



**WESTERN
PACIFIC
REGIONAL
FISHERY
MANAGEMENT
COUNCIL**

**The Impact of the Regulations Resulting from the Events of September
11th on the Transshipment of Fresh Fish in the American Pacific**

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Introduction

The purpose of this project is to assess the impact that the terrorist airplane attacks of September 11th 2001, and the resulting heightened air travel security, have had on the fresh fish transshipment industry in the Pacific, focusing on Hawai'i, Guam, The Commonwealth of the Northern Marianas (CNMI) and American Samoa. Islands are dependent on airlift to transport tourists in and fresh fish out. The economic downturn and people's unwillingness to fly as a result of September 11th has resulted in fewer flights, and less cargo space to send fish.

Added to the potential of increased competition for cargo space is the advent of new security measures. When assessing the profitability of transshipping fish, it is necessary to weigh the costs of shipping the fish against the potential profit from the overseas market. The added security surcharges and the increased inspections, have the potential to make transshipment less viable and profitable.

Both Hawai'i and Guam are involved in the export of fresh fish. The tourism industry, which is essential to the economy of these two areas, provides the needed airlift to transport fish to the various markets in Japan, the U.S. mainland, and Europe. Because passenger fees are the major source of income for scheduled airlines, any cargo acquired for shipment is only of secondary importance. Therefore, the health of tourism can have a significant impact on the amount of cargo space available.

This project also looks at the possibilities of transshipment in the territories of the Commonwealth of Northern Marinas and American Samoa. Unlike Hawai'i and Guam, CNMI does not really have a transshipment industry that could be impacted by post-September 11th shipment regulations. American Samoa has a similar situation due to inadequate airlift. The purpose then, is to look at the potential these two territories have of joining the fresh fish transshipment business.

It is important to note that there are many other factors besides September 11th that greatly influence the health of the fishing industry. The Asian economy crashed in 1997, which was strongly felt in areas such as Guam and CNMI, which are largely dependent on tourists from that area. Low fish landing and transshipment numbers during the months of September-December could also be attributed to seasonal lows in the fishing industry, which is further compounded this year (2002) by El Nino. There has been a shift within the airline industry to smaller planes, which means much less cargo space available to shippers. These are examples of other impacts on the industry that will be discussed later in the paper, when relevant.

The relevant literature in this subject is limited, so the vast majority of findings are from interviewing those who participate in all aspects of the fish transshipment industry. However, I will attempt to supplement both of these with data whenever possible.

New Regulations

The initial impact of September 11th was the grounding of all air traffic for several days, which had very costly consequences for those invested in shipping perishable goods. However, this paper seeks to examine the long-term impacts caused by government restrictions resulting from heightened air travel security. Changes concerning mail, the problem of "known shippers," and increased inspections and costs were frequently mentioned in interviews as post-September 11th security measures that impacted the transshipment industry.

Mail

As a result of the events of September 11th, greater restrictions have been placed on the movement of mail. Because it is impossible to verify the origin and therefore the safety of packages sent by U.S. Postal Service, it was decided that any parcel exceeding 16 ounces must be transported by freighter craft, rather than by passenger plane. While the passenger airlines financially felt the loss of the postal cargo, this new regulation did free up more space in the cargo section of passenger planes (D Cook, 2002).

This new requirement also provided possibilities to ship fish on the newly chartered mail freighters. For example, Fred Spencer of Transpacific Associates, Inc. sends cargo out on the flight between Honolulu and the Mainland (2002). However, this potential may be exploited in any area where the U.S. Postal Service operates.

The island of Majuro, in the Marshall Islands, is now a stop off for a chartered Postal Service plane from Honolulu on its way to Guam. This flight flies two times a week and can move 20-30 thousand pounds of cargo (Spencer, 2002). Fish can be loaded on the plane bound for Guam, and from there access Japanese markets. There is even more potential to load the plane when it is east-bound for Honolulu because it no longer has as much mail, leaving much more cargo space. This solution is optimal for both parties, because the fish and the mail subsidize each other, increasing profit for all concerned. In terms of access of the U.S. market, this particular result postal regulation following September 11th is quite positive (Bell, 2002).

