THE TEXAS INSHORE BAY AND BAIT LICENSE BUYBACK PROGRAM

Robin Riechers*
Wade Griffin**
Richard Woodward**

* Texas Parks and Wildlife Department, 4200 Smith School Road, Austin, TX 78744
** Department of Agricultural Economics, Texas A&M University, TAMU-2124, College Station, TX 77843-2124

Abstract

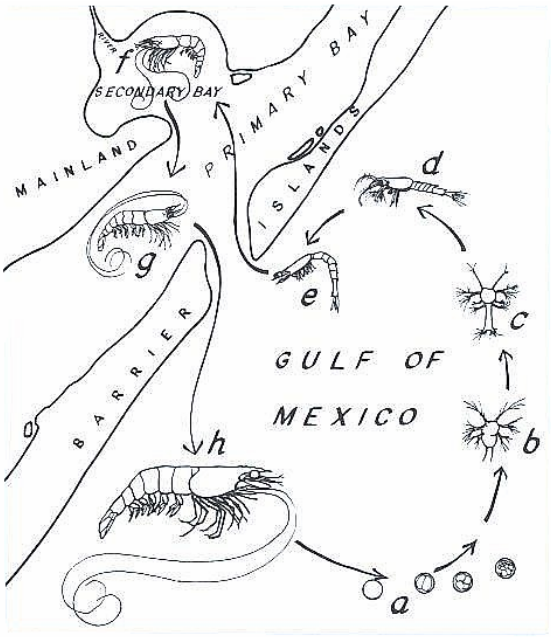
The Texas Shrimp License Management Program provided authority to establish a voluntary license buyback program to remove commercial bay and bait licenses from the shrimp fishery without creating excessive social and economic disruptions within coastal communities. The voluntary buyback program is conducted through a reverse bid process. The Department calculates an estimated value of any bay and bait license based on specific criteria, such as how long the license has been in the fishery and the length of the vessel. The shrimper evaluates the value of his license and submits a sale offer (bid) to the Department. Each offer is then compared with the calculated value for that particular license. The shrimper's bid is accepted if it is less than the calculated value. Bids with the greatest monetary difference from the calculated value are selected to be purchased first.

Funding for the buyback program was originally established through a portion of license fees which accrue annually based on the number of shrimp handling and harvesting licenses sold. Additional funding of $1.4 million was acquired in 1997 as a three-year federal grant to the Department. Private donations of $132,000 have also been used in the buyback program. In May 2000, the Texas Parks and Wildlife Commission adopted a proposal to increase the fees associated with the Saltwater Fishing Stamp by $3.00 per stamp, which increased the Saltwater Stamp from $7.00 to $10.00. Approximately $1.3 million is raised each year to support the buyback based on the fee increase. The fee increase is scheduled to expire in August 2005.

Twelve rounds of license buyback have occurred since the implementation of the buyback program in 1996. The Texas Parks and Wildlife Department has purchased 1005 bay and bait commercial shrimp license at a cost of approximately $5.8 million.

Description of the Shrimp Fishery

The life cycle of the Gulf of Mexico *penaeid* (brown, pink, and white shrimp) involves both gulf and bay phases (Texas Parks and Wildlife Department 2000a). Mature shrimp spawn in the gulf and their eggs are carried shoreward by tidal action to freshwater estuaries along the gulf coast as postmysis (Figure 1). After they reach the estuaries, they continue to grow where they develop into juvenile shrimp. The juveniles then begin their migration into bays, the near-shore, and then finally the offshore gulf where the process repeats itself. The shrimp's life cycle is approximately one year.



a) shrimp eggs
b) nauplius larva
c) protozoea
d) mysis
e) postmysis
f) juvenile shrimp
g) adolescent shrimp
h) mature adult shrimp

Source: Texas Parks and Wildlife Department 2002b

The largest and most valuable commercial fishery in Texas is the shrimp fishery and consists of bait, bay, and gulf participants (Funk, et al. 2003). To operate in any one of these fisheries, a vessel owner must obtain a license specifically for that fishery. The bait shrimp fishery operates within the bays along the Texas coast, harvesting live shrimp for use as fishing bait by recreational fishermen. The bay shrimp fishery harvests shrimp for human consumption in Texas bays and these vessels typically range from 15 to 60 feet in length. Some of these vessels will also hold a gulf license and operate in the nearshore area of the Gulf. Also, operating in Texas gulf waters, as well as in the offshore waters of the Gulf of Mexico, are those vessels in the gulf shrimp fishery, which typically harvest larger mature shrimp for human consumption. The gulf shrimp fishery vessels will range from 60 to 90 feet in length.

