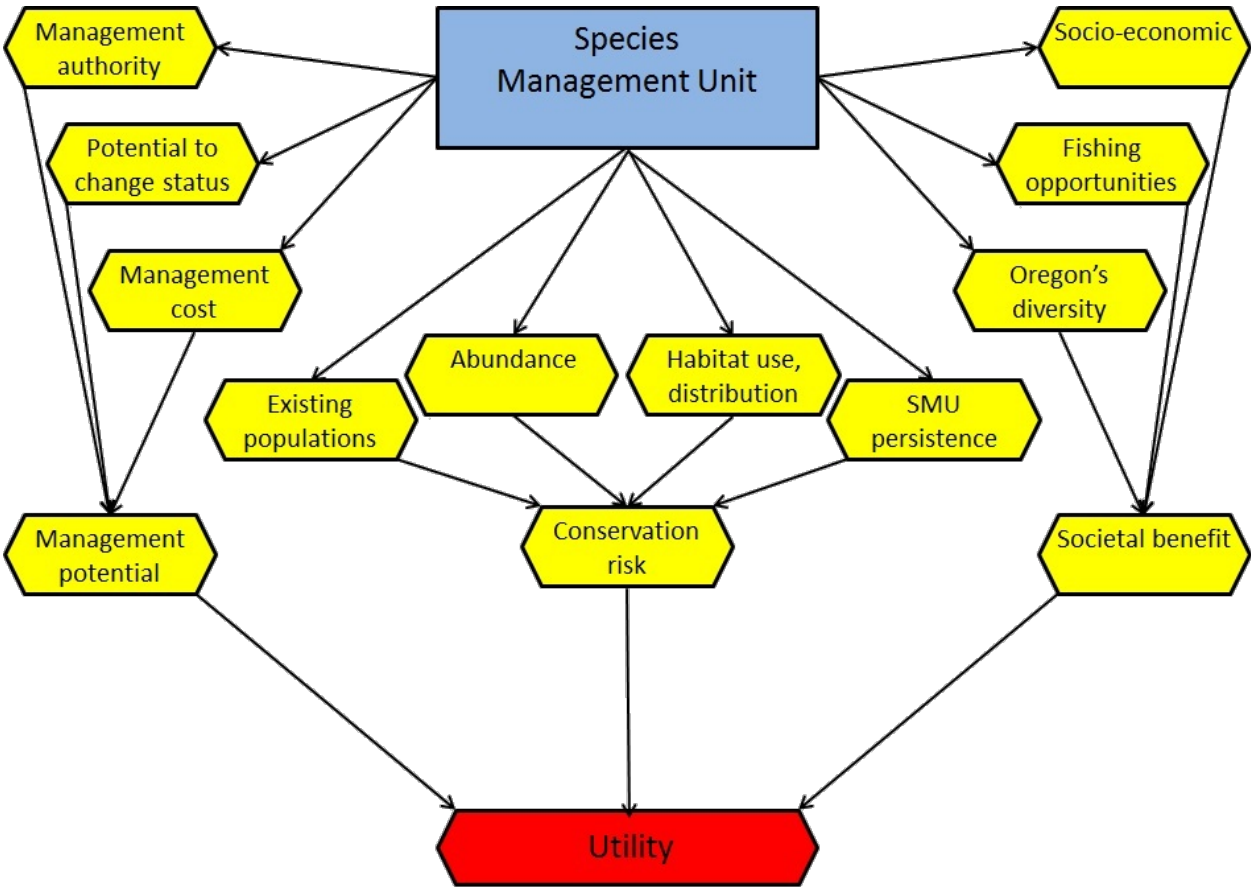
Native Trout Decision Support Model:
Summary Report



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2012

Introduction

The goal of the Oregon Department of Fish and Wildlife – Native Fish Investigations Program (ODFW – NFIP) is to promote the sustainable management of native fishes in Oregon. To achieve this goal, NFIP provides scientific information on the status, life history, genetics, and habitat needs for native fishes in Oregon. Specific objectives of the NFIP are 1) document the status of native fishes in Oregon, 2) document factors that may be limiting native fishes in Oregon, 3) evaluate management actions to address limiting factors for native fishes in Oregon, and 4) evaluate the effect of management actions on native fishes in Oregon.

Currently, NFIP has no method for determining the relative conservation and social value of potential research and management activities. Additionally, NFIP has no long-term strategy for addressing conservation, research, and management needs for native fishes in Oregon. Therefore, NFIP has been developing a strategic method for focusing research and management efforts for native trout in Oregon.