Transportation Security Administration

Due to the events of September 11th, 2001, the United States government has more stringently implemented the pre-existing "known shipper" policy. This policy requires that shippers verify those clients that already have credit accounts established with them. Now companies and individuals who wish to send cargo via air must have a long, clean record of shipment (Steigman, 2002). Those who were part-time shippers now have to either work through a known shipper, or establish an account (Kohn, 2002; D. Cook, 2002). To become a known shipper requires an investment in time while lengthy background checks are conducted by the FBI and U.S. Customs (Steigman, 2002).

This new regulation resulted in lost revenue for cargo shippers due to the restrictions on part time shippers. However, Steigman of the Transportation Security Administration noted that by and large, most of those who are in the business of shipping fish were already known shippers, so the impact was minimal. Many have expressed the opinion that the problem has largely been overcome and has had no lasting significance (Bell, 2002; Bartram, 2002).

Food and Drug Administration (FDA)

The number of FDA inspectors in Hawaii has gone from 3 to 13; however, the increase in staff does not translate in an increase in understanding of the product itself (Kaneko, 2002). Since September 11th the FDA has attempted to increase the amount of physical testing from 1% of imported items to 2% (a 100% increase). 800 new inspectors have been hired nation-wide and there are many new offices being opened in smaller airports which will meet the demands caused by the airlines new trend of sending smaller planes to more locations (Recendes, 2002).

Most inspections are done by the company that imports the goods, although the FDA does oversee this process. There are times when the FDA focuses on a certain product, and at this time the concentration of testing is on fish (Recendes, 2002). Recendes of the FDA asserts that the testing still occurs within the pre-established time frame, despite the increase of mandatory testing. Those involved in the import still have some reservations due to the highly perishable nature of their product (Takenaka, 2002).

The window of time in which it is possible to ship fish while maintaining the value decreases relative to how long the fish has been dead. With fisheries making fewer but longer trips (up to 30 days), the quality of the fish is harder to maintain for long periods of time once the fish is unloaded from the ship. Because the opportunity to sell the fish as a high quality product is already quite brief, any delay in inspections could therefore be disastrous (Kaneko, 2002). If

the trips were shorter, the quality of the fish would be easier to maintain and delays would not be so problematic.

While the purpose of these inspections is to determine the safety of the seafood from natural food hazards, regulations like the new Bioterrorism Act of 2002 may shift the focus to purposefully contaminated food. In situations such as these, fish imported from outside the U.S. (especially areas with Muslim populations) would be subject to more testing, possibly impacting its quality. While this presents problems for those importing foreign fish, the demand for domestic fish may increase because it would not have to deal with as many potential delays (Kaneko, 2002).

Security Surcharge

With the emphasis on increased security after September 11th, it was necessary for those involved in the transshipment industry to install new equipment and take more precautions. These added costs are passed down to the forwarder by way of a security surcharge. The added cost depends on which airline is being used and the destination of the cargo. For example, Continental Airlines charges \$.10/kg for international shipping and \$.03/kg for domestic, while American Airlines charges \$.15/kg and \$.06/kg respectively. Michael Kohn estimates that these new charges can increase the cost to ship by as much as 50%, while Norma Acob puts the estimate around 40%.

Ultimately it is the consumer that will have to pay most of the extra costs. However, this increase of cost makes shipping an item as perishable as fish that much more risky. If these charges increase too much relative to the profit, it no longer becomes worth it to ship fish.

U.S. State and Territories in the Pacific

Hawaii

Transshipment

As one of the largest air transport hubs of the Pacific, Hawai'i imports and exports large amounts of fish. Countries like the Philippines and Fiji send their fish to Hawai'i where it is re-iced and sent on its way to the final destination, either Japan or the Mainland (D. Cook, 2002). Of the locally landed fish, Bartram estimates that about 50% is sent to the Mainland (with some going to Japan and Europe), while the other 50% is consumed locally. This, of course, depends on the market, and currently with less demand in Hawai'i a greater percentage is sent off (2002). There are some occasions when fish from overseas is off loaded

here for local consumption, but this only happens if there is a low production for the local fisheries, or contractual obligations with Hawai'i importers. (Bartram 2002).

