

Salmon 2050: Drivers of Change Summary

Thank you to all who were able to participate in the first step of understanding the future of salmon in the Kenai River. We were incredibly impressed with the level of engagement and interest you provided during our day and a half workshop. Here is an initial summary of your work and an outline of when and how you can continue to be involved with the research.

Participants

Beginning on Thursday afternoon for lunch, we had the distinguished honor of hearing from **Major Mike Navarre** from the Kenai Peninsula Borough, as well as **Erin Harrington** from the Salmon Project to remind us the unifying role of salmon on the Kenai. We also heard from **Dr. Alan Boraas** from the Kenai Peninsula College who gave us an overview of the cultural importance of salmon for indigenous people on the Kenai. Friday we were presented with a welcome from Commissioner of the Alaska Department of Fish and Game **Charles Swanton**, by Chief Fisheries Scientist **James Hasbrouck**, before we launched into our workshop. There were 11 agencies (Kenai Field Office-USFWS; Sport Fish-ADFG; Planning-KPB; Parks and Recreation-ADNR; Kenai National Wildlife Refuge-USFWS; EPA; Subsistence-ADFG; Division of Habitat-ADFG; City of Kenai; ADEC; Kenaitze Indian Tribe), providing an excellent cross-section of the decision makers on the Kenai.

Scenario Process

Just a reminder that we are engaging in this scenario analysis process to ask *better* questions about the future of salmon in the Kenai. This process will facilitate the incorporation of future considerations into current decision making given that predictions are highly variable and uncertain. This not only allows us to identify what actions we might suggest to improve or guide possible outcomes, but also asks new questions and challenges our conventional thinking. A critical distinction between our approach and other scenario analysis frameworks is that we explicitly identify the consequences both within the scenario narrative itself (to ensure logical coherence) but also through elaborate and cutting-edge impact assessments. This is where the scenario process, and you as stakeholders, are leveraging \$20 million of research focused on how changing environments in Alaska are impacting communities. We call this process the Alternative Future Framework (see figure below).

Top Six Actors

- Kenai Watershed Forum
- Kenai Peninsula Borough
- Alaska Department of Fish and Game
- USFWS Kenai Wildlife Refuge
- Alaska Department of Natural Resources (Division of Parks)
- Alaska Board of Fish

Three Top Issues/Decisions Facing the Kenai

1. Consider uncertain climate in management decisions
2. Make habitat conservation a priority

3. Create a watershed plan that would pool resources, funding, and planning processes

Six Top Uncertainties Facing the Kenai

1. Climate warming resulting in loss of freshwater habitat, increased stream temperature, increased sedimentation, changing hydrological regime, increased invasive species, and increased disease (146 points)
2. New economic pressures of decisions in direct competition for salmon protection (70 points)
3. Changing marine conditions leading to loss of salmon access (62 points)
4. More demand for fish as land use and population changes (34 points)
5. Increase in participation of the personal use fishery (19 points)
6. Increase in sport fisherman user days due to population increase (18 points)

Actor-Uncertainty Relationships

		Key Actors					
		KWF	ADFG	DNR Parks	FWS Refuge	KPB	BoF
Key Uncertainties	Climate warming impacts freshwater habitat, stream temps, sedimentation, hydrological regimes, invasive species, and disease.	-12	-20	-8	-9	-7	-3
	Economic development favored over salmon habitat protection	-5	-14	-12	-15	1	-10
	Marine conditions decrease survival of salmon	-10	-15	-15	-16	3	-3
	Increased local population leads to land use change and increases local demand for fish resources.	-2	-14	-14	-12	-8	-11
	Participation in the personal user fishery continues to increase	0	-5	-7	-7	-10	2
	Population increase results in an increase of sport fisherman user days	-2	-7	-3	-9	-9	0

Table 1: Cumulative scores of whether a given uncertainty would greatly hinder (negative numbers) or help (positive numbers) the actor's ability to be effective at what they do. **Bold** indicates the primary actor-uncertainty scores.

Scenario Narratives

By completing the actor-uncertainty relationships, you have begun to define potential scenario pathways that will be explored by our team of researchers and more fully developed by you and other stakeholders at our next workshop, scheduled for late March-early April 2016. As you can see from the actor-uncertainty table, there are clearly some actors who are more negatively impacted by specific uncertainties than other actors. Similarly, each actor has at least one or two uncertainties that are likely to have a significant impact on their ability to be successful in the future. There are also cases when some actors could benefit from future activities that inhibit other actors, creating a spectrum of potential responses to these uncertainties. All of these factors will be considered when developing the scenario narratives.

