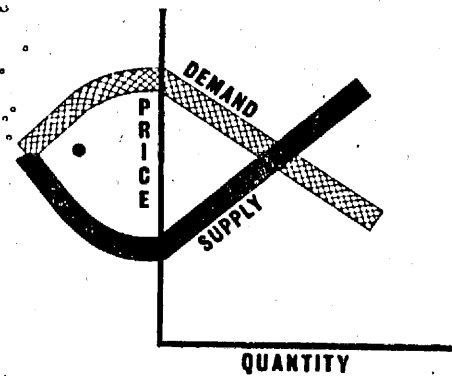


WITHDRAWN
ANNUAL SHELF



ECONOMIC STUDY OF SAN PEDRO WETFISH BOATS

By

William F. Perrin and Bruno G. Noetzel

Working Paper No. 32
October 1969

US BUREAU OF COMMERCIAL FISHERIES
DIVISION OF ECONOMIC RESEARCH

WORKING PAPER SERIES

1. An Application of an Investment Model to Channel Catfish Farming by R. Thompson and F. Mange.
2. The Development of Catfish as a Farm Crop and an Estimation of Its Economic Adaptability to Radiation Processing by D. Nash and M. Miller.
3. Design Study: An Optimum Fishing Vessel for Georges Bank Groundfish Fishery by A. Sokoloski (Project Monitor).
4. The Relation between Vessel Subsidy Percentages and the Rate of Return on Investment for Various Technologies and Scale Levels: The Haddock Fishery by D. Nash, A. Sokoloski and F. Bell (Project Monitors).
5. An Economic Justification for Recommended Legislative Changes in the 1964 Fishing Fleet Improvement Act by F. Bell, E. Carlson, D. Nash and A. Sokoloski.
6. The Economic Impact of Current Fisheries Management Policy on the Commercial Fishing Industry of the Upper Great Lakes by D. Cleary.
7. Cost and Earnings in the Boston Large Trawler Fleet by B. Noetzel and V. Norton.
8. Some Elements of An Evaluation of the Effects of Legal Factors on the Utilization of Fishery Resources by A. Sokoloski.
9. A Report on the Economics of Polish Factory Trawlers and Freezer Trawlers, by B. Noetzel.
10. An Inventory of Demand Equations for Fishery Products by D. Nash and F. Bell.
11. Industry Analysis of West Coast Flounder and Sole Products and an Estimation of Its Economic Adaptability to Radiation Processing by D. Nash and M. Miller.
12. Bio-Economic Model of a Fishery (Primarily Demersal) by E. Carlson.
13. The Factors behind the Different Growth Rates of U. S. Fisheries by F. Bell.

(continued on inside back cover)

ECONOMIC STUDY OF SAN PEDRO WETFISH BOATS

by

William F. Perrin and Bruno G. Noetzel

ABSTRACT

Because the San Pedro wetfish fleet is shrinking and is not yielding good wages for fishermen or good returns to investors, it needs to improve its economic state. The fleet is antiquated, and one way it can improve itself is by constructing new, efficient vessels, both for replacement of vessels and for expansion of the fleet to harvest presently underexploited stocks of jack mackerel and anchovies in the California Current. The study reported here investigated the feasibility of this approach. It found that, at present rates of catch and prices of fish, the construction of new vessels is not economically feasible--even if the construction is subsidized. It also found, however, that expansion of the fleet through acquisition of surplus vessels from other fisheries is feasible, given sufficient demand for wetfish at present prices.

Authors: William F. Perrin, Fishery Biologist (General), Bureau of Commercial Fisheries Fishery-Oceanography Center, P. O. Box 271, La Jolla, California 92037, and Bruno G. Noetzel, Industry Economist, Bureau of Commercial Fisheries Division of Economic Research, 7338 Baltimore Avenue, College Park, Maryland 20740.