Of the fish transshipped from Hawai'i the vast majority of it is destined for the West Coast of the U.S. mainland, although there is a small market on the East Coast as well. People in cities like San Francisco and Seattle are willing to pay a high price for good quality fresh yellowfin and albacore (Bartram, 96). The main airlines that fly between Hawai'i and the mainland are Continental, Delta, Northwest and United. Not all of these flights connect directly to the West Coast, however, those with hubs further east, such as Delta, often make technical stops in Los Angeles, providing the possibility for unloading fish (Black, 2002)

Cargo is usually sent in passenger planes, linking it with the health of the air passenger business. Because the main revenue for the commercial airlines is derived from the passengers, cargo is just the "icing on the cake" and not the main priority (D. Cook, 2002).

There are alternatives to sending fish by the tourist-dependent passenger planes. Pacific Air Cargo connects Honolulu to the mainland five times a week. The cargo planes are a more desirable option than passenger planes because not only are the security restrictions less stringent, the costs are also lower. In Hawai'i there is generally more cargo being imported than exported, resulting in lower rates outbound from Honolulu. The reason passenger planes continue to be used is that there are not enough cargo planes to satisfy demand (Calvert, 2002). The other option of chartered postal planes is a direct result of September 11th. For safety reasons larger packages are no longer allowed to be sent on passenger planes and therefore the Post Office has chartered air freight services. Since these planes are devoted only to cargo, there is excess space available (Spencer, 2002).

Flight Frequency/Available Cargo Space

In 2000, there was an average number of 41 flights daily from Honolulu to the U.S. mainland. From January to August 2001, that number had risen to almost 43 daily flights. From September to December 2001, the number dropped to 37.5, which translates to a 9.7% decrease from the same time period the year before (about 480 fewer flights total). While this means quite a bit of lost cargo space, it has not been a sustained trend. Of the data that has been collected and made available for this year, flight frequencies have not only recovered, but are nearing 47 flights daily, already exceeding pre-September 2001 numbers (Bureau of Transportation Statistics).

When questioned, those involved in the transshipment of fish cited the airline industries shift to smaller planes as the primary problem, rather than the possible repercussions of September 11th. Most of the airlines flying between Hawai'i and the mainland have discontinued the use of the larger DC 10 aircraft in favor of the smaller 767. The smaller planes need less fuel and require fewer crew members, saving the airlines approximately 20% over the DC 10 (D. Cook, 2002). The small planes, having smaller bodies, naturally have less cargo space. The DC 10 could accommodate an LD3 container, which holds approximately 1 ton of cargo, while a 767, having a much smaller hatch door, can only accommodate an LD2 container with space for only 800 kg (Calvert, 2002; Bartram, 2002).

Not only are the planes smaller, but they now serve a greater number of cities. Instead of simply flying between Honolulu and San Francisco, or Los Angeles, there are now direct flights to San Jose, San Diego, and other more remote West Coast airports. The loss of cargo space and the diversification of mainland destinations that has occurred with the smaller aircraft could be quite damaging to the cargo industry. Both of these shifts may lead to an increased use of cargo planes and postal charter flights as mentioned earlier.

One solution to the decentralization is using trucks to bring the cargo in from these remote locations to prepare it for distribution (D. Cook, 2002). Unfortunately this increases both the time and the cost of getting the product to its market, and the extra handling could adversely affect the value of the fish (Takenaka, 2002). On the other hand, it may encourage new markets to open up in these smaller cities, providing new opportunities for expansion (Bartram 2002)

Interisland Cargo

Aloha Airlines has begun to use their planes to transport both passengers and cargo, but not at the same time. Four of their planes are "quick change" meaning that the seats can be easily removed and the space converted for cargo usage. These flights take place at night, and the next morning the plane is converted back to carry passengers. Most of the fish shipped by Aloha Airlines is outbound from Honolulu, destined for local consumption on the outer islands (Arujo, 2002).

