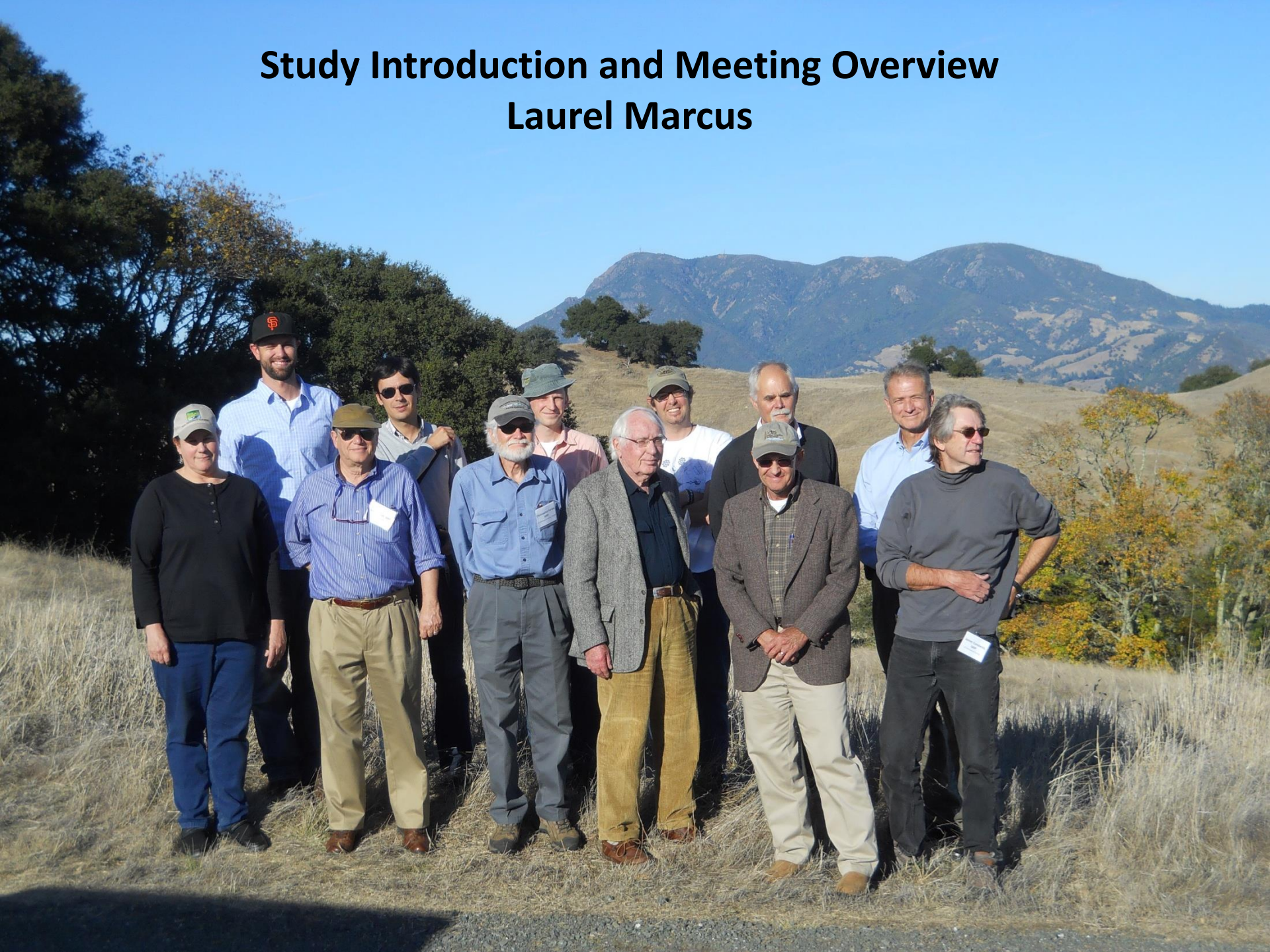
Study Introduction and Meeting Overview
Laurel Marcus



