

## **Resource Decision Support**

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## **Group Decision Making Techniques to Evaluate Proposals for Change in Steller Sea Lion Protection Measures in the GOA and BSAI Groundfish Fisheries**

### **Introduction**

Problems in strategic planning, resource allocation, conflict resolution, and prioritization in many disciplines have been addressed for decades using decision making techniques. One such technique is the Analytic Hierarchy Process (AHP), which is extensively used because it allows the decision maker to assess the contributions or impacts to a system using all available information – tangible and intangible. Combinations of specific techniques are frequently used in addressing complex problems. For example, the AHP has been used in combination with the maximax, maximin tool to identify strong support and weak opposition to options among conflicting user groups (Merritt and Criddle 1993); with optimization, in an analysis of research proposals (Merritt and Skilbred 2002); and, with gap analysis, to determine the state of knowledge and recommend the appropriate action in a call for proposals (USFWS 2005, 2006).

The AHP is a systems approach to structuring a problem and the interactions of its parts by integrating expert judgments (Saaty 1999). Expert judgment is defined as “previous relevant experience, supported by rational thought and knowledge” (Saaty and Kearns 1985). The AHP is a tool for facilitating decision-making by structuring the problem into levels comprising a hierarchy. Breaking a complex problem into levels permits decision makers to focus on smaller sets of decisions, improving their ability to make accurate judgments. Structuring also allows decision makers to think through a problem in a systematic and thorough manner, thus resulting in a clear and concise portrayal of the problem. The AHP encourages people to explicitly state their judgments of preference, importance or likelihood, and increases the chances of finding an optimal solution. Decision support software is used interactively to structure the problem, depict the influence of weights, and derive the priority of elements.

### **Helpful Information Sources**

[www.expertchoice.com](http://www.expertchoice.com)

[www.decisionlens.com](http://www.decisionlens.com)

[www.superdecisions.com](http://www.superdecisions.com)

[www.r7.fws.gov/asm/strategic.cfm](http://www.r7.fws.gov/asm/strategic.cfm)

### **Scoping Outline: For Discussion with the SSLMC**

1. Clearly define the assignment.
2. Identify participants

Who will define the situation and criteria? Who will offer expert judgments? The group should encompass expertise and perspectives needed to describe the problem well, yet not be redundant. 12-15 participants may be ideal; subgroups are used for specific tasks.

3. Identify the scope of the problem

- Geographic area
- Cast of characters; e.g., Steller Sea Lions (SSL), the fishing industry, targeted fish and fish assemblages (prey), SSL predators, the public, those responsible for research and oversight.
- Time frame(s); e.g., short term, long term (consider cumulative effects).

4. Identify expectations and products

- Arrangements (meeting room, refreshments, materials, equipment, support).
- Define expected products and time line.

5. Estimate of cost

### **The Planning Process**

1. Recognize there is a problem, and set the stage for problem solving.

2. Select and invite participants.

3. Select group decision making technique(s).

The benefits of using decision-making techniques to aid in problem-solving are:

- clearly defined objectives, factors, criteria;
- the ability to incorporate various information sources into one structure;
- consideration of multiple perspectives; and,
- increases the likelihood of finding an optimal solution to the problem.

For example, AHP using a top-down approach: You know the judicial ruling, but are not sure which proposals will help to stay above the “jeopardy bar”.

4. Prepare for the meeting.

5. At the meeting:

Stage I.

Group develops frameworks depicting factors impacting the degree of benefits (loss) to:

- the SSL; and,
- fishing (see Figure 1).

Group decides on a desired balance of objective attainments-a preferred set of payoffs.

Stage II.

Group develops criteria for evaluating proposals. The nature of the situation, as depicted by the frameworks, is used as a guide in identifying criteria that should be considered when judging a proposed change. Criteria definitions should be precise and clearly understood.

