

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition to List the Kern Brook Lamprey as Threatened or Endangered

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of petition finding.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), announce a 90-day finding on a petition to list the Kern brook lamprey (Lampetra hubbsi) under the Endangered Species Act of 1973, as amended. We find the petition and other information available did not present substantial scientific or commercial information indicating that listing the Kern brook lamprey may be warranted. Therefore, we will not be initiating a further status review in response to this petition. We ask the public to submit to us any new information that becomes available concerning the status of or

threats to the species. This information will help us monitor and encourage the conservation of the species.

The Pacific lamprey (Lampetra tridentata), river lamprey (Lampetra ayresi), and western brook lamprey (Lampetra richardsoni) were also identified in the petition. However, these species are addressed in a separate finding, prepared by the Portland Fish and Wildlife Office in Oregon, and are not addressed in this notice.

DATES: The finding announced in this document was made [insert date of Federal Register publication]. Submit any new information concerning this species for our consideration at any time.

ADDRESS: Comments, material, information, or questions concerning this petition and 90-day finding should be sent to the Field Supervisor, Sacramento Fish and Wildlife Office, U.S. Fish and Wildlife Service, 2800 Cottage Way, Room W-2605, Sacramento, CA 95825-1846. The petition and supporting information are available for public inspection, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: Wayne White, Field Supervisor, Sacramento Fish and Wildlife Office (see ADDRESS above) (telephone 916/414-6600; facsimile 916/414-6712).

SUPPLEMENTARY INFORMATION:

## Background

Section 4(b)(3)(A) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (Act), requires that we make a finding on whether a petition to list, delist, or reclassify a species presents substantial scientific or commercial information indicating that the petitioned action may be warranted. We are to base this finding on all information available to us at the time we make the finding. To the maximum extent practicable, we are to make this finding within 90 days of our receipt of the petition, and publish our notice of this finding promptly in the Federal Register.

Our standard for substantial information within the Code of Federal Regulations (CFR) with regard to a 90-day petition finding is “that amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted” (50 CFR 424.14(b)). If we find that substantial information was presented, we are required to promptly commence a review of the status of the species, if one has not already been initiated, under our internal candidate assessment process.

In making this finding, we relied on information provided by the petitioners and evaluated that information in accordance with 50 CFR 424.14(b). This finding summarizes information included in the petition and information available to us at the time of the petition review. Our process of coming to a 90-day finding under section

4(b)(3)(A) of the Act and section 424.14(b) of our regulations is limited to a determination of whether the information in the petition meets the “substantial information” threshold.

We do not conduct additional research at this point, nor do we subject the petition to rigorous critical review. Rather, as the Act and regulations contemplate, in coming to a 90-day finding, we accept the petitioner’s sources and characterizations of the information unless we have specific information to the contrary.

Our finding considers whether the petition states a reasonable case for listing on its face. Thus, our finding expresses no view as to the ultimate issue of whether the species should be listed. We reach a conclusion on that issue only after a more thorough review of the species’ status. In that review, which will take approximately 9 more months, we will perform a rigorous, critical analysis of the best available scientific and commercial information, not just the information in the petition. We will ensure that the data used to make our determination as to the status of the species is consistent with the Act and Information Quality Act.

On January 27, 2003, we received a petition, dated January 23, 2003, from the Siskiyou Regional Education Project and 10 other organizations, requesting we list the Pacific lamprey, western brook lamprey, river lamprey, and Kern brook lamprey in Oregon, Washington, Idaho, and California. Further, the petitioners requested

designation of critical habitat for the range of the species or for distinct population segments comprised of one or more major river basins. The petition clearly identified itself as such and contained the names, addresses, and signatures of the petitioning organizations' representatives. The petition included the following information for each lamprey species: life history information; population status and local distribution; destruction, modification, or curtailment of habitat or range; other natural or manmade factors affecting the species' continued existence; predation; overutilization for commercial or recreational purposes; inadequacy of existing mechanisms; and a conclusion for each lamprey species.

In response to the petitioners' requests to list these species, we sent a letter to the petitioners dated March 12, 2003, explaining that we would not be able to address their petition until fiscal year 2004. The reason for this delay was that existing court orders and settlement agreements for other listing actions required nearly all of our listing funding for fiscal year 2004. In March 2004, we received a 60-day notice of intent to sue, and on May 26, 2004, received a complaint regarding our failure to carry out the 90-day and 12-month findings on the status of the four species of lamprey. On November 23, 2004, we reached an agreement with the plaintiffs to complete the 90-day finding by December 20, 2004, and to complete if applicable, the 12-month finding by November 15, 2005.

