

DEFINITION OF CONSERVATION UNITS UNDER THE RESOURCE MANAGEMENT GUIDELINES

BACKGROUND

The three principles outlined in the most recent version of the Wild Salmon Policy are:

Principle 1: Conserve wild salmon by maintaining diversity of local populations and their habitats.

Principle 2: Acknowledge and protect the key role that wild salmon play in their ecosystem.

Principle 3: Establish operational guidelines consistent with best practices in risk management for carrying out harvest, habitat, and fish cultivation activities.

Principles 1 and 2 are simply general statements of intent, and without further elaboration they have little operational value. This is explicitly acknowledged by Principle 3, which calls for the development of operational guidelines.

The Department has established working groups to develop Resource Management, Resource Enhancement, and Habitat & Aquaculture operational guidelines. A number of profoundly important issues have surfaced within the various working groups. It may be prudent to take stock in order to determine the best path to proceed. The focus of attention here concerns conservation units being examined in the Resource Management Guidelines.

CONSERVATION UNITS

Salmon species are comprised of hundreds, or potentially thousands, of local populations. This raises the question, in pursuing Principles 1 and 2, how many local populations should be “maintained” and therefore directly managed and conserved? The answer to this question has important social, economic and management implications. While there is always some degree of conservation benefit in maintaining every wild salmon population, the social and economic costs may be prohibitive from a societal perspective.

The most recent version of the WSP provides only very broad guidance with respect to this issue. Specifically, the draft policy states that wild salmon will be managed and conserved as aggregates of local populations called conservation units. Conservation units are defined as a group of one or more local populations that share a common genetic lineage and can be managed effectively as a unit by virtue of their common productivity and vulnerability to existing fisheries. The most recent version of the WSP does not take a position on the most appropriate number of conservation units, however the last publicly issued draft WSP document states that there could be up to 50 conservation units for all salmon species.

The most recent *draft* document of the Resource Management working group examines the issue of operationalizing the conservation unit concept. The working group’s report outlines a process for determining the number of salmon populations to be actively conserved and managed, and states that work involved in determining conservation units for Pacific salmon species is presently well advanced and will be reviewed by PSARC

over the next several months. The review process includes provision for participation by outside experts and other interested parties including First Nations and stakeholders. An initial listing of conservation units will be finalized by year-end 2003.

The Department's position on conservation units is important for at least two reasons. First, a significant increase in the number of conservation units will have substantial economic, management and social implications. Second, COSEWIC's recent decisions to list Sakinaw Lake and Cultus Lake sockeye salmon as endangered, makes it all the more important that the Department develops a considered approach to conservation units.

In light of the importance of conservation unit determination to salmon management (and the possible implications for rockfish and other species), the following section discusses a number of conservation unit issues.

ISSUES CONCERNING CONSERVATION UNITS

Are the Number of Conservation Units Strictly a Science Issue?

In addressing the question of how much genetic diversity and population structure should be maintained (i.e., how many conservation units should be actively conserved), the current version of the WSP states that:

There is no "correct" answer to the question of precisely how much biological diversity and population structure should be maintained or can be lost to provide a long-term future for salmon. Scientific estimates – including uncertainties associated with them – are only part of the argument. Society must decide what degree of biological security would be desirable and affordable if it could be achieved, i.e., the desired probability of survival or extinction of natural populations, over what time and what area, and at what cost.

This perspective is echoed elsewhere. A recent paper¹ concerning conservation units for Atlantic salmon differentiates between strictly biologically determined conservation units (called evolutionary significant units) and operational conservational units, stating that:

Decisions about conservation will rarely be based solely on biological information. Social, ethical, legal, and economic issues will also determine the conservation effort. In many cultures, people are willing to place only a certain economic value on conservation while in others the economic resources simply do not exist for conservation... Since the goal is to ensure resources for humans, social, ethical, legal and economic issues (summarized for simplicity as socio-economic issues) will play a major role in deciding the operational conservational unit (OCU).

...

The OCU [operational conservation unit] is the unit of conservation that results from the interplay between biological requirements and socio-economic issues. The biological requirements are largely found within the ESU [evolutionary significant unit]. The OCU therefore reflects the ESU and its interaction with the socio-economic issues. In some cases, sufficient economic issues and desire may exist within society to preserve all ESUs and thus the ESUs become the OCUs. In most cases, however, the OCUs may be larger units than individual ESUs, encompassing several ESUs into a single OCU. This may lead to the loss of biological capacity of the species, although this loss is presumably balanced by the needs of society. Thus, decisions about the OCU must weigh the socio-economic and biological trade-offs.

It is worth noting that one of the authors of this paper chairs the COSEWIC subcommittee reviewing the status of salmon species.

¹ Dobson, D. Gibson, R., Cunjak, R., Friedland, K., Garcia de Leaniz, C., Gross, M., Newbury, R., Nielsen, J., Power, M. and Roy, S. 1998. Elements in the development of conservation plans for Atlantic salmon (*Salmo salar*). Can. J. Fish. Aquat. Sci. 55 (Suppl. 1): 312-323

How are Socio-economic Factors Incorporated under SARA?