CONTENTS

Introduction

- I. Financial condition of the fleet
 - A. Productivity, revenue, and profits
 - B. Capital structure and return on investment
 - C. Crew earnings
 - 1. Fleet averages for 1963 to 1967
 - 2. Vessel variation in crew earnings
 - D. Employment
- II. Model for calculating costs and earnings
 - A. Analysis of costs
 - 1. Operating costs
 - 2. Owner costs
 - a. Parts and repairs
 - (1) Existing vessels
 - (2) New vessels
 - b. Netting and supplies
 - c. Insurance
 - (1) Existing vessels
 - (2) New vessels
 - d. Payroll and taxes
 - e. Interest on loans
 - f. Moorage

- g. State and county taxes
- h. Depreciation
 - (1) Existing vessels
 - (2) New vessels
- i. Office expenses and other costs

B. Prediction of earnings

- 1. Revenue
 - a. Problem of predicting revenue
 - b. Solution to the problem of predicting revenue
- 2. Profits, return on investment, and crew earnings
 - a. Existing vessels
 - b. New vessels

III. Economic feasibility of fleet expansion and new-vessel construction

A. Fleet expansion with existing vessels

- 1. Summary table
- 2. Analysis of summary table and conclusions

B. Fleet expansion or vessel replacement with new vessels

- 1. Summary tables
- 2. Analysis of summary tables and conclusions

Summary

Acknowledgements

References Cited

INTRODUCTION

San Pedro is the major seaport for Los Angeles, California. San Pedro wetfish boats fish for mackerel, bonito, anchovies, and tuna in local waters and land them in a fresh unfrozen condition. In recent years, vessel operators in this fleet have been financially hard-pressed; they have complained of rising costs coupled with static fish prices. At the same time, large underexploited populations of mackerel and anchovies are reported to exist in the California Current (Ahlstrom, 1968). If these resources are to be harvested by U.S. fishermen, the wetfish fleet must expand, either through recruitment of surplus vessels from other fisheries or through the construction of new vessels. Motivated by these considerations, the U.S. Bureau of Commercial Fisheries in 1968 began an investigation of the present financial condition of the fleet and the economics of the operations of wetfish boats. This paper reports the results of the study. In this introduction, we shall present background material on the makeup, history, landings, and operations of the San Pedro fleet, state the precise aims of the study, and describe the data base used.

The San Pedro wetfish boat fleet is part of the roundhaul fleet, which is made up of four types of vessels: (1) tunaboats, (2) combination boats, (3) wetfish boats, and (4) miscellaneous small roundhaul boats.

(1) Tunaboats. Tunaboats are large, long-range purse seiners that vary in fish capacity from 100 short tons to 800 short tons and that fish almost solely for tuna: yellowfin tuna (Thunnus albacares) and skipjack (Katsuwonus pelamis) off Mexico,

Central America, and South America; and bluefin tuna (Thunnus thynnus) and albacore tuna (Thunnus alalunga) off California and Mexico. McNeely (1961) has described the purse-seining gear used and the methods of fishing. Green and Broadhead (1965) have described and analyzed the costs and earnings of tropical tunaboats.

(2) Combination boats. Combination boats are purse seiners that vary in fish capacity from 140 tons to 160 tons and are medium-range vessels that fish primarily for tuna off California and Mexico and for wetfish mostly off California, with tuna making up the major part of the catch. In 1967, eight combination boats were in the San Pedro fleet.

(3) Wetfish boats. Wetfish boats are relatively small purse seiners that vary in fish capacity from 25 tons to 160 tons and that range in length from 40 to 86 feet overall. They operate within 100 miles of San Pedro. Individual trips last from 1 to 10 days, with the average being between 1 and 2 days. Scofield (1951) has described the vessels, gear and fishing methods. Recent technological developments in the fleet, including the adoption of nylon nets and hydraulic net-hauling blocks, have paralleled those described by McNeely (1961) for the tunaboat fleet.

These boats fish primarily for wetfish, here defined to include bonito (Sarda chiliensis), Pacific mackerel (Scomber japonicus), jack mackerel (Trachurus symmetricus), and Pacific sardine (Sardinops caerulea) for canning and also for the fresh-fish market; and northern anchovy (Engraulis mordax) for reduction.

