California Department of Fish and Game's

Loligo Examiner

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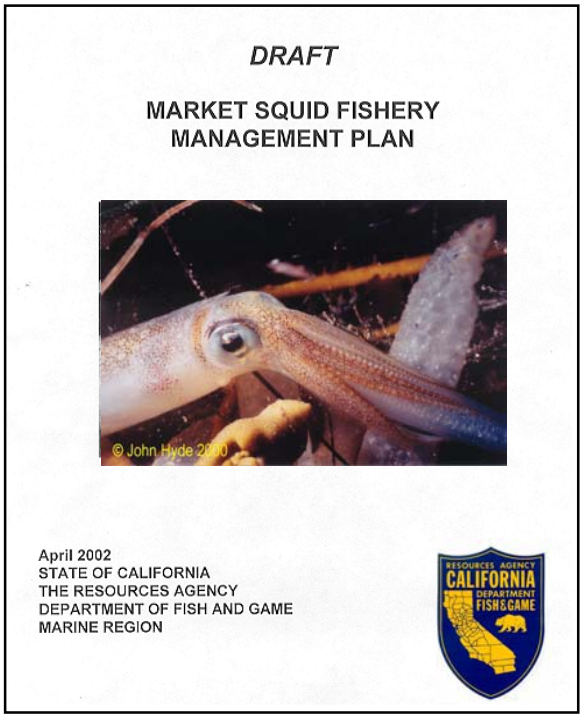
Introduction

Welcome to the latest edition of the *Loligo Examiner.* This newsletter serves as a means for the California Department of Fish and Game (the Department) to provide market squid (*Loligo opalescens*) fishery participants and other interested persons with information on regulation changes, research activities, and the progress of squid fishery management.

Coming Soon to the Market Squid Website.....



Cover page for the Draft Market Squid Fishery Management Plan.

Check out our new website at:
http://www.dfg.ca.gov/mrd/marketsquid/index.html

You can view the Draft Market Squid Fisheries Management Plan as soon as it is available for public review. The expected release date is mid-May.

Summary of the Draft Market Squid Fishery Management Plan

Corey Kong - CDFG Santa Barbara

The Draft Market Squid Fishing Management Plan (MSFMP) is being developed under the provisions set forth in the Marine Life Management Act (MLMA) of 1999. The MLMA created state policies, goals, and objectives to govern the conservation, sustainable use and restoration of California's marine living resources. The MLMA gives the Fish and Game Commission and the Department specific guidance for managing marine resources through a comprehensive set of goals and objectives. The MSFMP is being developed under this direction to better facilitate conservation and stewardship of this important resource. The following is a brief summary of the Draft MSFMP.

Chapter 1. Introduction

The introduction contains the purpose and need for action, how the MSFMP is related to the MLMA, and the goal and objectives of the MSFMP. The MLMA sets goals and guidelines for the creation of Fishery Management Plans (FMPs), including peer and constituent involvement. This portion also has a section on authority and responsibility for the MSFMP and the MSFMP in relation to the California

Environmental Quality Act (CEQA). The CEQA exists to provide decision-makers with information about environmental effects and possible safeguards related to a proposed action. Finally, the current state of management of market squid is outlined.

Chapter 2. Description of Stocks

This section includes the biological information concerning market squid. Summaries of distribution, biomass, genetics, migration, age and growth, and reproductive characteristics are included. Ecological factors of mortality, disease, predator/prey relationships, competition, and habitat are outlined.

Chapter 3. Description of the Fishery

A thorough history and description of the fishery is explained including areas and stocks, history of exploitation, description of commercial and recreational users, effort by user groups, and socio-economics of users including regional demographics and allocation issues.

Chapter 4. History of Conservation and Management Measures

The regulatory history of market squid is summarized, including all legislation, and additions and amendments to the Fish and Game Code (FGC) concerning squid. Also, there is a section on how market squid is monitored as part of the CPS FMP.

Chapter 5. Fishery Management Program

This portion of the MSFMP describes potential management measures, their application to the fishery, and definitions of Maximum Sustainable Yield (MSY) and Optimum Yield (OY) under Fish and Game Code. The general fishery management plan framework is described including: the amendment process, the process of establishing, adjusting, or removing management measures, and the establishment of routine management measures (frequently adjusted measures). The MSFMP framework consists of a "points of concern" process, socio-economic process, allocation criteria, and harvest control rules, which provide the Commission specific guidelines for making management decisions. An additional section outlines the process of using fishery trigger mechanisms to provide the Commission with real time management recommendations. Finally, the process of using management alternatives (Chapter 6) is summarized.

