

**Bonneville Power Administration
Fish and Wildlife Program FY99 Proposal**

Section 1. General administrative information

**Evaluate Status Of White Sturgeon In The Hells
Canyon Reach Snake River, ID**

Bonneville project number, if an ongoing project 9056

Business name of agency, institution or organization requesting funding
IDAHO DEPARTMENT OF FISH AND GAME

Business acronym (if appropriate) IDFG

Proposal contact person or principal investigator:

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Subcontractors.

Organization	Mailing Address	City, ST Zip	Contact Name

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

10.4A.4

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

Other planning document references.

Idaho Department of Fish and Game Fish Management Plan, 1996-2000; Columbia Basin Fish and Wildlife Authority Draft Multi-year Implementation Plan

Subbasin.

Snake River Drainage, Idaho

Short description.

Determine the population status of white sturgeon *Acipenser transmontanus* in the Hells Canyon reach of the Snake River, ID. by continuing to capture fish for mark-recapture analysis and comparison with previous studies.

Section 2. Key words

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

Other keywords.

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	Determine population abundance and composition of length (age) groups.	a	By sport angling techniques, capture white sturgeon between Hells Canyon Dam and Lower Granite Dam pool and mark with

			PIT tags using standard techniques
		b	Using same angling techniques determine recapture rates of previously marked white sturgeon.
		c	Using mark-recapture procedures determine population estimate for river section in question and compare with previous estimates from the past 25 years
2	Develop and implement strategies to sustain healthy, viable population	a	Using information collected in Objective 1, formulate plan to address future management direction that may include additional research needs.

Objective schedules and costs

Objective #	Start Date mm/yyyy	End Date mm/yyyy	Cost %
1	9/1998	6/2002	80.00%
2	7/2002	6/2003	20.00%
			TOTAL 100.00%

Schedule constraints.

Completion date.

2003

Section 5. Budget

FY99 budget by line item

Item	Note	FY99
Personnel	Fishery Tech-12 mos; Bio-aide--8 mos	\$37,400
Fringe benefits	@ 36%	\$13,500
Supplies, materials, non-expendable property		\$8,100
Operations & maintenance		\$19,800

Capital acquisitions or improvements (e.g. land, buildings, major equip.)	PIT tag scanner	\$3,500
PIT tags	# of tags: 200	\$580
Travel		\$2,000
Indirect costs	@21.3%	17,300
Subcontracts		
Other		
TOTAL		\$102,180

Outyear costs

Outyear costs	FY2000	FY01	FY02	FY03
Total budget	\$107,320	\$112,690	\$118,320	\$65,500
O&M as % of total	20.00%	20.00%	20.00%	10.00%

Section 6. Abstract

The white sturgeon *Acipenser transmontanus* is a resident fish species native to the Snake River drainage and lives in isolated populations segmented by hydroelectric dam construction. The white sturgeon population inhabiting the Hells Canyon reach of the Snake River has been isolated by Hells Canyon (rkm 398) and Lower Granite Dam (rkm 167). This sport fish has been managed under a catch and release sport fishery since 1970, but tribal harvest continues. It is unknown how a healthy, viable sturgeon population appeared prior to man’s interference. This Hells Canyon population has been recognized as one of the most viable in Idaho. We know the population has been impacted by sport harvest prior to 1970 and to some unknown degree because of the dam construction. Coon (1977) described the population before shortly after Hells Canyon and Lower Granite dams began operation. Lukens (1985) suggested the population composition is changing in a positive manner and that juvenile recruit is adequate. NWPPC measure 10.4A.4 recommends that the Bonneville Power Administration fund an evaluation of potential means of rebuilding the sturgeon population in the Snake River between Lower Granite and Hells Canyon dams. Based on previous studies it appears the population is slowly rebuilding itself. This study will describe the population abundance and composition so that comparisons can be made to the previous two studies.. Since 1991 the Idaho Department of Fish and Game Clearwater Region has been annually capturing and marking (by PIT tags and scute removal) all sizes of white sturgeon in this stretch as part of their Sport Fish Restoration program. The ongoing work is not a focused project but is in conjunction with other IDFG investigations. A concerted effort such as this study will allow for total focus on white sturgeon so that adequate sample size can be obtained to make statistically valid decisions. The results of this analysis will provide information for future management direction.

Section 7. Project description

a. Technical and/or scientific background.

