Response to ISRP Comments
Project 199007700
Northern Pikeminnow Management Program

Introduction

Most ISRP comments focused on general economics of the program, cost-effectiveness of the dam-angling and gill-net fisheries, and perceived decreases in program effectiveness. Answers to specific comments indicate that we (1) will eliminate dam-angling and site-specific fisheries, (2) will use some of the realized savings to fund an economic evaluation of the tiered reward system and the promotion costs, and (3) disagree with many comments regarding trends in biological effectiveness (and related cost-effectiveness). A revised budget has been submitted.

The important point repeated often in our responses is that our direct biological objective is measured in terms of annual exploitation, not catch or biomass. As with any previously unexploited fish population, catches are expected to be greatest in the first few years, then decline to lower but somewhat stable levels. Variations in northern pikeminnow year-class strength, as well as variations in effort and CPUE result in some variation among years in catch. Reductions in annual costs shown in the proposal and in our responses, coupled with relatively stable (or slightly increasing) exploitation rates (as shown in the proposal), result in stable or somewhat increasing cost-effectiveness in terms of exploitation rate per dollar.

Responses to Specific Comments

This long-term program has met many goals, but cost-effectiveness appears on a downward trajectory...There is likely a net benefit to adult salmon returns, but those numbers are likely declining and costs of the program are going up in both direct dollars and value per unit dollar spent.

As shown in the proposal and in Table 1, annual costs have actually decreased considerably since 1991. The budgets for 2001 and 2002 are the lowest since the program was fully implemented in 1991. Declines in annual costs would be even greater if inflation was considered. Furthermore, catch of northern pikeminnow >250 mm fork length in 2001 was the highest since 1996. Assuming a catch of about 130,000 fish in 2002 (well within reason because catch of fish >200 mm exceeded 130,000 by July 31), recent three-year averages are similar to the average from 1996-98. Table 1provides an overview of cost-effectiveness throughout the life of the program. It is readily apparent that cost effectiveness is not on a downward trajectory.

Neither monitoring nor evaluation contains an economic component, but economics, including cost-effectiveness monitoring, should be a core part of the projects evaluation. This is an expensive project and there is an opportunity cost of funding this project at $3 million rather than other projects.

The final sentence in this comment can be said for every project in the Fish and Wildlife Program. There is an opportunity cost associated with each project. In the Mainstem/Systemwide Province alone, there are seven other ongoing projects with budgets exceeding $2 million annually. A number of projects in other provinces have budgets higher than that of the NPMP. The ISRP calls for few if any economic evaluations of these other

Table 1. Summary of cost-effectiveness in terms of dollar per catch.

Year	Budget	Catch (>250mm)	$/Fish
1991	$5,259,629	192,704	$27.29
1992	$6,846,410	213,537	$32.06
1993	$4,253,600	121,641	$34.97
1994	$3,670,707	145,322	$25.26
1995	$4,311,186	214,669	$20.08
1996	$3,846,248	168,778	$22.79
1997	$3,730,347	125,370	$29.75
1998	$3,259,230	114,582	$28.44
1999	$3,306,000	119,850	$27.58
2000	$3,104,592	122,496	$25.34
2001	$2,779,992	156,846	$17.72
2002	$2,852,938	130,000 (estimated)	$21.95

projects. Economic evaluation was included in the Hankin and Richards (2000) report. A summary of recommendations and actions taken follows:

Tribal Fisheries – cost effectiveness is poor. Dam angling and gill net fisheries were subsequently placed under a strict CPUE requirement. This requirement was not met in 2002; therefore, these fisheries will be eliminated effective 2003. This will address subsequent ISRP comments and will result in a decrease in the FY 2003-05 budgets (see attached budget).

Numbers of participating agencies - there are too many. CBFWA coordination was eliminated, as was CRITFC coordination of tribal fisheries. Elimination of tribal fisheries in 2003 will leave PSMFC, WDFW, and ODFW as project cooperators.

WDFW budget – *too many full time positions*. WDFW eliminated two full time biologist positions and reduced the full time technician position to 9 months.

Tiered-Reward System – further information is needed. As noted in subsequent ISRP comments, this has not been addressed. See response to related comment below.

Program promotion – Increase rewards by decreasing promotion costs. As noted in subsequent ISRP comments, this has not been addressed. See response to related comment below.

Success of the benefits to salmon is measured strictly in numbers of pikeminnow caught. There is no analysis of the cost-effectiveness of the pikeminnow removal on salmon or any economic tradeoffs embedded in conducting this program in its current form.

