

13. SURFPERCHES

Overview of the Fishery

The 22 species in the surfperch family, Embiotocidae, are commonly called surfperch, seaperch and perch. They are found predominantly in temperate, northeastern Pacific waters; however, three species are found in the Sea of Japan and one species (tule perch, *Hysterothorax traski*) occupies freshwater and estuarine habitats in California. Eighteen species occur in California's coastal waters:

- barred surfperch *Amphistichus argenteus*
- black perch *Embiotoca jacksoni*
- calico surfperch *Amphistichus koelzi*
- dwarf perch *Micrometrus minimus*
- kelp perch *Brachyistius frenatus*
- pile perch *Rhacochilus vacca*
- pink seaperch *Zalembeus rosaceus*
- rainbow seaperch *Hypsurus caryi*
- redbill surfperch *Amphistichus rhodoterus*
- reef perch *Micrometrus aurora*
- rubberlip seaperch *Rhacochilus toxotes*
- sharpnose seaperch *Phanerodon atripes*
- shiner perch *Cymatogaster aggregate*
- silver surfperch *Hyperprosopon ellipticum*
- spotfin surfperch *Hyperprosopon anale*
- striped seaperch *Embiotoca lateralis*
- walleye surfperch *Hyperprosopon argenteum*
- white seaperch *Phanerodon furcatus*

The island surfperch, *Cymatogaster gracilis*, was once thought to be a separate species, however it is now considered synonymous with shiner perch.

There are both recreational and commercial fisheries for surfperches in California. Surfperches are easy to catch and highly sought. They are caught using hook-and-line gear and a variety of baits such as clams, tubeworms, or sand crabs, as well as artificial lures. The recreational fishery is enjoyed by anglers of all ages who fish for surfperches from boats, piers, jetties, and sandy beaches. Flyfishing for surfperches has become popular in recent years. Commercially-caught surfperches are sold as food and as fishing bait. Commercial fishermen receive from \$0.25 to \$5.00 per pound for surfperches.

Currently, the recreational take of surfperches is far larger than the commercial take (Figure 13.1, Figure 13.2, Table 13.4 and Table 13.5). Recreational catch estimates and commercial landings from 1980 through 1989 and from 1993 through 2001 indicate that the recreational catch averages about 739,000 lb per year, while the commercial landings average about 127,000 lb per year, which is approximately 17% of the recreational catch.

Commercial Surfperch Fishery

Commercial landings data are available from 1916 to 2001; however, from 1916 through 1927, DFG reported as “perch” the combined landings of all surfperches and other perch-like species such as blacksmith, halfmoon, opaleye, and sargo. After 1927, DFG reported separately the landings of surfperches, blacksmith, halfmoon, opaleye, and sargo, but the surfperch landings reported by fish dealers on landing receipts may have included other perch-like species. In addition, individual landing receipts frequently do not specify the type of surfperch landed. For example, during the 1990s approximately 33% of the commercial landing receipts did not indicate which species of surfperch had been landed.

