14 Garibaldi, *Hypsypops rubicundus*

Juvenile garibaldi, *Hypsypops rubicundus*. Photo credit: D Porzio, CDFW.

History of the Fishery

In the late 1800s, garibaldi, *Hypsypops rubicundus*, was a minor commercial species commonly taken at Santa Catalina Island with gill nets for Los Angeles fish markets. There has never been any significant sport fishery for garibaldi. In 1995, garibaldi was designated California's state marine fish, and a prohibition on commercial take was implemented on January 1, 1996. Prior to the commercial ban, garibaldi was one of the main targets of the commercial marine aquarium trade.

Adult garibaldi are a brilliant orange color while juveniles are orange with iridescent blue spots. Because of their brilliant colors, both adult and juvenile garibaldi were harvested for the commercial marine aquaria trade, which supplies specimens for live pet, hobby, and display purposes. The take of marine aquaria species occurs statewide primarily in nearshore waters by commercial divers. Methods used to take garibaldi and other finfish for the aquarium trade include traps gear, hook-and-line but primarily consist of dropnets and slurp guns used by divers. Commercial laws governing the marine aquarium trade were first implemented in 1993 which established a Marine Aquaria Collectors Permit for commercial fishermen and a Marine Aquaria Receiver's License for commercial fish businesses. These laws put restrictions on where fish may be taken, and created a listed of prohibited species (FGC §8596 et seq.). Before 1993, only a general commercial fishing license was required to land fish destined for the aquarium trade.

According to California Department of Fish and Wildlife (Department) commercial landing receipt data reported by fish businesses, there were little to no reported garibaldi landings before 1981 (Figure 14-1). In 1982, 38 landings were reported, totaling 133 pounds (60 kilograms) of garibaldi, and landings increased each year until peaking in 1990 at 520 pounds (236 kilograms) with 85 reported landings (Figure 14-1). The number of reported landings decreased to 10 in 1992, totaling just 39 pounds (18 kilograms). The ex-vessel value of garibaldi increased from $3,700 in 1982 to a high of $14,100 in 1990, with the price per pound ranging from a high of $32.40 ($71.28 per

kilogram) in 1983 to a low in 1991 of $7.69 ($16.91 per kilogram). The catch during this period mostly originated from the front side of Santa Catalina Island near the Isthmus, and at Palos Verdes and Laguna Beach along the mainland coast (Figure 14-2a). Before 1993, all landing receipts required landings to be reported in pounds; however most garibaldi (and other fish in the aquarium trade) were sold by the individual and as a result, landing receipts typically only contained an estimate of pounds landed. Due to this discrepancy, some landing receipts did not accurately capture pounds landed. Therefore, while the trends in catch are likely valid, landings before 1993 likely do not reflect true values.

