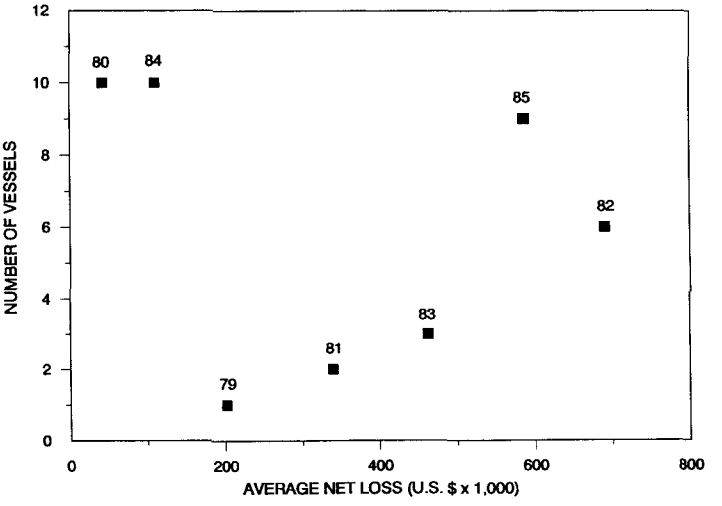

FIGURE 8.—Relationship between number of U.S. vessels transferred to foreign-flag registration and average net economic loss (thousands of US$) of U.S. purse seiners, 1979–1985. Year is shown for each point.

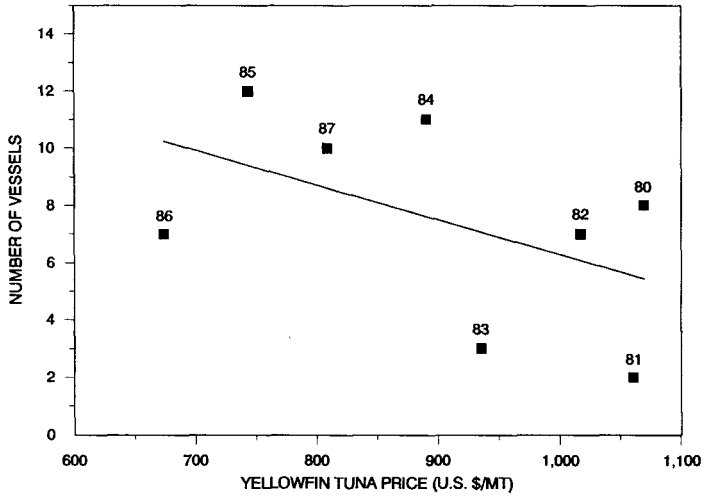

FIGURE 9.—Relationship between number of vessels (Y) transferred to foreign registration and nominal U.S. ex-vessel price (X, US$/metric tonne) for yellowfin tuna, 1980–1987. Year is shown for each point along with the linear regression line, $Y = 18.48 - 0.012X$.

embargo. Not until 1986, when Mexico joined the IATTC tuna–dolphin program, were the embargoes lifted. During the 1981–1986 embargo period, only five transfers (12%) were made to Mexico. Venezuela, on the other hand, which met MMPA requirements and freely exported tuna to the USA, became the home for 15 former U.S. vessels (36%) during this period.

The future outlook is for transfer of fewer U.S. vessels, and most of those will be older or smaller vessels too costly to own and operate under U.S. registry or from a U.S. port. This forecast is based on changes in vessel ownership, market conditions, and regulations.

During 1979–1987, 56% of the transferred vessels were owned by processors, either solely or with a majority share (Figure 5). Those processors liquidated virtually all of their vessel holdings to generate capital for restructuring. Now, the liquidation has been largely completed and processors have a significantly lower capital involvement in the U.S. harvesting sector. Remaining active vessels in the U.S. fleet are mostly owned and operated by U.S.-based families with a long allegiance to tuna fishing. They are less likely to liquidate their holdings en masse as did processors in the early 1980s.

The economic climate for vessel operators as a whole has improved. There are firmer markets, slower growth in operating costs (particularly in debt service), and higher catch rates in the ETP. Also operators can fish in the central-western Pacific under the South Pacific Tuna Treaty, a treaty between the USA and 16 south Pacific island countries that permits up to 50 U.S. purse-seiners access to tuna in the region. This has allowed most vessel owners to operate profitably, to consider construction of more efficient replacement vessels (FNI 1988), and to exploit more options for fishing strategy.

Changes in the MMPA in 1988 now require all foreign countries that export yellowfin tuna and fish products to the USA to adopt comparable tuna–dolphin regulations. Moreover, these exporters must include a schedule for reducing their dolphin kill rate to a level comparable to U.S. vessel performance, and they are required to impose trade sanctions ("secondary" sanctions) on trading partners who fish for yellowfin tuna but do not adopt U.S.-type tuna–dolphin regulations. The MMPA regulations are thus written to reduce any competitive advantage that a foreign-registered purse-seiner may have over a U.S.-registered vessel in marketing yellowfin tuna caught in association with dolphins.

Recent Events

On April 12, 1990, the three largest tuna processors in the USA (Star-Kist Seafoods, Van Camp Seafoods, and Bumble Bee Seafoods), which together account for 80% of domestic production, pledged to stop buying or selling tuna caught in a

manner that kills or injures dolphins. This pledge in effect terminates virtually all U.S. purse-seine deliveries of ETP tuna to U.S. processors, because most of the U.S. catch from the ETP fishery is taken on dolphins, the preferred manner of fishing for that region (Jackson 1989).

In the months ahead, the full effect of this pledge will be unfolding. It is already clear, however, that the U.S. purse-seine fleet will be deeply affected. There will be a reduction of U.S. vessels participating in the ETP fishery and an increase in vessels participating in the central-western Pacific fishery. Also, some vessels will explore means of participating in the Atlantic or Indian Ocean fisheries. The full 50 licenses allowed under the South Pacific Tuna Treaty have already been subscribed by vessels switching or planning to switch from the ETP fishery. About 14 purse-seiners continue to fish in the ETP, but this number is expected to shrink, given increased costs to market their catch, softening of prices for ETP tuna, and increased competition for schools of tuna not associated with dolphins. Several particularly small and older vessels have suspended their ETP operations and are for sale. A few of these vessels no doubt will be sold to foreign investors and registered under foreign flags.

This event underscores the influence of market forces on the U.S. tuna industry in general and the U.S. tuna purse-seine fleet in particular. The downsizing of the U.S. purse-seine fleet and the transfer of U.S. vessels to foreign flags in the 1980s occurred because of changes in the economic climate of the industry, not because of government tuna–dolphin regulations. The transfers were the result of the sale of vessels to foreign interests and not a ploy to circumvent U.S. tuna–dolphin regulations.

Acknowledgments

The complex, emotionally charged tuna–dolphin issue has many facets, from biology to politics; consequently, I relied on many individuals for information, advice, and comments. Assistance is acknowledged from the following colleagues: Norman Bartoo, Atilio Coan, and Sam Herrick (Southwest Fisheries Science Center, La Jolla); Svein Fougner, Lt. James Herkelrath, Rodney McInnis, and J. Gary Smith (Southwest Region, Terminal Island); Michael Hinton (IATTC, La Jolla); and Bernard Fink (Van Camp Seafoods, San Diego). The dedicated efforts of National Marine Fisheries Service tuna–dolphin observers in collecting data used in this study are also acknowledged.

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