

**Developing an aboriginal subsistence whaling  
management procedure: outline of a process**

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**Abstract**

The Commission's 1994 Resolution on Aboriginal Whaling clarifies and reaffirms its management objectives for aboriginal subsistence whaling, and instructs the SC to "investigate potential management regimes." This clarification appears adequate to allow such an investigation to be done effectively. The process used by the SC in evaluating approaches in developing the commercial Revised Management Procedure evolved as it went on. Based on that experience, the SC can more fully specify at the outset a process appropriate for efficiently selecting a management procedure for aboriginal subsistence whaling. A suitable process may differ from that used for commercial whaling because the SC has been able in recent years to give management advice for some aboriginal subsistence situations, and because the management goals and objectives for aboriginal subsistence whaling are different from those for commercial whaling. To help the SC in specifying an appropriate process, key steps that such a process should address are outlined.

**INTRODUCTION**

The Commission's 1994 Resolution on Aboriginal Whaling clarifies and reaffirms its management objectives and instructs the SC to "investigate potential management regimes." This clarification appears adequate to allow this to be done effectively. It identifies the principles for management of aboriginal subsistence whaling (ASW) as those in paragraph 13(a) of the Commission's Schedule, including the footnote (Table 1). This Resolution also reaffirms previously defined objectives of management, and specifies relative priorities (Table 2).

The process used by the SC in evaluating approaches in developing the commercial Revised Management Procedure evolved as it went on. Based on that experience, the SC can more fully specify at the outset a process appropriate for efficiently selecting a management procedure for aboriginal subsistence whaling. More thorough specification of

the steps in this process, which should identify key questions that will need to be answered before continuing to subsequent steps, will allow an ASW procedure to be arrived at more efficiently.

While the general form of the selection process that the SC needs to define can be based on its previous experience, there are some aspects of ASW that may result in significant differences. One aspect is that we have can give advice under the present ASW procedure at least in some cases, suggesting that it may be useful to identify current problems with the procedure used. These problems appear to vary among the present applications. A clear statement of these problems would help ensure that any procedure developed would adequately address them.

A second aspect is that the Commission's principles and objectives for ASW management are different from those for commercial whaling. The need to carefully consider the specific aspects of ASW in developing any new procedure was reemphasized by the SC when it noted that (p. 38, Report for 1994 meeting):

there has as yet been no development of a procedure comparable to the RMP designed to meet the objectives of the Commission in relation to aboriginal subsistence whaling.

A third aspect is that aboriginal subsistence whaling includes a more diverse range of harvesting activities than were considered in developing the commercial procedure. For example, some goals of aboriginal whaling are addressed by the Commission in the concept of "need," which is not easily quantified. More generally, there is a question if it will be better to develop a single management procedure applicable to all aboriginal harvests or to develop separate management procedures for each application.

A fourth aspect is that "need," a central concern in the Commission's ASW management objectives, is not under the responsibility of the SC, and may have to be taken as an exogenous factor

Finally, many types of information are presently collected, and there are technical and financial constraints on the type and quantity of information that can be collected. Thus while specific information could be prescribed for the commercial RMP, there may be less latitude for this in aboriginal situations.

Because of these differences, it can be expected that the best process for the SC to use in developing and testing an ASW management procedure may be substantially different from that used for commercial whaling management.

## **OUTLINE OF PROCESS**

The process of developing an ASW management procedure can usefully be considered in seven steps (Table 3). The first two steps address the current ASW situations and the Commission's objectives, and can be addressed simultaneously. Subsequent steps include identification of anticipated gains, criteria implementing the Commission's objectives, and

criteria for selecting among candidate procedures; these would more efficiently be handled sequentially. We describe these seven steps below.

### **1. Describe aboriginal harvests to be managed**

Because each ASW situation is different, it is important that the SC have a clear idea of each so that the relevance of their work can be maintained. Four issues will need to be addressed for each harvest. One is to clarify and quantify the basis for recent management of each aboriginal harvest. A second is to describe the data available and to determine the degree consensus exists on its interpretation. A third is to determine if the animals harvested are from a single population or stock, and if there is the potential for commercial harvest from that stock. Finally, to determine the adequacy of the management procedures actually being used in each, it may be useful to identify the implicit "principles" used in recent management decisions, especially in terms of identifying problems that a candidate management procedure may be expected to overcome.

### **2. Review Commission's principles and objectives**

The internal consistency of the guidance in Commission's Resolution needs to be examined carefully. It will be important to identify possible multiple interpretations, to determine if the instructions are internally consistent, and to either develop consensus interpretations or to seek clarification. Consensus interpretations will likely include some quantitative and/or probabilistic expression of the wording of the management objectives and principles of the Commission. It is especially important to identify the implications of the Commission's use of the verbs "should" and "shall."