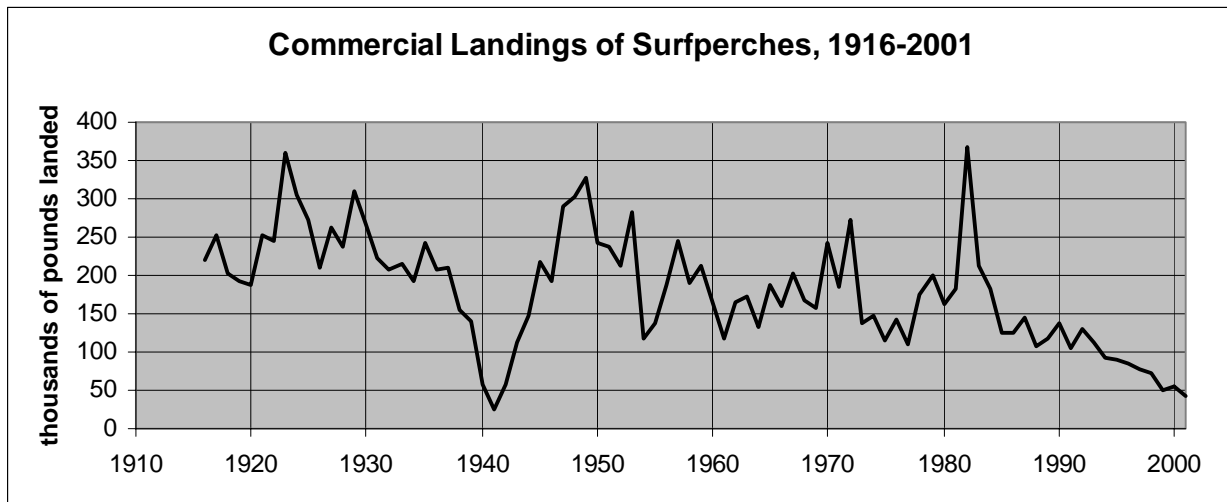


Figure 13.1. Annual commercial landings (pounds) of surfperches from 1916 to 2001. Data sources are the California Department of Fish and Game (DFG) Catch Bulletins (1916-1983) and the DFG commercial landing receipt database (1984-2001). Landings of surfperches, blacksmith, halfmoon, opaleye, and sargo were combined and reported as “perch” from 1916 to 1927. After 1927, surfperches, blacksmith, halfmoon, opaleye, and sargo were reported separately, but the reported surfperch landings may include some of the other perch-like species.

Annual commercial landings of surfperches have varied over time (Figure 13.1 and Table 13.4). Large drops in the landings occurred during two periods: from 1938 to 1941, and from 1983 to 2001. The drop in landings from 1938 to 1941 was due to decreased effort (because of the low prices offered to fishermen for surfperches) rather than a lack of fish, whereas the drop in landings from 1983 to 2001 appears to be due to declines in surfperch populations.

In addition to fluctuations in total surfperch landings, the composition and location of landings have changed as well. In the 1930s, an estimated 69% of the commercial surfperch landings came from waters north of Point Arguello (Santa Barbara County), and the catch was dominated by rubberlip seaperch, striped seaperch, walleye surfperch and white seaperch. In the 1990s, however, these species each comprised less than 1% of the identified species in commercial landings. Barred and redbtail surfperches dominated the commercial landings in the 1990s, with 93% of landings coming from north of Point Arguello. The differences in fishing location and catch composition from the 1930s to the 1990s may be attributed to a variety of factors, such

as changes in the locations fished, in regulations, in the abundance of various species, and in the gear used to catch surfperches.

In the 1930s, fishing gear used to catch surfperches differed by area. Beach seines were used in bays and estuaries in northern California, lampara nets and drift gill nets¹ in Monterey Bay, and lampara nets and purse seines in southern California. In the 1990s, hook-and-line gear was the primary gear used to catch surfperch. The dominant species in the 1930s (rubberlip seaperch, striped seaperch, walleye surfperch and white seaperch) frequently occur in estuaries, while the dominant species in the 1990s (barred and redbtail surfperch) are common along sandy beaches. The degradation and loss of estuarine habitats in California may have been a factor in the declines of surfperch populations, especially for those species that use estuaries.

In the 1990s, only about 67% of the commercial landing receipts indicated the species of surfperches landed. Redtail surfperch accounted for 54% of these landings, while barred surfperch accounted for 40%. Both redbtail and barred surfperches are primarily caught from beaches with hook-and-line gear during the birthing season (spring to early fall for redbtail surfperch, and spring to summer for barred surfperch). The commercial fishery for redbtail surfperch is centered in the Crescent City/Eureka area, while the commercial fishery for barred surfperch is centered in the Morro Bay area.

Commercial restrictions include a closed season from May 1 through July 15 for all surfperches except shiner perch (which may be taken at any time). The closed season was first implemented in 1913, and was changed in 1963 to allow the take of shiner perch during the closed season. In 1953, the commercial take of surfperch was prohibited south of Point Arguello; however, the law was modified in 1959 to prohibit the commercial take of only three particular species south of Point Arguello: barred, calico, and redbtail surfperches (however, redbtail surfperch are not known to occur south of Point Arguello).

Recreational Surfperch Fishery

Catch estimates for the recreational fishery are available from 1980 to 1989 and from 1993 to 2001 through the Marine Recreational Fisheries Statistics Survey (MRFSS)². During the last two decades, the size of the total recreational catch has fluctuated, but has generally declined (Figure 13.2, Table 13.5 and Table 13.6). The average annual catch from 1993 through 2001 is 40% smaller than the average annual catch from 1981 through 1989. The average annual catch and the catch-per-unit-of-effort for most surfperch species also declined from 1981 through 1989 and from 1993 through 2001 (Table 13.1).

