Table 2.32. Non-Native Fish Species Present (and Effects on Salmonids)

Introduced Fish Species List

Modified from Ayres et al, 2003

Common Name	Family	Feeding Strategy	Preferred Habitat	Effect on salmon	Status/Year of Indroduction to California
Golden shiner, *Notemigonus crysoleucas* (Mitchill)	Minnow family (Cyprinidae)	Surface and midwater feeders, feed on zooplanton and zooplanters	Warm shallow ponds, lakes, and sloughs often associated with aquatic plants	Little effect due to poor adaptation to Secret Ravine	IIE, 1891(?)
Common carp, *Cyprinus carpio* (Linnaeus)	Minnow family (Cyprinidae)	Omnivorous bottom feeders, feed predominantely on algae and aquatic insect larvae however fish larvae and eggs also eaten when available	Warm turbid water at low elevations but can survive in trout streams	Predation of fish eggs	IIE, 1872
Fathead minnow, *Pimephales promelas* (Rafinesque)	Minnow family (Cyprinidae)	Omnivorous bottom feeders, feed predominantely on filamentous algae, diatoms, small invertebrates including chironomid larvea, and organic matter	Pools in small, muddy, streams and ponds	Competition with juveniles	IIE, 1953(?)
Black bullhead, *Ameiurus melas* (Rafinesque)	Catfish family (Ictaluridae)	Omivorus bottom feeders, feed predominately of fish, amphipods, isopods, snails, and other invertebrates including chironomid larvae	Ponds, small lakes, river backwaters, and sloughs and pools of low gradient streams with muddy bottoms, warm turbid water	Competition with juveniles	IID, 1930s
Brown bullhead, *Ameiurus natalis* (Lesueur)	Catfish family (Ictaluridae)	Omnivorous bottom feeders, feed predominantly on amphipods, isopods, crayfish, and chironomid larvea	Highly adapted to cold and warm water including trout streams, also found in lakes, sloughs and river pools, with sluggish, low-gradient reaches and high turbidity, beds of aquatic plants and soft substrate	Competition with juveniles	IID, 1874
Green sunfish, *Lepomis cyanellus* (Rafinesque)	Sunfish family (Centrarchidae)	Opportunistic predator, predominantely on small fish and invertebrates including chironomids	Small, warm streams, ponds, and lake edges	Predation on juveniles and competition with juveniles	IIE/IID, 1891 or 1908
Redear sunfish, *Lepomis microlophus* (Gunther)	Sunfish family (Centrarchidae)	Omnivorous bottom feeders predominately on hard shelled invertebrates and aquatic plants	Deeper waters of warm, quiet ponds, lakes, and river backwater and sloughs with substatial beds of aquatic vegetation	Little effect due to poor adaptation to Secret Ravine	IID, 1950 & 1954
Bluegill, *Lepomis macrochirus* (Rafinesque)	Sunfish family (Centrarchidae)	Opportunistic predators, aquatic insects larvae, planktonic crustaceans, flying insects, snails, small fish and fish eggs	Warm, shallow lakes, reservoirs, ponds, stream, and sloughs at low elevation	Predation on eggs and competition w/ juveniles	IID, 1908

Table 2.32. Non-Native Fish Species Present (and Effects on Salmonids) (continued)

Largemouth bass, *Micropterus salmoides* (Lacepede)	Sunfish family (Centrarchidae)	Opportunistic predators, feed largely on threadfin shad, golden shiners, and bluegill though in Bay Delta predate on juvenile salmon and native minnows	Warm shallow waters <6 m in depth can include farm ponds, lakes, reservoirs, sloughs, and river backwaters	Predation on juvenile salmon though Secret Ravine not ideal habitat	IID, 1891 or 1895
Smallmouth bass, *Micropterus dolomieu* (Lacepede)	Sunfish family (Centrarchidae)	Opportunistic predators, feed largely on crayfish also an introduced species	Clear lakes, clear streams with abundant cover and cool summer temperature (elevation between 100 and 1000m)	Good habitat for these fish, however prefer crayfish	IID, 1874
Spotted bass, *Micropterus punctulatus* (Rafinesque)	Sunfish family (Centrarchidae)	Opportunistic predators of larger invertebrats and fish; they feed largely on aquatic invertebrates, fish, crayfish, and terrestrial insects	Moderately sized, clear, low-gradient sections of rivers and reservoirs, like faster water than large mouth bass and more turbid water than small mouth bass	Most abundant fish seen in Secret Ravine, predation on juvenile fish	IIE, 1936
Western Mosquitofish, *Gambusia affinis* (Baird and Girard)	Livebearer family (Poeciliidae)	Opportunistic omnivore, predominately feed on what organisms are most abundant including aquatic invertebrate insects such as mosquito larvae and pupae, algae, zooplankton, and terrestrial insects	Wide range of conditions including warm ponds, lakes, and streams	Little effect due to preference for mosquitoes	IIE, 1922

Status: Describes abundance trends and management needs. This is the status found in Moyle's Inland Fishes of California, 2002.

I. Alien Species

C. **Localized likely to become more widespread or already** widespread but not abundant in most areas. Alternately, it may be fairly common but is declining. The species is usually a recent introdution and is just starting to expand its range, or it is a long-established species that is only regionally abundant.

D. **Widespread and stable.** The species is widely distributed but seems to have reached the limits of its range. Presumably such species are integrated into local ecosystems.

E. **Widespread and expanding.** These fish are aggressive invaders that are still expanding their range to all suitable habitats in the state.