Summary of the NPLCC Science and TEK Subcommittee Meeting
April 5th, 2012

The Science and Traditional Ecological Knowledge Subcommittee (S-TEK) of the NPLCC held a meeting by conference call and WebEx on April 5th, 2012, from 1 pm to 3:30 pm PDT. Fourteen subcommittee members participated and are listed in Appendix A.

There were two main topics for the call:

- Follow up and follow through on five FY 12 projects from last meeting
- Begin discussions on development of Science-TEK Strategy

This document briefly summarizes the meeting discussions and describes action items to be addressed between now and the next scheduled meeting on May 8th. Action items are listed in Table 1 below and are explained more fully in highlighted boxes within this document.

Table 1. Action items from April 5th meeting/call.

Action	Who	When
Volunteer / nominate reviewers for TEK proposals	All	Nominations to Mary Mahaffy by April 27th
Develop proposal review process	Frank S., Mary M., and Karen J.	By May 8th meeting; S-TEK will discuss and finalize process on call
Develop recommendations for a data management platform; arrange for demonstration of recommended platform	Data management platform technical team (additional volunteers welcome)	First call April 16th Develop recommendations for discussion on May 8th S-TEK call
Convene GIS team and begin work	GIS technical team (additional volunteers welcome)	First call April 23rd Update to S-TEK on May 8th call
Provide input on potential science and information sharing workshops and symposiums the NPLCC should consider supporting in FY12	All	Suggestions to Mary Mahaffy by May 1st
Review and provide comments on the decision support context: management decisions and outcomes of interest (Appendices B and C of this summary)	All	Comments and suggestions to Karen Jenni by May 1st
Review and provide comments on proposed goals/objectives for the Science Strategy (pages 5-6 of this summary)	All	Comments and suggestions to Karen Jenni by May 1st
Provide links, descriptions, and/or contacts for related science strategies affecting the NPLCC region	All	Information to Mary Mahaffy by May 25th

Updates and activities since February 29 meeting

Frank Shipley (USGS and Chair of the S-TEK subcommittee) provided a brief review of activities since the last meeting of the subcommittee. The S-TEK has an aggressive schedule, and are making very solid progress. All the action items from the February 29 meeting have been completed, the two most important of which were: (1) to establish a meeting schedule for the S-TEK (see last section of these notes) and (2) to recommend the five FY12 priorities identified at the last meeting to the Steering Committee (SC).

The five items identified in February were all foundational and will help the S-TEK in developing and implementing the Science Strategy. The recommendations were well-received by the SC, who approved the full set. The TEK item generated the most discussion, with the SC concluding that the exploratory nature of the proposed RFP scope was a good way to start to better understand where we are going with TEK.

FY12 priorities

Mary Mahaffy (NPLCC Science Coordinator) led a discussion and review of the FY12 priorities. The status and schedule for each of these items is summarized in Table 2 (slides are attached separately as S-TEK_FY12_4-5-12.pdf). There are action items for the S-TEK for four of the five priorities.

The S-TEK chair and the NPLCC staff will develop a proposal evaluation process for review of the TEK proposals and will share that with the S-TEK.

Please let Mary Mahaffy know by April 27th if you are interested in participating in the evaluation of TEK proposals, or if you have a recommendation for proposal reviewers. Under the anticipated schedule, proposals will be received on May 16 and must be evaluated by May 28.

The technical team looking at data management platforms will make recommendations to the S-TEK at the May 8th meeting. If possible, they will include a demonstration of the recommended platform during that call. If you are interested in participating in this team and have not already indicated so, please let Mary Mahaffy know and join the call on April 16th, 2:30-4:30 PDT.

The technical team looking at GIS data layers will convene its first meeting by teleconference on April 23rd, 1:30 – 2:30 pm PDT. If you are interested in participating in this team and have not already indicated so, please let Mary Mahaffy know.

The NPLCC provided support to several science and information sharing workshops and symposiums, as listed in Table 2.

Please provide a list of science and information sharing workshops and symposiums that you think the NPLCC should consider supporting in FY12 to Mary Mahaffy by May 1st. The S-TEK will discuss possibilities and make recommendations on what to support during their May 8th meeting.