The construction of eleven hydroelectric dams on the Snake River from its mouth upstream to Twin Falls has isolated white sturgeon populations with upstream movement none existent and downstream movement minimal. The status of each isolated population is varied and dependent on habitat availability for each life history phase. The two most viable populations have been found between Bliss and C.J. Strike dams and between Hells Canyon and Lower Granite dams (Cochnauer, et al 1985). Because of the unknown status of white sturgeon, the sport fishery in Idaho was closed to harvest in 1970. Since that time the sport fishery has been under catch and release regulations. Initial studies of the Hells Canyon population were conducted by Coon, et al (1977) with subsequent studies by Lukens (1985). As a continuing effort to assess population status, the Idaho Department of Fish and Game has been capturing and marking the Hells Canyon reach sturgeon with PIT tags since 1991. As of 1997, over 300 IDFG PIT tags have been implanted in white sturgeon below Hells Canyon Dam. The intent of this study is to focus the effort to make a determination of population abundance and composition. This information can be used in comparison with previous studies to determine the status of the populations and provide direction of future management of the population based on biological, social and political desires. The findings will be coordinated with appropriate state, federal, tribal and private entities.

A healthy, viable population would display abundant juvenile fish (less than 10 years of age); representation of most if not all age classes; and, an increase in the percentage of fish exceeding 100 cm when compared to the 1970's and 1980's studies.

This study will continue to collect white sturgeon and add to the existing data. It is anticipated that the crew will spend 32 weeks (40 hours per week), annually, capturing white sturgeon by sport angling techniques. The anticipated number of sturgeon to be captured is 250 of which 50 may already be tagged. Sites to be fished in the 231 kilometer stretch of river will be selected on a random basis and each designated site will be visited an equal amount of time as other sites. This will preclude worked from targeting certain segments of the populations. Captured sturgeon will be scanned for presence of PIT tags, and measured for total length. Using previous collected data (Coon, 1977 and Lukens, 1985) age class groupings can be constructed. The location and time of year of each capture will also be noted. As sturgeon are captured and marked, the information will be used in a multiple census mark-recapture population estimator as described by Cochnauer (1983).

The overall goal of the project is to protect native white sturgeon population in the Hells Canyon stretch of the Snake River. This project is closely related to several planning documents. The system-wide goal in the NPPC's Fish and Wildlife Program (FWP) (NPPC 1994, amended 1995) is "a healthy columbia Basin, one that supports both human

settlement and the long-term sustainability of native fish and wildlife species in native habitats....”. The resident fish goal mirrors the system-wide goal by emphasizing the long-term sustainability of native species in native habitats where possible...”. The goal of the CBFWA draft resident fish multi-year implementation plan is to promote the long-term viability of native species in native habitats (CBFWA 1997). Idaho Department of Fish and Game’s fish management plan (IDFG 1996) states that wild native, self sustaining fish populations are management priority as is protection and restoration of habitats and water quality. One of the goals of the plan is to maintain and restore wild, native fish populations.

References:

Cochnauer, T. 1983. Abundance, Distribution, Growth and Management of White Sturgeon *Acipenser transmontanus* in the Middle Snake River, Idaho. Doctoral Dissertation, University of Idaho, Moscow, Idaho.

Cochnauer, T., J.R. Lukens, F.E. Partridge. 1985. Status of white sturgeon, *Acipenser transmontanus*, in Idaho. Pages 127-133 in F.P. Binkowski and S.I. Doroshov (eds.) North American Sturgeons:biology and aquaculture potential. Dr. W. Junk, Dordecht, The Netherlands.

Columbia Basin Fish and Wildlife Authority. 1997. Draft multi-year implementation plan for resident fish protection, enhancement and mitigation in the Columbia River Basin. Technical Planning Document. June 3, 1997.

Coon, J.C., R.R. Ringe and T.C. Bjornn. 1977. Abundance, growth, distribution, and movements of white sturgeon in the mid-Snake River. Research Technical Completion Report, Project B-026-IDA, Idaho Water Resources Research Institute. University of Idaho, Moscow, Idaho.

Idaho Department of Fish and Game. 1966. Fisheries management plan 1996-2000. Boise, ID.

Lukens, J.R. 1985. Hells Canyon white sturgeon investigations. Idaho Department of Fish and Game. River and Stream Investigations, job Performance Report, Federal Aid Project F-73-R-7. Idaho Department of Fish and Game, Boise, ID.

Northwest Power Planning Council. 1994, amended 1995. Columbia River Basin Fish and Wildlife Program. As amended in 1995. Portland, OR.

b. Proposal objectives.

1. Determine population abundance and composition of length (age) groups.

This project is designed to estimate white sturgeon population abundance in the Hells Canyon section of the Snake river. Using marked (by PIT tags) sturgeon and subsequent recaptures, a multiple census population estimator can be utilized to determine the present numbers of sturgeon (within bounds) in respective age classes (by length groups). The age class estimates will be compared to previous studies conducted by Coon, et al (1977) and Lukens (1985) for determination of how the populations has responded to a no sport harvest. Increases in numbers of fish in certain, older (<20 years) age classes would suggest that spawning is adequate and mortality rates are such that the population can grow.