Other Factors

- **Swordfish**

The closing of the swordfish industry had an extensive impact on the amount of fish being shipped. The swordfish comprised of 60-65% of the local catch, and since local demand was low, 95% of that was sent to the mainland. Norma Acob

remembers sending up to 10 containers of fish daily (Acob, 2002). The loss of product means that this event alleviated the competition for cargo space. Although, at the same time, the loss of swordfish meant that the relationship between the airlines and the shippers was weakened due to the lack of constant contact (Takenaka, 2002)

- Direct Delivery Service

Another factor in the export of fish in Hawaii even before September 11th is an alternative to the traditional shipping method. There are some businesses in Hawaii that specialize in the export of fish, either globally or to the mainland, who process and package their product and send it directly through courier rather than sending via commercial airlines. For example, Honolulu Fish Company has a deal exclusively with FedEx for the distribution of its product. While this alleviates any possible competition for cargo space on the commercial airlines, it completely circumvents the brokers, and the shippers who are usually involved in the process (J. Cook, 2002).

- Economic downturn

One aspect of September 11th that impacted all individuals was the weakening of the economy. Not only did this result in lower prices for fish, but with fewer tourists coming in to Hawaii and fewer people willing to eat out in general, the amount of quality fish being consumed dropped (J. Cook, 2002). This is an impact that is impossible to control, but also has every potential for recovery.

- Aku Fishery

As a direct result of September 11th, Aku fishermen are no longer allowed to bait in Military harbors such as Pearl Harbor or Kaneohe Bay. This is done for reasons of security and naturally impinges on the efficiency of the industry (Takenaka, 2002). [contacting Charlie Piers]

Possibilities

It seems clear that with the available airlift it does not appear to be an insurmountable limiting factor despite added costs and smaller planes. Nevertheless, there are other impacts that result from September 11th that set their own unique challenges. The slowing economy and the new restrictions to the Aku fishery have had immediate disadvantages. However, the edge that September 11th may have given Hawai'i fish over international competitors may be advantageous. John Kaneko speculates that if the focus is on the quality of the fish, the process will be more profitable (2002).

Guam

Transshipment

Guam's transshipment industry began in the late 1980's. Due to the excellent port and airport facilities, as well as its proximity to both the fishing grounds and Japan, Guam became a transshipment hub. Although the major market for Guam's fresh fish is Japan, the lower grade fish is being sent to Europe (Economic development and planning division 1998).

Guam is exempt from the Nicholson Act (which prohibits landing of fish in U.S. ports by foreign vessels). As a result, the majority of vessels offloading in Guam's harbors are Japanese and Taiwanese. Guam-based longliners usually have 30 day trips and their arrivals in port are coordinated so that the air cargo capacity to Japan is not over loaded (Duenas, 2002).

The economic benefits Guam enjoys from the spending done by Asian longliners during port calls is significant¹. If the Federated States of Micronesia (FSM) continues to airfreight fresh fish into Guam and take up cargo space on the flights to Japan, the contribution to Guam's economy would be less extensive. (Hamnett 96, 6). FSM implemented a local docking law for those fishing in their water. This threatened the revenues Guam was getting from service providing to ship and crews. However, the fine of \$2000 to land in Guam rather than FSM can be less than the loss of value incurred if the fish have to wait to be air freighted from FSM to Guam and from there to Japan. (Duenas, 2002)

The successful transshipment of fish from Guam's harbors to Japan's fish markets is dependent on the tourism industry. In 1998 there were up to 11 flights a day between Japan, which provided the frequency required. 60-85% of the cargo space was fresh fish, depending on the time of day.² (Economic Development and Planning Division, 1998). The most popular flights for freighting fish are those that arrive in Japan early in the day so that they may be processed through Japanese customs quickly enough to be at the market the next morning.

Unlike Hawai'i, which has a vast array of products competing for cargo space, Guam's export to Japan is almost exclusively fish, and since the fishing vessels coordinate their landings, there has usually been excess space. Similar to Hawai'i, Guam was also faced with the narrowing of aircrafts, although Alan Smithwick believes that cargo space constraints are still only really a problem during Japanese Holidays, due to the heightened demand of fresh fish (Smithwick, 2002).

¹ Total expenditures per call for longline was \$21,522 and for purse seine, \$358,150 (Economic development and planning division 1998).