COSEWIC's decision to list Cultus Lake and Sakinaw Lake sockeye populations as endangered species was based strictly on biological factors. Social, economic and management impacts appear not to have been considered, but in light of COSEWIC's mandate this is not surprising. However, under SARA, the Minister of the Environment has discretion with respect to COSEWIC recommendations. While SARA does not explicitly require the Minister to incorporate socio-economic and other factors into the decision-making process, this discretion is implicit in the proposed legislation otherwise COSEWIC recommendations would automatically become legal listings.

What is the Role of Socio-economic Factors in Determining Conservation Units in the Draft Resource Management Guidelines?

The draft Resource Management Guidelines state that "In order to facilitate conservation action in advance of SARA listings, it is necessary for the Wild Salmon Policy to operate at a genetic scale that is either the same or lower than that used under SARA."

To achieve the above, the guidelines outline a two-stage process for determining conservation units. First, evolutionary significant units will be determined solely on the basis of biological information. This approach is argued to be largely consistent with COSEWIC's approach. Second, the Department's conservation units are determined by a further subdivision of evolutionary significant units on the basis of factors such as "similarities and differences in run timing, differential susceptibility and the range of productivity of fish populations comprising the ESU."

Under this process, management and socio-economic factors are given no weight in determining whether evolutionary significant units should be aggregated when determining the number of populations (within each salmon species) that are to be actively managed and conserved. In fact, other information is used to increase further the number of conservation units the Department must conserve. Under this approach, when determining the number of conservation units, the benefits associated with increasing the number of conservation units (e.g., the reduction in risk to a salmon species or some other component of the ecosystem) is never compared to the additional socio-economic and management costs that may be imposed.

The proposed SARA legislation states that before making a recommendation in respect of a wildlife species or a species at risk, the Minister of the Environment must, among other things, consult the competent minister or ministers. Under the approach proposed in the draft Resource Management Guidelines, the Department adopts a public policy stance that is largely equivalent to COSEWIC's approach to the determination of conservation units.

As a result, it may be more difficult for the Minister of Fisheries and Oceans to make socio-economic/management feasibility arguments when it comes to COSEWIC recommendations. In essence, the Department constrains itself to operate under a COSEWIC-type mandate with respect to conservation units.

CONSIDERATIONS CONCERNING THE DEVELOPMENT OF THE RESOURCE MANAGEMENT GUIDELINES

Conservation Units

As a large increase in the number of salmon conservation units will have significant socio-economic and management impacts, it is important that a strong case is built for the proposed approach. To this end, a science perspective on the following questions would be useful:

- Is there a generally accepted procedure through which the concept of evolutionary significant unit should be operationalized? Or is there scientific debate on how best to operationalize the concept (which would in turn imply a range of ESU estimates)? If there is scientific debate, how is this to be reflected in the WSP guidelines?
- Will ESUs be developed on the basis of sound scientific analysis, subject to internal and external peer review, or will “best guess” estimates be employed while the underlying science is undertaken?
- What time frame will be needed to establish ESUs for each of the salmon species?
- From a science perspective, to what extent is the determination of conservation units a societal, as opposed to a strictly scientifically-based, decision?² And what does the scientific literature on this issue say?

Incorporation of Non-Biological Information in Determining Conservation Units

An alternative approach to that being proposed in the guidelines would be to build such considerations explicitly into the Wild Salmon Policy guidelines. For example, as a first step, concepts such as ESUs could be used to develop a list of desirable populations, from strictly a biological perspective, to be conserved within each salmon species.

Second, the number of conservation units to be actively conserved and managed would be determined through the development of a risk management framework that would explicitly evaluate the likely management, biological and social-economic consequences of various ESU aggregations.

With respect to salmon populations recommended as endangered by COSEWIC, this approach would provide the Minister with information that would be useful in discussions (legally required under SARA) with the Minister of the Environment on whether the recommendations should be accepted. Departmental policy (unlike the proposed conservation unit guidelines) would not, in a sense, act to limit the Minister's

² How does the following quote from the U.S. National Research Council's 1996 report, *Upstream: Salmon and Society in the Pacific Northwest*, relate to this question? “The focus is on [ecologically sustainable] units that are largely independent over evolutionary important periods, and the “bottom line” test for an ESU is whether its loss would represent a significant loss of ecological and genetic diversity to the species as a whole. It is important to recognize...that decisions about what constitutes “significance” and about the resource tradeoffs implicit in recovery plans are largely societal decisions that cannot be based on scientific grounds alone.

options; but rather would provide the Minister with a broad perspective with which to enter into these discussions.

In addition, provided that public consultations are undertaken with respect to the development of a risk-management framework for the development of conservation units, the Minister (and presumably the government) may be in a stronger position in any SARA discussions

To support this approach, answers to the following questions would be required from Fisheries Management:

- What are the likely impacts on commercial, recreational and First Nation fisheries associated with implementing fisheries regimes designed to manage to the conservation unit level?
- What will be the management costs associated with these new harvesting regimes?