The MRFSS estimates indicate that in the last two decades about 90% of surfperches were caught from shore, 9% from private or rental boats, and less than 1%

1 Surfperch were frightened into drift gill nets by setting the net close to shore and splashing the water between the shore and the net, or by setting in a circle around the fish and throwing a brick or stone into the center of the circle.

2 The catch estimates for 1980 are not used here to compare the catches from different time periods because the effort data used to calculate those estimates is of poor quality.

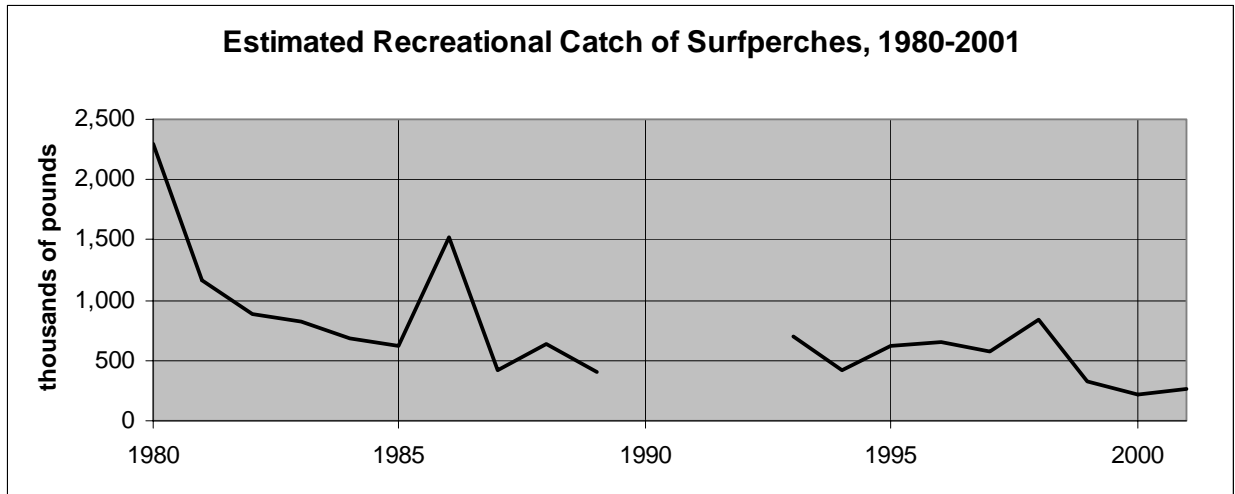


Figure 13.2. Estimated recreational catch (pounds) of surfperches from 1980 to 1989 and 1993 to 2001. Catch estimates do not include fish that were caught and released alive. Data source is the Marine Recreational Fisheries Statistics Survey (MRFSS).

from commercial passenger fishing vessels. Barred surfperch, black perch, redbtail surfperch, shiner perch, silver surfperch, striped seaperch, and walleye surfperch are the most commonly caught species statewide. Barred surfperch comprise about one-half of the surfperch catch in southern California and one-third of the surfperch catch statewide.

During the last two decades, approximately 59% of the recreational surfperch catch has come from central and northern California, and 41% of the catch has come from southern California. The geographic distribution of the catch varies by species and by location (Table 13.1). Approximately 76% of the recreational surfperch catch comes from ocean waters and 24% from bays and estuaries

Until 2002, there was no recreational daily limit or possession limit on shiner perch, and the daily and possession limit for all other species of surfperch was 20, with not more than 10 of any one species. In an effort to reduce the recreational harvest of surfperches and stabilize population levels, the daily and possession limits were reduced in 2002 to an aggregate total of five surfperches for all species except shiner perch (limit of twenty). In addition, a minimum size limit was established for redbtail surfperch of 10.5 inches, and a closed season (April 1 to July 31) was established in San Francisco Bay for all surfperch species except shiner perch.

Status of Biological Knowledge

Surfperches can be identified by their elliptical, compressed body form, single dorsal fin, large eyes, small mouth, and moderately- to deeply-forked tail fin. Some are silvery and many are marked with bars or stripes. Their most notable trait, however, is their mode of reproduction.