## **Literature Cited**

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- Saaty, T. 1999. Third edition. Decision making for leaders: the analytic hierarchy process for decisions in a complex world. RWS Publications. Pittsburgh, Pennsylvania.
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## Strawdog

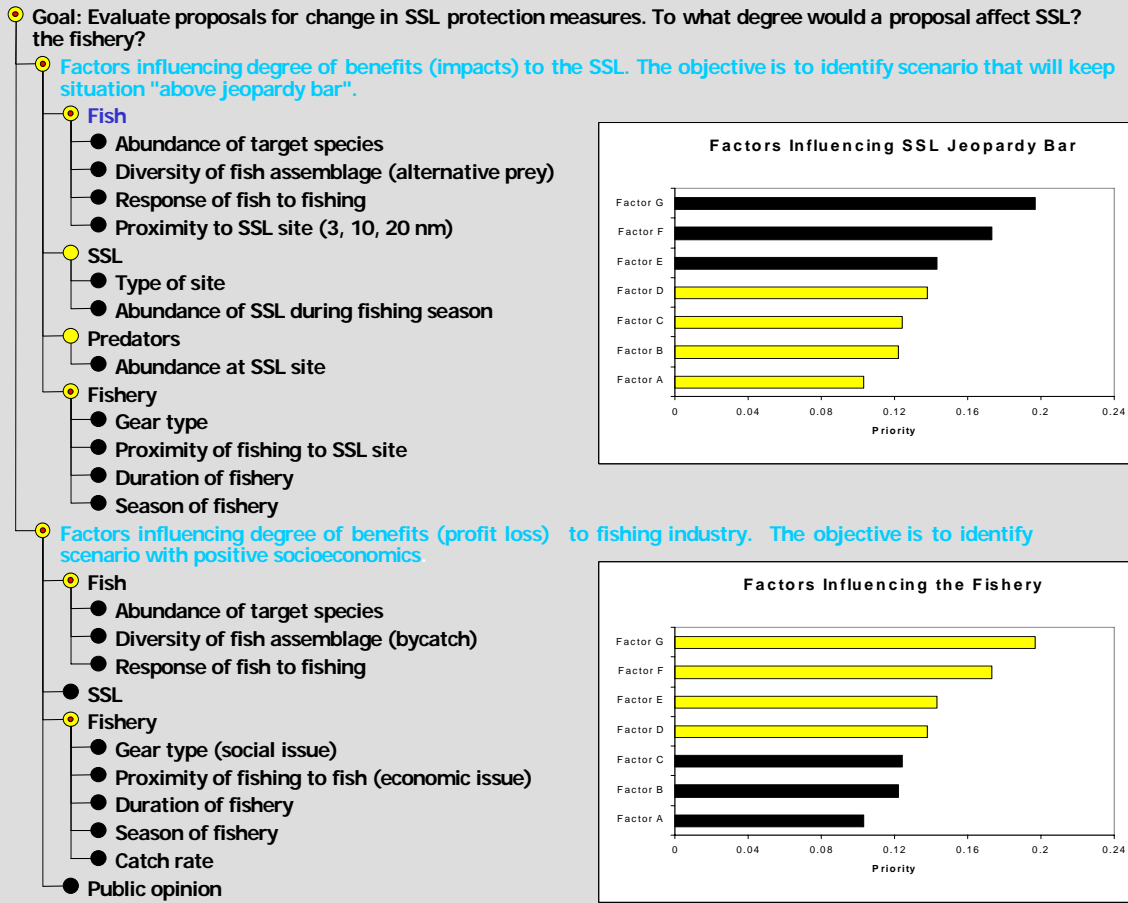


Figure 1. Strawdog of a conceptualized framework to evaluate proposals for change in SSL protection measures. A preferred payoff mix would be proposals that have the least impact on the “jeopardy bar” while offering the most socioeconomic benefits. An end product is a definition by the SSLMC of the “jeopardy bar”; this definition may slightly change annually, depending on the payoff mix.