NORTHERN CALIFORNIA PACIFIC LAMPREY CONSERVATION INITIATIVE REGIONAL MEETING

CALIFORNIA MEETING 1: CAPE MENDOCINO (INCLUDING THE MATTOLE RIVER) TO THE OREGON BOARDER (INCLUDING THE OREGON PORTION OF THE KLAMATH BASIN)

HUMBOLDT BAY AQUATIC CENTER, 921 WATERFRONT DRIVE, EUREKA, CA

SEPT. 1ST 9AM-4PM & SEPT. 2ND 9AM-12PM

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The following document was prepared by members of the USFWS Western Lamprey Conservation Team including Jody Brostrom, Carrie Cook-Tabor, Damon Goodman, Christina Luzier, R.D. Nelle, Kenneth Ostrand, Howard Schaller and Bianca Streif for use with the Pacific Lamprey Conservation Initiative regional meetings.

NatureServe and its member programs and collaborators use a suite of factors to assess the extinction or extirpation (regional extinction) risk of plants, animals, and ecosystems (or "elements" of biodiversity). By researching and recording information on a set of conservation status factors, biologists can assign a conservation status rank to these elements at both global and regional (i.e., national/subnational) scales. The protocol for assigning a conservation status rank is based on scoring an element against ten conservation status factors, which are grouped into three categories based on the characteristic of the factor: rarity, trends, and threats. Once assigned, scores for the individual factors within each of these categories are pooled and the resulting three summary scores are combined to yield an overall numeric score, which is translated into a calculated rank[1].

We have chosen this approach to rank the relative risk of Pacific lamprey for various watersheds, given the lack of demographic information available across the range. Information for all ten conservation status factors is not required to assign a status rank.

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1 Faber-Langendoen, D., L. Master, J. Nichols, K. Snow, A. Tomaino, R. Bittman, G. Hammerson, B. Heidel, L. Ramsay, and B. Young. 2009. NatureServe Conservation Status Assessments: Methodology for Assigning Ranks. NatureServe, Arlington, VA (http://www.natureserve.org/publications/ConsStatusAssess_RankMethodology.jsp).

We will be using a modified suite of factors (seven) to assess the relative risk/status ranking of Pacific lamprey by watershed throughout its range. The set of factors we will use to assess conservation status, by category, are:

• **Rarity:** population size, range extent, area of occupancy, and number of occurrences;
• **Trends:** short-term trend in population size;
• **Threats:** threat impact

Information on the conservation factors above will be collected at the regional meetings and this data will be entered into the NatureServe model to aid in assessing the relative health of Pacific lamprey by watershed throughout its range. The goal of the USFWS Pacific Lamprey Conservation Plan is to implement a strategy for restoring Pacific lamprey populations that includes identification and prioritization of: threats; restoration actions; research, monitoring, and evaluation needs; and finally identification of partnerships and potential funding sources to implement priority actions. The relative ranking of risk using the NatureServe conservation status assessment tool will aid us in achieving this goal. The following categories and associate questions will be applied to each drainage evaluated in the meeting and used in the Nature Serve Model. Listed below are the topics that will be reviewed for each drainage and the resulting information will be incorporated in to the NatureServe Model.

A. WATERSHED POPULATION DISTRIBUTION (AREA OF OCCUPANCY)

The purpose of this section of the assessment is to provide information for developing a GIS-based layer showing the extent of habitat routinely occupied by Pacific lamprey in the watershed. In watersheds where more information is available, that information could be further distilled to estimate extent of spawning/rearing (S/R) habitat vs. migrating and overwintering habitat, etc.

A1. IS THERE AN EXISTING MAP OF PACIFIC LAMPREY DISTRIBUTION IN THIS WATERSHED?

If not… Is there an existing map of a surrogate species (e.g., steelhead spawning and early rearing distribution) in this watershed?

A2. IS THERE ADDITIONAL RELEVANT INFORMATION REGARDING THE SPECIES' SPATIAL DISTRIBUTION (E.G. DOCUMENTED PRESENCE, BLOCKED HABITAT REOPENED, HABITAT POTENTIAL, ETC.) IN THIS WATERSHED?

If yes, then provide the citation(s) for documenting the information and a brief summary of their relevance. Provide a brief summary of how this information affects our understanding of the watershed or local populations for Pacific lamprey as described.

A3. CATEGORIZE THE RELEVANCE AND QUALITY OF THE DISTRIBUTION DATA FOR THIS WATERSHED USING THE CATEGORIES OF 0-5 AS FOLLOWS:

"0" = no information available
"1" = best professional judgment based on expansion of data for other species (e.g., steelhead),
"2" = largely undocumented but based on extent of habitat, suspected barriers and/or anecdotal information,
"3" = partial adult, juvenile, or nest survey data in one-half or less of the potential spawning and rearing habitat in the watershed,
"4" = partial adult, juvenile, or nest survey data in more than one-half of the potential spawning and rearing habitat in the watershed with some estimate of error,
"5" = comprehensive adult, juvenile, or nest survey data in more than 90% of the watershed incorporating some estimate of error.

