

**Summary of August 10th, 2012 meeting of the Science and TEK subcommittee of the NPLCC  
August 14, 2012**

The Science and Traditional Ecological Knowledge subcommittee (S-TEK) of the NPLCC held a meeting by conference call and WebEx on August 10th, 2012, from 9:00 am to noon PDT. Fifteen subcommittee members participated and are listed in Appendix A.

The main topics for the call were:

- Review and discuss the structure and outline of the S-TEK strategy document
- Review the results of
  - The priority scoring of potential topics completed by the S-TEK
  - The draft synthesis of the results of the surveys and focus groups conducted by the National Wildlife Federation
- Agree, if possible, on Priority Topics to be included in the strategy
- Discuss next steps

The slides used to guide the discussion are attached as a separate file ("*NPLCC STEK\_Aug10\_final.pdf*") and provide a thorough review of the discussion topics. This document emphasizes the conclusions from those discussions rather than a recap of the information in the slides. S-TEK members who did not attend the call may benefit from a review of the slides as well as this summary.

**Strategy document structure and outline**

Frank Shipley reviewed the planned structure of the S-TEK Strategy document. Both during this presentation and in the subsequent discussion of the potential topic areas, the following conclusions were reached. Several questions / issues remain to be worked out about how well the proposed structure will work as the Strategy document is written.

- The main content of the S-TEK Strategy will consist of both "priority principles" and "priority topics," and they will be given equal emphasis in the Strategy. S-TEK participants expressed concern that the focusing on topics in the draft outline (called "Priority Focus Areas" in the slides) presented would overlook key non-topical priorities identified both through in the National Wildlife Federation Synthesis and in S-TEK discussions over the past 6 months.
- The S-TEK Strategy will include a matrix showing both the priority principles and priority topics and how they relate to each other.
- If possible, annual implementation plans should focus on the elements of this matrix, rather than simply on topics. It was not clear during the discussion on the call whether there would be priority principles that could not adequately be addressed using this "matrix" approach, and it was agreed that we would revisit recommendation on how the priority principle and priority topics are to be used as writing progresses. (during optional conference calls and the scheduled Sept 25<sup>th</sup> meeting)

## Priority Topics

The S-TEK reviewed the results of the priority scoring exercise and the potential focus areas from the Draft NWF Synthesis report (primarily those that were topic-oriented). This review is summarized in the slides, and led to the identification of 6 (Preliminary) Priority Topics. Those topics are listed below and described, briefly, in Appendix B. Frank Shipley (S-TEK Chair) was asked to develop short descriptions of these topics to clarify their definitions. In alphabetical order, the 6 priority topics are:

- Hydrologic Regime Influences on Anadromous Fish
- Hydrologic Regime Shifts and their effects on Rivers, Streams, and Riparian Corridors
- Invasive Species, Diseases, and Pests and their effects on Biological Communities
- Precipitation and Temperature Change and their effects on Forests
- Sea Level Changes, Storms and their effects on Marine Shorelines, the Nearshore, and Estuaries
- Temperature Change and its effects on Biological Communities

We note that these 6 re-defined priority topic areas include, to some degree:

- All of the top 10 items (and most of the top 22) items identified by the S-TEK through the Impact Matrix and Priority scoring exercises
- All 5 of the topic-oriented “opportunities, needs, and potential priorities” identified in the executive summary of the Draft NWF Synthesis report.
- 6 (clearly) to 11 (somewhat) of the 19 topic areas identified as potential focus areas in the body of the NWF report. Three of those 19 area were either clearly inappropriate for the S-TEK strategy (a narrow geographic focus) or were evaluated as clearly of lower priority than other topics by the S-TEK).

Potential gaps are noted in the slides and will be revisited as Strategy development continues.

