Bonneville Power Administration
Fish and Wildlife Program FY99 Proposal

Section 1. General administrative information

Prioritize Research And Restoration Needs For Pacific Lamprey

Bonneville project number, if an ongoing project 9147

Business name of agency, institution or organization requesting funding
Oregon Department of Fish and Wildlife

Business acronym (if appropriate) ODFW

Proposal contact person or principal investigator:

Name	Dave Ward/Tom Rien
Mailing Address	17330 S.E. Evelyn Street
City, ST Zip	Clackamas, OR 97015
Phone	503-657-2000 x 402
Fax	503-657-6823
Email address	davidlward@yahoo.com, tom.rien@rocketmail.com

Subcontractors.

Organization	Mailing Address	City, ST Zip	Contact Name

NPPC Program Measure Number(s) which this project addresses.
7.5F

NMFS Biological Opinion Number(s) which this project addresses.

Other planning document references.
Status Report of the Pacific Lamprey in the Columbia Basin (Close et al. 1995) calls for 'immediate research to address critical uncertainties related to lamprey abundance, distribution, passage impediments, habitat limiting factors, artificial propagation, and

transplantation/supplementation", as well as immediate definition of "impementation actions for lamprey restoration pilot projects".

Restoration of Pacific lamprey to much of its historic range is an objective of Wy Kan Ush Me Wa Kush Wit and ODFW subbasin plans stated in the Fish and Wildlife Managers of the Columbia River Basin's 1997 Multi-Year Implementation Plan (pages 347, 349, 350, 359, 362-364, 366-367, 371-374, and 377-380).

Subbasin.
This is a planning project that deals with populations basin-wide.

Short description.
Conduct several planning group meetings and document the information, research, and immediate restoration actions needed for Pacific lamprey in the Columbia River Basin. Set priorities for future work based on opinions from agency and tribal experts.

Section 2. Key words

Mark	Programmatic Categories	Mark	Activities	Mark	Project Types
X	Anadromous fish		Construction		Watershed
	Resident fish		O & M	+	Biodiversity/genetics
	Wildlife		Production	X	Population dynamics
	Oceans/estuaries		Research		Ecosystems
	Climate		Monitoring/eval.	+	Flow/survival
	Other		Resource mgmt		Fish disease
		X	Planning/admin.	+	Supplementation
			Enforcement		Wildlife habitat en-
			Acquisitions		hancement/restoration

Other keywords.
Information gaps, Critical uncertainties, population status, distribution

Section 3. Relationships to other Bonneville projects

Project #	Project title/description	Nature of relationship

Section 4. Objectives, tasks and schedules

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Identify and describe critical uncertainties and information gaps that limit fisheries managers' ability to restore populations of Pacific Lamprey in the Columbia River Basin and set priorities for research and restoration actions.	a	Conduct a series of 3 to 4 regional technical workgroup meetings involving all concerned parties to reach a consensus on a management framework and associated research plan for Pacific lamprey.
		b	Summarize meeting results in a work plan for restoring runs of Pacific lamprey throughout their historic range.

Objective schedules and costs

Objective #	Start Date mm/yyyy	End Date mm/yyyy	Cost %
1	10/1998	6/2000	99.99%
			TOTAL 99.99%

Schedule constraints.
The project schedule will be constrained by schedules of personnel from agencies who will participate in the work groups. It is important to remain flexible and to allow all interested parties a fair chance to participate.

Completion date.
2000

Section 5. Budget

FY99 budget by line item

Item	Note	FY99
Personnel		$11,117
Fringe benefits		$4,558
Supplies, materials, non-expendable property		$ 275
Operations & maintenance		$ 713
Capital acquisitions or improvements (e.g. land, buildings, major equip.)		$ 0
PIT tags	# of tags:	$ 0
Travel		$ 591
Indirect costs		$3,951
Subcontracts		$ 0
Other		$0
TOTAL		$21,205

Outyear costs

Outyear costs	FY2000	FY01	FY02	FY03
Total budget	$2,500	$ 0	$ 0	$ 0
O&M as % of total	3.00%			

Section 6. Abstract

Conduct a series of regional technical workgroup meetings involving all concerned parties to reach a consensus on a management framework and associated research plan for Pacific lamprey. The management framework plan will emphasize a cooperative approach to work that will ensure coordination of research and avoid duplication of effort.