Table 2. Status and schedule for FY12 S-TEK focus areas

FY12 focus	Status	Plan & Schedule
Priorities and Literature Synthesis for Terrestrial Habitats	Modifying current agreement (marine/coastal and freshwater ecosystems) with NWF to include this task - $86,500	Web-based expert panel discussions (3-5) completed by May 31, expert workshops (2) completed by week of June 4. Mid- July: Draft focus group report (all ecosystems) available for S-TEK consideration in developing Science Plan (final report Mid-August) May 2013 - Literature synthesis and final report
Traditional Ecological Knowledge and Tribal/First Nations Priorities	RFP under development, with input on scope and criteria from work group	RFP to be issued April 11, proposals due May 16 S-TEK to evaluate proposals and make recommendations by May 29, SC approval of projects by June 4 Goal to have contracts in place by August 15
Data Management Platform	Info on platforms currently used by NPLCC partners is being collected (LC-MAP, Northwest Knowledge Network, DataBasin, BISON, NPS IRM system)	Technical team call April 16th. Technical team to evaluate the needs of the NPLCC as they relate to a data management platform and evaluate existing systems Recommendation to S-TEK by May 8 call S-TEK recommendation to SC by May 22 Meeting
GIS Data Layer Inventory / Mapping	Tom Miewald- Region 1 USFWS taking lead forming team, will provide direction to grad student working on the inventory $25k approved by Steering Committee	First call April 23; 1:30 – 2:30 Work will continue through this fiscal year
Science and Information Sharing Workshops / Symposiums	Action supported by Steering Committee Workshops financially supported by NPLCC in FY11: • Second Transboundary Data Integration Workshop (Alaska Coastal Rainforest Center) • Second Annual Pacific Northwest Climate Science Workshop (Climate Impacts Group) • WildLinks (Conservation Northwest) • Coastal Temperate Rainforest Symposium (April 17-19, Juneau; Alaska Coastal Rainforest Center)	May 8 – S-TEK discuss priority list Recommendations to Steering Committee by May 29 along with the TEK and Tribal/First Nations priority identification projects

Science strategy discussions

Karen Jenni (Insight Decisions) led a series of discussions on the science strategy, building from concepts introduced at the February 29th meeting, and from the results of the Steering Committee's Framing workshop in October, 2011 (slides used during the discussion are provided in a separate file S-TEK_SS_4-5-12.pdf).

The main purpose of these initial strategy discussions was to focus attention on the decision-support context for the NPLCC, to confirm or update the types of decisions NPLCC science and information should support, the outcomes of interest for those decisions, and to use those factors to identify various ways potential science needs can be identified.

Decision types supported

The S-TEK reviewed and commented on the list of decision types identified by the SC (summarized in the slides and in Table 1 of the Framing Workshop summary). Several questions or concerns were raised and discussed:

- It was not immediately clear whether and where "adaptation decisions" are included in the list. Discussion clarified that all of the decision types are related, in the context of the NPLCC mission, to climate change and climate change adaptation. E.g., "land management decisions" includes the concept of managing land use under a changing climate. Several subcommittee members suggested that we make that connection more clear, and that we include the concepts of adaptive management in the description of decision types.
- The summary list of decision types is fairly comprehensive, but also quite general. Several S-TEK members felt that the decision types were too general to be useful for identifying information needs, and that the more detailed decisions (e.g., "what should we plant at location X?") would be required in order to identify information needs.
    - Invasive species management was called out as an important decision type not on the summary list.
- Some of the decision types on the list are not necessarily decisions that additional science or information would inform (e.g., decisions about standing and sovereignty), and some were not sufficiently well defined

Appendix B contains a lightly edited list of the types of decisions the NPLCC supports, including the more detailed decisions identified in October. Please review this list and provide any comments, additions or deletions to the list to Karen Jenni by May 1. We will review a "final" list on the May 8 S-TEK call.

Outcomes of interest

The S-TEK next reviewed and commented on the list of objectives or outcomes of interest related to the decision types identified above. These were summarized in the slides and on pages 8-10 of the Framing Workshop summary. Several questions or concerns were raised and discussed:

- Several participants raised the issue of scale and what can be addressed in a four-year science plan. It was suggested that several of the high-level outcomes are too broad and will need to be defined at a more detailed level. As with the decision types, some of that additional detail was identified in the framing workshop, but may need to be developed further.
- Some of the outcomes of interest are clearly topics where it will be possible to identify science and information needed to support more comprehensive understanding of the outcomes. But for others, it is difficult to see how they are relevant to a Science Plan.

Appendix C contains a lightly edited list, based on the discussions during the call, of the outcomes of interest for NPLCC partner decisions, including more detailed outcomes. Please review this list and provide any comments, additions or deletions to the list to Karen Jenni by May 1. We will review a "final" list on the May 8 S-TEK call.

