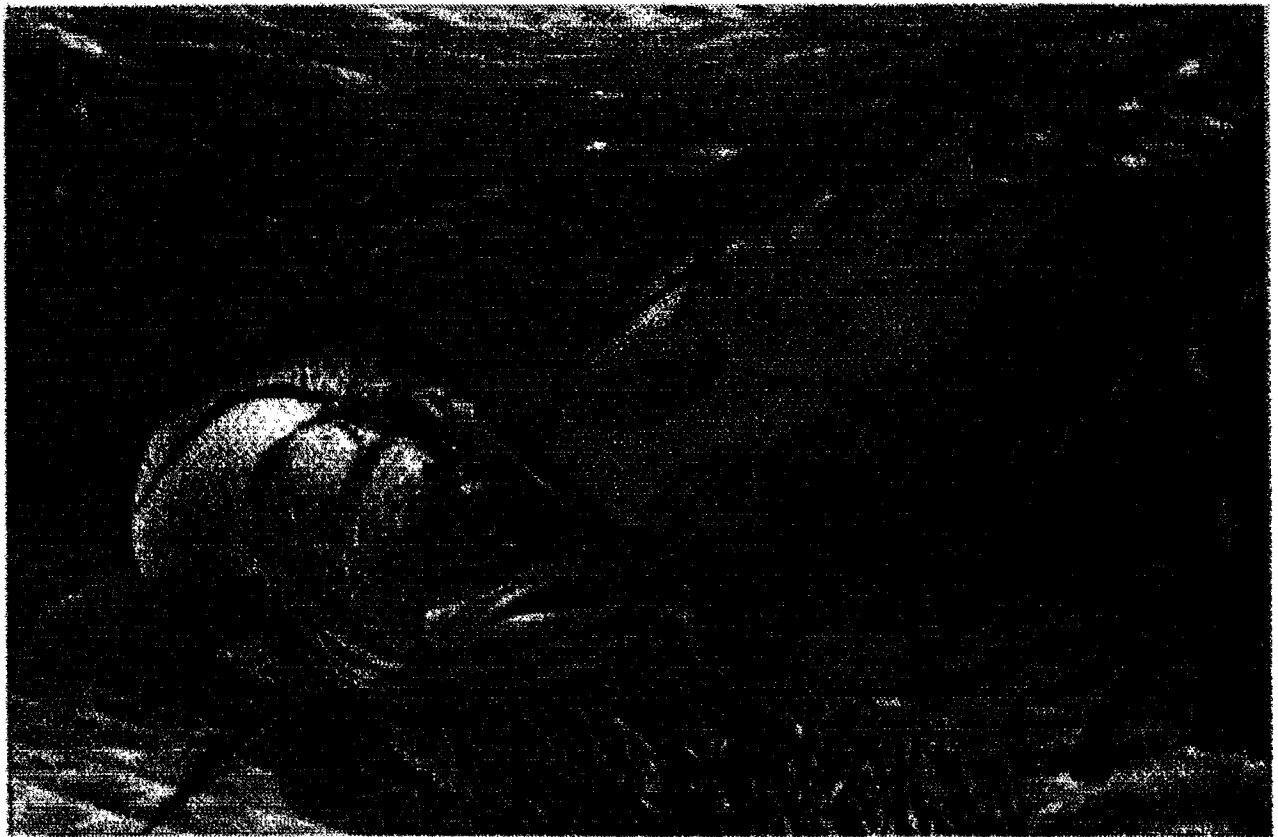


The Status of Snook in Florida Bay & adjacent waters, Everglades National Park



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Gamefish Harvest Monitoring Project

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INTRODUCTION

National Park Service (NPS) management policies state that recreational fishing is permitted in parks where it is authorized by federal law or is not specifically prohibited, and is in accordance with applicable federal/state laws and regulations. However, the NPS may restrict fishing activities whenever necessary to achieve management objectives. NPS goals and management objectives are based on the preservation and restoration of the natural diversity and ecological integrity of fish populations. When harvest is permitted, in no case should it be allowed to reduce the reproductive potential of the population or to radically alter its natural (unfished) age structure. Fishing activity and harvest of sportfish from Everglades National Park have been monitored nearly continuously since 1958. The objectives of fisheries monitoring in the park are: 1) to estimate catch rates, relative abundance, age structure, and total harvest, and 2) to estimate boating and fishing activity in park waters.