In developing the commercial RMP, the tradeoffs among the several objectives were not sufficiently well defined at the outset, resulting in the SC having to ask the Commission for clarification. It would improve efficiency if the SC similarly determined early in its deliberations the need for this type of guidance from the Commission and anticipated the form that such a dialog might usefully take. The implementation of this is anticipated under Step 6, below.

### **3. Identify expected gains from and generality of anticipated procedure**

Based on the problems identified with existing ASW management (Step 1), it will be important to identify the specific gains that might be expected from the SC developing a new procedure. This is particularly important because the SC has given management advice for some harvests using existing procedures. The development of such a procedure would be more efficient if the nature of the anticipated improvements were identified in advance.

An important decision made during the development of the commercial whaling management procedure was the choice between a completely general procedure and one tailored to specific applications. Several additional considerations arise for ASW, including

the wider variety of harvesting activities included and the wider range of types and quality of data available or even collectable. It will be substantially more difficult to develop a single management procedure to all ASW situations than was the case for commercial whaling. If several management procedures are to be developed, it will be necessary to determine priority. Those ASW situations which present greater difficulty under the present procedures might be most usefully addressed first.

#### **4. Define criteria for evaluation of candidate procedures**

While the Commission's Resolution provided the principles, objectives and priorities, specific quantitative criteria that incorporate these must be developed to evaluate the acceptability of candidate management procedures. These criteria must be designed to account for the principles and objectives of ASW management. Because the objectives differ from those for commercial whaling, the criteria will generally be different. Despite these differences, the experience in developing the commercial management procedure will be helpful. Criteria relating to need, however, are likely to be substantially different from anything developed for commercial whaling. They must be defined to reflect different ways in which need may not be fully met that may be important in aboriginal situations. For example, a procedure that nearly meets the full need in most years may be preferable to a procedure that meets the full need but in a lower proportion of years.

Other types of criteria for selecting among management procedures can be identified, such as range of data types that can be used. However, constraints driven by the specifics of each ASW situation will automatically limit the form of acceptable management procedures to ones that could be implemented, so it may not be necessary to specify such further criteria in general. The cost of data required by a procedure might usefully be compared to its performance, however. Thus a procedure that performs better, but at higher data collection costs, might be judged less desirable.

While different management procedures may be required for each aboriginal harvest, the performance criteria for selection among candidate procedures might be quite similar. This would increase efficiency of the SC in completing the implementation of suitable ASW management procedures.

#### **5. Define and implement tests and select among candidate procedures**

Given agreement on the criteria to use for selection, it will be necessary to design specific simulation scenarios to consider. The definition of plausible scenarios will need to be considered carefully. For example, it will be necessary to determine if scenarios can be judged plausible in general or only relative to specific ASW situations.

It will also be necessary to define statistics that measure the degree to which the criteria are being met, including the various ways need may not be completely met. Again, the SC's experience in developing a procedure for management of commercial whaling may be helpful. Not all of the many statistics collected in the simulation trials then proved to be important. Based on that experience, it may be possible to better limit the number of

statistics routinely collected. Statistics for measuring the degree to which the aboriginal "need" is met, however, will necessarily be more complex than were the statistics for commercial catch.

In the commercial development testing was conducted in phases, with procedures needing to pass the tests of each phase; the developers modified their candidate procedures both between and within phases to ensure that they did pass. The necessity for and utility of a similar phased testing for ASW procedures will need to be evaluated. If phases are necessary, then appropriate rules for determining minimum acceptable performance for each will need to be developed. For example, the evaluation of candidate procedures could include the feasibility of collecting the required data. All candidate procedures passing this test would be ensured of being implementable. Advanced knowledge of the structure of the evaluations to be conducted would presumably improve the efficiency of developers of candidate procedures.

#### **6. Define criteria and conduct simulation trials for "tuning," if necessary**

If the Commission's advice is not sufficiently complete to allow complete specification of a selected candidate management procedure, as discussed above, it may be necessary to conduct further simulation trials to explore the behavior of the selected procedure under different weightings of the management objectives. If this were to be prove necessary, it would be useful to anticipate the way in which the specific results might be provided to the Commission. Such anticipation would allow further work to be oriented toward needed comparisons, and would presumably allow procedure developers to be more efficient in their work.

The commercial management procedure experience may be useful here. However, the implications inspected by the Commission in selecting weights for objectives did not include the catch limits. Given the different nature of aboriginal whaling, and the likelihood that procedures may be developed for each ASW situation, the SC will need to consider specifically if the relationship between the catch limits and the "need" should be included to maximize the likelihood that the Commission is able to make a selection.