#### Species Information

The Kern brook lamprey adult has gray-brown sides and dorsal region, a white ventral area, unpigmented dorsal fins, and some black pigmentation restricted to the area around the notochord (the cartilaginous rod that runs along the back) in the caudal fin (Vladykov and Kott 1976). The Kern brook lamprey has poorly developed plates (teeth) on its oral disc (mouth). In adults, the supraoral lamina plate (the thin plates above the oral opening) typically has two cusps (projections on the teeth) (Moyle et al. 1995) with three or four (usually four) lateral plates on each side of the oral disc (Moyle 2002). In addition, this species has 9 to 12 posterial teeth (average 10.3) (Vladykov and Kott 1976). The Kern brook lamprey has only three velar tentacles, which prevent undesirable objects from entering the digestive cavity and are present in the junction of the pharynx and esophagus. In other lamprey species the number of velar tentacles varies from 5 to 18 (Vladykov and Kott 1976). The Kern brook lamprey has 51 to 57 trunk myomeres (Moyle 2002), which are the “blocks” of muscle mass along the body (Moyle et al. 1995). Males have a longer urogenital papilla, a small conical tube through which gametes are expelled, located just ahead of the anal fin and usually visible only during, or shortly before, spawning (Vladykov and Kott 1984). Only the females develop an anal finlike fold close to spawning time, and can be distinguished from the males based on this morphological characteristic (Vladykov and Kott 1984).

Identification of the Kern brook lamprey can be problematic. While definitive identifications of the Kern brook lamprey can be made through genetic analysis (Docker et al. 1999), identifications are more commonly made by analyzing adult morphological

characteristics, such as tooth patterns on the oral disc (Vladykov and Kott 1976). When utilizing morphological characteristics to determine a lamprey species, adults must be analyzed because the juveniles, or ammocoetes, of the different lamprey species are not readily distinguishable from each other (Kostow 2002). For example, the number of trunk myomeres is frequently counted to determine species. However, Kern brook lamprey ammocoetes have 51 to 57 trunk myomeres, while the western brook lamprey has 52 to 67 (52 to 58 in California populations), making these two species indistinguishable using this morphological characteristic (Moyle 2002). Identification of lamprey species is made more difficult because lamprey species are in the adult stage for a relatively short duration of their life. Based on the life history of other lamprey species, the Kern brook lamprey spends approximately the first five years of its life as an ammocoete, and approximately one year as an adult, which reduces the opportunity to make conclusive identifications during the adult stage. In addition, misidentifications may also occur between parasitic and brook lamprey species at early stages of metamorphosis because they both have eyes and the development of the oral discs are still incomplete, making these characteristics unreliable until further development (Kostow 2002; Brian Beale, California Department of Fish and Game (CDFG), pers. comm. 2004).

### Range and Distribution

The Kern brook lamprey is endemic to the east side of the San Joaquin Valley and found only in the San Joaquin River drainage in California (Vladykov and Kott 1976).

This species has been reported in the Friant-Kern Canal and Merced, San Joaquin, Kings, and Kaweah Rivers (Moyle 2002). Brown and Moyle (1993) made a considerable effort to find Kern brook lamprey in the Kern, Tule, Tuolumne, and Stanislaus Rivers, which are tributaries in the same geographic region as those with Kern brook lamprey, but were unsuccessful in capturing the species.

This species was first discovered by Vladykov and Kott in February 1972 in the Friant-Kern Canal, east of Delano, Kern County (Vladykov and Kott 1976). The Friant-Kern Canal is connected to Millerton Reservoir and the upper San Joaquin River through an extensive irrigation system (Wang 1986). This canal also connects the Kern River with the San Joaquin River, which led Vladykov and Kott (1976) to believe that this species originated in the Kern River system. The canal is not considered typical habitat for the Kern brook lamprey because it is concrete lined and flows are greater than the rivers where this species is found (Vladykov and Kott 1976). In 1988, ammocoetes and adults were collected by CDFG from the siphons of the Friant-Kern Canal when they were poisoned with rotenone as part of an effort to eradicate white bass (Morone chrysops) from the system (Brown and Moyle 1993; Moyle et al. 1995). The Kern brook lamprey still occurs in the Friant-Kern Canal, but spawning habitat is not available within the canal, so ammocoetes that enter the canal do not reproduce in the canal itself (Moyle 2002).