The first sentence of this comment is incorrect. First, exploitation rate is the primary direct evaluation tool, not numbers of fish caught. Because of variations in year-class strength, as well as the expected decrease in catch after a few years of exploiting a previously unexploited population, exploitation and catch are not interchangeable. Second, we use observed exploitation, and the relationship between exploitation and size of northern pikeminnow, to estimate changes in size structure of the northern pikeminnow population resulting from exploitation. Changes in size structure drive the model that estimates changes in predation, which is our indirect evaluation tool.

Cost-effectiveness and economic issues were discussed above, and will be discussed again below.

The Hankin and Richards report reviewing the program two years ago contained recommendations for improving the efficiency of the program. Two such recommendations not yet implemented are to conduct further study of the tiered reward system and to explore possibilities to increase rewards by decreasing promotion costs. A trained economist (not a biologist) should be subcontracted to conduct these analyses. Even more desirable would be an economic evaluation of the entire program.

As noted above, these two recommendations have not yet been addressed (although three other economic and all eight biological recommendations have been).

Tiered-Reward System: The tiered reward system was implemented to stimulate additional effort and catch from successful anglers. This system gives incentives and goals for anglers to shoot for that result in increased rewards. In 2001 during the drought year, the tiered rewards were increased $1-$2 per tier. The 2001 season produced the highest effort and catch in the history of the program. Program components that attempt to make substantial increases in catch need to provide incentives for the more successful anglers. These incentives produce the largest impact on catch for the money.

We have many anglers that fish for recreation and the hope of catching a few reward size fish. It takes many more of these anglers to increase catch substantially than does providing monetary stimulants to the consistently effective anglers. That is the whole basis of the tiered reward system.

Promotion Costs: These funds are maintained by BPA and are used for newspaper advertisements announcing season openings, printing of brochures describing the program to distribute at registration stations and sporting goods stores. If the promotion budget were diverted to the reward fund, it would allow raising the rewards by about 30 cents per fish. We do not feel this amount to be substantial enough to make an appreciable difference in fishing effort. We have made adjustments in the rewards of whole dollars only. The program needs to be announced and explained each year to promote new anglers to replace those that leave the program and to give all anglers who may wish to help save salmon an opportunity to learn about the program. Brochures are also sent to travelers and others out of the area that inquire about the program.

A subcontract for an economist to further evaluate these program components can be included in the FY 2003 contract, partially using savings realized from eliminating dam angling and gill net fisheries. Economic evaluation of the entire program was included in the Hankin and Richards (2000) report. Again, the ISRP calls for little in the way of economic evaluations of other projects.

Additionally, we note that in the two years since the review, the catch per unit effort has dropped significantly, especially in site specific and dam fishing but also the entire program. The total numbers, size, and biomass of the program seems to have dropped by more than 50% since implementation in 1991, by the programs own numbers.

CPUE in the dam angling and site specific fisheries actually increased in 2001 from previous years; however, overall contribution to the program has been minimal. CPUE decreased in 2002; therefore, these fisheries will be eliminated.

As noted previously, and as pointed out by Hankin and Richards (2000), catches would be expected to be greatest in the first few years of program operation and to thereafter decline to lower but eventually stable levels. Sport reward catch in 2001 (> 250 mm only) equaled that of 1991 and was approximately 80% of the entire 1991 catch. Sport reward catch in 2001 was approximately 77% of the highest annual catch observed (1995).

As noted previously, the primary direct evaluation tool for the program is exploitation, not numbers of fish caught. Exploitation from 1999-2001 in the sport reward fishery averaged 13.5%, higher than the average of 11.7% from 1991-98. Exploitation in 2002 will likely be around 12%.

CPUE and catch in the sport reward fishery have not consistently decreased, much less decreased 50% since 1991. Table 2 summarizes catch and CPUE in the sport reward fishery since 1991. These numbers reflect catch of fish >250 mm only. CPUE actually peaked in the low catch year of 1998. CPUE in both 2000 and 2001 was approximately 85% that in 1991. These CPUE estimates are actually biased low because of the exclusion of fish 200-250 mm. Catch of these fish undoubtedly contributed to the increased effort observed in 2000 and 2001. Including these fish increases CPUE to approximately 6.2 fish per angler trip in both 2000 and 2001.

Table 3 summarizes sport-reward catch in terms of biomass. Data for 2000 and 2001 is given for fish >250 mm and for smaller fish. After reaching near historic lows in 1998 and 1999, biomass removed increased during 2001 and 2002. Biomass removed in 2002 was similar to that of 1991 and 1996, and was approximately 75% that of the record established in 1992. Even when fish <250 mm are excluded, biomass removed in 2001 was 77% that of 1991, and 62% that of 1992.

The program does not seem to have presented a downward modified smolt consumption index related to the smaller 200 mm fish now considered a substantial part of the harvest… the reality is that actual smolts saved by removing non-predatory northern pikeminnow cannot be "counted twice", once for what they might have eaten this year and what they might have consumed next year.