#### **7. Develop a context for implementing, reviewing, and revising selected management procedure**

Depending on the nature of the development process adopted by the SC, a management procedure could be adopted by the Commission that does not fully specify all of the relevant details for an aboriginal situation. To fully implement such a procedure, mechanisms will need to be developed to ensure that the details can be unequivocally specified. In any event, there will be a need for procedures for reviewing the application of the procedure for each ASW situation, and for reviewing the performance of, and potentially revising, the procedure itself.

These issue were addressed in the commercial management procedure by defining the Revised Management Procedure to include the Catch Limit Algorithm. Although the

structure of the RMP was specifically to allow for addressing situations with multiple stocks, many other details were also addressed. One example of particular relevance is provision for carry over of catch limits; while only general considerations were included in the RMP, carryover of catch limits has been an integral part of ASW management.

## DISCUSSION

A well-specified procedure that addresses the issues outlined above should allow the efficient development of an aboriginal management procedure that the Commission and the SC could implement easily.

The experience of the SC with developing a new approach to management of commercial whaling will be of great value to its undertaking a parallel development of a procedure for ASW management. The actual process used then can provide a basis for designing an appropriate process that would allow efficient development of an appropriate procedure.

However, there are several differences between the two types of whaling and between the principles and objectives the Commission has set for them. Further, there are substantial differences among the specific instances of aboriginal whaling. These differences will require this previous experience to be interpreted carefully to ensure the development of an efficient and effective process for ASW management. The issues addressed under seven headings here are an initial attempt to identify important points that the SC should keep in mind. These seven headings themselves could form the basis of a process for development of an ASW management procedure.

Relative to implementing such a process, Breiwick and Smith (1995) address some issues raised under Step 1 above, especially describing the current and recent management experience. Givens et al (1995) describes the implications of the previously used Bayesian Synthesis method for providing management advice for the aboriginal subsistence harvest of Bering-Chukchi-Beaufort Seas bowhead whales. They suggest that the information requirements for the existing management procedure are fully met, raising the question of the gain to be had in developing a new management procedure for this ASW situation. DeMaster (1995) addresses some issues arising under Step 2 above, specifically relating to the interpretation of the Commission's advice on principles and objectives.

## REFERENCES

- Breiwick, J. and T. Smith. 1995. A review of the biological and abundance information used in aboriginal subsistence whaling advice. SC/47/AS8
- Givens, G., J. Zeh, and A. Raftery. 1995. Implementing the current management regime for aboriginal subsistence whaling to establish a catch limit for the Bering-Shukchi-Beaufort Seas stock of bowhead whales. SC/47/AS14.
- DeMaster, D., G. Givens, and T.D. Smith. 1995. A comparison of principles used by the IWC to manage commercial and subsistence whaling. SC/47/AS7.

Table 1: Principles of management identified by Commission in its 1994 Resolution.	
Principle	Definition
13(a)(1)	For stocks above MSY level, aboriginal subsistence catches shall be permitted so long as total removals do not exceed 90 per cent of MSY.
13(a)(2)	For stocks below MSY level but above a certain minimum level, aboriginal subsistence catches shall be permitted so long as they are set at levels which will allow whale stocks to move to the MSY level <sup>1</sup> .
Footnote	1. The Commission, on advice of the Scientific Committee, shall establish as far as possible (a) a minimum stock level for each stock below which whales shall not be taken, and (b) a rate of increase towards the MSY level for each stock. The Scientific Committee shall advise on a minimum stock level and on a range of rates of increase towards the MSY level under different catch regimes.

Table 2: Objectives of management identified by the Commission in its 1994 Resolution.	
Objective	Definition
(a)	Ensure that the risks of extinction to individual stocks are not seriously increased by subsistence whaling.
(b)	Enable aboriginal people to harvest whales in perpetuity at levels appropriate to their cultural and nutritional requirements, subject to the other objectives.
(c)	Maintain the status of stocks at or above the level giving the highest net recruitment and to ensure that stocks below that level are moved towards it, so far as the environment permits.

Table 3. Proposed steps in a process for developing management procedure for aboriginal subsistence whaling.

Step	Description
1	Describe aboriginal harvests to be managed.
2	Review Commission's principles and objectives.
3	Identify expected gains from and generality of anticipated procedure.
4	Define criteria for evaluation of candidate procedures.
5	Define and implement tests and select among candidate procedures.
6	Define criteria and conduct simulation trials for "tuning," if necessary.
7	Develop a context for implementing, reviewing, and revising selected management procedure.