B. WATERSHED POPULATION ABUNDANCE

The purpose of this section of the assessment is to provide information for making a determination of the current number of adult (reproductive) Pacific lamprey in the watershed. The objective is not necessarily to develop a precise estimate, but rather to estimate a range of values within which the adult population is likely to occur and to assess the data quality with which that determination can be made, based on available data.

B1. IS THERE RELEVANT INFORMATION REGARDING THE SPECIES' ABUNDANCE IN THIS WATERSHED (SELECT A CATEGORICAL RANKING OR RANGE OF RANKS)?

Z = Zero, no individuals believed extant (i.e., species presumed extinct)
A = 1–50 individuals
B = 50–250 individuals
C = 250–1,000 individuals
D = 1,000–2,500 individuals
E = 2,500–10,000 individuals
F = 10,000–100,000 individuals
U = Unknown
Provide the citation(s) of information (e.g. updated nest counts) and a brief summary.

B2. CATEGORIZE THE RELEVANCE AND QUALITY OF THE ABUNDANCE DATA FOR THIS WATERSHED USING THE CATEGORIES OF 0-5 AS FOLLOWS:

"0" = no information available
"1" = largely undocumented but based on extent of habitat and/or anecdotal information,
"2" = best professional judgment based on expansion of data for other life stages (e.g., juvenile abundance, reproductive proportion),
"3" = partial adult or nest count data from one-half or less of the potential spawning habitat in the watershed,
"4" = partial adult or nest count data from more than one-half of the potential spawning habitat in the watershed with some estimate of error,
"5" = comprehensive adult or nest count census in more than 90% of the watershed incorporating some estimate of error.

C. SHORT-TERM WATERSHED POPULATION TREND

The purpose of this section of the assessment is to provide information for determining the short-term trend (e.g., three generations ~27 years) in the number of adult Pacific lamprey in the watershed. The watershed population trend should, when possible, be determined from the longest time series of available data. However, use of a shorter time series may be warranted in cases of inconsistent data quality over the time series. Ideally, quantitative information (e.g., dam and nest counts) should be used.

C1. IS THERE RELEVANT INFORMATION REGARDING THE SPECIES' SHORT-TERM POPULATION TREND (E.G. INCREASING, DECREASING, STABLE).

If yes, what is the quality of the data? How confident are we in the certainty of the trend estimate? Provide the citation(s) for documenting the information and a brief summary of their relevance.

C2. CATEGORIZE THE RELEVANCE AND QUALITY OF THE SHORT-TERM POPULATION TREND DATA FOR THIS WATERSHED USING THE CATEGORIES OF 0-5 AS FOLLOWS:

"0" = no information available
"1" = largely undocumented but based on extent of habitat and/or anecdotal information,

"2" = best professional judgment based on expansion of data for other life stages (e.g., juvenile abundance, reproductive proportion),

"3" = partial adult or nest count data from one-half or less of the potential spawning habitat in the watershed,

"4" = partial adult or nest count data from more than one-half of the potential spawning habitat in the watershed with some estimate of error,

"5" = comprehensive adult or nest count census in more than 90% of the watershed incorporating some estimate of error.

D. WATERSHED THREATS ANALYSIS

The purpose of this section of the assessment is to provide information for determining and classifying the threats which are providing the <u>greatest level</u> of present and future risk to the Pacific lamprey population in a watershed. While threats may be both cumulative and synergistic, focusing on threats that currently present the highest individual severity, scope, and immediacy of challenge to Pacific lamprey within a watershed may provide the most meaningful way to compare the relative status of threats amongst watersheds. Wide-ranging chronic threats (such as climate change) that affect multiple Pacific lamprey watersheds are not highlighted in this analysis, but are typically considered at the regional or species-wide scale.

D1. DESCRIPTION OF THREATS

For each of the threats listed below describe the nature of the threat including types and locations. Provide the citation(s) of information and a brief summary of their relevance. How certain are the data stating this is a threat in this watershed?

A. **Passage -** dams, culverts, water diversions, tide gates, other barriers
B. **Dewatering and flow management** - reservoirs, water diversions, instream projects
C. **Dredging** - channel maintenance and mining
D. **Chemical poisoning and toxins** - accidental spills, chemical treatment
E. **Poor water quality**
F. **Disease**
G. **Utilization/harvest**
H. **Predation**
I. **Stream and floodplain degradation** - channelization, loss of side channel habitat, scouring
J. **Translocation**
K. **Small population effects**
L. **Lack of awareness of the status of Pacific lamprey**
M. **Climate change** - Thinking specifically for this watershed, and considering the current extent of occupied Pacific lamprey habitat, do you believe summer maximum water temperature increases in spawning and rearing habitat of 1° to 3° C would have **minimal, moderate, or profound** impacts on the Pacific lamprey population? Why might this watershed be potentially especially vulnerable or especially insulated from climate change?
N. **Other threats?**

D2. SCOPE OF EACH THREAT

What proportion of the watershed population is affected by each threat? Classify the scope of threat as high, moderate, low, or insignificant, based on the following general guidelines:

- **High** scope is impacting over 71-100% of the total Pacific lamprey population or its habitat in this watershed for an extensive period of time (multiple Pacific lamprey generations). If a threat broadly impacts spawning and rearing habitat then the scope is likely to be high.