Surfperches bear live, highly developed young that swim at birth. Newborns are relatively large, ranging from about 1 to 2.5 in. depending upon the species. The number of young in a brood is relatively low, ranging from around a dozen to a little more than 100 (Table 13.2). For all species, brood size tends to increase with the size of the female. The age at sexual maturity varies by species and by sex. Males of a few

Table 13.1. Summary of recreational catches of marine surfperches from 1981 through 1989 and from 1993 through 2001 based on Marine Recreational Fisheries Statistics Survey data

Species	Geographic distribution of catch		Location of catch		Average annual catch		Trends in the catch: change between the periods 1981-1989 and 1993-2001		Primary fishing modes
	North/Central	South	Ocean	Bays and estuaries	Number of fish	Weight (lb)	Average number of fish per year	Average catch per 1000 angler hours	
barred surfperch	40%	60%	98%	2%	374,000	255,000	13% decrease	45% increase	beach and bank (86%)
Black perch	38%	62%	57%	43%	68,000	43,000	21% decrease	44% increase	all shore modes (58%); private or rental boats (41%)
calico surfperch	66%	34%	96%	4%	28,000	15,000	67% decrease	50% decrease	beach and bank (89%)
dwarf perch	Rarely landed because of its small size								
kelp perch	Rarely landed because of its small size								
pile perch	70%	30%	47%	53%	45,000	57,000	80% decrease	73% decrease	all shore modes (71%); private or rental boats (29%)
pink seaperch	Rarely landed								
rainbow seaperch	85%	15%	50%	50%	12,000	6,000	23% decrease	78% increase	all shore modes (86%); private or rental boats (14%)
redtail surfperch	99%	1%	84%	16%	67,000	54,000	78% decrease	84% decrease	beach and bank (91%)
reef perch	Rarely landed because of its small size								
rubberlip seaperch	53%	47%	56%	44%	32,000	38,000	56% decrease	18% decrease	all shore modes (53%); private or rental boats (46%)
sharpnose seaperch	33%	67%	82%	18%	2,000	1,000	19% increase	29% decrease	man-made structures (25%); CPFV (57%)

Table 13.1. Summary of recreational catches of marine surfperches from 1981 through 1989 and from 1993 through 2001 based on Marine Recreational Fisheries Statistics Survey data

Species	Geographic distribution of catch		Location of catch		Average annual catch		Trends in the catch: change between the periods 1981-1989 and 1993-2001		Primary fishing modes
	North/Central	South	Ocean	Bays and estuaries	Number of fish	Weight (lb)	Average number of fish per year	Average catch per 1000 angler hours	
shiner perch	74%	26%	54%	46%	109,000	10,000	42% decrease	25% decrease	man-made structures (84%);
silver surfperch	67%	33%	84%	16%	76,000	20,000	55% decrease	28% decrease	beach and bank (72%); man-made structures (26%)
spotfin surfperch	Rarely landed because of its small size								
striped seaperch	97%	3%	68%	32%	82,000	76,000	44% decrease	40% decrease	all shore modes (87%); private or rental boats (13%)
walleye surfperch	49%	51%	77%	23%	171,000	46,000	47% decrease	33% decrease	man-made structures (69%); beach and bank (25%)
white seaperch	71%	29%	44%	56%	45,000	18,000	67% decrease	62% decrease	all shore modes (82%); private or rental boats (17%)

1. No estimates are available from 1990 through 1992 or for January and February of 1995.
 2. Catch estimates do not include fish that were caught and released alive; they only include fish that were harvested.
 3. North/Central is the area north of Point Conception; South is the area south of Point Conception.

species are reproductively mature at birth, while, for example, female redbait surfperch do not reach maturity until they are 3 to 4 years old. Many surfperch species mate in the fall or winter (Table 13.2), and a number of species exhibit complicated courting behaviors. Fertilization is internal and the females of most species store sperm for several months after mating. Gestation lasts from 3 to 6 months. The birthing period varies by species and location, but most surfperches give birth in the spring and summer (Table 13.2).