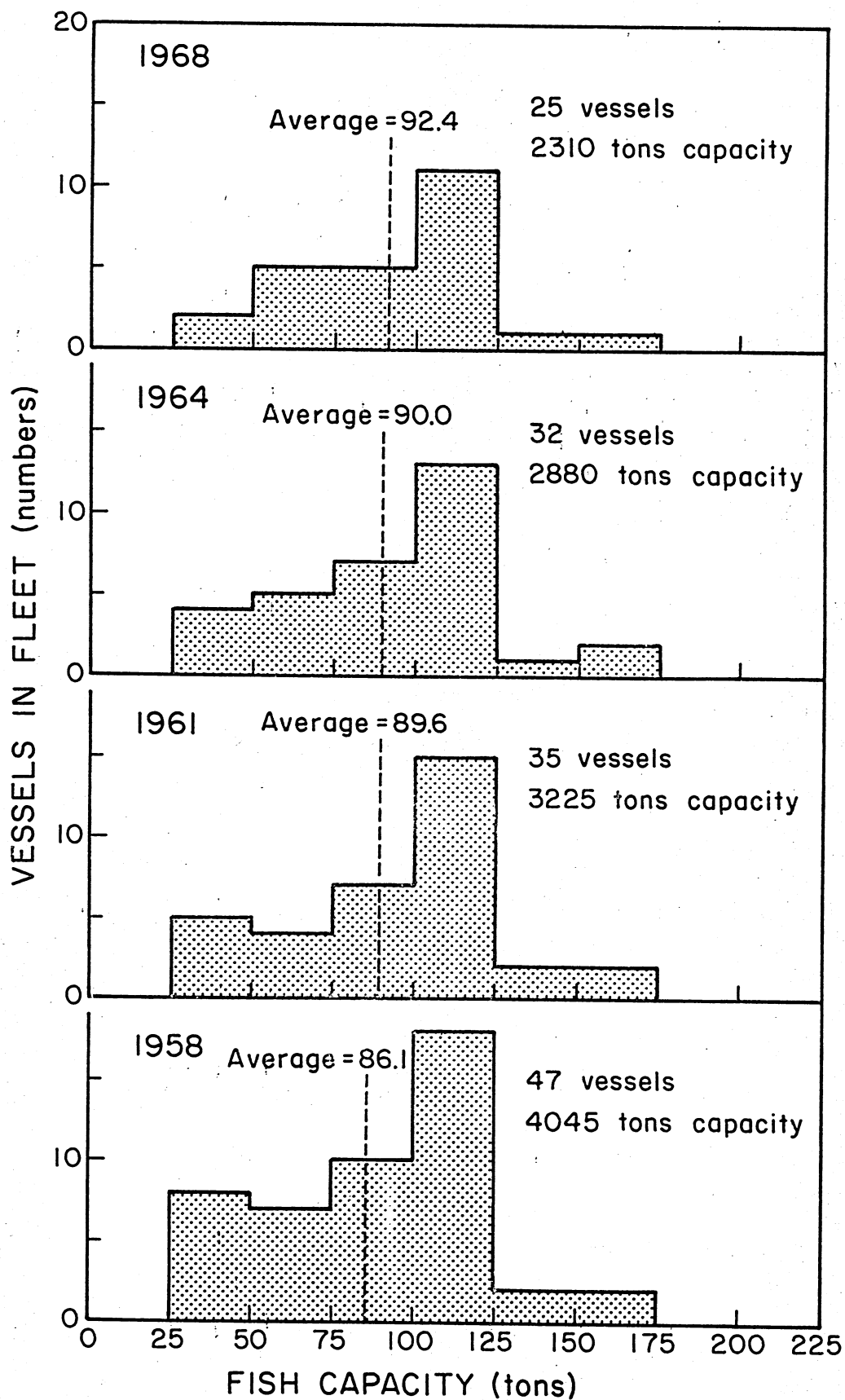


Figure 1.--San Pedro wetfish boat fleet--1958 to 1968. (These data were furnished by the Fishermen's Cooperative Association of San Pedro.)

