

## Fish species descriptions

Note: Descriptions adapted from Moyle, 1976.

### Chinook salmon *Oncorhynchus tshawytscha*

Spawning adults are olive brown to dark maroon in color without streaking or blotches on the sides. Spawning males are darker than females and have a hooked jaw and slightly humped back. There are numerous small black spots on the back, dorsal fin, and the tail. The gums of the lower jaw are solid black. Adult spawners are the largest Pacific salmon, 29.5-31.5 inches.

### Rainbow trout *Oncorhynchus mykiss*

Rainbow trout are the most abundant and widespread species of the western salmonids. They are highly variable in color, body shape, etc.. They can usually be recognized as silvery trout with numerous black spots on tail, fins, and back, and an iridescent pink to red lateral band. Cheeks are pinkish and the back iridescent blue to nearly brown sides and belly are silver, white or yellowish. Rainbow trout are highly aggressive at defending their feeding territories. Most wild rainbows spawn in the spring but low temperatures in high mountain areas may delay spawning until later.

### California roach *Hesperoleucus symmetricus*

California roach are small, generally less than four inches. Their eyes and head are large with the upper half of their body usually dark, from dusky gray to steel blue. The lower half of the body is usually a dull silver. During breeding, patches of bright orange may develop. Generally found in intermittent tributaries to Butte Creek, they are most abundant at mid-elevation in the foothills. Roach are tolerant of relatively high temperatures (86-95 °F). They are habitat generalists. Most habitat is correlated with low flows, moderate gradients, warm temperatures, and water edge vegetation mats. In foothill streams, abundance is negatively correlated with other species. Filamented algae is the roach's primary food, and they eat lesser amounts of macro invertebrates, diatoms and other unicellular algae, and detritus. Roach grow fast during early summer, probably because of algal abundance. Sacramento roach is plentiful in many streams, however it is gone from many streams where it once thrived. It's population in Butte Creek is unknown.

### Hardhead *Mylopharodon conocephalus*

Large cyprinids that grow to over 2 feet. They are similar to Sacramento squawfish, but their body is deeper and heavier with a less pointed head. It has a deep bluish-green body with yellowish fins. McReynolds (1996) found a "relatively high abundance of hardheads" in the section of Butte Creek from Chimney Rock to Helltown Bridge. He thought that the wild undeveloped character of that reach was responsible for the numbers. He found about 4.5 times as many Hardheads as squawfish. Hardheads are largely bottom feeders.

### Sacramento squawfish *Ptychocheilus grandis*

Another large native minnow, squawfish are a lighter yellowish green and have a groove separating the lips from the snout. McReynolds (1996) studied hardheads and squaw fish in Butte Creek. The largest population was found from the Covered Bridge to Parrott-Phelan Dam. They frequently occur with rainbow trout. Generally rare in disturbed waters with introduced fish. Squawfish are predatory. They were at the top of the food chain before the introduction of bass. Under 7 inches, they feed mostly on bottom dwelling invertebrates or surface insects. Over 7 inches, they feed mostly on other fish. Often sedentary in habit, they will move downstream in summer and upstream to feed and spawn during higher flows. They are generally overrated as predators or competitors of young salmon (Moyle, 1976).

Pacific lamprey *Lampetra tridentata*

Lampreys are specialized eelike vertebrates. They latch onto a large fish with their suckerlike mouth and rasp a hole in the fish with their tongue extracting blood and body fluids until they drop off satiated. The wound left may be fatal although many fish do survive attacks. (Moyle, 1976). They grow to over 16 inches and spend their predatory time in the ocean. When mature they migrate up to their spawning streams in April to September. They are stopped in their migration only by major barriers. The young called ammocetes, spend 3-7 years as filter feeders, then metamorphose into adults. Moyle (1976) thought it unlikely that they could withstand severe habitat changes.

Brown trout *Salmo trutta*

The only trout in California with both red and black spots on their bodies. The red spots are present only on the lower sides. They are usually dark to olive brown on the back, shading to yellow brown on the sides and white to yellow on the belly. This trout can withstand higher temperatures, up to 80° F. Optimum growth occurs 45° F - 66° F, with preference for temperatures 55° F- 66° F. Colorado researchers found they wouldn't move upstream unless temperatures exceeded 55° F. Young Browns eat drift insects as they grow they eat more invertebrates. At one inch length they eat other fish and invertebrates. Spawning takes place in November- December, in pea to walnut size gravels. Brown trout can provide great fishing but their bottom feeding habits mean that anglers are more likely to catch other planted or wild rainbows. Stream production of wild catchable fish can sometimes be improved by removal of large Brown trout that subsist mainly on other fishes.

Brook trout *Salvelinus fontinalis*

Can be distinguished from other trout by a dark olive background with lighter colored wavy lines (vermiculations), red spots on their sides enclosed by blue halos, and white edges on some fins. They are present in the meadows of Butte House. Brook trout are the most cold tolerant of salmonids even feeding below ice. They feed mostly on terrestrial and aquatic insects, and generally spawn in pea to walnut sized gravels in the Fall.

