01/27/01

AMENDMENT 7

TO THE

FISHERY MANAGEMENT PLAN

FOR THE STONE CRAB FISHERY OF

THE GULF OF MEXICO

(Includes Environmental Assessment and Regulatory Impact Review)

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Abbreviations Used in this Document

AP	Advisory Panel
Council	Gulf of Mexico Fishery Management Council (a/k/a GMFMC)
CPUE	Catch Per Unit Effort
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
FDEP	Florida Department of Environmental Protection (formerly Department of Natural Resources)
FFWCC	Florida Fish & Wildlife Conservation Commission (previously FMFC)
FMFC	Florida Marine Fisheries Commission
FMP	Fishery Management Plan
FMRI	Florida Marine Research Institute
GC	General Counsel (SER - Southeast Region)
IRFA	Initial Regulatory Flexibility Analysis
MSY	Maximum Sustainable Yield
NMFS	National Marine Fisheries Service
OFF	Organized Fishermen of Florida
RA	Regional Administrator, NMFS
RFA	Regulatory Flexibility Act
RIR	Regulatory Impact Review
SEFSC	Southeast Fisheries Science Center
SSC	Scientific and Statistical Committee
State	State of Florida (FFWCC)
MCCF	Monroe County Commercial Fishermen, Inc.

TABLE OF CONTENTS
FOR THE
STONE CRAB FISHERY MANAGEMENT PLAN - AMENDMENT 7

APPENDICES

1. PUBLIC REVIEW

Over a period of about 3½ to 4 years the Council, through its Stone Crab AP and, **especially**, the state of Florida (FMFC and FFWCC) have worked closely with the stone crab industry, through workshops, to reach a general consensus on the structure of an effort reduction program. This compromise agreement resulted in the trap limitation program which was adopted by the FFWCC and subsequently the Florida legislature. This plan amendment recognizes this state trap limitation program will apply to the EEZ off Florida for participants licensed under that program. This plan amendment also provides for a federal trap limitation program in the EEZ for persons who can meet the federal eligibility criteria, but who could not obtain or who chose not to obtain the state license. These persons may apply for a federal permit.

The carefully crafted compromise state effort reduction program involved extensive public participation by the stone crab industry in development of the final compromise adopted for implementation by the state. This involved the public workshops held by the Council Stone Crab AP and by FMFC (or FFWCC) over the following period. In addition to these workshops final hearings by the FMFC (or FFWCC) were held annually at the conclusion of each set of workshops.

Council AP Workshops:

Date	Location	# of Public Attending
10/23/96	Marathon	11
02/19/97	Ft. Myers	16
02/20/97	Marathon	51
07/07/97	Marathon	29

FMFC (or FFWCC) Workshops:

Date	Location	# of Public Attending
11/03/97	Perry	17
11/04/97	Crystal River	15
11/05/97	St. Petersburg	6
11/17/97	Bonito Springs	28
11/18/97	Marathon	35
11/19/97	Key West	17
11/16/98	Key Colony Beach	25
11/17/98	Bonito Springs	25
11/23/98	Crystal River	37
11/28/98	Steinhatchee	15
11/16/99	Marathon	70
11/17/99	Naples	38
11/18/99	Palmetto	45
11/29/99	Crystal River	60
11/30/99	Steinhatchee	11

Public hearings were held at the following locations and dates from 7:00 p.m. to 10:00 p.m. on a previous plan amendment that proposed to extend the state trap limitation program into the EEZ off Florida.

Tuesday, June 6, 2000
Naples Depot Civic Cultural Center
1051 Fifth Avenue, South
Naples, Florida 34102

Wednesday, June 7, 2000
Banana Bay Resort & Marina
4590 Overseas Highway
Marathon, Florida 33050

Tuesday, June 13, 2000
Jaycee Building
501 SE 7th Avenue
Crystal River, Florida 34429

Wednesday, June 14, 2000
Steinhatchee Elementary School
1st Avenue, South
Steinhatchee, Florida 32359

The Council heard public testimony on that amendment on July 12, 2000 at its meeting in Key Largo before taking final actions. At the Council meeting in Key Largo it was determined that the amendment proposed by the Council in May (GMFMC, May 2000) was not in compliance with the Magnuson-Stevens Act, and to rectify that problem must provide an opportunity to persons who could not obtain a state license to participate in a federal trap limitation program in the EEZ. That program is described in this amendment which was discussed at public hearings at the following locations and dates from 7:00 p.m. to 10 p.m.:

Monday, October 16, 2000
Marathon Government Center
BOCC Room
2798 Overseas Highway MM 47.5
Marathon, Florida 33050

Wednesday, October 18, 2000
Plantation Inn & Gulf Resort
9301 West Fort Island Trail
Crystal River, Florida

The Council heard public testimony on this amendment on November 15 at its meeting in Biloxi, Mississippi before taking final action. Written comments were accepted if received at the Council office by November 3, 2000.

2. LIST OF AGENCIES AND PERSONS TO BE CONSULTED

Gulf of Mexico Fishery Management Council:
Scientific and Statistical Committee
Stone Crab Advisory Panel

Coastal Zone Management Programs:
Florida

National Marine Fisheries Service:
Southeast Fisheries Science Center
Southeast Regional Office

Florida Fish & Wildlife Conservation Commission (formerly FMFC)
Organized Fishermen of Florida (OFF)
Monroe County Commercial Fishermen, Inc. (MCCF)

3. LIST OF PREPARERS

Gulf of Mexico Fishery Management Council
-Wayne Swingle, Biologist
-Antonio Lamberte, Economist

Florida Fish and Wildlife Conservation Commission
-Roy Williams, Biologist

National Marine Fisheries Service
-Georgia Cranmore, Biologist

4. HISTORY OF MANAGEMENT

The Fishery Management Plan for the Stone Crab Fishery of the Gulf of Mexico (FMP) was implemented on September 30, 1979 (44 FR 53519). The FMP resolved an armed conflict over competing gear use between stone crab and shrimp fishermen operating in the Exclusive Economic Zone (EEZ) off southwest Florida and extended Florida's rules regulating the fishery into the EEZ. The management area of the FMP is limited to the EEZ seaward of the west coast of Florida in the Gulf of Mexico (Gulf). The FMP has been amended six times. Amendment 1 was implemented on November 8, 1982 (47 FR 41757), and specified a procedure for modifying the zoned area to resolve the gear conflict. Amendment 2 was implemented on August 31, 1984 (47 FR 30713), and established procedures for resolving gear conflicts in central west Florida. Amendment 3 was implemented on September 25, 1986 (51 FR 30663), and included management measures to enhance survival of crabs held on board vessels and prohibited harvest of egg-bearing female crabs. Amendment 4 was approved on February 19, 1991 (56 FR 6837), and contained provisions for adding a scientifically measurable definition of overfishing and an action plan to arrest overfishing, should it occur, as required by the Magnuson Act National Standards (50 CFR 602), a section on vessel safety considerations, and a revised habitat section as required by the Magnuson Act.

Amendment 5 was implemented on April 14, 1995 (60 FR 13918) and placed a three-year moratorium on registration of stone crab vessels by the Regional Administrator (RA) of the National Marine Fisheries Service (NMFS). This was done for the period, April 15, 1995 - June 30, 1998, because the Florida Legislature proposed a state moratorium on issuance of permits while the industry considered development of a effort reduction or limited access system.

Amendment 5 also included a protocol and procedure (framework measure) under which the RA could approve for implementation in the EEZ certain types of rules proposed by the state of Florida after review by the Advisory Panel (AP), Scientific and Statistical Committee (SSC), and Gulf of Mexico Fishery Management Council (Council). Amendment 5 also updated the description of the fishery habitat and the factors affecting this habitat. The Council published a control date effective July 24, 1995 (60 FR 37868) for the commercial fishery; the effect of which was to notify fishermen entering the fishery after this date that they may not be allowed to participate in the fishery if that date is used in a limited access program to limit entry. Amendment 6 was implemented on August 20, 1998 and extended the moratorium on NMFS issuing registrations of stone crab vessels through June 30, 2002.

5. DESCRIPTION OF FISHERY AND UTILIZATION PATTERNS

The description of the fishery and utilization patterns are described by Muller and Bert (1997) in their 1997 Update on Florida's Stone Crab Fishery which is appended to this document. The Executive Summary is repeated here, whereas the tables and figures describing the fishery are in Appendix A. **Vondruska (1998) described the Florida west coast commercial fishery, along with some of its economic characteristics (Appendix C).** The Executive Summary of Muller and Bert (1997) is as follows:

- The stone crab fishery does not harvest the crab but rather fishers remove the claws from the crabs and then return the crabs to the water. Approximately 10 percent of the claws observed by samplers in the fish houses have been regenerated. Since males have larger claws, males enter the fishery earlier and the majority of the claws are taken from males. Female crabs have already spawned one or more seasons by the time their claws reach legal size.

- Landings in weight of claws have been increasing for more than 30 years, fluctuations surround the trend line. For example, the landings in the 1981-82 and 1982-83 seasons were substantially above the trend line but those from the 1983-84 and 1984-85 seasons were below the trend line. More recently, landings from the 1990-91 through 1994-95 seasons were above the trend and landings from the 1995-96 season were below. A preliminary estimate of 1996-97 based on October-January landings indicate that the 1996-97 landings were also below the trend line.

- Effort also has increased during the past 30 years. The number of traps in the fishery has increased from 14,000 traps in 1962-63 to an estimated 798,000 traps in 1995-96. The number of commercial trips has increased from 19,000 per season in 1985-86 (the first season with trip information available) to 32,000 trips per season in 1995-96. Landings have not kept pace with the increases in either measure of effort.

- Catch per trap has fluctuated widely, and has shown a decreasing trend. Catch rates have dropped rapidly from more than 20 pounds per trap in the 1960s to less than 10 pounds per trap by 1971 to less than 5 pounds per trap by 1983. Catch rates declined as the number of traps increased. Although the catch per trap since 1983 has been very low, it has declined

only slightly with the doubling of traps. However, the catch per trip, which has higher resolution, indicates that the catch per trip has declined since 1993-94. The preliminary 1996-97 catch rate is the lowest of the series and has the highest effort.

- Monthly catch per trip during the fishing season typically declines sharply during the season.

- Plots of landings on effort indicate that as effort has increased, landings have not increased at the same rate. Both measures of effort, number of traps and number of commercial trips, indicate that the fishery is either operating at its maximum (traps) or slightly past the maximum (trips).

- The catch rate of juvenile crabs from the fishery independent stone crab monitoring project in Tampa Bay provide a good estimate of the commercial fishery's catch rates three years later. The first year of the juvenile index (1989-90) did not predict the 1992-93 commercial catch rates well but from 1990 through 1993 there was good correspondence between juvenile catch rates collected in the sampling and the catch per trap three years later (1993-94 to 1996-97). Correlations between monthly commercial catch rates and the juvenile catch rates indicate that some juveniles enter the fishery at approximately 27 months after settlement, these are presumably males. Some juveniles also enter the fishery 38 months later, these are principally females.

- Based on the results of these analyses, we recommend that the Marine Fisheries Commission continue with their plans to reduce effort in the stone crab fishery.

The following discussion is from Amendment 5 with an update from Vondruska (1998):

The FMP, as amended, provides for management of the fishery in the EEZ off the west coast of Florida. The fishery is managed jointly by the State of Florida and the Gulf of Mexico Fishery Management Council (Council). The fishery is largely commercial with limited recreational participation confined to the near-shore waters within state jurisdiction.

The fishery is unique in that only the claws are harvested, and the live crabs with one or both claws removed are returned to the water. Data from Florida Department of Natural Resources (FDNR) studies indicate 3 to 8 percent of these crabs regenerate claws that may be harvested in a subsequent season (Amendment 3). Claws regenerate to approximately 70 percent and 100 percent of their original (pre-autotomy) size one and two molts after de-clawing, respectively (Restrepo, 1989).

The Florida stone crab (Menippe mercenaria and M. adina) commercial fishery has rapidly increased in both landings and economic value in recent years. From 1985 through 1991, the stone crab has consistently ranked as the fourth most valuable marine species landed on Florida's west coast, being surpassed only by shrimp, spiny lobster, and grouper. Since 1992 the stone crab became the third most valuable marine species by surpassing grouper. This increase in ranking may be partly the result of regulations placed on the grouper fisheries limiting landings,

as for example in1992 stone crab landings increased by only 400,000 pounds from 1991. Regardless, the stone crab fishery is becoming more and more important in landings and value. The annual stone crab ex-vessel value landed at Florida Gulf ports ranged from slightly less than $8.0 million in 1985 to about $32 million in 1997.

Stone crabs are principally caught by commercial trap fishermen in the Gulf of Mexico waters off southwestern Florida. Until the 1960's, the Florida stone crab fishing area was mostly in the shallow waters of Monroe, Collier, Manatee, and Pinellas Counties. In more recent years, the fishery area has expanded to include deeper waters for most Gulf coastal counties from Monroe to Franklin. The original market for stone crab was consumers in the immediate fishing area. The current market is broader and is still mostly composed of seafood restaurants, local retail outlets, hotels, and specialty food stores.

Joint regulation between the Gulf of Mexico Fishery Management Council (Council) and Florida Marine Fisheries Commission (FMFC) requires that only claws larger than 7 cm (2.75 inches) in propodus length (Claw length from the tip of the lower finger to the elbow) can be legally harvested and that live, declawed crabs be returned to the water. Based on age/growth results of Lindberg and Marshall (1983), this minimum claw size regulation ensures at least one reproductive season before the female crab enters the fishery (see Amendment 4). Although there is high mortality associated with declawed crabs (Davis et al., 1979), some survive and regenerate new claws. Mortality of declawed stone crabs was further discussed by Bolden and Harper (1992). Other management regulations intended to provide for stock conservation include: (1) prohibiting the harvest of egg bearing females; (2) moistening and shading captured crabs prior to claw removal in order to enhance survival of released crabs; and, (3) closing the fishing season (May 16 to October 14) during the time of peak spawning activity.

The Southeast Fisheries Science Center (SEFSC) has periodically summarized commercial stone crab landings along Florida's Gulf coast (Zuboy and Snell, 1980, 1982; Phares, 1982, 1985; Sutherland, 1988, 1989; Powers, 1990; Harper et al., 1991; Bolden and Harper, 1992; Bolden, 1993). Restrepo (1990) produced a simulation model of fishing on yield per recruit and egg production for the stone crab fishery (see Amendment 4). In 1998, the NMFS-SERO summarized the performance of the stone crab fishery (Vondruska 1998).

Stone crab landings at Florida gulf coast ports for 1985 through 1992 are summarized by season, month, and claw size (Table 1). Vondruska (1998) also summarized stone crab landings from 1986 to 1997 by claw size and separately by month. During the 1985-1992 period, about 49 percent of the landed claw weight was classified as large, 30 percent medium, 7 percent small, 4 percent jumbo, and 12 percent ungraded by claw size. For the period 1993-1997, the corresponding percentage distribution by claw size was 42 percent large, 37 percent medium, 4 percent small, 7 percent jumbo, and 11 percent ungraded.

The commercial landings and ex-vessel value of stone crabs are presented in Figure 1. Vondruska (1998) presented similar information up to 1998, although the last year was still preliminary. Ex-vessel value has steadily increased from $196,100 in 1962 to $7.5 million in

1986. A year later ex-vessel value increased substantially to $11.1 million and fluctuated from that level to slightly above $15 until 1994. From 1995 to 1997, ex-vessel value surged and peaked at about $32 million in 1997. In 1991, the ex-vessel value dropped to $12.4 million, a decrease of $3.5 million over one year. A decrease of 50,208 pounds from 1990 to 1991 alone cannot account for the drastic decrease ($3.5 million) in ex-vessel value. Bolden (1993) suggested the decline was due to market saturation during the first few months of the season. However, this could be due in part to the recession in the early 1990s. Adams and Prochaska (1992) found that prices were more responsive to income than to claw landings, and during the early 1990s personal income was relatively lower than in previous or later period. This finding is corroborated by the performance of ex-vessel prices in later years, rising from $2.08 in 1991 to $5.05 in 1997 even when total landings leveled around the ranged of 2-3 million pound claws. The 1992 ex-vessel value of $15.7 million was slightly below the $15.9 million reported in 1990. Hurricane Andrew hit late August 1992, damaging some traps as they were being prepared for the season. A "super-storm" of 13 March 1993 displaced or damaged such a great number of stone crab traps that many fishermen pulled the traps they could locate and quit the season (G. Pizzuti and T. Herbert, NMFS, SEFSC, Fishery Reporting Specialists, personal communication). This coupling of pre-season trap damage and the voluntary early season abandonment may have decreased landings, nevertheless total landings were the highest ever reported and a near record in ex-vessel value.

Monthly estimates of mean CPUE (total pounds of claws/trip) are shown for trips where stone crabs were the primary species landed (Fig. 2). In general, landings were highest during the beginning of a fishing season and then rapidly declined. the 1987 season was the only season in which catch per trip declined in each successive month. Only December 1988, October 1990, and October 1992 have recorded monthly mean CPUE over 200 pounds (202.9, 203.3 and 202.9, respectively) since FDEP trip tickets were used to measure catch and effort. The 1985 - 1992 mean seasonal catch per trip was 125.5 pounds, the preliminary 1992 data indicate an increase of about a pound and a half per trip with a mean of 127.2 pounds. This increase for 1992 is partly because the high monthly mean CPUE reported for October. Figure 3 depicts the monthly CPUE by claw size during the 1985 through 1992 fishing seasons for stone crab landings at Florida Gulf ports. Large claws dominated the landings throughout all fishing seasons, but medium claws became a larger component of the landings during January and February when landings of large claws began to decline. CPUE for jumbo claws increased from 1988 to 1989 and continued to the present.

Previously, the number of traps hauled (lifted) per stone crab fishing trip were voluntarily reported on about 20 percent (18,867 of 94,341) of the FDEP trip tickets (1985-1991). However, the 1985-1992 number of reported trap hauls was nearly 30 percent; this is due to the doubling of fishermen/seafood dealers voluntarily reporting.

The mean number of traps hauled (lifted) during each fishing trip was plotted by month (Fig. 4). For all seasons except 1989, the mean traps hauled per trip declined as the season progressed. This trend reversed in 1989 when effort (number of traps hauled per trip) generally increased and the season progressed. The seasonal range for mean number of trap hauls per trip is greater for

the 1989 to present fishing seasons than those prior to 1988 (Fig. 4). However, it does appear that mean trap hauls per trip is once again stabilizing, but at higher levels, as the preliminary 1992 data reveal a trend similar to that of 1985-1988 (Fig. 4).

The total number of traps hauled per month was estimated by multiplying the mean number of trips per month by the mean number of traps hauled per trip based on the voluntarily reported data (Fig. 5). The number of trap hauls per season is increasing as an estimated 3.6, 4.4, 4.9, 5.3, 7.7, 8.4, and 7.7 million trap hauls were made from 1985 through 1992, respectively. The 1992 decline is probably an effect of the aforementioned storms. CPUE (Fig. 2) declines more rapidly during each season than the number of traps hauled per month (Fig. 5). Total estimated monthly trap hauls during the last month of the fishing season (May), was considerably less than that of the first month for most seasons (Fig. 5). Fishing effort for the 1992 season, although preliminary, appears to follow the general trend of the other seasons as number of trap hauls greatly declines toward the end of the season.

The 1964-1992 monthly landings show a greater portion of the total catch was caught during the early months of the fishing season (Fig. 6). Since 1983, elevated landings have occurred during the first few months of each season, followed by sharp declines in succeeding months. Until this past fishing season, the number of traps in the fishery have remained relatively stable since around 1985. However, the 1992 season reported 686,260 traps in the fishery, an increase of 57,760 traps over one fishing year (Table 2 and Fig. 7). It is anticipated that the number of traps in the 1993 season was probably lower than the 1992 level due to a large percentage of traps damaged/lost by the March 1993 storm. However, many fishermen did apply for available SBA loans in order to replace lost traps which may, in fact, elevate the already high trap number.

The Scientific and Statistical Committee (SSC) in reviewing data in Amendment 4 concluded that increases in traps beyond the 1981 level (approximately 350,000 traps) in addition to not significantly increasing landings probably would not increase fishing mortality (see Restrepo, 1989 and Bert et al., 1986). Essentially, the increases in trap numbers just further overcapitalized the industry through gains in excess fishing capacity without impacting the resource. The SSC indicated that total traps deployed in the fishery was a poor bench mark for examining CPUE trends since many fishermen fished the spiny lobster fishery in the first part of the stone crab season. Also as indicated by the Stone Crab Advisory Panel (minutes, 1983), fishermen tend to deploy excess traps in certain areas to reserve fishing areas weeks before the crabs migrate into that area or the traps are fished.

Total landings have steadily increased from a low of 0.30 million pounds of claws in 1962 to a maximum of 3.4 million pounds of claws in 1992 (Table 2 and Fig. 8). Annual landings averaged 2.6 million pounds for 1985-1992. Catch/trap rapidly decreased from 1962 to 1974, then fluctuated but remained fairly stable around 6.5 lbs/trap from 1974 until 1982 (Fig. 9). Mean catch rates declined from a high of 23.3 lbs/trap in 1963 to a low of 3.5 lbs/trap in 1987 (Fig. 9). Catch/trap steadily increased from 1987 to 1990 (5.1 lbs/trap) remained stable for 1991, but decreased slightly to 4.6 lbs/trap in 1992 and dropped further to 3.5 lbs/trap in 1995/96.

Monthly catch (pounds) per trap was calculated for the peak stone crab fishing months of November to January 1964-1992 (Fig. 10). Since the 1987 low of 0.5 lbs/trap the average monthly landings index, for the seasonal peak, have increased and remained relatively stable at about 0.8 lbs/trap since 1988. Landings dropped to 0.7 lbs/trap in 1992, perhaps due to the January lapse.

6. PLAN PROVISIONS

FMP Management Objectives:

Management objectives of the FMP as amended are:

1. Provide for orderly conduct of the stone crab fishery in the management area in order to reduce conflict between stone crab fishermen and other fishermen in the area.

2. Establish an effective fishery statistical reporting system for monitoring the stone crab fishery.

3. Attain full utilization of the stone crab resource in the management area.

4. Promote uniformity of regulations throughout the management area.

5. Provide for a more flexible management system that minimizes regulatory delay to assure more effective, cooperative state and federal management of the fishery.

Protocol and Procedure for an Enhanced Cooperative Management System:

NOTE: Editorial revisions proposed are included by bolding additions and bracketing and typing over deletions.

Under this regulatory amendment procedure each proposed rule or set of rules must be adopted by the State through their hearing process and be submitted to NMFS and the Council along with socioeconomic analyses, hearing summaries, and other supporting information. The Council and NMFS must concur that the proposed rule is consistent with the FMP objectives and other federal law. NMFS, the Council staff and **FFWCC** staff will prepare the regulatory amendment and supporting documentation. This documentation will include an EA and RIR which examine in detail the environmental, social and economic impacts of each proposed rule and the alternatives to the rule. The rules implemented will be subject to approval by NMFS after review of public comment submitted directly to NMFS during the comment period on the regulatory amendment. The procedure under this amendment is limited to only the types of rules listed under parts A and B on page 12. All other types of rules must be implemented by FMP amendment by the Council.

PROTOCOL:

The Council, **FFWCC** and NMFS adopted the following protocol which describes the roles of the federal and state governments:

1. The Council and NMFS acknowledge that the fishery is a Florida (State) fishery (which extends into the EEZ) in terms of current participants in the directed fishery, major nursery, fishing, and landing areas, historical regulation of the fishery, and is a fishery requiring cooperative State/federal efforts for effective management through a FMP.

2. The Council and NMFS acknowledge that the State is managing and will continue to manage the resource to protect and increase the long-term yields and prevent depletion of the stone crab stocks and that the State Administrative Procedure Act and rule implementation procedures, [~~including final approval of the rules by Governor and Cabinet~~] provide ample and fair opportunity for all persons to participate in the rulemaking procedure.

3. **FFWCC** acknowledges that rules proposed for implementation under this amendment must be consistent with the management objectives of the FMP, the National Standards, the Magnuson Act and other applicable federal law. Federal rules will be implemented in accordance with regulatory amendment procedures.

4. The Council and NMFS agree that for any of the rules defined within this amendment that the **FFWCC** may propose the rule directly to NMFS, concurrently informing the Council of the nature of the rule and that NMFS will implement the rule within the EEZ provided it is consistent under protocol number 3. If the Council informs NMFS of their concern over the rule's inconsistency with protocol number 3, NMFS will not implement the rule until the Council, **FFWCC**, and NMFS or their representatives meet and resolve[3] the issue.

5. The State (**FFWCC**) will have the responsibility for collecting and developing the information upon which to base the fishing rules, with assistance, as needed by NMFS and cooperatively share the responsibility for enforcement with federal agencies.

6. **FFWCC** will provide to NMFS, and to the Council written explanations of its decisions related to each of the rules (including a statement of the problem that the rulemaking addresses, how the rule will solve the problem, and how interested parties were involved in the rulemaking), summaries of public comments, biological, economic and social analyses of the impacts of the proposed rule and alternatives, and such other information that is relevant.

7. The rules will apply to the EEZ management area off Florida.

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[3] The issue will not be resolved until the Council has withdrawn their objections.

8. The NMFS agrees that its staff will prepare the proposed federal rule. The Council agrees that its staff with assistance by the staffs of **FFWCC** and NMFS will prepare the EA/RIR and other documents required in support of the rule.

PROCEDURE:

1. This procedure will function under and be governed by the protocols for cooperative management agreed upon by the **FFWCC**, the Council, and NMFS.

2. Based on the best available scientific information, the **FFWCC** will develop alternative proposed rules and socioeconomic analyses on the effects of these alternatives, hold public hearings (as required by Florida's Administrative Procedure Act), and at a final hearing select each preferred alternative rule ~~[for recommendation to the Florida Governor and Cabinet]~~ for implementation. After approval of the rule or rules [~~by the Governor and Cabinet~~], the **FFWCC** will advise the Council and Regional **Administrator (RA)**, NMFS of the recommended rule(s) and proposed implementation date and will provide to the **RA** and to the Council the analyses of the effects and impacts of the recommended and alternative rules and summaries of public comment. For rules to be implemented by the start of the fishing season (currently October 15), **FFWCC** must complete these actions on or before February 1. The Council will submit the rule and supporting analyses to the SSC who will advise the **RA**, through the Council, of the scientific validity of the analyses. The Council will also submit the rule and supporting analyses to the stone crab advisory panel for comment and recommendations.

3. The **RA** will review the recommended rule, analyses, and public record, and if he preliminarily determines that the rule is consistent with the objectives of the FMP, the National Standards, and other applicable law, he will notify the Council and **FFWCC** of his intent to implement the rule in the EEZ. If in the judgment of the **RA**, the rule or its supporting record are not consistent with these statutory criteria or the FMP objectives, he will immediately notify the Council and the **FFWCC** of the deficiencies in the rule or supporting record. The **FFWCC** may submit additional information or analyses to correct the deficiencies in the record.

4. When in the judgment of the Council the rule is not consistent with the Magnuson Act or the objectives of the FMP, they will inform the **RA** and **FFWCC**. In this case the **RA** will not proceed with implementation of the rule until this issue has been resolved.[3]

5. When the **RA** has preliminarily concluded the rule is acceptable, he will draft and publish the proposed rule for implementation by regulatory amendment. Based on **FFWCC** analyses of impacts, the Council's staff, with assistance from **FFWCC**, will prepare the supporting documentation (EA/RIR, etc.) that accompany the proposed rule. The effective date of rules

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[3] The issue will not be resolved until the Council has withdrawn their objections.

promulgated under this procedure will be the starting date of the next fishing season following approval of the regulatory amendment unless otherwise agreed upon by **FFWCC**, the Council, and the **RA.** A reasonable period for public comment on the proposed rule shall be provided.

After reviewing public comment if the **RA** has concluded the rule is not consistent with the FMP objectives, the National Standards, other applicable law, or the provisions of this procedure, he will notify the Council and **FFWCC** of the fact and/or the need for proceeding with implementation by FMP amendment. If the supporting record is still deficient, he will delay taking action until the record has been supplemented by **FFWCC** and/or Council staffs. If the **RA** has concluded the rule is consistent, he will publish the final rule.

6. PART A (GEAR RESTRICTIONS)

Appropriate rules or regulatory changes that can be implemented under this part include:

a. Limiting the number of traps that may be fished by each vessel.
b. Describing the construction characteristics of traps.
c. Specification of gear and vessel identification requirements.
d. Specification of gear that may be utilized or prohibited in directed fishery and specification of bycatch levels of stone crabs that may be taken as incidental catch in non-directed fisheries.
e. Changes to soak or removal periods and requirements for traps.

7. PART B (HARVEST RESTRICTIONS)

Appropriate rules or regulatory changes that can be implemented under this part include:

a. Changes in fishing season.
b. Limitations on use, possession, and handling aboard vessels of stone crab.
c. Changes in minimum legal size.

Discussion: The Council feels that utilizing a regulatory amendment procedure approach for implementation by the **RA** of certain types of rules adopted by the state under oversight by the Council, AP, and SSC has the following advantages:

- provides a more flexible and timely system that should result in compatible rules between State and federal jurisdictions;

- provides ample and fair opportunity for public input into the rulemaking process through State hearings and workshops, Council oversight, and to NMFS during the public comment period on the proposed rule;

- is more cost-effective: (1) allowing the Council and **RA** to utilize public hearing information and comments gathered by the State and utilize socioeconomic analyses prepared by the State; (2) reduces enforcement cost and increases effectiveness through compatible rules; and, (3) through agreed upon protocol, shifts the data gathering and management interpretation costs and enforcement costs to the State;

- provides the Council with opportunity to review each rule for consistency with the FMP objectives and the Magnuson Act and to cease the implementation process until issues over consistency have been resolved;

- in no way prohibits the Council from exercising the amendment or public hearing authority for changes to the FMP;

- provides the State with a more responsive management system for a fishery that is largely a State fishery (all permits are issued by the state), whereas previously by virtue of the localized geographical scope of the fishery the Council placed higher priorities on amending other FMPs with regional application, thereby delaying implementation of compatible rules and impacting effective management of the fishery; and,

- assures that the management objectives of the Council and **FFWCC** are most effectively carried out in a manner that benefits the resource and user groups and within standards of the Magnuson Act and standards of the **FFWCC**.

A possible disadvantage is that there is no statutory time period specified under the Magnuson Act for processing of regulatory amendments by NMFS. Therefore, the implementation period may, on occasion, exceed that for FMP amendments, depending on the NMFS workload. Also, the opportunity for public comment at the federal level could be somewhat reduced; however, the Council can schedule additional hearings if it determines the issue is controversial.

Parts A and B of the procedure limit the type of regulatory actions that can be addressed to the issues most likely to be addressed by the State in fine tuning regulations. Other issues cannot be addressed through the procedure and would require a FMP amendment.

7. PURPOSE AND NEED FOR ACTION

Protocol and Procedure

The Constitutional Referendum transferring the FMFC to be part of the FFWCC resulted in a rule making change whereby the FFWCC takes final action in implementing rules, rather than the Governor and Cabinet, as has been the case under the FMFC[4]. The protocol and procedure

[4] It should be noted that currently most of the Florida state agencies are empowered to take final regulatory action without approval of the rule by the Governor and Cabinet, e.g., it no longer

needs to be modified to reflect that change and the agency name change. Although this was a significant change it was sanctioned under the state constitution. The advantage of retaining the regulatory process allowed under the protocol and procedure is cited in the discussion following that section.

Management Objectives

As indicates in the discussion below, the fishery has expanded to the extent that full utilization of the resource has been attained (Management Objective 3), and in that process the industry has become overcapitalized in terms of gear deployed. Therefore an alternative objective to reduce that overcapitalization seems more appropriate.

State Trap Limitation Program (See Appendix B)

The commercial stone crab fishery off Florida has been continually expanding in terms of areas fished since the Council became involved in management (1978). ~~T~~his areal expansion has been both geographically northward to the Florida Big Bend area and seaward further offshore. As a consequence the landings continually increased over much of this period and a much larger portion was landed from the EEZ. Eventually landings stabilized at 3 to 3.5 million pounds of claws (See Section 5), which is probably MSY for the stock. The fishery is very stable because the minimum size limit for claws results in the fishery operating at a SPR level greater than 70 percent and in the females spawning for 1 to 2 years before their claws are large enough to harvest. Along with expanding areally, the fishery also expanded significantly in terms of numbers of fishermen and traps. This has resulted in overcapitalization of the industry and declining catch per unit effort (CPUE) per trap (See Section 5 and Appendices A, C, and D). The most significant increase in number of traps has been in recent years, i.e., from 800,000 in the 1995-1996 season to an estimate of about 1.3 million by 1998-1999 (See Section 9).

As long ago as the mid-1980's the AP requested that the Council and state take some action to limit participation in the fishery. Beginning in 1996 the industry, through its associations, Organized Fishermen of Florida (OFF) and Monroe County Commercial Fishermen, Inc. (MCCF), and in coordination with the state and to some extent the Council, through the AP, began serious discussion of alternative programs to halt this overcapitalization trend. They considered a license limitation system, but finally agreed upon an effort reduction program through a trap limitation program which would not only stabilize the fishery, but also would, over time, reduce the total number of traps deployed thereby increasing CPUE, reducing overcapitalization, and maintaining MSY. The state trap limitation program that applies to all persons that will be licensed by the state to land stone crab claws within the state would achieve the proposed objective under Section 9.B.

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applies to FDEP which housed the FMFC. It also does not apply to the FFWCC, which is an agency created by the state constitution.

Federal Trap Limitation Program

The federal trap limitation program is structured to achieve the same objectives as the state program and would apply to persons fishing the EEZ who could not obtain the Florida license. The federal program is needed to provide this opportunity to participate under this federal FMP which regulates the fishery in the EEZ. The federal program also allows participation in the EEZ of fishermen licensed by the state.

8. PROBLEMS REQUIRING A PLAN AMENDMENT

Both the protocol and procedure and the management objectives need to be updated and are, therefore, revised.

The discussion of the state trap limitation program under Section 9.C. sets forth the problems which the industry felt had occurred in the fishery. Those that occurred or been accentuated because of excessive growth in the fishery are as follows:

- Excessive growth in the trap fishery has reduced the efficiency in the industry and has not produced any new yield.
- Excessive growth has increased conflicts with the shrimp trawl fishery.
- Buoy ropes damage live bottom such as soft corals, and traps set in manatee grass damage the grass by shading and crushing. Excessive growth in the industry accentuates this problem.
- Shoreline debris resulting from lost ropes and buoys increases with the increasing number of traps. Catastrophic losses during hurricanes increases this problem.
- Excessive number of buoys and ropes impede navigation.
- There is an excessive demand on bait. (NOTE: In recent years, the industry has shifted to primarily using pigs' feet rather than fish; therefore, the excessive demand on finfish no longer exists).
- Crabs become smaller and smaller with increasing overcapitalization, leading to a loss in value.
- Excessive growth has led to conflicts and practices not in the best interest of the fishery (e.g., harvest/sale of lights, careless breaking of claws).

It is anticipated that implementation of the state trap limitation program proposed by the industry will, in time, significantly reduce most of these problems. Initially the program will only prevent the problems from getting worse, but by the time the trap reduction goal is attained or nearly attained some of the problems, such as one related to reduced industry efficiency, will be solved. Reducing the effects of overcapitalization is the principal goal of the industry, state, and Council.

The federal trap limitation program is anticipated to have very few participants when compared to the state program. However, it, along with the state program, will contribute to solving some of the problems. The NOAA position was that the state program could not be implemented into

the EEZ without creating the federal trap limitation program for persons who could not obtain the state license. That is the problem resulting in this amendment.

9. PROPOSED ACTIONS

A. Protocol and Procedure

Proposed Alternative: Adopt the revisions to the protocol and procedure as indicated under section 6.0.

Alternative: Status Quo - No action.

Discussion: The proposed editorial changes do not alter the intent of the protocol and procedure. The name of the state agency is changed to the current name. The Governor and Cabinet no longer take final action to approve the agency rules and that language has been deleted[4]. This change in the regulatory process while significant is mandated by the state constitution, in that the FFWCC was created by a constitutional referendum.

Biological Impacts: The retention of the regulatory amendment process for implementing minor rule changes which expedite the management process is anticipated to have a beneficial biological impact.

Economic Impacts: The retention of the regulatory amendment process for implementing minor rule changes reduces the implementation costs of such rules by eliminating duplication in the public review process; therefore, the economic impact will be beneficial to the agencies and user groups.

Environmental Consequences

Essential Fish Habitat (EFH): Since the regulatory amendment process includes implementation of rules limiting the number of traps that may be fished and the specification of allowable gear, the retention of the process should have a beneficial impact on EFH.

Physical Environment: The impact on the physical environment by retention of the regulatory amendment process will be similar to that for EFH.

Human Environment: The proposed alternative is anticipated to have a beneficial impact on the state and federal regulatory agencies by allowing continuation of the process of implementing

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[4] It should be noted that currently most of the Florida state agencies are empowered to take final regulatory action without approval of the rule by the Governor and Cabinet, e.g., it no longer applies to FDEP, which housed the FMFC. It also does not apply to the FFWCC, which is an agency created by the state constitution.

minor rules adopted by the state into the federal FMP, thereby expediting the effect of management rules agreed upon by the state and the Council. No adverse impact is anticipated on the user groups by the abbreviated process, since the state rulemaking process is duplicative of the federal process.

Fishery Resources: The proposed alternative is anticipated to have a beneficial impact on stone crab resources.

Other Fisheries Resources: The alternatives have no impact on other fisheries.

Effect on Wetlands: The impact of the alternatives on submerged aquatic vegetation (SAV) would be similar to that for EFH (See Section 12.1).

B. FMP Management Objectives

Proposed Alternative: (1) Delete objective 3 which reads as follows: Attain full utilization of the stone crab resources in the management area, and (2) replace it with the following objective: 3. Take regulatory action to increase catch per unit effort (CPUE) and reduce overcapitalization in terms of gear deployed in the fishery.

Alternative: Status Quo - No Action.

Discussion: As pointed out in Sections 5 and 7 the stone crab fishery has been continually expanding in terms of areas fished since the Council became involved in management (1978). This areal expansion has been both geographically northward to the Big Bend area and seaward further offshore. As a consequence, landings continually increased over much of this period and a much larger portion came from the exclusive economic zone (EEZ). Eventually landings stabilized at 3.0 to 3.5 million pounds of claws which is probably maximum sustainable yield (MSY) for the stock. However, in the same period the fishery became grossly overcapitalized in terms of traps deployed in the fishery (see Sections 5, 8, and 9.C.). Therefore, while the objective to attain full utilization was appropriate at the time (1978) the fishery management plan (FMP) was prepared, it is no longer appropriate. The proposed new objective is consistent with addressing the problems listed under Section 8, and with the proposed actions to implement the state and federal trap certificate systems.

Biological Impacts: The objective to reduce the number of traps should have a beneficial biological impact.

Economic Impacts: Re-specification of management objectives, as in the Proposed Alternative has no direct effects on fishery participants. However, specific measures adopted to attain the new objective would likely change the economic status of fishery participants. The impacts of specific measures considered in this amendment to achieve the new objective are discussed in the Regulatory Impact Review section.

Environmental Consequences

Essential Fish Habitat (EFH): Attaining the proposed alternative for a management objective to reduce overcapitalization in terms of gear deployed in the fishery will have a significant beneficial impact on EFH. Many of the problems cited under Section 8.0 are related to adverse effects on EFH of deploying an excessive number of traps, well above the number needed to harvest the resource.

Physical Environment: Attaining the proposed management objective to reduce the number of traps deployed would reduce the shoreline debris resulting from adverse or catastrophic weather.