Texas has managed the shrimp fishery, basically through closures, to allow shrimp to mature to a larger size because larger shrimp bring a higher ex-vessel price per pound. However, since 1970 effort in the bays has more than doubled, causing increased biological pressure on the shrimp stock (Figure 2). This has resulted in the reduction of availability of larger shrimp to the bay and bait shrimp fishery, as well as, the gulf shrimp fleet. This increased harvest by bay and bait fishermen has led to a decrease in the number of shrimp reaching mature size, thus reducing harvest of the gulf shrimp fleet (Robinson, Campbell, and Butler 1994).

History of Management

Historically, the Texas shrimp fishery was directly managed by the Legislature. In 1985 the Legislature granted management authority over shrimp to the Texas Parks and Wildlife Commission (Commission) contingent upon development of a shrimp management plan. The Texas Shrimp Fishery Management Plan was adopted in November, 1989 which resulted in Commission control over regulation of traditional management measures, including means, methods, times, places, quantity, and size of harvest. Included in the Plan is the establishment of the Texas Shrimp Advisory Committee, which signaled a shift towards "co-management" with industry members. Disturbing trends within the shrimp fishery led the industry and the Department to work jointly to create a Shrimp License Management Program (SLMP) for the Texas inshore shrimp fishery. The first ever Texas commercial fishery limited entry program, Senate Bill 750, was signed into law on June 8, 1995 (Texas Parks and Wildlife Department, 1999c).

The SLMP provided authority to establish a voluntary license buyback program to remove licenses from the bay and bait shrimp fishery without creating excessive social and economic disruptions within coastal communities. The buyback program was a significant element in the license limitation plan and was designed to remove licenses and fishing effort from the inshore shrimp fishery through time. Vessel upgrades for the licenses issued in SLMP are limited to increases in the length and horsepower of fishing vessels. Replacement vessels cannot be more than 15% longer than the vessel being replaced. Further, replacement vessel length is limited to a maximum of 60 feet. Similarly, engine upgrades cannot be greater than a 15% increase in horsepower, up to a maximum of 400 horsepower (Texas Parks and Wildlife Department, 1999c).

A nine-member Shrimp License Management Review Board was elected by shrimp license holders to make recommendations to the Department on hardship and appeal cases concerning initial eligibility and license transfers. Additionally, the Review Board makes recommendations concerning the administrative aspects of the Shrimp License Management Program. The Review Board membership is geographically distributed based on the total number of bay and bait license holders per county along the coast (Texas Parks and Wildlife Department, 1999c).

The Shrimp License Management Program also made significant changes regarding law enforcement. A category of flagrant violations was created within the current set of

shrimping regulations. For flagrant violations, an individual can receive a license suspension and ultimately revocation if enough of these violations occur during a certain period of time.

Description of the buy-back program

The SLMP provided authority to establish the voluntary license buyback program. Commission action in August 1996 (31TAC §58.130) established administrative procedures for the voluntary buyback program. The first license buyback period opened in October 1996. The voluntary aspect of the program was to allow for effort reduction while minimizing the economic and social disruptions in local communities. The voluntary buyback program is conducted through a reverse bid process. The Department calculates an estimated value of any bay and bait license based on specific criteria, such as how long the license has been in the fishery and the length of the vessel. The shrimper evaluates the value of his license and submits a sale offer (bid) to the Department. Each offer is then compared with the calculated value for that particular license. The shrimper's bid is accepted if it is less than the calculated value. Bids with the greatest monetary difference from the calculated value are selected to be purchased first (Texas Parks and Wildlife Department, 1999c).

Funding for the buyback program was originally established through a portion of license fees as established in Senate Bill 750. These funds accrue annually based on the number of shrimp handling and harvesting licenses sold, and were estimated to be $170,000 per year. The first buyback round was funded with only these monies. Additional funding of $1.4 million was acquired in 1997 as a three-year federal grant to the Department. Private donations of $132,000 have also been used in the buyback program. In May 2000, the Commission adopted a proposal to increase the fees associated with the Saltwater Fishing Stamp by $3.00 per stamp,which increased the Saltwater Stamp from $7.00 to $10.00. Approximately $1.3 million is raised each year to support the buyback based on the fee increase. The fee increase is scheduled to expire in August 2005.

This increased funding for license buyback programs will be used for the shrimp license buyback, crab license buyback, and the finfish license buyback programs in Texas. This is expected to increase funding by approximately $1.3 million each year in new revenue dedicated solely to commercial fishery buybacks. The proposed fee increase is scheduled to expire in August 2005(Texas Parks and Wildlife Department, 1999c).

Results of the Buyback Program

Twelve rounds of license buyback have occurred since the implementation of the buyback program (Table 1). The Texas Parks and Wildlife Department has purchased 1005[1] bay and bait commercial shrimp license at a cost of approximately $5.8 million. This represents 31% of the original 3231 licenses grandfathered into the fishery in 1995.

[1] Current data was not readily available for the number of bay and bait licenses purchased. However, as of round ten 815 commercial license were purchased of which 422 were commercial bay and 393 were bait.