The first step in this process was to identify how ODFW staff wanted NFIP to prioritize research and management efforts. A survey was distributed to district staff on May 24, 2012 that allowed individuals to select one of three options for prioritizing research and management efforts. The options were:

1) NFIP solicits potential projects from district offices annually and prioritizes these for implementation.
2) NFIP develops (with district assistance) a priority list of species management units (SMUs) in the state based on factors such as conservation status, socio-economic value, ability to manage, etc. For the priority SMUs, NFIP (with district advice) develops a list of potential research or management actions to implement and evaluate.
3) NFIP takes a topic based approach (based on district input – majority rules) and addresses research and management topics that may be applicable beyond single districts or SMUs.

The results of this survey indicated that district staff were generally supportive of option 2 [i.e., allowing NFIP to develop a priority list of SMUs (groups of populations from a common geographic area that share similar life history, genetic, and ecological characteristics) in the state and consulting with district staff to develop research or management actions]. Therefore, NFIP began developing a decision support model (DSM) that is used to provide a priority rank order of inland trout SMUs in Oregon based on the management potential, conservation risk, and societal benefits associated with those SMUs. The aim of this summary is to outline the general process used to develop this DSM and to report the current rank order of inland trout SMUs in Oregon.

Methods

NFIP included 24 inland trout SMUs in the DSM; these SMUs were generally identified from the 2005 Oregon Native Fish Status Report [Oregon Department of Fish and Wildlife (2005a, 2005b)]. A utility score was calculated for each SMU based on three proximal criteria (management potential, conservation risk, and societal benefit); utility scores were calculated based on a weighting of 40% management potential, 40% conservation risk, and 20% societal benefit. Each proximal criterion was calculated from multiple distal criteria (Figure 1). Distal criteria were defined and weighted (Table 1) and scored by NFIP staff based on information obtained from peer-reviewed literature, agency reports, and expert opinion. Initial scores were sent to district staff, other ODFW personnel, and partners in other agencies (Appendix A) to provide feedback on NFIP weighting and scoring. Weighting and scoring were adjusted where appropriate after obtaining feedback from ODFW staff and others. Finalized scores were entered into a decision network and analyzed using Netica software.

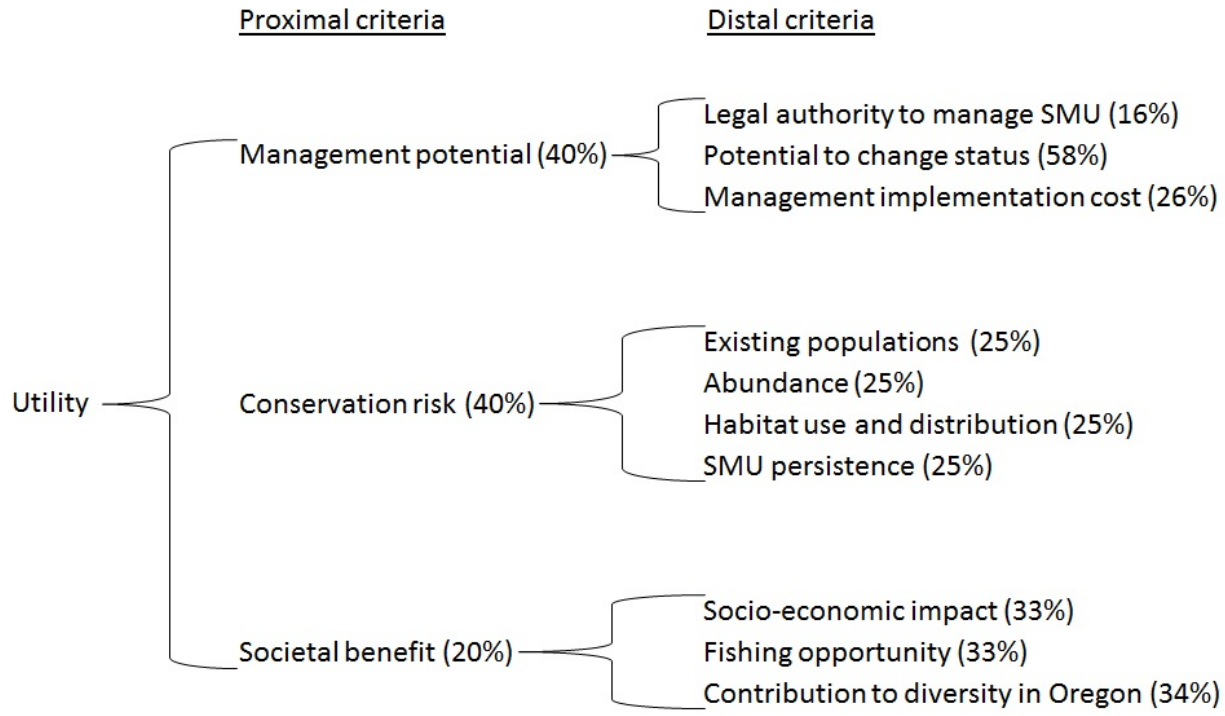

Figure 1. Proximal and distal criteria (and percent weights) used to calculate a utility score for each SMU..