Chapter 6. Project Alternatives

The project alternatives are the management options that the Commission uses to determine how to manage the fishery. Management options are presented for:

- Statewide seasonal catch limitation
- Daily trip limit for squid vessels and brail vessels
- Weekend closures
- Research and monitoring programs
- Harvest replenishment areas (areas closed to fishing)
- Live bait and incidental catch
- Restricted access – limited entry programs including:
  - Capacity goals
  - Initial issuance criteria
  - Permit transferability
  - Permit transferability fee structure
- Gear restrictions
- Area and time closures for seabirds
- Advisory committees
- Permit fees

Chapter 7. Analysis of Proposed Management Alternatives

The MSFMP is a CEQA equivalent document. As such, the effects of the proposed management and alternatives (Chapter 6) must be evaluated for potential impact on target and non-target species, the environment and the socio-economics of the squid fishery.

Chapter 8. Fishery Research Protocols

As directed by the MLMA, all FMP's must contain research protocols which describe past and ongoing monitoring, identify Essential Fishery Information (EFI), and indicate steps to monitor the fishery and obtain EFI. EFI can belong to one of two broad categories: fishery dependent (related to take by fishermen) or fishery independent (data gathered independent of fishery) information. There are nine general EFI groups: age and growth characteristics, distribution of stocks, ecological interactions, abundance estimates, movement patterns, recruitment, reproductive characteristics, total mortality, and socio-economic factors. This chapter also describes current knowledge of EFI, research needed to

obtain EFI, and steps to monitor and obtain EFI.

Chapter 9. Implementation Requirements

This chapter discusses the projected costs and requirements for implementing the MSFMP. There are three categories or requirements: enforcement, ongoing and future fishery dependent and independent research, and administrative management. Cost estimates are based upon the time spent on each activity.

Chapter 10. Other Ecological Concerns

Other ecological concerns related to the squid fishery are outlined in this chapter. Environmental conditions, such as El Niño (warm water) and La Niña (cool water) events, appear to affect the market squid population. Water quality issues are also addressed. Water quality (the amount of substances or pollutants in water) can have a direct/indirect affect on marine environment and organisms, including market squid. Air quality concerns and standards are also addressed.

Research Update

Market Squid Research Cruise

Anthony Cossio - CDFG La Jolla

In December, the Department, in cooperation with the National Marine Fisheries Service (NMFS), headed to the waters surrounding the Channel Islands to investigate market squid reproduction. The primary objective was to collect at least 50 prespawning (virgin) female squid. These squid are needed to refine fecundity estimates used in the egg escapement method that is being used as a proxy for maximum sustainable yield (MSY) in the squid fishery.

The R/V Mako worked mainly off Santa Cruz Island from December 3rd through the 7th where spawning was concentrated. Three types of nets were used to attempt to capture virgin squid. The first was a bottom trawl which caught no virgin female squid. Next we tried a Marinovich trawl net in midwater and collected five virgin female squid. Fifteen additional virgin female squid were collected using dip nets, which turned out to be the most successful. Once captured, the squid were processed immediately to determine length, weight, sex and maturity. The reproductive organs were then preserved for study.

We also captured 40 male and female squid and kept them alive to study at the Southwest Fisheries Science Center. One mature female was separated from the others for spawning observations. Later the squid was found dead after spawning nine egg cases. A total of 916 eggs was counted. The mean number of eggs was 222 per egg case. Three egg cases contained few or no eggs. Previous studies have reported about the same average eggs per egg case.

Although we did not collect our target goal of 50 prespawned females, the cruise was still valuable for the fecundity information to refine collection methods for future collection cruises.

Market Update

The 2001/2002 Squid Season in Review

Valerie Taylor - CDFG Los Alamitos
Travis Tanaka - CDFG Monterey

In Monterey, squid made their first appearance for the season during the latter part of April 2001, and fishing began with limited success (Figure 1). Throughout the season, landings were inconsistent and sometimes squid seemed to vanish from the fishing grounds. There were only eight landings between the second week of May and all of June because of wind, a strike, and no squid. Landings increased as summer came into full swing, and vessels began fishing for squid during the daylight hours without light boats. Although variable, landing tonnage increased to a peak in August of 3,600 tons. September was also a good month with about 2,300 tons landed. Squid landings decreased considerably by October, and the Monterey squid fishing season was officially over by November. In February 2002, several vessels began landing squid again and continued to do so through March. Squid occurrence was very spotty, however, with only a few boats looking. With the early start in February, this season's preliminary total of 9,552 tons surpassed last year's harvest of 8,312 tons. Ex-vessel values ranged from $250/ton (following the May strike) to a low of $190/ton. Ex-vessel price was $250/ton following the March 11-15 strike.