This last statement is actually incorrect. Each pikeminnow has a lifetime of consumption ahead of it. The magnitude of that consumption depends on (1) current age of the fish, (2) the relationship between age and consumption, and (3) the chances of living to each subsequent age. Consumption of salmonids increases with age of pikeminnow from about age 4 until they are very old (teens); however, the chance of living from year to year is only about 75% (natural mortality) making the likelihood of reaching prime consumption age minimal, unless the particular fish is already almost there. This potential predation is nicely illustrated in Rieman and Beamesderfer (1990). The key benefit of removing pikeminnow is the removal of that lifetime potential predation.

All that aside, no smolts saved are "counted twice". Estimates of savings result from the model, which estimates relative predation based on size structure of the population. In fact, the model slightly underestimates benefits, because in the model, fish removed in year n do not affect the size structure until the beginning of year n+1.

Table 2. CPUE in the sport reward fishery.

Year	Catch	Effort (angler trips)	Catch per angler trip
1991	153508	33566	4.6
1992	186095	88494	2.1
1993	104536	34879	3.0
1994	129384	40783	3.2
1995	199788	62704	3.2
1996	157230		
1997	119047	27133	4.4
1998	108372	21823	5.0
1999	114687	25905	4.4
2000	121519	30320	4.0
2001	153577	39091	3.9

Table 3. Biomass of northern pikeminnow removed annually.

Year	Catch	Mean length (FL)	Mean weight (g)	Biomass removed (millions of grams)
1991	153508	345	492	75.5
1992	186095	348	505	94.0
1993	104536	340	471	49.2
1994	129384	341	475	61.5
1995	199788	330	431	86.1
1996	157230	336	455	71.5
1997	119047	333	443	52.7
1998	108372	330	431	46.7
1999	114687	330	431	49.4
2000	121519 + 67,945	320	393	57.1 (47.8 + 9.3)
2001	153577 + 87,317	316	378	70.1 (58.1 + 12.0)

Estimates of the numbers of smolts saved are further underestimated because absolutely no savings have yet been credited for removing the smaller fish. Although not yet major predators of salmonids, some savings do occur. The model will be adjusted to accommodate these smaller fish in FY 2003.

Early feasibility analysis indicated the potential for commercial "rough fish" harvest and processing into minced product. However, implementation of a commercial fishery (other than the tribal long-line experiment) was precluded by policy decisions at ODFW and WDFW to use northern pikeminnow as a recreational fishing opportunity to compensate for diminished salmon opportunities.

Commercial long-lining below Bonneville Dam was evaluated in 1992, and found not to be feasible. Other gears and methods, such as floating trap nets, purse seining, electrofishing, and lure trolling were tested from 1992 through 1994 and considered unacceptable because of low catch rates, high incidental catch, or a combination of both.

Catch targets are cited for the sport-reward fishery, but none are cited for the dam angling fishery or the site-specific fishery…The proponents should provide an economic and efficiency evaluation of these fisheries with justification for their continuation.

Dam angling and site specific fisheries will be terminated effective 2003.

Past recommendations from the ISRP indicated that future submissions of this program should endeavor to better describe the budget for the sport reward system and the $1 million in personnel costs.

WDFW Budget Summary:

Salaries and Benefits- $727,470: This covers a full time Project Leader, a full time Biologist, and a 9-month Scientific Technician at Vancouver; a full time Biologist at Pasco; and 35 seasonal Scientific Technicians that have duty stations at Rainier, Vancouver, North Bonneville, Dallesport, Pasco, and Clarkston. These technicians operate 20 stations, 7 days a week for about 5 ½ months. Hours of operation vary according to station, but about half are open 8 hours and the remainder are open 2 to 4 hours. They are located from Cathlamet to nearly Priest Rapids Dam on the Columbia River, and up to to Clarkston on the Snake River, which represents a distance of over 400 miles

Travel- $101,189: Transportation costs are for 17 vehicles leased from General Services Administration and mileage of nearly 200,000 miles per year. Vehicles include utility vans for the stations, pickups, mini-vans, and a 1-ton stake truck used for collecting and hauling fish to a rendering facility.

Services and Supplies- $121,851: About $40,000 is budgeted for supplies. Services amount to $82,000 for office space (2 year round and 4 seasonal facilities), 4 cold storage units for temporary fish storage, fish rendering, phone services, postal services, and personnel training.

Indirect Costs- $239,655: This is the mandatory agency overhead cost.

PSMFC Budget Summary:

Salaries and Benefits- $121,332: This includes ¼ time for a Program Administrator, 1/4 time for a Data Technician, and some time for a Computer Programmer and part-time data entry help.

Travel- $1,257.

Services and Supplies- $43,954: Charges are primarily for data processing services, postage, and office space.

