THE FISH POPULATIONS INHABITING LOWER MARINA DEL REY HARBOR AND BALLONA CHANNEL FROM JULY 1990 TO APRIL 1991

Technical Report

for

The Playa Vista EIR,
MacGuire Thomas Partners

by

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BASELINE INVESTIGATION:

INTRODUCTION

The goal of this monitoring study was to assess the current status of the fish populations of lower Marina del Rey Harbor and Ballona Channel just prior to possible construction of a new marina and restoration of the Ballona Marsh complex. Lower Marina del Rey was included in the study since the fish assemblages of the new marina should be very similar to those found in the existing marina.

Southern California harbors are relatively productive and heterogeneous environments which support abundant diverse fish assemblages. Harbors combine the attributes of extensive, nearshore soft bottom habitat with those of nearshore pelagic, sandy and rocky shores, and shallow rock reefs. Harbors are numerically dominated by two species of croaker, the white croaker (Genyonemus lineatus) and queenfish (Seriphus politus) and the juveniles of northern anchovy (Engraulis mordax), but also possess high species diversity. However, diversity is dependent on the water quality. In heavily eutrophic and/or polluted areas where water circulation is poor diversity is generally low with only a few, tolerant species (e.g., white croakers and queenfish) being abundant. Harbors share some characteristics with bays and estuaries as fish habitats, but do not adequately replace them (Allen, 1990).

PROJECT AREA

This baseline study and impact analysis deals exclusively with Area A and the portion of lower Marina del Rey immediately northwest of Area A. Area A is bounded by Marina del Rey to the north and west, the Ballona Channel to the south, and Linclon Boulevard to the east. The topography of the site is largely the result of anthropogenic activities. The naturally occurring topography of this site was altered by the disposal of dredge material during the construction of the Ballona Flood Control Channel in the 1930's and Marina del Rey in the 1960's. The area is now largely vacant and is of no to extremely low value as a marine habitat. The Ballona Channel which forms the southern border to Area A is a levied, flood control channel which drains a total of approximately 76,700 acres of urban area largely within the City of Los Angeles. The channel is tidally influenced within the boundaries of the Playa Vista project area. Tidal ranges within the channel approximate those found along the open coast.

METHODS

The sampling program targeted the juvenile and adult fishes near the bottom. Large (7.6m) otter trawls were used to effectively sample larger bottom associated fishes. The 2m otter trawls targeted young-of-the-year and juvenile fishes which utilize these areas as nursery grounds.

Each station was divided into a nine-square grid. Four of the squares were randomly selected for occupation during each survey. Sam-

pling was conducted on a quarterly schedule (July 1990 - April 1991) at two stations (lower Marina del Rey Harbor and Ballona Channel). One day was required to sample both stations. The 24.5 m R/V YELLOWFIN served as our base of operation. The YELLOWFIN is owned and operated by the Ocean Studies Institute of the California State University.

Two types of sampling gear were employed:

1) A small otter trawl a horizontal opening of 1.6 m and a vertical opening of 0.343 m. The netting of the trawl consisted of 3 mm mesh. All tows were made within the randomly selected squares at both stations.

2) A 7.6 m semi-ballon otter trawl (2 cm mesh in wings and 8 mm mesh in codend) towed behind the R/V Yellowfin was used to sample bottom juvenile and adult fishes in the main channel of Marina del Rey. Due to limited space two replicate, five minute tows were made during each survey.

Ballona Channel was not sampled in April 1991 due to an oil spill upstream. The channel was completely closed off by a boom which denied access to the station. Overall , 12 tow samples were taken in Ballona Channel and 24 in lower Marina del Rey.

Replicate tows were vital to offset the high variance always encountered among individual tows. Our studies over the last 15 years have consistently shown a high degree of variance (variance to mean ratios >1.0 usually) among replicates due to patchy distributions of the most species.

Sample catches were transported back to the R/V YELLOWFIN in individually marked buckets for work-up. All fishes or subsamples of large catches were identified, counted and weighed.

RESULTS AND DISCUSSION

A total of 6,063 individual fishes representing 29 species (and other taxa) were collected over the course of the study (Table 1). The catch was numerically dominated by four species. Queenfish (Seriphus politus) ranked first contributing 39% of all fishes caught, followed by northern anchovy (Engraulis mordax; 38%), cheekspot goby (Ilypnus gilberti; 11%), and white croaker (Genyonemus lineatus; 5%) (Table 1). Queenfish, northern anchovy, and white croaker occurred exclusively in Marina del Rey while cheekspot was the most abundant fish captured in Ballona Channel (Table 1; Figure 1). Another group of common, nearshore fish species were found in comparable numbers in both areas, these included: California halibut (Paralichthys californicus), barred sand bass (Paralabrax nebulifer), arrow goby (Clevelandia ios), and diamond turbot (Hypsopsetta guttulata) (Table 1; Figure 1). The post-larval goby taxon probably consisted mainly of cheekspot gobies and arrow gobies which were too young for positive identification.

