

2. Does Executive Order 13175 Apply to This Proposed Rule?

This action does not have tribal implications, as specified in Executive Order 13175 (65 FR 67249, November 9, 2000). Proposing a site to the NPL does not impose any costs on a tribe or require a tribe to take remedial action. Thus, Executive Order 13175 does not apply to this proposed rule.

*G. Executive Order 13045: Protection of Children From Environmental Health and Safety Risks*

1. What Is Executive Order 13045?

Executive Order 13045: "Protection of Children from Environmental Health Risks and Safety Risks" (62 FR 19885, April 23, 1997) applies to any rule that: (1) Is determined to be "economically significant" as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

2. Does Executive Order 13045 Apply to This Proposed Rule?

This proposed rule is not subject to Executive Order 13045 because it is not an economically significant rule as defined by Executive Order 12866, and because the Agency does not have reason to believe the environmental health or safety risks addressed by this proposed rule present a disproportionate risk to children.

*H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Usage*

Is This Rule Subject to Executive Order 13211?

This action is not a "significant energy action" as defined in Executive Order 13211 (66 FR 28355 (May 22, 2001)), because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. Further, we have concluded that this rule is not likely to have any adverse energy impacts because proposing a site to the NPL does not require an entity to conduct any action that would require energy use, let alone that which would significantly affect energy supply, distribution, or usage. Thus, Executive Order 13175 does not apply to this action.

*I. National Technology Transfer and Advancement Act*

1. What Is the National Technology Transfer and Advancement Act?

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), Public Law 104-113, section 12(d) (15 U.S.C. 272 note), directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. The NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

2. Does the National Technology Transfer and Advancement Act Apply to This Proposed Rule?

No. This proposed rulemaking does not involve technical standards. Therefore, EPA did not consider the use of any voluntary consensus standards.

*J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations*

1. What Is Executive Order 12898?

Executive Order (EO) 12898 (59 FR 7629 (Feb. 16, 1994)) establishes federal executive policy on environmental justice. Its main provision directs federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States.

2. Does Executive Order 12898 Apply to This Rule?

EPA has determined that this proposed rule will not have disproportionately high and adverse human health or environmental effects on minority or low-income populations because it does not affect the level of protection provided to human health or the environment. As this rule does not impose any enforceable duty upon State, tribal or local governments, this rule will neither increase nor decrease environmental protection.

**List of Subjects in 40 CFR Part 300**

Environmental protection, Air pollution control, Chemicals, Hazardous substances, Hazardous waste, Intergovernmental relations, Natural resources, Oil pollution, Penalties, Reporting and recordkeeping requirements, Superfund, Water pollution control, Water supply.

**Authority:** 33 U.S.C. 1321(c)(2); 42 U.S.C. 9601-9657; E.O. 12777, 56 FR 54757, 3 CFR, 1991 Comp., p. 351; E.O. 12580, 52 FR 2923, 3 CFR, 1987 Comp., p. 193.

Dated: April 1, 2009.

**Barry N. Breen,**

*Acting Assistant Administrator, Office of Solid Waste and Emergency Response.*

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**DEPARTMENT OF THE INTERIOR**

**Fish and Wildlife Service**

**50 CFR Part 17**

**[FWS-R8-ES-2008-0045; MO 922105 0083-B2]**

**Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition to List the San Francisco Bay-Delta Population of the Longfin Smelt (*Spirinchus thaleichthys*) as Endangered**

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Notice of 12-month petition finding.

**SUMMARY:** We, the U.S. Fish and Wildlife Service (Service), announce a 12-month finding on a petition to list the San Francisco Bay-Delta population of the longfin smelt (*Spirinchus thaleichthys*) as endangered with critical habitat under the Endangered Species Act of 1973, as amended (Act). After a thorough review of all available scientific and commercial information, we find that the San Francisco Bay-Delta population of the longfin smelt does not meet our definition of a distinct population segment (DPS), as identified in our DPS policy (61 FR 4721, February 7, 1996). As a result, listing the species as a DPS is not warranted. However, we are initiating a status assessment of the longfin smelt, and we solicit information on the status of the species range wide.

**DATES:** The finding announced in the document was made on April 9, 2009.

**ADDRESSES:** This finding is available on the Internet at <http://www.regulations.gov> and <http://www.regulations.gov>

[www.fws.gov/sacramento](http://www.fws.gov/sacramento). Supporting documentation we used in preparing this finding are available for public inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, 2800 Cottage Way, Room W-2605, Sacramento, CA 95825; telephone 916-414-6600; or facsimile 916-414-6712. Please submit any new information, materials, comments, or questions concerning this finding to the above street address or fax.