This monitoring program was originally initiated because of concern over greatly increased fishing pressure resulting from the construction of a highway, marina facilities, and an access canal to Whitewater Bay in 1958. The first ten years of the park's fishery monitoring program (1958-1969) were conducted through a contract with the University of Miami's Institute of Marine Science and were directed at evaluating only the sport fishery. Under the University of Miami program, measures of catch and catch-per-unit-of-effort (CPUE) were made only from those fishermen operating out of Flamingo. These data covered a major area of the fishery, but largely missed two other major areas: eastern Florida Bay and the lower Ten Thousand Islands.

In 1965, a permitting system was established for commercial fishermen operating in the park. These fisheries included commercial hook & line (primarily spotted seatrout), netting (mullet and pompano), stone crab trapping, and professional guides. Until 1972, these catch data consisted of monthly total harvest, by species, for each fishermen. The harvest reports did not include any measure of fishing effort or specific area of harvest so it was not possible to monitor populations by ecosystem or management unit, nor to evaluate the degree to which fishermen complied with the reporting requirements of their permits.

In 1972, the NPS expanded the harvest monitoring program. Censusing techniques were developed to evaluate total parkwide fishing effort (sport and commercial). The primary emphasis of the expanded monitoring was to improve the precision of the catch rate and total fishing effort estimates for both sport and commercial fisheries. In 1974, fish size data was added to the information recorded and, in 1980, Chokoloskee-Everglades City boat ramps were added on a routine basis.

METHODS

Methods (data collection/recording format) employed to obtain sport fishing monitoring and boating activity data in Everglades National Park have been previously presented by Higman (1967), Davis and Thue (1979) and Tilmant et al. (1986), and are briefly discussed below:

Figure 1: Map of ENP

- a) All results that will be discussed come from Areas 1-5.
- b) Anglers are interviewed at boat launch sites (Chokoloskee/Everglades City) upon completion of their trip every weekend. Data recorded include area fished, fish kept, fish released, effort (angler-hours fished), species preference, angler residence, and fish lengths. Professional guides are required to obtain a permit from the park and report their monthly catch and effort on a per trip basis via logbooks supplied with the permit.