About 90% (5469) of the individuals were taken from Marina del Rey and about 10% (594) from Ballona Channel. Catch-per-unit-effort was also higher at the Marina del Rey station (CPUE = 228 inds/tow) than at the Ballona Channel station (CPUE = 49 inds/tow) (Table 2). In addition, more species were taken in Marina del Rey (23) than in Ballona Channel (12) with the former having almost twice the mean number of species per survey (12 spp/survey vs. 7 spp/survey).

The fish species found to inhabit lower Marina del Rey during the course of this investigation were very characteristic of harbor habitats found throughout southern California. The fish assemblage within Ballona

Channel appeared to be depauperate relative to the marina due mainly to the absence of the highly abundant species (queenfish, northern anchovy, and white croaker) in the shallow, channel habitat. The overall species composition in Ballona Channel appeared similar to that found in shallow marina habitats adjacent to estuaries and marshes in southern California (Allen, 1985). Noticeably absent were fish species known to be indigenous to salt marshs and estuaries such as, California killifish (Fundulus parvipinnis), longjaw mudsucker (Gillichthys mirabilis), striped mullet (Mugil cephalus), barred pipefish (Syngnathus auliscus), and shadow goby (Quietula ycauda).

The catches from both stations varied greatly on a seasonal basis (Tables 3 and 4). The abundance was high at both stations in the summer (July) and fall (October) of 1990 and low in winter (January 1991). An oil spill precluded sampling in Ballona Channel in April 1991, however, the catch in the marina remained low at that time (Table 4). Heavy rains during the month of March 1991 could have played a role in depressing the numbers of fish in April. These seasonal patterns are not surprising since fish assemblages of bays, estuaries, and harbors in southern California are know to be highly seasonal in both abundance and diversity (Allen, 1990).

IMPACT ANALYSIS:

If the design of the new marina provides adequate circulation, a highly diverse fish assemblage should occupy the area. The typical harbor fish species occur in abundance in Marina del Rey Harbor which is adjacent to both the proposed marina site and Ballona Channel. These

fishes should have no trouble becoming established in the marina and channel. The current condition of Area A obviously serves no function as a marine fish habitat. Conversion of this area into a marina would certainly provide habitat for marine fish which currently does not exist.

Ballona Channel appears to be a degraded or, at least marginal habitat for both marine and estuarine fishes at this time. An improvement in the quality of water traversing the channel should improve its potential as a functional fish habitat.

A functional Ballona Channel and new marina with an estimated inhabitable area of 37 ha may produce between 252 and 592 Kg of harbor and nearshore, bottom fishes each year (Allen, 1990).

LITERATURE CITED

Allen, L.G. 1985. A habitat analysis of the nearshore marine fishes from southern California. Bull. So. Cal. Acad. Sci., 84(3): 133-155.

Allen, L.G. 1990. Fishes of bay, estuary and harbor habitats in southern California; a perspectus and predictions regarding_Ballona Wetlands restoration. Consultation for MacGuire Thomas Partners. 25 p.

Figure 1. Species composition of the fish assemblages occupying Ballona Channel and Marina del Rey from July 1990 to April 1991. Catch-per-unit-effort (CPUE) for the ten most abundant species is compared between the two areas. SERPOL = Seriphus politus; ENGMOR = Engraulis mordax; ILYGIL = Ilypnus gilberti; GENLIN = Genyonemus lineatus; PARCAL = Paralicthys politus; PARNEB = Paralabrax nebulifer; PL GOBY = post-larval goby; CLEIOS = Clevelandia ios; HYPGUT = Hypsopsetta guttulata; and SYMATR = Symphurus atricauda.