- **Moderate** scope is impacting 31-70% of the total Pacific lamprey population or its habitat in this watershed over more than one Pacific lamprey generation.
- **Low** scope is impacting only 11-30% of the total Pacific lamprey population or its habitat in this watershed over a short period of time (less than one Pacific lamprey generation). However, if the habitat impacted is of especially high value (e.g., the only primary spawning and rearing habitat) or importance (e.g., critical wintering area) those impacts would elevate the scope to moderate or high, regardless of the extent.
- **Insignificant** scope is impacting to less than <10% of the Pacific lamprey population or habitat in this watershed only briefly.

D3. SEVERITY OF EACH THREAT

How badly and irreversibly is each watershed affected? Classify the severity of threat as high, moderate, low, or insignificant, based on the following general guidelines:

- **High** severity is resulting in near-total destruction of suitable habitat and/or functional loss of Pacific lamprey from this watershed; leading to essentially irreversible decline that may require over 100 years to restore.
- **Moderate** severity is resulting in long-term degradation or reduction of suitable habitat and/or major decline of Pacific lamprey from this watershed; requiring 50-100 years to restore.
- **Low** severity is resulting in reversible degradation of or reduction of habitat and/or a measurable reduction of the watershed Pacific lamprey population, with recovery expected to be feasible within 2-3 generations.
- **Insignificant** severity essentially is resulting in no measurable reduction of the Pacific lamprey population or habitat in this Watershed. A population would recover within 2 generations from any temporary fluctuation in the population. Locally sustainable levels of land management activities or angling are, by definition insignificant, as described here.

E. WATERSHED IDENTIFICATION OF SUITES OF ACTIONS TO ADDRESS THREATS

The purpose of this section of the assessment is to identify suites of actions we can use to address the threats which are providing the greatest level of present and future risk to the Pacific lamprey population in a watershed.

E1. IDENTIFY ONGOING CONSERVATION MEASURES IN THIS WATERSHED.
E2. DEVELOP NEW ACTIONS TO ADDRESS THREATS IN THIS WATERSHED.

F. REGIONAL IDENTIFICATION OF RESEARCH, MONITORING, AND EVALUATION NEEDS

The purpose of this section of the assessment is to identify research, monitoring, and evaluation needs relating to the prioritized threats.

F1. RESEARCH NEEDS – CRITICAL UNCERTAINTIES
F2. EFFECTIVENESS MONITORING

G. REGIONAL LIFE HISTORY CHARACTERISTICS AND HABITAT PREFERENCES

The purpose of this section of the assessment is to provide information on life history characteristics and habitat preferences of Pacific lamprey in the region. Regional or watershed differences in life history characteristics and habitat preferences of Pacific lamprey in the watershed will be provided.

G1. Life History Characteristics

a) Is there relevant information regarding life history characteristics of Pacific lamprey in this region?
b) Are there regional or watershed level differences in life history characteristics in this region?
c) Are there uncertainties about life history characteristics of Pacific lamprey in this region?
If yes, then provide the citation(s) for documenting the information and a brief summary of their relevance. Also provide a brief summary of how this information affects our understanding of the Watershed or local populations for Pacific lamprey as described.

G2. Habitat Preferences

a) Is there relevant information regarding habitat preferences of Pacific lamprey in this region?
b) Are there regional or watershed level differences in habitat preferences in this region?
c) Are there uncertainties about habitat preferences of Pacific lamprey in this region?
If yes, then provide the citation(s) for documenting the information and a brief summary of their relevance. Also provide a brief summary of how this information affects our understanding of the Watershed or local populations for Pacific lamprey as described.

H. REGIONAL CONNECTIVITY

The purpose of this section of the assessment is to provide information on the relative degree of connectivity within this region. Connectivity refers to the maintenance of suitable stream conditions that allow Pacific lamprey to move freely upstream and downstream with habitat linkages that connect to other habitat areas. Is the connectivity poor (i.e., barriers to migration exist, the only connection is the ocean) or good (i.e., unrestricted migration opportunities and the full expression of life history strategies).

H1. Can (and do) adult Pacific lamprey move freely within the migratory corridor (populations connected to habitat in a way that allows expression of life history characteristics)?

If no, then provide the citation(s) for documenting the information and a brief summary of their relevance. Also provide a brief summary of how this information affects our understanding of the Watershed or local populations for Pacific lamprey as described.