**FOR FURTHER INFORMATION CONTACT:** For information on this finding, contact Susan Moore, Field Supervisor, or Arnold Roessler, Listing Program Coordinator, of the Sacramento Fish and Wildlife Office (see **ADDRESSES**). If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 1-800-877-8339.

**SUPPLEMENTARY INFORMATION:**

**Background**

Section 4(b)(3)(B) of the Act (16 U.S.C. 1531 *et seq.*) requires that, for any petition containing substantial scientific and commercial information indicating that listing may be warranted, we make a finding within 12 months of the date of our receipt of the petition on whether the petitioned action is: (a) not warranted, (b) warranted, or (c) warranted, but the immediate proposal of a regulation implementing the petitioned action is precluded by other pending proposals to determine whether any species is threatened or endangered, and expeditious progress is being made to add or remove qualified species from the Lists of Endangered and Threatened Wildlife and Plants. Such 12-month findings are to be published promptly in the **Federal Register**. This finding is based on our determination, based on the limited evidence available, that the San Francisco Bay-Delta population of longfin smelt is not a valid distinct population segment (DPS) under our Distinct Population Segment Policy (61 FR 4721, February 7, 1996), and, therefore, cannot be considered a listable entity under section 3(16) of the Act.

**Previous Federal Actions**

On August 8, 2007, we received a petition from the Bay Institute, the Center for Biological Diversity, and the Natural Resources Defense Council to list the San Francisco Bay-Delta population of the longfin smelt as a distinct population segment (DPS) and designate critical habitat for the species concurrent with the listing. The petition was clearly identified as a petition for a listing rule and contained the names,

signatures, and addresses of the requesting parties. On May 6, 2008, we published a 90-day finding (73 FR 24911) in which we concluded that the petition provided substantial information indicating that listing San Francisco Bay-Delta Population of the longfin smelt as a DPS may be warranted, and we initiated a status review. However, in that notice, we did not make a final determination that the San Francisco Bay-Delta Population of the longfin smelt was a DPS; we only stated that the petition presented substantial information indicating that listing as a DPS may be warranted and that we would finalize our determination in our status review. This notice constitutes the 12-month finding on the August 8, 2007, petition to list the San Francisco Bay-Delta population of the longfin smelt as a DPS and designate critical habitat for the species concurrent with the listing.

**Species Description**

The following species description is taken from U.S. Fish and Wildlife Service 1995, p. 47, except where cited otherwise. Longfin smelt is a pelagic (lives in open water), estuarine fish that typically measures 3.5 to 4.3 inches (in) (90-110 millimeters (mm)) standard length, although third-year females may grow up to 5.9 in (150 mm) (Moyle 2002, p. 236). The sides and lining of the gut cavity appear translucent silver, the back has an olive to iridescent pinkish hue, and mature males are usually darker in color than females. Longfin smelt can be distinguished from other smelts in California by their long pectoral fins, incomplete lateral line, weak or absent striations on their opercular (covering the gills) bones, low numbers of scales in the lateral series (54 to 65), and long maxillary bones (in adults, these bones extend just short of the posterior margin of the eye).

**Taxonomy**

The longfin smelt belongs to the true smelt family Osmeridae, and is one of three species in its genus; the night smelt (*Spirinchus starksi*) co-occurs in California and the shishamo (*S. lanceolatus*) occurs in northern Japan (McAllister 1963, pp. 10 and 15). Because of its distinctive characteristics, the San Francisco Bay-Delta population of longfin smelt was once described as a species separate from more northern populations (Moyle 2002, p. 235). McAllister (1963, p. 12) merged the two species, *S. thaleichthys* and *S. dilatus*, because the difference in morphological characters represented a north-south cline rather than a discrete set; a subsequent study using electrophoresis

of allozymes (proteins used as genetic markers because DNA contains information that is used by cells to build proteins) showed that populations from Lake Washington near Seattle, Washington, and the Sacramento-San Joaquin Delta in California are similar genetically (Stanley *et al.* 1995, p. 390). The study did, however, find that the Sacramento-San Joaquin Delta population of longfin smelt differs in allele (alternative form of a gene) frequencies from the population in Lake Washington (Stanley *et al.* 1995, p. 390). Delta smelt and longfin smelt hybrids have been observed in the San Francisco Bay-Delta estuary, although these offspring are not thought to be fertile because delta smelt and longfin smelt are not closely related taxonomically or genetically (California Department of Fish and Game (CDFG) 2001, p. 473).