Results

Within the proximal criteria management potential, the distal criteria potential to change status was weighted higher than management implementation cost and legal authority to manage SMU. This weighting is an attempt to prioritize SMUs that have the greatest potential for increased distribution or abundance following research and management. Within the proximal criteria conservation risk, the four distal criteria were weighted equally, and within the proximal criteria societal benefit, the three distal criteria were weighted about equally (Table 1; Figure 1). The proximal criteria management potential and conservation risk were each given a weight of 40% when calculating the utility score for each SMU. This weighting was selected to prioritize SMUs that had the greatest conservation risk, but that also showed the greatest potential to benefit from research or management. The current SMU priority ranking and DSM scores are presented in Table 2.

Table 1. Proximal and distal criteria (and weightings), categories for each distal criteria, and category definitions. Actions that were considered to potentially benefit an SMU were those that would likely have a positive impact on the status (e.g., increase the distribution and/or abundance) of the species within the SMU.

Proximal criteria	Distal criteria	Category	Definition
Management potential (40%)	Legal authority to manage SMU (16%)	Complete	Issues that ODFW has complete control over.
		Partial	Issues that willing partners have control over.
		None	Issues that neither ODFW nor willing partners have control over.
	Potential to change status (58%)	High	Research or management has a high likelihood of benefitting the SMU.
		Moderate	Research or management has a moderate likelihood of benefitting the SMU.
		Low	Research or management has a low likelihood of benefitting the SMU.
	Management implementation cost (26%)	Low	Management costs of less than about $50,000 to benefit the SMU.
		Moderate	Management costs of about $50,000 to $500,000 to benefit the SMU.
		High	Management costs of greater than about $500,000 to benefit the SMU.
Conservation risk (40%)	Existing populations (25%)		Proportion of historic populations that are extant (ODFW 2005b).
	Abundance (25%)		Proportion of populations that meet a specified abundance (ODFW 2005b).
	Habitat use and distribution (25%)		Proportion of populations that meet a specified distribution (ODFW 2005b).
	SMU persistence (25%)	Poor	Declining trend in abundance over the last 5 to 20 years.
		Unknown	Data unavailable to determine trend.
		Good	Stable or positive trend in abundance over the last 5 to 20 years.
Societal benefit (20%)	Socio-economic impact (33%)	Positive	Identified or perceived positive socio-economic impact.
		Neutral	No known positive or negative socio-economic impact.
		Negative	Identified or perceived negative socio-economic impact.
	Fishing opportunity (33%)	Positive	Research or management may result in new fishing opportunities.
		Neutral	Research or management likely will not change fishing opportunities.
		Negative	Research or management may result in loss of fishing opportunities.
	Contribution to Oregon's diversity (34%)	High	Unique species, subspecies, behavior, life-history, etc.
		Medium	Uncommon species, subspecies, behavior, life-history, etc.
		Low	Common species, subspecies, behavior, life-history, etc.

Table 2. Species management unit (SMU), priority ranking, and DSM score for 24 inland trout SMUs in Oregon.

Species Management Unit	Priority ranking	Score
Quinn River Lahontan cutthroat trout	1	63.83
Odell Lake bull trout	2	63.07
Hood River bull trout	3	58.32
Westslope cutthroat trout	4	57.10
Willamette bull trout	5	56.28
Coyote Lake Lahontan cutthroat trout	6	54.21
Upper Willamette redside	7	53.83
John Day bull trout	8	52.48
Klamath bull trout	9	49.60
Deschutes redband trout	10	47.43
Umatilla bull trout	11	47.01
Hells Canyon bull trout	12	44.92
Malheur bull trout	13	44.87
Upper Klamath Basin redband trout	14	42.37
Deschutes bull trout	15	41.95
Catlow Valley redband trout	16	41.90
Imnaha bull trout	17	38.84
Malheur Lakes redband trout	18	38.21
Fort Rock redband trout	19	38.10
Chewaucan redband trout	20	37.85
Goose Lake redband trout	21	37.85
Grande Ronde bull trout	22	35.90
Warner Lakes redband trout	23	34.95
Walla Walla bull trout	24	27.02

Future Activities

NFIP will prepare a full report outlining the process summarized in this document. NFIP will also disseminate this information on its website (http://oregonstate.edu/dept/ODFW/NativeFish/Index.htm). The DSM developed by NFIP, and its metadata, will serve as a strategic framework for identification of priority focal SMUs in the future. This model will be updated at least biennially to integrate emerging information and societal values.

NFIP will work with district staff to identify research needs within SMUs that were ranked high by the DSM. High ranking SMUs that currently have ongoing research and management may be omitted from consideration following discussions with district staff. NFIP will prioritize research and management projects that are outcome focused (i.e., those that have clear objectives and those that are committed to management implementation based on research results).