2. Develop and implement strategies to sustain healthy, viable population.

The ultimate product of this study will be to incorporate population parameters with population simulators to determine at what mortality rates will the population structure and size begin to reverse itself. This type of information can be used to assess the impacts of initiating sport fishing harvest after a thirty year absence.

The goal of the FWP is to make a determination of the long-term sustainability of white sturgeon in the Columbia River Basin (Measure 10.4A4). This project will provide needed information as to the status of white sturgeon Snake River River drainage between Hells Canyon and Lower Granite dams.

c. Rationale and significance to Regional Programs.

The overall goal of this project mirrors the goals of the NPPC's FWP, IDFG's Fish Management Plan, and CBFWA's MYIP. The goal of all of these documents is the protection and restoration of native fishes in native habitats. This project will follow a logical sequence of steps designed to protect and recover wild native salmonids.

Specifically the goal of the FWP is to make a determination of the long-term sustainability of bull trout in the Columbia River Basin (Measure 10.4A4). This project will provide needed information as to the status of white sturgeon in the Hells Canyon stretch of the Snake River.

The Fish and Wildlife Plan, Measure 10.4A.4, specifically addresses the need to rebuild white sturgeon populations in the Snake River. Without baseline information as to the status of the population, future direction for 'rebuilding' can not be determined. This project is designed to address status. The direction for achieving the goal of restoring

white sturgeon in the Hells Canyon stretch of the Snake River is dependent upon whether the population is presenting rebuilding itself through natural processes. This project will incorporate existing information collected since 1991 under the Sport Fish Restoration program and are compatible with comparable previous investigations. The project is also compatible with other ongoing white sturgeon research work in the Columbia River basin. This project will be coordinated with Idaho Power Company, State of Oregon, State of Washington and the Nez Perce Tribe white sturgeon programs.

d. Project history

No project history

e. Methods.

This project will conduct a systematic approach in capturing white sturgeon for marking and identification of recaptures. A multiple census approach to estimating population abundance and composition will allow for capture of fish over an extended period of time. The study reach will be divided into seven sections as described in the Upper Snake River White Sturgeon Biological Risk Assessment, 1996. Each of these sections will be sampled for a five days within a two month period. Over the course of the sampling period, March through October, each section will be sampled four times. Sampling will be conducted by traditional sport fishing methods. This procedure has provided an adequate number of fish during the previous two studies conducted in the Hells Canyon reach.

Each sturgeon captured will be held in water while lengths (total and fork) are measured, a PIT tag inserted at the posterior end of the dorsal fin, and the second left lateral scute removed. Removal of a scute provides for a quick, reliable method for identifying previously tagged fish. This procedure has been implemented for the past five years. Date and location of capture will be noted. In previous studies, aging had been accomplished by removing and reading a section of the leading ray of a pectoral fan. To minimize risk of disease and possibly mortality, no fin sections will be removed. Separating fish into distinct age classes can be accomplished by length frequency analysis.

After the first year of the project, the number of recaptured fish can be used for estimating population abundance and corresponding confidence intervals. These numbers will be compared with previous work to determining whether the population as a whole or specific age class groups are increasing. Increase in either would suggest the population is rebuilding as a result of limited harvest and that necessary life history needs are being met.

f. Facilities and equipment.

The project's field crew will be stationed at IDFG's Clearwater Region office in Lewiston, ID. At that facility necessary clerical staff, office space, computers, etc., are available. IDFG will provide necessary vehicles including a jet boat capable of navigating this reach of the Snake River. The only special equipment required will be state-of-the art PIT tag detectors. Other equipment will be commonly used camping and fishing gear.

g. References.

Cochnauer, T. 1983. Abundance, Distribution, Growth and Management of White Sturgeon *Acipenser transmontanus* in the Middle Snake River, Idaho. Doctoral Dissertation, University of Idaho, Moscow, Idaho.

Cochnauer, T., J.R. Lukens, F.E. Partridge. 1985. Status of white sturgeon, *Acipenser transmontanus*, in Idaho. Pages 127-133 in F.P. Binkowski and S.I. Doroshov (eds.) North American Sturgeons:biology and aquaculture potential. Dr. W. Junk, Dordecht, The Netherlands.

Cochnauer, T., E. Schriever, and J. Brostrom. 1993. River and Stream Investigations. F-71-R-17. Federal Aid in Sport Fish Restoration. Idaho Department of Fish and Game.

Cochnauer, T., E. Schriever, and J. Brostrom. 1994. River and Stream Investigations. F-71-R-18. Federal Aid in Sport Fish Restoration. Idaho Department of Fish and Game.

Cochnauer, T., E. Schriever, and J. Brostrom. 1995. River and Stream Investigations. F-71-R-19. Federal Aid in Sport Fish Restoration. Idaho Department of Fish and Game.

Cochnauer, T., E. Schriever, and J. Brostrom. 1996. River and Stream Investigations. F-71-R-20. Federal Aid in Sport Fish Restoration. Idaho Department of Fish and Game.

