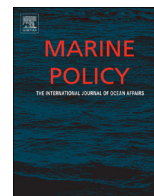




ELSEVIER

Contents lists available at ScienceDirect

Marine Policy

journal homepage: www.elsevier.com/locate/marpol

Port level fishing dynamics: Assessing changes in the distribution of fishing activity over time

Cameron Speir^{a,*}, Caroline Pomeroy^b, Jon G. Sutinen^c^a NOAA, National Marine Fisheries Service, Southwest Fisheries Science Center Fisheries Ecology Division, 110 Shaffer Road, Santa Cruz, CA 95060, USA^b California Sea Grant, UCSC Institute of Marine Sciences, Center for Ocean Health, 100 Shaffer Road, Santa Cruz, CA 95060, USA^c Department of Environmental and Natural Resource Economics, University of Rhode Island, USA

ARTICLE INFO

Article history:

Received 1 October 2013
 Received in revised form
 16 January 2014
 Accepted 24 January 2014
 Available online 21 February 2014

Keywords:

Commercial fishing
 Ports
 Community analysis

ABSTRACT

This article assesses changes in the relative distribution of commercial fishing activity within a system of ports. Like other coastal fisheries in the United States, fishing activity declined significantly at California's central and north coast region ports between 1981 and 2007. The central questions addressed in this paper are: how have the changes in overall fishing activity (as measured by total regional fishing trips, revenues, and landings) affected fishing activity in each of the central and northern California coastal region's 30 fishing ports? How have individual ports fared relative to other ports and the region as a whole during this decline? The analysis assesses the degree to which the relative distribution of fishing activity across ports—as measured by port rankings—is stable over time. The formal rank correlation analysis shows that ports' rankings have changed slowly and have changed more over longer intervals. In addition, the rankings change less (more) when the comparison is made over a larger (smaller) set of ports. Tests for the statistical significance of differences in percentage changes in fishing activity between region-wide totals and individual ports are performed. The results indicate that ports differ in terms of their dynamic fishing activity patterns over time, which constitutes a rejection of the null hypothesis that the cumulative percent changes at individual ports are the same as changes at the region-wide level.

Published by Elsevier Ltd.

1. Introduction

Similar to some other regions of the U.S., fishing activity at California's central and north coast region ports has declined significantly since the early 1980s. The number of participating fishing vessels declined by 78% between 1981 and 2007 while the number of fishing trips, after increasing through the mid-1980s, declined by 73% between 1988 and 2007. Ex-vessel revenues (in constant dollar terms) and landings declined by 58% and 70%, respectively, between 1981 and 2007. Much of the decline in fishery participation and activity coincides with the introduction of more restrictive management in some major fisheries, although a range of social, economic, and environmental factors also have shaped these trends [1]. This article compares relative changes in fishing activity across multiple ports in the face of this long term reduction in total fishing activity.

Previous studies have explored the impacts of declining fishing activity and other change on port communities. For example, Knapp

[2] and Knapp and Lowe [3] documented changes in and consolidation of processing capacity and associated infrastructure in Alaska following crab fishery rationalization. Portman et al. ([4,5]) assessed the impact of changing marine resource and fishing conditions on coastal land uses and essential fishery infrastructure over a two-decade period, and found that changes in species abundance influence the location of associated land-based marine-related activities. They conclude, “the cumulative effect of marine resource conditions can substantially alter marine industry's location decisions and may have long-term and multi-sector impacts at the community level,” and highlight the importance of considering this information in decision-making about coastal land use planning and fisheries management [4].

However, to date, limited work has been done to quantitatively assess relative changes in fishery activity across systems of related ports in the context of broad-scale change, though some related work has examined relative changes in economic activity in coastal communities. Mulkey et al. [6] performed a shift-share analysis of Florida's coastal counties and found a net shift of economic activity (1) toward the study area relative to the nation, and (2) toward coastal counties relative to noncoastal counties within the state. Marti ([7,8]) applied shift-share analysis to waterborne energy imports via New England ports to test hypotheses related to (1) the level at which ports

* Corresponding author. Tel.: +1 831 420 3910; fax: +1 831 420 3977.

E-mail addresses: cameron.speir@noaa.gov (C. Speir), cpomeroy@ucsd.edu (C. Pomeroy), jgsutinen@gmail.com (J.G. Sutinen).

function relative to one another; (2) the consistency of foreign inbound energy cargoes over time; (3) factors driving port competition; and (4) inter-port competition over time. Working on a larger scale, Jin and Kite-Powell [9] used shift-share analysis to evaluate the competitive performance of shipyards within the U.S. shipbuilding industry, and found that those large U.S. yards that survived the recent industry contraction have done so by achieving a good product mix and remaining competitive in the quest for military contracts whereas those that have not have reduced operations or shut down entirely. Notteboom [10] examined the concentration of load center development within the European container port system for the period 1980–1994.