Between February and March 1977, ammocoetes and adult Kern brook lamprey were collected from the Merced River, below McClure Reservoir, near Merced Falls



(Vladykov and Kott 1984). Brown and Moyle (1993) also collected Kern brook lamprey ammocoetes from the Merced River during surveys from 1985 through 1987. Recently, Kern brook lamprey ammocoetes have been incidentally reported in the Merced River during rotary screw trap salmonid surveys (Tim Heyne, CDFG, pers. comm. 2004; Dave Vogel, Natural Resource Scientists, pers. comm. 2004).

Wang (1986) collected ammocoetes between July and September of 1979 in the upper San Joaquin River downstream of Kerckoff Dam to the junction with Millerton Lake. The trunk myomeres count (53 to 58) of those specimens fit the description for ammocoetes of either the western brook lamprey or Kern brook lamprey. No adult specimens of either species were captured, but these ammocoetes were likely Kern brook lamprey, based on their low number of trunk myomeres (Brown and Moyle 1993; Moyle et al. 1995; Moyle 2002). Brown and Moyle (1993) also collected Kern brook lamprey ammocoetes from the San Joaquin River below Friant Dam during surveys from 1985 through 1987. We are not aware of recent surveys for this species on the San Joaquin River.

Brown and Moyle (1993) collected Kern brook lamprey during surveys on the Kings River above and below Pine Flat Dam. The Kings River is still known to support Kern brook lamprey. The Kings River Conservation District has performed surveys for trout species from 1990 to the present and has found Kern brook lamprey adults and ammocoetes both above and below Pine Flat Reservoir during all years surveyed (Jeff Halstead, Kings River Conservation District, pers. comm. 2004).

Brown and Moyle (1993) surveyed fish fauna in the lower Kaweah River, downstream of the Kaweah Reservoir, and collected Kern brook lamprey ammocoetes from 1985 through 1986. We are not aware of recent surveys on the Kaweah River for this species.

#### Habitat

The Kern brook lamprey is known to occur in four of the San Joaquin River tributaries emerging from the west side of the Sierra Nevada mountains and has been observed at elevations of 100 to 1,000 feet (30 to 305 meters) (Moyle et al. 1995; Moyle 2002). This species commonly occupies sand, gravel, and rubble substrates (Moyle et al. 1995). It has been reported at stream depths of 12 to 43 inches (in) (30 to 110 centimeters (cm)) (Moyle 2002). Adults seek riffles with gravel for spawning and rubble for cover, while ammocoetes are typically found in sandy-bottomed backwaters, shallow river edges, and shallow pools, and along edges of runs where there are low stream velocities, where they remain buried with their heads protruding above the substrate for feeding (Moyle et al. 1995).

#### Reproduction and Growth

Little information regarding the life history of the Kern brook lamprey is available, but it is presumably similar to the western brook lamprey (Moyle 2002).

Adults are non-predatory, and feeding is confined to the ammocoete stage (Moyle 2002). Because recently transformed Kern brook lamprey adults have been collected in the spring, it is likely that Kern brook lamprey undergo metamorphosis in the fall (Moyle et al. 1995; Moyle 2002). During metamorphosis, the Kern brook lamprey develops eyes and more distinctive fins, and the oral disc enlarges (Kostow 2002). As with other lamprey species, the adults do not eat and they shrink in size following metamorphosis (Vladykov and Kott 1976). Adults are 3 to 5.5 in (8 to 14 cm) and ammocoetes are 4 to 6 in (10 to 15 cm) in length (Moyle 2002).

Based on the life history of western brook lamprey, it is likely that the Kern brook lamprey ammocoetes over winter in burrows while they undergo metamorphosis in mud and sand substrates, emerge in the spring as sexually mature adults after completing metamorphosis, and then migrate to spawning areas (Moyle 2002). Adults build nests in the gravel-bottomed substrate, spawn, and then die (Moyle 2002). The eggs are sticky and dense, and they are deposited in nests prepared by spawning adults. The eggs are then buried by the adults beneath sand and gravel. Based on the life history of the western brook lamprey (Kostow 2002), the newly hatched larva of the Kern brook lamprey likely spend another week to a month in the nest. The ammocoetes then emerge and are carried downstream to mud and sand-bottomed backwaters where they burrow into stream sediments (Moyle 2002). If life history is comparable to other brook lamprey, Kern brook lamprey live for 4 to 5 years as ammocoetes (Moyle et al. 1995) and would therefore live up to 6 years or more after completing metamorphosis and spawning as adults. When encountered, the ammocoetes are usually locally abundant (Brown and

Moyle 1993) and can be found in sand and mud substrates, where they remain buried with their heads protruding above the substrate and feeding by filtering diatoms and other micro-organisms from the water (Moyle 1995).