As in the last two seasons, the southern California fleet continued to land squid throughout the spring and summer months, but squid fishing was slow because of limited availability. Between April and July, the average landing tonnage per month was 3,055 tons, but plummeted to a low of 371 tons in August. In November, landings increased to a peak of 19,571 tons in August. In November, landings increased to a peak of 19,571 tons, but were still considerably lower than last season's (30,531 tons), because of a squid strike during the first week of November and because of rough weather. As the season progressed, landings remained steady with an average of 13,721 tons per month and were near the levels of last season. However, many fishermen and dealers complained of small, poor quality squid. At the northern Channel Islands, squid distributions were reported as patchy, and fishermen blamed it on cold water temperatures. Near the end of the season, squid quality improved, but rough weather, increasing water temperature, and another strike kept landings lower. Unlike Monterey, this season's preliminary total of 87,870 tons will not surpass last year's harvest of 115,638 tons. Ex-vessel prices ranged from a high of $300/ton in August, to a low of $100/ton in May, with an average of $200/ton.

Although landings have decreased, the fishery remains strong after the 1998 El Niño season, in which landings plummeted to less than 12,000 tons (Figure 2). Preliminary landings total 97,000 tons, which indicate that the 2001/2002 squid season will fall below landing totals of the past two seasons, 122,597 tons and 123,340 tons, respectively. Strikes and squid quality affected this season's landings more than in previous seasons. Fishermen believe that the squid abundance was the same but in different locations. Squid were previously found in large quantities around the northern Channel Islands; this season, however, most squid were found around Santa Catalina Island. Fishermen also believe the squid are consistently getting smaller and will continue to do so through the next season.

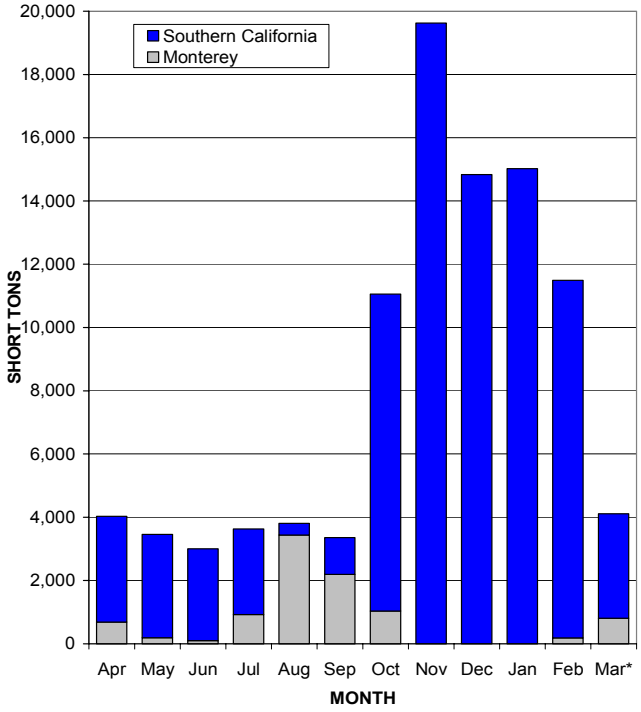


Figure 1. Monthly squid landings for Monterey and southern California, 2001/02.* Denotes preliminary data.

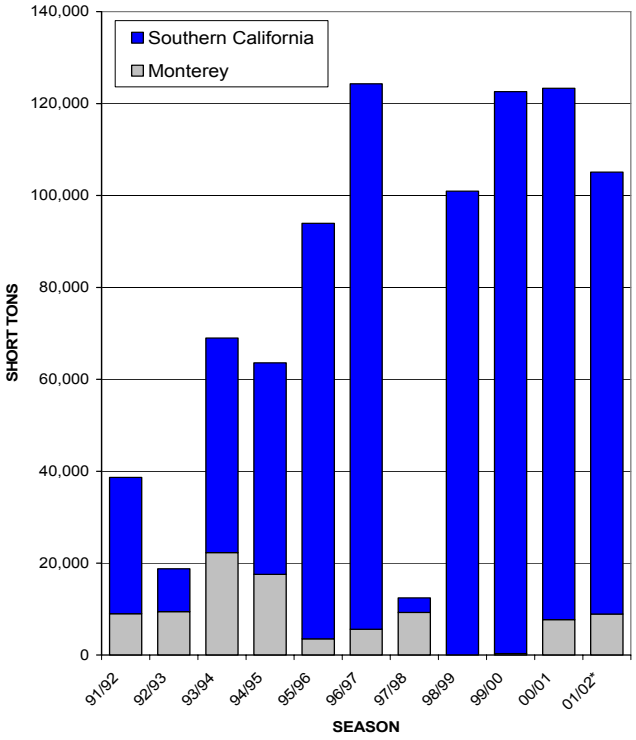


Figure 2. Seasonal squid landings for Monterey and southern California, 1991/92 - 2001/02.* Denotes preliminary data

Squid Fishing in Winter?