**Biology**

The longfin smelt is a euryhaline (tolerant of variable salinities) pelagic fish that inhabits various depths of the water column depending on the individual's life stage. Longfin smelt have been found throughout the year in fresh and brackish waters with salinities ranging from 14 to 28 parts per thousand (ppt) (CDFG 2001, p. 477). Adults can typically be found in the middle or lower part of the water column (Moyle 2002, p. 236), while larvae maintain position in the upper part of the water column, where they are usually found. Longfin smelt reportedly cannot tolerate water temperatures greater than 68 degrees Fahrenheit (°F) (20 degrees Celsius (°C)) (Moyle 2002, p. 236), and will move farther downstream (west) during the summer months when water temperatures in the Delta are higher. Adult longfin smelt occupy water at temperatures from 61 to 68 °F (16 to 20 °C), with spawning probably occurring in water with temperatures between 44.5 to 58 °F (7.0 to 14.5 °C) (Wang 1986, pp. 6-9).

Longfin smelt prey primarily on opossum shrimp (*Neomysis mercedis*) and other small crustaceans (*Acanthomysis* sp.), although copepods such as the calanoid copepod (*Pseudodiaptomus forbesi*) and cyclopoid copepod (*Acanthocyclops vernalis*) (Hobbs *et al.* 2006, p. 907) and other crustaceans are also preyed upon, especially by smaller fish (Moyle 2002, p. 236). Longfin smelt are preyed upon by fishes, birds, and mammals (Barnhart *et al.* 1992, p. 44) and are a major prey item of harbor seals (*Phoca vitulina*) in the Columbia River (Service 1995, p. 51). Predation of longfin smelt in the San Francisco Bay Estuary is known to occur by both striped bass (*Morone*

*saxatilis*) and inland silversides (*Menidia beryllina*), but the effects of predation on the population are not well understood (Moyle 2002, p. 238). In the ocean, longfin smelt feed primarily on small crustaceans, but may also feed on jellyfish and larval fish (Barnhart *et al.* 1992, p. 44).

### Reproduction

Longfin smelt may spawn as early as November and as late as June, although typically spawning occurs from February to April (Moyle 2002, p. 236). However, longfin smelt at various life stages are detected in the San Francisco Bay estuary trawl surveys in numerous months of the year (Rosenfield and Baxter 2007, p. 1578), suggesting that the spawning period may not be restricted to November to June or that growth and development between individuals varies. Spawning occurs in areas of relatively low salinity, which are considered essential nursery habitat for estuarine organisms (Jassby *et al.* 1995, p. 284). Spawning usually occurs over rocky or gravelly substrates and aquatic plants (Moyle 2002, p. 236). Female longfin smelt produce between 5,000 to 24,000 eggs which stick to the substrate, and hatch within 40 days depending on the water temperature (CDFG 2001, p. 477). Newly hatched embryos are transported in the upper portion of the water column downstream (west) into more brackish parts of the San Francisco Bay-Delta system (Moyle 2002, p. 236). Longfin smelt usually live for 2 years, although some individuals may spawn as 1- or 3-year-old fish (Moyle 2002, p. 236), and die soon after spawning.

### Range and Extant Distribution

The historical and current range of the longfin smelt is from Alaska southward to the San Francisco Bay-Delta in California, which includes the Delta, Suisun Marsh, San Pablo Bay, and the San Francisco Bay to the Golden Gate. One fish was found in the Monterey Bay (south of the San Francisco Bay-Delta) in California (Eschmeyer 1983, p. 82; Wang 1986, pp. 6-10). In Alaska, longfin smelt are known from Hinchinbrook Island, Prince William Sound, Dixon Entrance, Yakutat Bay, and Cook Inlet (Alaska Natural Heritage Program (ANHP) 2006, p. 3). In Washington, the range includes Willapa Bay, Skagit Bay, Columbia River, Grays Harbor, and Puget Sound; in Oregon, the range includes Coos Bay and Yaquina Bay (ANHP 2006, p. 3). Relative to longfin smelt in the San Francisco Bay-Delta, the nearest confirmed breeding population of longfin smelt occurs in the Columbia River, approximately 640

miles (mi) (1,029 kilometers (km)) north of the San Francisco Bay-Delta (Randall Baxter, CDFG, pers. comm. 2008). In California, longfin smelt are known from (north to south) the Klamath River, Humboldt Bay and its tributaries, the Eel River, the Van Duzen River, the Russian River, and the San Francisco Bay-Delta (Moyle 2002, p. 235). The species was previously described as "weakly anadromous" (Fry 1973, p. 88); however, new research has found that at least part of the San Francisco Bay-Delta population is anadromous (living mostly in the ocean and spawning in fresh water) (Rosenfield and Baxter 2007, p. 1590). Non-anadromous land-locked populations occur in Lakes Harrison and Pit in British Columbia, and Lakes Washington and Union in Washington (Page and Burr 1991, p. 57).