The average price per license in 1996 was $3,394 with a range of $220 to $6000. The average price of the license in 2003 was $7,202 with a range of $2,300 to $9,500.

Table 1. Results of the Texas Bay and Bait License Buyback Program, 1996-2003 (Nominal Dollars).

Year	Round	Number Bought	License in Fishery/After Buyback	High	Low	Average	Total Spent/Round
1996	1	30	2975	$6,000	$220	$3,394	$101,820
1997	2	37	2938	$6,000	$800	$3,424	$126,687
1998	3	59	2879	$6,400	$1,500	$3,692	$217,855
1998	4	53	2826	$6,500	$2,500	$3,554	$188,345
1999	5	75	2751	$7,000	$2,500	$4,632	$347,400
1999	6	118	2633	$8,500	$2,000	$5,544	$654,250
2000	7	105	2528	$8,600	$1,500	$6,273	$658,698
2001	8	77	2451	$8,000	$2,500	$6,039	$465,000
2001	9	142	2309	$8,500	$3,000	$6,255	$888,185
2002	10	119	2190	$8,950	$3,000	$6,607	$786,285
2002	11	86	2104	$9,500	$2,500	$6,999	$601,896
2003	12	105	2000	$9,500	$2,300	$7,202	$756,194
Grand Total		1005					$5,792,615

Source: Robin Riechers, Texas Parks and Wildlife Department, coastal Fisheries Division

Gainers and Losers

Funk, et al (2003) used a simulation model to analyzed the Texas buyback program after the 2nd round of buybacks. They set the rents to zero for both small and large shrimp vessels so that there would not be any entry or exit of fishermen from the fishery except with a buyback of licenses. They found that at low levels of funding such as a surcharge on commercial vessels and dealers that it would take 15 years to buyback the excess licenses from the bay[2] fishery. If additional funds of $500,000/year for 5 years were made available the time could be reduced to about 5 years. Once excess licenses were removed from the fishery then positive rents were incurred in the bay shrimp fishery due to the reduction of effort in the bay fishery. The reduction of effort in the bay fishery led to more shrimp escaping to the offshore fishery, which caused positive rents to the larger vessels. Positive rents lead to additional large vessels being attracted to the fishery since it was an open access fishery.

There are other fisheries and fishery stocks that would also be affected. The reduction of effort in the bays would lead to a reduction in bycatch of other fish and sea turtles whereas the increase in effort in the offshore would lead to an increase in bycatch. Thus,

[2] The bait shrimp fishery was not included in the analysis because no data existed on that fishery.

in the bays there would be an increase in abundance of some species and the catch of those species may increase whereas in the gulf there would be a decrease in abundance of some species and thus catch may be reduced.

The cost of the program is partially borne by the shrimp fishery through a surcharge on licenses. Part of the cost is passed on to society in general by a government grant. The recreational fishery is bearing part of the cost through the increased fee for the salt water fishing stamp.

The nice thing about simulation models is that all "other things" can be held constant and the effect of the buyback can be isolated. In Figures 2 through 9 we try to discern what has happened as a result of the Texas inshore license buyback program when nothing is held constant. This data is actual landings and revenue data from the NMFS gulf shrimp landings file data and the effort is from Griffin[3]. During this time period several things changed. First, shrimp is an annual crop and abundance changes from year to year. Second, prices received for shrimp have declined in 2001 and 2002 in the bays and in the gulf (Figures 10 and 11). Third, the Texas Parks and Wildlife Commission passed additional regulations, which were implemented beginning in September 2000. The rule(s) which were implemented were designed to protect shrimp throughout the range and thus had both bay and gulf fishery components. Examples of this increased protection for shrimp and other species included (see "Statewide Shrimp Fishery Proclamation 25 Texas Register 10157-10182 for complete list of changed rules): increasing nursery areas in the bay systems from 12% to 17% of the bay total area, requiring bycatch reduction devices for the bay food shrimp fishery and the gulf shrimp fishery in Texas waters, and further gear and seasonal closures in the nearshore gulf. The nearshore restrictions included a gear restriction that limited vessels to two trawls with a total width of 130 feet of headrope and a closed shrimping area in the lower Texas coast out to five nautical miles which would now remain closed from December 1 to July 15th. There were previous closures but this made this closure continuous through these dates.

Since shrimp migrate to deeper waters this will leave less shrimp available for small vessels when the season is open. In this comparison we look at the bays and the gulf as well as compare Texas (TX) to the rest of the gulf, which include west coast of Florida through Louisiana (FL to LA). Although data is provided for 1965 to 2002 we will only be referring to years 1996 to 2002 in our comparison. We recognize that the comparisons will be rather subjective. Also, the comparison below does not include the bait fishery, which was included in the buyback program.