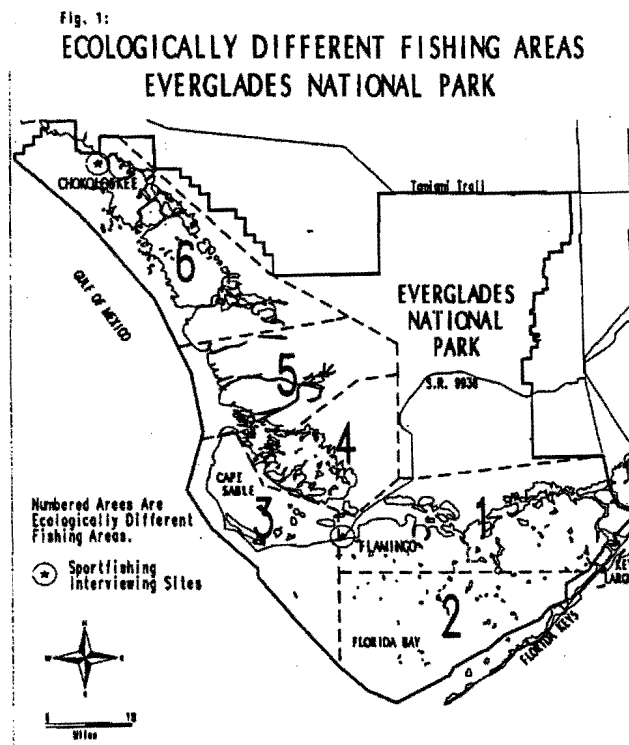
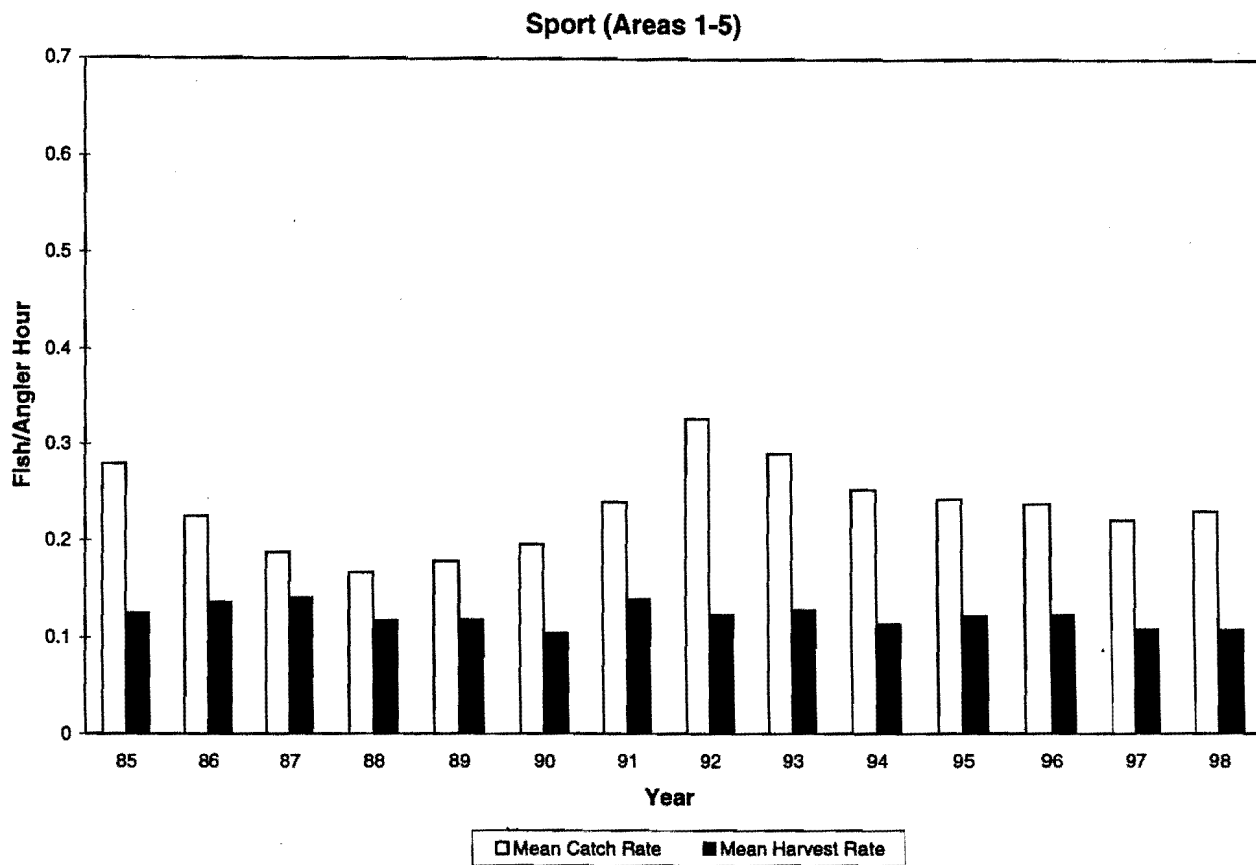


Figure 2: Sport Catch and Harvest Rates

- a) Sport CPUE (catch rate) shows a cyclical trend every four years.
- b) 1997 was an extra down year.
- c) CPUE begins to increase again in 1998. Preliminary data indicates that snook catch rate increased from 1998 to about .24 snook per angler-hour in 1999.
- d) Harvest rates have remained relatively steady.



Sport catch rate and environmental factors

- Sport CPUE was significantly correlated with mean annual water levels from three years before.
- Other studies have shown that increased upland water levels are beneficial for juvenile snook (lower salinities, more available habitat, more food available).
- The cycle seen in catch rate is partly due to the four years needed for juveniles to recruit to the fishery.

Figure 3: Sport catch rate and fishing boats

- Human influences on snook: there are more and more fishermen now competing for a limited resource.
- We correlated the estimated total number of fishing boats with Sport CPUE from 1985-1998. There was a significant negative correlation between CPUE and the number of fishing boats.
- As more anglers (both sport and guide) enter the fishery, the pressure on the snook stock increases, and abundance (CPUE) may decline.
- Snook are a heavily targeted species; 41% of licensed anglers have snook stamps.
- FMRI stock assessments indicate that snook are overfished on the Gulf coast and are possibly overfished on the Atlantic coast.
- The state of Florida increased the minimum size to 26" to prevent further overfishing.