² DC 10 = \$15,000 cost to ship per flight and 747 = \$20,000 cost to ship per flight (Economic development and planning division 1998)

After the September 11th attacks, the numbers of tourists travelling from Japan dropped 44%. Although September is typically a low tourist season, such a drastic drop can be directly linked with a loss of tourist confidence following the attacks. Comparing August 2002 to August 2001, the number Japanese tourists was still down by 21% (Guam Visitors Bureau). It is important to note that Japan's economic crisis earlier in the year may also have contributed to the decline of the tourism industry (Daleno, 2002).

Flight frequency

Until September 2001 the number of flights leaving from Guam was up relative to the year before. Directly after the attacks in September, flights were grounded for around four weeks (Duenas, 2002). Overall, airlines such as Continental Micronesia, Japan Airlines (JAL) and All Nippon Airways (ANA) had an average maintenance or increase in frequency over the year before. The results from the first two months of 2002 indicate a cut back of 91 flights per month for those three airlines collectively (23% fewer planes)³ (Bureau of Transportation Statistics). ANA has since recovered and is currently offering two daily flights between Osaka and Guam, exceeding even their 2000 flight frequency (Maruta, 2002). Japan Airlines has also improved on their 2000 performance by offering 4 flights daily (Kimoro, 2002). Northwest Airlines, interestingly enough, only had three fewer flights in the month of September 2001, and since that time has maintained the same 30 flights a month it had in 2000 (Bureau of Transportation statistics). [have yet to hear from Continental Micronesia]

The transshipment data available from Western Pacific Fishery Information Network indicates that there were 11.77 million kilograms of tuna sent out of Guam in 2001, the majority being bigeye, followed by yellowfin. This is a vast improvement over the low of 4.82 million kilograms in 1997 (WPacFIN). The data does not include 2002 and is presented in years, not months, so it is difficult to ascertain the direct impact of September 11th.

Changes in domestic catch

Asian longline landings in Guam that are not transshipped to Japan are locally processed for sale, canneries or wholesale. Due to September 11th the local demand for fish has been fulfilled by local fisherpeople, rather than the fish left over from international fisherpeople. Duenas estimates there was a 40% increase in the local catch, and a 30% increase in local effort. He attributes the increase in effort to the rise in unemployment due to the problems with the tourism industry. The extra fishing supplements the family income. (Duenas, 2002)

Possibilities

³ This data was obtained from the Bureau of Transportation Statistics which only have information up to February 2002.

It appears that despite the decreased flight frequency late last year and early this year, the airlines have not only recovered but have exceeded pre-September 2001 service to Japan. There are worries about the lack of Japanese tourists, and if the United States enters a war, there may be even more cause for concern. However, there does seem to be quite a bit of optimism concerning the emerging Korean tourist market. Arrivals from Korea has improved by 46% from last year (Daleno, 10/29/02). With a developing demand for sashimi in Korea (Bartram 1996), it may be worth it to encourage this trend parallel to the increasing number of tourists.

Northern Marianas

Fishery

Fishing is certainly not one of the major contributors to the economy of the Commonwealth of the Northern Mariana Islands. Tourism and garment production compete for CNMI's small amount of land while the seas remain largely undisturbed by large commercial fishing ventures.

Most of those who fish in CNMI do so from smaller boats that stay within 20 miles from land. The main take by the commercial, subsistence and recreational fishers is skipjack tuna, which is found relatively near the shore at certain times of the year. However, there are also some larger operations that target bottom fish (WPacFIN).

Despite the local fishers, CNMI must import fish so that the hotels and restaurants may guarantee its supply for tourists (Gourley, 2002). In 2000 CNMI imported almost 411 thousand pounds of fish, mostly from Guam and the FSM. (Central Statistics Division, CNMI, 2001, 153). If a local fisherperson has a good catch, they may not have any customers due to the previous agreements with importers (Gourley, 2002)

There is little incentive for Asian longline fishing vessels to port in Saipan because Guam is closer to the southern fishing grounds, and has better facilities as well as cheaper fuel and re-supplying costs. At the moment there simply is not an adequate infrastructure for the transshipment of fresh tuna (Gourley, 2002).