Human Environment: While respecifying the management objective that would reduce traps in itself has no impact, the state and federal programs to attain that objective will have major beneficial impacts which range from a greater economic profit created by increasing CPUE and reducing the number of units of gear needed to harvest that CPUE to reducing the navigation hazards to other boaters and to shrimp vessels using trawls.

Fishery Resources: As indicated in Section 5.0 and Appendix A, the excessive number of traps does not appear to have adverse impacts on the stone crab stock; therefore, a proposed management objective to reduce the number of traps would likewise be anticipated to have no impact.

Other Fishery Resources: The excessive number of stone crab traps deployed in the fishery does have adverse impacts on other fishery resources such as soft corals (gorgonians), other bottom organisms such as sponges, and more rarely to hard coral and seafans. Although bycatch of finfish and invertebrates in stone crab traps is very minimal compared to other gear and usually released alive, a reduction in the number of traps would reduce that bycatch. Therefore, attaining the proposed objective would have a beneficial impact.

Effect on Wetlands: Attaining the proposed management objective to reduce the number of traps should have a beneficial impact on wetlands, especially the submerged aquatic vegetation (SAV). As indicated in Section 12.1, there is an adverse impact from deployment of traps on SAV.

C. Stone Crab Trap Limitation Programs

1. Description of *the State* Program

(See Appendix B for complete description of state program)

NOTE: The rules and laws implementing this program have been adopted by the state.

Initial Eligibility:

1. Must have a 1999/2000 Salt Water Products License (SPL) with stone crab endorsement and restricted species endorsement.

Persons who allowed their endorsements to expire during the moratorium are not eligible for an initial allocation of certificates. However, after the moratorium expires, anyone may purchase an endorsement from the state and then acquire certificates from fishermen who have certificates for sale.

2. Must have had at least 300 pounds of claws during one fishing season from 1993/94 to 1998/99.
3. Neither the person's saltwater products license nor stone crab endorsement can be under suspension.

The current estimate is that approximately 1,132 persons will be eligible initially based on the above criteria.

Initial Allocation of Certificates:

1. Initial allocation of certificates will be based on the three fishing seasons 1995/96, 1996/97, and 1997/98.
2. Certificate allocation will be the lesser of:
   a) the maximum number of traps stated on the SPL application in each of the three years, or
   b) the annual claw landings in pounds divided by 2 pounds per trap in each of those years.
3. Certificates may only be issued only to natural persons. Corporations, companies, associations, etc. with landings must name a person or persons to receive the certificates.
4. No person or entity may own or control more than 1 percent of certificates.
5. After three years of unpaid certificate fees, certificates will be considered abandoned and will be removed from the pool of available certificates.

The current estimate is that about 1.3 million certificates could be allocated under this program. That does not include the 100,000 certificates that would initially be allocated to the Appeals Board.

Effective date:

Beginning October 1, 2001, each trap used for directed harvest must have an annual tag. Tags will be issued annually at a proposed cost of 50 cents each for each certificate held.

Transferability:

1. After initial issuance, certificates are transferable on a market basis. FFWCC must be notified of transfer within 72 hours.
2. All outstanding fees must be paid prior to transfer.
3. No transfer will be allowed if the SPL or X-number is suspended.

Passive Reduction:

1. Upon sale or transfer of certificates outside of the immediate family, the number of certificates obtained by the purchaser will be reduced by:
   a) 25 percent if more 1½ million certificates are available,
   b) 22 ½ percent if 1 1/4 to 1½ million certificates are available,
   c) 18½ percent if 1 to 1 1/4 million certificates are available,
   d) 15 percent if 3/4 to 1 million certificates are available,
   e) 10 percent if more than 600,000 but fewer than 3/4 million are available,
   f) no reduction when 600,000 or fewer certificates are available.
2. In the event of death or disability, endorsements and certificates may be transferred to an immediate family member without transfer fees and without any reduction in number of certificates.
3. Five percent of the reductions may be set aside each year for redistribution to persons properly licensed and qualified to harvest stone crabs.

The length of time to reduce the number of certificates to 600,000 depends on the total number initially allocated and the turnover rate of fishermen entering and leaving the fishery. It is likely to take more than 30 years to get to the optimum number of traps.

Leasing:

Leasing of certificates or tags is prohibited.

Incidental Take Endorsement:

Persons with valid a lobster or blue crab endorsement but who do not have a stone crab endorsement may land 5 gallons of claws from lobster or blue crab traps if they also have an "incidental take endorsement" (proposed at cost of $25 per year).

It is estimated that anywhere from 500 to 1400 persons will acquire this endorsement. This derives from a comparison the present number of endorsement holders with at least 1 pound of landings compared to the 1132 that will initially qualify under the 300 pound provision. The disparity in the estimates stems from the fact that when several years are pooled, the number of fishermen with even 1 pound of landings greatly inflates.

Rights:

This program does not establish any vested rights. The program may be altered or terminated as necessary by the FFWCC to protect the resource, the participants in the fishery, or the public interest.

Appeals Board:

1. There will be a Trap Certificate Advisory and Appeals Board consisting of eight stone crab certificate holders and one FFWCC staff person to make recommendations to the Executive Director of the FFWCC regarding disputes and other problems arising from implementation of the program. The Executive Director may accept, alter, or disapprove any decision of the board. The action of the Executive Director is final but is appealable pursuant to the requirements of Florida's Administrative Procedures Act. Board composition will be balanced both geographically and by numbers of certificates held. One person must be Hispanic and fluent in Spanish and English.
2. The Board will make recommendations which include but are not limited to the following situations:
   a) Citrus, Dixie, Levy, Taylor County fishermen limited by local law to 600 traps,
   b) Persons with landings who did not record traps on their SPL applications,
   c) Persons with legitimate sales to a dealer but whose landings were not reported to the FFWCC on trip tickets, and
   d) Certain persons displaced by the 1995 net ban who will qualify for 100 certificates.
   e) Recommendations on how to allocate certificates among persons who worked on the same boat as separate business entities but whose landings were reported on a single trip ticket.
3. A total of 100,000 certificates will be allotted to the Appeals Board.
4. The Board will be dissolved July 1, 2002.

The Florida Legislature has the authority to set license fees and establish penalties, and has adopted the following program:

1. Endorsement fee of $125, of which $25 goes to trap retrieval.
2. Certificate fee of $0.50 per certificate per year. Replacement tags to cost $0.50 each (unless a major storm occurs).
3. Transfer fee of $2 per certificate to be paid by purchaser ($1 to crew member).
4. Additionally, a transfer fee of $2 per certificate or 25 percent of actual value of the certificate will be assessed the first time a certificate is transferred outside the immediate family.
5. Incidental take permit (endorsement) of $25.
6. Equitable rent may be charged if approved by Trustees of the Internal Improvement Fund (Governor/Cabinet).
7. Regarding trap retrieval, provides that there will be no additional cost for the first 5 traps recovered under the trap retrieval program. Thereafter, recovered traps will be $10 each. Revenues will be used solely to fund the retrieval program. Retrieval fees must be paid prior to renewal of the endorsement.
8. All fees, surcharges, fines to be deposited in Marine Resources Conservation Trust Fund. No more than 50 percent may be used for operation of the certificate program. Remaining revenues to be used for trap retrieval, management, evaluation of the program, education, and enforcement.

9. Provides for penalties for violation of the program.

Discussion: The Legislature declared a moratorium in the stone crab fishery in 1995. The effect of that was to prevent further persons from entering the fishery though it did not prevent the escalation in the number of traps since existing fishermen could add more boats and more traps without impunity. At the time of the moratorium, there were approximately 800,000 traps in the fishery (Monroe County to Wakulla County). However, they had increased to about 1.3 million traps by the start of the 1998/99 fishing season. The moratorium expires July 1, 2001.
The stone crab fishery has a sustainable yield in the range of 3 - 3 ½ million pounds of claws, regardless of how many traps are deployed. FFWCC believes that about 600,000 traps would be sufficient to catch that yield. Thus there are more than twice as many traps as needed to catch all the crabs. However, despite the excessive effort, the fishery is not overfished due to the fact that the female crabs have spawned 1 - 2 times before they reach the minimum size limit. However, even though the crabs themselves are not overfished, there are still plenty of problems in the industry that are driven by the excess numbers of traps.

At the request of some members of the stone crab industry, the FMFC began developing a program to control effort in the fishery in late 1996. Workshops have been conducted along the Florida Gulf Coast in each of the last three years. Before that the Gulf of Mexico Fishery Management Council's Stone Crab Advisory Panel held workshops and recommended limiting effort in the fishery. Last year the FMFC identified the following as nine problems in the industry. A tenth problem has been added by FFWCC staff.

1. Excessive growth in the trap fishery has reduced the efficiency in the industry and not producing any new yield.
2. Excessive growth has increased conflicts with the shrimp trawl fishery.
3. Buoy ropes damage live bottom such as soft corals, and traps set in manatee grass damage the grass by shading and crushing. Excessive growth in the industry accentuates this problem.
4. Shoreline debris resulting from lost ropes and buoys increase with increasing numbers of traps. Catastrophic losses during hurricanes increase this problem.
5. Excessive number of buoys and ropes impede navigation.
6. There is an excessive demand on bait. (NOTE: In recent years, the industry has shifted to using primarily pigs' feet rather than fish; therefore, the excessive demand for finfish no longer exists.)
7. Crabs become smaller and smaller with increasing overcapitalization, leading to a loss in value.
8. Excessive growth has led to conflicts and practices not in the best interest of the fishery (e.g., harvest/sale of light claws, careless breaking of claws).
9. Law enforcement problems grow as profits dissipate and some crabbers become more economically desperate.
10. Turtles, manatees, and dolphins may, on occasion, become entangled in buoy ropes.

Last year, the FMFC made recommendations to control effort in the fishery but the FMFC lacked the authority to implement the kind of program that would optimize benefits to fishermen and consumers, and they asked the Legislature to implement it. The legislation made it through committees in both House and Senate, but got hung up and died when recreational lobster trapping provisions were tacked on in one of the House committees.

Unlike the FMFC, the FFWCC has the authority to limit effort in the industry. However, the program recommended by staff requires fees on licenses and traps which only the Legislature can implement. Therefore, the FFWCC completed the rule to implement a trap management and limitation program, but depended on the Legislature approving fees to implement it.

The stone crab rule approved by the FFWCC on February 3, 2000 does several things:

1. It creates an effort management program to control the number of traps deployed in the stone crab fishery.
2. It merges the existing statutory provisions found in Chapter 370.13, Florida Statutes, for which the FWC now has authority (season, license requirements, license moratorium) with the existing stone crab rule.
3. Finally, it makes changes to the existing stone crab rule by modifying the definition of stone crab, by allowing two endorsements per boat, and by allowing another person to deploy, pull, and retrieve a fisherman's traps with permission of the owner and the Division of Law Enforcement.

The effort management program described below begins at 68B-13.010 of the proposed rule which is appended to the amendment. The program will be a certificate-based trap limitation program like spiny lobster. However, the initial eligibility, initial allocation, and trap reduction provisions are much different than those of the lobster program. Most of major features of the program were suggested by the stone crab industry at workshops and hearings.

The trap management program is a certificate based attrition program which attempts to grandfather fishermen into the program with their present level of traps and then slowly reduces trap numbers to the optimum level by reducing the number of certificates whenever they are sold. The reduction rate is a sliding scale which declines with the number of certificates. It is significantly different than the lobster trap management program in two ways: 1) in the lobster program fishermen were allocated traps based on their annual production whereas in this program they are given the number of traps which they recorded on their saltwater products license application provided that their annual landings reflect at least 2 pounds of landings for each trap claimed, and 2) in the lobster program reductions are across the board reductions made annually or semi-annually whereas in the stone crab program, reductions will occur only when a fisherman sells trap certificates.

2. Description of the Proposed Federal Program

A summary of the proposed program is as follows:

- **Recognizes the state license and tags for use in the EEZ, but does not require them.**
- **Persons who could not obtain or chose not to obtain, the state license could apply for a federal vessel permit.**
- **The same qualifying criteria would apply, i.e., 300 pounds of claws landed in one of the fishing seasons 1995/1996 through 1997/1998.**
- **Persons would have 90 days to apply after the effective date of implementation of the final rule.**
- **Persons qualifying would be issued a trap certificate and federal trap tags based on their landings divided by 5 pounds which is the annual harvest level that would occur when the number of traps is reduced to the optimum level of 600,000 traps.**
- **Federal vessel permits, trap certificates, and tags would be non-transferrable to other persons.**
- **It is anticipated that the cost of the federal trap tags would be higher than the cost of the state trap tags, i.e., $1.10 vs $0.50.**
- **Inclusion of a second alternative for a federal appeals process that tracks the language of the appeals process in the NPFMC FMPs.**

Discussion: Any persons who land commercial quantities of stone crab claws in Florida for sale must comply with the provisions of the state trap limitation program under Section 9.C.1 (and the rule under Appendix B). These persons may fish in both state waters (to 9 nautical miles in the Gulf) and the EEZ beyond state waters. The proposed Federal program summarized above would provide the opportunity for persons who could not obtain or did not obtain the state license to acquire a Federal vessel permit to fish commercially for stone crab in the EEZ only (i.e., not in state waters).

To qualify for the Federal vessel permit the applicant must be able to demonstrate to NMFS through landings records that they harvested at least 300 pounds of claws in one of the six fishing seasons: 1993/1994 through 1998/1999. This is the same eligibility requirement as for the state program. Persons issued state trap certificates and holding the state licenses (SPL with stone crab and restricted species endorsements) would not be eligible to apply for the federal vessel permit. The number of persons who would qualify is unknown, but is likely to be small. Applicants would have 90 days after the effective date of the federal rule implementing this amendment to apply for the vessel permit and submit their landings records to NMFS.

In order to attain the new proposed management objective (under (9.B), the state trap limitation program reduces the number of traps by devaluating the trap certificate each time they are transferred (sold) to a person outside the immediate family. The federal trap limitation program proposes to reduce the number of traps through attrition by making the permits, certificates, and trap tags non-transferable, i.e., they would revert to NMFS if the permit was not renewed and the tag fees paid annually.

The state stone crab trap limitation program applies to all resident and non-resident fishermen who hold Florida Saltwater Products Licenses (SPL) with a stone crab endorsement and a restricted species endorsement and who are issued trap certificates. Residents and non-residents may enter the fishery by purchasing the SPL with both the endorsements, and subsequently purchasing certificates from persons in the fishery.

The Florida trap limitation program is an effort reduction program designed to reduce the number of traps, reducing overcapitalization and making the industry more efficient. It will contribute toward solving or reducing the problems listed in the discussion of Section 9.C.1. Description of the State Program (above). The eligibility requirements of the program coupled with the moratorium, should stabilize the fishery at the current participation level (in terms of fishermen, and particularly traps). Under open access the number of stone crab permits totaled 6,501 at the beginning of the moratorium of which only 1,556 had stone crab landings. Under the eligibility criteria it is anticipated that 1,132 persons would be initially eligible to receive certificates. Under the criteria for allocation of certificates it is estimated that up to 1.3 million certificates would be issued. That is likely higher than the number of traps being fished. Muller and Bert (1997) estimated that about 800,000 traps were being fished in the 1995-1996 season. The state trap limitation program provides that initially as certificates are sold outside the immediate family, the number will be reduced by up to 25 percent. The percent reduction in certificates declines as the number of traps is reduced reaching 10 percent when the total remaining traps are between 750,000 and 600,000. Therefore, it is estimated to reach the optimum target level of 600,000 traps may require more than 30 years.

Proposed Alternatives:

Alternative 1-A: Issue a federal stone crab vessel permit to participate in the federal stone crab trap limitation program to those persons who could not or did not obtain the state license and certificate to participate in the state trap limitation program, provided that they meet the eligibility or qualifying criteria for the federal program. (The permitted vessel may deploy traps and fish only in the EEZ). Persons whose state license has been suspended or revoked are ineligible for the federal vessel permit.

NOTE: Vessels issued the federal stone crab vessel permit will also be issued a color code and trap number by NMFS. The color code and trap number must be displayed on the vessel and on the buoys attached to each trap. An annual trap tag with the trap number must be permanently attached to the trap. The federal stone crab vessel permit must be renewed within one year of its expiration date or it will be revoked. Trap tags must be purchased each year and affixed to each trap before the trap is deployed at sea. Traps must be removed from the water and stored on land from May 20 to October 5.

Under the federal program person means a natural person. Corporations must designate a natural person to qualify to hold the permit, certificates, and tags.

Alternative 2-A: Persons issued state stone crab trap certificates and holding state licenses (SPL with stone crab and restricted species endorsements) would not be eligible to apply for the federal stone crab vessel permit.

Alternative 3-A: In order to qualify for the federal stone crab vessel permit an applicant must demonstrate to NMFS through landings records that they landed at least 300 pounds of stone crab claws in one of the fishing seasons 1995-1996 through 1997-1998. Such landing records may consist of Florida trip ticket receipts or other verifiable landing receipts from fish dealers. Such landing records must be for stone crab landed during the open season (October 15 - May 15) and from the Florida shelf and/or EEZ off Florida[5]. Landing records for persons (on vessels) qualifying for the state program cannot be used.

Alternative 4-A: Applicants for the federal stone crab vessel permit must apply and submit their landings records to NMFS within 90 days after the effective date of implementation of the final rule for this amendment.

Alternative 5-A: Persons qualifying for the federal stone crab vessel permit would be issued a trap certificate and federal trap tags based on the highest seasonal landings of stone crab claws in one of the seasons 1995/1996, 1996/1997, and 1997/1998 of the qualifying period divided by 5 pounds. An annual fee will be charged for issuance of the trap tags and re-issuance of the vessel permit.

Alternative 6-A: The federal vessel permits, trap certificates, and trap tags are not transferable to other persons. Vessel permits may be transferred between vessels owned by the permitted person. Vessel permits and certificates cannot be leased to another person.

Alternatives Considered and Not Selected:

Alternative 1-B: Status Quo - No Action. Do not issue a federal stone crab vessel permit to participate in the federal trap certificate program.

Alternative 2-B: Allow persons issued state stone crab certificates and holding state licenses (SPL with stone crab and restricted species endorsements) to apply for the federal stone crab vessel permit.

Alternative 3-B: In order to qualify for the federal stone crab vessel permit an applicant must demonstrate through landings records that they landed at least (100 or

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[5] This is necessary because stone crab of the species Menippe adina exist clear across the Gulf off other states. Whereas Menippe mercenaria makes up the bulk of the Gulf commercial landings and exists only off Florida. It would be inequitable to allow commercial landings of Menippe adina off other states to be used to qualify for the federal trap limitation program in the EEZ off Florida.

500) pounds of stone crab claws in one of the fishing seasons 1995-1996 through 1997-1998.

Alternative 4-B: Applicants for the federal stone crab vessel permit must apply and submit their landings records to NMFS within (60 or120) days after the effective date of implementation of the final rule for this amendment.

Alternative 5-B: Persons qualifying for the federal stone crab vessel permit would be issued a trap certificate and federal trap tags based on the highest seasonal landings of stone crab claws in one of the three seasons of the qualifying period (1995/1996, 1996/1997, and 1997/1998) divided by (2, 3 or 4) pounds. (Annual fees are charged for permits and tags).

Alternative 6-B: Allow transfer of the vessel permit and trap certificate to another person; such person could apply to NMFS to be issued the trap tags.

Alternative 6-C: Allow transfer of the vessel permit and trap certificate only within the immediate family.

Alternatives for Implementing the Programs

Alternative 7-A: Implement the state trap certificate program into the EEZ by regulatory amendment under the protocol and procedure of the FMP.

Alternative 7-B: Delegate to the state of Florida management of stone crabs under the FMP as provided for under Section 306(a)(3)(B), thereby allowing the state to implement the state trap certificate program as part of the FMP.

Alternative 7-C: Withdraw the FMP and allow Florida to manage the stone crab fishery.

Discussion: In a legal opinion General Counsel (GC) indicated to be consistent with the provisions of the Magnuson-Stevens Act the Council should provide to persons who could not obtain or did not obtain the state license and trap certificate an opportunity to participate in a federal trap certificate program in the EEZ. Proposed Alternative 1-A provides for that by issuing a federal vessel permit and trap certificate, provided the applicant can meet the qualifying criteria. Alternative 1-B is the Status Quo - No Action alternative under which there would be no federal program. Inasmuch that anyone who fishes commercially for stone crab within the state jurisdiction must qualify for the state trap certificate program and must pay the state fees, vessels permitted under Proposed Alternative 1-A are limited to fishing and deploying traps only in the EEZ.

It is necessary to specify that persons participating in the federal program be defined natural persons because the federal permits and trap certificates are not transferable. That is, they can

be used as long as that person is in the fishery, but revert back to NMFS when that person leaves the fishery. This is the mechanism by which reduction in traps is achieved under the federal program. If corporate persons were allowed as permit and certificate holders, it is most likely that the person (corporation) would never leave the fishery, i.e., the natural persons in the corporation would continually change.

Proposed Alternative 2-A makes persons and vessels participating in the state trap certificate program ineligible to apply for a federal stone crab vessel permit, and thereby participate in the federal trap certificate program. Alternative 2-B would have allowed such persons and vessels to participate in the federal program, if that alternative had been selected as a proposed alternative. However, if that had happened it potentially could have resulted in almost twice as many traps, as allowed under the state program, to be deployed in the fishery. That would have made it impossible for the state and federal programs to attain the management objective under 9.B or solve any of the problems under 8.0.

Proposed Alternative 3-A provides that applicants for participation in the federal program must demonstrate that they can meet the same qualifying criteria as persons selected to participate in the state program, i.e., demonstrate that they landed at least 300 pounds of stone crab claws in 1 of the 6 fishing seasons 1995-1996 through 1997-1998. That landing level is equivalent to about $2000 of annual gross ex-vessel value, certainly a very liberal criteria. The alternatives not selected under Alternative 3-B range from a more liberal level of 100 pounds of annual landings to a more restrictive level of 500 pounds of annual landings. Proposed Alternative 3-A makes that date May 15, 1999. Proposed Alternative 3-A provides applicants for the federal permit must demonstrate their annual landings of stone crab claws through landings records. These records can be Florida trip ticket receipts or records from seafood dealers of landings in other states. Such landing records must be for stone crab landed during the open season (October 15 - May 15) and from the Florida shelf and/or EEZ off Florida. Landing records for persons (on vessels) qualifying for the state program cannot be used.

Proposed Alternative 4-A provides that applicants for the federal vessel permit must apply and submit their landings records within 90 days after the effective date of the final rule for their amendment. This means the application and records must be received by mail or be hand-delivered to the NMFS Permits Branch Office by the close of business on the 90th day following the effective date of the rule. The alternatives for this time period not selected under Alternative 4-B were 60 or 120 days. Ninety days was selected because the NMFS Permits Branch personnel suggested it was an adequate amount of time to receive and process such records. An appeals process is provided for persons denied federal permits who feel that their records should have resulted in their being issued the federal permit. The NMFS appeals process is described in Section 9.D.

Proposed Alternative 5-A provides that the number of traps authorized by the federal trap certificate will be determined by dividing the highest seasonal landings of stone crab claws during one of the seasons 1995/1996 through 1997/1998 by 5 pounds. Five pounds was selected because it is the level that would be the average annual landing per trap for the fishery when the

number of trips is reduced to the optimum level of 600,000. The state program uses the highest number of traps listed annually on the SPL or the highest seasonal landings divided by 2 pounds, whichever is less. Although the Council considered divisors of 2, 3, and 4 pounds under the alternatives not selected under Alternative 5-B, they selected 5 pounds as most appropriate under the proposed alternative. They did that because the federal program potentially adds more participants and traps than would have occurred if only the state program was implemented; therefore, they were more restrictive. The basis for being more restrictive and selecting 5 pounds as the divisor is fully discussed under the Environmental Consequences on the Human Environment section that follows.

As provided in Proposed Alternative 5-A NMFS will charge annual fees for re-issuance of the stone crab vessel permit and for the federal trap tags issued each year. The cost of these fees is limited to the administrative costs to NMFS in issuing the permit and tags, such costs are currently $50 and $1.10 per tag, respectively. NMFS can also charge a one-time fee for the trap certificate when that is issued.

Proposed Alternative 6-A provides that the federal vessel permits, trap certificates, and tags are not transferable to other persons. This was done to provide for reducing the number of traps over time through attrition, i.e., persons leaving the fishery and not renewing their permits. The state program provides for reducing the value of the trap certificate each time they are transferred to persons outside the immediate family. Initially the number of traps allowed under each trap certificate is reduced by 25 percent when transferred. Over about a 30-year period that reduction declines to 10 percent when the certificate is transferred. Alternatives considered but not selected by the Council under Alternatives 6-B and 6-C that were not selected would allow transfer of vessel permits and trap certificates to either other persons or within the immediate family, respectively.

The alternatives considered and not selected under 7-A, 7-B, and 7-C all provided options that were considered in the previous FMP amendment (GMFMC, May 2000) for either implementing the state trap limitation program into the EEZ as federal rule or completely withdrawing the FMP allowing the state to manage the fishery. Alternative 7-A was the Council's preferred method for implementing the program, and the Council felt that it was an appropriate method since the spiny lobster trap limitation program had been implemented by regulatory amendment under the protocol and procedure agreed upon by NMFS, the Councils, and FMFC for that fishery. However, GC SER has concluded that the stone crab trap limitation program is a limited access system rather than an effort reduction program. Therefore, the Council is proceeding with this FMP amendment which creates a federal trap limitation program and which addresses the Section 303(b)(6) provisions related to limited access systems. (See that discussion under Section C.4, which follows).

Under Alternative 7-B, the Council in the previous draft amendment had considered delegating to the state of Florida management of stone crab under the FMP as provided for by Section 306(a)(3)(B) of the Magnuson-Stevens Act (MSA), which reads as follows:

(3) A state may regulate a fishing vessel outside the boundaries of the state in the following circumstances.

(B) The fishery management plan for the fishery in which the fishing vessel is operating delegates management of the fishery to a state and the state's laws and regulations are consistent with such fishery management plan. If at any time the Secretary determines that a state law or regulation applicable to a fishing vessel under this circumstance is not consistent with the fishery management plan, the Secretary shall promptly notify the state and the appropriate Council of such determination and provide an opportunity for the state to correct any inconsistencies identified in the notification. If, after notice and opportunity for corrective action, the state does no correct the inconsistencies identified by the Secretary, the authority granted to the state under this subparagraph shall not apply until the Secretary and the appropriate Council find that the state has corrected the inconsistencies. For a fishery for which there was a fishery management plan in place on August 1, 1996 that did not delegate management of the fishery to a state as of that date, the authority provided by this subparagraph applies on ly if the Council approves the delegation of management of the fishery to the state by a three-quarters majority vote of the voting members of the Council.

As opposed to withdrawing the FMP under Alternative 7-C, this alternative would have the advantage that Florida could regulate not only vessels registered in Florida, but also any vessel fishing the EEZ under the provisions of the FMP. Therefore, the Council would have much preferred to implement the state trap limitation program under Alternative 7-B. However, GC SER has indicated this would not be possible because Florida charges fees to participate in the state program that are higher than the federal cost of issuing a permit, and that would preclude using Alternative 7-B to implement the state program into the EEZ.

In the previous draft FMP Amendment (GMFMC, May 2000), Alternative 7-C was listed as a proposed alternative but was considered a default position since Alternatives 7-A and 7-B were ruled to be in violation of the MSA. The Council considered this alternative because the fishery as managed under the FMP is essentially a Florida fishery in terms of participants in the Gulf EEZ off west Florida and the Atlantic EEZ off Monroe County. However, over the years as the fishery expanded a greater and greater portion of the landings were from the EEZ (see Appendix D). This action would allow the state to proceed unimpeded with implementation of the trap limitation program. But under this alternative, the state could only regulate the activities of vessels registered under that state, whereas under Alternative 7-B, the state could regulate any vessel fishing for stone crab in the FMP management area.

Biological Impacts: The beneficial biological impacts for the proposed federal trap limitation program like those for the state trap limitation program will principally benefit the fishery resources other than stone crab, that have been adversely impacted by the excessive number of traps deployed in the fishery. These other fishery resources include principally soft corals (gorgonians), sponges, and other "live bottom" organisms, and to a much lesser degree, hard

corals, seafans, and the finfish and invertebrates taken as bycatch. As indicated in Section 5.0, the excessive number of traps does not appear to have an adverse impact on the stone crab stock.

Economic Impact: The economic impacts of the proposed federal trap limitation program would be closely similar to those of the state trap limitation program, but will be of a much smaller magnitude because the number of participants in the federal program is anticipated to be very small in comparison. A full discussion of impacts is found in the RIR section.

Environmental Consequences

Essential Fish Habitat (EFH): The reduction of traps in the fishery achieved by the proposed federal trap limitation program, working in conjunction with the state trap limitation program, will jointly have a significant beneficial impact on EFH. Such EFH includes live bottom and submerged aquatic vegetation (SAV). The impact of the federal program will be a very small portion of the impact of the combined programs.

Physical Environment: The reduction in traps in the fishery achieved by the proposed federal trap limitation program would, like the state program, have a beneficial effect on the physical environment through the reduction of shoreline debris, but to a much lesser extent than the state program.

Human Environment: The proposed federal trap limitation program will have a beneficial impact on persons excluded from or who failed to qualify for participation in the state program, and who can qualify for the federal program. The number of such persons is anticipated to be less than 30 and possibly much less than 30, considering that the federal stone crab rule had a provision from 1979 through 1994 whereby anyone who could not obtain a Florida stone crab permit could apply to the RA and be issued a color code and trap number to fish in the EEZ (44 FR 53521). In that 16-year period, no one applied to the RA. In as much as participation in the state program will include all persons who will land commercial quantities of stone crab claws in Florida, there may be very few or no persons applying for the federal permit. The eligibility criteria and provisions of the state trap limitation program are so liberal that most of the persons who participated in the fishery, even on a marginal or occasional basis, should initially qualify.

Persons qualifying to participate in the state program would not be eligible to participate in the federal program because their participation in both programs could potentially nearly double the number of traps initially allowed in the fishery, which would preclude attaining management objective (3) and solving the problems set forth in Section 8.0. That action should not have an adverse impact on those persons.

Persons granted the federal stone crab vessel permit would be limited to deploying their traps in and fishing in the EEZ; this is because anyone who fishes in the state fishery jurisdiction or who will land commercial quantities of crab claws (including incidentally taken allowances) in Florida must have the appropriate state licenses. The stone crabs do move inshore and offshore. This may result in crab abundance being higher in the EEZ during only part of the season,

reducing the catch of persons in the federal program, as compared to persons in the state program who can follow the crabs' migration from state to federal waters or vice versa. The trend in the gear conflict area of Pasco, Hernando, and Citrus counties was for the fishery to be more productive in federal waters in the October-November period (Fig. 2 of Stone Crab Amendment 2); whereas, the trend in the gear conflict area of Monroe, Collier, and Lee counties was the opposite, the fishery was more productive in state waters in the October-December period and the crabs gradually moved offshore (Ad Hoc Stone Crab AP minutes 1978).

The qualifying criteria for the federal permit are the same as for the state program so there should be no adverse impact on federal participants. In lieu of creating a trap reduction provision for the federal program, the Council instead chose to implement two measures: (1) making the federal permits, trap certificates, and tags non-transferable between persons; and, (2) dividing the highest seasonal landing record over 1995-1998 period by 5 pounds to yield the number of traps allowed under the trap certificate. The non-transferability of permits will result in a long-term reduction in the number of participants, i.e., the person can remain in the fishery as long as he/she holds the permit which reverts to NMFS when he/she leaves the fishery. Rather than reducing the value of the trap certificate annually by 25 (or some other) percentage, the Council chose to use the 5-pound divisor, initially creating a reduction to the optimum harvest level, and not reducing the value of the trap certificate thereafter. The Council considered divisors of 2, 3, and 4 pounds as alternatives, but also considered the fact that the federal trap certificate program potentially adds additional traps to the fishery that would not have been allowed without the federal program. The Council, therefore, feels this approach does not create an adverse impact on the federal participants. The Council, in reaching a decision to use 5 pounds as the divisor also considered public comment from FFWCC and Council hearings (November 2000 Council minutes). Mr. Williams pointed out that at these hearings persons testifying indicated 2 pounds per trap was not nearly enough for someone fishing offshore in the EEZ. Those persons should be harvesting at least 5 pounds per trap per year and even higher than that to be a real stone crab harvester. These persons asked the FFWCC to use a higher standard as a divisor to not allow so many traps under the state program. Mr. Williams pointed out that however, the FFWCC was sensitive to the needs of the small scale fishermen that fish near shore (or in the bays) who had annual yields as low as 2 pounds per trap. Based on that and the other considerations cited above the Council felt the 5-pound divisor was fair for the EEZ fishermen under the federal program.

Mr. Williams also pointed out that persons participating in the state program would be paying for the cost of research, management, and enforcement. Whereas the participants in the federal program would not be paying for any of these.

Fishery Resources: As indicated in Section 5.0 and Appendix A, the excessive number of traps does not appear to have an adverse impact on the stone crab stocks; therefore, the reduction of traps by the federal and state programs would likewise be anticipated to have no impact.

Other Fishery Resources: The excessive number of traps does have adverse impacts on other fishery resources, including soft corals (gorgonians), other bottom organisms such as sponges, and more rarely to hard coral and seafans. Therefore, the reduction in traps resulting from the

federal program, working in conjunction with the state program, would have a beneficial effect on these resources. Although the bycatch of finfish and invertebrates in stone crab traps is very minimal compared to other gear (SFA Amendment, GMFMC, 1999), the reduction of the number of traps achieved by the federal program, working in conjunction with the state program, would reduce that bycatch having a beneficial impact.

Effect on Wetlands: Reduction of the number of traps resulting from the federal program, working in conjunction with the state program, should have a beneficial effect on wetlands, especially the submerged aquatic vegetation (SAV). As indicated in Section 12.1, there is an adverse impact from deployment of traps on SAV.

3. Federal Appeals Process

Any applicant for the federal stone crab vessel permit who complies with the provisions of Alternative 4-A and who is denied a vessel permit can appeal that initial administrative determination. Appeals must be received by the NMFS RA not later than 60 days after the date notification of the initial administrative determination is issued. The appeals must be in writing and must include copies of landing records relating to eligibility and such other reliable evidence upon which the facts related to issuance can be resolved. The applicant may request a hearing.

The RA will appoint one or more appellate officers to review the appeals and render recommendations to the RA. The appellate officer(s) has discretion to (1) deny the appeal, (2) issue a decision on the merits of the appeal if the records are sufficient to reach a final judgement, or (3) order that an oral hearing be conducted. Such action will be taken within 30 days after the written appeal is received and the officer will notify the RA of the tentative decision. The RA may affirm, reverse, modify, or remand the appellate officer(s) decision. The applicant will be immediately notified of the decision. Should an oral hearing be approved, the RA or appellate officer will notify the applicant of the place and date of the hearings providing the applicant 30 days to provide supplementary documentary evidence along with a written response. The appellate officer will provide the applicant a statement of the issues to be determined at the hearing. The appellate officer will issue a decision for review by the RA after determining the information on record is sufficient to render a decision. The RA may affirm, reverse, modify, or remand the appellate officer(s) decision. A federal stone crab vessel permit will be issued to a person on acceptance of his/her appeal by the RA.

Discussion: The appeals process is limited to the determination of eligibility of applicants for the federal stone crab vessel permit based on the records and other reliable evidence submitted to NMFS. The process does not consider hardship cases affecting an applicant's ability to apply for a permit or the ability to meet the qualifying criteria. The appeals process will be conducted entirely by NMFS, with the RA's final decision not subject to further appeal. The appeals process will terminate when issues related to eligibility have been resolved.

4. <u>Comparison of Programs to the Magnuson-Stevens Act Provisions for Limited Access</u>

Section 303(b)(6) provides that:
to establish a limited access system for the fishery in order to achieve optimum yield if, in developing such a system, the Council and the Secretary take into account—

a. **Present participation in the fishery,**
b. **Historical fishing practices in, and dependence on, the fishery,**
c. **The economics of the fishery,**
d. **The capability of the fishing vessels used in the fishery to engage in other fisheries,**
e. **The cultural and social framework relevant to the fishery and any affected fishing communities, and**
f. **Any other relevant considerations.**

Whereas over an extended time period the state program will likely become limiting on the number of participants in the fishery, over the near term (5 to 10) years it appears likely that the number of participants (license holders) will increase. This is because initially there will be a significant excess of certificates above and beyond the number needed to harvest the resource annually. This will result in a very low value for the state stone crab trap certificates, as was the case initially under the spiny lobster trap limitation program (Milon et al 1998), which was less than $2 per certificate. In that the number of stone crab certificates anticipated to be issued by the state (1.3 million) greatly exceeds the number of spiny lobster certificates that were issued, the value is likely to be lower. This is likely to result in many persons entering the fishery at little cost on the speculation that the state certificates will become valuable, as was eventually the case for the spiny lobster certificates. However, the federal program proposed in this amendment will limit participants throughout its existence in that the permits and certificates are not transferable and revert to NMFS when the permit holder leaves the fishery. However, both programs share some of the elements of limited access systems and in addressing the provisions of 303(b)(6) are considered together as one system.

The programs certainly fully considered the present participation in the fishery to the fullest extent. Under open access, the number of (no cost) permits issued prior to the 1995 state moratorium on permits was 6,501 of which only 1,556 had a record of any stone crab landings. Under the state trap certificate program it is anticipated that approximately 1,132 of these persons would initially be eligible to received certificates. The proposed federal trap certificate program would add an additional unquantifiable number of persons with records of participating in the fishery. This certainly takes into full consideration the historical fishing practices and dependence on the fishery by the participants eligible under the two programs.

The economics of the fishery were a prime consideration in the design of the programs, which through reduction of traps should result in greater economic profit for operating vessels by increasing CPUE and reducing the number of units of gear needed to harvest the increased CPUE. In terms of gear deployed, the industry has become very overcapitalized. The

transferability of trap certificates under the state program, along with reductions in the value of the certificates, will, over time, result in the consolidation of trap certificates by fewer and fewer vessels, making the industry more economically efficient.

Since the stone crab fishery is a six-month seasonal fishery, all the vessels have the capability to be used in other fisheries, and are. Since the two programs provide for initial eligibility for almost all participants who ever landed stone crab claws, the programs do not alter the cultural and social framework of the fishery or adversely impact the fishing communities involved in the fishery. Over time, the programs will result in the industry being more economically efficient, benefitting those communities.

10. REGULATORY IMPACT REVIEW (RIR)

10.1 Introduction

The National Marine Fisheries Service (NMFS) requires a Regulatory Impact Review (RIR) for all regulatory actions that are of public interest. The RIR does three things: (1) it provides a comprehensive review of the level and incidence of impacts associated with a proposed or final regulatory action; (2) it provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problem; and, (3) it ensures that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost-effective way.

The RIR also serves as the basis for determining whether the proposed regulations are a "significant regulatory action" under the criteria provided in Executive Order 12866, and whether the proposed regulations will have a significant economic impact on a substantial number of small entities in compliance with the Regulatory Flexibility Act of 1980 (RFA). The primary purpose of the RFA is to relieve small businesses, small organizations, and small governmental jurisdictions (collectively: "small entities") of burdensome regulatory and recordkeeping requirements. The RFA requires that if regulatory and recordkeeping requirements are not burdensome, then the head of a federal agency must certify that the requirement, if promulgated, will not have a significant effect on a substantial number of small entities.

This RIR analyzes the probable impacts that the proposed alternatives in this plan amendment to the Stone Crab FMP would have on the commercial stone crab industry.