Indirect Costs- $26,384.

Rewards- $1,000,000.

ODFW Budget Summary:

Salaries and Benefits- $214,983: This includes ¼ time for a Program Leader, ½ time for a Project Leader, a full time biologist, ½ time for a project technician, and six seasonal workers for 3-5 months each. During most years, work includes sampling throughout the lower Columbia and Snake rivers to collect, tag and release northern pikeminnow, collecting scales or other samples from released fish, monitoring capture of tagged fish to calculate exploitation rates, entering exploitation information into the model to estimate reductions in predation, entering and summarizing data and preparing reports, examining scales or other samples, keeping boats and sampling gear operational, coordinating activities with cooperators and other agencies, and preparing proposals, statements of work, ESA and NEPA documents.

Travel- $36,870: Transportation costs or mostly for per diem for crew members sampling throughout the lower Columbia and Snake rivers, and for trucks used to haul boats.

Services and Supplies- $36,550: Approximately 2/3 of this amount is dedicated to boat operations, maintenance, and repair.

Indirect Costs- $67,198.

A concern about current work is whether investigators are continuing to do verification on the captured pikeminnows to confirm assumptions of predation rates on salmon. There are some questions that the "live" smolt index is accurate today given the new size removal index and the declining number caught per effort.

As stated in the proposal, field sampling to evaluate response of northern pikeminnow in terms of consumption, growth, etc., occurs every 3-5 years now. The next year for this sampling will be 2004. As stated previously, catch per effort has not been declining; furthermore, biological benefits of the program do not rely on CPUE, but on annual exploitation, which is definitely not declining.

Another previous concern not addressed was the request to address alternative approaches and their evaluation…Some previous comments calling for new approaches include the following:

Due to the high annual cost of this project, reviewers suggest that it may be time to creatively re-think how this program could be delivered. Given that northern pikeminnow are long-lived and slow growing, and that the number of northern pikeminnow that are being removed appears to be declining in recent years, a cost/benefit analysis should be conducted to assess alternative predator control strategies. Running the predator control program every second or third year may be equally effective; or less expensive designs could be developed for a variety of strategies, including running the program in alternate years but offering increased incentives for fishing (e.g. double or higher the current reward offered for each fish).

As stated previously, the number of northern pikeminnow being removed is not declining; and, biological benefits of the program do not rely on CPUE, but on annual exploitation, which is definitely not declining.

A quick assessment of running the program every 2-3 years shows that biological benefits are substantially reduced (Table 4). We used our model to estimate biological benefits under three scenarios: (1) assuming mean 1996-2001 sport reward exploitation rates each year from 1990-2002 (with no dam angling or site specific exploitation), (2) assuming mean 1996-2001 sport

Table 4. Predation as a percentage of pre-program predation under 3 management scenarios.

Scenario	2000	2001	2002	2003
1	71.5	71.5	71.5	71.5
2	84.9	80.9	84.9	80.9
3	78.9	73.7	78.9	73.7

reward exploitation rates in alternating years from 1990-2002, with no program in other years, and (3) using the maximum observed 1996-2001 exploitation rate in alternating years from 1990-2002, with no program in other years. Benefits are given in terms of predation as a percentage of predation prior to 1990:

Results indicate that running the model from 1990-2002 was long enough for benefits to stabilize. Scenario 2 may be the worst-case for limiting the program to alternate years (although any alternating system may result in the loss of some good anglers, regardless of the incentives). This scenario assumes that even with increased incentives in alternate years, exploitation will not increase over observed levels. Scenario 3 may be best-case for running the program in alternate years. Even with increased incentives, it is unlikely that annual exploitation in alternate years will consistently exceed the highest exploitation rate observed to date. Annual predation under this scenario averages 76.3% of the potential maximum. Reduction in predation is approximately 83% of that using observed values. It should be noted that costs would not be reduced by 50% should the program be limited to alternate years. Starting and stopping the program would result in some loss of efficiency. Given the NMFS Biological Opinion requirements, reduction in biological benefits may not justify the decrease in cost. Although not shown in the table, running the program every third year (with maximum exploitation) would result in annual predation averaging 80.4% of the potential maximum. Reduction in predation would therefore average about 69% of that using observed values.

Comparison of costs per returning adult salmonids to other programs.

Few if any other BPA-funded programs offer a detailed-enough evaluation to make this comparison.

Page 2 Para 2 and 4. Lab results show that northern pikeminnow prefer dead smolts to live ones. Yet evidence provided suggests that only 22% of the prey were dead experimental fish in stomachs sampled. How did the researchers know whether some of the unmarked stomach contents were not from dead but unmarked fish?

As stated in the proposal, the field experiments included releases into the tailrace of dead and live marked fish. Only marked fish were used in the analysis.