There have been a few attempts at transshipment in the past. In 1992 R/V SUN longline tried the transshipment business, but according to Gourley there was not enough experience or capital invested in the project, and they were unable to catch enough fish to make it profitable. More recently there was a rather lucrative venture to send bottom fish to Japan, but it is on hold at the moment

due to the ill health of the project coordinator (Gourley, 2002). Lack of investment in either time or capital seems to be the problem in these cases.

Flight Frequency

Although CNMI may not yet have the required infrastructure in terms of fishing, there is certainly no limitation of air lift. It is true that tourism was stagnant before September 2001, and the events of September did nothing to encourage cautious Japanese tourist (Osman:CNMI 2001, 15). However, tourist numbers for this year appear to be on the rise, and an increase of flight frequency confirms this trend.

Japan Airlines and Northwest Airlines are both taking advantage of the Airline Incentive Program, begun in May 1999, to encourage airlines to expand their service to Saipan (Commonwealth Ports Authority). There are currently 3 daily flights (two Japan Airline and one Northwest) linking Saipan directly with both Tokyo and Osaka. Continental Micronesia also provides service between CNMI and Japan, but it is not direct, making a stop in Guam both ways. The fact that these flights arrive in the evening is not optimal for the importation of fish because the timing involved getting the product through customs and to the market is delayed by a day.

Possibilities

It is clear that the limiting factor in this case is the lack of exploitation of local marine resources, rather than available airlift. The transshipment of fish has already been shown to be successful in the case of bottom fish, so it is certainly possible. While there is a growing Japanese market for skipjack, the most commonly caught fish in the Northern Marianas, Gourley suggested that high quality yellowfin and bigeye or processed loins would be the most profitable. To make this venture a success, harbor infrastructure would need improvement and Saipan's fuel and service charges would have to be competitive with Guam prices.

American Samoa

Unlike Hawai'i and Guam, and to some extent CNMI, American Samoa tuna production (mainly albacore) is mostly destined for canning. Like Guam and CNMI, American Samoa is exempt from the Nicholson Act, which means that foreign vessels can land fish. American Samoa also has partial duty-free status for value-added tuna products, another attraction to canneries.

The fish canning business begun in the mid 1950's has grown to become the backbone of American Samoa's economy. From 2000 to 2001 there was a 300% increase in the tuna landing in American Samoa. This dramatic rise in production

level is a result of the expansion of the domestic longline fleet, beginning in 1997 (Tulafono, 2002). Starkist Seafood and Samoa Packing employ one third of the population of American Samoa, and generate secondary spending in the territory by supplying the fleet with provisions and repair services (Hamnett 96, 2).

The local canneries' economic viability is threatened. American Samoa's duty-free status may soon be shared with countries that have lower minimum wage laws, threatening American Samoa's competitive advantage (Wolman, 2002). It would be prudent to explore alternative options. Unfortunately, unlike Guam, American Samoa has no tourism industry to speak of, which also limits cargo lift on passenger airlines, and the possibilities of fresh fish export.

Possibilities

Ray Tulafono from the Department of Marine and Wildlife Resources says that his department is in the process of exploring the possible options for exporting fish. At the moment the amount of airlift available is not too promising. Currently Hawaiian Airlines provides a direct flight from Pago Pago to Honolulu every Monday and Friday with a DC 10-10 aircraft. The flight's arrival in Honolulu at 5:15 am is excellent for marketing in Hawai'i or transfer to another plane bound for Japan or the west coast. But the small lift and low frequency makes a constant flow of goods impossible.

A Post Office charter plane that carries the mail to American Samoa continues on to Australia, meaning there is little potential for fish export to the U.S. (Western Pacific Regional Fishery Management Council 2002, 101). However, Sydney is one of the major airport hubs of the Pacific, and if there is a focus on obtaining and maintaining fish of the highest quality there is potential for fresh tuna export to Japan.

There is even a possibility of having fish sent from Western Samoa, which is quite close in proximity and has much more airlift than American Samoa. Of course, in this case questions of additional charges would have to be carefully assessed relative to potential costs (Tulafono, 2002).