Figure 2 shows days fished[4] for the bays in TX and FL to LA. During the buyback period days fished increased in FL to LA bays while they decreased in TX bays. Therefore, we see a move in opposite directions in the bays, which could be the results of the buyback. The drop in days fished in bays from 2001 to 2002 in FL to LA is probably due to Louisiana coding shoreline to 3 miles offshore as inshore waters and due to the price of

[3] Griffin expanded days fished from the interviewed landings to the total data set using regression analysis.
[4] One day fished is 24 hours of drag time.

shrimp sharp decline in 2002. Figure 3 shows that in FL to LA gulf days fished decreased a minor amount while days fished in TX gulf remained fairly constant.

Since days fished decreased in TX bays resulting in less landings (Figure 4) one would expect landings to increase in the TX gulf. We see in Figure 3 that days fished in the TX gulf during the buyback remained basically unchanged while in Figure 5 TX gulf landings increased. Notice however, that days fished and landings increased in FL to LA bays resulting in a minor decrease in days fished in FL to LA gulf, but landings had a minor increase. One explanation for this apparent contradiction is that research by me (Wade Griffin) on the TX closure has shown considerable growth overfishing in LA. That is, the price per pound from the shrimping areas in LA are 50% to 60% of the price per pound from shrimp landed from TX waters because of the intense effort directed at smaller shrimp in LA.. Therefore, a decrease in days fished could result in an increase in landings and would definitely increase the value of landings in FL to LA.

Figure 6 shows that the CPUE remains constant in TX bays but increases in the TX gulf (Figure 7) as would be expected from the buyback program. However, CPUE increases in both bays and gulf for FL to LA. One possible explanation is that shrimp abundance, which is an annual crop, could have been higher in these years. A second explanation is that less growth overfishing occurred due to regulation changes or behavior of the fishing fleet.

Figures 8 and 9 show the profits per days fished in the bays and gulf respectively. Profit here includes only cash cost[5] (i.e., no opportunity costs). One would expect the profits in TX bays would increase provided that the excess licenses have been removed from the TX bay fishery. Funk et al. estimated that there were 289 excess TX bay licenses which means that, assuming the roughly 50 percent of the licenses bought back are bay licenses, profits should begin to increase by 2002. However, shrimp imports began to increase and shrimp prices took sharp decline in 2002 (continuing through 2003), which would have decreased profits.

Strengths and Weaknesses of the Texas Buyback

The purpose of the bay and bait voluntary license buyback program was to remove licenses from the shrimp fishery without creating excessive social and economic disruptions within coastal communities. This appears to have been achieved and is ongoing.

The Texas Parks and Wildlife Department worked closely with a shrimp limited entry working group, the Texas Shrimp Advisory Committee, the Shrimp License Management Review Board and elected officials in a "co-management" process, allowing communities to take responsibility for the public's shrimp resource in developing a limited entry program and then to carry out the intent of the legislation. Continuing these efforts has the potential to create enormous benefits for management of the shrimp resources of Texas and all users of these public resources as well as other fishery resources. The future of the shrimp license buyback program is promising due to the continued funding of the

[5] Cost were estimated for the Gulf of Mexico landings files based on research by Funk et al.

buyback program through license fees and donations. The Texas Parks and Wildlife Department's goal of effort reduction will eventually lead to a long-term sustainable fishery without the economic instability that currently plagues the industry.

There are other issues of concern for members of the industry, other concerned citizens, recreational fishing interests, and environmental groups. Shrimp vessels that fish in the EEZ are now required to have permits and there is consideration of a limited entry program for these vessels. Since vessels are fairly mobile in the Gulf fishery and typically fish in state waters and federal waters, how will the Gulf of Mexico Fishery Management Council (GMFMC) create an effort reduction program? How will Texas and the other states work cooperatively with the GMFMC to create the program? The Texas Parks and Wildlife Department will continue the co-management approach with the Texas Shrimp Advisory Committee committees, review boards, and industry-wide workshops as forums for education, discussion, and resolution of problems within the shrimp fishery.

As established in the initial legislation, restrictions on license transfer expired on September 1, 1999. As a result this could have increased the price of licenses as more selling opportunities for those attempting to leave the industry occurred. The average price per license does not suggest that the removal of the transfer restriction affected the price of licenses to a large degree. Other factors affecting the industry, such as cost of production and price of shrimp may also have continued to dampen the price on shrimp licenses.

The removal of this restriction has also created an opportunity for potential buyers who are not in the shrimping industry to buy licenses. This transferability also creates a philanthropic opportunity for persons or organizations that want to buy licenses and return them to the Department without cost. To date a total of 10 licenses have been retired to the State by an organization that is buying and retiring licenses.