#### Discussion of Listing Factors

Section 4 of the Act and its implementing regulations (50 CFR 424) set forth the procedures for adding species to the Federal list of endangered and threatened species. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1) of the Act. In the following discussion, we respond to each of the major assertions made in the petition, as well as our analysis of other information in our files, organized by the Act's listing factors. The five listing factors include: (1) the present threatened destruction, modification, or curtailment of its habitat or range; (2) overutilization for commercial, recreational, scientific, or educational purposes; (3) disease and predation; (4) the inadequacy of existing regulatory mechanisms; and (5) other natural or manmade factors affecting its continued existence. The petition provided specific information regarding the Kern brook lamprey in its discussion of poisoning, water diversions, and channelization, under Factor A. We have determined that the threat of poisoning would be more appropriately addressed under Factor E, as a natural or manmade factor affecting the continued existence of the species. The petition also specifically addressed the Kern brook lamprey in its discussion of the inadequacy of regulatory mechanisms to manage dam operations within the Kern brook lamprey's range, under Factor D. These are the only threats for which the petition

specifically addresses the Kern brook lamprey, as the petition primarily focuses on the Pacific lamprey. This 90-day finding is not a status assessment and does constitute a status review under the Act.

A. The Present or Threatened Destruction, Modification, or Curtailment of its Habitat or Range

The petition discusses the following threats under Factor A: (1) artificial barriers; (2) road culverts; (3) water diversions; (4) poisoning; (5) dredging; (6) streambed scouring and degradation; (7) channelization; and (8) ocean conditions. The petition provided specific information regarding the Kern brook lamprey in its discussions of poisoning, water diversions, and channelization. For the threats described under Factor A, the petition states that all of the factors affecting the Pacific lamprey would also affect the Kern brook lamprey, so we have analyzed all of the factors listed under Factor A, except for ocean conditions, which does not apply to the Kern brook lamprey because it is not an anadromous (migrates to the ocean and spawns in freshwater tributaries) species and the threat of poisoning which was addressed under Factor E.

*Artificial Barriers and Road Culverts*

Information provided in the petition

The petition lists dams, culverts, or other artificial barriers as a threat to the Pacific lamprey. The petition did not provide information regarding the effects that dams, culverts, or other artificial barriers may have on the Kern brook lamprey, including the extent to which artificial barriers may threaten population numbers or distribution of the Kern brook lamprey.

Analysis of the information provided in the petition and information in our files

Artificial barriers may prevent upstream dispersal for adults because lampreys are not strong swimmers, are unable to jump, and their movement is determined by flow velocity (Kostow 2002). It is likely that if artificial barriers are present within the range of the Kern brook lamprey, and if encountered, the Kern brook lamprey would not likely be able to negotiate upstream passage around the barriers. However, we are not aware of information describing the number, distribution, or location of dams or artificial barriers, and therefore, the overall extent to which these artificial structures may affect Kern brook lamprey movement. Therefore, we are unable to determine if dams, culverts, or other artificial barriers have caused a reduction in the range or population size of the species.

#### *Water diversions*

Information provided in the petition

The petition stated that water diversions pose a threat to the Kern brook lamprey. The petition supports this assertion by stating that the siphons of the Friant-Kern Canal mimic habitat preferred by Kern brook lamprey ammocoetes, and the species is not able to successfully reproduce in the canal due to a lack of spawning habitat.

Analysis of information provided in the petition and information in our files

We are unaware of the extent or number of Kern brook lamprey which may be lost as a result of ammocoetes entering into the Friant-Kern Canal system through the siphons. Therefore, we are unable to determine if ammocoetes entering the siphons has caused a substantial reduction in Kern brook lamprey population numbers.

Information in our files does indicate that the loss of habitat through water diversions for irrigation may have an effect on Kern brook lamprey population numbers. Most of the water that once flowed into the San Joaquin River has been diverted for irrigation. The limited remaining water is being used for human population growth in the region, especially in the vicinity of the cities of Modesto, Fresno, and Bakersfield (Brown and Moyle 1993). This reduction in stream flow may result in a loss in both the range and numbers of this species. However, we are unaware of information quantifying the loss of habitat that has occurred within the range of the Kern brook lamprey, or to what degree this threat has reduced the range or population size of this species. In addition, we are not aware of information describing how future population growth in those cities will threaten the population size and range of the Kern brook lamprey.