Considering that turbine mortality is estimated at about 10%, cumulative numbers suggest that even if half of juveniles are transported, there are over 60 million stunned or killed smolts in the river below the dams. What percent of these are eaten by other fish? By northern pikeminnow? Can we assume that the 1-2 million adult northern pikeminnows (calculated by dividing number harvested by % of the population given on Table Page 9) are consuming all of these? Do we have consumption rates? This would help characterize total losses in the system from northern

pikeminnow and other predators and help determine how much cropping of predators would be effective in the future.

Our best estimate is that an unmanaged northern pikeminnow population will consume about 8% of the available salmonids. This would be about 5 million of the 60 million. Past work indicated that northern pikeminnow were responsible for about 78% of the total predation by resident fish, leaving about 1.4 million for smallmouth bass and walleye (plus an unknown amount for channel catfish and other unstudied species).

Yes, we have information on consumption rates. Vigg et al. (1991) determined that northern pikeminnow consumed an average of 0.68 smolts per day in McNary Dam tailrace, and 0.13 in the remainder of John Day Reservoir. Ward et al. (1995) calculated consumption indices, which were highly correlated with direct estimates of consumption rate. Consumption varied widely over areas and seasons. Zimmerman and Ward (1999) updated information from Ward et al. (1995).

All this information is used in our model to estimate benefits of the program in terms of reduction in predation. We can already estimate the effects of increases or decreases in exploitation on predation by northern pikeminnow. Although we have substantial information on other predators, specific modeling of the effects of removals of these fish is beyond the scope of the program.

What are the current regulations on the take of smallmouth bass, channel catfish, and walleye. If these have limits, and they are exotic predators of smolts, why don't we lift all restrictions on their sport harvest? Are harvests on these species restricted?

These species are considered game fish in Oregon and Washington, and therefore limits are in place. Oregon broached the subject of removing all regulations for these species a few years ago and was soundly chastised for even considering it. Such management decisions are beyond the scope of the program.

Lifting of limits would be cosmetic and relatively ineffective at reducing predation. Few anglers can catch a limit anyway, and those that can often catch and release most of their fish (especially smallmouth bass and walleye). Many anglers are more willing to remove a former "non-game" species such as northern pikeminnow. Furthermore, northern pikeminnow removal is especially effective because both vulnerability to angling and consumption of juvenile salmonids increases with size. This is not true for other predators.

Inflation is one factor, but the northern pikeminnow program is now paying about double the rate to capture fish in 2000-01 compared to 1990? What is the CPUE in 1990 versus 2000.

Using the Council's favorite estimate of 3.4% for inflation, a $3 reward in 1991 would be about $4.50 now. The average payment per fish each year from 1999 through 2001 was $5.21; however, this includes payment of $50 for each tagged fish. Tag payments were not part of the reward system until 1993. The payment of $50 for tagged fish ensures the reporting of virtually all tagged removed. CPUE's were discussed previously.

What is the cost to capture 500 NPM at dams and at site-specific locations?

Dam angling and site specific fisheries are being terminated.

Does the northern pikeminnow program corroborate the actual location of fish harvested? What would be the consequence of inaccurate data?

Anglers are interviewed to determine angling location. Responses to interview questions, combined with location of the check station help to corroborate location of fish harvested. Suspicious anglers are sometimes observed on subsequent fishing days, and Police have been informed of suspected wrong doing. Arrests have been made.

Consequence of inaccurate data is primarily to cost-effectiveness. Reward payments for fish caught outside program boundaries add to program costs. Biological consequences are minimal. As stated previously, the primary direct evaluation tool is exploitation, not numbers of fish caught. Although information on reservoir-specific exploitation is nice, program-wide exploitation is the most important result. Actually, even within-reservoir information is not affected because we know in which reservoir every fish was tagged, and we know that movement among reservoirs is minimal. Fish recorded as being caught in a different reservoir than tagged are either eliminated from analyses of reservoir-specific exploitation (but not system-wide), or, exploitation is characterized as "exploitation of fish tagged in reservoir x".

Assuming that dead smolts will feed existing northern pikeminnow as well as live ones, has any attempt been made to artificially feed the northern pikeminnow with dead fish during the juvenile salmon migration? The concept would be to bait an area, like a tailrace with an abundance of dead fish to sate the predators. Would this have the benefit of attracting larger numbers of northern pikeminnow to a site-specific location and make them more vulnerable to harvest. How are the captive northern pikeminnow used. Can they be cut up and fed to northern pikeminnow? Will northern pikeminnow eat flesh of other northern pikeminnow? If so, these could be stockpiled to bait northern pikeminnow.