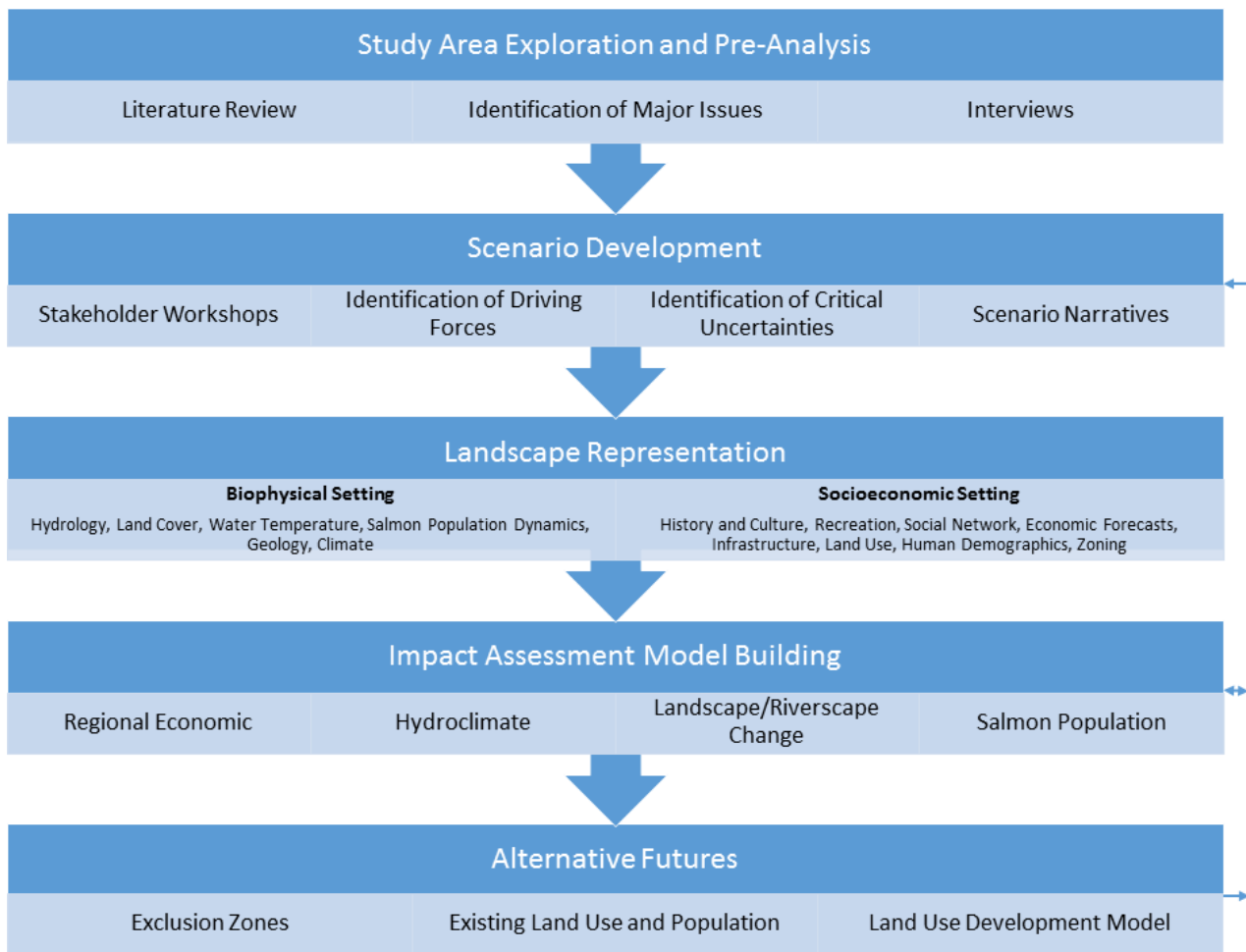


Figure 1: Alternative Futures framework.

Implications

Our next workshop will focus on the implications of these actor-uncertainty relationships. You've already ranked them in terms of their potential impact to the actors, but leveraging much of the scientific work we've developed as part of this project, and your understanding of institutional response, we will define the implications of these relationships so they can be included within the scenario narratives. You can expect to hear more information on the next workshop in early 2016.