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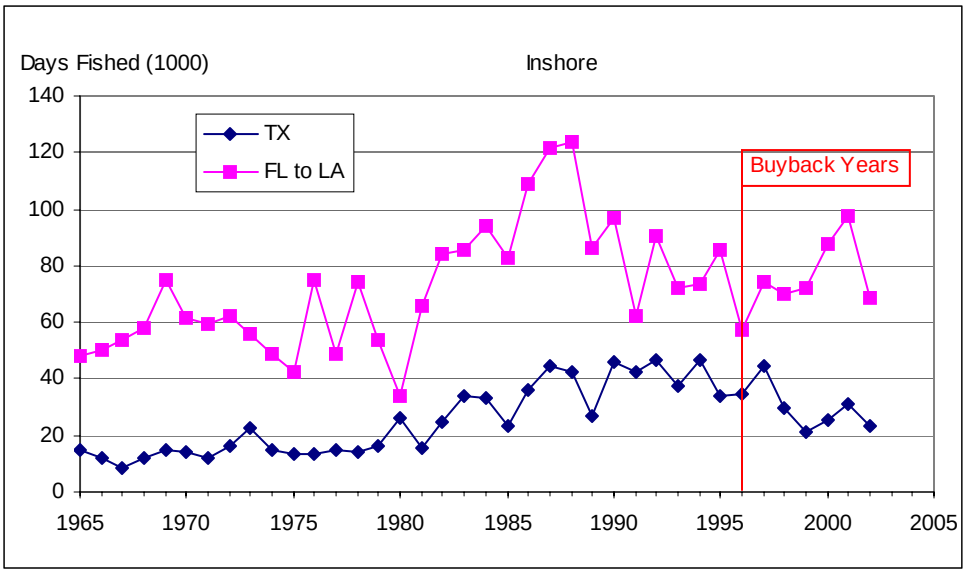

Figure 2. Days fished in the bays in Texas and FL to LA.

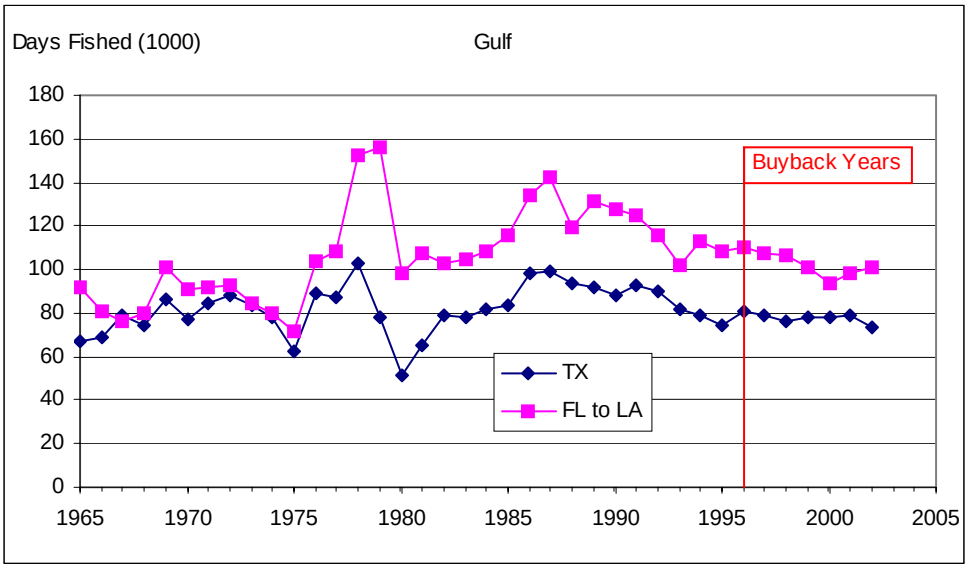

Figure 3. Days fished Gulf offshore in Texas and FL to LA.