Species	Brood size (range)¹	Mating Seasons	Release of young
barred surfperch	4 to 113	fall and winter	spring and summer
black perch	5 to 31	most mating is in summer and fall, but have been reported mating year-round	most births are in the spring and summer, but young are reported year-round
calico surfperch	NA	NA	NA
dwarf perch	2 to 25	summer	spring and summer
kelp perch	insufficient data	fall and winter	spring and summer
pile perch	7 to 80	fall	spring and summer
pink seaperch	2 to 6	March to June	winter
rainbow seaperch	9 to 22	fall	summer and fall
redtail surfperch	1 to 45	winter	spring to early fall
reef perch	NA	summer	spring and summer
rubberlip seaperch	insufficient data	NA	spring, summer and fall - based on fish with embryos
sharpnose seaperch	Insufficient data (one specimen examined with 7 young)	NA	summer
shiner perch	2 to 36	spring and summer	spring and summer (about one year after mating)
silver surfperch	3 to 17	fall to early winter	spring and summer
spotfin surfperch	4 to 20	NA	summer - based on the number of small juveniles in coastal waters
striped seaperch	9 to 92	fall	summer
walleye surfperch	1 to 19	fall to early winter	spring and summer
white seaperch	8 to 33	NA	spring and summer

1. Minimum brood size is not well-known for most species.
2. NA = not available.

The maximum size and life span for surfperches varies by species. The maximum size ranges from 6.25 in. to 19.6 in. (Table 13.3), and the maximum life span ranges from 2 to 10 years.

Collectively, California's surfperch species range from southeastern Alaska to central Baja California, Mexico (Table 13.3). The center of most species' ranges is central California. The redtail surfperch is the only marine surfperch species in California whose range does not extend into Baja California. Seven of California's marine surfperch species are found only south of the California-Oregon border, while eleven have ranges that extend north of the border.

Surfperch species are found in a variety of habitats, including beaches, rocky substrate, and kelp beds. A few species, including the pile perch, rubberlip seaperch, shiner perch, walleye surfperch, and white seaperch, inhabit more than one habitat type. The majority of surfperches, however, occupy only one type of habitat. Species

most commonly found along beaches include the barred surfperch, calico surfperch, redbtail surfperch, silver surfperch, and the spotfin surfperch. Black perch, dwarf perch, kelp perch, rainbow seaperch, reef perch, sharpnose seaperch, and striped seaperch tend to be associated with rocky substrate and kelp beds. The pink seaperch inhabits deep water. Many species move to different areas for mating and birthing; for example, female surfperches may move into shallow coastal waters, or bays and estuaries, to give birth.

The diets of surfperches are quite varied (Table 13.3), but most eat small crustaceans such as isopods (also known as rock lice), amphipods (also known as skeleton shrimp), small crabs (such as sand crabs), and copepods. Many eat mollusks and polychaete worms. Surfperches are usually bottom feeders, but may also feed mid-water when competitors are absent. Black perch, kelp perch, pile perch, rainbow seaperch, sharpnose seaperch, and white seaperch can act as “cleaners”, removing external parasites from other fish.

Surfperches are prey for larger fish such as kelp bass, barred sand bass, California halibut, striped bass, sturgeon, rockfishes and salmon. They are also eaten by harbor seals and birds (including the great blue heron, least tern, Caspian tern, Forster’s tern, cormorants, and various gulls).

Much information is lacking on this group. Life history and habitat requirements are areas in need of more research.

Species	Range	Depth	Main habitat	Maximum size	Foods
barred surfperch	Bodega Bay (Sonoma County) to central Baja California, Mexico	surface to 240 ft	sandy beaches	17 in	sand crabs and other crustaceans, bivalves, echinoderms, and fish eggs
black perch	Fort Bragg (Mendocino County) to central Baja California, Mexico including Guadalupe Island	intertidal to 150 ft	rocky areas near kelp; kelp beds; occasionally around piers and pilings and in coastal bays	15.35 in	polychaete worms, bryozoans, mollusks, and small crustaceans
calico surfperch	northern Washington to northern Baja California, Mexico	surface to 30 ft	sandy beaches	12 in	small crustaceans
dwarf perch	Bodega Bay (Sonoma County) to central Baja California, Mexico	tidepools to 30 ft	shallow eelgrass and surfgrass beds, shallow rocky inshore areas such as reefs and jetties	6.25 in	small crustaceans, mollusks, polychaete worms and algae