Longfin smelt are dispersed broadly in the San Francisco Bay-Delta estuary by high outflows and currents, which could transport larvae or small juveniles long distances before they mature and become demersal (living near the bottom of the water column) (Baxter 2008, p. 1). Unverified reports exist of longfin smelt being captured 3 to 4 mi (5 to 6 km) offshore in northern California (Service 1994, p. 3), but the ecology and behavior of longfin smelt in the open ocean remains largely unstudied. We are unaware of any studies assessing the swimming abilities of longfin smelt, but they may be comparable to juvenile salmon with the capability of swimming back into estuaries from the ocean (Moyle 2008, p. 1). We believe it is likely that individuals from the San Francisco Bay-Delta estuary population could be transported via ocean currents, north to the Russian River, Eel River/Humboldt Bay, and Klamath River estuaries, particularly during high outflow years, which are associated with northward ocean currents in the winter. It is also likely that individuals from northern estuaries may be transported to the San Francisco Bay-Delta estuary via southward (summer) currents, although the main southern current (the California current) is farther offshore than the northern current (the Davidson current). Humboldt Bay and the Klamath River are more than 260 mi (418 km) and 320 mi (515 km) away by sea, respectively, from the San Francisco Bay. It is impossible to reliably approximate how many individuals as a proportion of the population may be transported by currents or swim between the San Francisco Bay-Delta and the other estuaries.

### Distinct Population Segment

We consider a species for listing under the Act if available information indicates such an action might be warranted. "Species" is defined in section 3 of the Act to include any subspecies of fish or wildlife or plants, and any distinct vertebrate population segment of fish or wildlife that interbreeds when mature (16 U.S.C. 1532(16)). We, along with the National Marine Fisheries Service (now the National Oceanic and Atmospheric Administration—Fisheries (NOAA—Fisheries)), developed the Policy Regarding the Recognition of Distinct Vertebrate Population Segments (DPS Policy) (February 7, 1996; 61 FR 4721) to help us in determining what constitutes a DPS. Under our DPS policy, we consider three elements in a decision regarding the status of a possible DPS as endangered or threatened under the Act. These elements include: (1) The discreteness of the population segment in relation to the remainder of the species to which it belongs; (2) the significance of the population segment to the species to which it belongs; and (3) the population segment's conservation status in relation to the Act's standards for listing. If we determine that a population segment meets the discreteness and significance standards, then the level of threat to that population segment is evaluated based on the five listing factors established by the Act to determine whether listing the DPS as either threatened or endangered is warranted.

#### Discreteness

The DPS policy states that a population may be considered discrete if it satisfies either one of the following conditions: (1) It is markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors (quantitative measures of genetic or morphological discontinuity may provide evidence of this separation); or (2) it is delimited by international governmental boundaries within which differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4(a)(1)(D) of the Act.

#### Significance

Under our DPS Policy, once we have determined that a population segment is discrete, we consider its biological and ecological significance to the larger taxon to which it belongs. This consideration may include, but is not limited to: (1) Persistence of the discrete

population segment in an ecological setting that is unusual or unique for the taxon; (2) evidence that loss of the discrete population segment would result in a significant gap in the range of the taxon; (3) evidence that the discrete population segment represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside its historic range; or (4) evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics.

If a population is considered both discrete and significant (i.e., it is a distinct population segment) its evaluation for endangered or threatened status will be based on the Act's definitions of those terms and a five-factor analysis will be completed.

#### Distinct Population Segment Analysis

##### Discreteness

The petitioners claim the San Francisco Bay-Delta population of longfin smelt is discrete because there is no evidence that large numbers of longfin smelt migrate between populations within their range in the eastern Pacific or along the California coast. Additionally, they cite survey data indicating longfin smelt populations within several hundred miles of the San Francisco Bay-Delta are small and possibly declining, which leads the petitioners to conclude that it is unlikely that longfin smelt in the San Francisco Bay-Delta are supplemented by immigration from other areas. Additionally, the petitioners cite Moyle (2002, p. 235) who concluded the longfin smelt in the San Francisco Bay-Delta are reproductively isolated from other population units.