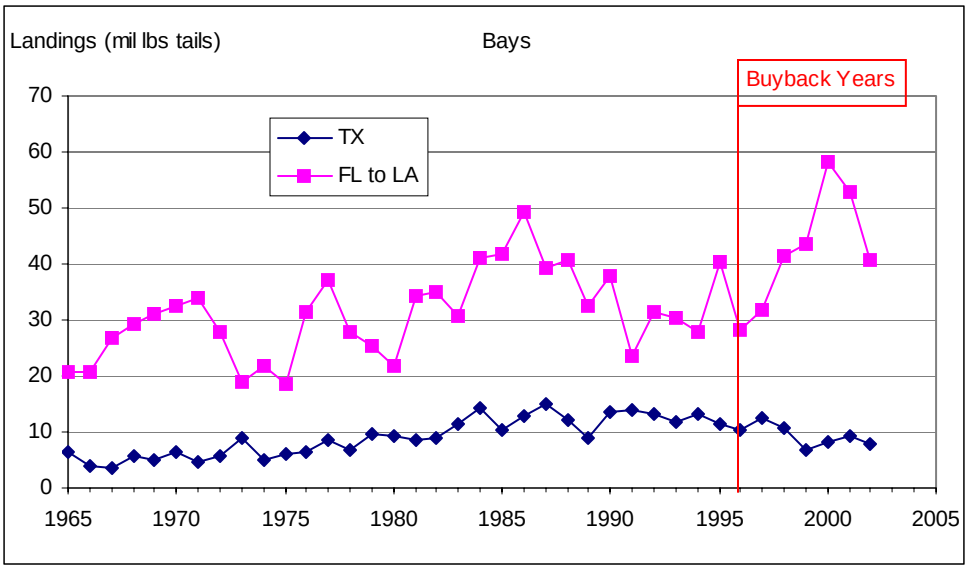

Figure 4. Landings from the bays in Texas and FL to LA.

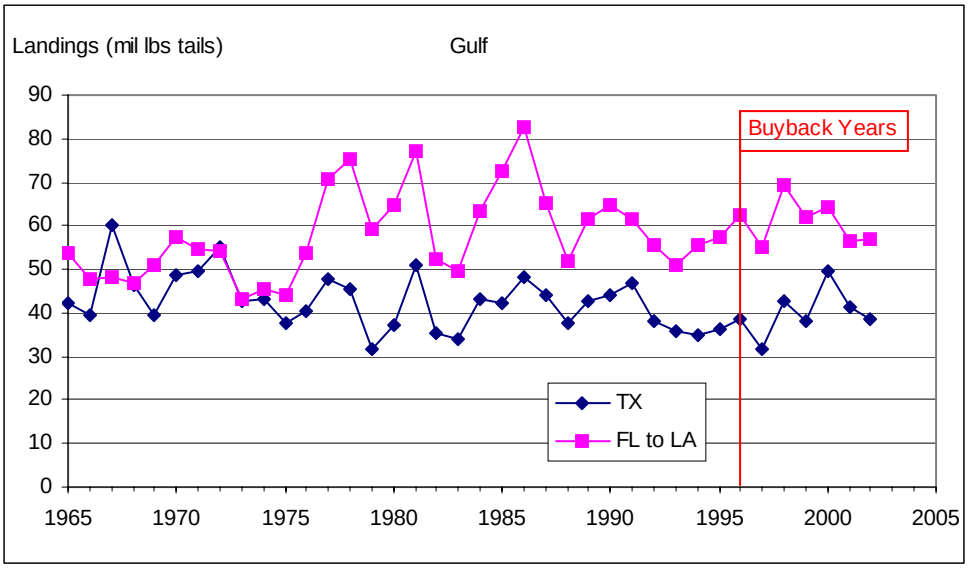

Figure 5. Landings from the Gulf offshore in Texas and FL to LA.

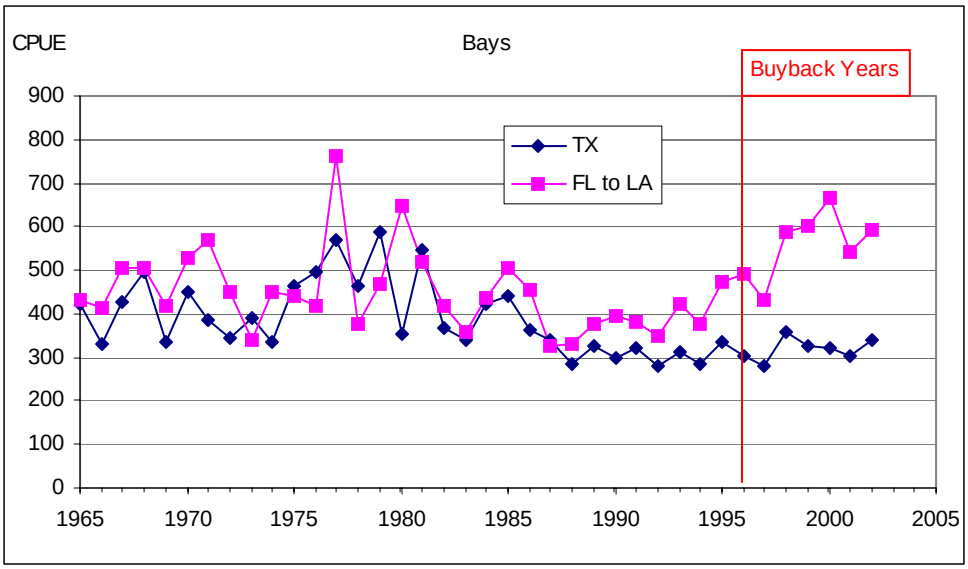

Figure 6. CPUE from the bays in Texas and FL to LA.