Section 7. Project description

a. Technical and/or scientific background.

Reduced abundance and apparent declines of Pacific lamprey is widely cited as a matter of serious concern for regional fisheries managers. *Wy Kan Ush Me Wa Kush Wit* (CRITFC 1995) and *Species at Risk* (Marshall et al. 1996) describe an evident widespread decline for reasons that are poorly understood. Because of its anadromous life history strategy, lamprey are likely impacted by a variety of factors throughout the Columbia

Basin. Habitat has changed dramatically in tributaries where prespawning adults may hold for up to a year, and where ammocoetes rear for 5-6 years. Hydro-power facilities that have created passage impediments for up- and downstream migrant fish may not be corrected for lamprey by the same actions taken for Pacific salmon. Varying levels of treaty, commercial, and recreational harvest still occur at Willamette Falls, Sherars Falls on the Deschutes River, and possibly other areas.

Despite the widespread concern for lamprey status a multi-agency plan for action has not been developed that will allow an orderly and coordinated approach to understanding reasons for decline and focus research efforts on management information needs for restoration.

b. Proposal objectives.

The single objective of this proposal is to identify and describe critical uncertainties and information gaps that limit fisheries managers' ability to restore populations of Pacific lamprey in the Columbia River Basin and to set priorities for research and restoration actions through broad regional consensus of interested parties. The product of these workshops will be a work plan for lamprey restoration in the Columbia Basin.

c. Rationale and significance to Regional Programs.

In spite of apparent widespread declines in Pacific lamprey, efforts to restore runs are now underway in only one subbasin of the Columbia Basin (Umatilla River). To date there is no regional plan to restore lamprey. A regional work plan will identify critical information gaps and the geographic areas where these most affect restoration. Such a work plan will foster cooperative strategies, and focus efforts on development of research and restoration projects called for by a consensus of fisheries managers.

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) has taken the initial steps at setting research and restoration goals, but the CTUIR lamprey project is focussed on taking restoration actions primarily in the Umatilla Basin. Regional goals, and the strategies for achieving them, have not been the focus of CTUIR work. At a recent meeting of the lamprey technical working group it was suggested that a separate group might need to be formed in order to discuss research needs and priorities. The project being proposed would fill that need, and would complement the CTUIR lamprey project.

d. Project history

This is a new project proposal.

e. Methods.

The project will consider, in a peer forum, a range of research related questions, their relative priority to lamprey restoration, and the geographic area where the information need is most pressing. These questions will include but not be limited to:

1. What is the present abundance of Pacific lamprey and distribution spawning and rearing areas in the Columbia River basin? How does this relate to historic Pacific lamprey abundance and distribution of spawning and rearing areas.
2. What are the natural groupings of Pacific lamprey?
    a) Are there life history, ecological, and genetic distinctions among Pacific lamprey populations in different areas of the Columbia River basin?
    b) Are Columbia basin Pacific lamprey populations genetically and ecologically similar to those in other coastal basins?
3. Is competition with other species influencing the status of Pacific lamprey in the Columbia River basin?
    a) What other species of lamprey use habitat important to Pacific lamprey? The anadromous and parasitic River lamprey and the resident non-parasitic brook lamprey are both found in the Columbia River basin.
    b) Has our understanding of Pacific lamprey been compounded by our failure to recognize and identify sympatric species?
4. What are the essential habitat elements and ecological processes that influence or limit production and survival at each critical life history phase?
    a) How much available habitat important to each life history phase is available and is it filled?
    b) Does the present availability of important habitats suggest that natural lamprey production could be improved?
    c) If significant life history bottlenecks exist due to habitat limitations or modifications, can we identify them?
    d) Once identified, can we correct them?
5. Have critical life history bottlenecks which influence the survival of lamprey and drive lamprey population dynamics been identified?
    a) What is survival from egg to hatching?
    b) What is survival during the ammocoete phase?
    c) What is downstream passage survival of transformers?
    d) What is survival during marine residency?
    e) What is adult upstream passage survival to spawning areas?
    f) What is the survival from arrival on the spawning grounds until spawning?