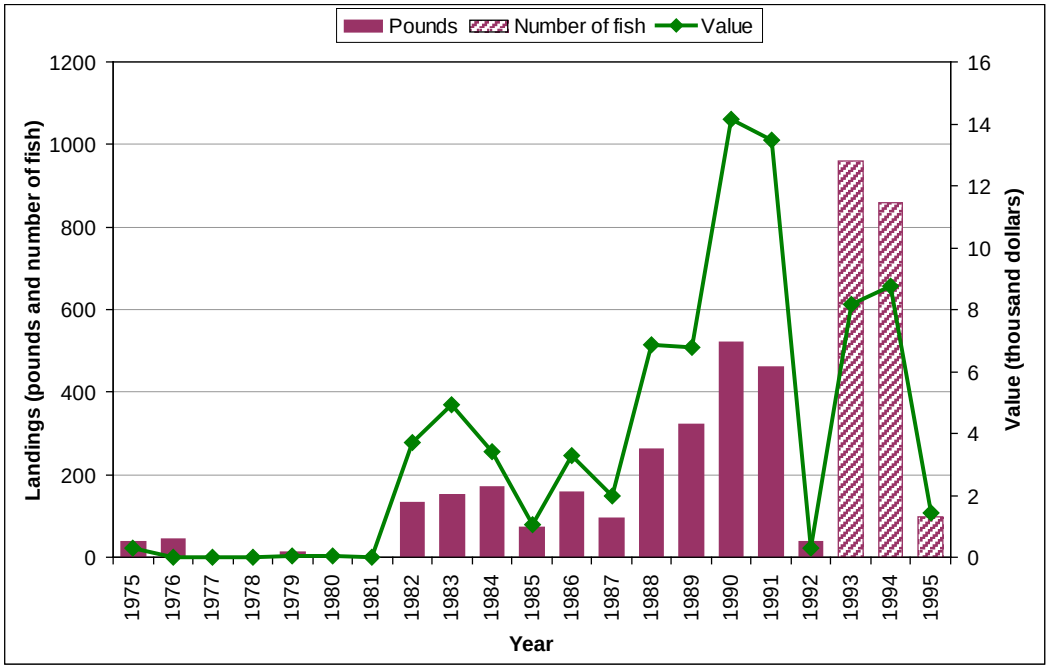

Figure 14-1. Garibaldi commercial landings and value, 1975-1995. Data source: Commercial Fisheries Information System (CFIS) data, all gear types combined. Data prior to 1975 are not available. From 1975-1992 actual pounds (solid bars) were recorded on commercial landing receipts. Landings after 1992 were reported in numbers of individuals landed (slashed bars) due to new landing receipts and regulations instituted in 1993 for the commercial aquarium trade. The commercial fishery was closed in 1996.

In 1993, a Marine Aquaria Collectors Permit was required for landing species for the aquarium trade (FGC §8598.3) and new landing receipts were created for this fishery requiring landings to be reported as numbers of individuals with price paid per individual. During this first year of new reporting requirements, 20 landings were reported totaling 959 garibaldi with an average price of $8.50 each and an ex-vessel value of $8,157 (Figure 14-1). From 1994 to 1995, landings decreased from 859 to 99 individuals with only 8 and 4 landings reported; however, the price paid per individual increased from $10.20 to $14.50, respectively. After 1992, garibaldi catch shifted from Santa Catalina Island to the front side of San Clemente Island and the Laguna Beach

area due to a restriction implemented in 1993 (FGC §8598) on commercial aquarium trade collecting at Santa Catalina Island (Figure 14-2).