*Dredging*

## Information provided in the petition

The petition provided information on threats from dredging to lamprey species in general, and cited specific examples from Oregon. Kern brook lamprey are not addressed in this discussion. The petition indicates that most lamprey die after passing through dredges (Kostow 2002).

## Analysis of information provided in the petition and information in our files

We are not aware of information detailing the extent that dredging activities occur in streams within the range of the Kern brook lamprey, or specific information regarding the threats that these factors pose to the continued survival of the Kern brook lamprey. Therefore, it is unknown at this time if dredging activities have significantly affected the population status or distribution of the Kern brook lamprey, or are likely to do so in the future.

*Streambed Scouring and Degradation*

## Information provided in the petition



The petition's discussion of streambed scouring did not specifically address the Kern brook lamprey, but discussed logging practices that scour streams to bedrock, and the effects that these practices have on lamprey species in general. The petition focused on logging practices in Oregon, and cited examples on the central coast of Oregon and in the Umpqua River basin.

Analysis of information provided in the petition and information in our files

We are not aware of information regarding the extent to which logging practices that result in streambed scouring occur in streams within the range of the Kern brook lamprey, or if these activities occur at all. In addition, there is a lack of information determining whether these activities, if they occur, have caused a substantial reduction in population size or range for the species. Therefore, it is unknown at this time if logging practices that result in streambed scouring have threatened or have the potential to threaten in the future the population status or distribution of the Kern brook lamprey.

*Stream Channelization and Destruction of Riparian Vegetation*

Information provided by the petition

Similar to the petition's discussion of streambed scouring, the petition's discussion of stream channelization and destruction of riparian habitat did not specifically address the Kern brook lamprey, but discussed the effects that many activities, including

stream channelization, floodplain filling, and destruction of riparian habitat, have on lamprey species in general. According to the petition, these activities are widespread in low gradient stream areas favored by lamprey species. The petition indicated that these activities result in water temperatures that are too warm for lamprey species, a loss in depositional areas favored by larval lamprey, and a loss in wetlands, side channels, back eddies, and beaver ponds. The petition did not provide information specific to the Kern brook lamprey regarding these threats, or information describing to what extent these activities have occurred or are likely to occur within the range of the Kern brook lamprey.

Analysis of information provided in the petition and information in our files

Development along the west side of the Sierra Nevada foothills, where the Kern brook lamprey occurs, has accelerated greatly, which has resulted in changes in land and water use (Moyle and Nichols 1973, 1974). There is a lack of information determining to what extent these activities have reduced the population size or range of the species, and if activities that cause stream channelization and riparian degradation have significantly affected the population status or distribution of the Kern brook lamprey, or is likely to do so in the future. Without this information we are unable to determine that stream channelization and degradation of riparian habitat threaten to substantially reduce the population or range of the species.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes.

We concur with the petitioner's opinion that the Kern brook lamprey is not known to be harvested for commercial or recreational purposes. The Service did not locate information regarding the importance of the Kern brook lamprey to Tribes in the range of this species, and this information was not provided in the petition.

### C. Disease and Predation

#### Information provided in the petition

The petitioners stated that the Pacific lamprey, river lamprey, western brook lamprey, and Kern brook lamprey are all vulnerable to predation by non-native fish species, especially in California, where conditions are favorable for predator fish from eastern states. The petition did not provide any information regarding the threats of disease to the Kern brook lamprey.

#### Analysis of information provided in the petition and information in our files

Healthy populations of native fishes are in decline throughout California, in large part because of an increase in non-native predators (Moyle and Nichols 1973, 1974). Human activities in the lower elevation foothills of the San Joaquin drainage tributaries have led to an increase in stream habitat alteration. These alterations have mostly been in the form of water impoundment, reduced stream flows, and siltation, which creates

habitat that is ideal for predatory non-native fish (Moyle and Nichols 1973, 1974; Brown and Moyle 1993). However, we are unaware of information describing the extent to which non-native fish species have affected Kern brook lamprey population size or their range, and this information was not provided in the petition. It is unknown at this time if non-native fish species have caused a substantial reduction in population size or range of the species or are likely to do so in the future.

The petition did not provide information regarding the threat that disease may pose to the Kern brook lamprey, and we are not aware of any diseases at this time that threaten this species.