Conclusion

The attacks in 2001 have resulted in significant changes in the cargo and transshipment industry, including more stringent rules about who is allowed to ship and the type of airplanes that are now available. It has increased the costs for the shippers, and the initial slump in tourism had a negative impact on the amount of cargo space available.

However, most of the air transport problems that resulted from 9/11 do not appear to be either long-term or insurmountable. The "known shipper" policy has not had a significant or lasting impact on the industry, increased inspection may benefit American fishermen, and the new regulations involving mail provides potential for even more available airlift.

Frequency of service between the islands discussed and their markets is equal to, if not better than, the pre-September 11th service levels. Most of the limiting factors involving airfreight, such as the shift to smaller planes, or in the case of American Samoa, a history of very little lift, are not connected to repercussions of September 11th.

In Hawai'i the restrictions of the Aku fishery and the added pressure placed on the already strained economy are the more visible correlations between September 11th and the fisheries. Combined with the pre-existing problems of the swordfish closure and a weak Asian economy, the fishing industry has its work cut out for it.

However, there are new possibilities to be explored for all involved. Some of these possibilities are even made possible by September 11th, and increasing pressure to diversify the economy may open new avenues. With creativity and innovation, the fisheries may be incorporated into the solution.

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Bibliography

- Acob, Norma. Commodity Forwarders. Personal communication. 18 October 2002.
- Arujo, Eddie. Aloha Airlines Cargo. Personal Communication. November 1 2002.
- Bartram, Paul, Joe Bourland, Paul Gates, John Kaneko, and Oliver Seth. Guam Fresh Tuna Longline Transshipment Study: Phase II. July 1991
- Bartram, Paul, Peter Garrod and John Kaneko. Quality and Product Differentiation as Price Determinants in the Marketing of Fresh Pacific Tuna and Marlin. SOEST 96-06, JIMAR Contribution 96-304.
- Bartram, Paul. Hawaii Seafood Distributors. Personal Communication. September 25, 2002.
- Bell, Eric. Triple B Forwarders. Personal Communication. September 30, 2002.
- Black, Anthony. Delta Airlines. Personal Communication. 13 October, 2002.
- Calvert, Tom. Tom Calvert and Associates. Personal communication. 21 October, 2002.
- Central Statistics Division, Department of Commerce (CNMI). Common Wealth of the Northern Mariana Islands Statistical Yearbook: 2000. August 2001. <http://www.commerce.gov.mp/csd/pdfs/Yearbook%202000.pdf>
- Commonwealth Ports Authority. Commonwealth of the Northern Mariana Islands: Saipan International Airport. <http://net.saipan.com/cftemplates/cpa/index.cfm?pageID=55>
- Cook, David. Northwest Airlines Cargo Department. Personal Communication. 8 October, 2002.
- Cook, Jim. Pacific Ocean Producers. Personal Communication. 3 October, 2002.
- Daleno, Gaynor Dumat-ol "Guam Expects 1.1 Million Tourists this Year Thanks to Korea" in Pacific Daily Nes/PINA Nius Online. 10/29/02. <http://pidp.eastwestcenter.org/pireport/2002/October/10-30-04.htm>