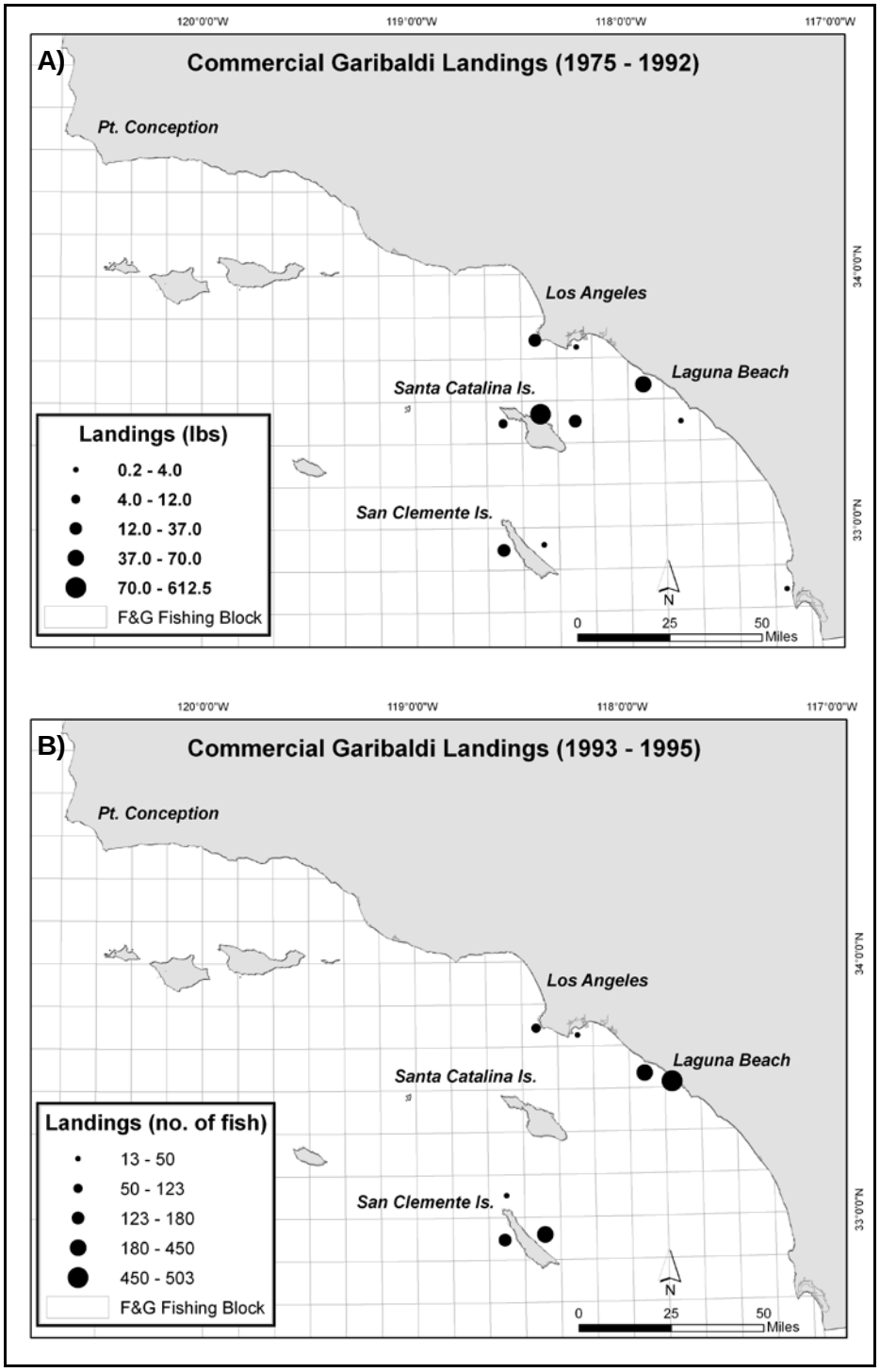

Figure 14-2. Origin of commercial garibaldi landings. A) pounds landed, and B) numbers of fish landed. Data source: CFIS data, all gear types combined. Data prior to 1975 are not available. The commercial fishery was closed in 1996.

During the early 1990s, a commercial aquarium trade developed for juvenile garibaldi. Although not substantial in terms of weight, because the fish were juveniles, these landings represented a large number of individuals. Because most of this take focused on one area, Santa Catalina Island, there was concern for localized depletion. Likely a result of concerns for garibaldi populations, Assembly Bill 77 (Morrow, 1995) was signed into California State law effective January 1, 1996 suspending the commercial fishery for garibaldi. This bill declared garibaldi the State marine fish (Government Code §425.6) and imposed a 3 year ban on its commercial collection "unless a study, the methodology of which is approved by the Department of Fish and Game shows a less than significant impact on the population of the resource." Three years later in 1999, FGC§ 8598 was amended removing the exception clause on the 3 year commercial ban and added garibaldi to the list of no-take species without exceptions. The prohibition on the commercial take of garibaldi continues today and garibaldi are now imported from Mexico where the commercial fishery continues.

Historically, garibaldi was never an important component of the recreational fishery in southern California and no reliable catch data exists, but some reports indicate that they were easy targets for novice spearfisher. In, *How to Fish the Pacific Coast*, published in 1953, the author states that garibaldi are taken in swirling waters along rocky shores but are very difficult to tempt. The author goes on to say, "This fish is of such beauty in the water it should be left there". According to the California Fish and Game Commission (Commission) meeting notes from January 2, 1953, the Department presented potential sportfishing regulation changes that included a recommendation to "prohibit skin diving fishing along the waterfront of Avalon, Santa Catalina Island" as proposed by the Santa Catalina Island Company. This proposed regulatory change was met with opposition because the public wanted to continue to spearfish near Avalon and the main concern was take of garibaldi. So the proposed regulation was modified to a statewide prohibition on the recreational take of garibaldi. At the January 30, 1953 Commission meeting, the prohibition against the take or possession of garibaldi, by either angling or diving was adopted (Title 14, CCR, §28.05). This prohibition on the recreational take of garibaldi is still in place.

Status of Biological Knowledge

The garibaldi, a member of the damselfish family (Pomacentridae), ranges from Monterey Bay, California to southern Baja California, Mexico. In California, they are rare north of Point Conception, but larvae and juveniles are transported to the north during El Niño events. Adult garibaldi have a conspicuous bright orange color, which is a unique characteristic in the rocky reef fish assemblage of southern California. They inhabit rocky habitat from the shallow intertidal to a depth of 125 feet (39 meters) but can also be found on shallow crossbeams of offshore oil platforms. Garibaldi are rarely found more than 3 to 6 feet (1 to 2 meters) above the bottom and prefer moderate to high relief rocky habitat that provides large holes and crevices for shelter. Their diet consists mainly of small benthic invertebrates such as sponges, bryozoans, anemones, and polychaete worms.