## Priority Principles

As discussed above, the S-TEK Strategy will be defined both by the Priority Topics and by a set of Priority Principles. Several of these priority principles have been discussed multiple times by the S-TEK, and some have emerged more strongly from the Draft NWF synthesis report. The list below is likely to evolve over the next month and S-TEK members who have comments or potential additions are encourages to contact Mary Mahaffy (and copy Frank Shipley and Karen Jenni). Priority principles identified to date include:

- Strategy actions will be identified as important to be undertaken by the NPLCC or by individual NPLCC or outside partners; emphasis is on usefulness relevant to management decisions and filling gaps.
- The focus of NPLCC S-TEK activities will go beyond simply enhanced understanding of climate change influences and impacts to include consideration of the effectiveness of climate change mitigation and adaptation actions. (Note that much of the input from the NWF work suggested that resource managers are more interested in the latter than the former)

- Actions undertaken annually will vary depending on NPLCC needs identified for specific priority topics. They may include the following:
  - Synthesis of existing information
  - Facilitation of collaboration to build capacity
  - Coordination of tools, science and information
  - Generation of new or different science, data, or information
  - Facilitation of improved science communication and outreach
 (Note that much of the input from the NWF work suggested that resource managers would prefer the NPLCC to focus on promoting collaboration, capacity building, resource leveraging, and decision support than on developing basic science)
- Both Western Science and Traditional Ecological Knowledge, where desired by Tribes and First Nations, will be incorporated into NPLCC's work.
- Balance will be considered both at the level of the Strategy and in developing annual Implementation plans, considering
  - the breadth of partner/stakeholder needs
  - the ecological diversity
  - the geographic diversity of the LCC
  - the different ways in which the LCC can provide information and support to its partners
- Attention will be given to cross-ecosystem interfaces and interactions where appropriate

Finally, we recognize that one clear priority from the Draft NWF Synthesis report suggest an emphasis on communication and outreach. This topic will be addressed by the NPLCC Communication and Outreach Subcommittee as they develop their strategy.

#### **Next steps – Completing the S-TEK strategy**

- Frank, Mary, and Karen to document and distribute the following: **(done with this transmittal)**
  - Notes and slides from the call
  - Short descriptions of the “Priority Principles” and “Priority Topics” that will comprise the main content of the S-TEK Strategy
- S-TEK members to indicate their interest and availability for two optional S-TEK calls between now and scheduled call of 9/25 **(Mary included doodle poll in email with notes; please respond by 8/20)**
  - Aug 23, 24, or 27 for preview of what will be presented to the Steering Committee for their feedback
  - Week of Sept 2 for review of Steering Committee feedback and check-in on document progress
- Frank, Mark, and Karen to do the following:
  - Begin drafting the Strategy document
    - Focus first on the priority principles and priority topics
    - Distribute for comment by S-TEK at the end of the month

- Prepare and present a summary of the S-TEK strategy to the NPLCC Steering Committee (SC) on **8/29**
  - Host an optional call to report back on the SC feedback and seek input from S-TEK on the direction of the draft document
- Everyone to participate in call on **Sept 25<sup>th</sup>, 9 am – noon PDT** to finalize the S-TEK strategy for possible adoption by the SC in early October.

**Appendix A. S/TEK subcommittee membership and attendance at meeting August 10, 2012**

<b>Name</b>	<b>Agency</b>
Frank Shipley (Chair)	USGS
Andrea Woodward	USGS
Bill Hanson	US FWS
Bruce Duncan	EPA
Chris Lauver	NPS
Dan Siemann	National Wildlife Federation
Dominick DellaSala	GEOS Institute
Jennie Hoffman	EcoAdapt
Karyn Gear	CA Coastal Conservancy
Kathy Lynn	OSU / Tribal Network
Keith Hatch	BIA
Marcus Miller	USDA - NRCS
Peter Kiffney	NOAA
Raymond Paddock	Central Council, Tlingit & Haida Tribes of Alaska
Tim Quinn	Washington DFG
<b>Additional participants</b>	
John Mankowski	NPLCC Coordinator
Mary Mahaffy	NPLCC Science coordinator
Karen Jenni	Insight Decisions, LLC

## **Appendix B. Priority Topics**

Frank Shipley (S-TEK Chair) developed the following short descriptions of the 6 (preliminary) Priority Topics to clarify their definitions.