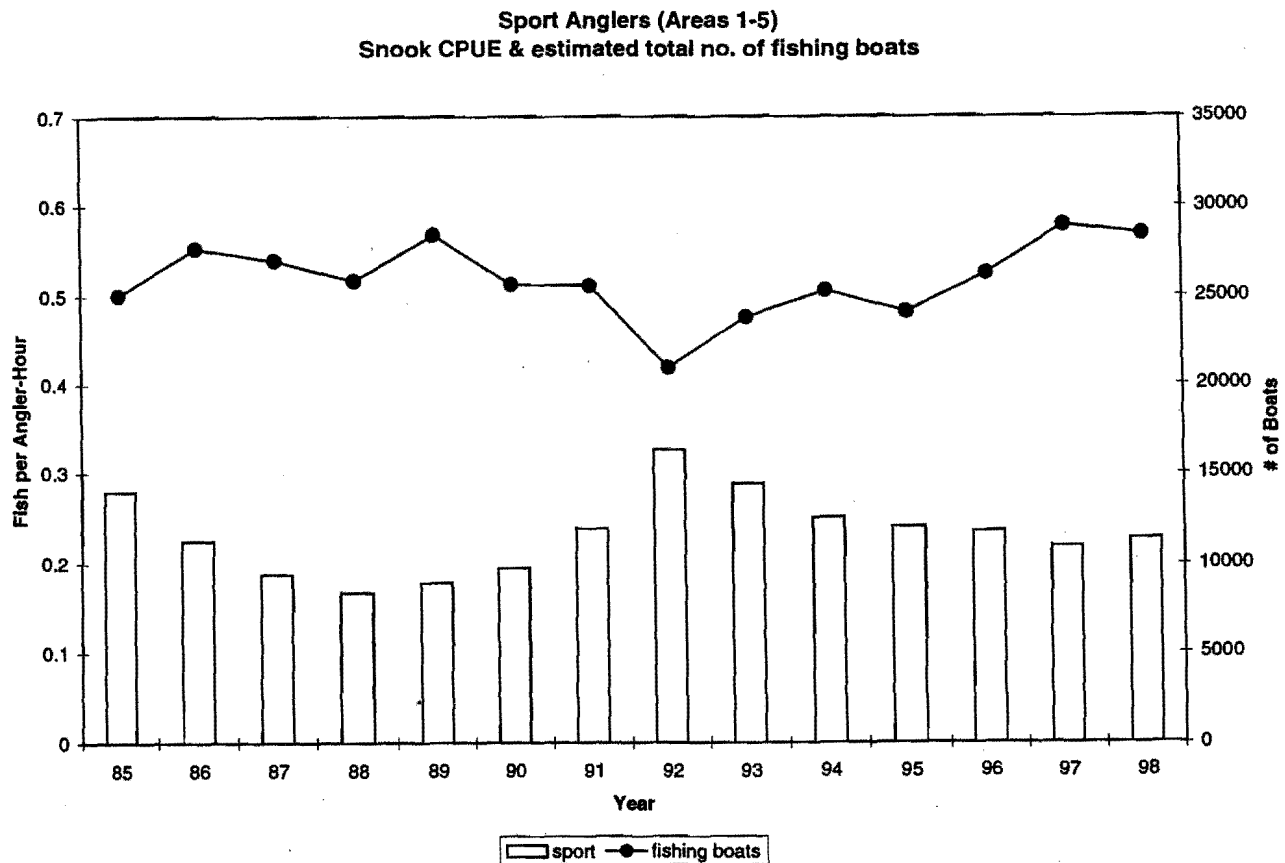