Species	Range	Depth	Main habitat	Maximum size	Foods
kelp perch	southeastern Alaska to central Baja California, Mexico including Guadalupe Island	surface to 100 ft	kelp beds in coastal waters	8.5 in	small crustaceans
pile perch	Vancouver Island, British Columbia, Canada (<i>unconfirmed record - southeastern Alaska</i>) to central Baja California, Mexico including Guadalupe Island	surface to 240 ft	several habitats in coastal waters, bays and estuaries: piers and other underwater structures, rocky shores, and kelp beds	17.5 in	hard-shelled mollusks, crabs, barnacles, and other crustaceans
pink seaperch	Cape Vizcaino (Mendocino County) to central Baja California, Mexico, with an isolated population in the Gulf of California	30 to 750 ft	over soft bottoms; usually found in deeper water than other surfperches (upper to mid-shelf)	8 in	small crustaceans, snails, polychaete worms, and brittlestars
rainbow seaperch	Cape Mendocino (Humboldt County) to central Baja California, Mexico	surface to 130 ft	usually over rocky substrate, often at the edge of kelp beds and in kelp beds	12 in	small crustaceans, snails, and polychaete worms
redtail surfperch	Vancouver Island, British Columbia, Canada to Avila Beach (San Luis Obispo County)	surface to 60 ft	sandy beaches on the open coast; sometimes rocky shores and jetties, and estuaries and bays	16 in	worms, fishes, crabs and other small crustaceans
reef perch	Tomales Bay (Marin County) to northern Baja California, Mexico	intertidal to 20 ft	shallow rocky areas including tidepools	7.1 in	algae and small invertebrates
rubberlip seaperch	Russian Gulch State Beach (Mendocino County) to central Baja California, Mexico, including Guadalupe Island	surface to 150 ft	several habitats including rocky areas, kelp beds, near piers and jetties	19.6 in	small crustaceans, mollusks, and polychaete worms
sharpnose seaperch	central Oregon to central Baja California, Mexico	surface to 750 ft	kelp beds and inshore and offshore reefs; and around piers when spawning	11.5 in	small crustaceans, bryozoans, and kelp

Species	Range	Depth	Main habitat	Maximum size	Foods
shiner perch	southeastern Alaska to northern Baja California, Mexico	surface to 480 ft	common in bays and estuaries and in protected areas along the open coast; inhabits several habitats including eelgrass beds and piers	7 in	small crustaceans, algae, polychaete worms, snails and mussels
silver surfperch	Vancouver Island, British Columbia, Canada to northern Baja California, Mexico	surface to 360 ft	in the surf zone of sandy beaches, over sandy areas, and around rocks and piers	10.5 in	small crustaceans and algae
spotfin surfperch	central Oregon to central Baja California, Mexico	surface to 300 ft	in the surf zone of sandy beaches and over sand	7.8 in	young squid, polychaete worms, small crustaceans, algae and fish eggs
striped seaperch	southeastern Alaska to central Baja California, Mexico	surface to 95 ft	mostly coastal kelp beds and rocky areas, but also in bays and estuaries	15.3 in	small crustaceans, algae, polychaete worms, fish eggs, bryozoans, mussels and snails
walleye surfperch	Vancouver Island, British Columbia, Canada to central Baja California, Mexico including Guadalupe Island	surface to 60 ft	several habitats including sandy beaches, piers, jetties and kelp beds	12 in	small crustaceans, polychaete worms, and snails
white seaperch	Vancouver Island, British Columbia, Canada to central Baja California, Mexico	surface to 140 ft	several habitats including near piers and jetties, in deeper waters of bays and estuaries, and offshore near rocks	12.4 in	small crustaceans and polychaete worms

Status of the Populations

No estimates exist for the size of surfperch populations in California coastal waters. However, both fishery-dependent (catch, landings, and effort) and fishery-independent data suggest that populations of surfperches may be declining in California.

- The total commercial landings of surfperches show a long-term decline: annual commercial landing averaged 173,000 pounds during the 1970s and 1980s, but only 95,000 pounds during the 1990s. This represents a 45% decline in landings.
- The total commercial landings of surfperches declined precipitously from 1983 through 2001 (Table 13.4). Landings for 2001 are only 12% of the 1982 landings.
- Estimates of the recreational catch in central and northern California show a long-term decline: the annual average surfperch catch was 1,254,000 fish per year from 1958 through 1961, 831,000 fish per year from 1981 through 1989, and 524,000 fish per year from 1993 through 2001.
- The recreational catch of most species decreased, both in terms of average annual catch and catch-per-unit-of-effort, between the periods of 1981-1989 and 1993-2001 (Table 13.1).
- Since the mid-1980s, the abundance of surfperch species commonly caught in DFG trawl surveys in San Francisco has declined.