### ***Hydrologic Regime Influences on Anadromous Fish***

Climate-related changes in the hydrologic regime (timing, volume and related water quality attributes of streamflow) are expected to influence salmon and other anadromous fish through multiple mechanisms. These mechanisms include increased water temperature and the progressive loss of “temperature refugia,” especially in the southern portions of species ranges; alteration of physical characteristics of spawning and rearing habitats such as substrate changes, scouring of redds, and alteration of off-channel rearing habitats; alteration of food chains in both upstream and estuarine environments; triggering of novel diseases associated with multiple stressors affecting fish; and invasive species influences. Pacific salmon provide perhaps the best example of a highly valued natural resource likely to be influenced by climate-driven hydrologic changes in rivers and streams.

### ***Hydrologic Regime Shifts and their effects on Rivers, Streams, and Riparian Corridors***

Changes in climate influence the flow of water in rivers and streams through changes in amount of precipitation (directly affecting runoff), the type of precipitation (snow vs rain) and temperature (evapotranspiration and snowmelt rates). Groundwater and glacier contributions to streamflow are influenced by climate change through aquifer recharge rates and influences on glacial mass balance. In this topic area we will consider those changes and how they are likely to influence physical, chemical, and biological attributes of rivers and streams, and how those changes affect the quality of habitats and valued resources associated with the Riparian corridor.

### ***Invasive Species, Diseases, and Pests and their effects on Biological Communities***

Species invasions, and changes in the prevalence and distribution of diseases and pests have a significant influence on the composition of ecosystems and the values those systems provide to humans. With the added influence of climate change, invasions rates and the kinds of invaders are likely to change, as are the prevalence and distribution of diseases and pests. Plant species distribution changes, such as the northward migration of some species and appearance of novel species are expected to change biological communities in ways that affect habitat suitability and occupancy for fish and wildlife, with some species being influenced more than others.

### ***Precipitation and Temperature Change and their effects on Forests***

Temperate rainforest in North America is characterized by high biomass, an abundance of epiphytes, and summer fog. Temperature and precipitation are critical primary drivers affecting the state of these forests. Each tree species distribution results from adaptation to particular climate factors that have been dynamic over the millennia. As these factors change at a much faster rate due to climate trends, the mix of species at a given location or elevation are likely to change relatively quickly due to tree species migrations and local extinctions. Other significant effects of climate changes on forest are likely to occur through complex, indirect secondary mechanisms such as fire, insects, and disease. Given the importance of the temperate rainforest as a habitat for other species, there are likely to be many cases of cascading effects on forest-dependent species.

### ***Sea Level Changes, Storms and their effects on Marine Shorelines, the Nearshore, and Estuaries***

Sea level rise is accelerating globally due to thermal expansion of sea water and land-based ice melting in a warming climate—processes that are projected to result in some 1-2 m of sea level rise this century. The coastal impacts of sea level rise are most severe during extreme storm events, and therefore storm frequency and severity must be considered along with sea level when consider the effects of climate change on coastal and near-coastal habitats. Sea level change in the NP LCC, however, is complex and regionally variable due to the effects of subduction zone uplift, earthquake triggered elevation drops, and isostatic rebound of shorelines following ice melt. While much of the societal concern for sea level rise relates to human infrastructure, natural resources will be affected by sea level itself, as well as by human infrastructure actions aimed at mitigation and adaptation.

### ***Temperature Change and its effects on Biological Communities***

Much of the capacity of NPLCC environments to support valued living resources occurs at the level of the biological community. Community level attributes include trophic webs, beneficial (mutualistic) relationships among species, and co-evolution of species that yield community types or biomes characterized by vegetative cover that sustains and provides habitat for specific other species. Warming will influence marine, aquatic freshwater, and terrestrial communities, for example by fragmenting existing species associations and creating new ones. For the species that are valued by and managed by humans, declines in valued components of communities that support these species, and increases in unwanted elements negatively affecting these species are likely to present challenges to resource managers.