10.2 Problems and Issues in the Fishery

The general problems in the fishery are enumerated in the section Problems in the Fishery of the Stone Crab Fishery Management Plan (FMP), as amended. The specific problems addressed by this proposed plan amendment are enumerated and discussed in Sections 7 and 8. Three issues have been identified for this plan amendment: (1) editorial revisions to the protocol and procedure for an enhanced cooperative management system currently contained in the FMP, as

amended.; (2) replacement of an objective with another that is more relevant to the recent developments that occurred in the fishery; and, (3) provision of a Federal stone crab trap limitation program that is similar to that developed by the state of Florida, with particular intent of allowing persons disqualified from the state program to continue fishing in the EEZ (but not in state waters).

10.3 Objectives

The general management objectives are enumerated in the section Management Objectives of the Stone Crab Fishery Management Plan, as amended. Section 7 of this document discusses the specific need for this plan amendment.

10.4 Management Measures

The proposed actions and specific management measures are fully stated and discussed in Section 8. The three sets of management measures considered are the editorial revisions to the protocol and procedure to enhance state-federal cooperative management of the stone crab fishery, revision of FMP management objectives, and the Federal trap limitation program that is similar in many respects to that developed by Florida.

10.4.1. Protocol and Procedure

No Action Alternative Versus the Proposed Alternative

The Proposed Alternative simply introduces editorial changes to the current protocol and procedure for an enhanced cooperative management system so that both this alternative and the no action alternative (status quo) would not change the social and economic status of fishery participants.

10.4.2. FMP Management Objectives

No Action Alternative Versus the Proposed Alternative

In and by itself, the proposed management objective to increase CPUE and reduce overcapitalization in terms of gear deployed creates no economic effect. However, the actions taken to achieve this objective will have the beneficial impact described under 10.4.3.

10.4.3. Trap Limitation Programs

No Action Alternative versus the Proposed Alternative

As discussed in Section 5, the stone crab fishery in the Gulf is essentially a Florida fishery. In the past, the fishing area was mostly in the shallow waters off Monroe, Collier, Manatee, and Pinellas Counties; but in recent years, fishing expanded to areas in deeper waters for most Gulf

coastal counties from Monroe to Franklin. Appendix D shows the increasing importance of catches in EEZ, from about 47 thousand pounds in 1993-1994 (or 1.4 percent of total landings) to 1.18 million pounds in 1998-1999 (or 36.3 percent of total landings). In addition to resolving gear conflicts between shrimp and stone crab fishermen, the FMP (as amended) simply extends the Florida rules into the EEZ. In addition the FMP's management area is limited to the EEZ seaward of the west coast of Florida, and off Monroe County, Florida includes the EEZ in the Atlantic Ocean.

Florida requires a permit to commercially fish for stone crabs. While a state permit is sufficient to fish in both state and EEZ waters, the NMFS RA is also authorized to issue a vessel identification number to allow fishing in the EEZ, but only to those who cannot secure a state permit. Both issuance of new state permits and federal vessel identification number are currently under a moratorium. One major purpose of the moratorium is to stabilize participation in the fishery while Florida develops some form of effort limitation in the stone crab fishery.

With material input from the industry, Florida has developed the stone crab trap limitation program. The rules and laws implementing this program have been adopted by the state of Florida. The proposed federal trap limitation program tracks the state program in most respects by recognizing, though not requiring, the state trap certificate program and providing for similar eligibility requirements as the state program. The major difference between the two programs is that the federal permit and traps apply only to fishing in the EEZ and are not transferable while those for the state program apply to fishing in both state and federal waters and are transferable. Both the state and federal stone crab trap limitation programs can be viewed as one way of rationalizing effort in the fishery, and thus they directly address the very objective of the state and federal permit moratoria.

The "no action" alternative means that fishing in the EEZ would not be subject to the trap limitation program. The direct implication here is that while fishing operations based in Florida would be subject to the program, those based in other states and fishing in the EEZ off Florida would be exempted. This situation creates two major problems for the fishery. First, effort reduction in the fishery borne by fishing operations based in Florida could be obviated by compensating increases in effort by fishing operations based in other states. Although in the present this is not a major problem as most stone crab operations are based in Florida, the problem could escalate in the future especially noting that more than a million pounds are now caught in the EEZ. Second, this action would complicate the enforcement of the Florida program and would only undermine the state/federal cooperative approach to managing the stone crab fishery.

Effort Reduction

The stone crab fishery is already overcapitalized both in terms of number of traps deployed and number of vessels. For the period 1962/63 to 1995/96, landings in claw weight increased from 300 thousand pounds to 2.828 million pounds, or by about 8,427 percent. For the same period, traps increased from about 15 thousand to 799 thousand, or by 52,267 percent. Consequently,

pounds per trap fell from 20.5 to 3.5 (Muller and Bert 1997, Table 1; see Appendix A). Based on the NMFS data on operating units, the number of vessels landing stone crabs rose from 70 in 1962 to 1,354 in 1994, or by 18,343 percent (Vondruska 1998). Very likely, however, most of these vessels/boats have been landing only few pounds of crab claws. The number of trips also increased from about 19,000 in 1985/86 to 34,000 in 1995/96, and for the same period the number of participants rose from 1,139 to 1,689 (Muller and Bert 1997, Table 2; see Appendix A). Despite then the increases in effort, be it measured in terms of vessels, traps, trips or a combination thereof, landings since the middle 1980s have stabilized around 2 to 3 million pounds in claw weight. What the moratorium has done so far is only to limit the number of new entrants into the fishery, but since it does not limit the deployment of traps nor the number of trips taken it has not materially constrained effort in the fishery.

Adams and Prochaska (1992) conducted both long-term and short-term ex-vessel price analyses for the stone crab fishery in Florida. While they found that ex-vessel prices were significantly related to claw landings and income over the short- and long-term period, prices were not very responsive to changes in claw landings. Prices, nonetheless, were found to be relatively responsive to income changes. Thus, growth in income, particularly over the long-run, would exert an upward pressure on prices. This finding is partly borne by the fact that while claw landings stabilized around 2 to 3 million pounds in the 1990s, the ex-vessel values of those landings rose from about $16 million in 1990 to $32 million in 1997 (Vondruska 1998). Such large jump in ex-vessel value was mainly accounted for by the increase in ex-vessel price from an average of $2.62 in 1990 to $5.05 in 1997. The increase in price, in turn, can likely be largely attributed to an increase in income as a consequence of a booming U.S. economy in the 1990s..

Against the backdrop of an increasing ex-vessel price, the "no action" alternative may be expected to only invite more effort into the fishery, albeit from fishing operations located outside of Florida. Since, as earlier mentioned, this effort increase would not be accompanied by a substantial increase in landings, the expected effort increase under the "no action" alternative would mainly worsen industry profitability. If the general economy and personal income started to fall back, profits would only be reduced further. Hence, any effort limitation program that would affect fishing operations in both state and federal waters, such as the state and federal trap limitation programs, would tend to address the further deterioration in industry profitability.
It may be noted, however, that the state stone crab trap reduction program would not reduce effort over a short period or even to the most efficient level. The state trap limitation program is estimated to initially allocate about 1.3 million certificates to existing participants, and one of the objectives of the program is to eventually reduce the number of traps to about 600,000 (Williams 2000). Since the reduction occurs only upon transfer of trap certificates outside the immediate family, the target number for trap reduction is estimated to be reached over a period of 30 years or more. Hence, the bigger portion of the benefits that would be generated by the trap limitation program would likely occur far into the future and would be subject to heavy discounting.

Similar to its state counterpart, the proposed federal trap limitation program would also not result in any substantial reduction in effort in the short-run. In fact, there is a good chance that this may

increase the number of participants in the fishery, and hence the traps and associated effort. Anybody who could not qualify under the state trap limitation program may qualify for the federal one, although the conditions for qualification are practically similar to those for the state program. The number of participants qualifying for the federal trap limitation program cannot be determined, although this number may be deemed small due to the qualifying conditions for the program.

At any rate, the fact that effort in the interim would not increase further still renders the state and federal trap limitation program better, from an economics standpoint, than the status quo.

As regards the targeted number of traps, Muller and Bert (1997) estimated that 600,000 is latter number as the number of traps sufficient to harvest all potential yield in the stone crab fishery. Since an economically efficient production level is generally below the maximum potential yield, it is likely that 600,000 traps would still be greater than the most efficient level. In fact, the Gulf Council's Scientific and Statistical Committee, reviewing the data in Amendment 4, concluded that increases in traps beyond the level of approximately 350,000 would not significantly increase total landings. This conclusion is partly supported by the fact that landings in 1982/83 were about 2.7 million pounds with about 353,000 traps while landings in 1995/96 were 2.8 million pounds with about 800,000 traps. Nonetheless, the 600,000 trap level would tend to generate better profitability configuration than the 1.3 million trap level existing at the start of the trap limitation program.

A parallel trap limitation program has been implemented for the spiny lobster fishery, with the federal component mainly consisting in the adoption of the state program to the EEZ. While the reduction feature of this program provides for a more rapid trap reduction than that for the stone crab trap limitation program, the actual transfer of spiny lobster certificates has been higher than originally estimated. Milon et al. (1998) reported that whereas the transfer rate was assumed to be 5 percent annually, the actual transfer rate was about 5 percent during the initial preseason period, increased to 12 percent, and then averaged above 8 percent from 1994 through 1998. If the rate of trap transfer in the stone crab fishery were to mimic that of the spiny lobster fishery, the reduction in stone crab traps could occur over a shorter period than the estimated 30 years. It may be noted, though, that the reduction feature under the state stone crab limitation program provides for a reduction only when traps are transferred so that the resulting trap reduction rate would still be much slower than that for spiny lobster. Because of the non-transferability of federal stone crab trap certificates, trap reduction at the federal level occurs only when the owner exits the fishery. And this may not necessarily speed up or slow down the overall stone crab trap reduction.

One important result of the spiny lobster trap limitation program is the reduction in the number of traps from about 825 thousand at the start of the program to about 544 thousand in 1998 (Milon et al. 1998). The trap reduction resulted in an increase in yield per trap (Muller et al. 1997). Profits per trap also improved although further reduction was deemed necessary to achieve an economically efficient level of effort in the fishery (Milon et al. 1999). This experience in the spiny lobster fishery is likely to be case also with the stone crab fishery under

trap limitation program. Thus, there is a good chance that the revised objective to increase CPUE and reduce overcapitalization in the stone crab fishery may be achieved under the trap limitation program, with concomitant economic improvement.

Both the state and federal stone crab trap limitation programs affect mainly the participants' holding of traps for fishing stone crabs and not the continuation of participation in the fishery. The eligibility requirement under these programs basically allow anyone with records of participation in the fishery to remain in the fishery. And since the reduction in traps would occur only after the transfer of certificates outside the immediate family in the case of the state program and after exit from the fishery for the federal program, participation by any existing participants is unlikely to be restricted. Under this condition, the trap limitation program is unlikely to affect participation in alternative fisheries, alternative employment, and incomes of operators. Naturally, those who are not currently in the fishery, be they prior or prospective participants especially those displaced by the net ban, would face restrictions on their fishing and employment opportunities. The extent of such restrictions cannot be assessed with existing information. Reduction in the incomes of operators is unlikely because any reduction in traps which occur only after a relatively long period of time would not translate to reduction in landings. While the trap limitation program may limit activities in boat building, trap construction, service industries, and affected coastal communities, it is believed that the extent of such effects is relatively small since the potential limitation would be relevant only to future changes in these activities which are likely to be relatively small considering the changes in the industry in the last three to five years.

To the extent that about the same level of harvest would be maintained even if traps are reduced to the target 600,000, any price increases to the consumers would not directly result from the trap reduction program for two reasons. First, there is expected to be no reduction in landings. Second and as discussed earlier, price increases are more a function of changes in income than in landings.

Cooperative Management and Enforcement

It may be recalled that one major motivation for the formulation of the stone crab FMP was to resolve the conflict between shrimp and stone crab fishermen fishing in the same areas in the EEZ (see Section 4). One of the causes of this conflict was the increasing number of stone crab and shrimp fishermen fishing in the same areas, and newcomers were not knowledgeable of existing fishing arrangements, thus contributing to exacerbation of the conflict (Overbey, 1987). This conflict was resolved and both groups of fishermen are greatly aware of the limits of their respective fishing activities. Adoption of the trap limitation program to the EEZ would continue to limit the number of stone crab fishermen, especially the new entrants, and therefore may enhance the chance that these previous conflicts not re-occur. The trap limitation program, however, would not affect the number of shrimp fishermen entering the fishery and fishing in the same areas as stone crab fishermen.

In assessing the importance of tradition as a rationale for government intervention in fisheries management, Cicin-Sain (1978) remarked that the tradition of individual freedom of choice is as equally important as the tradition of economic efficiency. The trap limitation program may be seen as a step toward limiting individual freedom in the stone crab fishery. While prevention of the re-occurrence of conflict between shrimp and stone crab fishermen may be enhanced through the trap limitation program, the acceptability of the program itself may partly depend on how strongly it is perceived as a step toward limiting individual freedom in the stone crab fishery. In view of the fact that the proposed trap limitation program is product of a concerted effort of both the industry and fishery managers, it appears that acceptability of the program is high. It is, of course, expected that a contrary position would be taken by those who are faced with limited opportunities, especially those displaced in other fisheries by regulations or laws such as the net ban. It may only be noted here that the federal stone crab limitation program would allow those who could not qualify the state trap limitation program providing they meet certain eligibility criteria.

Under the "no action" alternative, stone crab fishermen would be subject to divergent rules when fishing in state and federal waters. This would only complicate compliance and enforcement, and thus would lessen any benefits that may accrue to the state trap certificate program. In addition, this would also create disparity in the business operations of entities located in Florida and other states. Florida-based operations would be subject to trap reductions upon transfer of traps while those in other states but also fish in the same federal waters would not be subject to the trap reduction rules. The state and federal cooperative management of the stone crab fishery would also be diminished without an accompanying increase in benefits to the fishery.

Under the Proposed Alternative, additional management costs would be incurred both by the industry and fishery agency, but while the cost per permit and cost per trap tag are known the total cost cannot be estimated in the absence of information about the number of applicants for the federal trap certificate program. There is no material increase in enforcement cost that would be expended by any federal agency.

Other Alternatives to the Status Quo

Alternatives 7-A, 7-B, and 7-C differ from the Proposed Alternative mainly in the mechanism of adopting the Florida trap limitation program to the EEZ. Their potential effects on fishery participants are closely similar to those of the Proposed Alternative. The fewer the persons who would apply and qualify for the federal trap limitation program, the closer would be the economic impacts of the Proposed Alternative to the three mentioned alternatives that were not selected. In view of the fact that the eligibility requirements for both the state and federal trap limitation programs are closely similar, the economic impacts of the Proposed Alternative are likely to be similar to those of the mentioned three alternatives that were not selected.

Alternatives 2-B through 6-C are alternatives to some components of the Proposed Alternative. Alternative 2-B would also allow to participate in the federal stone crab trap limitation program those that qualify under the state trap limitation program. This particular alternative would tend

to negate the intent of the state program to limit and eventually reduce effort in the fishery, since those that qualify under the state program can increase their trap certificates through the federal program. Although the federal trap limitation program applies only to fishing in the EEZ, the fact that more than a third of stone crab landings are caught in the EEZ would be a sufficient reason for many to secure the federal permit and fish in the EEZ. Overall effort would only rise under Alternative 2-B, thus negating the very intent of the state program and lowering the chance of achieving the objective to raise CPUE.

Alternative 3-B could be more or less restrictive than Alternative 3-A (Proposed Alternative), depending on the chosen landings requirement. A landings requirement equal to or greater than 300 would probably have the same impacts as the proposed alternative in terms of the number of individuals that can qualify for the federal trap limitation program. A requirement lower than 300 pounds would probably allow a fairly good number of fishermen to qualify for the federal trap limitation program. A more lenient condition like this would only tend to lessen the chance of achieving the objective of increasing CPUE and reducing overcapitalization in the fishery.

Alternative 4-B would likely have similar consequences as its proposed counterpart (Alternative 4-A), considering that this alternative affects only the number of days open for permit application.

Alternative 5-B would allow for more trap certificates to be issued than its proposed counterpart (Alternative 5-A). Again, this would have the tendency to constrain the achievement of the objective to increase CPUE and reduce overcapitalization in the fishery. It may be noted, however, that the proposed alternative is more restrictive than its state counterpart.

Alternative 6-B would allow the transfer of vessel permit and trap certificates to another person, and thus presents as a stark contrast to its proposed counterpart (Alternative 6-A). If transfer were allowed, no reduction in vessel permit and trap certificates may ensue at the federal level. If the number of persons qualifying for the federal program is relatively large, the provision for transferable federal permit and certificates without any concomitant provision for trap certificate reduction could materially slow down the achievement of benefits from the state program.

10.4.4. Appeals Process

No Action Alternative versus the Proposed Alternative

The provision for an appeals process has minimal effects on economic efficiency, but does address the equity issue of the trap limitation program. One major reason for this is that an appeals process would only marginally affect the number of persons or vessels receiving permits and trap certificates/tags. Economic changes would only become evident if the number of successful appeals were large compared to the number of qualifying persons or vessels. The provision of an appeals process does provide an avenue for fishermen to provide information related to their respective particular situations that were not available to fishery managers in their decision to exclude certain fishermen from continued participation in the stone crab fishery.

10.5 Private and Public Costs

The preparation, implementation, enforcement, and monitoring of this or any federal action involves the expenditure of public and private resources that can be expressed as costs associated with the regulations. Costs associated with this specific action include:

Council costs of document preparation, meetings, public hearings, and information dissemination	$25,000
NMFS administrative costs of document preparation, meetings, and review	15,000
Law enforcement costs	none
NMFS costs associated with the permitting system	5,000
TOTAL	$45,000

The Council and NMFS costs of document preparation are based on staff time, travel, printing, and any other relevant items where funds would be expended directly for this specific action. There are no additional law enforcement and data collection costs at the federal level with this plan amendment. The private and public costs of the permit and trap tags cannot be estimated, because of lack of information to determine the number of potential permit applicants. It may only be noted that the administrative cost for each permit is $50 while each trap tag costs $1.10. One other this worth noting is that new entrants into the fishery, even if they fish only in the EEZ, would have to incur additional costs by purchasing trap certificates from existing state participants, since the federal permit, trap certificates, and tags are non-transferable. This cost cannot be estimated given available information, but it is deemed to be higher than the proposed $0.50 (state) or $1.10 (federal) cost of each trap certificate, since an additional value would be generated by the trap limitation program. It is felt that the identified costs comprise the major cost items for the preparation and implementation of this amendment.

10.6 Summary of Regulatory Impacts

Editorial revisions to the protocol and procedure for an enhanced state/federal cooperative management of the stone crab fishery has no direct impacts on fishery participants. Also, the addition of a management objective to increase CPUE and reduce overcapitalization in term of gear deployed in itself has no impacts on fishery participants.

Establishing a federal stone crab trap limitation program, as in the Proposed Alternative, would help ensure that effort in the fishery would not materially increase in the short run and should decrease over the long term. The fishery is now overcapitalized, and adoption of a trap limitation program at the state and federal levels would help in alleviating this problem. It is expected that most of the current participants in the fishery would continue to remain operational likely at their

current level. While there would ensue over time a reduction in traps, the target level of 600,000 is sufficient to harvest the available resource so that price increases to the consumers and reduction in income to the operators are very unlikely to happen as a result. In addition, the Proposed Alternative is apt to enhance the state and federal cooperative management of the fishery and at the same time lessen the complication of enforcing the Florida stone crab trap limitation program.

Other alternatives to the status quo that are considered in this amendment vary from the Proposed Alternative mainly in the mechanism of adopting the Florida trap limitation program to the EEZ. Their potential effects on fishery participants are deemed to be identical to those of the Proposed Alternative. Other alternatives that were not selected present as alternatives to some of the features of the Proposed Alternative. Their effects vary from being less to more restrictive than their proposed counterparts.

There are no additional costs to the Council and NMFS that would be incurred under the Proposed Alternative. The costs to the public and NMFS arise mainly from issuance of permits and trap tags, the sum total of which cannot be estimated. It may be noted that new entrants to the fishery would have to buy their trap certificates from existing holders of state certificates, since the federal permits, certificates, and tags are non-transferable. In this sense, they would have to incur additional cost in participating in the fishery. This cost cannot be quantified with the available information.

While many of the information needed to quantify the net effects of the proposed rule is not available, the discussions in the RIR point to the conclusion that the proposed rule would provide economic benefits that are likely to exceed the costs, inclusive of administrative costs.

10.7 Determination of a Significant Regulatory Action

Pursuant to E.O. 12866, a regulation is considered a "significant regulatory action" if it is likely to result in a rule that may: (1) have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of the recipients thereof; or (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in E.O. 12866.

Providing for a federal stone crab trap limitation program that tracks the Florida stone crab trap limitation program would not reduce the current number of participants in the fishery and their total landings; thus it is not expected to have an effect on the economy of $100 million or more. In addition, the stone crab fishery had an ex-vessel value of only about $31.9 million in 1997, the highest recorded value so far for the fishery. Since harvest would not be restricted, no major cost or price increases for consumers and stone crab and related industries would result from the

stone crab trap limitation program. The costs to federal government agencies of formulating and implementing the trap limitation program moratorium are expected to be relatively small. The Florida state government would have to expend some additional cost in implementing this program. But it should be noted that such cost would be incurred whether or not the federal trap limitation program is adopted. There are no expected cost or price increases in the geographic region where stone crab is a major fishery. Since the trap limitation program would not reduce the current number of participants in the stone crab fishery, no significant adverse effects on competition, investment, productivity, innovation, or the competitive status of the domestic fishery, vis-a-vis its foreign rivals, would arise. To the contrary, economic efficiency may be enhanced if the trap limitation program is successful in reducing effort in the fishery. Employment in the fishery of prospective entrants would be limited under the trap limitation program, but the quantitative extent of this probable effect cannot be determined.

A federal stone crab trap limitation program would render federal rules somewhat consistent with those of the state. Maintaining the status quo, on the other hand, would severely limit the effectivity of the Florida rules governing the stone crab fishery. The trap limitation program is not expected to impact entitlements, grants, user fees, or loan programs or the rights and obligations of the recipients thereof. In a sense, the trap limitation program is a novel idea when applied to the stone crab fishery, but it is relatively close in some respects to the trap limitation program in the spiny lobster fishery which Florida adopted and was extended to the EEZ. Under this condition, adoption of a federal stone crab trap limitation program does not raise any novel legal or policy issues.

It is, therefore, determined that the proposed regulation of establishing a federal trap limitation program would not constitute a major regulatory action as stipulated under E.O. 12866.

10.8 Determination of the Need for an Initial Regulatory Flexibility Analysis

Introduction

The purpose of the Regulatory Flexibility Act (RFA) is to establish a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of businesses, organizations, and governmental jurisdictions subject to regulation. To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure that such proposals are given serious consideration.

With certain exceptions, the RFA requires agencies to conduct an Initial Regulatory Flexibility Analysis (IRFA) for each proposed rule. The IRFA is designed to assess the impacts various regulatory alternatives would have on small entities, including small businesses, and to determine ways to minimize those impacts. An IRFA is conducted to primarily determine whether the proposed action would have a "significant economic impact on a substantial number of small entities." In addition to analyses conducted for the Regulatory Impact Review (RIR), the IRFA provides a description of the reasons why action by the agency is being considered; a

succinct statement of the objectives of, and legal basis for, the proposed rule; a description and, where feasible, an estimate of the number of small entities to which the proposed rule will apply; a description of the projected reporting, record-keeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirements of the report or record; and, an identification, to the extent practicable, of all relevant Federal rules, which may duplicate, overlap, or conflict with the proposed rule.

Description of the reasons why action by the agency is being considered: The need and purpose of the actions are set forth in Section 7 of this document. The problems requiring this amendment are identified in Section 8 of this document. These particular sections are included herein by reference.

Statement of the objectives of, and legal basis for, the proposed rule: The objectives of this action are described in Section 7 of this document. The management objectives of the FMP, as amended, are listed in Section 6 of this document. These sections are included herein by reference. The Magnuson-Stevens Fishery Conservation and Management Act, as amended, provides the legal basis for the rule.

Description and estimate of the number of small entities to which the proposed rule will apply: Muller and Bert (1997) estimated that for the period 1985/86-1995/96 the number of participants (as measured by the Saltwater Product License (SPL) numbers with stone crab endorsements that reported landings) in the commercial stone crab fishery averaged 1,507 annually. In 1995/96, there were 1,689 participants in the stone crab fishery. However, the number of SPLs with stone crab endorsements indicates a much higher number of potential participants. For the 1985/86-1995/96 period, the number of SPLs with stone crab endorsements averaged 5,387 annually. In 1996/97 season, there 5,051 such SPLs with stone crab endorsements. The number of SPLs, however, does not match one to one with the number of vessels/boats; that is, several SPLs may be associated with one vessel/boat or several vessels/boats may be associated with one SPL.

Based on NMFS vessel operating units file, Vondruska (1998) reported that from 1985 through 1994 the number of fishing crafts in the stone crab fishery averaged at 720 annually. Of this total, 234 were vessels (i.e., fishing crafts greater than 5 net tons) and 486 were boats. For this ten-year period, 1994 registered the highest number of vessels at 313 and boats at 1,168. Fishermen aboard the fishing crafts are full-time participants while those for boats consist of part-time and full-time participants. Full-time commercial fishermen are those that receive more than 50 percent of their annual income from fishing activities while part-time commercial fishermen are those that receive 50 percent or less of their annual income from fishing activities. For the period 1985-1994, the number of fishermen aboard all vessels and boats averaged 1,427 persons annually. Of this total, 590 fishermen were on vessels and 837 fishermen on boats. Approximately 1,034 were full-time participants and 392 were part-time participants. In 1994, a total of 2,852 fishermen participated in the stone crab fishery, with 765 individuals on vessels and 2,087 on boats. There were 764 full-time and 1,323 part-time participants. Mainly because 1994 registered the highest number of fishing craft, it also registered the highest number of participating fishermen.

Two surveys conducted on reef fish vessels/boats, one for the Gulf (Waters 1996) and the other for the Keys (Waters et al. 1998) captured some activities related to fishing for stone crabs. The Gulf survey stratified the sample by gear, area, and scale of operation. Stone crab was listed as a more important source of revenue for the low-volume boats[6], with 12 of 17 such boats ranking stone crab as their most important source of revenue and 11 ranking red grouper as their second most important revenue source. Stone crab fishing occurred during the October-May season for Florida while grouper fishing occurred during June through September. While gross revenue and net income for high-volume boats generally exceeded those for low-volume boats, low-volume boats that fished for stone crabs had slightly higher net income than high-volume boats. For the Keys survey, stone crab was listed by about 14 percent of the boats surveyed as an important source of revenue. Of the estimated 653 commercial reef fish boats in the Keys, 77 boats fished for stone crab in October-December, 71 boats in January-March, 44 boats in April, and 46 boats in May.

Description of the projected reporting, record-keeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for the preparation of the report or records: This amendment imposes additional reporting requirements that are primarily related to the eligibility requirements for the federal permit and trap certificates. These requirements essentially involve assembling and submission of landings records which presumably all those that would apply already have in their possessions. These requirements do not require professional skills, and thus may be deemed not to be onerous on the affected participants.

Identification of all relevant Federal rules which may duplicate, overlap or conflict with the proposed rule: No duplicative, overlapping, or conflicting Federal rules have been identified, especially since the proposed trap limitation program would cover the entire commercial fishery for spiny lobster in the EEZ. In fact, the proposed rule would complement a similar program adopted for the state of Florida.

Substantial Number of Small Entities Criterion

Generally, a fish-harvesting business is considered a small business if it is independently owned and operated and not dominant in its field operation, and if it has annual receipts not in excess of $3.0 million. Although there are several fleet operations in the stone crab fishery, none of these operations may be considered dominant in the harvesting sector of the fishery. In this case, the gross receipts criterion may be used to define small business in the stone crab fishery.

The latest year for which information on the number of fishing crafts is available is 1994. Because this year showed the highest number of participating fishing crafts, it is more reasonable

[6]The 75th percentile of annual reef fish landings as reported on logbooks was used to categorize vessels/boats as either high-volume or low-volume.

to use the average number of fishing crafts for the period 1985-1994 which is 720 fishing crafts. The highest ex-vessel revenues from stone crab landings was registered in 1997 at $31.924 million. Using these two numbers, the averaged ex-vessel revenue would amount to $44,339. This number is obviously pulled down by the average number of boats (486) that participated in the fishery. If it is assumed that all landings were made only by the 234 participating vessels (average for the 1985-1994 period), the average gross revenue would amount to about $136,427. Even under this relatively restrictive assumption, it is clear that business operations in the stone crab fishery fit the definition of small business entities.

Williams (2000) indicated that under the condition of 300 pounds of claw landings from 1995/96 to 1997/98 for initial eligibility under the Florida state's trap limitation program, approximately 1,132 persons would qualify. In addition, another 500 to 1,400 persons would qualify for the incidental take endorsement. This latter number includes those persons holding stone crab endorsements with at least 1 pound but less than 300 pounds of claw landings. A total ranging from 1,632 to 2,532 would then qualify at the start of the state's stone crab trap limitation program. The higher number would comprise slightly less than half of SPLs with stone crab endorsements.

The number of participants for the federal stone crab trap limitation program cannot be estimated partly because the federal program would allow participants who may not qualify for the state program or who qualify for the state program but opt to apply for federal permit and trap certificates. It is very likely that most of those that may not qualify for the state program would also not qualify for the federal program, since the landings requirement for participation in the federal program are not too different from those of the state program. In terms of the number of fishing crafts, it is very likely that most, if not all vessels, would qualify under the state program. It is highly reasonable to expect that these vessels would opt to apply for the state trap limitation program rather than the federal counterpart, because the state program provides relatively more flexibility than the federal program. For one, vessels operating under the state program may fish in both state and federal waters while under the federal program, these vessels could fish only in federal waters. Another reason is that federal vessel permits, trap certificates, and trap tags are not transferable while their state counterpart are transferable, subject to certain requirements. Some of the boats may not qualify under the state program, but again it is not known how many can qualify under the federal program.

While the number of small entities qualifying under the federal trap limitation program cannot be estimated, it is perhaps reasonable to conclude that, in conjunction with the state trap limitation program, the proposed federal trap limitation program would affect a substantial number of small entities. Thus, the substantial number criterion would be met.

Significant Economic Impact Criterion

The outcome of "significant economic impact" can be ascertained by examining two issues: disproportionality and profitability.

Disproportionality: Do the regulations place a substantial number of small entities at a significant competitive disadvantage to large entities?

All the commercial entities potentially affected by the proposed rule are considered small entities so that the issue of disproportionality does not arise in the present case. Within these small entities, there are potentially significant variations among fishing operations, specifically between boats and vessels.

Profitability: Do the regulations significantly reduce profit for a substantial number of small entities?

There exists very limited information regarding the profitability of stone crab fishing operations. In a survey of reef fish vessels, Waters (1996) found that high-volume vessels undertaking fishing trips with stone crabs as the main species with the greatest revenues generated total annual revenues of about $70,000, of which about $67,000 were from stone crab harvest. Low-volume vessels, on the other hand, generated about $28,000 in revenues, of which $27,000 were from stone crab harvest. Annual routine costs (excluding payment to boat, captain and crew) were approximately $14,000 for high-volume vessels and $8,000 for low-volume vessels.

The proposed rule's impacts on revenues would depend on whether or not a fishing craft qualifies for the federal program, and if it does qualify, on how many traps it be allowed to use for harvesting stone crabs. While the actual number of those that may or may not qualify for the federal program cannot be estimated, it is deemed that only a few fishing crafts would apply for inclusion in the federal program. For vessels that qualify for the federal trap limitation program, the potential increase in costs would mainly come from the cost of permits (about $50 per vessel) and trap tags (about $1.10 per tag). These costs may be considered relatively minimal.

Conclusion

Due mainly to the likely few number of vessels applying for the federal trap limitation program, the proposed rule may be adjudged to have no significant economic impact on a substantial number of small entities.

11. ENVIRONMENTAL CONSEQUENCES

11.1 Physical Environment

The proposed action to create a federal trap limitation program, along with the state trap limitation program will, over time, reduce the degradation of the physical environment by reducing the amount of debris associated with excessive growth and overcapitalization of the industry. Such debris consists of rope, floats, and lost traps that litter the shoreline. The trap retrieval program funded by the state trap limitation program should have a beneficial effect on the physical environment through the removal of lost or abandoned traps before they deteriorate.

11.2 Fishery Resources

Neither the proposed action to create a federal trap limitation program, nor the state action establishing a state trap limitation program are anticipated to have any impact on the stone crab stock. However, both programs are anticipated to have beneficial impacts on other fishery resources. These impacts are discussed under the Environmental Consequences in Section 9.C.2.

11.3 Human Environment

The proposed action to create a federal trap limitation program when coupled with the state trap limitation program is expected to have a significant beneficial impact on the fishermen, over time, as the efficiency of the industry and CPUE are increased. Other persons will benefit by the reduction of the navigation problems caused by the excessive increase in trap numbers. The impacts are discussed under the Environmental Consequences in Section 9.C.2.

11.4 Impact on Other Fisheries

The proposed action to create a federal trap limitation program, when coupled with the state action creating a state trap limitation program, will have a beneficial impact on other fishery resources. The impacts are discussed under the Environmental Consequences in Section 9.C.2.

11.5 Effect on Endangered Species and Marine Mammals

The proposed federal action when coupled with the state action should, over time, should reduce the likelihood of entanglement of threatened and endangered animals as the number of traps and associated buoy lines are reduced. A Section 7 consultation has been completed by the NMFS indicating no adverse impact of the proposed action on endangered species or marine mammals.

Stone crab traps are relatively small, deployed primarily in shallow coastal waters off Florida, required to have a biodegradable panel, and tended frequently, with harvest landed on a daily basis. Most fishing effort occurs in the fall and winter; the stone crab season is from October 15th through May 15th. Very limited data are available on the interaction of this fishery with marine mammals and endangered species. NMFS Southeast Region has one confirmed report (October 1998) of the entanglement of a bottlenose dolphin calf in a crab trap line off the west coast of Florida; although there are anecdotal reports of dolphins and manatees with rope marks, potentially indicating trap line entanglements. The characteristics of the fishery, particularly the small size of the gear, biodegradable panel requirement for traps, and frequent tending make it unlikely that the fishery has a significant adverse impact on marine mammals or on threatened or endangered species or their critical habitat.

11.6 Effect on Wetlands

The proposed action to create a federal trap limitation program, when coupled with the state action creating a state trap limitation program, will have a beneficial impact on wetlands. These impacts are discussed under the Environmental Consequences in Section 9.C.2.

11.7 Effect on Essential Fish Habitat (EFH)

The area affected by the proposed action in the Stone Crab fishery off Florida had been identified as EFH for the Red Drum, Reef Fish, Shrimp, Stone Crab, and Coral FMPs of the Gulf Council; Coastal Migratory Pelagics and Spiny Lobster joint FMPs of the Gulf and South Atlantic Councils; and the Tuna/Swordfish/Shark and Billfish FMPs of NMFS Highly Migratory Species Division (HMS). The actions are intended to conserve and enhance the stocks of stone crab by limiting and reducing the number of traps deployed in the fishery, and in the context of the fishery as a whole will not have an adverse impact on EFH; therefore, an EFH consultation is not required. See Section 12.1 for more discussion related to the effects of the fishery on EFH.

11.8 Conclusion

Mitigation measures related to the proposed action and fishery: No significant environmental impacts are expected; therefore, no mitigating actions are proposed. Unavoidable adverse effects with implementation of the proposed actions and any negative net economic benefits are discussed in the Regulatory Impact Review. Irreversible and irretrievable commitment of resources involved with government costs are those related to preparation and approval of the amendment, but they are mainly one-time expenditures.

11.9 Finding of No Significant Environmental Impact

In view of the analysis presented in this document, I have determined that the fishery and the proposed action in this amendment to the Fishery Management Plan for the Stone Crab Fishery of the Gulf of Mexico would not significantly affect the quality of the human environment with specific reference to the criteria contained in NDM 02-10 implementing the National Environmental Policy Act. Accordingly, the preparation of a Supplemental Environmental Impact Statement for this proposed action is not necessary.

Approved: _____ _____
Assistant Administrator for Fisheries Date

12. OTHER APPLICABLE LAWS

12.1 Habitat Concerns

Stone crab habitats and related concerns were described in the FMP and updated in Amendments 2, 4, and 5 and by the Generic EFH Amendment implemented in 1998. The actions in this amendment should have a beneficial effect on the habitat.

Stone crab traps are deployed in various habitats including soft (mud) bottom, submerged aquatic vegetation (SAV), and in the vicinity of coral reefs and other hard bottom habitats. SAV is an important natural resource that is essential habitat for many species of finfish and shellfish. SAV

species found in the Gulf of Mexico include: turtle grass, *Thalassia testudinum*, shoal grass , *Halodule wrightii*, manatee grass, *Syringodium filiforme*, star grass, *Halophila engelmanni*, paddle grass, *Halophila decipiens*, and widgeon grass, *Ruppia maritima*. There are about 3.7 million acres of SAV in the Gulf of Mexico. The majority of hardbottom in the Gulf of Mexico consists of exposed limestone with algae, coral and sponge growth; high profile reef tracts are present but uncommon. Many important commercial and recreational fisheries including reef fish fisheries operate near banks, ledges, and small outcroppings colonized by complex benthic communities of sessile invertebrates such as hydroids, bryozoans, corals, and algae.

The use of crab traps may result in primary and secondary impacts on habitat. Coral and other hard bottom damage from the deployment or retrieval of traps and smothering of SAV are two of the most serious forms of primary impacts; however, stone crab fishermen buoy their traps on individual lines and do not use trawls (submerged lines between traps). Consequently, retrieval impacts are expected to be minimal compared to fish and lobster traps. Degradation of coral habitat and SAV from trap movement due to storm action and abrasion of SAV and coral colonies against traps and trap lines are examples of secondary impacts. However, it should be recognized in considering the entire fishery throughout the entire management area, that the great majority of traps are set in areas without coral reefs. There are few studies on trap impacts on habitat and the relative damage caused by traps compared to damage caused by other activities such as anchoring, vessel groundings and propeller scarring. Since the proposed action is expected to limit participation in the fishery and reduce the number of traps, it should also result in a reduction of impacts on essential fish habitat.

12.2 Vessel Safety Considerations

Actions proposed in the amendment have been reviewed by the U.S. Coast Guard and have no effect on vessel safety.

12.3 Coastal Zone Consistency

Section 307(c)(1) of the federal Coastal Zone Management Act of 1972 requires that all federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. The proposed changes in federal regulations governing stone crab in the EEZ of the Gulf of Mexico will make no changes in federal regulations that are inconsistent with either existing or proposed state regulations.
It is the goal of the Council to have complementary management measures with those of the states.

This amendment is consistent with the Coastal Zone Management program of the state of Florida, to the maximum extent possible; and other Gulf states are not affected. This determination has been submitted to the responsible state agency under Section 307 of the Coastal Zone Management Act administering approved Coastal Zone Management programs in the state of Florida.

12.4 Paperwork Reduction Act

The purpose of the Paperwork Reduction Act is to control paperwork requirements imposed on the public by the federal Government. The authority to manage information collection and record keeping requirements is vested with the Director of the Office of Management and Budget. This authority encompasses establishment of guidelines and policies, approval of information collection requests, and reduction of paperwork burdens and duplications.

The Council proposes, through this amendment, to establish an additional permit and data collection program related to trap tags and certificates. There are insufficient data to compute this regulatory burden.