Fishery-dependent measures, such as catch, are not definitive measures of population abundance. The declines in recreational catch and commercial landings may be due to factors such as reduced fishing effort rather than a decline in the size of surfperch populations. However, catch-per-unit-of-effort can be indicative of declining populations (if catch rates are proportional to abundance). The catch-per-unit-of-effort (measured as average catch per 1000 angler hours) declined for most species in the recreational fishery.

Various life-history traits of surfperches make them susceptible to overfishing and vulnerable to habitat loss and degradation in estuaries and marine nearshore areas. Surfperches produce few young and are relatively short-lived, which makes it difficult for populations to rebound. Some species aggregate to mate and many species use bays and estuaries as birthing areas and nurseries.

Management Considerations

Surfperches are important commercial and recreational fishes. Most of the California coastal species are taken in the recreational fishery and the majority of the catch is taken when spawning aggregations are present. Female surfperches are intentionally targeted by recreational anglers because they are larger than males. Recreational anglers also grade their catch (discard smaller fish when larger ones are caught), which probably results in an even greater take of mature females with a resulting decline in the fishery. Recent research has indicated that some of the decline in surfperch populations is associated with increases in water temperature. The redbait and barred surfperches are the most notable in the commercial catch and may be important to local economies.

Human use of surfperch habitats will continue to negatively impact these populations, and cause conflict regarding the appropriate use of nearshore areas. As shoreline development increases, areas inhabited by surfperches may become polluted or destroyed. Although surfperches may adapt to structures such as jetties and piers, it

seems clear that they cannot be expected to successfully adapt to all the human-induced changes to which they are exposed.

In 2002, the regulations governing the recreational fishery were changed in an effort to reduce the recreational harvest to a sustainable level. In addition, the State Legislature gave the Fish and Game Commission authority to adopt regulations to manage the commercial surfperch fishery beginning in 2003.

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Further Reading

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Table 13.4. Commercial landings (pounds) of surfperches from 1916-2001

Year	Pounds	Year	Pounds	Year	Pounds	Year	Pounds	Year	Pounds
1916	221,186	1933	214,511	1950	242,354	1967	202,513	1984	182,082
1917	252,503	1934	192,596	1951	237,331	1968	168,040	1985	124,080
1918	203,420	1935	241,525	1952	213,357	1969	156,528	1986	124,858
1919	192,481	1936	207,280	1953	281,998	1970	241,409	1987	145,566
1920	186,381	1937	210,309	1954	118,499	1971	184,938	1988	107,071
1921	253,199	1938	155,815	1955	136,554	1972	272,913	1989	118,201
1922	243,776	1939	139,394	1956	187,681	1973	138,000	1990	137,648
1923	359,682	1940	57,977	1957	245,699	1974	148,086	1991	104,746
1924	305,726	1941	25,832	1958	189,679	1975	113,757	1992	129,662
1925	272,351	1942	58,018	1959	212,853	1976	142,037	1993	111,261
1926	208,910	1943	113,018	1960	164,273	1977	110,233	1994	93,672
1927	262,893	1944	146,546	1961	118,245	1978	174,064	1995	89,643
1928	236,974	1945	217,486	1962	165,115	1979	201,160	1996	85,279
1929	311,194	1946	192,430	1963	172,884	1980	162,952	1997	76,512
1930	267,972	1947	289,182	1964	133,115	1981	182,675	1998	73,731
1931	223,092	1948	302,087	1965	187,736	1982	367,704	1999	49,396
1932	207,222	1949	326,336	1966	160,381	1983	211,556	2000	56,235
								2001	43,225

1. Data sources: California Department of Fish and Game (DFG) Catch Bulletins (1916-1983) and DFG commercial landing receipt database (1984-2001).