g) Were the causes of mortality at various life history stages?

h) What is the reproductive potential and stock-recruit relationship for the populations of Pacific lamprey?

6. What is the significance of Pacific lamprey to populations of other fishes of the Columbia River basin?

a) As a potential prey item for sturgeon and marine mammals?

b) As a predator on salmonids?

f. Facilities and equipment.

No special equipment is required for this project. We will use existing offices and office equipment to complete progress reports. We will use existing meeting spaces to conduct workgroup meetings.

g. References.

Close, D. A., M. Fizpatrick, H. Li, B. Parker, D. Hatch, and G. James. 1995. Status report of the Pacific lamprey (Lampetra tridentata) in the Columbia River basin. Annual Progress Report to Bonneville Power Administration, contract number 95BI39067, Portland, Oregon.

Columbia River Inter-Tribal Fish Commission. 1996. Wy-Kan-Ush-Mi Wa-Kish-Wit (Spirit of the Salmon). The Columbia River Anadromous Fish Restoration Plan of the Nez Perce, Umatilla, Warm Springs, and Yakama Tribes, Volume 1. Portland, Oregon.

Fish and Wildlife Managers of the Columbia River Basin. 1997. CBFWA Review Draft, 1997, Multi-Year Implementation Plan for the Protection, Restoration, and Enhancement of Columbia River Basin Fish and Wildlife Resources. Presented to the Northwest Power Planning Council. Portland, Oregon.

Marshall, D. B., M. W. Chilcote, and H. Weeks. 1996. Species at risk: sensitive, threatened, and endangered vertebrates of Oregon. 2nd edition. Oregon Department of Fish and Wildlife, Portland, Oregon.

Section 8. Relationships to other projects

This project will complement and cooperate with Project 9402600 (Pacific Lamprey Research and Restoration) being conducted by the Confederated Tribes of the Umatilla Indian Reservation.

Section 9. Key personnel

Resume for David Ward

Experience

1984-Present Oregon Department of Fish and Wildlife, 17330 S.E. Evelyn St., Clackamas, OR. (1) Program Leader for Columbia Region Research Program (6 months). Current responsibilities: Coordinate activities of ongoing departmental and interagency projects, identify needs for and develop future projects, provide technical oversight to project leaders, and supervise project leaders and other program staff. (2) Project Leader on evaluation of the Northern Squawfish Management Program (7 years); (3) Project Leader on Portland Harbor Study (3 years); (4) Project Biologist and Technician on various studies (3 years).

Education:	Degree and Date Received
Humboldt State University, Arcata, CA	M.S. Fisheries, 1985
Humboldt State University, Arcata, CA	B.A. Zoology, 1978

Duties as Project Manager on Proposed Study: Coordinate and integrate activities of cooperating agencies; supervise project leaders; review and edit project summary reports; provide technical oversight for data analysis and report preparation. FTE: 0 months. (Supervision contributed.)

Expertise: Coordinated and integrated activities of cooperating agencies, hired and supervised staff of project leaders, project biologists, and seasonal workers, designed field and laboratory sampling plans, analyzed wide variety of biological data, authored, edited, and reviewed scientific reports and peer-review articles. Organized personnel from cooperating agencies to give symposia at fisheries conferences. Developed and submitted proposals for numerous research projects to various funding sources. Direct experience with methods and gears associated with habitat and fish surveys in streams, rivers, lakes, and reservoirs.