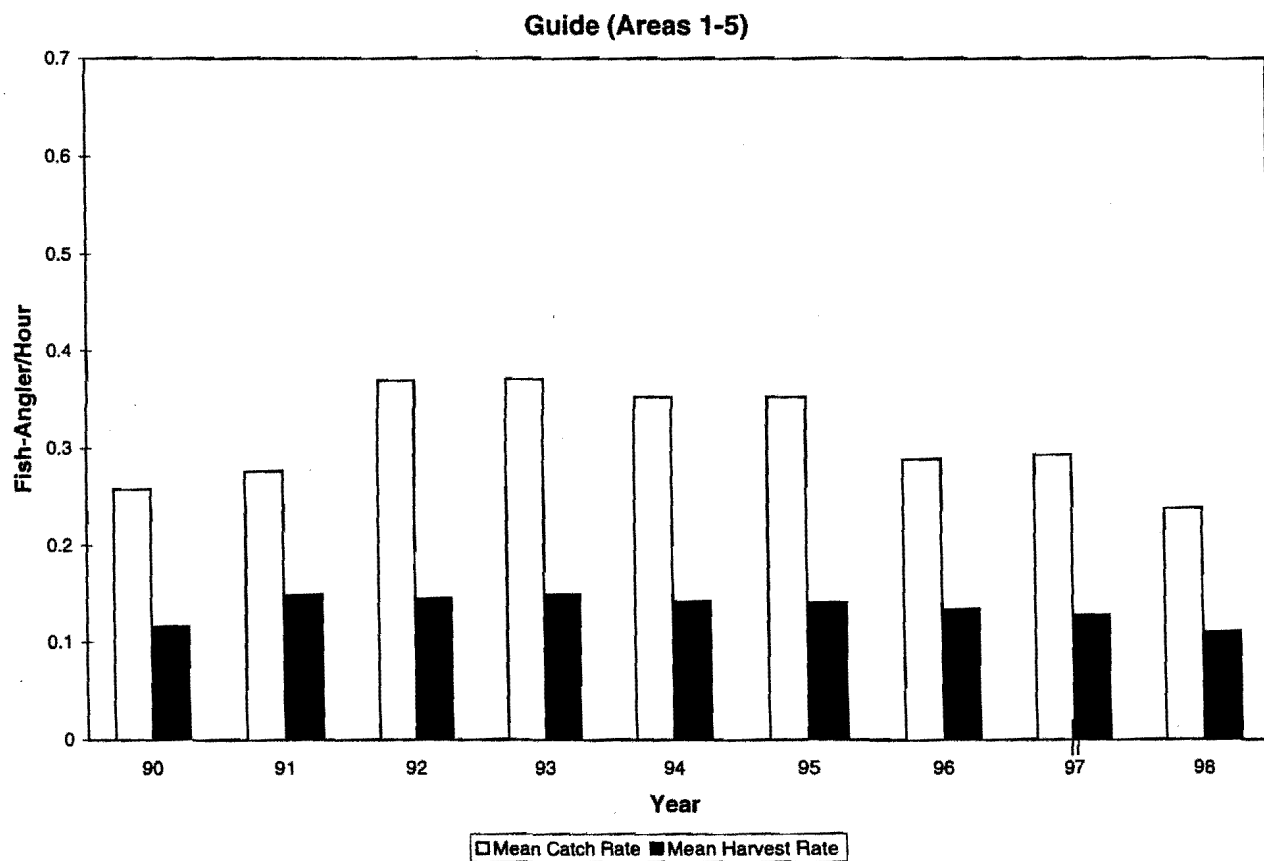