Identifying potential information needs

Identification of potential information needs for the NPLCC is driven by an understanding of who requires information (the various NPLCC partners), what types of conservation and sustainable resource management decisions they make now and will make in the future, and what outcomes are of interest to them as they make those decisions. Numerous approaches for identifying those potential information needs are being used in the NPLCC, and were discussed briefly by the group.

The issue of the scale or scope of the information needs was highlighted as an important question by several participants; some additional discussion is included under the section on science strategy objectives below.

Also discussed the fact that there are other strategic plans and other science plans being developed that are relevant to the NPLCC, and that it would be valuable to review those documents and to coordinate, as appropriate, with those efforts. Participants mentioned to following as examples of relevant strategy documents:

- Northwest and Alaska Climate Science Centers
- Scenario Networks for Alaska and Arctic Planning (SNAP)
- Great Northern LCC
- Other LCC strategies
- Forest Service strategy - "Responding to Climate Change in National Forests: A Guidebook for Developing Adaptation Options"
- West Coast Governor's Alliance; climate change impacts on ocean health
- Save the Redwoods League "Redwoods and Climate Change Initiative"
- Climate change assessment of impacts on NW CA forests (Klamath ecologists)
- NPC / University of Fairbanks assessment (?)
- AK Native Consortium?

If you are aware of other related strategic science planning efforts within the NPLCC region, please contact Mary Mahaffy (and send a copy of the relevant study if possible – thanks to those of you who have already done so).

NPLCC staff will collect, review, and summarize these related efforts, with periodic summaries to the S-TEK.

Science strategy objectives

The final topic discussed was what goals the S-TEK members have for the Science Strategy. The discussion started with a review of the list of NPLCC objectives (see slides and the NPLCC charter) and how the objectives of the science strategy should ultimately relate to or implement these NPLCC objectives.

Participants then shared their own objectives or visions of success, in response to the question "what would a successful NPLCC science strategy accomplish?" Below I have combined and summarized these various objectives as a first pass for a description of what the S-TEK would like the Science Strategy (and its implementation) to accomplish.

The overall objective can be stated as:

- A successful S-TEK strategy would maximize the ability of partners/constituents/stakeholders to make good conservation and sustainable resource management decisions under a changing climate (*NPLCC goal #1*). It would do so by providing "everything you need and nothing you don't, to better cope with climate change":
    - the right information (spatial or non-spatial data, TEK, case studies of adaptation action, etc.) at the right scale in the right way and at the right time, and
    - the tools, perspectives, and support needed to make appropriate use of the information.

As several steps will be necessary to reach this ultimate goal, it might be useful to specific some lower-level or intermediate goals, which, when accomplished, will achieve the overall goal:

- *Identify* science and TEK information needed to support entities making conservation and sustainable resource management decisions throughout the NPLCC region, that are affected by climate change and related stressors (*related to NPLCC Goal #3*). This includes identifying all of the following:
    - What types of information are necessary? (i.e., what types of information will provide decision-makers with improved understanding of how climate change and their management decisions may affect the outcomes of interest to them)
    - At what scale and scope is the information needed? (e.g., Many decisions are "local" and may require detailed local-level information, yet the scope of the LCC is landscape-level so it is also important to look at how local information can be scaled up or made relevant more broadly, and whether/how landscape-level information can be made relevant to decisions at a variety of scales)

- When and in what form is the information needed? (explore how the various NPLCC partners make conservation and natural resource decisions, to better understand where in the decision process, and in what form(s), information is most useful)

- Determine what information gaps can be appropriately and adequately addressed by the NPLCC (related to NPLCC Goal #2). This includes:
  - Recognizing and communicating that uncertain exists and will remain: resource managers will continue to have to make decisions without full knowledge of everything they care about
  - Evaluating how effectively the information gap can be addressed
    - By the NPLCC, given realistic consideration of the budget, charter, and goals of the NPLCC
    - By other entities with interests in supporting landscape-level conservation and sustainable resource management
  - Identifying how information to support local decisions might be scaled to regional issues or needs.

- Develop and provide the identified data, information, and knowledge to people making on the ground decisions (*related to NPLCC goals #4 and #5*). The actual development of needed information will occur through the implementation of the strategy: an implementation plan will be a critical component of the science strategy document that the S-TEK is developing.

- The development and implementation of the science strategy should help continue to build relationships among NPLCC partner agencies

Please review the above summary of goals for the Science Strategy. Provide feedback, including additional goals, if any, to Karen Jenni and Mary Mahaffy. We will review this list as it evolves over the next several meetings.