No such attempt has been made, although it has been discussed. This is beyond the scope of the current program. It may possibly make northern pikeminnow more vulnerable. It may also provide pikeminnow and other predators with more food, and increase their growth rate and survival.

Captive northern pikeminnow are currently rendered to fertilizer.

Small northern pikeminnow have been found in the digestive tracts of large northern pikeminnow; however, this been rare. Whether northern pikeminnow will eat other northern pikeminnow as cut bait is unknown.

REFERENCES

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Bonneville Power Administration
FY 2003 Provincial Project Review

Mainstem & System-wide Province

First, read the help documents

Please carefully read the **Proposal Development and Selection Criteria** document, which contains information on the review process, and the **instructions** document, which provides field- and content-related help for the form. If you are missing either document, please visit http://www.cbfwa.org/reviewforms/systemwide/default.htm or call 503-229-0191.

Important notes

- This form is to submit projects or proposals for BPA FY 2003-5 funding for Mainstem & System-wide Province only.
- This document is only available for Word97/Word2000/WordXP. Do not save down to older formats, or use in another word processor such as WordPerfect, even if it supports Word conversions. You will lose the auto-calculations, and won't be able to add or delete table rows. You may also risk not being able to re-open the document.
- Some help text is included as "hidden" comments on the data form, which is displayed by resting the mouse cursor over any yellow text (usually section headings or field names)
- Use these keystroke macros to assist you in the form. If the macros aren't available (nothing happens when you press these keys), then you need to enable macros in Word: In Word97, close the proposal, then open again and choose Enable macros if prompted. In Word2000/XP, close the proposal, choose Tools, Macro, Security, and set the security level to medium. Re-open the proposal and choose Enable macros when prompted.

To	Press
insert rows in tables	Alt-R and you'll be asked whether to insert a row at the current position or add one to the end of the table
delete rows in tables	Alt-D at the row you want to delete
calculate budget totals	Alt-C either periodically, or when you're done with the form
Spellcheck	Alt-S

Steps to complete the form

1) First, read the help documents (get them at http://www.cbfwa.org/reviewforms/systemwide/default.htm)
2) There are two documents to this form:
   a) Part 1 (**blank_sys.doc)** consists of administrative and budgeting information. Your input is restricted to the grey fields.
   b) Part 2 (**narrative.doc)** allows you to describe your project at length, including maps, tables, graphics, etc.
3) Save this as something other than blank_sys.doc. Preferably, use the BPA 9-digit project number, like "198906200.doc" or if your project has no project number, the first few words of the title, like "RestoreFish.doc", and a proposal number will be assigned to you by BPA upon receipt of your proposal.
4) Your cursor is already in the first input field, Title of Project, so start typing

5) Fill in all fields (gray boxes) pressing Tab to advance from one field to the next
6) Press Alt-C when complete to calculate totals
7) Save document, then open **narrative.doc** to begin Part 2.
8) Please print the completed documents. Part 1 prints in landscape (sideways) orientation, Part 2 in portrait (regular).

Save the documents and then **email** your forms and any attachments to fwproposals@bpa.gov. **NOTE: BPA cannot receive e-mails larger than 5 MB.** Or mail paper and diskette(s) to:

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Attention: Cate Hanan - KEWB-4
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905 NE 11th Avenue
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9) Monitor the http://www.efw.bpa.gov/cgi-bin/FW/02MainstemSystemwide.cgi.website to verify your project funding request is received and posted correctly.

All projects must be received no later than 5:00pm PST on Monday, June 3, 2002.
No late proposals will be reviewed for FY 2003 funding.

PART 1 of 2. Administration and Budgeting

Section 1 of 10. General administrative information

Title of project
Northern Pikeminnow Management Program

BPA project number 199007700

Business name of agency, institution or organization requesting funding
Pacific States Marine Fisheries Commission

Business acronym (if appropriate) PSMFC

Proposal contact person or principal investigator:

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Manager of program authorizing this project Russell Porter

Location of the project

Latitude	Longitude	Description
		Columbia River from Cathlamet Washington upstream to Priest Rapids Dam; Snake River from mouth upstream to Hells Canyon Dam.

Target species

Northern pikeminnow (predation on juvenile salmonids)

Short description
Reduce predation on juvenile salmonids by implementing fisheries to harvest northern pikeminnow in the mainstem Columbia and Snake rivers. Monitor effects of fisheries on predation by northern pikeminnow and other resident fish.

RPAs. View guidance on proposal development and selection criteria named mainstem_systemwidecriteria.pdf, available as a link from the main proposal solicitation page. Indicate what, if any, ESA Biological Opinion action(s) will be met by the proposed project. Explain how and to what extent the project meets the ESA requirement.

NMFS and/or FWS Reasonable and Prudent Alternatives (RPA)

RPA Number	Description
100	Continuation and improvement of the Northern Pikeminnow Management Program is specifically listed as a component of RPA 100.