#### D. The Inadequacy of Existing Regulatory Mechanisms

The petition stated that State and Federal agencies have not adequately regulated dam building, logging, mining, water withdrawals, road building, and construction activities, all of which have led to a decline in population numbers and range in lamprey species. The petition divided its discussion of regulatory mechanisms into the following categories: water law and flow regulations, passage at dams and culverts, harvest and escapement goals, private and Federal logging, and mining and dredging activities. The only category for which the petition specifically addresses the Kern brook lamprey is water law and stream flow regulation.

#### *Water Law and Stream Flow Regulation*

### Information in the petition

The petition described various threats posed by dams, water irrigation, and fish screens, and stated that State agencies have not been able to ensure that aquatic species such as lamprey have adequate flows for migration and long freshwater rearing periods. According to the petition, flows and habitats of lower reaches of rivers of the San Joaquin River drainage are not managed for the needs of Kern brook lamprey.

### Analysis of information provided in the petition and information in our files

There are dams on all of the primary tributaries of the San Joaquin River drainage. All collections of Kern brook lamprey have been below the lowermost major dams, with the exception of the Kings River population, which is found above Pine Flat Reservoir. These dams may cause fluctuations or sudden reductions in stream flows, which may isolate or kill ammocoetes (Moyle 2002). According to Moyle (2002), if the Kern brook lamprey is going to persist, flows and habitats of lower reaches of rivers of the San Joaquin drainage should be managed with the consideration of the species' biological requirements. However, at this time we are not aware of how the operations of the four major dams are affecting the Kern brook lamprey, and if the operations of these dams could substantially reduce or extirpate the species. In addition, we do not have information at this time regarding the specific spatial distribution of the Kern brook lamprey, and how changes in stream flows affect this species. Without this information,

it is speculative to state that a single action, such as a rapid drawdown in stream flows, could cause a significant reduction in the range or population of the species. While it is possible that Kern brook lamprey populations have been reduced by the management of stream flows from these dams, the petition provides no evidence that the operation of these dams has led to a significant decline in either population sizes or range of the species, or is likely to do so in the future.

Through diverting nearly all of the San Joaquin River's flow, Friant Dam's stream flow management on the San Joaquin River has likely led to a reduction in native fishes (Natural Resource Defense Council, et al. v. Kirk Rodgers (Case No. CIV-S-88-1658 LKK/GGH)). In this case, the court found that this absence of water in the San Joaquin River has led to a reduction in many native fish, including the Pacific lamprey and western brook lamprey. While the court did not specifically list the Kern brook lamprey as a native fish affected by the dam, it is likely to be affected in the same manner as the other lamprey species. Therefore, Friant Dam may have caused a reduction in the range and distribution of the Kern brook lamprey because of a lack of stream flows, but there is no information available to us or provided in the petition that quantifies a reduction in the range and distribution of this species, if any.

### *Passage at Dams and Culverts*

Information in the petition

The petition provided information regarding lamprey species in general, and did not specifically address the Kern brook lamprey. The petition stated that current laws and regulations do not require fish ladders, fish screens, and road culverts to effectively pass adult lamprey species upstream or provide for safe passage of ammocoetes and young adults downstream.

Analysis of information provided in the petition and information in our files

The petition reiterates the threats discussed in its earlier discussion of artificial barriers under Factor A. Please refer to the discussion of Artificial Barriers, under Factor A described above. We are not aware of, and the petition did not provide information that indicates that a lack of regulatory mechanisms on fish passage has significantly reduced Kern brook lamprey population numbers and distribution. Because of this lack of information, we are unable to determine that the current regulatory mechanisms have led to a significant reduction in the range and population size of the species.

#### *Harvest, Escapement Goals*

Information in the petition:

The petition focused on the harvest and escapement goals for the Pacific lamprey, and did not provide information that specifically addressed the Kern brook lamprey. The petition stated that the current laws and regulations pertaining to harvest and escapement

goals are not adequate to protect lamprey species. The petition also stated that the Kern brook lamprey is not known to be harvested for commercial or recreational purposes in its discussion under Factor B.

Analysis of information provided in the petition and information in our files:

We concur with the petitioner's opinion that the Kern brook lamprey is not known to be harvested for commercial or recreational purposes.

#### *Logging Activities*

Information in the petition:

The petition did not provide information that specifically addressed the Kern brook lamprey, and focuses on Pacific lamprey in Oregon. The petition discusses the Northwest Forest Plan and the Oregon Forest Protection Act, and cites examples from rivers in Oregon, including the Smith River, Illinois River, and Umpqua River. The petition indicated that the current laws and regulations do not adequately protect lamprey species from logging activities.