The meeting closed with a brief preview of upcoming meetings (see slides) and a recap of the action items highlighted above.

Next meeting: May 8th, 1:30 – 4:30 pm PDT, conference/WebEx

Additional meetings:

- June 13-14, (starting at 9 am 6/13). In-person meeting (WebEx avail), USFWS Regional Office, Portland
- July 10th, 1:30 – 4:30pm PDT. WebEx & conference call.
- Aug 10th, 9:00 am – noon PDT. WebEx & conference call
- Sept 25th, 9:00 am – noon, PDT. WebEx & conference call

Appendix A. S/TEK subcommittee membership and attendance at meeting

Name	Agency	Feb 29 mtg (I)n person or (P)hone	Apr 5 call
Subcommittee members			
Frank Shipley (Chair)	USGS	I	X
Lyman Thorsteinson	USGS	P	X
Phil Van Mantgem	USGS		X
Andrea Woodward	USGS	I	X
Keith Hatch	BIA	I	X
Bruce Duncan	EPA		X
Brendan Moynahan	NPS		
Chris Lauver	NPS	I	X
Kathryn Boyer	NRCS		
Peter Kiffney	NOAA	P	
John Laurence	USFS		X
Marc Kramer	USFS		
Frank Lake	USFS	P	X
Bill Hanson	USFWS	I	
Steve Morey	USFWS	I	
Charlie Chamberlain	USFWS		X
Tasha Sargent	CWS and PCJV		
Madeline Maley	BC Ministry FLNR	I	
Tim Quinn	Washington DFW	P	X
Sue Rodman	Alaska DFG	P	
Karyn Gear	CA Coastal Conservancy	P	X
Whitney Albrecht	California DFG	P	
Kathleen Sloan	Yurok Tribe	P	
Mike Goldstein	ACRC	I	
Bob Altman	PCJV - U.S./ American Bird Conservatory	I	
Mark Petri	PCJV - U.S. / Ducks Unlimited		
Dan Siemann	National Wildlife Federation	I	X
Jennie Hoffman	EcoAdapt	I	X
Dominick DellaSala	Geos Institute	I	
Susan Schlosser/HBI	Humboldt Bay Initiative/Sea Grant		
Kathie Dello	CIRC (NOAA RISA)/OSU	I	
Durelle Smith	USGS	P	
Leilani Knight-McQueen	CCTHITA		X
Additional participants			
Mary Mahaffy	NPLCC Science coordinator	I	X
Karen Jenni	Insight Decisions, LLC	I	X
Tim Nieman	Decision Applications, Inc		X

Appendix B. Types of decisions NPLCC will support

This list is modified slightly from the list developed by the Steering Committee in October of 2011, based on the discussion during our April 5 call. S-TEK members are asked to review this list and provide comments. We particularly want to highlight the types of decisions where science and TEK can provide supporting information.

Note that all of the listed decisions are decisions that will be relevant in the context of climate change and related stressors.

Decision types - examples	**Examples of relevant decision-makers**
Mitigation and restoration decisions (where, how, when) - Restoration of ecological function of shorelines - Prioritizing areas for conservation and mitigation - Restoration contract specifications	Federal, state, and provincial agencies (e.g., Restoration coordinators, Environmental assessment decision-makers, permitting entities), Aboriginal decision-makers, Tribal Councils
Land use decisions / decisions about allowable activities - Land use designation (areas of critical environmental concern) - Location & establishment of parks, conservancies, other areas for protection - Constraints on planned uses or activities - Zoning, etc. – affecting where and how growth happens - Permitting of various activities on the landscape - Wetland easement terms (and terms of any easement?)	Numerous, including: Federal, state, and provincial agencies (e.g., Environmental assessment decision-makers, Provincial Cabinet Subcommittee, State Fish and Game planners), Aboriginal decision-makers, Tribal Councils, Joint Ventures, NGOs
Land management decisions / decisions about managing allowable activities - Forest land management plans - Development, transportation, land planning - Infrastructure development and maintenance (roads, pipelines, transmission lines, etc.) - Invasive species prevention, management, and designation - Fire management strategies - Drought management strategies - Agricultural practices - Aquaculture practices - Energy (renewable energy) development	Land owners and land managers at all levels, including private land owners
Water allocation, use and management - Hydropower & reservoir management - Irrigation methods	Water managers (at all levels)