12.5 Federalism

As the amendment document currently stands, no federalism issues have been identified relative to the actions proposed in this amendment; therefore, preparation of a federalism assessment under Executive Order 12612 is not necessary.

13. REFERENCES

Adams, C.M. and F.J. Prochaska. 1992. Stone crab (genus menippe) claw ex-vessel price analyses for Florida. In Bert, T.M. (ed.) Proceedings of a Symposium on Stone Crab (Genus Menippe) Biology and Fisheries. Fla. Mar. Res. Publ. No. 50. pp. 44-49.

Bert, T.M., J. Tilmant, J. Dodrill, and G.E. Davis. 1986. Aspects of the population dynamics and biology of the stone crab (Menippe mercenaria) in Everglades and Biscayne National Parks as determined by trapping. Report SFRC-86/04. National Park Service. South Florida Research Center.

Bolden, S.K. 1993. Summary of the Florida Gulf Coast Commercial Stone Crab Fishery 1962-1992. NOAA, NMFS, SEFSC, Miami, Florida. Contri. No. MIA-92/93-84. 32 pp.

Bolden, S.K. and D.E. Harper. 1992. The Florida Gulf coast stone crab fishery: landings and effort 1962-1991. NOAA, NMFS, SEFSC, Miami, Florida Contri. No. MIA-91/92-86. 22 pp.

Cicin-Sain, B. 1978. Evaluative criteria in making limited entry decisions: an overview. Paper presented to the Workshop on Limitation of Entry into Fisheries, Lake Wilderness, WA.

Davis, G.E., D.S. Baughman, J.D. Chapman, D. MacArthur and A.C. Pierce. 1979. Mortality associated with declawing stone crabs, Menippe mercenaria. South Florida Research Center Rep. T-522. 23 pp.

GMFMC, 1984. Amendment 2 to the FMP for the Stone Crab Fishery and Amendment 3 to the FMP for the Shrimp Fishery. 14 pp. plus EA/SRIR/IRFA document. 14 pp.

GMFMC/SAFMC, 1989. Amendment 2 to the FMP for Spiny Lobster in the Gulf of Mexico and South Atlantic/EA/RIR. 24 pp. plus appendix.

GMFMC/SAFMC, 1992. Regulatory Amendment to the FMP for Spiny Lobster for the Gulf of Mexico and South Atlantic. 37pp.

GMFMC, 1999. A Generic Sustainable Fisheries Act Amendment to the GMFMC FMPs. 155 pp. plus 7 appendices.

Harper, D.E., D.G. Neff and J.A. Bohnsack. 1991. Florida Gulf coast stone crab landings and fishing effort update, 1962-1990. NOAA, NMFS, SEFC, Miami, Florida. Contri. No. MIA-90/91-79. 23 pp.

Higgs, R. 1978. Preliminary report on the probable socioeconomic effects of a moratorium on the issuance of new vessel licences in the Pacific Ocean commercial salmon fishery. Pacific Fishery Management Council, 526 S.W. Mill Street, Portland, OR 97201, 100 pp.

Lindberg, W.J. and M.J. Marshall, 1983. Species profiles: life histories and environmental requirements (South Florida) - stone crabs. USFWS Div. Biol. Serv., FWS/OBS-82-11. Washington, D.C.: U.S. Army Corps of Engineers, TR E1-82-4.

Milon, J.W., S.L. Larkin, and N. Ehrhardt. 1999. Bioeconomic models of the Florida commercial spiny lobster fishery. Florida Sea Grant Report 117, Florida Sea Grant College Program, University of Florida, Gainesville, FL

Milon, J.W., S.L. Larkin, D.J. Lee, K.J. Quigley, and C.M. Adams. 1998. The performance of Florida's spiny lobster trap certificate program. Florida Sea Grant Report 116, Florida Sea Grant College Program, University of Florida, Gainesville, FL

Muller, R. G. and T. M. Bert. 1997. 1997 Update on Florida's Stone and Fishery-Report to the Marine and Fisheries Commission. FDEP, FMRI. Memeo. File Rpt. 20 pp. plus tables.

Muller, R. G., J.H. Hunt, T.R. Matthews, and W.C. Sharp. 1997. Evaluation of effort reduction in the Florida Keys spiny lobster, Panulirus argus, fishery using an age-structured population analysis. Mar. Freshwater Res., 48, 1045-1058.

National Marine Fisheries Service (NMFS). 1997. Appendix 2.d: Guidelines on regulatory analysis of fishery management actions. In **Operational guidelines for fishery management plan process.** National Marine Fisheries Service, Silver Spring, Maryland.

Overbey, M.M. 1985. Fishery management in a multiple-use conflict: the stone crab and shrimp fisheries conflict of the Gulf coast of Florida. Florida Sea Grant, University of Florida, Gainesville, FL 32611, 29 pp.

Phares, P.L. 1982. Review of the Florida stone crab fishery data from 1962 to 1982. Stock Assessment Workshop, NMFS, SEFC, Miami, Florida. 13 pp.

Powers, J.E. 1990. A summary update of production of the Florida stone crab fishery. NOAA, NMFS, SEFC, Miami, Florida, Contri. No. MIA-89/90-23. 5 pp.

Restrepo, V.R. 1989. Population dynamics and yield-per-recruit assessment of southwest Florida stone crabs, Menippe mercenaria. Ph.D. dissertation, University of Miami, Coral Gables, Florida. 224 pp.

Restrepo, V.R. 1990. Florida stone crab yield and reproductive potential. Discussion document prepared for SEFC/Fishery Management Councils Workshop on definitions of overfishing. NOAA, NMFS, SEFC. Miami, Florida. 12 pp.

Sutherland, D.L., 1988. Stone crab stock assessment data, 1962-1987. NOAA, NMFS, SEFC, Miami, Florida. Contri. No. CRD-87/88-29. 16 pp.

Waters, J.R. 1996. An economic summary of commercial reef fish vessels in the U.S. Gulf of Mexico. NOAA. NMFS. Beaufort Laboratory. Memo Rpt. 63pp. With Appendices A through H.

Williams, R. 2000. Stone crab effort management program. Florida Marine Fisheries Commission, 2540 Executive Center Circle West, Suite 106, Tallahassee, FL 32301. 4 pp.

Williams, R. 1997. Stone crab limited entry. Florida Marine Fisheries Commission, 2540 Executive Center Circle West, Suite 106, Tallahassee, FL 32301. 11 pp.

Zuboy, J.R. and J.E. Snell. 1980. Assessment of the Florida Stone crab fishery. NOAA Tech. Memo. NMFS-SEFC-21. 29 pp.

Zuboy, J.R. and J.E. Snell. 1982. Assessment of the Florida stone crab fishery, 1980-1981 season. NOAA Tech. Memo. NMFS-SEFC-79. 21 pp.

Table 1. The 1985 – 1992 commercial stone crab landings (pounds of claws) at Florida Gulf ports by fishing season, month, and claw size. Data source: Florida Department of Environmental Protection, Marine Fisheries Trip Ticket System data files.

SEASON	MONTH	POUNDS BY CLAW SIZE					MONTHLY TOTAL	SEASON TOTAL	
		Jumbo	Large	Medium	Small	Ungraded			
1985	Oct	1,223	186,090	67,419	16,691	40,438	311,861	2,167,473	1985
	Nov	3,673	277,955	138,002	24,713	77,569	521,912		
	Dec	4,049	188,442	102,081	17,655	50,825	363,052		
	Jan	6,657	154,080	114,309	26,420	51,812	353,278		
	Feb	3,467	96,607	76,705	13,832	28,979	219,590		
	Mar	410	107,151	83,700	15,185	23,501	229,947		
	Apr	106	61,311	37,192	10,121	17,100	125,830		
	May	0	20,055	9,998	2,429	9,521	42,003		
	Jun	0	383	16	0	396	775		
	Jul	0	128	31	4	32	195		
	Aug	0	856	74	478	0	1,408		
	Sep	10	1,013	122	264	0	1,409		
1986	Oct	1,712	154,096	68,302	15,513	29,200	268,823	2,187,351	1986
	Nov	194	188,162	76,287	12,586	49,396	326,625		
	Dec	439	206,992	101,133	19,254	48,229	376,047		
	Jan	1,402	219,430	163,270	26,667	58,080	470,849		
	Feb	2,429	158,465	130,806	15,692	34,033	341,425		
	Mar	3,276	87,362	54,536	11,000	15,888	172,062		
	Apr	1,236	87,461	42,717	13,514	20,818	165,746		
	May	1,574	35,550	9,950	5,804	12,896	65,774		
	Jun	0	31	270	55	876	1,232		
	Jul	19	197	23	0	5	244		
	Aug	0	1,442	0	0	14	1,456		
	Sep	0	122	0	3	53	178		
1987	Oct	7,502	201,404	84,352	19,894	48,151	361,303	2,206,131	1987
	Nov	3,875	230,484	102,378	26,153	58,610	421,480		
	Dec	2,492	199,916	91,868	16,581	33,370	344,227		
	Jan	3,557	152,126	68,511	17,636	33,662	275,492		
	Feb	3,366	132,124	102,713*	30,598	35,251	304,052		
	Mar	659	116,982	88,199	25,782	29,622	261,244		
	Apr	1,699	76,047	44,257	14,655	26,673	163,331		
	May	1,157	37,638	17,733	5,621	12,853	75,002		
	Jun	7	27	205	0	0	239		
	Jul	0	89	540	0	2,996	3,625		
	Aug	5	384	106	507	0	1,002		
	Sep	0	414	226	2,108	238	2,986		
1988	Oct	8,157	215,210	96,163	20,572	49,588	389,690	2,494,756	1988
	Nov	9,391	218,424	95,853	37,225	54,368	415,261		
	Dec	15,970	258,225	129,036	58,185	78,042	539,458		
	Jan	11,968	169,561	103,643	42,322	26,073	353,567		
	Feb	7,778	145,611	95,299	31,442	22,627	302,757		
	Mar	6,740	152,033	113,278	40,406	16,573	329,032		
	Apr	5,095	56,878	36,533	11,993	8,969	119,166		
	May	2,932	21,382	11,388	5,279	4,842	45,823		
	Jun	0	156	101	50	300	607		
	Jul	0	197	30	1	54	282		
	Aug	838	459	0	0	19	1,316		
	Sep	0	542	393	13	66	1,014		

Table 1. continued | The 1965 – 1992 commercial stone crab landings (pounds of claws) at Florida Gulf ports by fishing season, month, and claw size. Data source: Florida Department of Environmental Protection, Marine Fisheries Trip Ticket System data files.

SEASON	MONTH	POUNDS BY CLAW SIZE					MONTHLY TOTAL	SEASON TOTAL	
		Jumbo	Large	Medium	Small	Ungraded			
1989	Oct	37,009	212,379	94,424	22,606	50,373	379,782	2,499,070	1989
	Nov	38,874	238,180	120,554	28,228	58,286	445,248		
	Dec	24,049	205,114	112,774	32,647	61,179	411,714		
	Jan	19,696	167,326	95,938	29,707	39,202	332,173		
	Feb	17,350	131,964	78,906	26,331	39,158	276,378		
	Mar	15,878	160,460	123,419	34,993	43,726	382,596		
	Apr	9,919	90,395	67,136	22,159	26,818	206,508		
	May	4,040	35,730	25,702	9,958	13,278	84,668		
	Jun	0	306	547	155	0	1,008		
	Jul	1	96	0	0	0	96		
	Aug	49	291	179	124	355	949		
	Sep	0	433	215	325	271	1,244		
1990	Oct	41,939	337,624	155,032	34,851	49,165	576,672	2,959,671	1990
	Nov	40,082	325,246	171,455	26,107	61,739	584,547		
	Dec	28,526	238,231	141,111	14,179	43,060	436,581		
	Jan	20,662	189,852	109,685	10,673	32,266	342,478		
	Feb	12,899	192,834	169,085	32,114	36,392	430,425		
	Mar	10,366	154,964	121,002	34,851	33,781	344,396		
	Apr	7,969	80,838	63,168	17,904	19,346	181,256		
	May	3,982	26,462	20,405	6,387	10,060	63,314		
	Jun	0	0	0	0	0	0		
	Jul	5	13	214	0	0	227		
	Aug	14	510	70	481	200	1,261		
	Sep	0	719	11	69	113	912		
1991	Oct	41,025	261,241	134,245	19,651	41,885	457,022	2,977,598	1991
	Nov	43,879	257,811	161,327	24,924	74,219	518,281		
	Dec	35,341	220,360	143,945	21,985	72,964	459,254		
	Jan	30,893	203,739	161,051	21,637	65,696	452,123		
	Feb	19,638	144,525	136,876	26,597	46,087	354,085		
	Mar	20,631	149,467	156,218	29,649	86,632	421,966		
	Apr	8,925	68,909	77,126	9,424	50,453	205,912		
	May	4,642	33,752	41,445	1,020	32,738	108,955		
	Jun	91	553	112	9,273	605	10,543		
	Jul	0	94	0	52	649	795		
	Aug	360	798	836	8	0	1,642		
	Sep	43	3,986	1,292	7	437	5,722		
1992*	Oct	51,613	296,357	160,219	57,974	65,100	579,650	3,024,327	1992*
	Nov	37,999	271,353	182,447	29,825	83,615	567,240		
	Dec	27,869	228,091	174,598	57,383	78,899	538,971		
	Jan	24,344	146,346	124,075	22,415	47,871	340,707		
	Feb	14,143	158,654	192,335	34,750	51,045	436,784		
	Mar	12,036	109,603	117,808	28,160	36,451	292,022		
	Apr	8,409	77,874	73,800	20,066	24,847	196,587		
	May	4,360	26,286	21,363	13,666	11,051	72,366		
TOTAL =		844,818	10,069,440	6,291,898	1,469,720	2,602,622	20,558,744	20,516,377	
PERCENT =		4.11%	48.98%	30.60%	7.15%	12.66%			

* Only preliminary, incomplete stone crab landings data available for 1992 fishing season.

TABLE 2. FLORIDA GULF COAST STONE CRAB CATCH AND EFFORT DATA[1]

	SEASON[2]	CATCH[3] (Millions of lbs of claws)	TRAPS[4] (Thousands)	LBS/TRAP	COMMERCIAL[5] FISHING CRAFT
62	1962-63	0.30	14.6	20.55	
63	1963-64	0.35	15.0	23.33	
64	1964-65	0.31	21.0	14.76	
65	1965-66	0.45	19.7	22.84	
66	1966-67	0.39	43.2	9.03	
67	1967-68	0.56	39.3	14.25	
68	1968-69	0.61	55.9	10.91	
69	1969-70	0.70	36.0	19.44	
70	1970-71	0.87	60.8	14.31	
71	1971-72	0.96	73.7	13.03	
72	1972-73	0.92	113.3	8.12	
73	1973-74	1.26	143.0	8.81	
74	1974-75	0.99	159.1	6.22	
75	1975-76	1.14	193.2	5.90	
76	1976-77	1.43	224.4	6.37	
77	1977-78	1.87	267.0	7.00	260
78	1978-79	1.90	312.2	6.09	245
79	1979-80	2.00	294.7	6.79	291
80	1980-81	1.70	275.7	6.12	308
81	1981-82	2.67	277.6	7.55	321
82	1982-83	2.70	353.5	6.12	
83	1983-84	1.95	432.8	4.49	
84	1984-85	1.75	421.4	3.90	
85	1985-86	2.17	576.1	3.83	
86	1986-87	2.19	577.6	3.79	
87	1987-88	2.21	624.0	3.54	466
88	1988-89	2.59	576.1	4.57	469
89	1989-90	2.67	565.6	4.72	461
90	1990-91	3.13	611.3	5.12	538
91	1991-92	3.18	617.3	5.15	635
92	1992-93	3.21	686.3	4.68	647

Notes:

1. Catch and effort sometimes differ from previously published estimates which rounded monthly data used in compiling the annual estimates.

2. A fishing season extends from October until May of the following year. Landings recorded from June to September were presumed to be late reports and were included in the season that began the previous October.

3. Catch data from October 1962 to September 1985 were taken from NMFS Florida Monthly (Detail) data files. Subsequent catch data were taken from the FDNR Florida Trip Ticket data files.

4. Estimates of the number of traps in the fishery are taken from an annual NMFS canvas of operating units conducted at the beginning of each calendar year.

5. Boats and vessels.

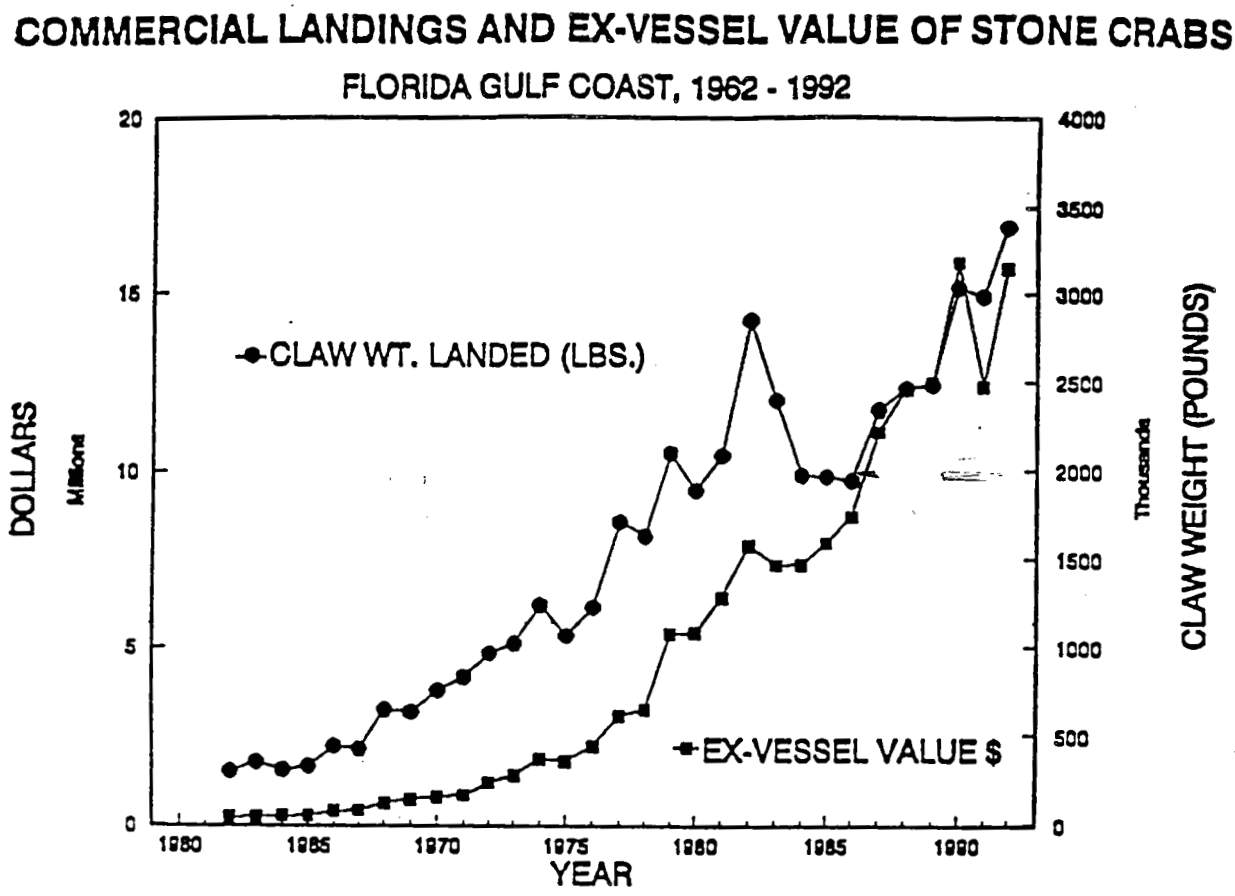


Figure 1. The commercial landings and ex-vessel value of stone crabs from Gulf ports in Florida for the calendar years, 1962-1992.

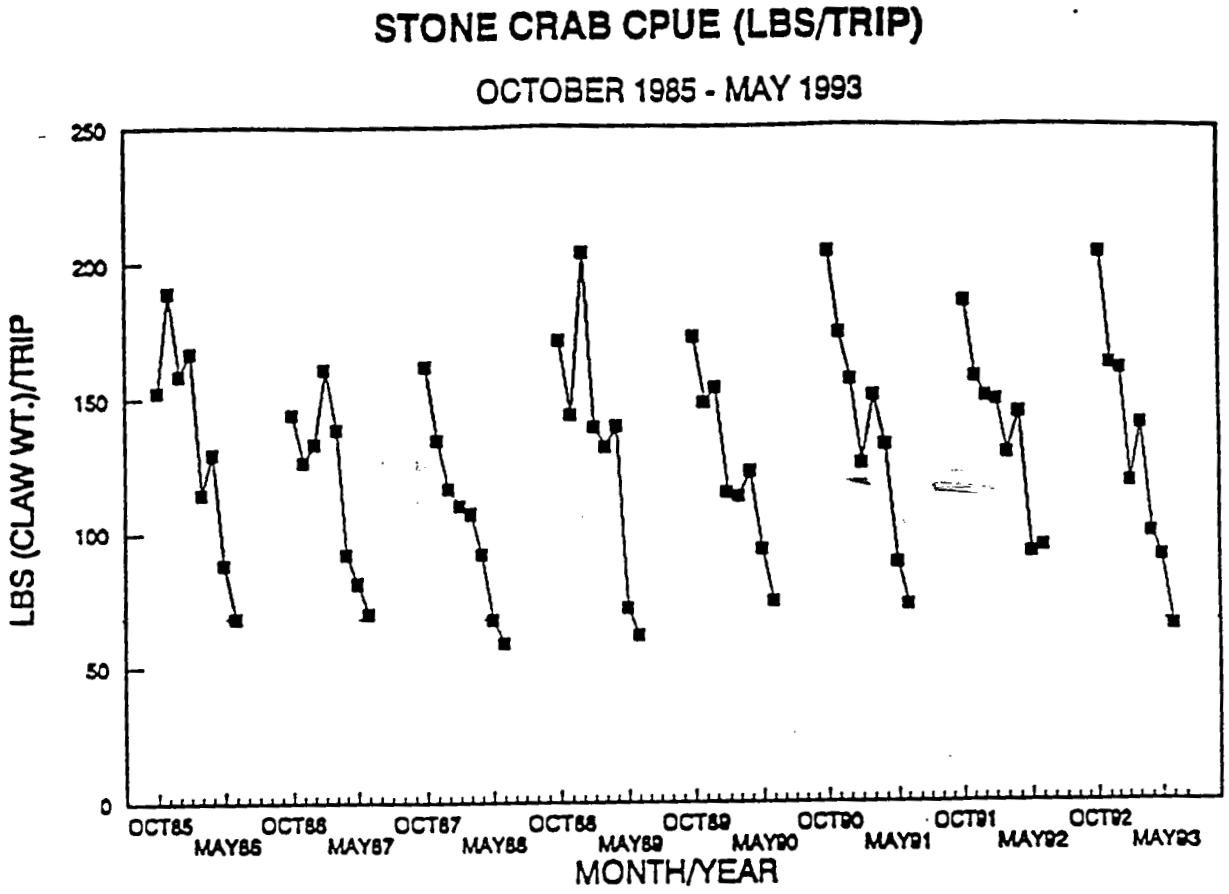


Figure 2. Average monthly stone crab catch-per-unit-of-effort (CPUE, pounds of claws per trip) at Florida Gulf coast ports. Catch rates computed only for trips where stone crabs comprised 75% or more of the total landings. The October 1992 through May 1993 data are preliminary and subject to change.

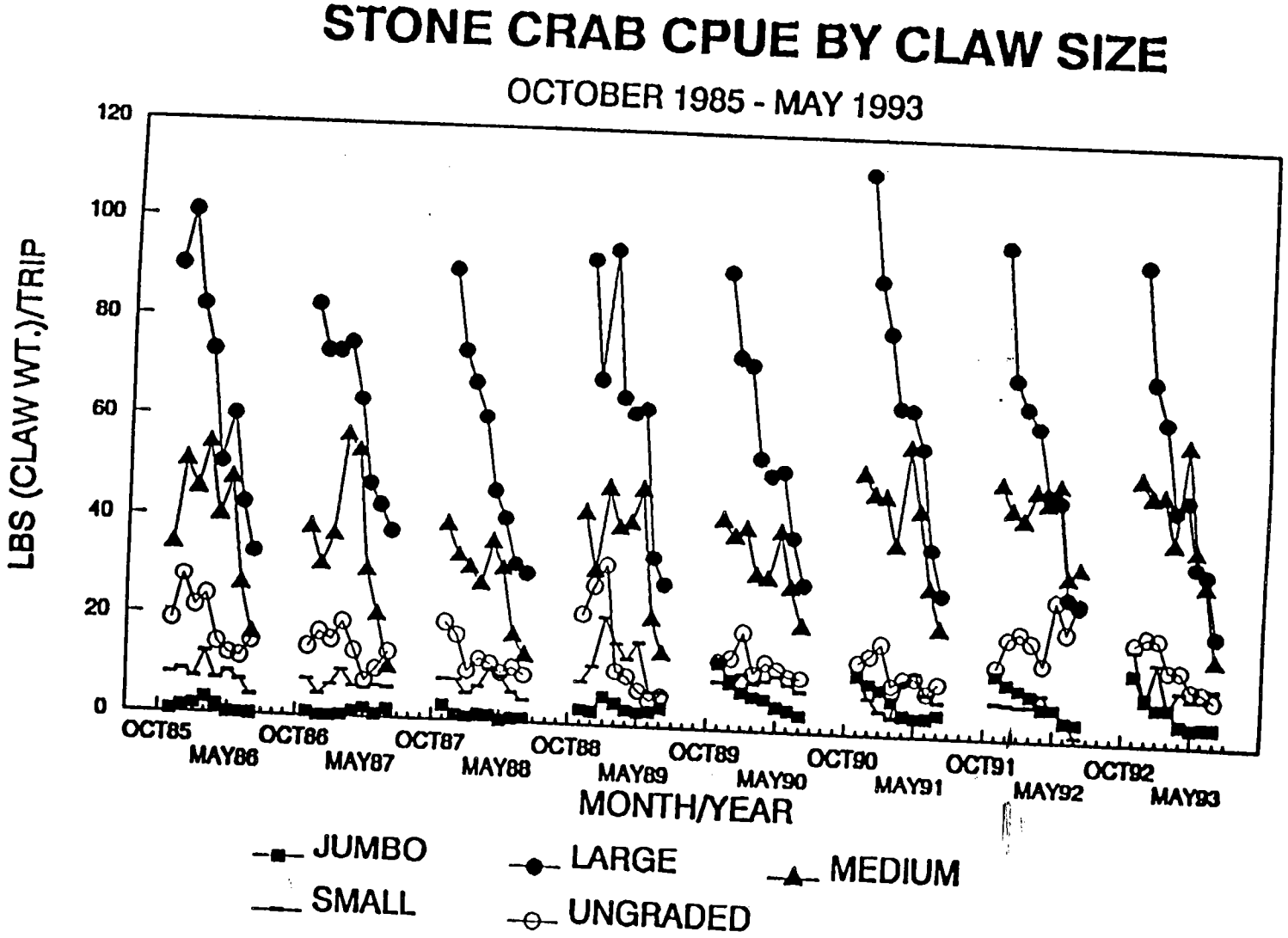


Figure 3. Florida Gulf coast monthly stone crab CPUE (pounds/trip) by claw size. Catch rates computed only for trips where stone crabs comprised 75% or more of the total catch.

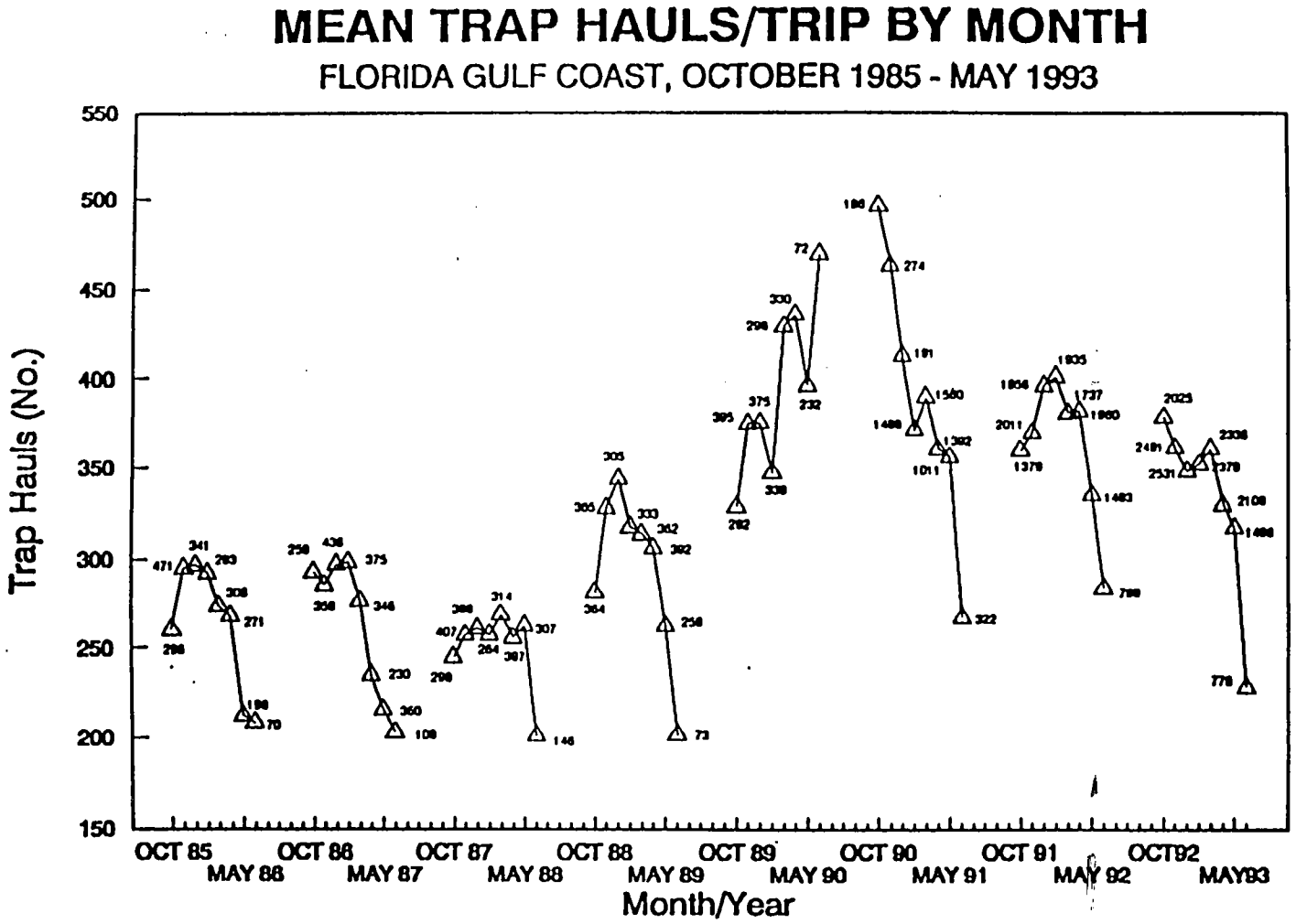


Figure 4. The mean number of traps hauled per fishing trip by month for the Florida Gulf coast stone crab fishery. The number of trips are indicated above the 95% confidence interval bars. Values were calculated from trips in which stone crabs comprised at least 75 percent of the total trip landings and number of traps hauled were recorded in the Florida Trip Ticket System data.

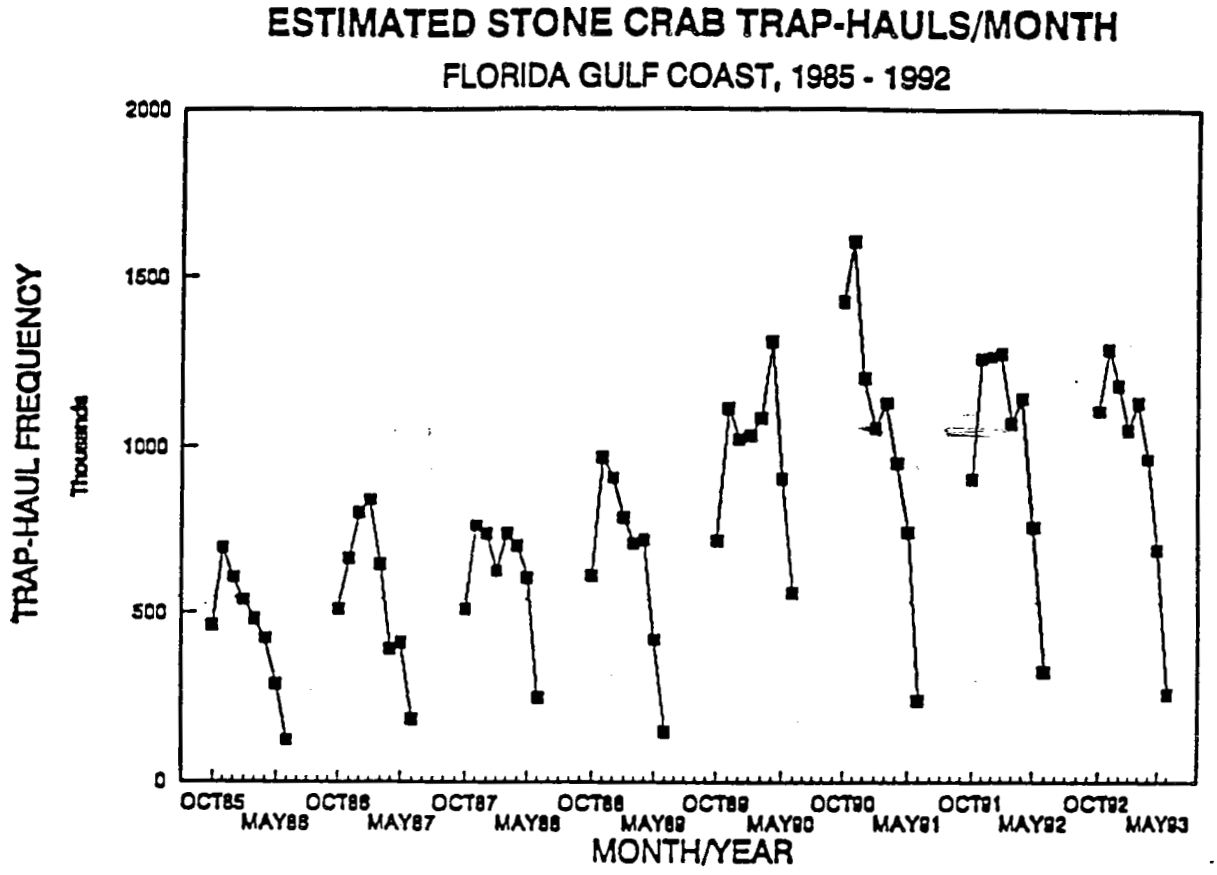


Figure 5. Estimated total number of stone crab trap-hauls per month off the west coast of Florida.

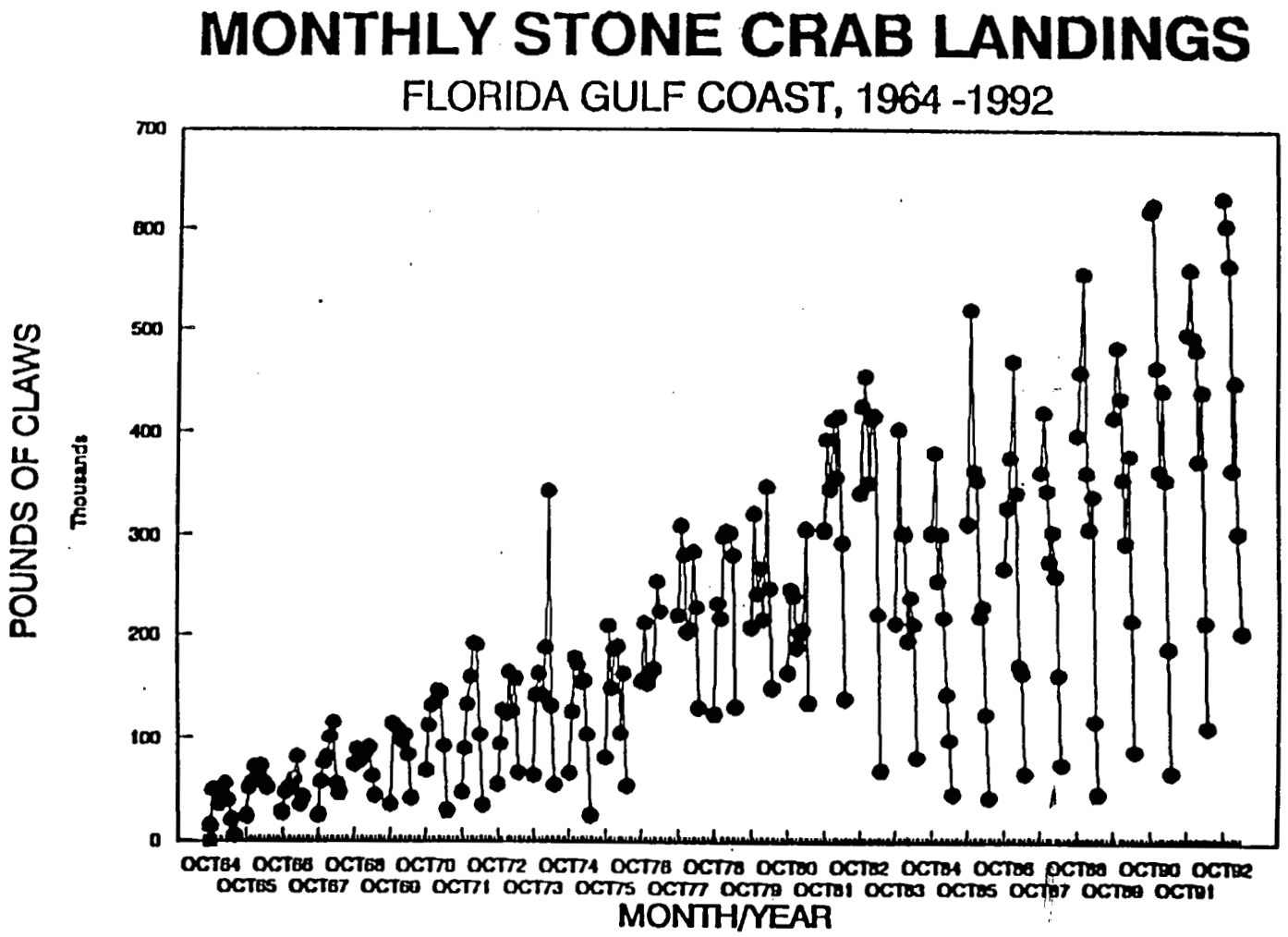


Figure 6. The 1964 to 1992 monthly commercial stone crab landings at Florida Gulf coast ports. In October and May of each year, stone crab fishing can legally be conducted during one-half of each month.