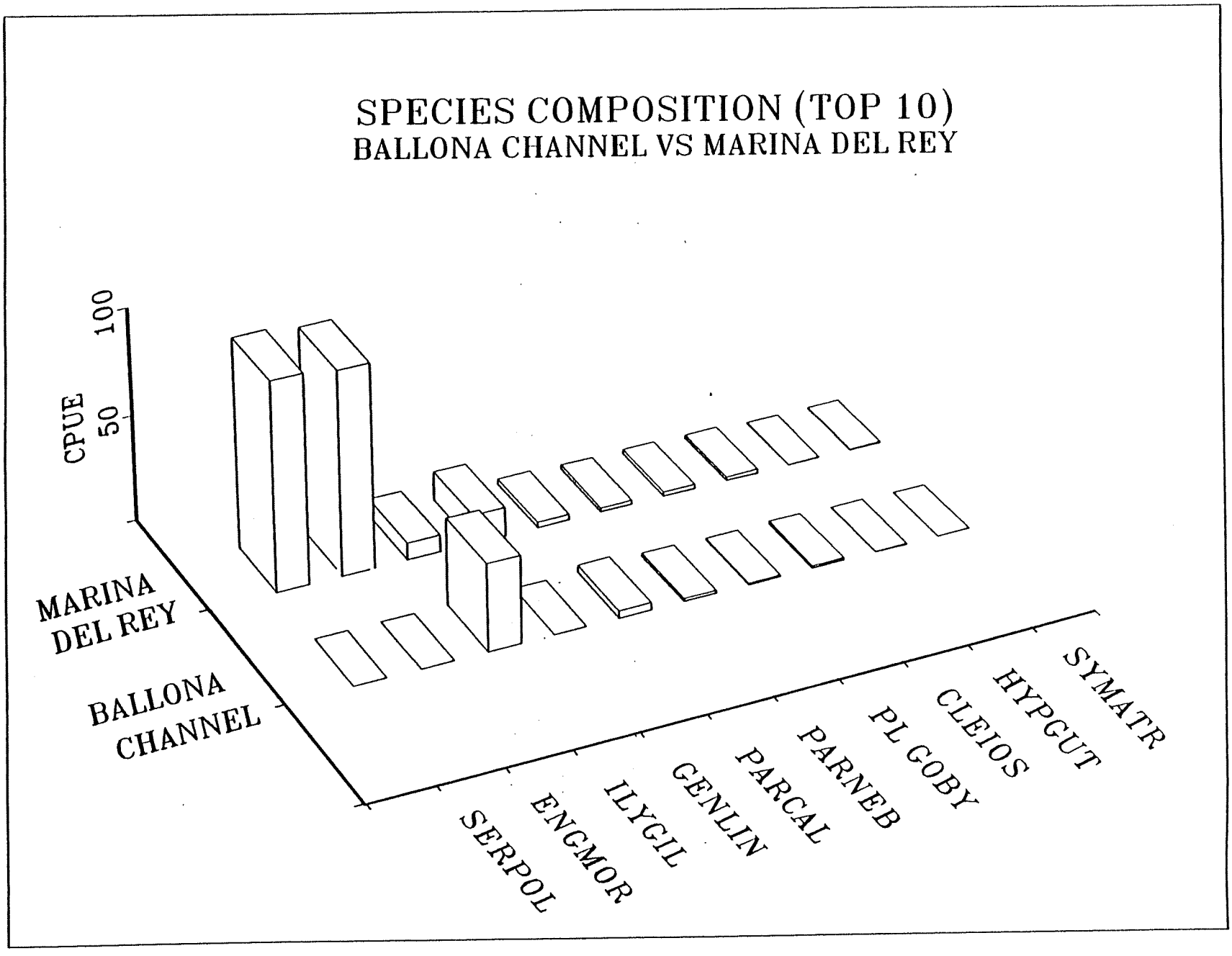

Figure 1

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TABLE 1. SUMMARY OF OVERALL CATCH BY AREA (BALLONA CHANNEL AND AND MARINA DEL REY) FOR ALL SURVEYS.

SPECIES/TAXON	AREA: BALLONA CHANNEL	AREA: MARINA DEL REY	TOTAL	%
Seriphus politus	0	2375	2375	39.17
Engraulis mordax	0	2316	2316	38.20
Ilypnus gilberti	492	193	685	11.30
Genyonemus lineatus	0	325	325	5.36
Paralichthys californicus	40	63	103	1.70
Paralabrax nebulifer	15	45	60	.99
post-larval goby	9	49	58	.96
Clevelandia ios	14	43	57	.94
Hypsopsetta guttulata	4	8	12	.20
Symphurus atricauda	0	9	9	.15
Paralabrax clathratus	5	3	8	.13
Acanthogobius flavimanus	0	8	8	.13
Heterostichus rostratus	0	7	7	.12
Pleuronichthys ritteri	4	3	7	.12
Hypsoblennius jenkinsi	1	5	6	.10
Leptocottus armatus	0	6	6	.10
Atherinops affinis	4	0	4	.07
Atractoscion nobilis	0	2	2	.03
Myliobatis californicus	0	2	2	.03
Pleuronichthys verticalis	2	0	2	.03
Sardinops sagax	2	0	2	.03
Sphyraena argentea	0	2	2	.03
Cymatogaster aggregata	0	1	1	.02
Gibbonsia elegans	0	1	1	.02
Gibbonsia sp.	1	0	1	.02
Gobiesox rhessodon	0	1	1	.02
Strongylura exilis	1	0	1	.02
Urolophus halleri	0	1	1	.02
Xenistius californiensis	0	1	1	.02
TOTAL	594	5469	6063	

TABLE 2. SUMMARY OF CATCH-PER-UNIT-EFFORT (CPUE) BY AREA BALLONA CHANNEL AND MARINA DEL REY) FOR ALL SURVEYS.