Adult male and female garibaldi are territorial year round, occupying a territory of about 54-108 square feet (5-10 square meters) which typically includes an area for forage, shelter, and for adult males, a benthic nest. Adults will aggressively defend their territory and attack or chase most invaders including individuals many times their size. For example garibaldi have been observed to attack kelp bass, California scorpionfish, and broomtail grouper but will tolerate juvenile garibaldi up to 8 inches (20 cm), and plankton eating species like blacksmith, and some flatfish species. The only animal reported to cause an adult to seek shelter are harbor seals. Individuals are only active during the day and seek shelter at night in crevasses that may include other species like California spiny lobster, moray eels, and, sometimes, other adult garibaldi.

Garibaldi spawning occurs between May and October when water temperatures reach at least 59°F (15°C). In March, males will start to attract females by cultivating a nest of red turf algae, which they defend aggressively. Courtship takes about 10-15 minutes with females laying thousands (34,000 to 190,000) of eggs that are externally fertilized on the male-tended red algal nests. Males actively defend the nest during the day until the eggs hatch. Nests typically contain more than one clutch as males will spawn with multiple females within a season. Some males may not spawn while others will spawn up to 7 times per season. Females likely only produce one clutch per season and preferentially spawn with males that are already guarding eggs. Newly deposited eggs are yellow in color, become grey as they develop, hatching in 12 to 20 days at dusk over a period of several days. Nests are reoccupied each year by the same male for many years, with later generations taking over after the male dies.

After a 21 day pelagic larval period young of the year garibaldi 0.7-1.0 inches (18-26 millimeters) settle out in shallow (<15 feet; 3 meters) rocky reefs from July to November. Individuals spend about three years as juveniles and two years as sub adults with males and females reaching sexual maturity at approximately 5-6 years of age and just over 8 inches (21 centimeters). Visibly there is no way to distinguish between males and females although behaviorally only males guard nests and attain a slightly larger size on average. Garibaldi attain a maximum size of 14 inches (35.6 centimeters) with a lifespan of 12-13 years and maximum reported age of 15-17 years.

Status of the Population

Garibaldi populations have rebounded from the local effects of commercial take and are in good condition throughout their range in southern California. While regulations prohibit the commercial and recreational take of garibaldi some individuals are taken under the auspices of a Department issued Scientific Collecting Permit, for research and educational purposes. Some garibaldi are also caught incidentally in the recreational fishery and may be subject to catch and release mortality; however, this mortality is likely very low.

Management Considerations

Recently implemented marine protected areas, particularly no-take state marine reserves, should reduce catch and release mortality of garibaldi in the recreational fishery. Similarly, reserves would protect habitats valuable to garibaldi from a variety of potential fishing activity related impacts. Some larval transport to distant areas would be expected, however this would not be expected to have significant impacts on populations as the garibaldi is already protected and at good population levels. Recent studies in San Diego County using diver surveys estimate that garibaldi densities range up to 0.32 individuals per square meter depending upon the location and availability of quality habitat.

The value of garibaldi is likely in its aesthetics and as an iconic species in its natural habitat, and not within a fishery. Garibaldi are commonly viewed by recreational scuba divers and snorkelers in California along La Jolla, Laguna Beach, Palos Verdes, and offshore Islands, and in some areas via glass bottom boat tours.

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Further reading

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Garibaldi Commercial Landings, 1975-1995.								
Year	**Pounds**	**Value**	**Year**	**Pounds**	**Value**	**Year**	**Number landed**	**Value**
1975	38	$276	**1984**	170	$,3398	**1993**	959	$8,157
1976	45	$0	**1985**	72	$1,071	**1994**	859	$767
1977	0	$0	**1986**	158	$3,300	**1995**	99	$,1434
1978	0	$0	**1987**	95	$1,988			
1979	12	$27	**1988**	261	$6,864			
1980	2	$30	**1989**	322	$6,797			
1981	0	$0	**1990**	520	$14,144			
1982	133	$3,715	**1991**	462	$13,461			
1983	152	$4,914	**1992**	39	$300			

Data Source: CFIS data, all gear types combined. Data prior to 1975 are not available. The commercial fishery was closed in 1996.