Hitch *Lavinia exilicauda*

Resemble golden shiners with narrow bodies, small heads with upward pointing mouths, large scales, and decurved lateral lines. When small they are silvery with a black spot by the tail which disappears with age. They also become darker colored approaching brownish yellow. Characteristic of warm, low elevation sloughs and slow moving reaches of Butte Creek. Their most common associates are introduced fish such as catfish, sunfish, and carp. Young feed on planktonic crustaceans. Large fish school, and feed on phytoplankton, planktonic crustaceans, and flying and emerging insects.

Speckled dace *Rhinichthys osculus*

Widely distributed, their usual habitat is in riffles and rocks where they are found in small groups. Possessing a subterminal mouth, they browse on small invertebrates, although they are known to take surface insects and planktonic crustaceans. Adapted ecotypes have survived temps up to 91° F. They survive because of nocturnal habits and an ability to hide in rocks.

Golden shiner *Notemigonus crysoleucas*

Introduced into California in 1891, they were used as bait fish and soon spread throughout the state. They live mainly in warm sloughs and are associated with dense aquatic vegetation. They can tolerate both low oxygen and high temperatures. They are active fish feeding mostly on the surface or mid-water. Larger shiners occasionally take small fish, mollusks and aquatic insect larvae. Small fish eat zooplankton, particularly daphnia, and lesser amounts of small surface insects. If there is a lack of animal food they will eat filamented algae. Where they become

established in cold water areas they apparently compete with young trout because trout production becomes much lower.

Goldfish *Carassius auratus*

Wild Goldfish are generally olive on the back, silvery on the sides and white on the belly. They are heavy bodied like carp. They are present in canals and sloughs of Butte Creek, and prefer warmer water with mild winters. They generally graze on phytoplankton, algae and detritus. Their ecological role is not well understood though they grow too fast to be forage fish. They should continue to be prohibited as bait fish (Moyle, 1976). They likely compete with game fish for space and food.

Carp *Cyprinus carpio*

Carp are large scaled heavy bodied minnows most abundant in warm, turbid water at low altitudes, and also manage to live in some trout streams. Generally associated with eutrophic waters with silty bottoms, they are bottom feeders that uproot aquatic plants and greatly increase turbidity. Carp can rapidly move into waters where conditions have become marginal or prohibitive for game fish. Carp have "displaced or greatly reduced the populations of many native fishes and have been responsible for the destruction of much game fish and waterfowl habitat". Control of carp is expensive and complex (Moyle, 1976).

Sacramento sucker *Catostomus occidentalis*

These are typical suckers with subterminal mouths that tend to be greenish on back and yellow-gold on the belly, with a slight red stripe in between. Found in a wide range of habitats, in streams, they are abundant in pools. Generally found with minnows such as hardheads, squawfish and California roach. Feeding is nearly constant on the bottom of pools but mostly at night along the bottom of riffles. Young suckers feed on young invertebrates. Older suckers feed on filamented algae, invertebrates, and detritus. They have the ability to live in a wide variety of habitats, but are frequently unable to maintain populations especially with carp and goldfish.

Black bullhead *Ictalurus melas*

A catfish they are distinguished by a square-tipped, slightly notched tail. They are stout bellied and vary from brownish yellow to black with yellow to white bellies. Black bullheads prefer ponds, river backwaters and pools with warm and turbid water. In Butte Creek they are found in the sloughs. They are omnivorous feeding on aquatic insects, crustaceans, algae, plants, detritus, etc. Their growth is highly variable. They produce large numbers of eggs and can form stunted populations from overpopulating an area. They spawn when water temps exceed 68° F. Not very common in California, they are considered a nuisance fish that crowd out other fish.

Brown bullhead *Ictalurus nebulosus*

Similar to Black bullheads, they can adapt to a large variety of habitats. They swim in loose schools, and forage on the bottom using their barbells, eating invertebrate larvae, although they will eat almost anything. Moyle (1976) states that they are under-exploited, being tasty, easily caught, and good sized (10-14 inches). They are found in lower Butte Creek and sloughs.

Channel catfish *Ictalurus punctatus*

These catfish are elongated and small headed with deeply forked tails that have pointed lobes. They are adapted to living in large streams and rivers. Small (<8inch) catfish that eat crustaceans and aquatic invert larvae. They sleep in pools in the day, moving into riffles to feed at night. Larger fish eat more fish and crayfish. One of the fastest growing catfish, it is becoming a more popular sport fish (night fishing) and is raised and planted by CDFG (Moyle, 1976).

Mosquitofish *Gambusia affinis*

Small stout bodied fish with short flattened heads and small mouths, they are unusual in that they are livebearers. These fish are popular for mosquito control because they can live in a large range

of conditions. They tend to be found among aquatic plants if the growth is not too thick. They feed on mosquito larvae or whatever is available, and were introduced into California to control mosquitos. One problem connected with them is that their use has prevented examination of native fish for mosquito control, which may be better for this purpose under certain circumstances.