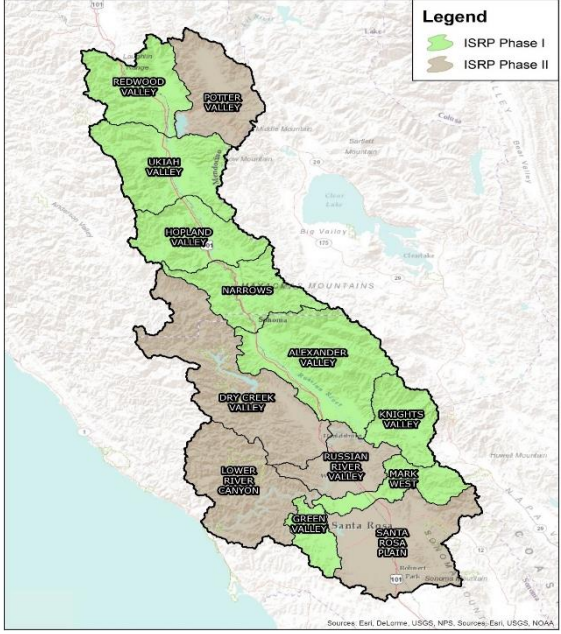
PURPOSE OF ISRP

- In the Russian River watershed river and stream ecology are inextricably linked to surface and groundwater interactions.
- Essential to an understanding of the river ecosystem is consideration of:
  - quality and extent of aquatic and riparian habitats and their inhabitants
  - natural fluvial geomorphic processes and the
  - connectivity of tributary and river stream flows.
- Many current and past projects and studies in the Russian River focus on single species (such as Coho salmon), or a single parameter of a single species habitat (such as surface flow).
- The Russian River is a complex system with a high degree of spatial variability. Successful restoration and water management efforts need to address this complexity.

ISRP TASKS

- Assemble and review existing data sources for the entire Russian River watershed.
- Identify major data gaps
- Evaluate monitoring methods, protocols, Quality Assurance/Quality Control (QA/QC) measures, and recommend standards
- Formulate a “conceptual model” of the physical processes of surface and groundwater flow for a series of eight subareas in the watershed
- As part of the conceptual model, evaluate the ecological processes associated with the physical processes
- Prepare a report describing the watershed and conceptual model, summarizing data sources and data gaps, and recommending needed studies, needed monitoring and monitoring protocols

LIMITATIONS OF WHAT WAS REVIEWED



- The ISRP evaluated the entire watershed generally but only a portion in great detail.
- Consideration of the entire watershed at a detailed level would create a stronger and more comprehensive analysis.
- The focus of this report is stream flow processes, salmonid habitats and water uses.
- This report chronicles land use changes and some of the associated water quality effects, but water quality issues were not fully evaluated.
- Conditions for the watershed assumed existing water infrastructure and operations and current land use. Land use changes in the watershed are described; however, policy and regulation of land uses are not discussed thoroughly.
- Fish species other than salmonids as well as other wildlife and aquatic species are not discussed thoroughly.
- An exhaustive search for historical accounts of the Russian River was not done
- Reports and data completed through 2015 are included; more recent reports could not be included.

CONCEPTUAL MODEL

• How do surface water and groundwater interact to produce stream flow in creek and river channels and how does this interaction vary spatially in fish-bearing tributary streams.

• A conceptual model is made up of the composition of concepts which are used to help people know, understand or simulate a subject the model represents.

•The conceptual model includes a typology of channels for the Russian River watershed defined by variations in surface and groundwater interactions.

•The ISRP applied the conceptual model to specific creeks to establish a framework for future data gathering and analysis, including determining what type of numerical model is needed.

•A numerical models are needed to evaluate current water management, and develop science-based alternatives protective of native fish and aquatic ecosystems.

•This report takes the first and a very important step to establish a science-based, systems approach to evaluating stream flow, salmonid habitats and the effects of water management in the Russian River basin.

FUNDING

•Funded in 2012 by a group of local water suppliers (Sonoma County Water Agency and the Russian River Mendocino County Flood Control and Water Conservation District), agricultural groups (Russian River Water Conservation Council), and watershed organizations (California Land Stewardship Institute) and growers in Sonoma and Mendocino Counties.

Over 16 applications for the panel were reviewed by representatives from the:
•Sonoma County Water Agency,
•Russian River Mendocino County Flood Control and Water Conservation District,
• Russian River Water Conservation Council the
•National Marine Fisheries Service
•Two representatives of the agricultural communities of Sonoma County and Mendocino County
• Dr. Kondolf, chair of the ISRP.

•The review panel selected nine members to serve on the ISRP, representing scientific expertise in geology, hydrology, groundwater, aquatic ecology, fish biology and resource economics.