2. Landings are the sum of all species of surfperch landed.

Table 13.5. Estimated recreational catch (pounds) of surfperches by fishing mode, 1980-2001

Year	Man-made structures	Beach and bank	Shore	Commercial passenger fishing vessels (CPFV)	Private or rental boats	Total
1980	1,124,270	958,401	-----	8,913	200,246	2,291,830
1981	220,218	761,655	-----	2,780	187,469	1,172,122
1982	152,845	636,565	-----	585	91,705	881,700
1983	203,866	550,553	-----	4,041	67,365	825,825
1984	172,904	393,711	-----	1,281	114,282	682,177
1985	125,020	416,801	-----	842	76,763	619,425
1986	-----	-----	1,268,683	2,083	244,721	1,515,486
1987	-----	-----	342,530	3,223	68,752	414,505
1988	-----	-----	558,522	625	73,233	632,380
1989	-----	-----	355,749	794	43,241	399,785
1990	-----	-----	-----	-----	-----	-----
1991	-----	-----	-----	-----	-----	-----
1992	-----	-----	-----	-----	-----	-----
1993	91,495	536,936	-----	2,049	73,198	703,678
1994	61,193	302,025	-----	815	56,501	420,534
1995	94,596	436,534	-----	1,732	86,308	619,169
1996	124,499	429,036	-----	1,838	96,446	651,818
1997	150,625	384,218	-----	1,789	33,062	569,694
1998	104,979	695,122	-----	777	44,268	845,144
1999	96,372	186,497	-----	2,115	36,984	321,969
2000	40,203	151,907	-----	585	30,868	223,563
2001	82,634	119,959	-----	2,121	54,412	259,126

----- Estimates not available.

1. Data source: MRFSS; data obtained from the Pacific States Marine Fisheries Commission website.
2. No estimates are available from 1990 through 1992 or for January and February of 1995. Estimates for 2001 are preliminary. Northern California commercial passenger fishing vessels were not fully sampled because of refusals.
3. Catch estimates do not include fish that were caught and released alive; they only include fish that were harvested.
4. From 1986 to 1989, individual catch estimates were not made for the man-made structures mode or the beach and bank mode. Instead, a single estimate was made for these shore modes.

Table 13.6. Estimated recreational catch (number of fish) of surfperches by fishing mode, 1980-2001

Year	Man-made structures	Beach and bank	Shore	Commercial passenger fishing vessels (CPFV)	Private or rental boats	Total
1980	1,618,704	1,498,566	-----	7,378	274,835	3,399,483
1981	619,572	1,358,110	-----	2,825	286,755	2,267,262
1982	565,759	1,141,467	-----	9,314	214,000	1,930,540
1983	588,267	903,514	-----	5,823	126,884	1,624,488
1984	475,961	677,281	-----	1,463	138,185	1,292,890
1985	390,128	838,492	-----	2,425	87,417	1,318,463
1986	-----	-----	1,662,897	4,192	228,975	1,896,064
1987	-----	-----	848,870	4,206	108,276	961,353
1988	-----	-----	1,286,099	1,939	144,926	1,432,964
1989	-----	-----	803,015	1,784	139,980	944,779
1990	-----	-----	-----	-----	-----	-----
1991	-----	-----	-----	-----	-----	-----
1992	-----	-----	-----	-----	-----	-----
1993	364,576	784,474	-----	5,474	95,348	1,249,872
1994	209,213	488,242	-----	1,235	50,859	749,549
1995	323,988	703,923	-----	1,846	131,173	1,160,929
1996	389,290	565,150	-----	2,749	105,058	1,062,247
1997	361,776	554,633	-----	2,557	36,569	955,534
1998	258,331	824,470	-----	1,442	54,461	1,138,705
1999	205,260	259,718	-----	4,019	37,244	506,242
2000	134,023	230,819	-----	1,367	42,697	408,906
2001	404,646	197,774	-----	3,798	66,444	672,662

----- Estimates not available.

1. Data source: the MRFSS; data obtained from the Pacific States Marine Fisheries Commission website.

2. No estimates are available from 1990 through 1992 or for January and February of 1995.

Estimates for 2001 are preliminary. Northern California commercial passenger fishing vessels were not fully sampled because of refusals.

3. Catch estimates do not include fish that were caught and released alive; they only include fish that were harvested.

4. From 1986 to 1989, individual catch estimates were not made for the man-made structures mode or the beach and bank mode. Instead, a single estimate was made for these shore modes.