Figure 4: Guide Catch and Harvest Rates

- a) Guide CPUE has shown a drop in recent years (from 1996-1998).
- b) Preliminary data suggests that guide CPUE has increased from 1998 to about .29 snook per angler-hour in 1999.
- c) Harvest rates have remained relatively steady.

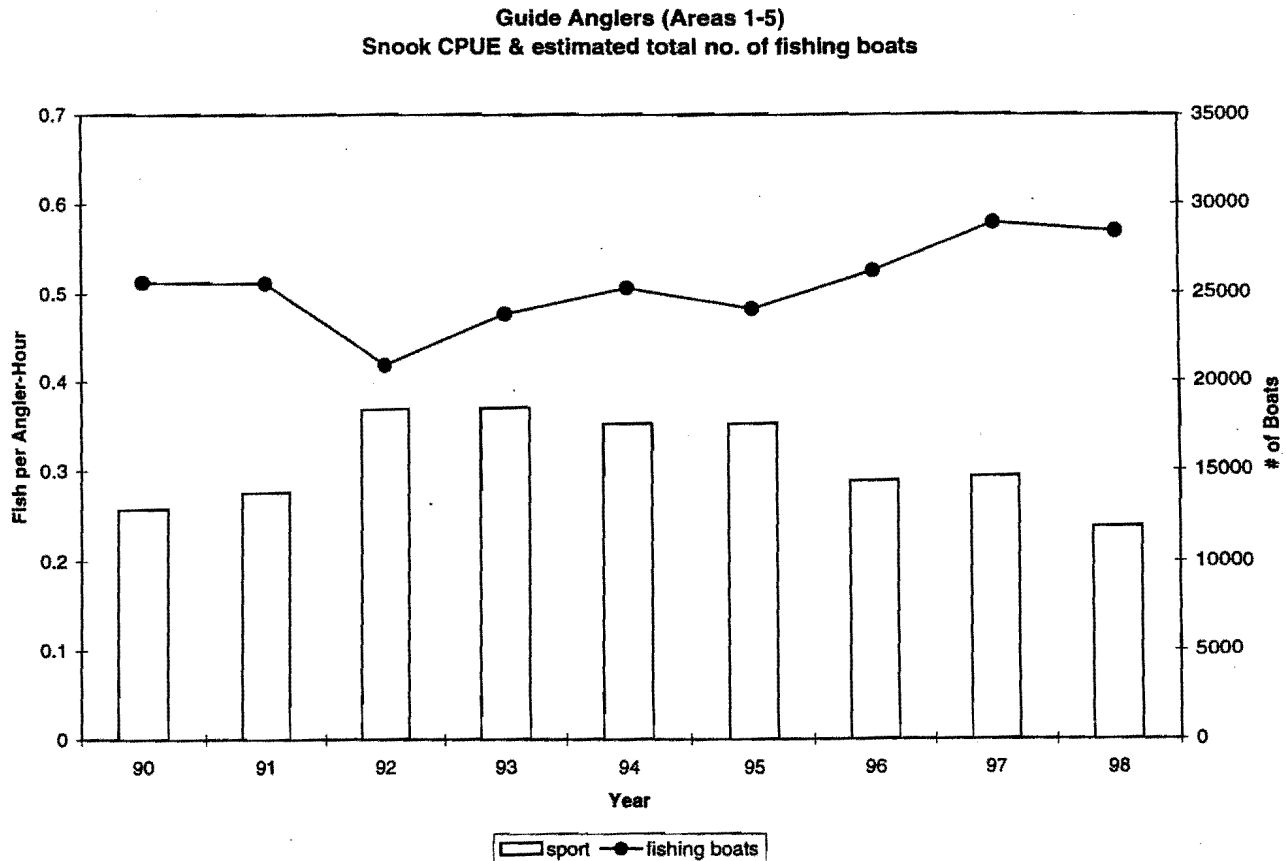


Guide catch rates and water levels

- a) Environmental influences on snook: other studies have shown that increased upland water levels are beneficial for juvenile snook (lower salinities, more available habitat, more food available).
- b) Mean annual guide CPUE correlated with mean annual water levels showed that there was a significant relationship between CPUE and water levels from three years before.

Figure 5: Guide catch rates and fishing boats

- a) Human influences on snook: there are more and more fishermen now competing for a limited resource.
- b) So we correlated the estimated total number of fishing boats with Guide CPUE from 1990-1998. There was a significant negative correlation between CPUE and the number of fishing boats.
- c) As more anglers (both sport and guide) enter the fishery, the pressure on the snook stock increases, and abundance (CPUE) may decline.
- d) Snook are a heavily targeted species; 41% of licensed anglers have snook stamps.
- e) FMRI stock assessments indicate that snook are overfished on the Gulf coast and are possibly overfished on the Atlantic coast.
- f) The state of Florida increased the minimum size to 26" to prevent further overfishing.



Bait Data at Flamingo (FSU Snook and Redfish Diet Study)

607 anglers were asked what type of bait they used at Flamingo from May 1999 to February 2000 as part of the FSU snook and redfish diet study.

- a) Overall, 59% of the **sport anglers** used bait, while 41% used artificial.
- b) However, if a snook was caught, 44% used bait and 56% used artificial.
- c) Preliminary catch rates (5/99 to 12/99) for those fishermen that caught a snook showed that anglers using artificial had a statistically higher CPUE than anglers using bait (.33 snook per angler-hour vs. .25 snook per angler-hour, respectively).
- d) Overall 79% of the **guides** used bait, while only 21% used artificial.
- e) When a snook was caught, 77% used bait and 23% used artificial.

CONCLUSIONS

Snook CPUE/abundance showed a drop during 1996-1998 for guides and during 1993-1997 for sport anglers. Environmental and human influences were working in conjunction to depress CPUE during this time period: 1) water level conditions, 2) fishing pressure, and 3) a large snook kill during February 1996 due to low water temperatures. It would take 3-4 years for stocks to recover after a fairly large kill as that is the time needed for snook to recruit to the fishery.

ENP has several works in progress to continue monitoring fish populations and to keep the public informed. The Annual Fisheries Report including 1999 data is currently being completed and will be available on the internet (www.nps.gov/ever). Bait data continues to be collected at Flamingo and Everglades City boat ramps. The catch rates of anglers using bait versus artificial will be compared to determine if there are any differences between the two fishing methods.