Decision types - examples	**Examples of relevant decision-makers**
Species management decisions - Harvest levels - Management of an isolated species - Maintenance and restoration of fish passages - Translocations - Disease control (plants, fish and wildlife, livestock) - Invasive / exotic species management	Wildlife and Fisheries co-managers, Park superintendents, Refuge managers, regulatory agencies (at all levels),
Decisions about cultural and historic resources - Preservation of cultural and historic resources (where, how, when) - Relocation of tribes and tribal (trust) lands and cultural and heritage sites to safer locations (including migration of trust species) - Decisions about mitigating and compensating for losses	Federal, state, and provincial agencies, Tribes (e.g., Historic preservation officers)
Private investment and development decisions - Capital investments - Locations of facilities - Provision of insurance	Various private industries (e.g., wood products mill owner, cannery, utilities, renewable energy developers)
Decisions about how to use natural resources	Individuals
Decisions about control of and response to infectious (human) diseases	Federal, state, and provincial agencies (e.g., CDC), municipalities (e.g., local health entities)
Regulations & legislation - Industry regulations and oversight - Decisions about quality standards - Establishing enforceable targets for water pollution reductions - Design of incentives, market based trading schemes, protocols and procedures for ecosystem services / emerging markets - Decisions about government structure, how you govern, staffing, etc.	Congress , federal agencies (e.g., EPA –Office of Water), regulators at all levels
Other decisions related to how various entities carry out their conservation and sustainable resource management responsibilities	
Allocation of agency or entity resources (funding, personnel) among various research efforts and conservation efforts.	Federal, state, and provincial agencies, municipalities and local communities, Tribes, NGOs, etc.
Identification and prioritization of areas/species for conservation - Identifying high priority areas for conservation - Prioritizing species and habitats for conservation and management - Decisions to defend, mitigate, move, abandon a place;	Federal, state, and provincial agencies (e.g., BLM managers, Provincial Cabinet Subcommittee, State Fish and Game planners), Joint Ventures, NGOs
Where and how to monitor for environmental changes	Many

Decision types - examples	**Examples of relevant decision-makers**
Decisions about information and knowledge governance - Monitoring and data collection decisions - Consistent data sets	Many agencies Note: the NPLCC itself may choose to take on a role and be a decision-maker for some of these decisions
Decisions about education/outreach (where, when, and how) - How to communicate information about stressors and changes (how to tell the story)	Everyone

Appendix C. Outcomes of interest

This list is modified slightly from the list developed by the Steering Committee in October of 2011, based on the discussion during our April 5 call. S-TEK members are asked to review this list and provide comments. We particularly want to highlight the types of outcomes of interest where science and TEK can provide supporting information.

The list below highlights the higher-level outcomes of interest derived from the more detailed lists below each. The detailed list is not intended to be comprehensive, but served as examples to identify the broad outcomes of interest.

Maximize habitat quality and species population health

- Quantity and quality of habitat for species of management interest, including but not limited to:
    - Habitat permanently conserved for birds during all life cycles
    - Oceans
    - Old growth forests
    - Designated wetlands
    - Habitat for rare and endemic species
- Quality of near-shore function/habitat/resilience to sea level rise
- Risk of harm to species, species extinctions
- Health of federal species at risk and allow to thrive without intervention
- Number of depleted fish populations, Productivity of fisheries
- Species biodiversity (in situ)

Maximize ecosystem function and services

- Health of ecosystems
- Ecological function and sustainability of working lands (farms, forests, etc.)
- Accounting systems' ability to capture value of ecosystem function
- Forest ecosystem ability to adapt to climate change
    - Ecosystem function
    - Water availability
    - Susceptibility to fire
    - Quantity of renewable resources
- Carbon sequestration capacity of ecosystems

Maximize ability of individuals and groups to engage in culturally important activities

- Abundance, access and quality of cultural resources
- Continue and restore tribal life ways including cultural and subsistence resources
- Use of traditional cultural practices
- No diminishment of treaty hunting or fishing rights

Maximize economic benefits from the landscape

- Economic opportunities, now and in future
- Jobs, career opportunities, technology development

- Economic security of native villages and rural communities associated with National Forest land
- Economic stability
- Loss of infrastructure investments due to sea level rise

Maximize water quality and availability

- Resource (water) efficiency of agriculture
- Sustainability of groundwater use
- Flow of ecological water and in the right places
- Use of pesticides
- Flow of contaminants into surface water and groundwater

Maximize security and human health

- Frequency and severity of diseases
- Food production
- Ability to respond to natural disasters
- Coordination with international security agencies