The central questions addressed in this paper are: how have the changes in overall fishing activity affected fishing activity at each of the central and northern California coastal region's 30 fishing ports? How have individual ports fared relative to other ports and the region as a whole during this decline? Has fishing activity become more or less concentrated in fewer ports and fewer fisheries? To explore answers to these questions, patterns in three indicators of fishing activity (measured in terms of trips, revenue, and landings) examined: (1) ports' shares of activity, (2) the concentration of fishing activity among ports and among fisheries, (3) rankings of ports in terms of their activity, and (4) ports'

percentage changes in activity relative to overall, region-wide percentage changes in activity.

The article proposes a null hypothesis that overall changes in fishing activity have been distributed evenly across fishing ports in the study region. A series of tests are used to determine:

1. Whether individual ports' *shares* of fishing activity are constant over time.
2. Whether the *rank order* of ports' fishing activity changed significantly over time.
3. Whether the concentration of fishing activity among ports and fisheries has changed over time; and
4. whether the *percent change* of individual ports' fishing activity is the same as the region-wide changes.

2. Data and study area

2.1. Data

The analyses presented here use data on commercial fishing activity from the Pacific Fisheries Information Network (PacFIN)

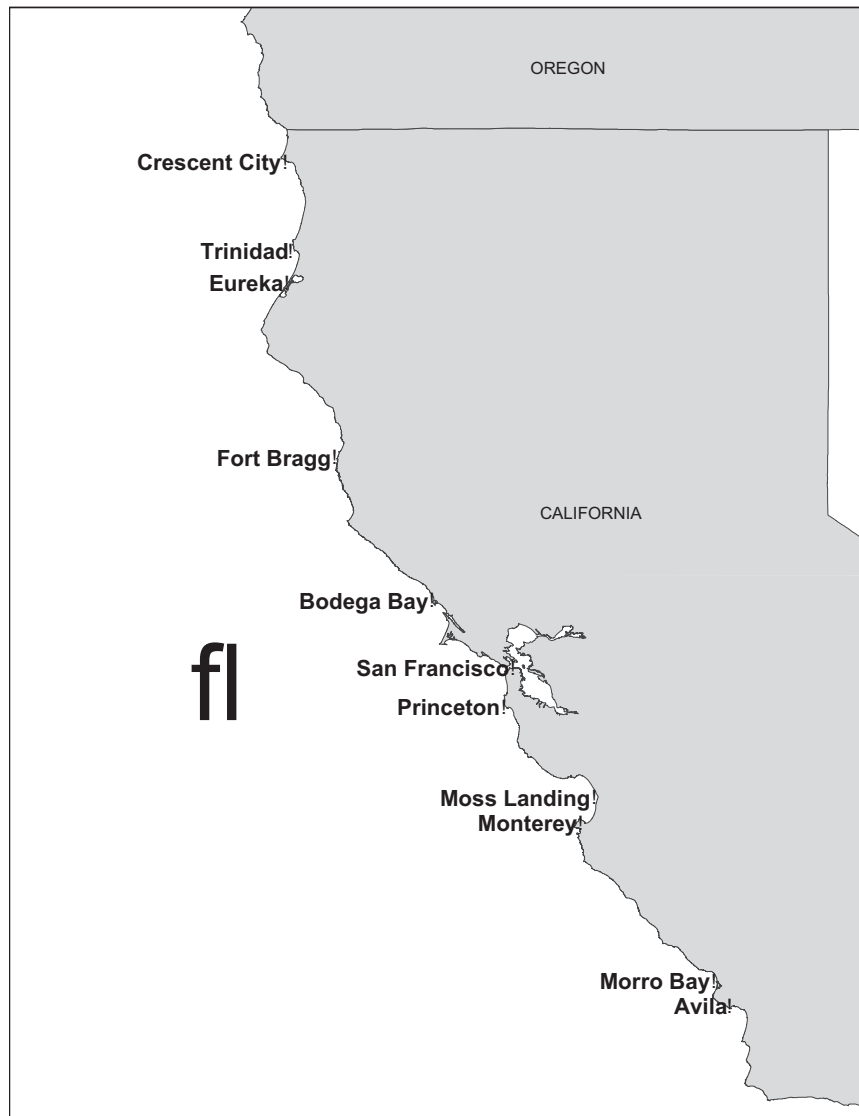


Fig. 1. Map of the study area: northern and central coast California ports. Selected major ports from Crescent city to Avila are indicated.

Download English Version:

<https://daneshyari.com/en/article/1060422>

Download Persian Version:

<https://daneshyari.com/article/1060422>

[Daneshyari.com](https://daneshyari.com)