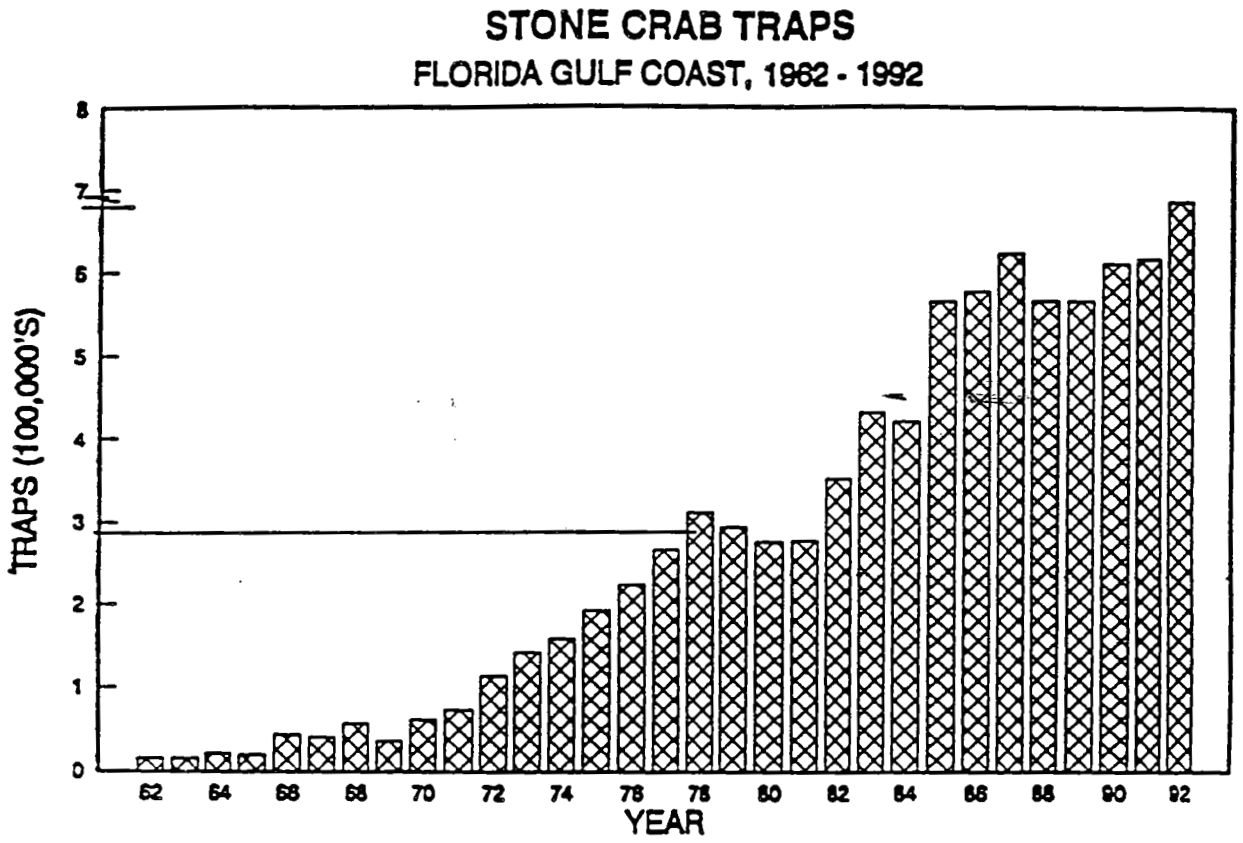


Figure 7. The estimated annual number of traps in the Florida Gulf coast stone crab fishery. The number of traps is compiled from an annual National Marine Fisheries Service canvas of dealers conducted at the beginning of each calendar year. Trap number for 1992 is preliminary and subject to change.

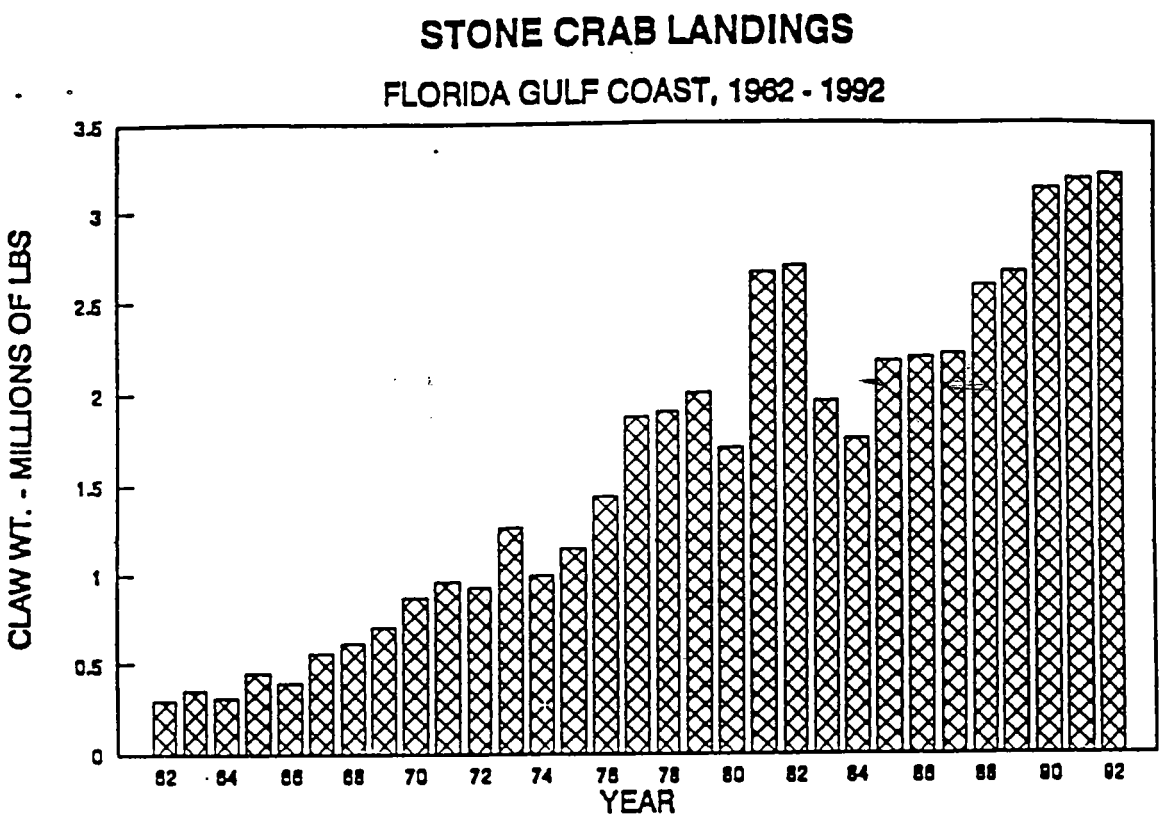


Figure 8. The 1962 - 1992 stone crab landings by annual fishing season (October - May) at Gulf coast ports in Florida.

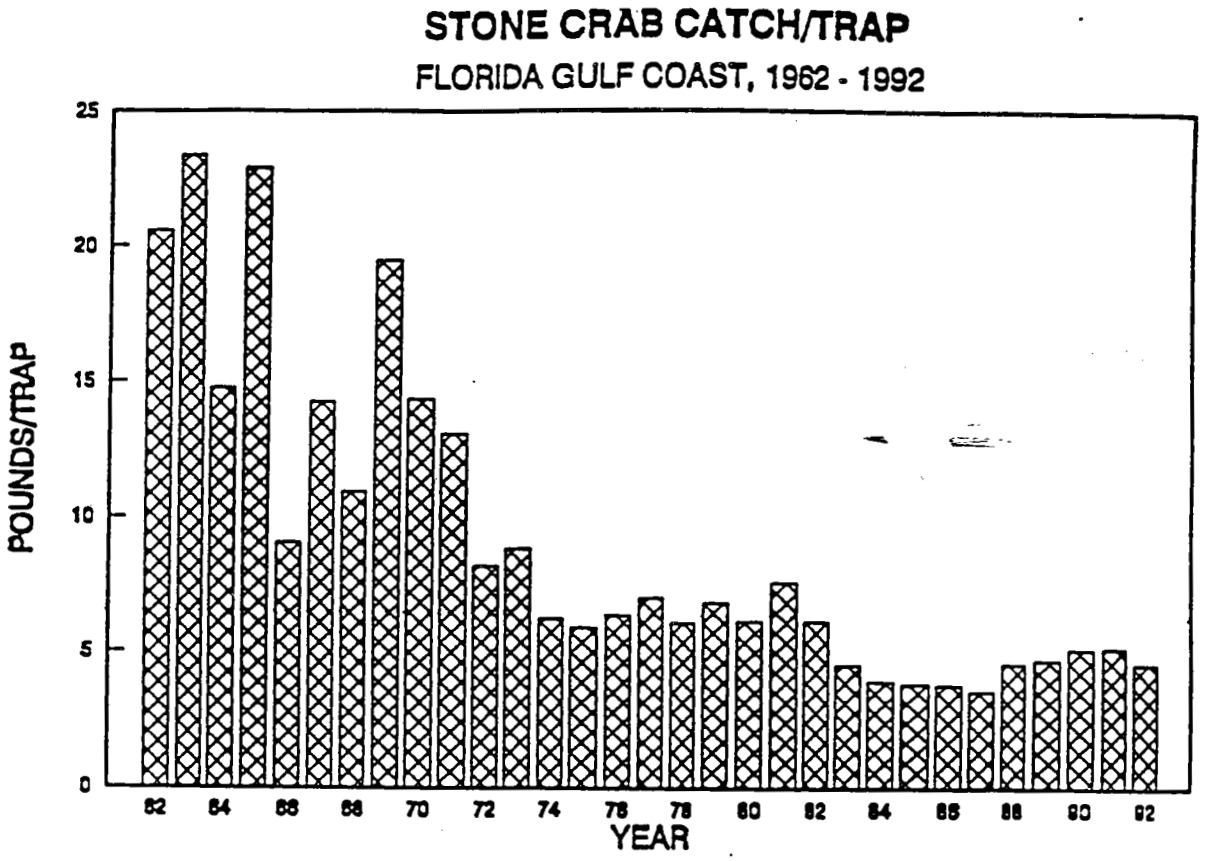


Figure 9. The 1962 - 1992 seasonal stone crab catch/trap (pounds of claws) for the Gulf coast of Florida.

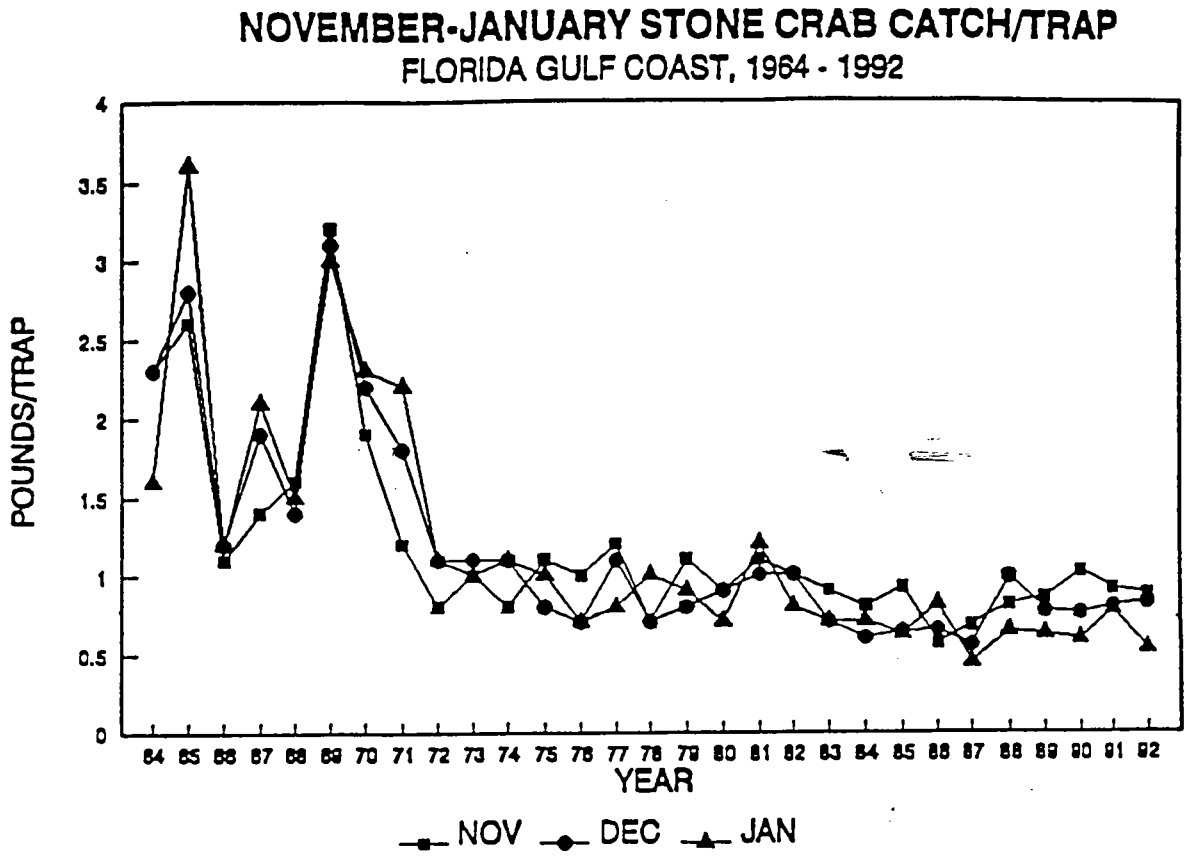
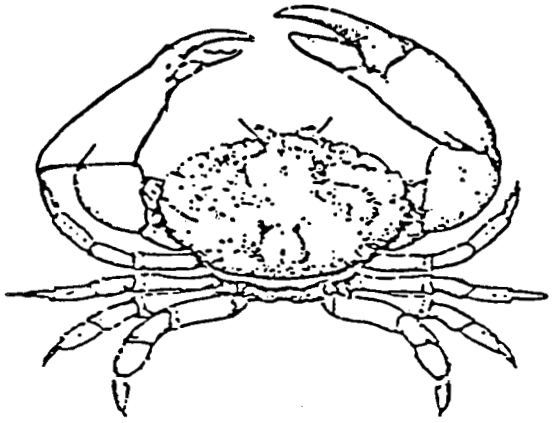


Figure 10. The 1964 - 1992 Gulf coast of Florida stone crab catch/trap (pounds of claws) during peak fishing months of November, December and January.

APPENDIX A



1997 Update on Florida's Stone Crab Fishery

Report to the Marine Fisheries Commission

Robert G. Muller and Theresa M. Bert

June 11, 1997

Department of Environmental Protection
Florida Marine Research Institute
100 Eighth Avenue Southeast
St. Petersburg, Florida 33701-5095

1997 Update on Florida's Stone Crab Fishery

Executive Summary

- The stone crab fishery does not harvest the crab but rather fishers remove the claws from the crabs and then return the crabs to the water. Approximately 10% of the claws observed by samplers in the fish houses have been regenerated. Since males have larger claws, males enter the fishery earlier and the majority of the claws are taken from males. Female crabs have already spawned one or more seasons by the time their claws reach legal size.

- Landings in weight of claws have been increasing for more than 30 years, fluctuations surround the trend line. For example, the landings in the 1981-82 and 1982-83 seasons were substantially above the trend line but those from the 1983-84 and 1984-85 seasons were below the trend line. More recently, landings from the 1990-91 through 1994-95 seasons were above the trend and landings from 1995-96 season were below. A preliminary estimate of 1996-97 based on October-January landings indicate that the 1996-97 landings were also below the trend line.

- Effort also has increased during the past 30 years. The number of traps in the fishery has increased from 14,000 traps in 1962-63 to an estimated 798,000 traps in 1995-96. The number of commercial trips has increased from 19,000 per season in 1985-86 (the first season with trip information available) co 32,000 trips per season in 1995-96. Landings have not kept pace with the increases in either measure of effort.

- Catch per trap has fluctuated widely, and has shown a decreasing trend. Catch rates have dropped rapidly from more than 20 pounds per trap in the 1960s to less than 10 pounds per trap by 1971 to less than 5 pounds per trap by 1983. Catch rates declined as the number of traps increased. Although the catch per trap since 1983 has been very low, it has declined only slightly with the doubling of traps. However, the catch per trip, which has higher resolution,

indicates that the catch per trip has declined since 1993-94. The preliminary 1996-97 catch rate is the lowest of the series and has the highest effort.

- Monthly catch per trip during the fishing season typically declines sharply during the season.

- Plots of landings on effort indicate that as effort has increased, landings have not increased at the same rate. Both measures of effort, number of traps and number of commercial trips, indicate that the fishery is either operating at its maximum (traps) or slightly past the maximum (trips).

- The catch rates of juvenile crabs from the fishery independent stone crab monitoring project in Tampa Bay provide a good estimate of the commercial fishery's catch rates three years later. The first year of the juvenile index (1989-90) did not predict the 1992-93 commercial catch rates well but from 1990 through 1993 there was good correspondence between juvenile catch rates collected in the sampling and the catch per trap three years later (1993-94 to 1996-97). Correlations between monthly commercial catch rates and the juvenile catch rates indicate that some juveniles enter the fishery at approximately 27 months after settlement, these are presumably males. Some juveniles also enter the fishery 38 months later, these are principally females.

- The juvenile index in Tampa Bay raises serious concern. If juvenile catch rates from the monitoring program continue to predict future commercial catch rates, there could be a scarcity of stone crabs in the Tampa Bay region in the 1999-2000 fishing season because catch rates of juveniles collected in Tampa Bay in 1996-97 were not significantly different from zero. While it remains to be seen if this relationship holds in other areas of Florida, fishery independent sampling has potential as an early warning system for this fishery.

- Based on the results of these analyses, we recommend that the Marine Fisheries Commission continue with their plans to reduce effort in the stone crab fishery.

1997 Update on Florida's Stone Crab Fishery

Background

Studies of the stone crab fishery were conducted by either the Department of Environmental Protection (Savage et al. 1975, Sullivan 1979) or Florida Sea Grant (Bert et al. 1978) until the Gulf of Mexico Fishery Management Council developed a fishery management plan in ~~1982~~ 1979 (GMFMC). The National Marine Fisheries Service analyzed the fishery for the Council (Powers 1983, Phares 1985, Phares 1989, Bolden and Harper 1992, and Bolden 1993). The Marine Fisheries Commission is considering recommending a trap reduction program similar to the program developed for the spiny lobster fishery and has asked for an update on the fishery.

Two species of stone crab are harvested in Florida. *Menippe adina* occurs westward from Cape San Blas and *Menippe mercenaria* occurs throughout peninsular Florida and extends into North Carolina. The species interbreed such that hybrid stone crabs occur from the Big Bend region to Tampa Bay. Since stone crab landings from Escambia through Gulf counties (*Menippe adina*) are quite small (typically less than 800 pounds of claws) and are harvested by fewer than 10 fishers, they will not be considered further in this analysis.

The stone crab fishery is atypical in that stone crabs are not killed or harvested but rather the claws are removed and the crabs are returned to the water. The fundamental assumption is that crabs can regenerate claws by molting; thus the new claws can potentially be harvested again. Most of claws are harvested from male crabs because males have larger claws (Sullivan 1979). By the time that females have developed legal sized claws (2 3/4 in or 70 mm), the females have been mature for one or more spawning seasons.

Initially, stone crabs were a by-catch in spiny lobster traps in the Florida Keys. Eventually, markets were developed and stone crabs became a fishery in its own right. Savage et al. (1975) noted that in 1973 stone crabs were trapped from Franklin county through Brevard County, that most of the landings were from Collier and Monroe counties, and that East Coast landings accounted for only about 6% of the statewide landings. The pattern remains unchanged today. The fishing season extends from

October 15 through May 15. After October 15, 1973, fishers could harvest both sexes of stone crabs as long as the female crab is not carrying eggs.

Landings

Although there are people who capture stone crabs for recreation and take the claws for home consumption, stone crab landings are only available from the commercial sector of the fishery. Stone crab landings prior to 1986 were reported by dealers to the National Marine Fisheries Service (NMFS) and afterwards through the State of Florida Marine Fisheries Information System, commonly known as the trip ticket program. The NMFS General Canvass information consists of monthly landings and value by dealer. The only measure of effort from NMFS's General Canvass is the number of traps estimated by the dealers for their fishers. The trip ticket program collects landings by individual trip and, in addition to the information collected previously by NMFS, trip tickets contain information such as the Saltwater Products License number of the fisher, gear deployed, number of sets, depth fished, numbers of traps, time away from the dock, the species, quantities, and prices for all species landed on the trip. For this analysis, the trip ticket information included tickets that were

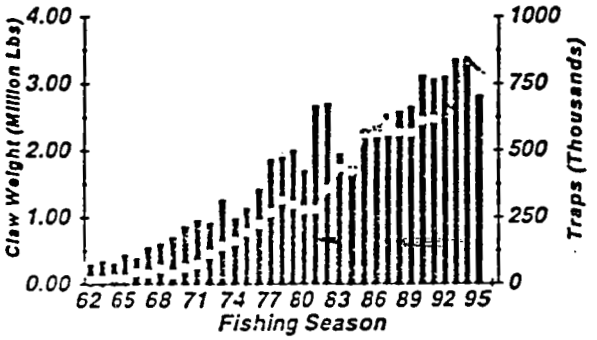


Figure 1. Historical Gulf coast stone crab landings of claws in pounds and numbers of traps by fishing season. Bars - landings, line with ellipses - traps, line with X - estimated traps.

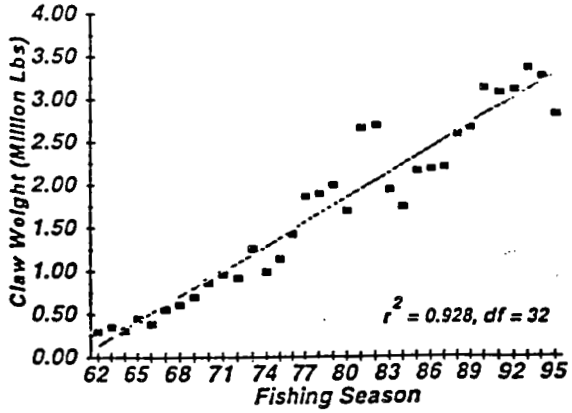


Figure 2. Linear trend in landings of Gulf Coast stone crab claws.

received by the Department of Environmental Protection through March 21, 1997. Thus, the landings data are assumed to be complete through the 1995-96 fishing season.

Landings of stone crab claws were less than 500,000 lbs until 1967-68 (Table 1, Figure 1). Gulf coast landings increased to 1,000,000 lbs by 1973-74 and recent landings have exceeded 3,000,000 lbs. Over the period from 1962-63 through 1995-96, the increases have been almost linear (Figure 2). In 1981-82 and 1982-83, the landings were noticeably above the trend line and 1984-85 and 1995-96 were below. Commercial fishing was eliminated from Everglades National Park after December 31, 1985.

Geographical Distribution

Based on the extent of hybridization and patterns of fishing activity and landings, the fishery was divided into five regions. The Big Bend region which has the highest proportion of stone crab hybrids consisted of landings from Franklin through Levy counties. The Crystal River region which has high proportions of intermediate and *M. mercenaria*-like hybrids, consisted of landings from Citrus through Pasco counties. The Tampa Bay region, which has a low percentage of predominantly *M. mercenaria*-like hybrids, consisted of Pinellas through Sarasota counties. The Southwest region which has essentially only *M. mercenaria*, consisted of Charlotte through Monroe counties. The Atlantic coast region consisted of all of Florida's east coast counties. As noted earlier, most of the stone crab claws are harvested in the Southwest region, especially in Collier and Monroe counties (Figure 3).

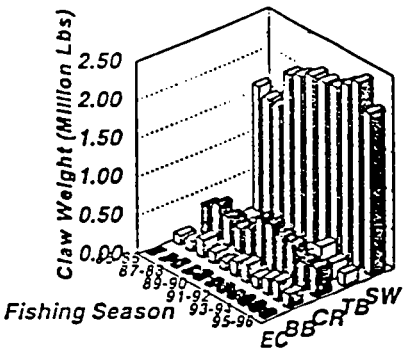


Figure 3. Landings in claw weights by region. EC - Atlantic Coast, BB - Big Bend, CR - Crystal River, TB - Tampa Bay, SW - Southwest.

Numbers of Participants

When the trip ticket program was originally implemented in October 1984, the Saltwater Products License (SPL) number could not be retained as part of the data record in the landings file. The State Legislature removed that restriction in 1986. By the 1987-88 fishing season, there were very few landings without SPL numbers. Statewide, the number of licenses that landed stone crabs in a given season has varied from 1,139 in 1986-87 to 1,880 in 1993-94 and down to 1,689 in 1995-96 (Table 2, Figure 4). The numbers of participants varied among the regions with the similarity that the number of licenses was less than the peak in every region. On the Atlantic coast, the number of licenses increased to 211 in 1994-95 and then declined to 139 in 1995-96. In the Southwest region, the number of licenses increased to 1,276 in the 1989-90 fishing season, then declined to 915 in 1992-93 and was 1,049 in 1995-96. In the Tampa Bay region, the number of licenses increased to 282 in 1993-94 and declined to 182 in 1995-96. In the Crystal River region, the number of licenses increased to 168 in 1991-92 and then declined to 144 in 1995-96. In the Big Bend region, the number of licenses increased to 192 in 1993-94 and then declined to 171 in 1995-96.

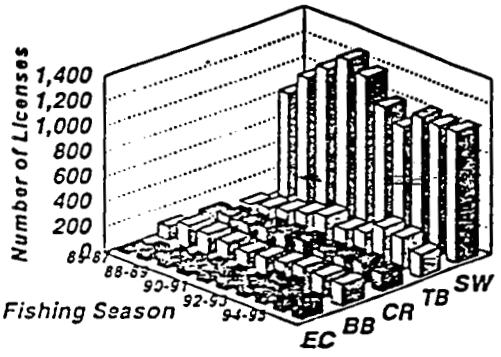


Figure 4. Regional participation by fishing season. EC- Atlantic coast, BB - Big Bend, CR - Crystal River, TB - Tampa Bay, SW - Southwest.

Effort

Although the ideal measure of effort in this fishery would be the number of traps pulled during a season, the only measures of effort available in the this fishery are the estimated number of traps by season available since the 1962-63 fishing season and the number of commercial trips available since the 1985-86 fishing season.

Numbers of Traps and Catch per Trap

The historical measure of effort is an annual estimate of

the number of traps provided by wholesale dealers to NMFS for their fishers. These trap estimates were not available for the past four seasons, therefore we estimated the number of traps in those years based on the total numbers claimed by fishers on their annual Saltwater Water Products License applications. The number of traps from NMFS General Canvass averaged 38% (CV = 6%) of the total number claimed on their license applications; therefore, we multiplied the traps numbers from the applications by 38% to get comparable number for the past four seasons.

The number of traps in the stone crab fishery has increased twenty-fold during the past 30 years from less than 40,000 traps to approximately 800,000 traps (Table 1, Figure 1). There has been an increase in the number of traps in the three most recent years, partly in response to a trap reduction program that is being discussed (Tom Matthews personal communication). Powers (1982) and Phares (1985, 1989) noted that number of traps does not account for differences in how the traps are fished. The number of traps in the fishery would provide a useful measure of effort if all of the traps were fished the same way and were pulled the same number of times per fishing season.

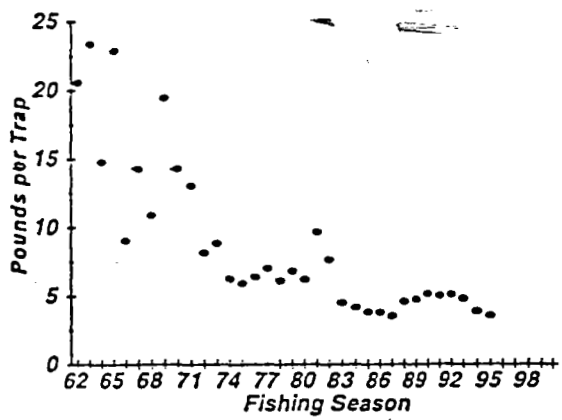


Figure 5. Historical catch per trap by fishing season.

As mentioned above, the historical catch per trap is the landings from the fishing season divided by number of traps in the fishery that season. Although this measure is coarse, it provides some insight into the historical development of the fishery. The catch per trap fluctuated markedly in the early years (Figure 5) partly reflecting the availability of crabs and partly the developing skill of the fishers. By 1972, the catch per trap had stabilized around 7-8 lb per trap during a season. The catch per trap increased significantly during the 1981-82 season and then declined. The catch per trap stabilized around 3-4 lb per trap after the 1983-84 fishing season. The catch per

trap was the lowest of the time series in 1995-96. The catch per trap has been relatively stable over the past decade (Figure 6) considering the potential effects of fluctuations in juvenile survival, predation, and other environmental perturbations. This stability has been sustained by the incorporation of improved technology, better navigation equipment, use of trap haulers, and by exploring alternative fishing areas.

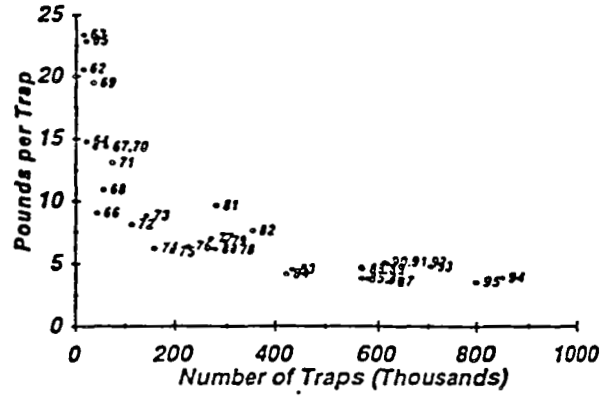


Figure 6. Historical catch per trap by numbers of traps.

Numbers of Trips and Catch per Trip

The number of commercial trips has also increased in recent years (Table 2). In Monroe County, many of the stone crab license holders (73%) also have spiny lobster endorsements. In response to the spiny lobster trap reduction program and the lower number of lobster trap certificates, some fishers are making more stone crab trips. The effect of this shift is to increase the number of trips without increasing the number of participants.

The catch per trip was standardized with a general linear model and adjusted for seasonal effects (month), geographical differences (county), and trip duration (days). Adjusting for trip duration is necessary (F = 5788, d.f. = 1, 308094, $P < 0.0001$) because some dealers only settle up with their fishers weekly. Thus, although stone crab trips only last one day because the claws have to be cooked before they

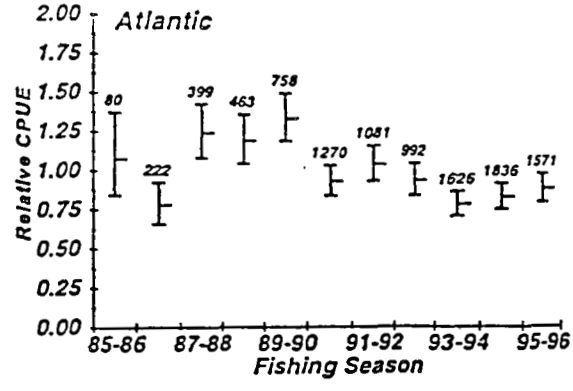


Figure 7. Atlantic coast standardized catch per trip. Number of trips, vertical bar - 95% confidence interval, and dash - mean.

can be frozen, some tickets reflect more than one day's fishing. The standardized catch rates are normalized to their mean so that a value of 1.0 indicates that the season's catch rate was equal to the average of the 11 fishing seasons; similarly, values less than 1.0 indicates seasons with below average catch rates. On the Atlantic coast, catch rates were variable and higher in the early seasons, except for 1986-87 (Figure 7). The lowest catch rate was in 1993-94 and has slightly increased since then. On the Gulf coast, the relative catch per unit effort was below average 1987-88 through 1989-90, then increased, peaked in 1993-94, and then declined (Figure 8). The lows in the late 1980s could reflect the closure of the Everglades and the displacement of those fishers to new grounds.

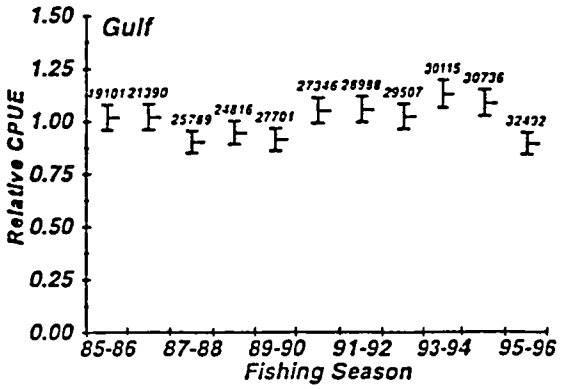


Figure 8. Gulf coast standardized catch per trip. Number or trips, vertical bar - 95% confidence interval, dash - mean.

To investigate whether the catch rate in the current season was also low like the 1995-96 fishing season, we extracted landings from October 1996 through January 1997. New catch rates for the time series were calculated using only October through January data. The relative catch rates from the early season indicate a steeper decline early in the series. The 1988-89 value was higher than before but the 1996-97 value was even lower than the 1995-96 catch rate (Figure 9). When the catch rates from the early season are plotted on the number of trips in

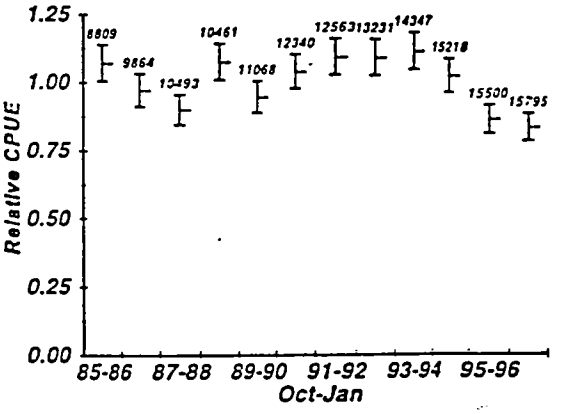


Figure 9. Gulf coast catch rates in the beginning of the fishing season, October through January. Number of trips, vertical bar - 95% confidence interval, dash - mean.

the same months, the catch rates from the two recent seasons are the lowest in the time series (Figure 10).

The two measures of effort are independent and both measures show a decline in the 1995-96 fishing season. Preliminary data indicate that the catch rates from 1996-97 are lower than 1995-96.

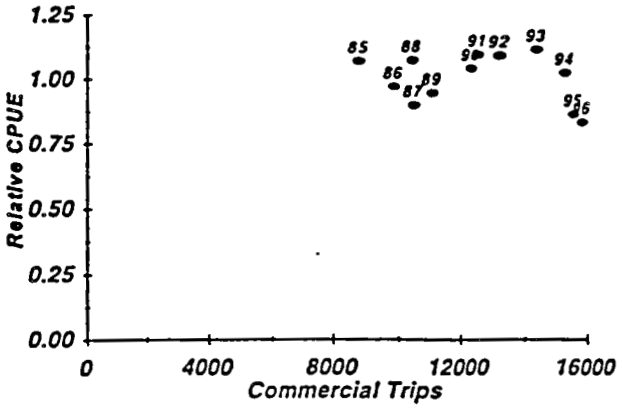


Figure 10. Relative catch per trip and the number of October through January trips. The years refer to the beginning of the fishing season.

Octopus, a predator on stone crabs, was mentioned as an possible explanation for low stone crab abundance in the 1984-85 season (Lindberg et al. 1989). Octopus catch rates on the Gulf coast from trip tickets indicate that octopus were above average abundant in the mid-to-late 1980s and that their catch rates have been lower in recent years (Figure 11). Further, the number of commercial trips landing octopus is small relative to the number of trips landing stone crabs (Table 2).

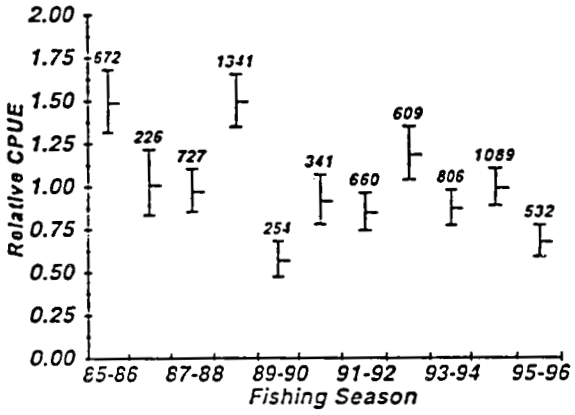


Figure 11 Gulf coast octopus catch rates by stone crab fishing season using all gears. Number of trips, vertical bar - 95% confidence interval, dash - mean.

Population Analyses

Models are used to synthesize information and to identify and summarize patterns. Many fishery models attempt to estimate fishing mortality rates by age and fishing season; however, these models are inappropriate for stone crabs because the animal is released after legal claws are removed. Length-based approaches also are not suitable because the size of regenerated claws does not indicate crab size. Therefore, we used empirical models to identify whether landings continue to increase as the number of

traps have increased (similar to equilibrium surplus production) or to identify recruitment patterns from monthly landings within fishing seasons (DeLury Depletion Model, for example see Basson et al. 1996 or Rosenberg et al. 1990).

Catch versus Effort

Hilborn and Walters (1992) do not recommend using equilibrium models because fisheries rarely attain equilibrium. However without assuming equilibria, a curve can be fitted to the observations as a simple means of summarizing landings and effort. As noted above, both landings of stone crab claws and effort have increased. When landings are plotted on the number of traps, landings from the developing fishery tracked the increase in traps quite closely up to about 300,000 traps (Figure 12). At higher effort, the landings were more variable for a given level of traps and did not continue to track effort indicative of a fully exploited fishery. A possible explanation is that there are so many traps that a crab has a choice of traps to enter or, in other words, the crabbing grounds have become saturated with traps. The curve in the figure indicates that if additional traps are put into the fishery and the fishery continues to operate as it has, landings will remain between 3,000,000 and 3,500,000 pounds.

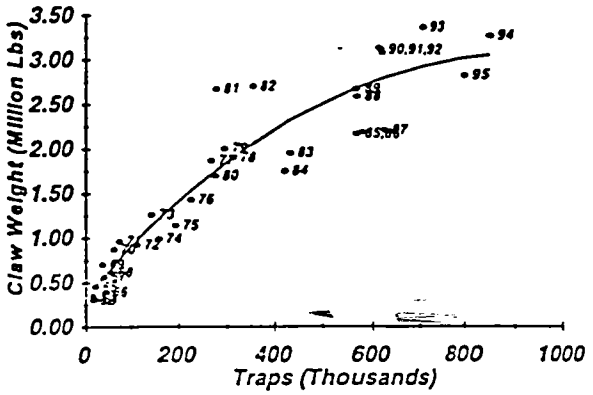


Figure 12. Landings in pounds of claws on the number of traps.

Just as the landings did not keep pace with increased numbers of traps, landings do not keep pace with increased numbers of trips. Landings have increased only slightly

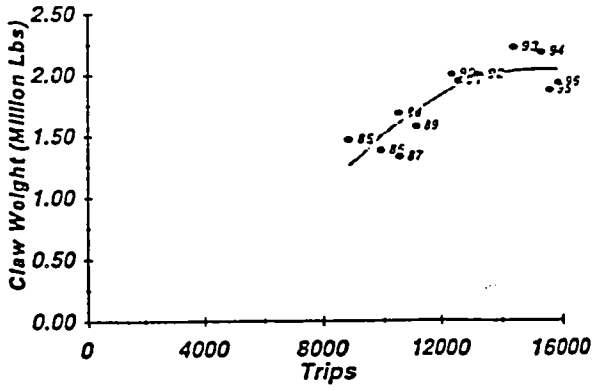


Figure 13. Landings by trip using only data from the beginning of the season, October through January.

beyond the level harvested with 75% of current trips (Figure 13). As with the discussion with traps, the additional trips are not adding to the overall landings. This indicates that the fishery is less efficient because the additional trips increase the cost of fishing without commensurate higher landings.

Recruitment Trends

Estimates of recruitment into this fishery are not as straight forward as in other fisheries because crabs can re-enter the fishery after sufficient molts for their claws again to attain legal size.