Publications and Reports

Ward, D.L., R.R. Boyce, F.R. Young, and F.E. Olney. 1997. A review and assessment of transportation studies for juvenile chinook salmon in the Snake River. North American Journal of Fisheries Management 17:652-662.

Beamesderfer, R.C., D.L. Ward, and A.A. Nigro. 1996. Evaluation of the biological basis for a predator control program on northern squawfish in the Columbia and Snake rivers. Canadian Journal of Fisheries and Aquatic Sciences 53:2898-2908.

Ward, D.L., J.H. Petersen, and J.J. Loch. 1995. Index of predation on juvenile salmonids by northern squawfish in the lower and middle Columbia River and in the lower Snake River. Transactions of the American Fisheries Society 124:321-334.

Ward, D.L. 1995. Distribution of fish and crayfish, and measurement of available habitat in the Tualatin River basin. Final Report by the Oregon Department of Fish and Wildlife to the Unified Sewerage Agency, Hillsboro, Oregon.

Resume for Tom Rien

Experience

1984-Present Oregon Department of Fish and Wildlife, 17330 S.E. Evelyn St., Clackamas, OR. (1) Project Leader for White Sturgeon Research (1.5 years). Current responsibilities: Principal Investigator for studies on the early life history and habitat use of white sturgeons in the Columbia River. Coordinate research activities on white sturgeons with the activities and needs of the tribes, states, and other governmental agencies. Arrange and conduct meetings of cooperating agency personnel to coordinate current and future research. Oversee the work of two biologists and several seasonal employees. (2) Project Biologist for studies on the early life history and habitat use of white sturgeons in the Columbia River (6.5 years); (3) Sub-Basin Planner for Clackamas and Lower Willamette rivers. Organized workgroups comprised of members of public, and fisheries managers. Conducted meetings to set priorities for restoration of salmonid runs. Prepared subbasin plans that established strategies in actions to restore fish runs. (1.5 years); (4) Project Technician and Biology Aide on various studies (4 years).

Education:	Degree and Date Received
Oregon State University, Corvallis, OR	B.S. Wildlife Biology, 1981

Duties as Principal Investigator. Coordinate research activities on white sturgeons with the activities and needs of the tribes, states, and other governmental agencies. Oversee the work of two biologists and several seasonal employees. FTE - 0.5 months.

Expertise: Considered expert at aging and age evaluations of several fish species including white sturgeon; devloping and implementing sampling designs to describe population parameters; interpretting and applying findings in population models. Coordinated and integrated activities of cooperating agencies, hired and supervised staff of project biologists, and seasonal workers.

Publications and Reports

Beamesderfer, R.C.P., T.A. Rien, and A.A. Nigro. 1995. Dynamics and potential production of white sturgeon populations in three Columbia River reservoirs Transactions of the American Fisheries Society 124:857-872.

North, J.A., R.C. Beamesderfer, and T.A. Rien. 1993. Distribution and movements of white sturgeon in three lower Columbia River reservoirs. Northwest Science 67(2):105-111.

Rien, T.A. and R.C. Beamesderfer. 1994. Accuracy and precision in age estimates of white sturgeon from pectoral fin rays. Transactions of the American Fisheries Society 123(2):255-265.

Rien, T.A., R.C.P. Beamesderfer, and C.A. Foster. 1994. Retention, recognition, and effects on survival of several tags and marks on white sturgeon. California Fish and Game 80(4):161-170.

Section 10. Information/technology transfer

Information collected from this project will be shared with fishery managers and used to prioritize future investigations of Pacific lamprey by management need for the information in the geographic areas it is needed. The primary product of the project, a work plan for lamprey restoration in the Columbia Basin, is intended for wide distribution among Columbia Basin fisheries managers. Sources of existing underlying biological data will be made available to StreamNet.