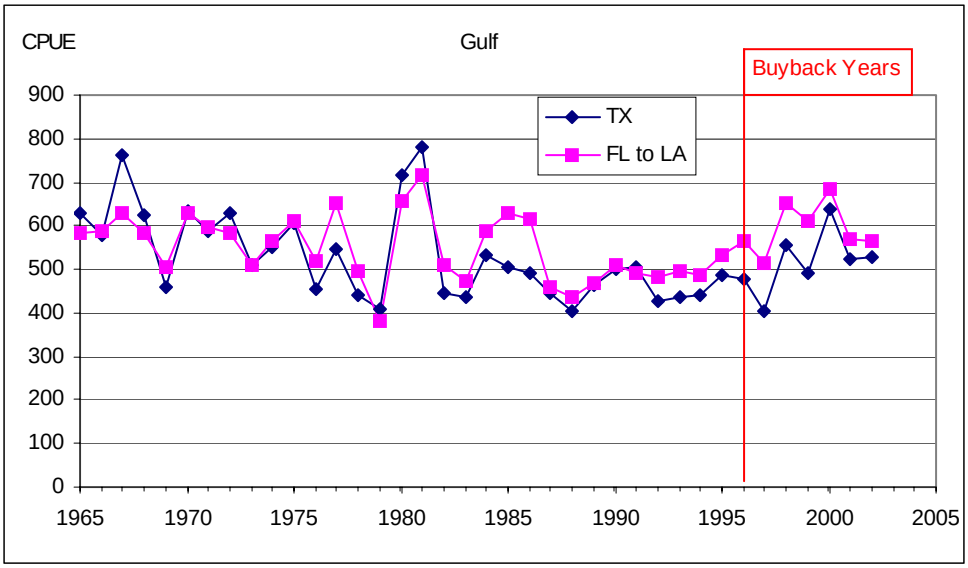

Figure 7. CPUE from the Gulf offshore in Texas and FL to LA.

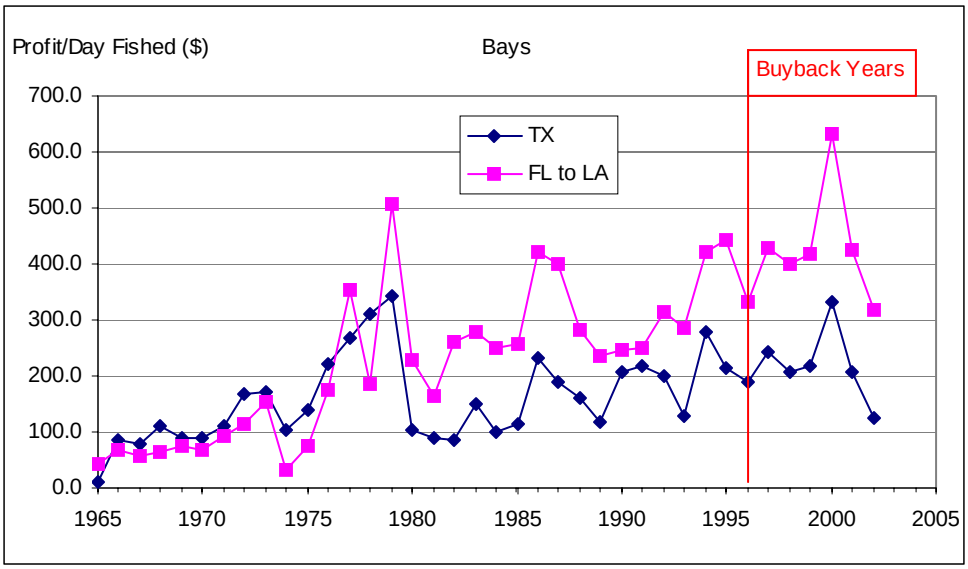

Figure 8. Profit per day fished (Not including opportunity costs of capital an labor) from the bays in Texas and FL to LA.