Analysis of information provided in the petition and information in our files:



We are not aware of information that indicates that a lack of regulatory mechanisms on logging activities has substantially reduced Kern brook lamprey population numbers and distribution. We also do not have information regarding the extent that logging activities affect the Kern brook lamprey, both within its range and upstream of areas where it is known to occur. Because of this lack of information, we are unable to determine that the current regulatory mechanisms on logging activities have led to a reduction in the range and population size of the species, or that a reduction in the range and population of this species is likely to occur in the future.

#### *Mining and Dredging Activities*

##### Information in the petition

The petition reiterated the threats described in its discussion of dredging under Factor A, and indicated that the current regulatory mechanisms do not adequately protect lamprey species from mining and dredging activities. The petition did not provide any information specific to the Kern brook lamprey, and focuses on lamprey species in general.

##### Analysis of information provided in the petition and information in our files

We are not aware of information that indicates that a lack of regulatory mechanisms on mining and dredging activities has significantly reduced Kern brook

lamprey population numbers and distribution. We also do not have information regarding the extent that mining and dredging activities occur within the range of the Kern brook lamprey. Because of this lack of information, we are unable to determine that the current regulatory mechanisms on mining and dredging activities have led to a reduction in the range and population size of the species, or that significant reductions in the range and distribution of Kern brook lamprey is likely to occur in the future.

E. Other Natural or Manmade Factors Affecting Continued Existence

According to the petitioners, a lack of monitoring data, lack of taxonomic determinations between lamprey species, and vulnerability to high density lamprey concentration areas are other threats to the Kern brook lamprey. We have also addressed the threat of poisoning under Factor E.

*Lack of Monitoring Data and Lack of Taxonomic Determinations*

Information provided in the petition

The petition indicated that data gathering by State and Federal agencies is inadequate to determine population trends and identify necessary conservation measures, and that most monitoring is done in conjunction with salmonid monitoring. During the petition's discussion of the need for more monitoring data and taxonomic determinations,

the petition did not address the Kern brook lamprey specifically, and focuses on lamprey species in Oregon.

Analysis of information provided in the petition and information in our files

There is a need for taxonomic clarity for all lamprey species, as well as a need for more complete monitoring data (Kostow 2002; P. Moyle, pers. comm. 2004); the same could be said for thousands of other species. However, lack of monitoring data and taxonomic clarifications, in themselves, do not pose a threat to the continued existence of the Kern brook lamprey.

#### *Vulnerability of High Density Areas*

Information provided in the petition

The Kern brook lamprey is not specifically addressed in this discussion. The petition describes the tendency of lamprey species to be locally dense in certain areas. According to the petition, a local habitat disturbance, such as a chemical spill or dredging operation, in an area that is densely populated by lamprey species, could cause a major reduction in population numbers.

Analysis of information provided in the petition and information in our files

According to Moyle (2002), Kern brook lamprey ammocoetes are locally abundant when found. Because of this species' propensity to congregate in high densities in particular locations, they may be vulnerable to localized habitat disturbances (Kostow 2002). Furthermore, if a local population of Kern brook lamprey is extirpated and the species is unable to recolonize the area, the range and distribution of the species would be reduced (Brown and Moyle 1993). If enough local extirpations occur, this could lead to the eventual extinction of the species (Vladykov and Kott 1976, 1984). However, we do not have enough information at this time to conclude that the Kern brook lamprey is at risk of substantial reductions in population or range because of its propensity to congregate in high densities. Based on the information available to us, it is speculative at this time to state that a single event, such as a chemical spill or dredging operation, could cause the extirpation of the species from an entire river system, or significantly reduce the population or range of the species.

The petition did not provide, and we are not aware of information on the precise locations inhabited by Kern brook lamprey ammocoetes. We also do not have information regarding the locations of activities such as dredging, or activities that could cause a poisoning event, in relation to the areas where Kern brook lamprey are known to congregate. In addition, we do not have information detailing how the operations of the four major dams are affecting the Kern brook lamprey, and if the operations of these dams could substantially reduce or extirpate the species (see Factor A above), and if the operations of these dams could substantially reduce or extirpate the species. Without this information, it is speculative to state that a single action, such as a chemical spill, rapid

drawdown in stream flows, or a dredging operation, could cause the extirpation of the species from an entire river system or significantly reduce the Kern brook lamprey's population size or range.