The range of the longfin smelt extends from Prince William Sound in Alaska, south to the San Francisco Bay-Delta. In California, longfin smelt have been found in the lower reaches and estuaries of the Klamath, Eel, Van Duzen (a tributary to the Eel River), and Russian Rivers, but populations in these areas are currently considered relatively small. We are unaware of historical numbers in these areas. Longfin smelt were historically abundant in Humboldt Bay, but this population is in decline (The Bay Institute *et al.* 2007, p. 1). The San Francisco Bay-Delta population is the southernmost self-sustaining population of longfin smelt (The Bay Institute *et al.* 2007, p. ii). One individual was found in Monterey Bay (Moyle 2002, p. 236), but a self-sustaining population is not considered

present there. See Range and Extant Distribution for more information.

##### Geographical Isolation

The petitioners assert that the San Francisco Bay-Delta population is geographically isolated from all other populations, that there is no evidence of large numbers of longfin smelt migrating between populations, and that it is highly unlikely that the San Francisco Bay-Delta population is supplemented by populations from other areas. The petitioners requested the Service list the San Francisco Bay-Delta population of the longfin smelt as a DPS. We note that standard set forth in the DPS policy is that a DPS be "markedly separated" from other populations—thus, while absolute separation is not required, neither are "large numbers" of individuals migrating between populations.

Although the range of longfin smelt extends into Canada, the San Francisco Bay-Delta population is not separated from all other populations by an international border. Therefore, the San Francisco Bay-Delta population cannot be discrete due to be delimiting by an international border.

We are unaware of any targeted sampling efforts for longfin smelt, so the information we have about their distribution and numbers and our conclusions outlined below have been gleaned from past and ongoing sampling efforts that target other aquatic organisms. The following outlines the survey efforts and detections of longfin smelt in California north of San Francisco Bay as a result of these non-target sampling efforts.

In the Klamath River, longfin smelt were found in low numbers in the early 1990s using electrofishing techniques from river mile 2 to river mile 4 (river km 3.2 to 6.4). The Klamath River is located approximately 320 mi (515 km) by sea north of the San Francisco Bay-Delta. Additional sampling by the Yurok Tribe in the Klamath River in recent years did not identify any longfin smelt; however, this sampling targeted salmonids and, as a result, any osmerids that may have been inadvertently captured were not documented (Gale 2008, p. 1). Also, because standard sampling methods for salmonids are likely highly inefficient for collecting longfin smelt, their presence or absence in the Klamath River cannot be determined based on the Yurok Tribe sampling data.

In Humboldt Bay in Humboldt County, California, longfin smelt population numbers have likely always been small (Moyle 2002, p. 237). Humboldt Bay is located approximately

260 mi (418 km) by sea north of the San Francisco Bay-Delta. A total of 12 longfin smelt were caught in north Humboldt Bay during surveys using a variety of gear types from 2003 to 2005 (Pinnix *et al.* 2005, p. 11), and one adult was netted in Freshwater Creek (a tributary to Humboldt Bay) in February 2008 (Justin Garwood 2008, p. 1). Eleven longfin smelt were found at a total of four sites in Humboldt Bay between 2000 to 2001 (Cole 2004, p. 20). Survey efforts conducted by California State University at Humboldt caught only about half a dozen longfin smelt in Humboldt Bay in the past 10 years of non-target sampling using both trawls and beach seines (Mulligan 2008, p. 1). In addition, non-target sampling around a dredge disposal site about 2 mi (3.2 km) offshore from Humboldt Bay yields an average of a few dozen longfin smelt every year (Mulligan 2008, p. 1).

The Humboldt Bay tributaries of Hookton Slough, Salmon Creek, and Elk River Slough were sampled from 2005 to 2006, and Freshwater/Eureka Slough and its tributaries were sampled from 2003 to 2006. Longfin smelt were found in very low numbers during these years in all of these tributaries (Mike Wallace, 2008, p. 1). Spawning longfin smelt have been recorded in the Van Duzen River and in the Eel River drainage in Humboldt County (Moyle 2002, p. 235), but the current status of longfin smelt and sampling efforts in these rivers is unknown. Humboldt Bay and the Klamath River estuaries may also support small but self-sustaining populations of longfin smelt. Pre-spawn and spent (post-spawn) adults have been detected in the Klamath River estuary as recently as 2001, and adult and juvenile longfin smelt have been detected in recent years in Humboldt Bay, suggesting spawning and recruitment may be occurring in these estuaries (Baxter 2008, p. 1).

