**Survey Questions (Qualtrics)**

**Title: Navigating information overload in environmental science: A way forward**

**Survey Target**

People involved in earth system processes (science and management) for: water, fire, snow, vegetation. Below is a list of potential groups to target. Target will be done by email. The survey recruitment text is given below.

**Scientists**

* <https://fmtf.fire.ca.gov/working-groups/science-advisory-panel/>
* UC lab fees (PI ‘s of related research projects) <https://www.ucop.edu/research-initiatives/programs/lab-fees/2018%20LFRP%20Awards.html>
* [California Council on Science and Technology](https://ccst.us/board-of-directors/)
* Ecohydrology AGU technical committee.
* [NASA Western Water Application Office](https://wwao.jpl.nasa.gov/)
* Send to Deans/Department Heads/Research Cluster Units in the UC that are currently doing relevant research (based on websites)
* NSF Critical Zone Observatory network (site in Western US)
* <https://ucanr.edu/sites/StrategicInitiatives/Sustainable_Natural_Ecosystems/Team_Members_725/>
* GP - database of managers and scientists

***NGOs***

* Sierra Club
* The Nature Conservancy
* Watershed Councils

**Resource Managers**

* DWR
* Forest Service
* Cal Fire
* USACE
* BLM
* NOAA

**Private Sector (Companies that use this information - consulting etc)**

* ERM (Environmental Research Management)
* PG & E
* SCE

Introduction

New science is transferred via the writing and reading of peer reviewed papers. Many of today’s science subdisciplines are “mature” fields, with hundreds, if not thousands, of peer reviewed papers. This survey is designed to better understand, (1) how well our current knowledge transfer system functions; (2) how we as scientists, managers, practitioners, and policy-makers “keep up” with our field of study; and (3) how well new findings are communicated.

To narrow the scope, this survey is designed specifically for natural resource management within the Western United States. This includes a range of subdisciplines such as, but not limited to: hydrology, ecology, climatology, geography, economics, political science and natural resource management.

This survey is voluntary and anonymous. The survey should take about **5 minutes** to complete. Results will be summarized in a published paper or report made available through the TagueTeam lab website. Please direct any questions to ctague@bren.ucsb.edu.

We thank you for your time.

**SURVEY QUESTIONS**

 **Q1: Broadly speaking, what is your discipline?**

* Earth System Science
* Social Science
* Ecology

**Q2: Each "discipline" (as we define it) has numerous primary subdisciplines. Based on the subdisciplines below, the closest description of YOUR primary subdiscipline is ...**

* Aquatic Ecology
* Communication / Psychology
* Environmental Policy
* Environmental Law
* Environmental Economics
* Fire ecology
* Geology
* Hydrology
* Meteorology/Climatology
* Natural resource management
* Sustainability Science
* Terrestrial ecology
* Water resource management
* Wildlife Biology
* If "other," what is your sub discipline

**Q3: Per year, on average how many first author peer reviewed papers do you publish?**

* None
* 1 - 3 papers
* 4 - 12 papers
* 12 - 20 papers
* More than 20 papers

**Q4:** **Per year, on average how many coauthored peer reviewed papers do you publish (not as the first author)?**

* None
* 1 - 3 papers
* 4 - 12 papers
* 12 - 20 papers
* More than 20 papers

**Q5:** **We presently record our scientific findings by writing journal papers. As part of this process, we are also asked to review each other’s work. Per year, on average how many peer review papers do you review?**

* None
* 1 - 3 papers
* 4 - 12 papers
* 13 - 49 papers
* 50 - 100 papers
* 100 or more papers

**Q6: To learn about new findings or discover new fields, we read journal papers. Is the reading of journal papers EFFECTIVE for transferring knowledge about METHODS/TECHNIQUES?**

* Very Effective
* Somewhat Effective
* Neither Effective nor Ineffective
* Somewhat Ineffective
* Very Ineffective

**Q7: Is the reading of peer-reviewed journal papers EFFECTIVE for transferring knowledge about HOW THE WORLD WORKS?**

* Very Effective
* Somewhat Effective
* Neither Effective nor Ineffective
* Somewhat Ineffective
* Very Ineffective

**Q8: Is reading journal papers EFFICIENT at transferring knowledge?**

* Very Efficient
* Somewhat Efficient
* Neither Efficient nor Inefficient
* Somewhat Inefficient
* Very Inefficient

**Q9: Per year, how many peer-reviewed papers do you read -- truly start to finish -- in the following disciplines?**

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**Q10: Per year, how many peer-reviewed papers do you skim -- either by just reading the abstract or examining a few figures or reading 1-2 paragraphs -- in the following areas?**