A significant proportion of their catch, however, in terms of value is made up of bluefin and albacore tuna (see the wetfish fleet landings below). The number of San Pedro wetfish boats decreased from 47 in 1958 to 25 in 1968 (Figure 1), with the greatest reduction occurring in the boats in the size range of 25 to 50 tons.

(4) Miscellaneous small roundhaul boats. Small roundhaul boats include very small purse seiners that vary in fish capacity from 5 tons to 25 tons and "lampara" boats that vary in fish capacity from 5 tons to 40 tons and that fish for wetfish, squid (Loligo opalescens), anchovies for use as bait in sport fishing, and a wide variety of other species landed primarily for the fresh-fish markets.

Of these four types of vessels in the San Pedro roundhaul fleet, wetfish boats (Category 3 above) were the subject of this study.

Wetfish boats have had a history of coping with adversity. The decline of the California sardine fishery (Figure 2) left a sizable fleet of small purse seiners on the West Coast in need of profitable employment. Some turned to salmon seining or to tropical-tuna seining, some converted to trawling, and many became the property of foreign fishing companies and left U.S. waters; but some boats, especially those at Monterey and San Pedro, expanded their activities on Pacific mackerel, jack mackerel, bonito, and bluefin, albacore, and skipjack tuna, which they had fished less intensively while sardine were abundant. The main emphasis was on mackerel (both species). They joined a declining fleet of various types of less efficient vessels already fishing primarily for Pacific mackerel (Crocker, 1938;