•Each ISRP member passed a conflict of interest review similar to that used by the National Science Foundation.

MEMBERS OF THE INDEPENDENT SCIENCE REVIEW PANEL

- **Dr. Matt Kondolf**, Professor of Environmental Planning at U.C. Berkeley. Matt has been working with the California Land Stewardship Institute on the ISRP concept for 6 years, and serves as Chair of the ISRP.
- **Dr. Richard Adams**, Professor Emeritus of Agricultural and Resource Economics at Oregon State University.
- **Dr. John Bredehoeft**, consulting Hydrogeologist and retired Senior Research Geologist at the U.S. Geological Survey. Dr. Bredehoeft resigned from the ISRP in February 2015 for health reasons.
- **Dr. James Constantz**, retired Research Hydrologist at the National Research Program at the U.S. Geological Survey.
- **Dr. Matthew Cover**, Associate Professor of Ecology at C.S.U. Stanislaus.
- **Mr. Christopher Farrar** retired U.S. Geological Survey Hydrologist.
- **Dr. Michael Marchetti**, Professor of Ecology at St. Mary's College of California.
- **Dr. Vincent Resh**, Professor Emeritus of Entomology at U.C. Berkeley.
- **Dr. F. Douglas Shields, Jr.**, Consulting Hydraulic Engineer and retired from the National Sedimentation Laboratory.

PEER REVIEW OF REPORT

The ISRP with assistance from CLSI completed a comprehensive report on the Russian River on November 15, 2015.

The report was submitted for peer review to four peer reviewers chosen by the ISRP selection panel. These reviewers included:

- Dr. Alison O'Dowd, Associate Professor, Humboldt State University, Dept. of Environmental Science and Management;
- Dr. Hubert Morel-Seytoux, Professor Emeritus, Colorado State University, Dept. of Civil and Environmental Engineering;
- Dr. Wade Martin, Professor, California State University Long Beach, Dept. of Economics;
- Dr. Jason Gurdak, Associate Professor, San Francisco State University, Dept. of Earth and Climate Sciences.

The peer review comments were discussed by the ISRP members and were incorporated or additional text added to the report to address the comments.

Thank you to Sonoma County Water Coalition and Sonoma County Water Agency for funding the Peer Review process

RECOMMENDATIONS

The ISRP recommends several different types of actions:

- A whole system approach is needed and all areas of the Russian River watershed require the detailed review completed for eight subareas by this report. The remaining five subareas should also be evaluated.

- Prioritized studies to fill major data gaps.

- Development of a numerical model of the watershed that uses the recommended monitoring data, simulates surface and groundwater interactions and can be used to evaluate effects of changes in water use and can be used with salmonid data to prioritize restoration actions.

- Development of economic incentives to change water management.

- Restoration recommendations for each channel type.

Agenda

8:30		**Registration & Refreshments**
9:00		**Welcome** Mendocino County Supervisor Carre Brown Facilitator Gina Bartlett, Consensus Building Institute
9:10	1	**Study Introduction and Meeting Overview** Laurel Marcus, Ca. Land Stewardship Institute Panel purpose, member selection, funding Panel member introductions Presentation overview
9:15	2	**Overview and History of the Russian River Watershed** Dr. Matt Kondolf Physical features and processes Surface and groundwater interactions Basin history and developments, Current conditions
9:30	3	**Surface and Groundwater Interactions** Dr, James Constantz How bedrock type and permeability, alluvial deposit thickness, channel slope, rainfall and water diversion affect flow in Russian River streams
9:40	4	**Conceptual Model of Stream Flow Processes** for the Russian River Watershed Chris Farrar Description of Channel Typology Examples of typology for tributaries in several subareas
10:00	5	**Channel Typology and Salmonids** Dr. Matt Cover How salmonids use each channel type
10:10		**BREAK**

10:10		**BREAK**
10:25	6	**Data Gaps and Recommended Studies** Dr. Matt Cover What do we know, what do we not know Recommended prioritized studies and monitoring
10:45	7	**Recommendations** Dr. James Constantz **Developing a numerical model** Dr. Richard Adams **Current and future water demand and the potential for water markets** Dr. Doug Shields **Restoration and water management recommendations by channel type**
11:05		**Audience Questions to Understand the Study**
11:55		**Wrap Up, Next Steps** **Thank you for coming!**