Threespine stickleback *Gasterosteus aculeatus*

Small narrow fish with three sharp spines on the back. Their eyes are large. Adults are usually olive to dark green on the back with white to golden bellies. The fins are colorless. A quiet water fish, living in weedy pools or at the waters edge in aquatic plants, they require cool water for survival (Max 75° F.) They feed on bottom and plant dwelling organisms and are abundant and wide spread. They are good food for salmonids (and others). Sticklebacks are unusual in that the male builds a nest of aquatic plants and protects the young.

Bluegill *Lepomis macrochirus*

Bluegills usually have an iridescent purple sheen and a blue or black flap on their operculum. They have the ability to survive and flourish in a wide variety of conditions, but do best in warm shallow sloughs and lakes. Bluegill feed on whatever animal food is available, insects, small fish and fish eggs. They reproduce prolifically and may live in stunted populations.

Redear sunfish *Lepomis microlophus*

Deep bodied fish with small mouths and lack distinctive markings except for an orange-red edge around the dark blotch on the gill flap. They prefer deeper waters with abundant aquatic vegetation, and are well adapted to eat snails. Similar to Bluegill in habits, they tend to be larger and do not become stunted. A very popular gamefish in the Southeast.

Green sunfish *Lepomis cyanellus*

These have stouter shallower bodies than other sunfish, and larger mouths. Inhabiting small, warm, and intermittent streams, they are very aggressive. Though not usually found where there are several species of fish, they are able to take over where native fishes have become depleted. They grow slowly compared to other sunfish. Moyle (1976) regarded their introduction as unfortunate as they provide little sport and much competition for native fish.

White crappie *Pomoxis annularis*

White crappie have a deep narrow bodies with large mouths, iridescent olive green backs and silvery white sides, and ten or less indistinct vertical bars. Breeding males turn nearly black. Crappie feed largely on plankton and plankton feeding fish. They replace Black crappie in more turbid lakes with less aquatic vegetation.

Black crappie *Pomoxis nigromaculatus*

They are similar to white crappie with body coloring and overcast black spots instead of bars. The back half of breeding fish turn black. Most successful in warm clear lakes with large beds of aquatic plants, they tend to be found in schools. They primarily feed on zooplankton, aquatic insects and larger fish on small fish.

Largemouth bass *Micropterus salmoides*

The heaviest bodied of "black" bass they tend to be olive grey on the back and white on the belly with a black stripe in between. They are abundant in sloughs and river backwaters including lower Butte Creek. A nonnative voracious predator of young salmonids, these fish have even been known to eat small birds.

Smallmouth bass *Micropterus dolomieu*

Chunky bodied greenish to dark olive brown on their sides, with faint dark vertical bars and white

bellies. A nonnative voracious predator of young salmonids, they prefer lower reaches of Butte Creek.

Spotted bass *Micropterus punctulatus*

These have a blochy line on their side not easily differentiated from small or largemouth. Their habitat is generally lakes

Striped bass *Morone saxatilis*

An introduced species. One of the "Temperate" Basses. Spiny torpedo shaped predator. One of the most efficient predator fishes in the Butte Creek system. Advanced evolutionarily and well known for taking great numbers of prey items. Known predators of salmonids in the Delta and elsewhere (Maslin, 1998). Found in screw traps in the West Borrow (Hill, 1998).

Bigscale logperch *Percina marcolepida*

Long and slender, recognized by pointed snouts, yellow bodies with 15 vertical dark vertical bars and a dark spot at the base of the tail, two well seperated dorsal fins and small (< 5inches) size. Introduced in 1966 they now occupy turbid muddy bottomed sloughs of Butte Creek. They rest on the bottom or logs and generally feed on insect larvae and fish eggs. Their effect on native fish is unknown.

Tule perch *Hystrocarpus traski*

A surfperch, they give birth to young rather than laying eggs. They are small, less than 6 inches, deep bodied fish with a hump between the head and top fin. The back is dark often bluish or purplish with a white to yellow belly. There are three color phases wide, narrow, and unbarred. They live in the lower reach of Butte Creek and are gregarious except when mating. They feed on small aquatic insects allied with aquatic vegetation. Populations are generally in decline due to habitat change from increased tubidity, pollution or reduced cover. Their population trend in Butte Creek is unknown.

Prickly sculpin *Cottus asper*

A small bottom fish with large flattened head, combined with the lack of an air bladder which enables them to stay on the bottom. A large mouth and short intestine shows its voracious feeding habits. They usually have little effect on salmonids although they do feed on loose eggs. Prickling on the body varies from very little to nearly complete coverage. They occupy a wide range of bottom habitats, hunt at night and feed on aquatic insects in the gravel.

Riffle sculpin *Cottus gulosus*

They have a large mouth and typical sculpin mottled body color. Riffle sculpins are well named in that they are found in headwater streams where riffles dominate. Riffle sculpins occupy the cool upper reaches of Butte Creek and Prickly sculpins the lower warmer reaches. They are oportunistic and feed on a wide variety of aquatic insects.