Information transfer

The expected outcomes of this project are (check one)
☒ quantitative ☐ qualitative ☐ indirect

Data generated by this project are (check one)
☒ primary ☐ derived ☐ indirect

Are there restrictions on the use of the data? (check one)
☒ none ☐ non-commercial use only
☐ educational use only ☐ requires prior approval
☐ sensitive ☐ proprietary, no public distribution

Where do the data reside (check one or more)?
Private/managed locally: ☒ printed ☒ electronic
Public access:
Printed at ☐ BPA ☒ Peer-reviewed journal or other
Internet at ☒ BPA ☐ StreamNet ☐ Fish Passage Center ☐ DART or other web address

In what other ways will information from this project be transferred or used?
In addition to annual reports and peer-review publications, findings are presented at symposia and conferences. A recent example (April 2002) is an overview of the program presented at the annual meeting of the Western Division of the American Fisheries Society.

Section 2 of 10. Past accomplishments

Year	Accomplishment
1993	Predation on juvenile salmonids by northern pikeminnow was indexed throughout the lower and mid Columbia River and the lower Snake River from 1990-93, with results confirming that significant losses of juvenile salmonids occurred throughout the basin.
1997	Predation indices from 1994-96 were lower than those from 1990-93, and estimates of annual predation by northern pikeminnow on juvenile salmonids had decreased to 75% (range 62-86%) of pre-program levels.
1999	Predation continued to remain lower than predation prior to implementation of the NPMP. Abundance of northern pikeminnow was lower in 1999 than mean abundance from 1994-1996. Predation was less than average predation from 1994-1996 at most locations.
1999	Sampling from 1990-96 and 1999 confirmed that compensation in predation, growth, or reproduction by surviving northern pikeminnow and other resident fish predators had not been detected.
1999	Eleven articles based on NPMP information published in peer-review journals from 1995-99.
2001	Fisheries for northern pikeminnow resulted in the removal of over 1.7 million northern pikeminnow >250 mm fork length throughout the lower Columbia and Snake rivers from 1991-2001, with annual exploitation averaging 12%.
2001	No trend of decreasing exploitation has been observed. Exploitation from 1999-2001 averaged approximately 13.5%.

Section 3 of 10. Relationships to other projects

Project #	Project title/description	Nature of relationship
199702600	Identify Marine Fish Predators of Salmon and Estimate Predation Rates	Complementary study of predation by marine fish
199702400	Avian Predation on Juvenile Salmonids in the Lower Columbia River	Complementary study of predation by birds

Section 4 of 10. Estimated budget for Planning & Design phase

Task-based estimated budget

Objective (1. text, 2. text...)	Task (a. text, b. text...)	Task duration in FYs	Estimated FY 03 cost	Subcon-tractor
				☐
				☐

Objective (1. text, 2. text...)	Task (a. text, b. text...)	Task duration in FYs	Estimated FY 03 cost	Subcon-tractor
				☐
				☐
		Total	$ 0	

Out year objective-based estimated 2004 - 2007 budget

Objective (1. text, 2. text...)	Starting FY	Ending FY	Estimated cost

Out year estimated budgets

	FY 2004	FY 2005	FY 2006	FY 2007
Total budget				

Section 5 of 10. Estimated budget for Construction/Implementation phase

Task-based estimated budget

Objective (1. text, 2. text...)	Task (a. text, b. text...)	Task duration in FYs	Estimated FY 03 cost	Subcon-tractor
				☐
				☐
				☐
				☐
		Total	$ 0	

Out year objective-based estimated 2004 - 2007 budget

Objective (1. text, 2. text...)	Starting FY	Ending FY	Estimated cost

Objective (1. text, 2. text...)	Starting FY	Ending FY	Estimated cost

Out year estimated budgets for construction/implementation phase

	FY 2004	FY 2005	FY 2006	FY 2007
Total budget				

Section 6 of 10. Estimated budget for Operation & Maintenance phase

Task-based estimated budget

Objective (1. text, 2. text...)	Task (a. text, b. text...)	Task duration in FYs	Estimated FY 03 cost	Subcon-tractor
1. Annually harvest 10-20% of northern pikeminnow >200 mm fork length in the lower Columbia and Snake rivers by implementing a public sport-reward fishery.	a. Implement the public sport-reward fishery for northern pikeminnow in the lower Columbia and Snake rivers.	Ongoing	1,278,425	☐
1.	b. Issue reward payments and prizes to qualifying anglers, and provide associated accounting, reporting, and problem resolution.	Ongoing - includes reward fund ($1,000,000).	1,094,009	☐
				☐
				☐
3. Coordinate implementation of the Northern Pikeminnow Management Program.	a. Guide the development of work statements, budgets, biological assessments, and reports.	Ongoing	47,005	☐
3.	b. Coordinate and guide program activities, respond to inquiries about the program, and provide status reports.	Ongoing	47,005	☐
3.	c. Provide contractual and fiscal oversight	Ongoing	47,004	☐