As a first attempt to identify trends in recruitment into the fishery, we used the DeLury Depletion Model to determine how many legal sized claws were required in each October to mimic the dynamics of monthly landings, effort, and catch rates for the period from October 1985 until May 1996. The equations in the DeLury Depletion model are:

$$Nbar_t = (R_t + N_t)e^{-M/2} + C_t/2 \quad (1)$$

and

$$C_t = q\, E_t\, Nbar_t \quad (2)$$

where $Nbar_t$ is the average number in the population at time, t; R_t is the recruitment in numbers at time, t; N_t is the number in the population at the beginning of time, t; M is the natural mortality rate; C_t is the catch during time, t; q is the catchability coefficient that relates the mortality expended by one unit of effort; and E_t is the effort expended during time, t. We used a natural mortality rate of 0.35 per year based on a maximum age

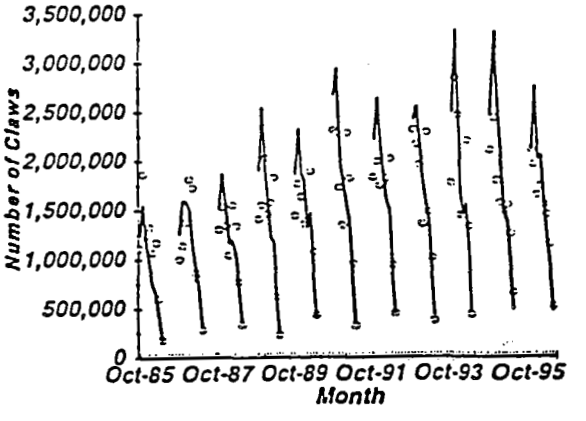


Figure 14. Monthly landings in number of claws as predicted by the DeLury Depletion model. Open ellipses - observed landings, line - predicted landings.

of 8 years (Restrepo 1989). Catch per unit effort is obtained by dividing equation 2 by E_t. The model used monthly landings, trips, and standardized catch rates from October 15, 1985 through May 15, 1996 to estimate the recruitment. To simplify the model, recruitment of legal claws is assumed to occur in October.

The model captures the seasonal depletions (Figure 14) reasonably well (r^2 = 0.59, d.f. = 77) with well balanced residuals. The resulting pattern in recruitment increased to a peak in 1993-94 and then decrease (Figure 15). The natural mortality rate that we used is lower than Ehrhardt's et al. (1990) estimate of 0.939 per year. When the DeLury model is recalculated with the higher value, the estimated population size is higher but the relative changes remain the same -- a decrease after the 1993-94 season.

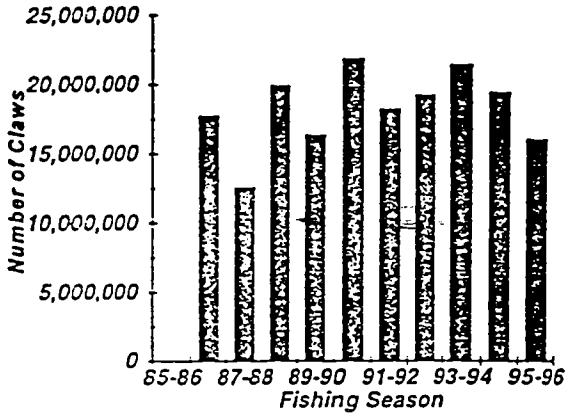


Figure 15. Recruitment trends in numbers of claws by fishing season estimated from DeLury model.

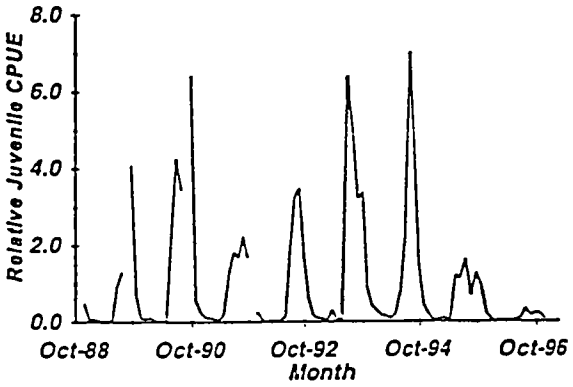


Figure 16. Monthly standardized catch rates of juvenile crabs from Tampa Bay monitoring program.

Monthly fishery independent estimates of post-settlement juveniles exist for Tampa Bay beginning in December 1988. The intention is to use juvenile settlement to predict subsequent recruitment into the fishery in a manner similar to the use of puerulus settlement in palinurid lobsters (Pollock 1986, MacDonald 1986, and Phillips 1986). Five traps are pulled biweekly in each of four sites. The number of juveniles are counted when the traps are scraped clean of fouling

biota every other trip. The monthly, standardized catch rates show distinct differences among fishing seasons (Figure 16). During the 1996 spawning season very few juvenile crabs were observed.

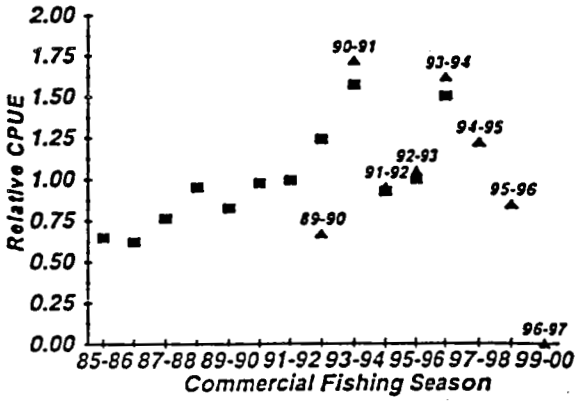


Figure 17. Commercial catch rates (squares) from the Tampa Bay region (using data from October through January only) and juvenile catch rates (triangles) by fishing season.

When the monthly juvenile catch rates are compared to the monthly commercial catch rates, there are two high correlations. The first occurs between juveniles and subsequent entry into the fishery with a time lag of 27 months ($r = 0.64$, d.f. = 41) and the second occurs between juveniles and subsequent entry into the fishery with a time lag of 38 months ($r = 0.79$, d.f. = 41). These results are consistent with Restrepo's (1989) estimate that male crabs enter the fishery at 2.25 years and female crabs enter later.

When the number of juvenile crabs is superimposed on the standardized lagged catch rates from the Tampa Bay region, there is good correspondence except for the first year (Figure 17). Since the catch rate of juvenile crabs in the 1996-97 fishing season was not significantly different from zero and if future commercial catch rates continue to track the juvenile index, then the catch rates in the Tampa Bay region can be expected to be much lower in about three years.

Regulations

Stone crabs are regulated under Florida Administrative Code, Chapter 46-13. The statute covers *Menippe mercenaria*, *M. adina* and their hybrid forms. Only the claws of stone crabs can be removed. The minimum size for claws is 2-3/4 inches in length, measured by a straight line from the junction of the elbow "hand" (the crushing part of the claw) to the tip of the lower immovable finger of the hand. It is unlawful to remove claws from egg-bearing female stone crabs or to have any egg-bearing female

stone crabs on board a vessel. The open season is from October 15 to May 15. Additional regulations include type of trap design, when the traps can be deployed and Division of Law Enforcement notification of post season trap retrieval, prohibition on the use of spears or hooks, buoy and vessel marking requirements, and requires a Saltwater Products License with a restricted species endorsement. The recreational harvest of stone crabs is restricted to a bag limit of 1 gallon of claws, a maximum of five traps that meet all of the commercial trap design criteria, a buoy marked with the letter "R" together with the name and address of the fisher unless the trap is fished from a dock, and the requirement that recreational traps be pulled manually and during daylight hours only.

Condition of the Stock

Stone crabs are difficult to assess from the information typically collected from fisheries. Landings are composed of claw weights categorized by size, but the presence of regenerated claws and the number of claws harvested per crab confound the interpretation. Given these caveats, the low catch rates in the stone crab fishery argue against further expansion of this fishery. With either measure of effort, the landings are not keeping pace with increases in effort. The landings appear to have reached their peak in recent years. The fishery has experienced good years, with crabs readily available, and poor years. The dramatic increases in catch rates in the fishery, for example the 1981-82 fishing season, have been followed by steep declines, for example the 1983-84 fishing season. It appears that we are currently in the decline following the increase in 1993-94. The estimated recruitment into the fishery has been down the past two years. Fluctuations in juveniles possibly explain some of the volatility. Juvenile crabs in Tampa Bay were highly available in the 1990-91, 1993-94 fishing seasons. The almost complete absence of juvenile stone crabs in the 1996 spawning season does not bode well for the stone crab fishery in Tampa Bay two or three years from now. The Institute will continue to monitor the relationship between juvenile catch rates and the subsequent commercial catch rates. The juvenile index demonstrates the utility of the fishery independent sampling Tampa Bay and the program should be expanded to additional areas.

Research Needs

The primary research need for stone crab management and assessment is the expansion of the fishery independent monitoring project because this program provides information on future recruitment, sex ratios of the crabs, detailed catch per trap, claw weight to claw size, and number of legal claws per crab.

Literature Cited

Basson, M., J.R. Beddington, J.A. Crombie, S.J. Holden, L.V. Purchase, and G.A. Tingley. 1996. Assessment and management techniques for migratory annual squid stocks: the *Illex argentinus* fishery in the Southwest Atlantic as an example. Fisheries Research 28: 3-27.

Bert, T.M. 1989. Summary of workshop on current issues related to stone crab (Genus *Menippe*) biology and fisheries, p. 108 to 115. *In* T. M. Bert [ed.] Proceedings of a symposium on stone crab (Genus *Menippe*) biology and fisheries. Florida Department of Natural Resources. Florida Marine Research Publication Number 50.

Bert, T.M, R.E. Warner, and L.D. Kessler. 1978. The biology and Florida fishery of the stone crab, Menippe mercenaria (Say), with emphasis on Southwest Florida. Florida Sea Grant. Technical Paper No. 9. 82 p.

Bolden, S.K. 1993. Summary of the Florida Gulf Coast commercial stone crab fishery 1962-1992. NOAA. National Marine Fisheries Service. Southeast Fisheries Science Center. Contribution No. MIA-92/93-84.

Bolden, S.K. and D.E. Harper. 1992. The Florida Gulf coast stone crab fishery: landings and effort 1962-1991. NOAA. National Marine Fisheries Service. Southeast Fisheries Science Center. Contribution No. MIA-91/92-86. 22 pp.

Ehrhardt, N.M., D.J. Die, and V.R. Restrepo. 1990. Abundance and impact of fishing on a stone crab (*Menippe mercenaria*) population in Everglades National Park, Florida. Bulletin of Marine Research 46:311-323.

Hilborn, R. And C.J. Walters. 1992. Quantitative fisheries stock assessment: choice, dynamics, and uncertainty. Chapman and Hall. New York. 570 p.

Lindberg, W.J., T.M. Bert, and G.P. Genoni. 1989. Alternative hypotheses for low landings in the Cedar Key stone crab fishery (Genus *Menippe*) fishery, 1984-85, p. 50 to 57. *In* T. M. Bert [ed.] Proceedings of a symposium on stone crab (Genus *Menippe*) biology and fisheries. Florida Department of Natural Resources. Florida Marine Research Publication Number 50.

MacDonald, C.D. 1986. Recruitment of the puerulus of the spiny lobster, *Panulirus marginatus*, in Hawaii. Canadian Journal of Fisheries and Aquatic Sciences 43:2118-2125.

Phares, P.L. 1985. Analysis of stone crab stock assessment data from 1979 to 1985 and evaluation of the logbook data collection system. NOAA. National Marine Fisheries Service. Southeast Fisheries Center. Fishery Analysis Division. Contribution No. ML1-85-27. n.p.

Phares, P.L. 1989. Analysis of trends in catch, effort, and catch per unit effort in the Florida stone crab (Genus *Menippe*) fishery, p. 18 to 25. *In* T. M. Bert [ed.] Proceedings of a symposium on stone crab (Genus *Menippe*) biology and fisheries. Florida Department of Natural Resources. Florida Marine Research Publication Number 50.

Phillips, B.F. 1986. Prediction of commercial catches of the western rock lobster *Panulirus cygnus*. Canadian Journal of Fisheries and Aquatic Sciences 43:2126-2130.

Pollock, D.E. 1986. Review of the fishery for and biology of the Cape rock lobster *Jasus lalandii* with notes on larval recruitment. Canadian Journal of Fisheries and Aquatic Sciences 43:2107-2117.

Powers, J.E. 1982. Report of the Southeast Fisheries Center stock assessment workshop August 3-6, 1982. NOAA. National Marine Fisheries Service. Southeast Fisheries Center. Miami Laboratory. 229 p.

Restrepo, V.R. 1989. Growth estimates for male stone crabs along the Southwest Coast of Florida: a synthesis of available data and methods. Transactions of the American Fisheries Society 118: 20-29.

Rosenberg, A.A., G.P. Kirkwood, J.A. Crombie, and J.R. Beddington. 1990. The assessment of stocks of annual squid species. Fisheries Research 8:335-350.

Savage, T., J.R. Sullivan, and C.E. Kalman. 1975. An analysis of stone crab (*Menippe mercenaria*) landings on Florida's west coast, with a brief synopsis of the fishery. Florida Department of Natural Resources. Florida Marine Research Publication Number 13. 37 p.

Simonson, J.L. and R. J. Hochberg. 1989. An analysis of stone crab (Genus *Menippe*) claws and their use in interpreting landings on Florida's west coast, p. 26 to 35. *In* T. M. Bert [ed.] Proceedings of a symposium on stone crab (Genus *Menippe*) biology and fisheries. Florida Department of Natural Resources. Florida Marine Research Publication Number 50.

Sullivan, J.R. 1979. The stone crab, *Menippe mercenaria*, in the Southwest Florida fishery. Florida Department of Natural Resources. Florida Marine Research Publication Number 36. 37 p.

LIST OF TABLES

Table 1. Historical landings for the Gulf coast stone crab fishery. Landings prior to 1986 are from the National Marine Fisheries Service's General Canvass and afterwards from Florida's Marine Fisheries Informatior System. The number of traps are from NMFS General Canvass except for the estimated numbers in the last four seasons.

Fishing Season	Landings Claw Weight (1000 Lbs)	Number (1,000 Traps)	Pounds per Trap
62 - 63	300	14.6	20.5
63 - 64	350	15.0	23.3
64 - 65	310	21.0	14.8
65 - 66	450	19.7	22.8
66 - 67	390	43.2	9.0
67 - 68	560	39.3	14.2
68 - 69	610	55.9	10.9
69 - 70	700	36.0	19.4
70 - 71	870	60.8	14.3
71 - 72	960	73.7	13.0
72 - 73	920	113.3	8.1
73 - 74	1,260	143.0	8.8
74 - 75	990	159.1	6.2
75 - 76	1,140	193.2	5.9
76 - 77	1,430	224.4	6.4
77 - 78	1,870	267.0	7.0
78 - 79	1,900	312.2	6.1
79 - 80	2,000	294.7	6.8
80 - 81	1,700	275.7	6.2
81 - 82	2,670	277.6	9.6
82 - 83	2,700	353.5	7.6
83 - 84	1,950	432.8	4.5
84 - 85	1,750	421.4	4.2
85 - 86	2,170	567.1	3.8
86 - 87	2,190	577.6	3.8
87 - 88	2,210	624.0	3.5
88 - 89	2,590	567.1	4.6
89 - 90	2,670	565.6	4.7
90 - 91	3,130	611.3	5.1
91 - 92	3,080	617.3	5.0
92 - 93	3,111	615.8	5.1
93 - 94	3,366	705.2	4.8
94 - 95	3,267	846.9	3.9
95 - 96	2,828	798.8	3.5

Table 2. Regional landings, effort, and participation. Data from Florida's Marine Fisheries Information System

a. Landings of stone crab claw weights in pounds by region.

Fishing Season	Panhandle Escambia - Gulf	BB Franklin - Levy	CR Citrus - Pasco	TB Pinellas - Sarasota	SW Charlotte - Monroe	EC Atlantic Coast	Inland	Statewide
85-86	3,888	130,422	364,786	36,934	1,634,959	3,951		2,174,940
86-87	114	139,014	459,740	41,045	1,547,456	8,683		2,196,052
87-88	362	231,213	378,210	58,036	1,541,969	34,506		2,244,296
88-89	1,352	147,639	314,989	102,502	2,028,090	20,283		2,614,855
89-90	248	98,839	378,183	99,887	2,094,651	49,194		2,721,002
90-91	185	189,256	603,323	148,879	2,185,293	30,525		3,157,461
91-92	87	235,583	606,359	146,046	2,176,148	44,366		3,208,589
92-93	199	144,879	535,272	232,886	2,198,214	32,250		3,143,700
93-94	174	210,745	492,888	353,470	2,308,673	57,330		3,423,280
94-95	212	258,309	364,814	221,684	2,421,534	60,500		3,327,053
95-96	1,669	180,829	375,737	161,910	2,107,887	41,502		2,869,534
Mean	772	178,793	443,118	145,753	2,022,261	34,826		2,825,524
CV	151%	28%	23%	66%	15%	53%		17%

b. Numbers of commercial trips by region.

Fishing Season	Panhandle Escambia - Gulf	BB Franklin - Levy	CR Citrus - Pasco	TB Pinellas - Sarasota	SW Charlotte - Monroe	EC Atlantic Coast	Inland	Statewide
85-86	23	1,896	2,656	574	13,975	80		19,204
86-87	4	2,119	3,013	563	15,695	222		21,616
87-88	9	3,171	3,324	920	18,374	399		26,197
88-89	26	2,308	2,588	1,167	18,753	463		25,305
89-90	9	2,200	2,902	1,303	21,296	758		28,468
90-91	11	2,425	3,280	1,917	19,724	1,270		28,627
91-92	6	2,471	3,947	1,729	20,841	1,081		30,075
92-93	3	2,049	3,716	2,385	21,357	992		30,502
93-94	24	3,264	2,994	3,249	20,608	1,626		31,765
94-95	23	2,646	2,498	2,880	22,712	1,836		32,595
95-96	9	2,209	3,150	2,339	24,794	1,571		34,072
Mean	13	2,433	3,097	1,730	19,830	936		28,039
CV	66%	18%	15%	53%	15%	64%		16%

Table 2. Continued. Regional landings, effort, and participation. Data from Florida's Marine Fisheries Information System

c. Numbers of participants as measured by Saltwater Products License numbers

Fishing Season	Panhandle Escambia - Gulf	BB Franklin - Levy	CR Citrus - Pasco	TB Pinellas - Sarasota	SW Charlotte - Monroe	EC Atlantic Coast	Inland	Statewide
85-86	no data	no data	no data	no data	no data	no data		no data
86-87	3	110	106	64	830	26		1,139
87-88	4	177	137	93	1,012	79		1,502
88-89	12	170	138	122	1,145	86		1,673
89-90	6	154	158	160	1,276	109		1,863
90-91	9	137	166	200	1,197	130		1,839
91-92	5	151	168	150	1,017	126		1,617
92-93	3	162	141	182	915	119		1,522
93-94	4	192	158	282	1,048	196		1,880
94-95	4	177	166	258	1,036	211		1,852
95-96	4	171	144	182	1,049	139		1,689
Mean	5	146	135	154	957	111		1,507
CV	65%	37%	36%	53%	36%	57%		36%

d. Numbers of Saltwater Products License stone crab endorsements

Fishing Season	Panhandle Escambia - Gulf	BB Franklin - Levy	CR Citrus - Pasco	TB Pinellas - Sarasota	SW Charlotte - Monroe	EC Atlantic Coast	Inland	Statewide
89-90	48	460	295	646	1,949	1,049	118	4,565
90-91	66	555	345	704	2,142	1,305	149	5,266
91-92	61	517	338	689	2,085	1,377	138	5,205
92-93	62	510	357	718	2,052	1,393	135	5,227
93-94	73	549	370	716	2,006	1,486	145	5,345
94-95	85	624	394	800	2,092	1,661	152	5,808
95-96	93	661	435	962	2,208	1,769	168	6,296
96-97	74	528	347	734	1,875	1,348	145	5,051
Mean	70	554	362	748	2,076	1,434	144	5,387
CV	22%	12%	12%	14%	4%	17%	11%	10%

APPENDIX B

Proposed Florida Rule

for a

Trap Certificate Program

STONE CRABS

68B-13.0015 Definitions.

(1) The term "stone crab" for purposes of this chapter and Section 370.13, Florida Statutes, means any crustacean of the species *Menippe mercenaria* or *Menippe adina* or their ~~the~~ interbreeding hybrids ~~hybrid *Menippe mercenaria x adina*~~, or any part of such crustacean.

(2) As used in this rule chapter:

(a) "Harvest" means the catching or taking of a stone crab by any means whatsoever, followed by a reduction of such stone crab to possession. Stone crabs caught but immediately returned to the water free, alive, and unharmed, temporarily possessed to determine compliance with size requirements or remove claws, or stored aboard a vessel temporarily until claws are removed as authorized by Rule 68B-13.007(3), F.A.C. ~~68B-13.002(1)(c)~~, are not harvested.

(b) "Harvest for commercial purposes" means the taking or harvesting of stone crabs for purposes of sale or with intent to sell or in excess of the recreational bag limit.

(c) The term "immediate family" for purposes of this chapter and Section 370.13, Florida Statutes, refers to an endorsement or certificate holder's mother, father, sister, brother, spouse, son, daughter, step-father, step-mother, step-son, step-daughter, half-sister, or half brother.

(d) "Incidental take endorsement" means an identification number stamped on a saltwater products license, showing that the

holder of the license is authorized to harvest a limited amount of stone crab claws for commercial purposes as specified in this rule chapter. Such endorsement shall only be valid when used in conjunction with a crawfish or blue crab endorsement.

(e) "Stone crab endorsement" means an identification number stamped on a saltwater products license showing that the holder of the license is authorized to harvest stone crabs for commercial purposes.

(f) "Untreated pine" means raw pine wood that has not been treated with any preservative or pine wood that has been pressure treated with no more than 0.40 pounds of chromated copper arsenate (CCA) compounds per cubic foot of wood.

PROPOSED EFFECTIVE DATE: July 1, 2000.

Specific Authority Art. IV, Sec. 9, Fla. Const. Law Implemented Art IV, Sec. 9, Fla. Const. History - New 8-25-87, Amended 10-4-95, _____, Formerly 46-13.0015.

68B-13.002 Stone Crabs, Regulation.--

PROPOSED EFFECTIVE DATE: July 1, 2000.

Specific Authority Art. IV, Sec. 9, Fla. Const. Law Implemented Art. IV, Sec. 9, Fla. Const. History - New 4-10-85, Formerly 46-13.02 and 46-13.002, Amended 4-18-90, 6-17-93, 10-4-95, 9-30-96, 1-1-98, 6-1-99, Repealed _____.

68B-13.005 Designation as Restricted Species; Season.

(1) Stone Crabs are hereby designated as a restricted species

pursuant to s. 370.01(21), Florida Statutes.

(2) The season for the harvest, possession and sale of stone crab claws shall be from October 15 through May 15, each year. No person, firm or corporation, shall harvest, or have in his or her possession, regardless of where taken, or sell or offer for sale, any stone crab of any size, or any parts thereof, from May 16 through October 14, each year, except for stone crab claws, placed in inventory by a wholesale or retail dealer as defined in s. 370.07, Florida Statutes, prior to May 16 of each year.

PROPOSED EFFECTIVE DATE: July 1, 2000.

Specific Authority Art. IV, Sec. 9, Fla. Const. Law Implemented Art IV, Sec. 9, Fla. Const. History - New - - .

68B-13.006 Licenses, Endorsements, and Permits for Experimental, Scientific and Exhibitional Purposes.

(1)(a) Except as provided in Rule 68B-13.010(5), F.A.C., in addition to a saltwater products license, a stone crab endorsement is required in order to harvest stone crabs for commercial purposes. This endorsement shall only be issued to a person, firm or corporation that possess a valid restricted species endorsement on their saltwater products license issued pursuant to s. 370.06, Florida Statutes.

(b) Until July 1, 2001, no stone crab endorsements shall be renewed or replaced except those endorsements that were active during the 1999-2000 fiscal year. Renewal of such endorsements shall be made by the endorsement holder or an immediate family

member on the endorsement holder's behalf, prior to September 30, 2000. Failure to renew by September 30, 2000, shall lead to the deactivation of the holder's endorsement.

(2) In accordance with Section 370.10(2), Florida Statutes, the Fish and Wildlife Conservation Commission may issue permits to collect and possess whole stone crabs, dead or alive, solely for experimental, scientific, educational or exhibitional purposes.

PROPOSED EFFECTIVE DATE: July 1, 2000.

Specific Authority Art. IV, Sec. 9, Fla. Const. Law Implemented Art IV, Sec. 9, Fla. Const. History - New - _____.

68B-13.007 Restrictions on Size and on Transport and Possession of Stone Crabs and Stone Crab Claws.

(1) Except as provided in subsection (3) of this rule, and in subsection (2) of Rule 68B-13.006, F.A.C., it is unlawful to harvest, possess, sell, or offer for sale any stone crab claw at any time which has a forearm (*propodus*) of less than 2-3/4 inches in length, measured by a straight line from the elbow to the tip of the lower immovable finger. The forearm shall be deemed to be the largest section of the claw assembly that has both a movable and immovable finger and is located farthest from the body of the crab.

(2) Except as provided in subsection (3) of this rule, and in subsection (2) of Rule 68B-13.006, F.A.C., it is unlawful for any person, firm, or corporation to possess or transport by boat, land vehicle, airplane, or other conveyance any intact stone crab or stone crab body whether dead or alive. Only legal sized claws of

stone crabs may be possessed or transported.

(3) Live stone crabs may be held on board a vessel while it is at sea until such time as the claws are removed, provided the crabs are held in shaded containers and wet with sea water every 30 minutes, or more often if necessary, to keep the crabs in a damp condition. Containers shall not be stacked in a manner which compresses the crabs.

(4) It is unlawful to remove claws from egg-bearing female stone crabs or to have any egg-bearing female stone crab on board a vessel.

PROPOSED EFFECTIVE DATE: July 1, 2000.

Specific Authority Art. IV, Sec. 9, Fla. Const. Law Implemented Art IV, Sec. 9, Fla. Const. History - New - .

68B-13.008 Gear, Trap Construction, Commercial Trap Marking Requirements, Trap Working Regulations, Trap Transfer.

(1) Gear. It is unlawful to use any device in the taking of stone crabs that can puncture, crush, or injure the crab body, such as spears, grains, grabs, hooks, or similar devices.

(2) Trap Construction. No person, firm, or corporation shall transport on the water, fish with, or cause to be fished with, set, or placed, in the harvest of stone crabs, any trap which does not meet the following requirements:

(a) Each trap shall be constructed of either wood, plastic, or wire.

(b) Such traps shall have a maximum dimension of 24 inches,

by 24 inches, by 24 inches or a volume of 8 cubic feet.

(c)1. The throat or entrance to all wood and plastic traps shall be located on the top horizontal section of the trap. If the throat is longer in one dimension, the throat size in the longer dimension shall not exceed 5½ inches and in the shorter dimension shall not exceed 3½ inches. If the throat is round, the throat size shall not exceed 5 inches in diameter.

2. Each throat (entrance) in any wire trap used to harvest stone crabs shall be horizontally oriented. The width of the opening where the throat meets the vertical wall of the trap and the opening of the throat at its farthest point from the vertical wall, inside the trap, shall be greater than the height of any such opening. No such throat shall extend farther than 6 inches into the inside of any trap, measured from where the throat opening meets the vertical wall of the trap to the throat opening at its farthest point from the vertical wall, inside the trap.

3. Each wire trap used to harvest stone crabs shall have at least three unobstructed escape rings installed on a vertical outer surface, each with a minimum diameter of 2 3/8 inches. One such escape ring shall be located on a vertical outer surface adjacent to each crab retaining chamber.

4. Each plastic or wire trap used to harvest stone crabs shall have a degradable panel.

a. A plastic trap shall be considered to have a degradable panel if it contains at least one sidewall with a rectangular opening no smaller in either dimension than that of the throat.

This opening must be obstructed with a cypress or untreated pine slat or slats no thicker than 3/4 inch. When the slat degrades, the opening in the sidewall of the trap will no longer be obstructed.

b. A wire trap shall be considered to have a degradable panel if one of the following methods is used in construction of the trap:

(I) The trap lid tie-down strap is secured to the trap at one end by a single loop of untreated jute twine. The trap lid must be secured so that when the jute degrades, the lid will no longer be securely closed.

(II) The trap lid tie-down strap is secured to the trap at one end with a corrodible loop composed of non-coated steel wire measuring 24 gauge or thinner. The trap lid must be secured so that when the loop degrades, the lid will no longer be securely closed.

(III) The trap lid tie-down strap is secured to the trap at one end by an untreated pine dowel no larger than 2-inches in length by 3/8-inch in diameter. The trap lid must be secured so that when the dowel degrades, the lid will no longer be securely closed.

(IV) The trap contains at least one sidewall with a vertical rectangular opening no smaller in either dimension than 6 inches in height by 3 inches in width. This opening must be laced, sewn, or otherwise obstructed by a single length of untreated jute twine knotted only at each end and not tied or looped more than once

around a single mesh bar. When the jute degrades, the opening in the sidewall of the trap will no longer be obstructed.

(V) The trap contains at least one sidewall with a vertical rectangular opening no smaller in either dimension than 6 inches in height by 3 inches in width. This opening must be obstructed with an untreated pine slat or slats no thicker than 3/8 inch. When the slat degrades, the opening in the sidewall of the trap will no longer be obstructed.

(VI) The trap contains at least one sidewall with a vertical rectangular opening no smaller in either dimension than 6 inches in height by 3 inches in width. The opening may either be laced, sewn, or otherwise obstructed by non-coated steel wire measuring 24 gauge or thinner or be obstructed with a panel of ferrous single-dipped galvanized wire mesh made of 24 gauge or thinner wire. When the wire or wire mesh degrades, the opening in the sidewall of the trap will no longer be obstructed.

(VII) The trap contains at least one sidewall with a vertical rectangular opening no smaller in either dimension than 6 inches in height by 3 inches in width. The opening may be obstructed with a rectangular panel made of any material, fastened to the trap at each of the four corners of the rectangle by rings made of non-coated 24 gauge or thinner wire or single strands of untreated jute twine. When the corner fasteners degrade, the panel will fall away and the opening in the sidewall of the trap will no longer be obstructed.

(3) Commercial Trap Marking Requirements.

(a) Each trap used must have the trap owner's stone crab endorsement number permanently attached. In addition, the stone crab endorsement number shall be affixed in legible figures at least two inches high, on each buoy used. The saltwater products license must be on the boat and the license and stone crab claws shall be subject to inspection at all times. Except as provided in paragraph (4)(c) of this rule, no more than two stone crab endorsement numbers shall be used on a single vessel.

(b) A buoy or time release buoy shall be attached to each trap or at each end of a weighted trap trotline. The buoy shall be constructed of styrofoam, cork, molded polyvinyl chloride, or molded polystyrene, be of sufficient strength and buoyancy to float, and be of such color, hue, and brilliancy as to be easily distinguished, seen, and located. Buoys shall be either spherical in shape with a diameter no smaller than 6 inches or some other shape so long as it is no shorter than 10 inches in the longest dimension and the width at some point exceeds 5 inches. No more than 5 feet of any buoy line attached to a buoy used to mark a stone crab trap or attached to a trotline shall float on the surface of the water.

(c) The buoy color and endorsement number shall also be permanently and conspicuously displayed on any vessel used by a person harvesting for commercial purposes for setting and collecting said traps and buoys, so as to be readily identifiable from the air and water, in the following manner:

1. From the Air - The buoy design approved by the Commission

shall be displayed and be permanently affixed to the uppermost structural portion of the vessel and displayed horizontally with the painted design up. The display shall exhibit the harvester's approved buoy design, unobstructed, on a circle 20 inches in diameter, outlined in a contrasting color, together with the endorsement number permanently affixed beneath the circle in numerals no smaller than 10 inches in height.

2. From the Water - The buoy design approved by the Commission shall be displayed and be permanently affixed vertically to both the starboard and port sides of the vessel near amidship. The display shall exhibit the harvester's approved buoy design, unobstructed, on a circle 8 inches in diameter, outlined in a contrasting color, together with the endorsement number permanently affixed beneath the circle in numerals no smaller than 4 inches in height.

(4) Trap-working regulations.

(a) It is unlawful for any person to place traps in the navigation channels of the intracoastal waterways, or in navigation channels maintained and marked by the Corps of Engineers, Coast Guard, State of Florida, or any county or municipal government.

(b) Traps may be worked during daylight hours only, and the pulling of traps from one hour after official sunset until one hour before official sunrise is prohibited.

(c) During any time of the year when it is legal to transport stone crab traps, a harvester may obtain permission from the Division of Law Enforcement to allow another person to transport,

deploy, pull, or retrieve his or her traps. Permission may be granted upon receipt of a written statement signed by the commercial harvester seeking to have his or her traps pulled. Such written statement shall contain the following:

1. The reason the harvester needs to have his or her traps pulled.

2. The numbers of the saltwater products license and stone crab endorsement of both, the harvester seeking to have the traps pulled and the person who will be pulling the traps.

3. The buoy colors of the harvester seeking such permission.

4. The vessel number and vessel name of the person who will be pulling the traps, and

5. The general locations of the pulling activity of the vessel engaged in pulling the traps.

Permission to pull traps in this manner shall be obtained daily; however, extension of permission may be obtained by telephone for up to a maximum of 5 days without renewal or extension. Permission to have traps pulled by another person for a longer period of time, must be based on extraordinary circumstances such as severe personal or family illness or accident, and may be obtained through petition to the Division of Marine Fisheries, and may be granted upon such conditions as the division deems appropriate.

(d) Except as provided in paragraph (e) of this subsection, it shall be unlawful to transport on the water, fish with, set, or place, or cause to be fished with, set, or placed, any trap or part

thereof during the closed stone crab season, except that traps may be placed in the water and baited 10 days prior to the opening of the stone crab season and shall be removed within five days after the close of the stone crab season. However, the Division of Law Enforcement of the Fish and Wildlife Conservation Commission may grant an extension for the retrieval of traps for up to a maximum of ten days after the expiration of the five-day grace period, or a total of up to 15 days after the close of the stone crab season, upon the following conditions:

1. The trap owner or the owner's lawfully designated agent shall request, in writing, permission for an extension of the grace period for retrieval of traps. The request shall specify the owner's name and trap number, the name of the boat to be used for trap retrieval, the boat owner's name, the period of additional time needed for trap retrieval, and the reason(s) for the request.

2. On the day that trap retrieval commences, and on each subsequent day that trap retrieval continues, the Division of Law Enforcement must be advised in person or by telephone of the trap locations and landing site.

3. Reasons for granting an extension shall be limited to:

a. Hazardous weather at the end of the season or during the trap retrieval period.

b. Medical emergencies which make it impossible for the owner to operate a boat.

c. Equipment breakdown.

4. Nothing herein shall authorize the landing or sale of any

stone crab or stone crab claw during the closed season.

(e) Any traps, floats or ropes in the water more than ten days prior to the opening of the stone crab season or remaining in the water or otherwise abandoned during the closed season (following the grace period and any extensions thereof for retrieval of traps) are declared to be public nuisances and shall be disposed of in a manner approved by the Division of Law Enforcement. This provision shall be in addition to any penalty imposed by law.

(5) Trap Transfer. Ownership of stone crab traps may be transferred to other persons, firms or corporations, so long as the following conditions are met:

(a) The person or entity acquiring ownership of such stone crab traps must notify the Division of Law Enforcement within five days of acquiring ownership and prior to placing or setting the traps in the water, as to the number of traps purchased, the vendor and the endorsement number currently displayed on the traps, and in addition, shall request issuance of a stone crab endorsement if such person or entity does not currently have one.

(b) Buoys must be renumbered and recolored at the first pulling of traps.

(c) The new endorsement number must be permanently attached to the traps prior to setting such traps in the following open season.

(d) The new owner must retain a valid bill of sale.

PROPOSED EFFECTIVE DATE: July 1, 2000.

Specific Authority Art. IV, Sec. 9, Fla. Const. Law Implemented Art IV, Sec. 9, Fla. Const. History - New - .

68B- 13.009 Recreational Stone Crab Harvest - Bag Limit, Trap Limit, Trap Marking Requirements, Trap Pulling.

(1) Bag limit. Except for persons harvesting pursuant to a saltwater products license with a stone crab endorsement and a restricted species endorsement, each harvester of stone crab claws is subject to a daily bag limit of 1 gallon of stone crab claws; provided, however, that no more than 2 gallons shall be possessed aboard any vessel at any time.

(2) Trap limit. No person harvesting stone crabs pursuant to this paragraph shall fish with, set, or place in the waters of the state more than 5 traps. Any such traps shall meet all requirements for stone crab traps specified in Rule 68B-13.008, FAC., in subsection 2, and in paragraph 3(b), 4(a), 4(b), 4(d), and 4(e).

(3) Trap marking requirements. The buoy attached to each trap used to harvest stone crabs, other than those used to harvest for commercial purposes, shall have a legible "R", at least two inches high, permanently affixed to it. The trap shall have the harvester's name and address permanently affixed to it in legible letters. The buoy requirements of this subparagraph shall not apply to traps fished from a dock.

(4) Trap pulling. Except for persons harvesting pursuant to a saltwater products license with a stone crab endorsement and a

restricted species endorsement, no person shall use any means other than manual means to pull stone crab traps in or from the waters of the State of Florida.

PROPOSED EFFECTIVE DATE: July 1, 2000.

Specific Authority Art. IV, Sec. 9, Fla. Const. Law Implemented Art IV, Sec. 9, Fla. Const. History - New - .

68B-13.010 Stone Crab Trap Limitation Program.

(1) Purpose and Intent. Rapid growth of Florida's stone crab trap industry has led to an excessive number of traps in the water, declining yields per trap, and an increase in conflicts between stone crabbers and shrimp trawlers. The expanding number of traps, buoys and ropes impede navigation and damage hard bottom and sea grass beds. In an effort to solve these problems, the Fish and Wildlife Conservation Commission is establishing a trap limitation program for the stone crab fishery in which the principal goal is to stabilize the fishery while generating an optimum sustainable yield utilizing the fewest number of traps.

(2) Certificates and trap tags. Each holder of a stone crab endorsement must have a certificate on record for each stone crab trap used or possessed in or on the water. In addition, attached to each trap shall be a tag, issued annually by the Commission, which corresponds to a valid certificate.

(a) Certificates.

1. A person is eligible for the initial allocation of stone crab trap certificates if he or she possessed a saltwater products

license (SPL) with a restricted species endorsement and a stone crab endorsement during the 1999/2000 fishing season, and can establish pursuant to Commission trip ticket records generated under the provisions of s. 370.07(6), Florida Statutes, that he or she had at least 300 pounds of stone crab claw landings associated with any one SPL, during any one fishing season from 1993/1994 through 1998/1999. A SPL with less than 300 pounds is not eligible to receive stone crab trap certificates.

2. Once eligible, a person will qualify for the initial allocation of certificates for each SPL based on whichever is less, the number of traps listed on the SPL application, or the pounds of claws landed divided by 2, as reported through the trip ticket program during any one of the applicable fishing seasons. The number of certificates allocated will be based on the highest cumulative total of qualified certificates for each SPL during one fishing season, 1995/1996 through 1997/1998.

3. Certificates shall only be issued to natural persons. For the purposes of this section, the term "natural person", or "person", refers to a human being and does not include a firm, organization, partnership, association, corporation, or other business or legal entity or group or combination. All endorsement holders other than natural persons shall designate the person or persons to whom their certificates will be allotted and the number thereof to each, if more than one person is designated.

4. Certificates shall only be issued to persons who possess a current year saltwater products license with a stone crab

endorsement, neither of which are under suspension or revocation

5. In no event shall any person, firm, corporation, or other business entity, possess or control, directly or indirectly, more than 1% of the total available certificates issued in any fishing season.