In the Russian River in Sonoma County, California (from the river mouth to approximately 10 mi (16 km) upriver), low numbers of longfin smelt were caught using otter trawls from 1997 to 2000 (Sonoma County Water Agency (SCWA) 1999, Appendices B-4 and B-8; SCWA 2000, Appendices B-8, B-10, B-11, and B-12; SCWA 2001, pp. 18-19). The Russian River estuary is approximately 75 mi (120 km) by sea north of the San Francisco Bay-Delta. No longfin smelt were caught in the Russian River using beach seines between 2003 and 2007 (SCWA 2004, p. 7; SCWA 2005, pp. 7-8; SCWA 2006, pp. 10-11; Cook 2008, p. 1). However, it is likely that beach seining is an ineffective method for determining presence or absence of longfin smelt,

because it does not sample the depths (typically 15 to 22 feet (ft) (4 to 7 meters (m)) or the middle of the river channel where longfin smelt were previously found in the Russian River using otter trawls.

One individual longfin smelt was found in Abbotts Lagoon at Point Reyes National Seashore in 1999 (Saiki and Martin 2001, p. 128), and near-shore midwater trawl surveys conducted by the NOAA – Fisheries in the spring for juvenile rockfish also detected longfin smelt and other smelt not identified to species at several locations from Cyprus Point near Monterey Bay to Point Reyes near Bodega Bay in 1984, 1994, and 2001 (Baltz, 2008, pp. 1-32). Although sampling continues, smelts caught have not been identified to species since 2001, and many of the stations where longfin smelt were identified in the 1980s and 1990s near the Gulf of the Farallones have not been sampled since 1996 (Sakuma, 2008, p. 1).

The City of San Francisco detected longfin smelt a few miles offshore in the Pacific Ocean in 1983 and 1984, suggesting that individuals from the San Francisco estuary disperse beyond the Golden Gate Bridge (City of San Francisco 1985, pp. 5-8; Rosenfield and Baxter 2007, p. 1590). Additional surveys conducted between 1987 and 2007 were not examined for pelagic fish species, so it is possible that longfin smelt were captured but not identified during these surveys (Kellogg 2008, p. 1).

### Summary of Geographic Isolation

Although no physical barriers exist between the San Francisco Bay-Delta and estuarine habitat to the north, the distance that longfin smelt are able to travel out into the open ocean or northward along the coast to reach these areas is unknown. The 1995 Sacramento/San Joaquin Delta Native Fishes Recovery Plan (Service 1995, pp. 47-65) states that the San Francisco estuary population “is isolated from other populations.” However, as described above in the Range and Extant Distribution section, it is likely that longfin smelt are moving or being transported via currents between the San Francisco Bay-Delta estuary and other estuaries to the north. A recent review of the abundance and distribution of longfin smelt within the San Francisco Bay-Delta concluded that at least a portion of the longfin smelt population within the San Francisco Bay-Delta is anadromous and routinely disperses outside the San Francisco Bay-Delta estuary and into the Pacific Ocean (Rosenfield and Baxter 2007, p. 1590). Although we know of no studies

assessing swimming ability of longfin smelt, it may be comparable to juvenile salmon, which have the capability to swim back into estuaries from the ocean (Moyle 2008, p. 1). Based on the recent information that a portion of the San Francisco Bay-Delta population of longfin smelt are anadromous and able to swim into and out of the San Francisco Bay-Delta, it is likely that individuals have the ability to swim into and out of ocean currents and into and between estuaries, including estuaries outside of the San Francisco Bay-Delta estuary. In addition, other individuals may be transported by other mechanisms, such as high outflows and ocean currents (see Range and Extant Distribution section). The distance that longfin smelt could swim or be transported from the San Francisco Bay-Delta is unknown. It is possible that the San Francisco Bay-Delta population is supplementing smaller nearby estuaries (such as the Russian River); therefore, Moyle’s (2002, p. 235) conclusion that longfin smelt in the San Francisco Bay-Delta being reproductively isolated is questionable. Additionally, it is possible that other self-sustaining estuaries (such as Humboldt Bay, Coos Bay, Columbia River) may be supplementing smaller estuaries in their vicinities. Therefore, we have determined the San Francisco Bay-Delta population of longfin smelt is not geographically isolated from other longfin smelt populations.