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**Q11: How familiar are you with the current peer-reviewed literature within your discipline (i.e. Earth System Science, Social Science, Ecology)?**

* Extremely familiar
* Very Familiar
* Moderately familiar
* Slightly familiar
* Not familiar at all
* I do not have access to the literature

**Q12: How familiar are you with current literature in your primary subdiscipline (i.e. Aquatic Ecology, Communication / Psychology, Environmental Policy, Environmental Law, Fire ecology, Geology, Hydrology, Meteorology/Climatology, Natural resource management, Sustainability Science, Terrestrial ecology, Water resource management, Wildlife Biology, Other)?**

* Extremely familiar
* Very Familiar
* Moderately familiar
* Slightly familiar
* Not familiar at all
* I do not have access to the literature

**Q13: Is there a subfield(s) within your primary subdiscipline (i.e. within Aquatic Ecology, Communication / Psychology, Environmental Policy, Environmental Law, Fire ecology, Geology, Hydrology, Meteorology/Climatology, Natural resource management, Sustainability Science, Terrestrial ecology, Water resource management, Wildlife Biology, Other) that you are more familiar with? For example, a snow hydrologist might be more familiar with the snow hydrology literature than the hydrology literature.**

* Yes
* No

**Q13b: If Yes, how familiar are you with that literature?**

* Extremely familiar
* Very Familiar
* Moderately familiar
* Slightly familiar
* Not familiar at all
* I do not have access to the literature

**Q14: To keep up to date in my primary subdiscipline, which of the following do you rely on? Please tick all that apply.**

* Regularly read a particular journal (or set of journals)
* Paper recommendations from others (including via Twitter feeds)
* Through professional conferences
* Ad-hoc through paper reviews or literature reviews for a paper I’m writing
* Personal communication of ideas (not through paper recommendations)
* Non peer-reviewed material

**Q15: What tools would you use to find an equation, or evidence to support a conclusion from your primary subdiscipline (i.e. Aquatic Ecology, Communication / Psychology, Environmental Policy, Environmental Law, Fire ecology, Geology, Hydrology, Meteorology/Climatology, Natural resource management, Sustainability Science, Terrestrial ecology, Water resource management, Wildlife Biology, Other)? Please check all that apply.**

* Reading papers from that discipline
* Reading synthesis papers from peer reviewed literature
* Wikipedia
* Contacting a colleague in that discipline
* Google non-peer reviewed material
* Attend a conference
* Textbooks, or other educational materials
* A research network, i.e. the Earth Science Research Network
* If "other", please tell us what you use:

**Q16: Is there a subfield(s) NOT within your primary subdiscipline (i.e. Aquatic Ecology, Communication / Psychology, Environmental Policy, Environmental Law, Fire ecology, Geology, Hydrology, Meteorology/Climatology, Natural resource management, Sustainability Science, Terrestrial ecology, Water resource management, Wildlife Biology, Other) that you are familiar with?**

* Yes
* No

**Q16b:** **If Yes, how familiar are you with that literature?**

* Extremely familiar
* Very Familiar
* Moderately familiar
* Slightly familiar
* Not familiar at all
* I do not have access to the literature

**Q17: How easy is it to find information from another primary subdiscipline (i.e. Aquatic Ecology, Communication / Psychology, Environmental Policy, Environmental Law, Fire ecology, Geology, Hydrology, Meteorology/Climatology, Natural resource management, Sustainability Science, Terrestrial ecology, Water resource management, Wildlife Biology, Other), e.g. an equation, or evidence to support a conclusion, etc.?**

* Easy
* Somewhat Easy
* Neither Easy nor Difficult
* Somewhat Difficult
* Very Difficult

**Q18: What is your most common approach to find new information from a different primary subdiscipline (i.e. Aquatic Ecology, Communication / Psychology, Environmental Policy, Environmental Law, Fire ecology, Geology, Hydrology, Meteorology/Climatology, Natural resource management, Sustainability Science, Terrestrial ecology, Water resource management, Wildlife Biology, Other)?**

* Reading papers from that discipline
* Reading synthesis papers from peer reviewed literature
* Wikipedia
* Contacting a colleague in that discipline
* Google non-peer reviewed material
* Attend a conference
* Textbooks, or other educational materials
* A research network, i.e. the Earth Science Research Network
* Other

**Q19: The state of the science used to predict the rate of snow and ice melt is … please pick the best description below**