References

Dale, C., B. Hooton, and W. Tinniswood. 2012. Klamath watershed fish district: September 2012. Report of Oregon Department of Fish and Wildlife.

Miller, S.A., S.E. Jacobs, S.L. Gunckel, and S. Richardson. 2010. Evaluation of a sampling approach to monitor the status of Great Basin redband trout in southeastern Oregon. Report of Oregon Department of Fish and Wildlife.

Oregon Department of Fish and Wildlife. 2005a. 2005 Oregon native fish status report: volume I, species management unit summaries. Report of Oregon Department of Fish and Wildlife.

Oregon Department of Fish and Wildlife. 2005b. 2005 Oregon native fish status report: volume II, assessment methods & population results. Report of Oregon Department of Fish and Wildlife.

Oregon Department of Fish and Wildlife. 2012. 2012 Oregon sport fishing regulations. Oregon Department of Fish and Wildlife.

Starcevich S. J., P. J. Howell, S.E Jacobs, P. M. Sankovich. 2012. Seasonal movement and distribution of fluvial adult bull trout in selected watersheds in the mid-Columbia River and Snake River Basins. PLoS ONE 7(5): e37257. doi:10.1371/journal.pone.0037257.

Starcevich, S.J. and S.E. Jacobs. 2010. Abundance, life history, and distribution of bull trout in the Hood River basin: a summary of findings from 2006-2009. Oregon Department of Fish and Wildlife, Information Report, Number 2010-01. Corvallis, Oregon.

U.S. Fish and Wildlife Service. 2002. Chapter 2, Klamath River Recovery Unit, Oregon. 82 p. *In*: U.S. Fish and Wildlife Service. Bull Trout (*Salvelinus confluentus*) Draft Recovery Plan. Portland, Oregon.

U.S. Fish and Wildlife Service. 2002. Chapter 5, Odell Lake Recovery Unit, Oregon. 96 p. *In*: U.S. Fish and Wildlife Service. Bull Trout (*Salvelinus confluentus*) Draft Recovery Plan. Portland, Oregon.

U.S. Fish and Wildlife Service. 2002. Chapter 6, Hood River Recovery Unit, Oregon. 66 p. *In*: U.S. Fish and Wildlife Service. Bull Trout (*Salvelinus confluentus*) Draft Recovery Plan. Portland, Oregon.

U.S. Fish and Wildlife Service. 2002. Chapter 7, Deschutes River Recovery Unit, Oregon. 62 p. *In*: U.S. Fish and Wildlife Service. Bull Trout (*Salvelinus confluentus*) Draft Recovery Plan. Portland, Oregon.

U.S. Fish and Wildlife Service. 2002. Chapter 8, Odell Lake Recovery Unit, Oregon. 53 p. *In*: U.S. Fish and Wildlife Service. Bull Trout (*Salvelinus confluentus*) Draft Recovery Plan. Portland, Oregon.

U.S. Fish and Wildlife Service. 2002. Chapter 9, John Day River Recovery Unit, Oregon. 82 p. *In*: U.S. Fish and Wildlife Service. Bull Trout (*Salvelinus confluentus*) Draft Recovery Plan. Portland, Oregon.

U.S. Fish and Wildlife Service. 2002. Chapter 10, Umatilla-Walla Walla Rivers Recovery Unit, Oregon. 153 p. *In*: U.S. Fish and Wildlife Service. Bull Trout (*Salvelinus confluentus*) Draft Recovery Plan. Portland, Oregon.

U.S. Fish and Wildlife Service. 2002. Chapter 11, Imnaha-Snake Rivers Recovery Unit, Oregon. 82 p. *In*: U.S. Fish and Wildlife Service. Bull Trout (*Salvelinus confluentus*) Draft Recovery Plan. Portland, Oregon.

U.S. Fish and Wildlife Service. 2002. Chapter 12, Grande Ronde River Recovery Unit, Oregon. 86 p. *In*: U.S. Fish and Wildlife Service. Bull Trout (*Salvelinus confluentus*) Draft Recovery Plan. Portland, Oregon.

U.S. Fish and Wildlife Service. 2002. Chapter 13, Hells Canyon Complex Recovery Unit, Oregon. 81 p. *In*: U.S. Fish and Wildlife Service. Bull Trout (*Salvelinus confluentus*) Draft Recovery Plan. Portland, Oregon.

U.S. Fish and Wildlife Service. 2002. Chapter 14, Malheur River Recovery Unit, Oregon. 71 p. *In*: U.S. Fish and Wildlife Service. Bull Trout (*Salvelinus confluentus*) Draft Recovery Plan. Portland, Oregon.

Appendix A: Personal Communications

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