6. The fees for unpaid certificates will accumulate each year a certificate holder fails to pay his or her annual certificate fee. In the event a holder's annual certificate fee is not paid for a period of 3 years, the certificate shall be considered abandoned and be removed from the pool of available certificates.

(b) Trap tags. Beginning October 1, 2001, each trap used for the directed harvest of stone crabs in state waters or adjacent federal waters shall, in addition to having the stone crab endorsement number permanently attached as required by rule 68B-13.008(3)(a), F.A.C., also have firmly affixed thereto a current trap tag issued annually by the Commission. Each such tag shall be made of durable plastic or material similarly durable and shall have stamped thereon the owner's endorsement number. The number of trap tags issued to each endorsement holder shall not exceed the number of trap certificates held by the endorsement holder at the time of issuance. To facilitate enforcement and record keeping, such tags shall be issued each year in a different color from that of each of the previous 3 years. Replacement tags for lost or damaged tags may be obtained from the Commission. Traps with tags which are not firmly affixed by nails, staples, or otherwise securely fastened as may be specified by the Commission, shall be

considered untagged for enforcement purposes.

(3) Certificate transferability and passive reduction. After initial issuance, trap certificates are transferable on a market basis and may be transferred for a fair market value agreed upon between the transferor and transferee.

(a) Transfer of any certificates shall, within 72 hours thereof, be recorded on a notarized form provided for that purpose by the Commission and hand delivered or sent by certified mail, return receipt requested, to the Commission for record keeping purposes. No transfer of any certificates will be effective, resulting in the issuance of transfer tags, until:

1. The Commission receives the notarized transfer form from the seller and the transfer fee is paid, and

2. The Commission receives a notarized copy of the bill of sale from the purchaser, and

3. All outstanding license fees, endorsement fees, trap tag fees, surcharges and any other charges owed to the Commission by either party in the transaction are paid, and

4. The saltwater products license, stone crab endorsement, and all certificates or other required licenses, endorsements or authorizations held by both parties in the transaction are not suspended, revoked, or inactive.

(b) Upon the sale or transfer of certificates outside the immediate family of the certificate holder, the number of certificates received by the purchaser shall be reduced by the following percentages depending on the overall number of

certificates available to harvesters throughout the state at the time of sale:

1. If more than 1 ⅔ million certificates are available, there shall be a 25 percent reduction in the number of certificates received by the purchaser.

2. If more than 1 1/4 million, but fewer than 1⅔ million certificates are available, there shall be a 22⅔ percent reduction in the number of certificates received by the purchaser.

3. If more than 1 million, but fewer than 1 1/4 million certificates are available, there shall be an 18⅔ percent reduction in the number of certificates received by the purchaser.

4. If more than 3/4 of a million, but fewer than 1 million certificates are available, there shall be a 15 percent reduction in the number of certificates received by the purchaser.

5. If more than 600,000, but fewer than 3/4 of a million certificates are available, there shall be a 10 percent reduction in the number of certificates received by the purchaser.

6. When 600,000 certificates or fewer are available, there shall be no percentage reduction in the number of certificates received by the purchaser.

(c) The Commission will maintain records of all certificates and their transfers and annually provide each endorsement holder with a statement of their certificate account.

(d) In the event of death or disability, endorsements and certificates may be transferred to a member of the immediate family without the family member being subject to any transfer fees or a

reduction in the number of certificates transferred. However, certificates will only be transferred if all outstanding license fees, endorsement fees, trap tag fees, surcharges and any other charges owed by either party to the Commission are paid, and both parties' saltwater products license, stone crab endorsement, and all certificates or other required licenses, endorsements or authorizations are not suspended, revoked or inactive.

(e) Each year as the numbers of certificates are reduced, the Commission may make up to 5% of the total amount of reduced certificates available to persons properly licensed and qualified to harvest stone crabs pursuant to the requirements of this rule chapter.

(4) Leasing prohibited. The leasing of stone crab certificates or the corresponding trap tags is prohibited.

(5) Incidental take endorsement. Persons possessing valid crawfish or blue crab endorsements may land 5 gallons of stone crab claws per day if the stone crab claws are harvested from legal crawfish or blue crab traps and the crawfish or blue crab endorsement holder also possesses a stone crab incidental take endorsement.

(6) No vested rights. The stone crab trap limitation program does not create any vested rights for endorsement or certificate holders whatsoever and may be altered or terminated by the Commission as necessary to protect the stone crab resource, the participants in the fishery, or the public interest.

(7) Trap Certificate Advisory and Appeals Board. There is

hereby established the Trap Certificate Advisory and Appeals Board. Such board shall consider and advise the Commission on disputes and other problems arising from the implementation of the stone crab trap limitation program. The board may also provide information to the Commission on the operation of the trap limitation program.

(a)1. Board Composition. The board shall consist of a member of the Commission staff appointed by the executive director, and eight members appointed by the executive director according to the following criteria, except as otherwise provided in subparagraph 2.:

a. All appointed members other than the commission staff person, shall be stone crab trap certificate holders, none of whom are appealing their trap certificate allotment. Two shall hold fewer than 200 certificates, two shall hold at least 200 but no more than 750 certificates, two shall hold more than 750 but not more than 2,000 certificates, and two shall hold more than 2,000 certificates.

b. At least one member shall come from each of the following regions:

(I) Wakulla, Taylor, Dixie, or Levy Counties;

(II) Citrus, Hernando, Pasco, Pinellas, or Hillsborough Counties;

(III) Manatee, Sarasota, Charlotte, or Lee Counties; and

c. The remaining five members of the board shall come from Collier, Monroe and Dade Counties.

d. At least one appointed member shall be a person of

Hispanic origin capable of speaking conversational English and Spanish.

2. If there are not enough individuals that meet the above-referenced criteria, the executive director of the Commission may fill any position on the initial board with an individual who does not fulfill the requirements of subparagraph 1.. However, as soon as individuals are available that meet the requirements of subparagraph 1, the executive director must replace any individual who does not meet the above-referenced criteria, and fill the position on the board with the qualified appointees.

(b) Meetings. The staff member of the Commission appointed by the executive director shall sit on the board as a voting member, and shall call the organizational meeting of the board. The board shall annually elect a chair and a vice chair. There shall be no limitation on successive terms that may be served by a chair or vice chair. The board shall meet at the call of its chair, at the request of a majority of its membership, at the request of the Commission, or at such times as may be prescribed by its procedural rules. Official action of the board shall require a majority vote of the total membership of the board present at the meeting.

(c) Expenses. Members of the board shall receive no compensation, however, they shall be reimbursed for per diem and travel expenses as provided in s. 112.061, Florida Statutes.

(d) Final Action. Upon reaching a decision on any dispute or problem brought before it, including any decision involving the initial allocation of certificates under paragraph (f), the board

shall submit such decision as a recommendation to the executive director of the Commission. The executive director may accept, alter, or disapprove any decision of the board, with notice given in writing to the board and to each party in the dispute explaining the reasons for the alteration or the disapproval. The action of the executive director of the Commission constitutes final agency action, and is appealable pursuant to the requirements of Chapter 120, Florida Statutes.

(e) Board Authority. In addition to those certificates allotted pursuant to the initial eligibility provisions established in subparagraph (2)(a), up to 100,000 trap certificates may be allotted by the board to make recommendations on allocations to settle disputes or other problems arising from implementation of the trap limitation program, and for special circumstances.

1. Disputes arising from the implementation of the trap limitation program shall cover those problems arising from implementation of the program during the 2000-2001 and 2001-2002 fishing seasons.

2. Special circumstances shall include but are not limited to the following:

a. Fishermen who can demonstrate that they were affected by Chapter 73 -432, Laws of Florida (1973), which limited fishermen in Citrus, Dixie, Levy, and Taylor Counties to 600 stone crab traps per boat.

b. Persons who had landings, but did not record any traps on their saltwater products license application during the qualifying

years and therefore did not receive an initial trap certificate allocation.

c. Persons who can demonstrate through copies of trip tickets, legitimate sales to a licensed wholesale dealer which were not reported by the dealer or included in the agency landings database.

d. Persons who worked together on the same boat but operated as separate business entities, each with their ~~own~~ SPL and stone crab endorsement, but who reported their landings or who had their landings reported on a single SPL. Under such circumstances the boards may divide the number of certificates allotted between the two people; however, each person must agree to the division prescribed by the board.

e. Persons displaced by Article X, Section 16, of the Florida Constitution who do not otherwise qualify for the stone crab limited entry program and who can demonstrate through landings that their net fishing occurred from Wakulla through Monroe Counties. Such persons shall qualify for 100 trap certificates if they can demonstrate that they:

(I) Sold nets to the state according to the provisions of the net buy back program, s. 370.0805(5), Florida Statutes,

(II) Invested money in the stone crab fishery by the 1999/2000 fishing season,

(III) Produced at least 300 pounds of claws since July 1, 1995, and

(IV) Have no record of net violations since July 1, 1995.

3. Any trap certificates not allotted by July 1, 2002, shall become permanently unavailable.

4. All appeals for additional certificates or other disputes must be filed with the board, on a form established by the commission, before October 1, 2001.

(f) In determining eligibility and initial allotment of traps for the trap reduction program, when a fisherman disagrees with commission records regarding the number of traps fished by the fisherman during a particular qualifying year, the burden of proof shall be on the fisherman to establish the number of traps fished, through trip tickets or copies of his or her SPL applications.

(g) Dissolution. On July 1, 2002, the board shall be dissolved.

PROPOSED EFFECTIVE DATE: July 1, 2000.

Specific Authority Art. IV, Sec. 9, Fla. Const. Law Implemented Art IV, Sec. 9, Fla. Const. History - New - _____.

68B-13.011 PROHIBITIONS.

(1) It is unlawful for a person to possess or use any other gear or device designed to attract and enclose or otherwise aid in the taking of stone crabs with a trap that does not meet the specifications of this rule chapter.

(2) It is unlawful for a person to possess or use stone crab trap tags without having the necessary number of certificates on record.

(3) It is unlawful for any person to remove the contents of

another harvester's trap without the trap owner providing his or her consent pursuant to the requirements of this rule chapter. Such unauthorized removal constitutes theft.

(4) It is unlawful for any person to willfully molest any stone crab trap, line, or buoy that is the property of any license holder, without the permission of that license holder.

(5) It is unlawful for any person to use a stone crab trap tag not issued to them by the commission, or to use an expired tag.

(6) It is unlawful for any person to make, alter, forge, counterfeit, or reproduce a stone crab trap tag.

(7) It is unlawful for any person to have in his or her possession a forged, counterfeit, or imitation stone crab trap tag.

(8) It is unlawful for any person to barter, trade, sell, supply, agree to supply, aid in supplying, or give away a stone crab trap tag or certificate unless such action is duly authorized by the commission as provided by commission rules.

(9) It is unlawful for any person to harvest stone crab claws out of season.

(10) It is unlawful to fraudulently report the actual value of transferred stone crab certificates.

(11) It is unlawful for a person to possess or use a stone crab trap in or on state waters or adjacent federal waters without having firmly affixed thereto the trap tag required by this rule.

PROPOSED EFFECTIVE DATE: July 1, 2000.

Specific Authority Art. IV, Sec. 9, Fla. Const. Law Implemented Art IV, Sec. 9, Fla. Const. History - New - _____.

APPENDIX C

Florida's West Coast Stone Crab Fishery

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Florida's West Coast Stone Crab Fishery
August 21, 1998

Introduction and Summary

Landings: Commercial fishing for stone crab on the west coast of Florida accounts for much of what is landed in the southeastern United States. Over the long-term, landings on Florida's west coast grew substantially, but growth appears to have subsided in the 1990s (data through 1997).

Inputs: Most of the numerous boats involved in fishing for stone crab on Florida's west coast appear to represent small, multi-fishery businesses. Since the early 1960s, the numbers of boats, fishermen, traps and trips increased much more than landings. In the early 1990s, a sharp rise in the number and proportion of "part-time" fishermen occurred despite stability of landings and a 1988-93 downturn in real prices, perhaps because of less regulation than for other fisheries. Concern about the effects of the growth in effort, a 1995 legislated moratorium on traps and other factors led to interest in options for limiting effort and entry (Williams, 1997). To better understand the fishery and fishermen's opinions, a survey was conducted during the 1997/98 fishing season (Response Management, 1998).

Stock conditions: The most recent assessment of stock conditions was prepared for the Florida Marine Fisheries Commission (Muller and Bert, 1997), and an update is scheduled for October 1999. The stocks are difficult to assess using fishery dependent data, in part because the claws are taken and the crabs are returned to the water, with some of them surviving and being recruited to the stock after regrowth of their claws. Nevertheless, according to fishery independent sampling of juveniles for the Tampa Bay area that began in December 1988, it appears that fluctuations in numbers of juveniles help explain fluctuations in the commercial harvest. Low availability of juveniles in that area in the 1996 spawning season suggests low catch rates in that area for two or three years forward. An identified research need is the expansion of juvenile sampling to other areas of the State.

Landings

Landings of stone crabs on Florida's west coast were 6.3 million pounds in 1997 (round weight; to obtain the landed claw weight, divide by 2). The landings are about ten times what they were in 1962. Growth in pounds landed appears to have subsided in the 1990s, while real prices and value resumed their upward trend in 1995-97 (Tables 1-3; Figures 1-2). The landings had a value of $31.9 million in 1997. Real exvessel prices (in 1990 dollars) exhibited an upward trend during 1962-97, though they did drop by about a third between 1988 and 1993 to $1.76 a pound, before moving sharply upward to $4.60 in 1997.

Data on landings by size of claw is shown in Table 3 for 1986 onward (excepting 1987). The data was analyzed in terms of catch per trip for the 1985/86 to 1990/91 fishing seasons by Harper, Neff and Bohnsack (1991). The prices tend to increase with the size of claw, and landings of medium and large sizes of claws dominate.

As shown in Tables 4-6, the pattern of monthly landings has changed during the fishing season (October 15 to May 15 in Florida). Comparing 1977-81 and 1993-97 five-year averages for each month, the 1993-97 averages for October-December are much higher, the differences decrease going from January to March, and the 1993-97 averages are lower for April and May. Combined October-December landings were 41% of the respective totals in 1977-81 and 57% in 1993-97, reflecting a tripling in the annual number of traps (Table 8). Use of traps declines by month of the fishing season, from the "annual" number in the first month or so to perhaps half that number in May.[1]

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[1]Harper, Neff and Bohnsack (1991, p. 5) indicate that the annual numbers for traps represents the maximum number used during a calendar year (NMFS data), usually in October. Using Florida Trip Ticket System data, they estimated the average number of traps hauled per month for the 1985/86 to 1989/90 seasons and found that the average for May was about half that for October. Their Figure 2 shows that the catch per trip (CPUE, catch per unit effort) typically declines during the October-May fishing season; from say 150-200 pounds (claw weight) to say 50 pounds or less (data for October 1985-May 1991). They state (p. 8) that "[t]he number of traps hauled month did not decline as rapidly as CPUE."

From Resource Management's (draft, 1998, pp. 110-112 & 131) detailed tables, the mean number of traps per respondent fisher is taken as an indicator for the total being used. The mean number of traps in the water in

Fishery Inputs

NMFS Operating Units Data

The NMFS data on operating units in the stone crab fisheries for Florida in 1962-96 is shown in Tables 7-8 and Figures 3-4. For 1995 and later years, only the data for vessels is available.[2] This discontinuity is significant in terms of the numbers for men, craft and traps for Florida's west coast; e.g., the number of traps was 931,121 in 1994 *for boats and vessels* and 484,490 in 1995 *for vessels alone*. The number of stone crab traps for 1994, 931,121, applies to the 1994/95 fishing season. The number of trips, another crude indicator of effort, rose from 19,124 in the 1985/86 fishing season to 30,759 in 1994/95 and to 32,501 in 1995/96.[3]

After a period of decline or stability in 1985-89 in the rates of growth in numbers for men, craft and traps on Florida's west coast, growth resumed (Figure 3). The number of full-time fishermen on vessels had surpassed the number on boats in the

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October 1997 was about 1126 for 674 respondents (sd, 1422 traps; median, 500); in May 1998, the mean was 585 traps for 620 respondents (sd, 1036 traps; median, 95).

[2]Since 1994, data on commercial fishing boats in the southeast has not been collected and managed under the state-federal cooperative program for fishery dependent data. Hence, it cannot be obtained from the NMFS data files for "operating units." A *vessel* is a commercial fishing craft having an internal cubic capacity of 5 net tons or more, where one net ton represents 100 cubic feet. These craft are either enrolled or documented by the U.S. Coast Guard and have an official number assigned by that agency. A *motorboat* is a commercial fishing craft that has a capacity of less than 5 net tons or that is not officially documented by the U.S. Coast Guard. *Full-time* (formerly regular) commercial fishermen are persons that receive more than 50% of their annual income from commercial fishing activities, including port activity, such as vessel repair and re-rigging. *Part-time* commercial fishermen are persons who receive less than 50% of their annual income from commercial fishing activities.

[3]Muller and Bert (1997) show that the number of SPLs for Florida as a whole with a stone crab endorsement during the 1989/90 to 1996/97 fishing seasons peaked in 1995/96 at 6,296 and then declined to 5,051, compared with an 8-season mean of 5,387. The number of participants (SPLs with landings) peaked in 1993/94 at 1,880, and then declined to 1,689 in 1995/96, compared with an 11-season mean of 1,507 (for 1985/86 to 1995/96). The number of trips for the Florida as a whole rose from 19,204 in 1985/86 to 34,072 in 1995/96, and the 11-season mean is 28,039 trips.

early 1980s, and the number of part-time fishermen was relatively small. Then, in the 1990s, there was a sudden increase in the number of part-time boat-based fishermen (Figure 4). Using data from Table 8, the 1994-to-1984 ratios are: vessels, 2.04 (294/144); full-time vessel fishermen, 1.87 (724/386); boats, 3.28 (1060/323); full-time boat fishermen, 2.00 (674/336) and part-time boat fishermen, 8.95 (1262/141).

It appears that the character of the stone crab fishery on Florida's west coast could have been affected during the early 1990s by the regulatory environment.[4] That is, the sudden, substantial increases in the number and proportion of part-time fishermen in the early 1990s may be attributed in part to the less restrictive fishery management regulations for stone crab than other fisheries; for example, it is understood that:

(1) Along with a moratorium on trap permits, the State of Florida proposed a "restricted species" designation for spiny lobster in 1988. The latter was implemented for the 1993/94 spiny lobster season (August 1993 to March 1994). Stone crab is not a restricted species, but there is a moratorium on trap numbers (July 1, 1995 to July 1, 1999--Williams, 1997). To engage in commercial fishing for a restricted species, over 25% of one's annual income or $5,000 (whichever is less) must be earned from the sale of saltwater products.

(2) Florida legislated a trap certificate program for spiny lobster in 1992; the number of trap certificates was reduced from 0.727 million in the 1992/93 season to 0.613 million in 1996/97 season.

(3) Florida implemented a Constitutional amendment (approved by voters in November 1994) that in effect prohibited most uses of nets in commercial fishing in State waters effective July 1, 1995.

Toward modeling fishery behavior

Increases in real prices may help explain entry and effort in the Florida west coast stone crab fishery over the long term, but real prices fell in 1988-93, before turning sharply upward in 1995-97, suggesting, as just noted, that regulatory or other factors need to be considered in the early 1990s (Table 2; Figures 3-5). One might posit for the sake of discussion an annual simultaneous equation model of fishery behavior for 1962-94 along the following lines:

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[4]This comment applies to operating units in the stone crab fishery on Florida's east coast as well (Table 7).

Demand: $P_t = f(QD_t, Y_t, Z_t)$

Supply: $QS_t = f(T_t, P_t, A_t)$

Effort: $T_t = f(P_{t-1}, T_{t-1}, D_t)$

Identity: $QD_t = QS_t$

where:

A_t: indicator or proxy for stock abundance, year t.
D_t: D_t=0 for 1962-89, D_t=1 for 1990 onward.
P_t: real exvessel price of stone crab, year t.
P_{t-1}: real exvessel price in year t-1.
QD_t: quantity demanded of stone crab, year t.
QS_t: supply (landings) of stone crab, year t.
T_t: number of traps, year t.
T_{t-1}: number of traps, year t-1.
Y_t: real disposable U.S. income per capita, year t.
Z_t: variable(s) for substitutes for stone crab, year t.

Figure 5 suggests something about the expected positive effect of real prices on traps, two of the variables in the effort equation. Results of a theoretically and statistically acceptable empirical model should provide a coefficient in the supply equation to indicate the effect of real price on traps, holding other things constant. Similarly, Figure 6 suggests something about the expected effect of traps on landings, two of the variables in the effort equation, preceding. The curve in Figure 6 is similar to the curves in Figures 12-13 in Muller and Bert (1997), although the much flatter slopes on their curves at high levels of traps may better depict fishery conditions. The slope of the curve in Figure 6 declines as the number of traps increases. This implies that the addition to landings associated with the addition of a specific, small number of traps when the fishery is operating at say 100,000 traps is much higher than when it is operating at 700,000 traps.

The model posited for the sake of discussion and the depictions of two-variable relationships in Figures 5-6 have some caveats. For example, a monthly model using data from the Florida Trip Ticket System for say the 1985/86 fishing season onward might be preferable. The relationship between traps and price is likely one-way; i.e., increases in price are likely to

prompt increases in the number of traps, but decreases in price may not result in decreases in traps, which may last for several seasons, if not lost or stolen.[5] Another caveat to the posited model is that it is single fishery in nature, whereas the boats involved in fishing for stone crab are mostly multi-fishery.

Florida Trip Ticket System data

Under Florida's Trip Ticket System, reporting by dealers became mandatory and the data is more detailed compared with what was done previously by the National Marine Fisheries Service. It is understood that a fisherman must have a Saltwater Products Licence (SPL) to sell fish in Florida, and wholesale dealers must submit a report or trip ticket for each commercial fishing trip. Over the years, entries in more fields in the trip tickets have become mandatory, such as price.[6]

Data from the Florida Trip Ticket System has been used to show, for example, numbers of SPLs (licensees) with stone crab endorsements, numbers of fishery participants (SPLs with stone crab landings), numbers of stone crab trips, mean monthly landings of stone crab per trip, and standardized landings of stone crab per trip for a fishing season (Harper, Neff and Bohnsack, 1991; Muller and Bert, 1997). Norris (1996) provided frequency distribution tables of the number of permits (SPLs with stone crab endorsements) against the number of traps the applicant *intended* to use, the number of such permits with landings, and various indicators of landings (quartiles for landings per trip, and quartiles for annual landings).

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[5]Traps may be constructed in the off-season (June-September) for use in the stone crab fishing season (October-May), but some fishermen may construct traps during the stone-crab fishing season, according to survey results (Response Management, 1998).

[6]Muller and Bert (1997, p. 5) indicate that an individual trip ticket shows the SPL number of the fisher, gear deployed, number of sets, depth fished, number of traps, time away from the dock, the species, quantities and prices for all species landed on the trip. Norris (1996) notes that gear may designated by writing in a gear code, which differentiates stone, spiny lobster, blue crab and fish traps, or gear may be designated by checking the box marked traps, and this does not indicate the type of trap used.

Fishing Activities

Judging by qualitative data, most boats that fish commercially for stone crab on Florida's west coast also work in other fisheries, depending on such things as the availability of various species, prices, and fishery regulations. Very few depend solely on stone crab.

Noetzel and Gaynor (1974) provide cross-classifications of of fishing vessels operating in 1969 according to gear used. In 1969, there were 14 fishing vessels in the Gulf of Mexico region, specifically Florida's west coast, that used stone crab pot gear (NMFS gear code 333). Among the 14 vessels, only 2 used this gear exclusively, and 5 used three kinds of gear, while 7 used two kinds of gear. Spiny lobster traps were also used by many of the vessels.[7]

Waters (1996), and Waters, Rhodes and Wiggers (1998) planned and summarized economic surveys that were designed to provide information on reef fish boats in 1993 in the U.S. Gulf of Mexico and the Florida Keys, respectively. Given the emphasis on reef fish in survey design, one would expect that boats that fished for other species would be less well represented.

For the Gulf of Mexico survey, there are strata for gear, area and scale of operation. Information on boats that fish for stone crab appears in two of the eight strata; i.e., those for the eastern Gulf area (Franklin to Collier Counties, Florida), fish trap gear and two (low and high) scales of operation. For both scales of operation, red grouper, gag grouper and black grouper were important sources of revenue, and fishing for all three occurred throughout the year. Stone crab was listed as a more important source of revenue for the low-volume boats (12 of 17 such boats ranked stone crab as their most important source of revenue; 11 ranked red grouper as their second most important source); and fishing for stone crab occurred during the October-May season for Florida, and fishing for red grouper occurred during June-September (Waters, 1996, p. 21). Red grouper was the

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[7]Among the 7 boats using two kinds of gear, 3 also used lobster pots (gear 355), 1 also used runaround gill nets (gear 475), 2 also used trammel nets (gear 530), and 1 also used hand lines (gear 610). Among 5 boats using three kinds of gear, all 5 used stone crab traps (gear 333) and spiny lobster traps (gear 355), and 1 also used shrimp trawls (gear 215), 3 also used runaround gill nets, and 1 also used hand lines (gear 610).

most important source for high-volume boats, while black sea bass and stone crab were listed as important sources (6 of 13 boats).

For the survey as whole, gross revenue and net income for high-volume boats generally exceeded that for low-volume boats, but the low-volume boats with fish traps had slightly higher net income because they fished for stone crab rather than reef fish ($21,025 versus $19,409--Waters, 1996, pp. 16-18). For the sampling population of 927 boats, other fish were named more frequently, but operators of an estimated 149 boats listed stone crab as being among their top four fish in value of sales.[8]

In their report (draft for review) on an economic survey for reef fish boats in the Florida Keys, Waters, Rhodes and Wiggers (1998) indicated that stone crab was listed by about 14% of the boats as an important source of revenue in 1993. Although more boats listed other fish as being among their top four fish in terms of revenue, stone crab was listed by an estimated 91 of the 653 boats in the sampling population.[9] Of the 653 boats, an estimated 77 boats fished for stone crab in October-December, 71 in January-March, 44 in April and 46 in May.

For Monroe County, Florida, Muller and Bert (1997, p. 9) report that 73% of the SPL holders with permits to fish for stone crab also have permits to fish for spiny lobster.

In a report describing the boats with federal fishing permits and home ports on the Atlantic and Gulf coasts (Maine to Texas, but mostly in the southeast) in 1997, it was found that 865 boats reported that stone crab was among their top four fish in value of sales (Vondruska, 1998).[10] For all boats on

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[8]Among the 927 boats in the sampling population for all strata, 449 considered red grouper as being among their top four fish as a source of revenue. The other fish were: red snapper (349 boats), groupers other than red grouper (gag, 244 boats; black, 172; yellow, 76 boats), vermillion snapper (165 boats), stone crab (147 boats), king mackerel (99 boats) and amberjack (85). Source: Waters, 1996, p. 22 and Figure 13.

[9]Among fish listed by operators of the 653 boats as being among the top four in terms of revenue, yellow snapper was listed by 525 boats; black grouper, 200 boats; gray snapper, 171 boats; king mackerel, 168 boats; spiny lobster, 146 boats; mutton snapper, 126 boats; and stone crab, 91 boats.

[10]Out of 6166 boats with federal fishing permits in 1997, applicants for 5345 boats selected from a list the fish that were among their top four in

Florida's west coast, the *geometric* means were as follows for boats with reported values: length, 32 feet; horsepower, 258; gross income from fishing, $16,311; and expense from fishing, $12,788.[11]

Resource Management (draft, 1998) provide results of a survey during the 1997/98 season for the Florida stone crab fishery using two sampling populations of fishermen with permits for this fishery. The results include data for 776 *census* respondents (permitted fishermen who had reported landings of stone crab on Florida trip tickets), and 545 *sample* respondents (permitted fishermen without reported landings of stone crab on Florida trip tickets). Some of the questions concerned fishing activity in calendar year 1997. About two-thirds of the census respondents obtained 100% of their personal income in 1997 from commercial fishing (this was true for about a fourth of the sample respondents). About a third of responding census fishermen obtained 51% or more of their personal income from stone crab fishing (about a tenth of the sample fishermen did). About three-fourths of the responding census fishermen considered themselves to be full-time commercial fishermen (about a third of the responding sample fishermen did).

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value of sales. Reef fish was specified for 66% of the boats, followed by king mackerel (64%), and more distantly by Spanish mackerel (40%), shark (33%), swordfish and tuna (24%), spiny lobster (18%), shrimp (17%), stone crab (16%), and other fish (13%). Of the 865 boats that listed stone crab, about three fourths also listed reef fish (629 boats), about half also listed spiny lobster (456 boats) and king mackerel (444 boats), and about a fourth also listed Spanish mackerel (273 boats) and shark (220 boats). Apparently, about a fourth (865 - 629 = 236) listed stone crab only.

[11]For the permits data, it was found that for three of five variables one would likely reject the assumption that the frequency distributions were close enough to being statistically normal ("bell shaped") for practical applications. Thus, geometric means and medians were used as measures of central tendency rather than arithmetic means. Among the three measures of central tendency, arithmetic means had much higher values, because of the skewed nature of the frequency distributions.

References

Harper, Douglas E., Dana G. Neff and James A. Bohnsack. 1991. U.S. Department of Commerce, NOAA, National Marine Fisheries Service, Southeast Fisheries Center, 75 Virginia Beach Drive, Miami, FL 33149, contribution MIA-90/91-79, September 1991, 12 p. + tables and figures.

Muller, Robert G and Theresa M. Bert. 1997. Appendix: 1997 update on Florida's stone crab fishery, a report to the Florida Marine Fisheries Commission. Florida Department of Environmental Protection, Florida Marine Research Institute, Division of Marine Resources, 100 Eighth Avenue, SE, St. Petersburg, FL 33701-5095, June 11, 1997, 23 p.

Noetzel, Bruno G. and William M. Gaynor. 1974. U.S. commercial fishing vessels by gear type, 1969. U.S. Department of Commerce, NOAA, National Marine Fisheries Service, Economic Research Division, Washington, D.C., August 1974, Current Fisheries Statistics No. 6543, 24 p.

Norris, Martha. 1996. Letter to Wayne Swingle (Executive Director, Gulf of Mexico Fishery Management Council). Florida Department of Environmental Protection, Florida Marine Research Institute, Division of Marine Resources, 100 Eighth Avenue, SE, St. Petersburg, FL 33701-5095, November 21, 1996.

Response Management. 1998 (draft). Fishing effort and resource allocation in the Florida stone crab fishery--results of a stone crab angler survey. Contract with Thomas R. Matthews, Florida Department of Environmental Protection, Florida Marine Research Institute, 2796 Overseas Highway, Suite 119, Marathon, FL 33050, as cooperatively funded under the NMFS MARFIN project 97MF065-G. Response Management, 130 Franklin Street, PO Box 380, Harrison, VA 22801, June 1998, 168 p.

Vondruska, John. 1998. Description of boats with federal fishing permits in 1997. U.S. Department of Commerce, NOAA, National Marine Fisheries Service, 9721 Executive Center Drive, North, St. Petersburg, FL 33702-2432, SERO-ECON-98-14, March 5, 1998, 46 p.

Waters, James R. 1996. An economic survey of commercial reef fish vessels in the U.S. Gulf of Mexico. U.S. Department of Commerce, NOAA, National Marine Fisheries Service, 101 Piver's Island Road, Beaufort, NC 28516, July 1996, 62 p. + figures and appendices.

Waters, James R., Raymond J. Rhodes and Robert Wiggers. 1998. An economic survey of commercial reef fish boats in the Florida Keys--draft report for review. U.S. Department of Commerce, NOAA, National Marine Fisheries Service, 101 Piver's Island Road, Beaufort, NC 28516 and South Carolina Department of Natural Resources, Marine Resources Division, Office of Fisheries Management, P.O. Box 12559, Charleston, SC 29422, May 1998, 74 p. + appendices.

Williams, Roy. 1997. Stone crab limited entry. Florida Marine Fisheries Commission, 2540 Executive Center Circle West, Suite 106, Tallahassee, FL 32301, February 3, 1997, 4 p.

Table 1.--Landings of stone crabs by state
(Quantity, thousands of pounds, round weight)
(Data for 1998 is incomplete, some areas to May)

Year	NC-FLec	FLwc	AL-TX	Total
1962	98	557	.	655
1963	157	660	.	817
1964	191	752	.	943
1965	218	655	.	872
1966	187	883	.	1,070
1967	125	847	.	971
1968	118	1,285	.	1,403
1969	108	1,258	.	1,366
1970	112	1,502	.	1,614
1971	91	1,650	.	1,742
1972	67	1,925	.	1,992
1973	54	2,034	.	2,088
1974	67	2,524	.	2,591
1975	42	2,119	.	2,161
1976	30	2,451	.	2,481
1977	26	3,428	.	3,454
1978	79	3,262	.	3,341
1979	7	4,197	.	4,204
1980	21	3,771	.	3,792
1981	12	4,175	.	4,187
1982	66	5,694	.	5,760
1983	40	4,790	.	4,830
1984	52	3,944	19	4,015
1985	40	3,933	139	4,113
1986	66	3,892	155	4,112
1987	165	4,696	72	4,933
1988	124	4,944	276	5,344
1989	159	4,982	183	5,325
1990	108	6,086	211	6,404
1991	82	5,932	338	6,352
1992	133	6,555	87	6,775
1993	105	6,474	20	6,600
1994	192	6,552	23	6,767
1995	132	5,918	114	6,164
1996	109	6,401	166	6,677
1997	176	6,320	86	6,582
1998	30	2,468	.	2,499

Table 2.--Landings of stone crabs, Florida west coast
(Quantity, thousands of pounds, round weight)
(Value, thousands of dollars)
(Price, dollars per pound, round weight)
(Real value, thousands of 1990 dollars)
(Real price, 1990 dollars per pound, round weight)
(Data for 1998 is incomplete, some areas to May)

Year	Quantity	Value	Price	Real value	Real price
1962	557	196	0.35	719	1.29
1963	660	207	0.31	762	1.16
1964	752	233	0.31	857	1.14
1965	655	253	0.39	913	1.39
1966	883	368	0.42	1,287	1.46
1967	847	410	0.48	1,428	1.69
1968	1,285	601	0.47	2,044	1.59
1969	1,258	696	0.55	2,274	1.81
1970	1,502	770	0.51	2,426	1.61
1971	1,650	827	0.50	2,525	1.53
1972	1,925	1,181	0.61	3,450	1.79
1973	2,034	1,386	0.68	3,582	1.76
1974	2,524	1,849	0.73	4,019	1.59
1975	2,119	1,766	0.83	3,516	1.66
1976	2,451	2,195	0.90	4,179	1.70
1977	3,428	3,046	0.89	5,458	1.59
1978	3,262	3,221	0.99	5,360	1.64
1979	4,197	5,366	1.28	7,929	1.89
1980	3,771	5,389	1.43	6,980	1.85
1981	4,175	6,397	1.53	7,592	1.82
1982	5,694	7,886	1.38	9,172	1.61
1983	4,790	7,319	1.53	8,403	1.75
1984	3,944	7,340	1.86	8,232	2.09
1985	3,933	7,954	2.02	8,964	2.28
1986	3,892	7,530	1.93	8,740	2.25
1987	4,696	11,108	2.37	12,567	2.68
1988	4,944	12,350	2.50	13,436	2.72
1989	4,982	12,501	2.51	12,957	2.60
1990	6,086	15,921	2.62	15,921	2.62
1991	5,932	12,337	2.08	12,315	2.08
1992	6,555	15,894	2.42	15,772	2.41
1993	6,474	11,646	1.80	11,391	1.76
1994	6,552	12,281	1.87	11,853	1.81
1995	5,918	18,768	3.17	17,490	2.96
1996	6,401	21,177	3.31	19,286	3.01
1997	6,320	31,924	5.05	29,097	4.60
1998	2,468	8,355	3.38	7,780	3.15

Table 3.--Landings of stone crabs, by size of claw, Florida west coast
(Quantity, thousands of pounds, round weight)
(Value, thousands of dollars)
(Price, dollars per pound, round weight)
(Real value, thousands of 1990 dollars)
(Real price, 1990 dollars per pound, round weight)

Stone crabs with small claws

Year	Quantity	Value	Price	Real value	Real price
1986	232	435	1.88	505	2.18
1988	426	685	1.61	746	1.75
1989	429	677	1.58	702	1.64
1990	398	591	1.49	591	1.49
1991	335	404	1.21	404	1.20
1992	368	425	1.16	422	1.15
1993	353	289	0.82	283	0.80
1994	320	193	0.60	186	0.58
1995	201	516	2.56	481	2.39
1996	229	629	2.75	572	2.50
1997	228	832	3.66	758	3.33

Stone crabs with medium claws

Year	Quantity	Value	Price	Real value	Real price
1986	1,136	2,271	2.00	2,636	2.32
1988	1,293	2,961	2.29	3,221	2.49
1989	1,379	2,684	1.95	2,782	2.02
1990	1,722	3,545	2.06	3,545	2.06
1991	1,846	2,870	1.55	2,865	1.55
1992	2,154	4,227	1.96	4,195	1.95
1993	2,295	3,458	1.51	3,382	1.47
1994	2,259	3,475	1.54	3,354	1.49
1995	2,241	5,820	2.60	5,423	2.42
1996	2,520	6,925	2.75	6,306	2.50
1997	2,284	8,766	3.84	7,990	3.50

Table 3.--Landings of stone crabs, by size of claw, Florida west coast
(Quantity, thousands of pounds, round weight)
(Value, thousands of dollars)
(Price, dollars per pound, round weight)
(Real value, thousands of 1990 dollars)
(Real price, 1990 dollars per pound, round weight)

Stone crabs with large claws

Year	Quantity	Value	Price	Real value	Real price
1986	1,982	4,211	2.13	4,888	2.47
1988	2,418	6,765	2.80	7,360	3.04
1989	2,405	6,969	2.90	7,224	3.00
1990	2,977	8,939	3.00	8,939	3.00
1991	2,773	6,674	2.41	6,662	2.40
1992	2,733	7,792	2.85	7,732	2.83
1993	2,677	5,807	2.17	5,680	2.12
1994	2,629	5,882	2.24	5,677	2.16
1995	2,448	8,852	3.62	8,249	3.37
1996	2,730	10,196	3.73	9,286	3.40
1997	2,748	15,832	5.76	14,430	5.25

Table 3.--Landings of stone crab claws, by size, Florida west coast
(Quantity, thousands of pounds, claw weight)
(Value, thousands of dollars)
(Price, dollars per pound, claw weight)
(Real value, thousands of 1990 dollars)
(Real price, 1990 dollars per pound, claw weight)

Stone crabs with jumbo claws

Year	Quantity	Value	Price	Real value	Real price
1986	26	58	2.25	68	2.61
1988	88	293	3.33	319	3.62
1989	271	965	3.56	1,000	3.69
1990	358	1,263	3.53	1,263	3.53
1991	356	1,001	2.81	1,000	2.81
1992	389	1,343	3.45	1,335	3.42
1993	339	931	2.75	911	2.69
1994	340	1,137	3.34	1,098	3.22
1995	406	1,808	4.45	1,685	4.15
1996	433	2,020	4.66	1,840	4.25
1997	635	4,806	7.57	4,380	6.90