### Genetic Separation

The petitioner states that the San Francisco Bay-Delta population of longfin smelt differs genetically from a population in Lake Washington in Washington State (Stanley *et al.* 1995, pp. 390-396). The petitioners conclude from the single study that the San Francisco Bay-Delta population differs markedly from other populations genetically and that additional genetic analysis will confirm that the San Francisco Bay-Delta population represents an evolutionarily independent lineage of this species and qualifies as a DPS.

Only one genetic study has addressed longfin smelt. Stanley *et al.* (1995, pp. 390-396) used electrophoresis of allozymes to examine genetic variation within and between two populations of longfin smelt. Allozymes are proteins used as genetic markers and have been used to assess genetic variation for many years. Allozyme studies have the advantage of being relatively inexpensive and straightforward, once the basic technique is developed for a group. However, drawbacks of using electrophoretic allozyme studies include the limited number of proteins

that can be screened (Parker *et al.* 1998, pp. 362-363) and the fact that they often detect little variability (Haig 1998, p. 419). It is not uncommon for population biologists to encounter species for which allozymes cannot be used as genetic markers because they lack variation (Parker *et al.* 1998, pp. 362-363).

Stanley *et al.* (1995, p. 395) found the San Francisco Bay-Delta population and Lake Washington populations of longfin smelt were significantly different in allele frequencies at several loci (gene locations). However, the authors also stated the overall genetic dissimilarity was within the range of other conspecific fish species (Stanley *et al.* 1995, p. 395) and concluded their research indicates longfin smelt from Lake Washington and the San Francisco Bay-Delta are conspecific (of the same species) despite the large geographic separation. We believe that this study is not well suited to address whether the San Francisco Bay-Delta longfin smelt population is markedly separated from other populations of longfin smelt (the criterion of the DPS policy) because only two locations were sampled. These two locations are ecologically different from one another and widely separated geographically. The life history and ecology of the landlocked Lake Washington longfin smelt population is different than other estuary populations, and may have been geographically separated for many years from other populations with access to the open ocean. A more appropriate comparison would have been to analyze longfin smelt from a series of locations with access to the open ocean (e.g., Columbia River to Humboldt Bay) to assess the potential of genetic relatedness of longfin smelt from the San Francisco Bay-Delta and other populations. While the study indicates that Lake Washington and San Francisco Bay-Delta longfin smelt differ significantly at some allozyme loci, it does not evaluate the genetic relationship between these populations and intervening populations along the Pacific coast.

Furthermore, at the time of their study, the authors believed the longfin smelt in Humboldt Bay to be rare or extinct but did acknowledge the existence of longfin smelt from the Klamath River, approximately 124 mi (200 km) north of Humboldt Bay. Stanley *et al.* (1995, p. 395) surmised that if the Humboldt Bay population was extinct, then genetic exchange between the Delta and Klamath River would be extremely unlikely. This line of reasoning appears to imply geographic isolation. However, based on more recent occurrence information, as

we have outlined above, longfin smelt are found in estuaries north of the San Francisco Bay-Delta, including the Russian River, Humboldt Bay, and the Klamath River. Also taking into account recent confirmation that a portion of the San Francisco Bay-Delta population of longfin smelt is fully anadromous and able to swim into and out of the San Francisco Bay-Delta, and that it is likely that individuals have the ability to swim into and out of ocean currents and into and between estuaries, including estuaries outside of the San Francisco Bay-Delta estuary, we believe the potential for genetic interchange exists.

As mentioned above, research to evaluate any genetic differences between the San Francisco Bay-Delta longfin smelt and other coastal longfin smelt populations has not yet been completed. There is also no indication that longfin smelt differ morphologically between the San Francisco Bay-Delta population and other populations. Researchers from University of California at Davis have undertaken a study using more modern molecular techniques, which examines DNA directly rather than looking at the product derived from DNA (i.e., proteins) to determine genetic variability within and among populations in Northern California, Oregon, and Washington (May 2008, p. 1). Additional study should provide more information on the distribution of genetic variation within the species and determine if longfin smelt from different locations are intermixing. We believe that while this additional study is needed, at this time we can not conclude that San Francisco Bay-Delta longfin smelt differ markedly from other populations in its genetic characteristics. Therefore, we have determined that, based on the best scientific and commercial information available, the San Francisco Bay-Delta population is not genetically distinct from other populations of longfin smelt.

#### **Determination of Discreteness**

Our DPS policy requires that when determining whether a population meets the definition of being a DPS, we must first consider discreteness of the population segment in relation to the remainder of the species to which it belongs. The population must be markedly separated from other population of the taxon as a consequence of physical, physiological, ecological, behavioral, genetic or morphological factors or as a result of international boundaries where significant differences in exploitation, management, conservation status, or regulatory mechanisms exist. If a

population is considered discrete then we would consider the biological and ecological significance of the population. To be considered a DPS under our policy, the population must meet both the discreteness and significance aspects of the policy.