* Advanced [We can quantify the uncertainty and know the driving mechanisms]
* Mature [We understand the underlying mechanisms, and have adequate techniques for monitoring, but there are a few areas where improvements are needed]
* Developing [We understand the basics, but much additional science or technique development is required to address some fundamental sources of uncertainty]
* Starting [We are just beginning to understand what is going on]
* I do not know

**Q20: The state of the science used to understand and estimate how forest density reduction (i.e. fuel treatments) impacts wildfire risk is … please pick the best description below**

* Advanced [We can quantify the uncertainty and know the driving mechanisms]
* Mature [We understand the underlying mechanisms, and have adequate techniques for monitoring, but there are a few areas where improvements are needed]
* Developing [We understand the basics, but much additional science or technique development is required to address some fundamental sources of uncertainty]
* Starting [We are just beginning to understand what is going on]
* I do not know

**Q21: The state of the science used to understand and estimate how climate change will alter the timing and magnitude of streamflow is … please pick the best description below**

* Advanced [We can quantify the uncertainty and know the driving mechanisms]
* Mature [We understand the underlying mechanisms, and have adequate techniques for monitoring, but there are a few areas where improvements are needed]
* Developing [We understand the basics, but much additional science or technique development is required to address some fundamental sources of uncertainty]
* Starting [We are just beginning to understand what is going on]
* I do not know

**Q22: The state of the science used to understand mountain precipitation is … please pick the best description below**

* Advanced [We can quantify the uncertainty and know the driving mechanisms]
* Mature [We understand the underlying mechanisms, and have adequate techniques for monitoring, but there are a few areas where improvements are needed]
* Developing [We understand the basics, but much additional science or technique development is required to address some fundamental sources of uncertainty]
* Starting [We are just beginning to understand what is going on]
* I do not know

**Q23: New scientific information is integrated into natural resource management**

* Quickly [within a few months]
* Fairly fast [within a few years]
* Not fast or slow [5 years]
* Slowly [ >10 years]
* Not at all
* I do not know

**Q24: The modeling tools (i.e. physically based fire models, hydrology models, forest health models) used to inform management …**

* Quickly incorporate new science
* Sometimes incorporate aspects of new science
* Rarely incorporate new science
* Never incorporate new science
* I do not know

**Q25: The primary barriers to the integration of new science into management are... please check all that apply.**

* Too many sources of information
* A lack of access to information
* A lack of synthesis
* A lack of consensus within the science community
* Problems in the structure of the management agency (i.e. laws and regulations restrict the management organization or agency in using new science)
* Other
* I do not know

**Q26: Of the above, which do you think is the most problematic?**

* Too many sources of information
* A lack of access to information
* A lack of synthesis
* A lack of consensus within the science community
* Problems in the structure of the management agency (i.e. laws and regulations restricting the use of new science)
* Other
* I do not know

**Q27: What is your primary work affiliation?**

* ACADEMIC
* Local GOVERNMENT employee (city, county, etc.)
* State GOVERNMENT employee
* Federal GOVERNMENT employee
* PRIVATE-FOR-PROFIT company, business or individual, for wages, salary or commissions
* PRIVATE-NOT-FOR-PROFIT, tax-exempt, charitable organization
* MILITARY
* SELF-EMPLOYED

**Q28:** **Within your area of expertise, are you:**

1. Early career (1 - 10 yrs)
2. Mid career (10 - 20 yrs)
3. Senior (20yrs + )

**Q29:** **How many employees work in your establishment? (Qualtrics Library)**

* 1-4
* 5-9
* 10-19
* 20-49
* 50-99
* 100-249
* 250-249
* 250-499
* 500-999
* 1000 or more

**Q30: What is your race? (US Census Bureau)**

* White
* Black or African American
* American Indian or Alaska Native
* Chinese
* Vietnamese
* Native Hawaiian
* Filipino
* Korean
* Samoan
* Asian Indian
* Japanese
* Chamorro
* Other (please specify)
* Prefer not to say

**Q31: What is your sex? (US Census Bureau)**

* Male
* Female
* Nonbinary
* Prefer not to say

**Q32: In which country do you currently reside? (Qualtrics Library)**

* Country selector tab

**Q33: In which state do you currently reside? (Qualtrics Library)**

* 50 states, D.C., and Puerto Rico

**Deleted Questions**

**Q6: Is the review process effective? Please rate this process.**

* Very Effective
* Somewhat Effective
* Neither Effective nor Ineffective
* Somewhat Ineffective
* Very Ineffective
* I do not know

**Q7: Do you find the review process to be efficient?**

* Very Efficient
* Somewhat Efficient
* Neither Efficient nor Inefficient
* Somewhat Inefficient
* Very Inefficient
* I do not know