Stone crabs, claw size not specified

Year	Quantity	Value	Price	Real value	Real price
1986	516	553	1.07	642	1.24
1987	4,696	11,108	2.37	12,567	2.68
1988	719	1,645	2.29	1,790	2.49
1989	497	1,205	2.43	1,249	2.52
1990	631	1,583	2.51	1,583	2.51
1991	622	1,387	2.23	1,385	2.23
1992	911	2,107	2.31	2,091	2.30
1993	810	1,161	1.43	1,136	1.40
1994	1,004	1,594	1.59	1,539	1.53
1995	622	1,772	2.85	1,651	2.66
1996	488	1,407	2.88	1,281	2.62
1997	425	1,688	3.97	1,539	3.62

Table 4.--Landings of stone crabs, monthly, Florida west coast
(Thousands of pounds, round weight)
(Data for 1998 is incomplete)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1977	332	337	511	449	178	.	.	.	1	441	618	562	3,428
1978	409	414	569	457	263	.	.	.	.	250	465	436	3,262
1979	598	608	605	562	265	.	.	.	.	432	641	486	4,197
1980	537	433	694	497	302	.	.	.	.	330	496	482	3,771
1981	379	406	413	612	274	.	.	.	.	611	790	689	4,175
1982	827	713	836	588	282	.	.	.	.	682	855	912	5,694
1983	702	829	836	444	137	.	.	.	.	427	809	606	4,790
1984	604	393	478	423	164	.	.	.	.	606	763	513	3,944
1985	610	496	260	174	101	.	.	.	.	541	1016	735	3,933
1986	706	440	460	252	84	2	0	3	3	538	653	752	3,892
1987	942	683	344	332	132	2	0	3	0	723	845	690	4,696
1988	551	609	523	328	150	0	7	2	6	781	904	1081	4,944
1989	709	606	658	238	92	2	1	3	2	834	968	870	4,982
1990	710	587	757	433	177	2	0	2	2	1236	1251	926	6,086
1991	725	884	710	378	135	.	0	3	1	1002	1107	986	5,932
1992	968	742	873	426	221	3	0	4	5	1238	1162	913	6,555
1993	568	895	600	407	146	0	.	1	.	983	1546	1326	6,474
1994	753	581	852	508	182	0	0	.	0	1206	1423	1046	6,552
1995	880	634	600	482	265	.	.	.	.	1167	1041	850	5,918
1996	861	594	532	426	189	.	.	.	.	1458	1503	839	6,401
1997	719	495	712	427	210	.	.	0	.	1369	1317	1070	6,320
1998	1083	423	561	370	32	.	.	.	.	.	.	.	2,468

Table 5.--Landings of stone crabs, monthly, Florida west coast
(Thousands of pounds, round weight)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	%	%	%	%	%	%	%	%	%	%	%	%	Total
1977	10	10	15	13	5	.	.	.	0	13	18	16	3,428
1978	13	13	17	14	8	.	.	.	.	8	14	13	3,262
1979	14	14	14	13	6	.	.	.	.	10	15	12	4,197
1980	14	11	18	13	8	.	.	.	.	9	13	13	3,771
1981	9	10	10	15	7	.	.	.	.	15	19	17	4,175
1982	15	13	15	10	5	.	.	.	.	12	15	16	5,694
1983	15	17	17	9	3	.	.	.	.	9	17	13	4,790
1984	15	10	12	11	4	.	.	.	.	15	19	13	3,944
1985	16	13	7	4	3	.	.	.	.	14	26	19	3,933
1986	18	11	12	6	2	0	0	0	0	14	17	19	3,892
1987	20	15	7	7	3	0	0	0	0	15	18	15	4,696
1988	11	12	11	7	3	0	0	0	0	16	18	22	4,944
1989	14	12	13	5	2	0	0	0	0	17	19	17	4,982
1990	12	10	12	7	3	0	0	0	0	20	21	15	6,086
1991	12	15	12	6	2	.	0	0	0	17	19	17	5,932
1992	15	11	13	7	3	0	0	0	0	19	18	14	6,555
1993	9	14	9	6	2	0	.	0	.	15	24	20	6,474
1994	11	9	13	8	3	0	0	.	0	18	22	16	6,552
1995	15	11	10	8	4	.	.	.	.	20	18	14	5,918
1996	13	9	8	7	3	.	.	.	.	23	23	13	6,401
1997	11	8	11	7	3	.	.	0	.	22	21	17	6,320

Table 6a.--Monthly landings of stone crabs, west coast of Florida, five-year statistics for 1977-81 (Thousands of pounds, round weight)

	5-yr sum	5-yr mean	Standard deviation	Percent
January	2,255	451	112	11.97
February	2,199	440	101	11.67
March	2,791	558	105	14.82
April	2,578	516	70	13.69
May	1,281	256	47	6.80
September	1	1	.	0.00
October	2,065	413	136	10.96
November	3,010	602	130	15.98
December	2,654	531	99	14.09

Table 6b.--Monthly landings of stone crabs, west coast of Florida, five-year statistics for 1993-97 (Thousands of pounds, round weight)

	5-yr sum	5-yr mean	Standard deviation	Percent
January	3,781	756	125	11.94
February	3,199	640	152	10.10
March	3,296	659	126	10.41
April	2,250	450	43	7.11
May	992	198	44	3.13
June	0	0	0	0.00
July	0	0	.	0.00
August	1	1	1	0.00
September	0	0	.	0.00
October	6,183	1,237	185	19.53
November	6,830	1,366	202	21.57
December	5,133	1,027	199	16.21

Table 7.--Operating units in the Florida east coast stone crab fishery

Year	Number of fishermen: on vessels, full time	on vessels, part time	on boats & shore, full time	on boats & shore, part time	Total	Vessels: Number	Gross tons	Average gross tons/ vessel	Boats: Motor	Boats: Other	Total craft (vessels plus boats)	Traps
1962			13		13				13		13	1575
1963	2		14		16	1	21	21	14		15	4380
1964			36	10	46				35		35	5500
1965			40	4	44				22		22	5850
1966			28	2	30				30		30	4200
1967	6		17		23	3	31	10	9		12	3100
1968	6		6		12	3	35	12	6		9	2500
1969	2		11		13	1	14	14	6		7	2200
1970	2		12	1	15	1	14	14	7		8	3200
1971	2		7	3	12	1	14	14	7		8	1550
1972			3	1	4				4		4	1000
1973	9		9		18	4	81	20	6		10	3200
1974	9		7		16	4	81	20	4		8	2800
1975	14		5		19	5	117	23	5		10	2240
1976	24		4	4	32	8	170	21	6		14	4750
1977	21		3	5	29	7	162	23	8		15	3470
1978												
1979	15		2	2	19	5	108	22	2		7	2900
1980	12		12	2	26	4	98	25	7		11	3900
1981	12			3	15	4	98	25	3		7	1700
1982	12		4		16	4	98	25	2		6	2700
1983	12				12	4	98	25			4	1700
1984	12				12	4	98	25			4	1700
1985	12				12	4	98	25			4	1700
1986	12				12	4	98	25			4	1700
1987	12		1	10	23	4	98	25	11		15	3724
1988	12		1	10	23	4	98	25	11		15	3724
1989	12		1	11	24	4	98	25	12		16	3900
1990	5		3	7	15	2	135	68	10		12	1260
1991	5			11	16	3	39	13	11		14	4000
1992	8		15	50	73	6			65		71	22775
1993	5		43	67	115	2	9	5	104		106	24930
1994	41		90	61	192	19	207	11	108		127	54023
1995	18					9	66	7			9	2530
1996	14					7	72	10			7	6810

Table 8.--Operating units in the Florida west coast stone crab fishery

Year	Number of fishermen: on vessels, full time	on vessels, part time	on boats & shore, full time	on boats & shore, part time	Total	Vessels: Number	Gross tons	Average gross tons/ vessel	Boats: Motor	Boats: Other	Total craft (vessels plus boats)	Traps
1962			66	17	83				70		70	14610
1963	2		65	15	82	1	21	21	65		66	14960
1964	4		89	17	110	2	36	18	78		80	20974
1965	7		50	30	87	4	55	14	71		75	19660
1966	13		108	10	131	8	104	13	92		100	43243
1967	19		89	19	127	11	132	12	84		95	39328
1968	36		122	9	167	18	260	14	108		126	55870
1969	28		97	18	143	14	261	19	93		107	35975
1970	29		122	40	191	15	265	18	143		158	60800
1971	39		134	14	187	20	277	14	122		142	73685
1972	66		185	22	273	32	482	15	157		189	113300
1973	73	1	218	16	308	35	501	14	162		197	142999
1974	84	1	242	15	342	40	714	18	185		225	159076
1975	117	1	240	24	382	55	987	18	186		241	193201
1976	138	1	290	29	458	65	1094	17	212		277	224651
1977	138		235	37	410	62	1046	17	204		266	266985
1978												312200
1979	163		229	64	456	70	1239	18	174		244	294685
1980	292		180	63	535	110	1883	17	174		284	275708
1981	301		210	73	584	113	1921	17	196		309	277626
1982	302		362	192	856	114	1921	17	338		452	352463
1983	380		278	74	732	142	2538	18	221	30	363	431768
1984	386		336	141	863	144	2714	19	323		467	420433
1985	481		323	192	996	189	3462	18	326		515	566146
1986	492		350	156	998	196	3325	17	317		513	575339
1987	526		338	96	960	209	3451	17	252		461	615758
1988	573		313	71	957	230	3903	17	237		467	562555
1989	565		312	78	955	230	3836	17	230		460	564615
1990	589		407	79	1075	232	3813	16	295	4	527	627990
1991	598		567	415	1580	233	3645	16	485		718	651835
1992	627		474	576	1677	245	2764	11	612		857	745900
1993	598		536	769	1903	234	3476	15	706		940	722695
1994	724		674	1262	2660	294	3930	13	1060		1354	931121
1995	737					303	4445	15				484490
1996	802					349	5195	15				475275

Figure 1.--Landings (1962-97)
Florida west coast stone crab fishery

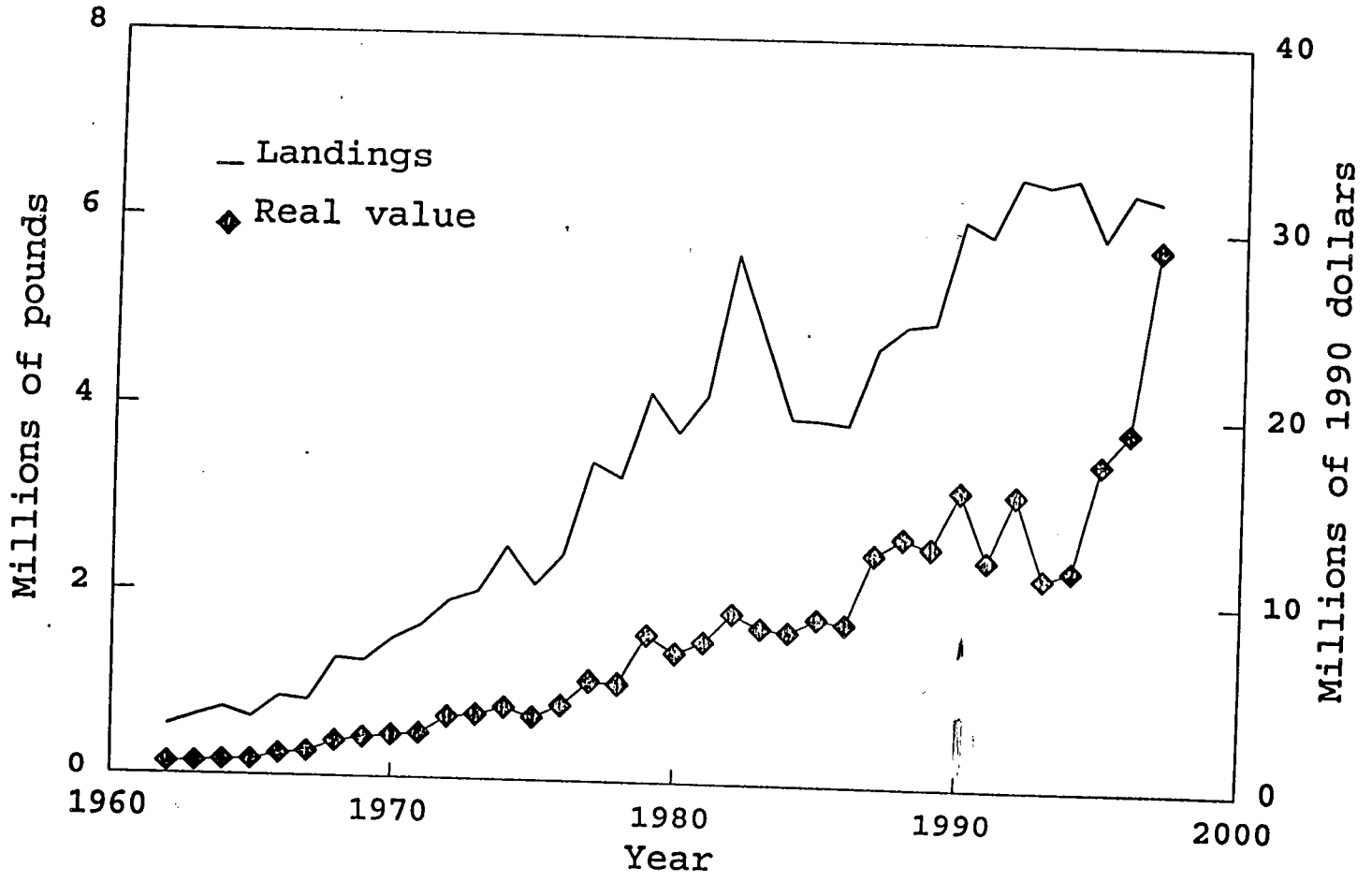


Figure 2.--Landings (1962-97)
Florida west coast stone crab fishery

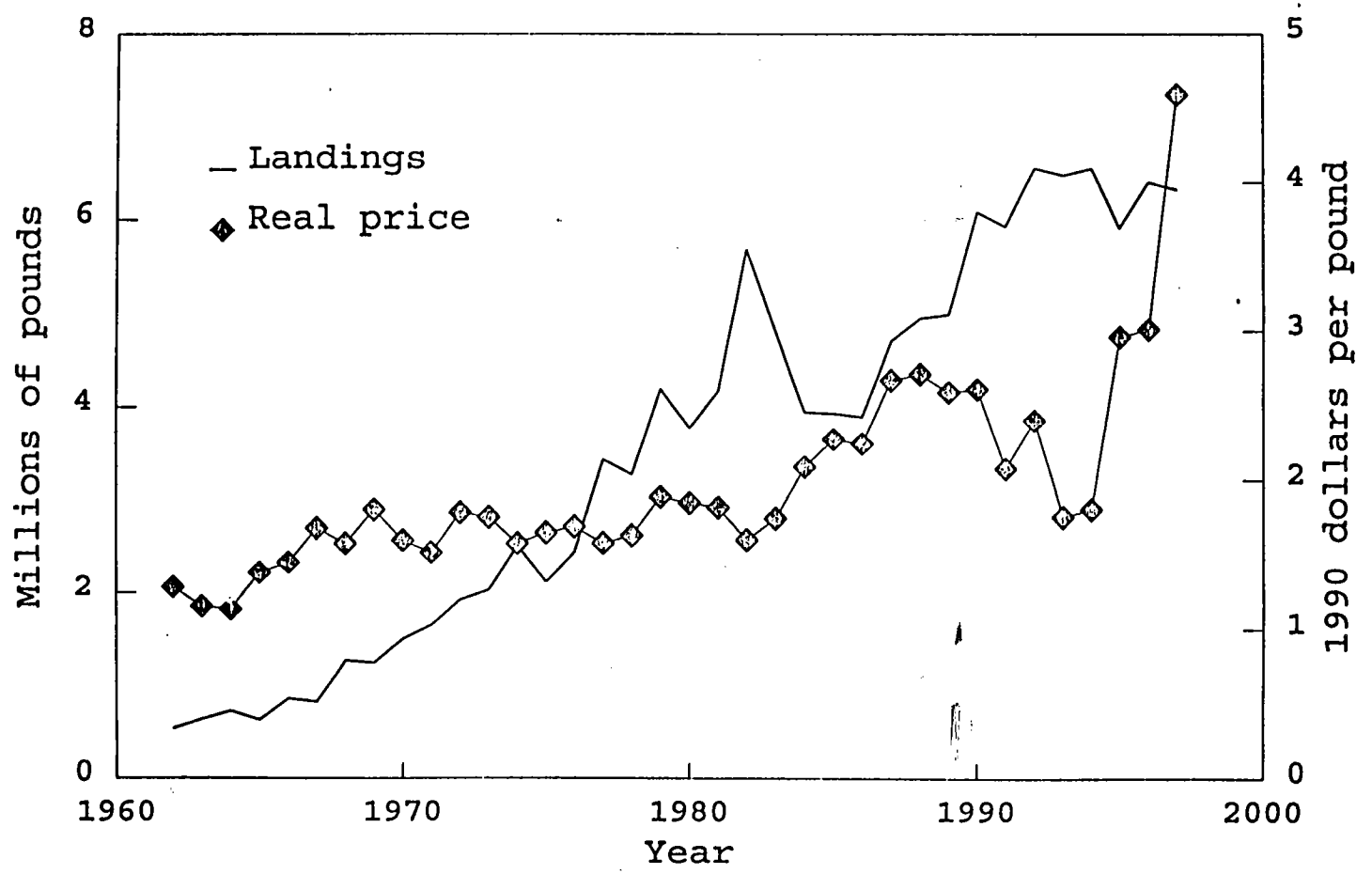


Figure 3.--Operating units (1962-94)
Florida west coast stone crab fishery

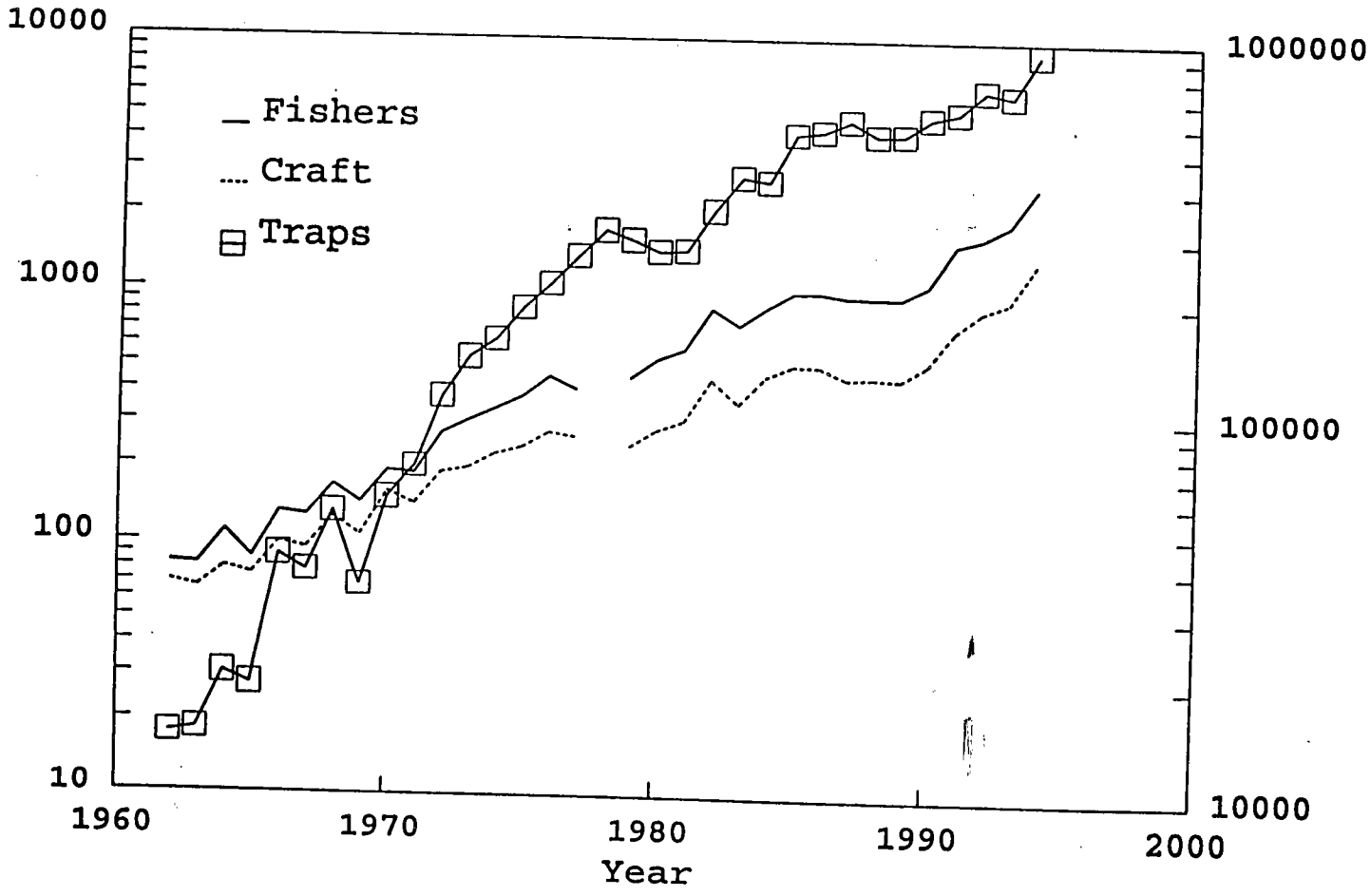


Figure 4.--Fishermen (1962-94, boats; 1962-96, vessels)
Florida west coast stone crab fishery

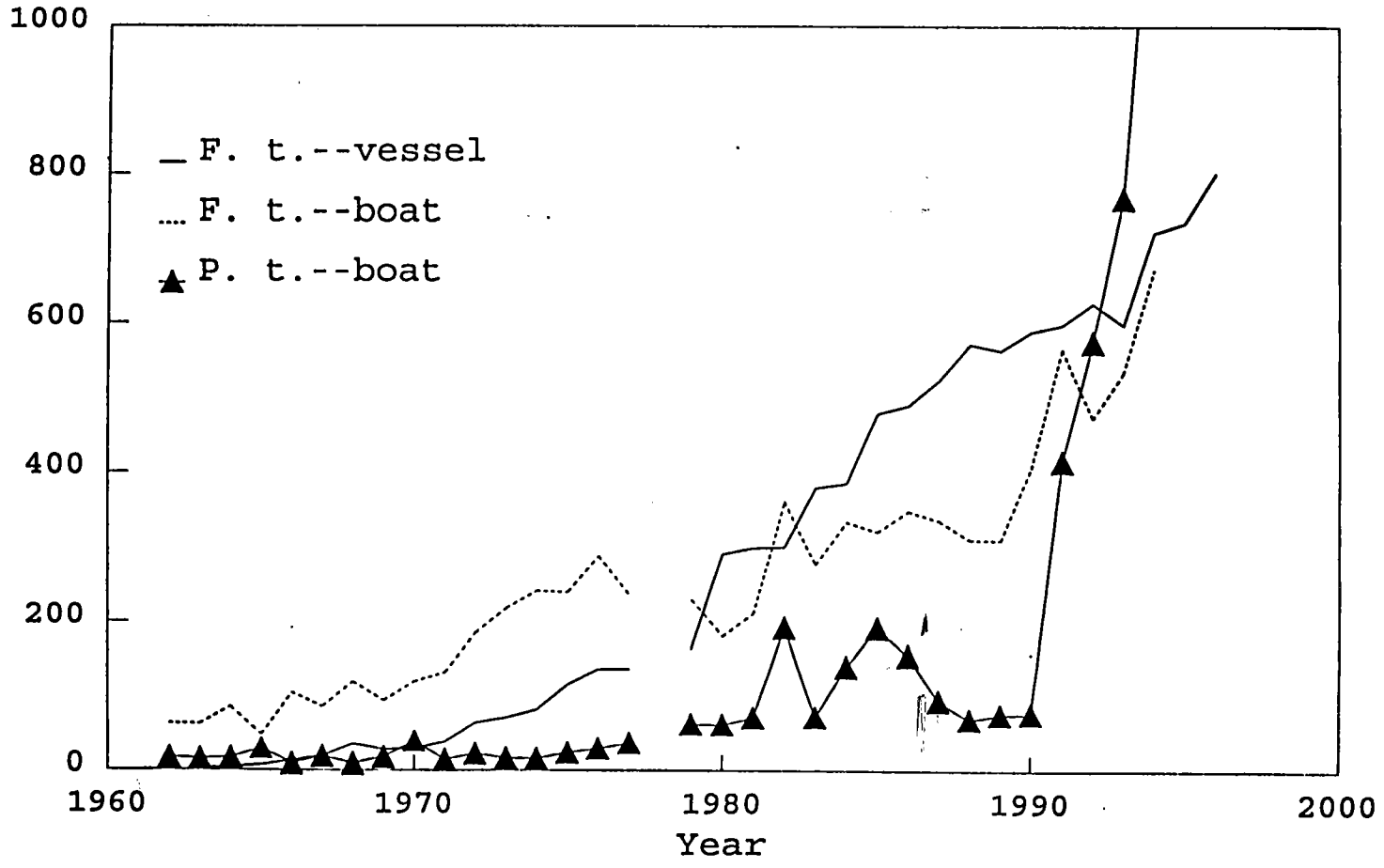


Figure 5.--Traps and real prices (1962-94)
Florida west coast stone crab fishery

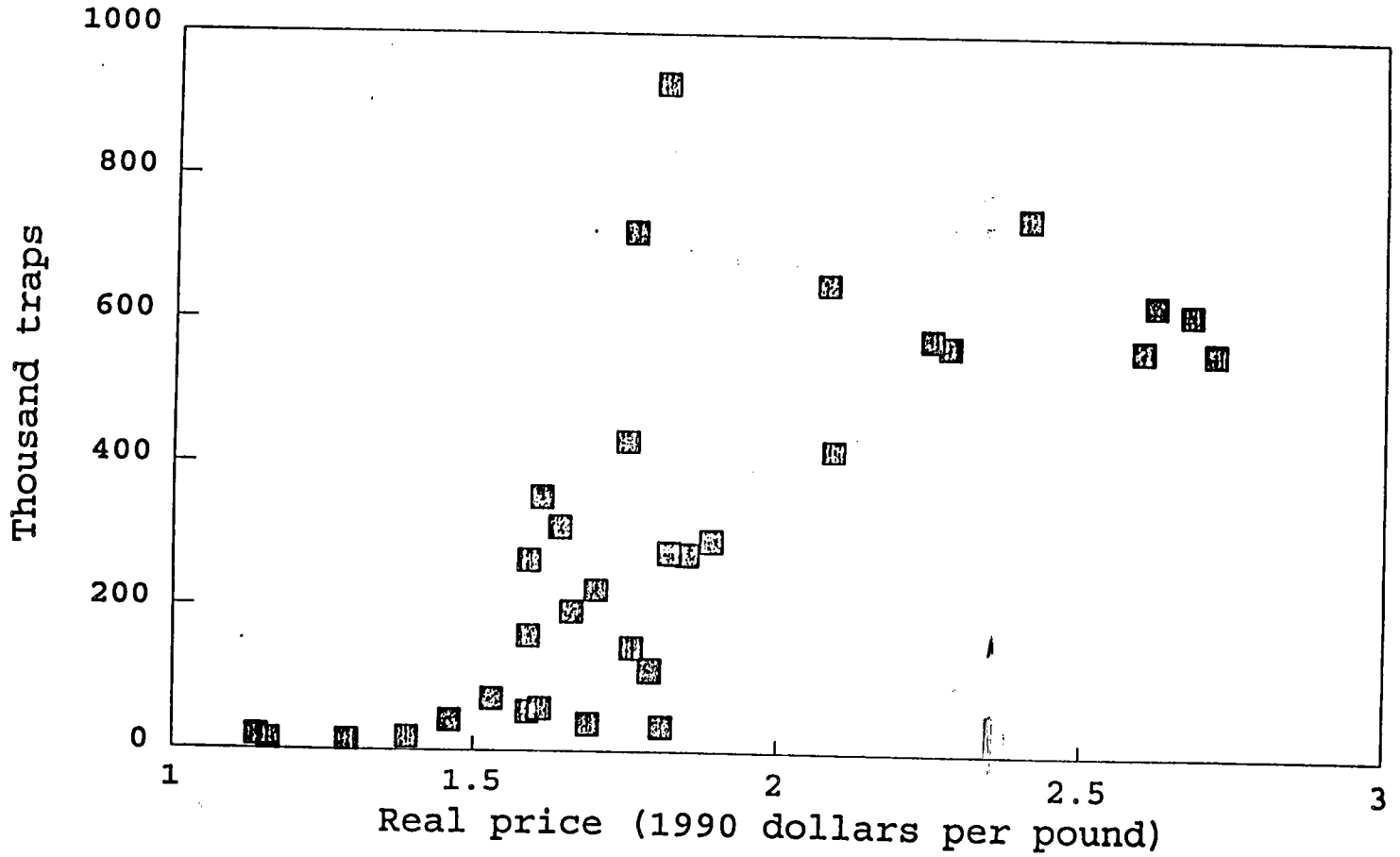
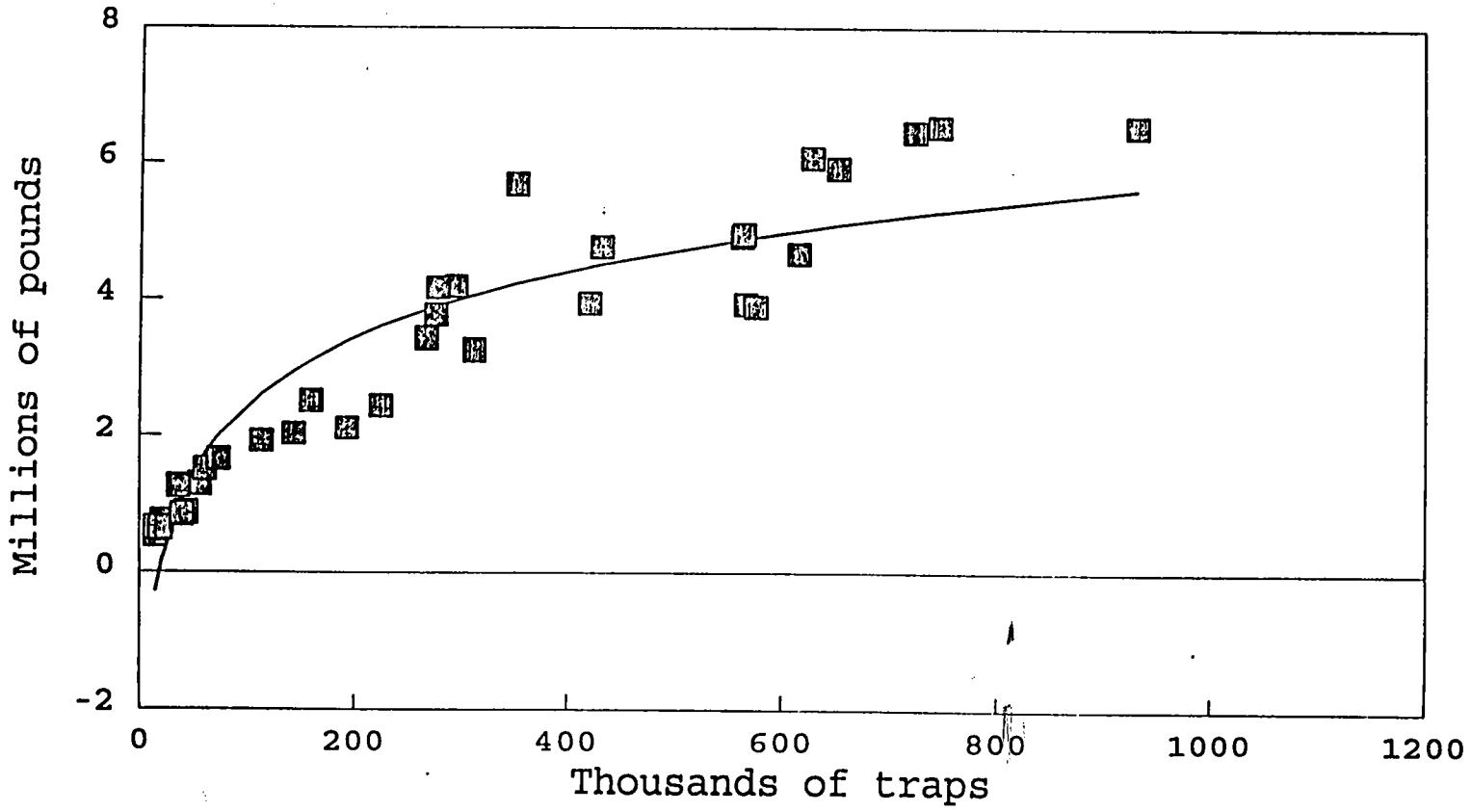
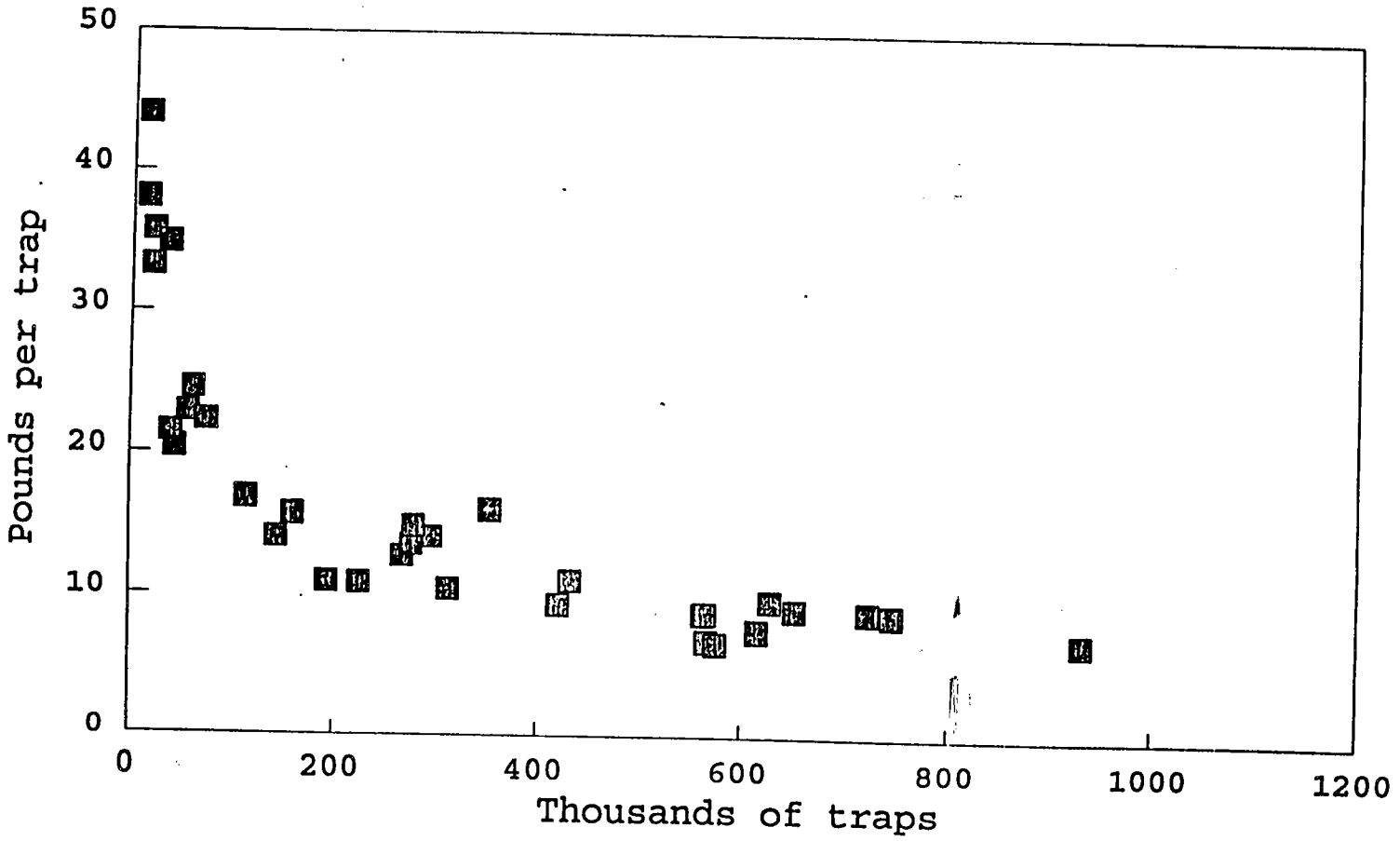


Figure 6.--Traps and landings (1962-94)
Florida west coast stone crab fishery



Landings = -13943 + 1424.04*ln(traps). R-squared=0.85. se=106.86

Figure 7.--Traps and average pounds per trap (1962-94)
Florida west coast stone crab fishery



FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION
MARINE FISHERIES INFORMATION SYSTEM

15:30 Thursday, June 15, 2000

COMMERCIAL STONE CRAB HARVEST (CLAW WEIGHT), STATE VS. FEDERAL WATERS,
BY SEASON AND COAST, 1993-1994 through 1999-2000

		COAST					
		EAST		WEST		TOTAL	
SEASON	FISHING AREA	POUNDS	TRIPS	POUNDS	TRIPS	POUNDS	TRIPS
1999-2000	STATE WATERS	636,936	11,722	1,043,251	13,618	1,680,186	25,340
	TOTAL	767,177	12,876	1,911,172	18,287	2,678,348	31,163

APPENDIX D

FLORIDA LANDING STATISTICS

FOR

STONE CRABS

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION 15:30 Thursday, June 15, 2000
MARINE FISHERIES INFORMATION SYSTEM

COMMERCIAL STONE CRAB HARVEST (CLAW WEIGHT), STATE VS. FEDERAL WATERS,
BY SEASON AND COAST, 1993-1994 through 1999-2000

		COAST					
		EAST		WEST		TOTAL	
		POUNDS	TRIPS	POUNDS	TRIPS	POUNDS	TRIPS
SEASON	FISHING AREA						
1993-1994	FEDERAL WATERS	40,347	297	6,829	82	47,176	379
	STATE WATERS	312,973	5,631	3,063,119	25,756	3,376,092	31,387
	TOTAL	353,320	5,928	3,069,948	25,838	3,423,268	31,766
1994-1995	FISHING AREA						
	FEDERAL WATERS	39,523	473	250,633	1,610	290,156	2,083
	STATE WATERS	388,485	7,104	2,649,713	23,446	3,038,198	30,550
	TOTAL	428,008	7,577	2,900,346	25,056	3,328,354	32,633
1995-1996	FISHING AREA						
	FEDERAL WATERS	59,623	350	790,115	5,256	849,738	5,606
	STATE WATERS	506,297	11,411	1,514,776	17,077	2,021,073	28,488
	TOTAL	565,920	11,761	2,304,891	22,333	2,870,811	34,094
1996-1997	FISHING AREA						
	FEDERAL WATERS	244,118	1,817	709,474	5,177	953,592	6,994
	STATE WATERS	590,729	11,959	1,684,081	19,726	2,274,810	31,685
	TOTAL	834,847	13,776	2,393,555	24,903	3,228,402	38,679
1997-1998	FISHING AREA						
	FEDERAL WATERS	218,848	1,854	1,307,333	6,743	1,526,181	8,597
	STATE WATERS	687,486	11,927	1,334,841	15,679	2,022,327	27,606
	TOTAL	906,334	13,781	2,642,174	22,422	3,548,508	36,203
1998-1999	FISHING AREA						
	FEDERAL WATERS	209,794	1,932	974,618	6,354	1,184,412	8,286
	STATE WATERS	706,442	11,195	1,361,719	15,024	2,068,161	26,219
	TOTAL	916,236	13,127	2,336,337	21,378	3,252,573	34,505
1999-2000*	FISHING AREA						
	FEDERAL WATERS	130,241	1,154	867,921	4,669	998,162	5,823

(CONTINUED)

* preliminary