Travis Tanaka – CDFG Monterey

The Monterey squid fishery started much earlier than expected and experienced several landings by the third week of February (Figure 3). Historically, the Monterey squid fishery begins in the spring and ends in the fall, with the exception of El Niño years when little or no squid are caught. A few scattered landings have occurred in January, February, and March over the years, but the bulk of squid landings begin in April. This season is the exception. When the weather was nice, boats averaged 10-15 tons per trip. Fishermen are excited over the early start of the Monterey squid season, but are equally apprehensive. Some believe that an early start translates to a short season. Life-long Monterey fishermen have never seen squid in Monterey Bay in harvestable quantities in February. This is a first for the Monterey market squid fishery.

Vessels Target Squid During the Day

The early start to the squid season was characterized by boats making sets during the day. Daylight fishing goes against the norm of using powerful lights to attract and concentrate squid. Daylight fishing is not common in the California squid fishery, but there are times when Monterey vessels have more success during the day. Squid are usually harvested at night when they are attracted to a squid vessel's lights or those of a light boat. Squid will then concentrate in tight masses under the attracting vessel, allowing harvest.

When fishing during the day, seiners are catching those squid that are up in the water column. Fishermen report that sometimes these squid seem to school in roving masses. Monterey squid also tend to show in shallow, predictable areas. A squid vessel, depending upon the depth of seine used, could capture these squid.

Lights were not always allowed in the Monterey squid fishery. Use of attracting lights was banned from Monterey Bay between 1959 and 1988.

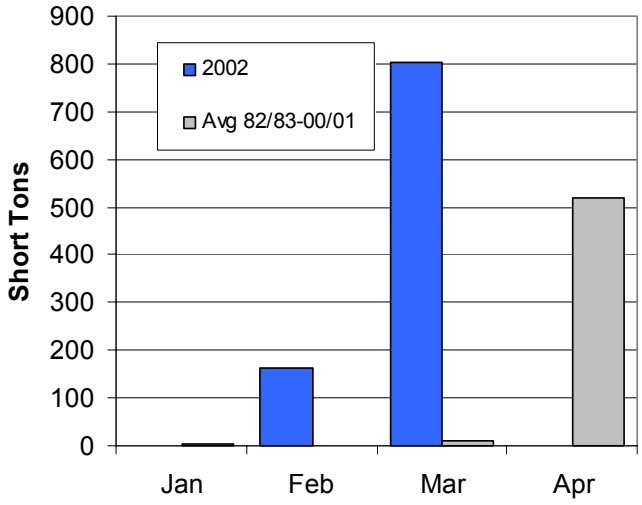


Figure 3. Squid landings in short tons from Monterey Bay for January, February, and March 2002 compared to the average monthly landings for 1982/03-2000/01. April 2002 landings not yet reported.

Meetings

Fish and Game Commission Events
See the 2002 meeting schedule at the Commission website at:
www.dfg.ca.gov/fg_comm/.

You can contact the Commission at:
California Fish and Game Commission
1416 Ninth Street
P.O. Box 944209
Sacramento, CA 95244-2090

Phone: (916) 653-4899
Fax: (916) 653-5040

Robert R. Treanor, Executive Director
rtreanor@dfg.ca.gov

John M. Duffy, Assistant Executive Director
jduffy@dfg.ca.gov

http://www.leginfo.ca.gov

If you have any questions or comments concerning the squid fishery, you can mail or fax them to:

CA Department of Fish and Game
Marine Region – Squid Project
1933 Cliff Drive, Suite 9
Santa Barbara, CA 93109
(805) 568-1231 (business phone)
(805) 568-1235 (fax)

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Dale Sweetnam Senior Marine Biologist	(858) 546-7170 dale.sweetnam@noaa.gov
Annette Henry FMP Coordinator/ Marine Biologist	(858) 546-5680 annette.henry@noaa.gov
Corey Kong Marine Biologist	(805) 568-1227 ckong@dfg2.ca.gov
Mary Ellsworth Editor/Office Technician	(858) 467-4214 mellsworth@dfg.ca.gov