	AREA		
SPECIES/TAXON	BALLONA CPUE	MDR CPUE	TOTAL CPUE
Seriphus politus	.00	98.96	65.97
Engraulis mordax	.00	96.50	64.33
Ilypnus gilberti	41.00	8.04	19.03
Genyonemus lineatus	.00	13.54	9.03
Paralichthys californicus	3.33	2.63	2.86
Paralabrax nebulifer	1.25	1.88	1.67
post-larval goby	.75	2.04	1.61
Clevelandia ios	1.17	1.79	1.58
Hypsopsetta guttulata	.33	.33	.33
Symphurus atricauda	.00	.38	.25
Paralabrax clathratus	.42	.13	.22
Acanthogobius flavimanus	.00	.33	.22
Heterostichus rostratus	.00	.29	.19
Pleuronichthys ritteri	.33	.13	.19
Hypsoblennius jenkinsi	.08	.21	.17
Leptocottus armatus	.00	.25	.17
Atherinops affinis	.33	.00	.11
Atractoscion nobilis	.00	.08	.06
Myliobatis californicus	.00	.08	.06
Pleuronichthys verticalis	.17	.00	.06
Sardinops sagax	.17	.00	.06
Sphyraena argentea	.00	.08	.06
Cymatogaster aggregata	.00	.04	.03
Gibbonsia elegans	.00	.04	.03
Gibbonsia sp.	.08	.00	.03
Gobiesox rhessodon	.00	.04	.03
Strongylura exilis	.08	.00	.03
Urolophus halleri	.00	.04	.03
Xenistius californiensis	.00	.04	.03
TOTAL CPUE	49.50	227.88	169.79

TABLE 3. SUMMARY OF CATCH IN BALLONA CHANNEL BY SURVEY PERIOD. SPECIES ARE RANKED IN ORDER OF OVERALL ABUNDANCE.

	SURVEY				
SPECIES/TAXON	JUL90	OCT90	JAN91	TOTAL	%
Ilypnus gilberti	323	169	0	492	82.83
Paralichthys californicus	17	22	1	40	6.73
Paralabrax nebulifer	0	14	1	15	2.53
Clevelandia ios	5	1	8	14	2.36
post-laval goby	9	0	0	9	1.52
Paralabrax clathratus	0	4	1	5	.84
Atherinops affinis	4	0	0	4	.67
Hypsopsetta guttulata	4	0	0	4	.67
Pleuronichthys ritteri	0	4	0	4	.67
Pleuronichthys verticalis	0	2	0	2	.34
Sardinops sagax	0	2	0	2	.34
Gibbonsia sp.	1	0	0	1	.17
Hypsoblennius jenkinsi	1	0	0	1	.17
Strongylura exilis	0	1	0	1	.17
TOTAL	364	219	11	594	

TABLE 4. SUMMARY OF CATCH IN MARINA DEL REY BY SURVEY PERIOD. SPECIES ARE RANKED IN ORDER OF OVERALL ABUNDANCE.

	SURVEY					
SPECIES/TAXON	JUL90	OCT90	JAN91	APR91	TOTAL	%
Seriphus politus	2361	14	0	0	2375	43.43
Engraulis mordax	210	2101	5	0	2316	42.35
Genyonemus lineatus	210	106	7	2	325	5.94
Ilypnus gilberti	12	153	20	8	193	3.53
Paralichthys californicus	16	29	4	14	63	1.15
post-larval goby	0	0	0	49	49	.90
Paralabrax nebulifer	7	27	1	10	45	.82
Clevelandia ios	0	41	2	0	43	.79
Symphurus atricauda	1	8	0	0	9	.16
Acanthogobius flavimanus	7	1	0	0	8	.15
Hypsopsetta guttulata	2	3	0	3	8	.15
Heterostichus rostratus	0	0	2	5	7	.13
Leptocottus armatus	6	0	0	0	6	.11
Hypsoblennius jenkinsi	1	2	2	0	5	.09
Paralabrax clathratus	0	0	2	1	3	.05
Pleuronichthys ritteri	2	0	0	1	3	.05
Atractoscion nobilis	0	2	0	0	2	.04
Myliobatis californicus	0	2	0	0	2	.04
Sphyraena argentea	0	2	0	0	2	.04
Cymatogaster aggregata	0	0	0	1	1	.02
Gibbonsia elegans	0	0	0	1	1	.02
Gobiesox rhessodon	0	0	0	1	1	.02
Urolophus halleri	0	1	0	0	1	.02
Xenistius californiensis	0	0	1	0	1	.02
TOTAL	2835	2492	46	96	5469	