- Daleno, Gaynot Dumat-ol. "U.S. West Coast Port Unrest Worries Guam." In Pacific Daily News/PINA Nius Online. 9/23/02.
<http://pidp.eatwestcenter.org/ireport/2002/September/09-23-01.htm>
- Duenas, Manuel P. II. Guam Fishermen's Cooperative Association. Personal Communication. 14 October, 2002.
- Economic Development and Planning Division, Guam Department of Commerce. Guam Large Scale Fisheries: Current Status and Prospects. 1998.
http://www.admin.gov.gu/commerce/guam_large_fisheries.htm.
- Economic Research Center, External Trade Section, Guam Department of Commerce. Guam's Export Data: CY 2001.
- Faleomavaega, Eni F. H. "News Release: President of Starkist Requests Meeting with Faleomavaega to Discuss Future of Starkist in American Samoa and IRS Section 936." October 28, 2002. In Pacific Islands Report.
<http://pidp.eastwestcenter.org/pireport/2002/October/10-30-15.htm>
- Gourley, John. Micronesia Environmental Services. Personal Communication. 25 October, 2002
- Guam Department of Commerce. Monthly Report on Tuna Offloaded in Guam by Species. 1999-2002.
- Guam Visitors Bureau. August 2002 Visitor Statistics: Visitors by Country of Origin.
- Hamnett, Michael P. and William Sam Pintz. The Contribution of Tuna Fishing and Transshipment to the Economies of American Samoa, the Commonwealth of Northern Mariana Islands, and Guam. SOEST 96-05, JIMAR contribution 96-303.
- Hamnett, Michael P. and Cheryl L. Anderson. Impact of ENSO Events on Tuna Fisheries in the U.S. Affiliated Pacific Islands. SOEST 00-03, JIMAR contribution 00-330.
- Hopai, Lance. Continental Airlines. Personal Communication. October 10, 2002.
- Kaneko, John. Pacmar Inc. Personal Communication. 16 October 2002.
- Kimoro. Japan Airlines, Honolulu Office. Personal Communication. October 10, 2002.

- Kohn, Michael. Hawaii Seafood Distributors. Personal Communication. September 25, 2002
- Maruta. All Nippon Airlines. Personal communication. 16 October, 2002.
- Osman, Wali M. Bank of Hawai'i Commonwealth of the Northern Mariana Islands Economic Report August 2001.
<http://www.boh.com/econ/pdfs/CNMIRpt.pdf>
- Osman, Wali M. Bank of Hawai'i Guam Economic Report August 2001.
<http://www.boh.com/econ/pdfs/GuamRpt.pdf>
- Pacific Magazine. "Northern Mariana Islands Visitor Arrivals Up" In Pacificislands.cc. October 22, 2002.
<http://www.pacificislands.cc/pm102002/pinadefault.cfm?pinaid=6048>
- Radio Australia. "Foreign Investment Drying Up in Northern Marianas" In Pacific Islands Report. Oct. 30, 2002.
<http://pidp.eastwestcenter.org/pireport/2002/October/10-30-11.htm>
- Recendes, Christopher. Food and Drug Administration. Personal Communication. 17 October, 2002.
- Sabuco, Ulysses Torres. "Northern Marianas seeks to Benefit from U.S.-Japan Agreement" In Pacific Islands Report.
<http://pidp.eastwestcenter.org/pireport/2002/August/08-27-12.htm>
- Sagapolutele, Fili. "Pago Fishermen Suffer Through Price Drought: Governor's Tuna Tax Plan Causes Cannery Opposition". In Pacific Islands.cc.
<http://www.pacificislands.cc/> April 2001.
- Smithwick, Alan. General Manager at Seapak. Personal communication. 15 October, 2002.
- Spencer, Fred. Transpacific Associates, Inc. Personal Communication. 4 October, 2002.
- Steigman, David. Transportation Security Administration Public Affairs. 4 November, 2002.
- Stock, Doug. United Fisheries Corporation. Personal Communication. 21 October, 2002.

Takenaka, Brooks. United Fishing Agency Ltd. Personal communication. 15 October, 2002.

Tulafono, Ray. Department of Marine and Wildlife Resources, American Samoa. Personal Communication. 30 October, 2002.

Western Pacific Fisheries Information Network (WPacFIN). Commonwealth of the Northern Mariana Islands Pelagic Fishery Description.
http://wpacfin.nmfs.hawaii.edu/cnmi/cnmi_pel_text.htm

Western Pacific Regional Fishery Management Council. Draft, Measure to limit pelagic longline fishing effort in the Exclusive Economic Zone around American Samoa: Amendment 11 to the Fishery Management Plan for the Pelagic Fisheries of the Western Pacific Region, May 28, 2002.

Western Pacific Regional Fishery Management Council. Pelagic Fisheries of the Western Pacific Region: 2000 Annual Report. April 2002

Wolman, Lewis. "What's American Samoa's future if canneries pack up?: The challenges ahead for the US territory" In Pacific Islands.cc.
<http://www.pacificislands.cc/> January 2002