We have determined that, based on the best scientific and commercial information available, the San Francisco Bay-Delta population of the longfin smelt is not markedly separated from the other populations of longfin smelt. The only available data to address the markedly separate standard for longfin smelt relate to geographic isolation and genetic uniqueness, and we do not find that these data indicate longfin smelt from the San Francisco Bay-Delta are markedly separated from other longfin smelt found elsewhere. Recent studies indicate that at least part of the San Francisco Bay-Delta population is anadromous and able to swim into and out of estuaries. Individuals may also be carried by currents from the San Francisco Bay-Delta to other estuaries outside the San Francisco Bay-Delta which leads us to the conclusion that longfin smelt may be able to disperse between populations. Although it is impossible without further study to reliably approximate how many individuals are being transported or swimming between the San Francisco Bay-Delta and the other estuaries, "large numbers" of migrating individuals are not required to rule out populations being markedly separated. Nor is absolute isolation required for populations to be markedly separated. On balance, the limited data available do not suggest that the San Francisco Bay-Delta population of the longfin smelt is markedly separate from populations outside the San Francisco Bay-Delta. In addition, the only genetic study conducted to date examined only Lake Washington and San Francisco Bay-Delta longfin smelt, a sampling scheme too limited to reasonably address whether longfin smelt in the San Francisco Bay-Delta differ genetically from other locations along the Pacific coast. Therefore, we have determined that the San Francisco Bay-Delta population of longfin smelt is not discrete as defined under our DPS policy.

#### **Significance**

Since the San Francisco Bay-Delta population of longfin smelt is not discrete as defined under our DPS policy, we do not need to evaluate the significance of the population to the species as a whole.

#### **Finding**

We have carefully assessed the best scientific and commercial information available regarding whether the San Francisco Bay-Delta population of the longfin smelt is a distinct population segment. We have reviewed the petition, information available in our files, and all information submitted to us following our 90-day petition finding (73 FR 24911, May 6, 2008). We also consulted with recognized smelt experts, including State and Federal agency biologists, academics, and individuals involved in sampling and surveying efforts for the longfin smelt.

We find the San Francisco Bay-Delta population of the longfin smelt does not meet the discreteness criterion of our DPS policy (and therefore we did not undertake a significance review) and therefore is not a valid DPS. As a result, the San Francisco Bay-Delta population of the longfin smelt is not a listable entity under the Act and we will not complete a 5-factor analysis of the San Francisco Bay-Delta population of the longfin smelt in response to the August 8, 2007, petition. This finding is based on information obtained on the potential for dispersal via ocean currents, and on information that a portion of the longfin smelt within the San Francisco Bay-Delta regularly disperse out to the Pacific Ocean and are fully anadromous. Once individuals emigrate from the San Francisco Bay Estuary they are likely transported by ocean currents and able to occupy estuaries outside of the San Francisco Bay-Delta for an undetermined amount of time.

However, given the demonstrated anadromy of the San Francisco Bay Estuary population of longfin smelt and its potential for dispersal, we are initiating a range wide status assessment of the longfin smelt and are seeking information regarding: taxonomy, genetics, distribution, habitat selection, population density and trends, habitat trends, effects of management, dispersal and migratory capabilities or patterns of dispersal, and potential threats to the longfin smelt throughout its range in Alaska, Canada, Washington, Oregon, and California. Upon completion of this review, we will also evaluate whether the best available scientific information suggests that the San Francisco Bay-Delta population of the longfin smelt may be considered to occupy a significant portion of the range (SPR), and institute appropriate action. We encourage interested parties to continue to gather data that will assist in determining the status of the longfin smelt. New information should be

submitted to the Field Supervisor, Sacramento Fish and Wildlife Office (see **ADDRESSES**).

#### **References Cited**

A complete list of all references cited in this proposal is available upon request. You may request a list of all references cited in this document from the Supervisor, Sacramento Fish and Wildlife Office (see **ADDRESSES**).

#### **Author**

The primary authors of this notice are staff members of the Sacramento Fish and Wildlife Office, U.S. Fish and Wildlife Service, 2800 Cottage Way, Sacramento, CA 95825.

#### **Authority**

The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Dated: March 31, 2009.

**Rowan W. Gould,**

*Acting Director, U.S. Fish and Wildlife Service.*

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