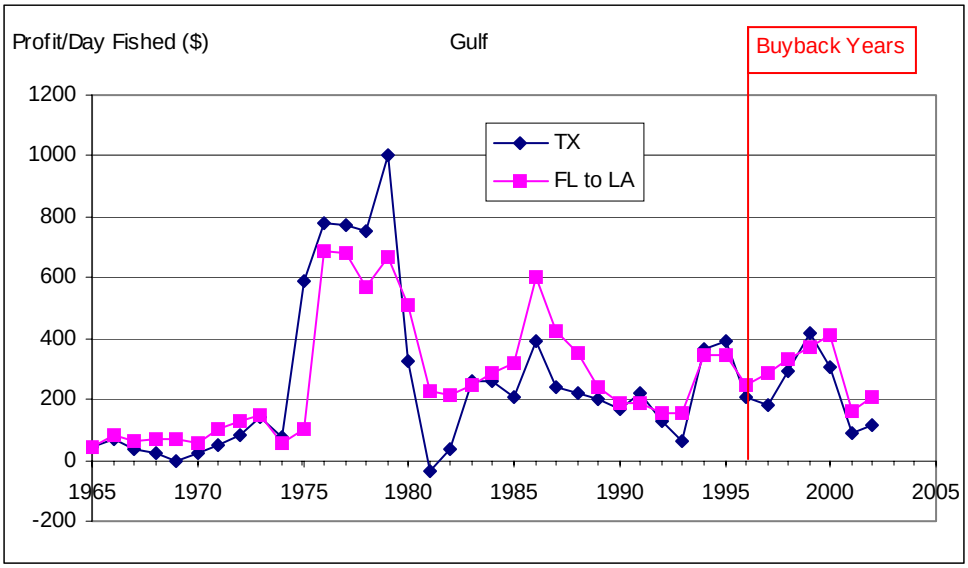

Figure 9. Profit per day fished (Not including opportunity costs of capital an labor) from the Gulf offshore in Texas and FL to LA.

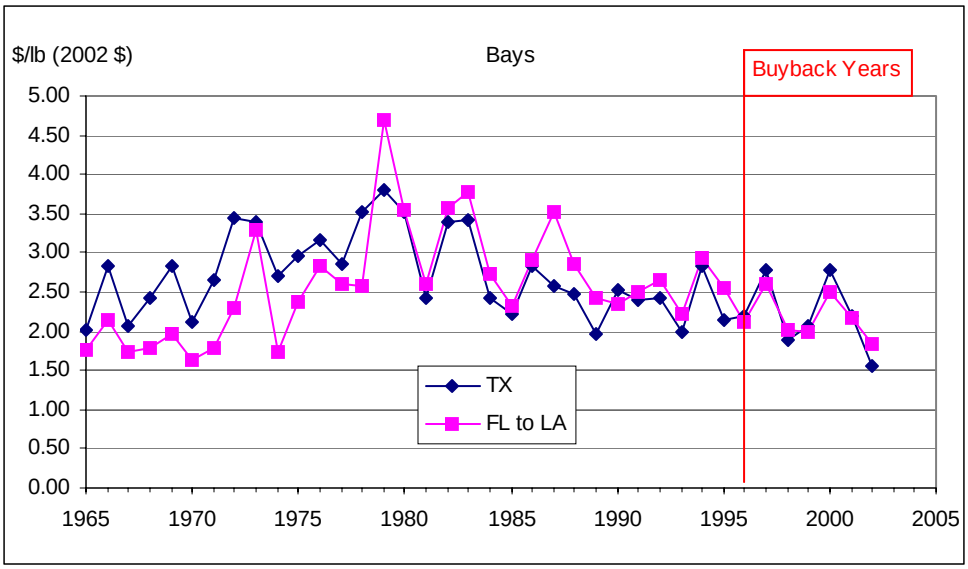

Figure 10. Price per pound (2002 dollars) received in the bays in Texas and FL to LA.

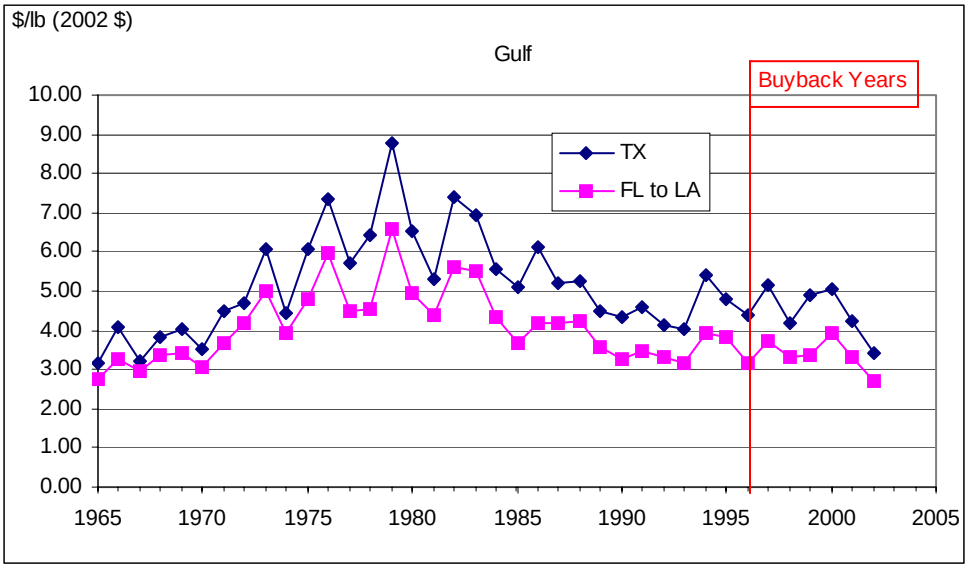

Figure 11. Price per pound (2002 dollars) received in the Gulf offshore in Texas and FL to LA.