### *Poisoning*

Information provided in the petition

Poisoning is described in the petition as a major threat to the Kern brook lamprey. The petition cites the only known occurrence of poisoning that resulted in the deaths of Kern brook lamprey, when ammocoetes and adults were collected by CDFG from the siphons of the Friant-Kern Canal when they were poisoned with rotenone as part of an effort to eradicate white bass from the canal system in 1988 (Brown and Moyle 1993; Moyle et al. 1995).

Analysis of information provided in the petition and information in our files

The use of rotenone in the Friant-Kern Canal has not occurred since 1988, and there are no future plans for this practice to occur again (Peter Moyle, University of California-Davis, pers. comm. 2004). Other than this one-time poisoning event, the petition did not provide any information regarding the use of chemicals or poisons within close proximity to known occurrences of the Kern brook lamprey. Because of a lack of information regarding activities that could cause a poisoning event within the range of the

Kern brook lamprey, as well as a lack of information on the spatial distribution patterns of the species, it is speculative to state that a single event, such as a chemical spill, could cause the extirpation of the species from an entire river system, or significantly reduce the population or range of the species.

### Summary

The petition to list the four lamprey species primarily provides information about the Pacific lamprey, and information specific to the Kern brook lamprey is lacking. The petition did not present substantial information that indicates rangewide declines, a reduction in population numbers, or threats to existing Kern brook lamprey populations that place them in danger of extinction now or in the foreseeable future.

According to the petition, many of the threats to the Pacific lamprey would also apply to the Kern brook lamprey. Threats to the Pacific lamprey, as described by the petition, included dams and artificial barriers, passage at road culverts, dredging, streambed scouring and degradation from logging activities, poisoning, water diversions, channelization, and ocean conditions. Of these reported threats, there are only four for which the petition specifically addresses the Kern brook lamprey (poisoning, water diversions, channelization, and lack of regulatory mechanisms regarding water law and stream flow regulation). While these threats may affect populations of this species, the information provided in the petition was speculative in nature and not substantiated. The petition did not provide specific information to document the degree that the species has

been affected by these threats, or if these threats have led to a significant decline in the range or distribution of the species or are likely to do so in the future.

There is a lack of survey information supporting reliable population and distribution estimates for this recently described species. The petition did not provide historical or current data to compare abundance of the Kern brook lamprey in any of the rivers where it is known to occur. We are not aware of quantitative documentation from surveys that shows declines in Kern brook lamprey populations or a reduction in range. In addition, the surveys that we are aware of which have recorded Kern brook lamprey, did not use a consistent level of effort in collecting Kern brook lamprey, occurred over periods of time that were too short in duration to establish trends, or used data that may be based on ammocoete counts where the surveyed species, whether the Kern brook lamprey, western brook lamprey, or Pacific lamprey were misidentified. Therefore, population and distribution trends at this time are not known.

All of the known occurrences of Kern brook lamprey, with the exception of the population above Pine Flat Reservoir on the Kings River, are below major dams. The petition stated that these dams are not managed to meet the biological needs of the Kern brook lamprey. However, the petition did not provide information on how stream flows below the four dams are managed and how these management practices affect the population status and distribution of the Kern brook lamprey. The petition provides no evidence that the operation of these dams has led to a significant decline in either population sizes or range of the species, or is likely to do so in the future.

## Finding

We have reviewed the petition and supporting literature, as well as other literature and information available in our files. The petition and other information available did not present substantial information that indicates rangewide declines, a substantial reduction in population numbers, or substantiated threats to existing populations that rise to the level that indicate the Kern brook lamprey is either in imminent danger of extinction, or likely to become so in the foreseeable future.

We will continue to monitor available information on the species, and maintain the option of initiating listing procedures in the future should such an action become necessary. We ask the public to submit to us any new information that becomes available concerning the status of this species. If you wish to provide materials concerning this finding, submit them to the Field Supervisor, Sacramento Fish and Wildlife Office (see ADDRESS section above).

## Literature Cited

A complete list of all references cited herein is available, upon request, from the Sacramento Fish and Wildlife Office (see ADDRESS section above).

## Author



The primary author of this notice is the Sacramento Fish and Wildlife Office, U.S. Fish and Wildlife Service (see ADDRESS section above).

Authority:

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

Dated: December 20, 2004

/s/ Marshall P. Jones Jr.

Marshall P. Jones Jr.

Deputy Director, Fish and Wildlife Service

Billing Code 4310-55