Objective (1. text, 2. text...)	Task (a. text, b. text...)	Task duration in FYs	Estimated FY 03 cost	Subcon-tractor
	for all components of the Northern Pikeminnow Management Program.			
	d. Economic evaluation of tiered reward system and promotion costs	FY 2003	20,000	☐
		Total	$2,533,448	

Out year objective-based estimated 2004 - 2007 budget

Objective (1. text, 2. text...)	Starting FY	Ending FY	Estimated cost
1. Annually harvest 10-20% of northern pikeminnow >200 mm fork length in the lower Columbia and Snake rivers by implementing a public sport-reward fishery.	2004	2007	10,352,082
3. Coordinate implementation of the Northern Pikeminnow Management Program.	2004	2007	1,022,856

Out year estimated budgets for operations & maintenance phase

	FY 2004	FY 2005	FY 2006	FY 2007
Total budget	$2,639,120	$2,771,076	$2,909,630	$3,055,112

Section 7 of 10. Estimated budget for Monitoring & Evaluation phase

Task-based estimated budget

Objective (1. text, 2. text...)	Task (a. text, b. text...)	Task duration in FYs	Estimated FY 03 cost	Subcon-tractor
2. Evaluate effectiveness of northern pikeminnow fisheries in reducing losses of juvenile salmonids to predation.	a. Monitor exploitation rates achieved by program fisheries.	Ongoing	266,701	☐
2.	b. Estimate effects of observed exploitation rates on predation by northern pikeminnow.	Ongoing	88,992	☐
	c. Monitor effects of observed	Ongoing; every	0	☐

Objective (1. text, 2. text...)	Task (a. text, b. text...)	Task duration in FYs	Estimated FY 03 cost	Subcon-tractor
	exploitation on population structure of and predation by northern pikeminnow, smallmouth bass, and walleye.	3-5 years. Next in 2004.		
				☐
		Total	$355,693	

Out year objective-based estimated 2004 - 2007 budget

Objective (1. text, 2. text...)	Starting FY	Ending FY	Estimated cost
4. Evaluate effectiveness of northern pikeminnow fisheries in reducing losses of juvenile salmonids to predation.	2004	2007	$1,732,000

Out year estimated budgets for monitoring & evaluation phase

	FY 2004	FY 2005	FY 2006	FY 2007
Total budget	$552,000	$392,000	$412,000	$433,000

Section 8 of 10. Estimated budget summary

Itemized estimated budget

Item	Note	FY 2003
Personnel	FTE:	846,527
Fringe benefits		217,259
Supplies, materials, non-expendable property		214,991
Travel		139,391
Indirect costs		365,973
Capital acquisitions or improvements (e.g. land, buildings, major equip. over $10,000)		
NEPA costs		

PIT tags @$2.25/ea	# of tags:	
Subcontractor	Economic evaluation	20,000
Other	Reward Fund ($1,000,000); Promotion (Direct by BPA - $85,000)	1,085,000
	Total BPA funding request	$2,889,141

Total estimated budget

Total FY 2003 project cost	$2,889,141
Amount anticipated from previously committed BPA funds (carryover)	- 0
Total FY 2003 budget request	$2,889,141
FY 2003 forecast from FY 2001	$3,645,950
% change from forecast	20.8% decrease

Reason for change in estimated budget
Increases in efficiency; elimination of dam-angling and gill-net fisheries; field sampling for Task 4c deferred from 2003 to 2004.

Reason for change in scope
No change in scope.

Cost sharing

Organization	Item or service provided	Amount ($)	Cash or in-kind?
			cash
			cash
			cash
			cash
	Total cost-share	$ 0	

Out year budget totals

	FY 2004	FY 2005	FY 2006	FY 2007
Planning & design phase	0	0	0	0
Construction/impl. phase	0	0	0	0
O & M phase	2,639,120	2,771,076	2,909,630	3,055,112
M & E phase	552,000	392,000	412,000	433,000
Total budget	$3,191,120	$3,163,076	$3,321,630	$3,488,112

Other budget explanation
Funding needed in FY 2004 is 11% greater than funding needed for FY 2003 because sampling for Task 4c (part of the evaluation of the NPMP) will occur in FY 2004. This sampling takes place once every 3-5 years.

Part 1 of 2 complete!

Press Alt-C to calculate totals on the document. If any totals don't match, you'll see a message.
Then save this document, and open "narrative.doc" to begin Part 2, which includes Sections 9-10.