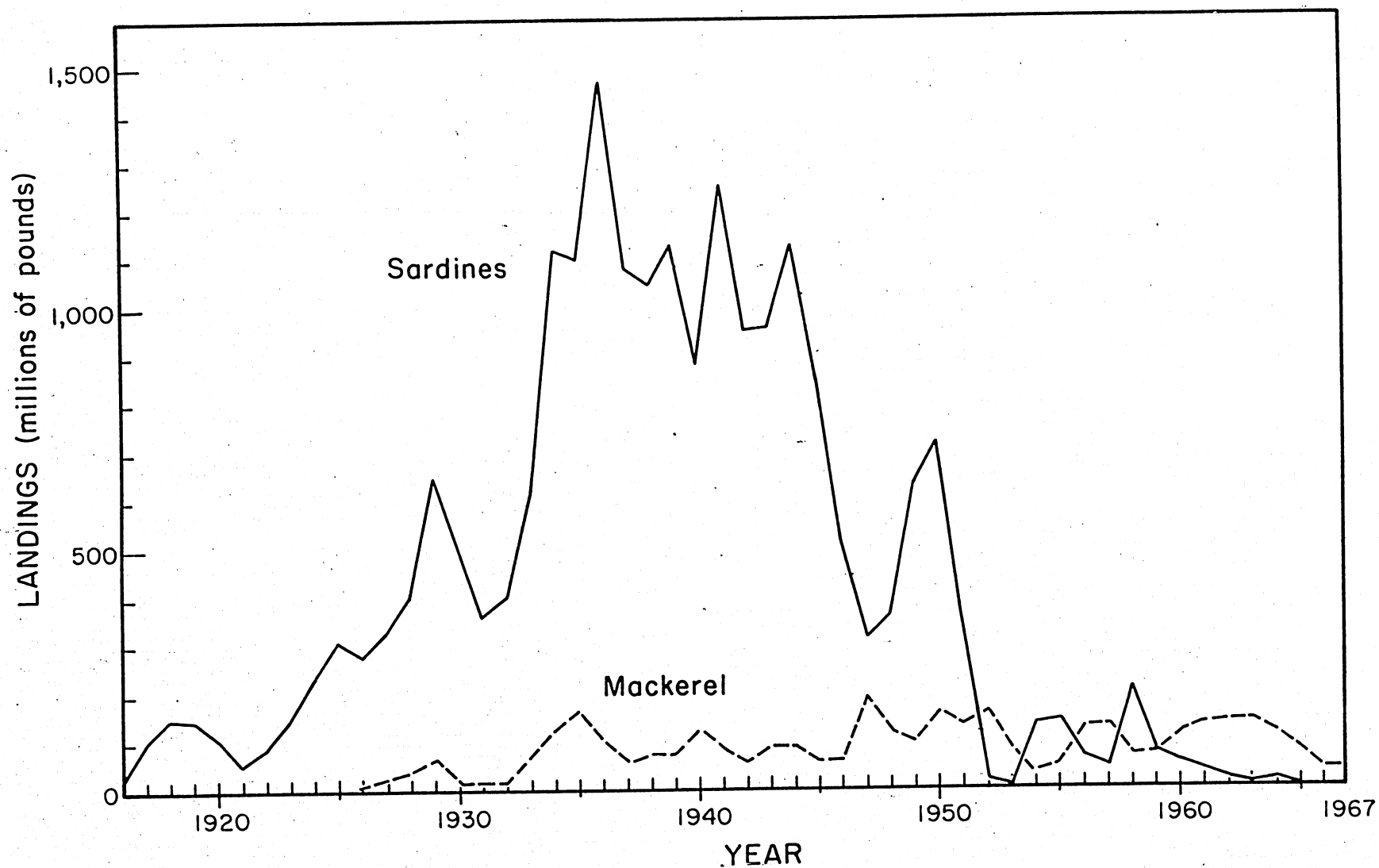


Figure 2.--Sardine and mackerel landings in California, 1916 to 1967. The data are from: Staff, Bureau of Marine Fisheries, 1949; Staff, Marine Fisheries Branch, 1951 and 1956; Staff, Marine Resources Operation, 1958; Biostatistical Section, Marine Resources Operations, 1960a, 1960b, 1961, 1963, 1964 and 1965; Greenhood and Mackett, 1965 and 1967; Heimann and Frey, 1968a and 1968b.

Roedel, 1952). When sardines in some years became temporarily more abundant, they returned for short periods to that species, so that landings of sardines and mackerel showed an inverse relation between 1952 and 1962 (Figure 2). Since 1962, the landings of sardines have been negligible, so that the fleet has depended primarily on mackerel. Thus, the wetfish boat fleet is essentially what is left of the sardine fleet. The newest boat in the fleet was built in 1947 (Table 1).

Table 2 shows the landings of the wetfish boats at San Pedro during 1963 through 1967. It also shows the percent of the total landings in California for each species making up the San Pedro wetfish boat landings.¹ During this period, landings for the fleet closely paralleled the total landings for California (Figure 3). Because the species landed vary widely in ex-vessel price (Table 3), figures for landings alone do not illustrate the species base of the fleet in economic terms. Figure 4 shows the makeup of the landings in terms of the percentage of total value accounted for by each species during 1963 to 1967.² The year-to-year variations in the composition of the catch reflect:

1. The decreasing population of Pacific mackerel, due to overfishing (Ahlstrom, 1968).
2. Yearly fluctuations in the abundance of the migratory bluefin and albacore tuna, probably due to varying local oceanographic conditions within the range of the wetfish fleet.

¹From unpublished data furnished by the California Department of Fish and Game.

²From unpublished landings data furnished by the California Department of Fish and Game and from price data gathered in the present study.

Table 1. --Age structure of the San Pedro wetfish-boat fleet in 1968

Year of construction	Number of vessels	Year of construction	Number of vessels
1935	4	1942	
1936		1943	
1937	5	1944	8
1938		1945	1
1939	3	1946	1
1940	1	1947	1
1941		Total	24

Note: These data were compiled from U.S. Bureau of Customs (1965) and from information provided by the Fishermen's Cooperative Association of San Pedro.