Columbia Basin Fish and Wildlife Authority. 1997. Draft multi-year implementation plan for resident fish protection, enhancement and mitigation in the Columbia River Basin. Technical Planning Document. June 3, 1997.

Coon, J.C., R.R. Ringe and T.C. Bjornn. 1977. Abundance, growth, distribution, and movements of white sturgeon in the mid-Snake River. Research Technical

Completion Report, Project B-026-IDA, Idaho Water Resources Research Institute. University of Idaho, Moscow, Idaho.

Idaho Department of Fish and Game. 1996. Fisheries management plan 1996 – 2000. Boise, Idaho.

Lukens, J.R. 1985. Hells Canyon white sturgeon investigations. Idaho Department of Fish and Game. River and Stream Investigations, Job Performance Report, Federal Aid Project F-73-R-7. Idaho Department of Fish and Game, Boise, ID.

Northwest Power Planning Council. 1994, amended 1995. Columbia River Basin Fish and Wildlife Program. As amended in 1995. Portland Oregon.

Section 8. Relationships to other projects

The project and findings will be coordinated with other white sturgeons projects in the Columbia River Basin, including Idaho Power Company, State of Oregon, State of Washington and Nez Perce Tribe.

Section 9. Key personnel

Project Manager: Tim Cochnauer PhD

Position: Regional Fish Manager, Idaho Department of Fish and Game, Clearwater Region,

Address: Idaho Department of Fish and Game
Clearwater Region
1540 Warner
Lewiston, ID 83501

Phone: 208-799-5010
FAX: 208-7995012

Education: Doctorate in Fishery Resources, 1983, University of Idaho, Moscow, ID
MS in Zoology, 1973, University of Oklahoma, Norman, OK
BS in Zoology, 1967, University of Oklahoma, Norman, OK

Current responsibilities:

As regional fish manager project manager has responsibility for both anadromous and resident fish populations and fisheries within the Clearwater Region of north central Idaho. The area encompasses the entire Clearwater River drainage, the Snake River drainage up to Hells Canyon Dam, the Palouse River drainage and the Salmon River drainage (North side) from its mouth upstream to Horse Creek (rkm 300). The Clearwater Region has a staff of four fishery scientists conducting a variety of activities including data collection, creel census, management decisions, setting and implementing fishing seasons, etc. throughout the region. The staff has responsibility for the FWP funded Idaho Supplementation Study and Natural Production Monitoring and Evaluation projects within the region.

I have over twenty years with the Idaho Department of Fish and Game working both in fish research and fish management. Experience include radio-tagging and monitoring a variety of fish species found in Idaho, marking and monitoring chinook salmon and steelhead trout juveniles and adult during the rearing, spawning and migratory phases of their lives, using a variety of sampling techniques for capturing different life history phases of different species of fish. These techniques include electroshocking, gill nets, angling, instream rotary screen and travelling screen traps, seining, instream weiring.

Publications:

Cochnauer, T. 1983. Abundance, Distribution, Growth and Management of White Sturgeon *Acipenser transmontanus* in the Middle Snake River, Idaho. Doctoral Dissertation, University of Idaho, Moscow, Idaho.

Cochnauer, T., J.R. Lukens, F.E. Partridge. 1985. Status of white sturgeon, *Acipenser transmontanus*, in Idaho. Pages 127-133 in F.P. Binkowski and S.I. Doroshov (eds.) North American Sturgeons:biology and aquaculture potential. Dr. W. Junk, Dordecht, The Netherlands.

Cochnauer, T., E. Schriever, and J. Brostrom. 1993. River and Stream Investigations. F-71-R-17. Federal Aid in Sport Fish Restoration. Idaho Department of Fish and Game.

Cochnauer, T., E. Schriever, and J. Brostrom. 1994. River and Stream Investigations. F-71-R-18. Federal Aid in Sport Fish Restoration. Idaho Department of Fish and Game.

Cochnauer, T., E. Schriever, and J. Brostrom. 1995. River and Stream Investigations. F-71-R-19. Federal Aid in Sport Fish Restoration. Idaho Department of Fish and Game.

Cochnauer, T., E. Schriever, and J. Brostrom. 1996. River and Stream Investigations. F-71-R-20. Federal Aid in Sport Fish Restoration. Idaho Department of Fish and Game.

PRINCIPAL INVESTIGATOR: TBA -- Senior Fishery Technician experienced in white water jet boating and sturgeon investigations.

Section 10. Information/technology transfer

The information collected will be presented in quarterly and annual reports to the funding agency. Monthly progress reports will be submitted to appropriate, state, federal, tribal and private entities. Overall significant finding will be submitted for publication in appropriate refereed professional journals. In addition the primary investigator will make oral presentation to fishery professional groups annually or as requested.