

Draft List
2015-2016 High-Impact Science Actions
April 8 Public Briefing

Background

In November 2014, the Delta Plan Interagency Implementation Committee (DPIIC) accepted the [Interim Science Action Agenda](#) (ISAA)¹ as a foundational document for guiding regional science activities in support of policy and management decisions in the Delta. Committee members expressed a collective interest in “committing science and policy managers to work collectively with the Delta Science Program ...to determine a science prioritization process and to identify [a short list of] high-impact science activities for near-term implementation” based on the ISAA. These science activities would involve high-impact, cross-agency science actions utilizing input already received through development of the ISAA that could feasibly begin implementation in 2015-2016 and be carried out during development of the Science Action Agenda².

In response to this request, a Delta Agency Science Workgroup (workgroup) was formed comprised of management-level individuals representing both state and federal agencies. Together with the Delta Stewardship Council’s Science Program, the workgroup has developed a draft list of high-impact science actions presented in the tables at the end of this document. The draft list includes potential projects that address high-priority issues in the Delta having multi-agency benefits and relevance to several mandates and documents including the Delta Plan, Delta Science Plan, and California Water Action Plan.

The final product, to be presented at the DPIIC meeting on May 11, 2015, will be in the form of a concise list covering a suite of high-impact science actions that will allow for joint implementation efforts among various agencies and members of the Delta science community.

Draft list of 2015-16 High-Impact Science Actions development

This section provides information about the process used to refine the master list of more than 320 individual science actions, based on the ISAA, to the current draft list of four high-priority areas and

¹The Interim Science Action Agenda is a non-prioritized, shared list of science needs, questions, and actions identified from existing documents, focused interviews with agencies and organizations, and public input. The ISAA was formed as an initial step in moving towards collaborative, transparent, and objective science to address the informational needs of Delta management and policymakers. More information on the ISAA can be found at: <http://deltacouncil.ca.gov/interim-science-action-agenda>.

²The Science Action Agenda is one of the three parts of the Delta Science Strategy, an overarching strategy described in the Delta Plan for collaborative science to fulfill the vision of “One Delta, One Science”. This three-part science strategy was developed in response to the need for more integrated scientific efforts among agencies and programs to facilitate efficient uses of resources and improve communication of highly credible, relevant, and legitimate science (Delta Plan Chapter 2, pp. 34-37, p. 54; Delta Science Plan pp. 8-9, Appendix C). Establishment of a shared science agenda would support rapid, well informed, and efficient management decisions and guide durable and comprehensive policy decisions necessary to achieve the coequal goals of the Delta.

The three parts are:

1. The Delta Science Plan, providing a shared vision for organizing, conducting, and integrating science in the Delta;
2. A Science Action Agenda, a four-year science work plan that prioritizes and aligns science actions to inform policy and management decisions; and
3. *The State of Bay-Delta Science (SBDS)*, a synthesis of the current scientific knowledge for the Delta and essential for informing updates to the Science Action Agenda.

corresponding science actions. For a more visual representation of this refinement process, please see Figure 1.

The master list was refined using three criteria based on the DPIIC request:

1. *Ready for near-term implementation*: The science action is feasible to implement in the upcoming year. The term “implementation” means to either begin the administration process to fund a given science action or fully executing the program or project outlined by the science action. Thus, projects and programs were not considered if they were currently underway or already funded with no foreseeable need for additional funding.
2. *Focused at a Delta-wide scale*: A “high-impact” science action was interpreted to involve joint implementation by multiple agencies and organizations with products that would affect decisions made about the Delta-wide system. These science actions would also serve as the “gaps and glue” by filling gaps in science knowledge and providing opportunities to collaboratively advance scientific understanding and build science capacity to address decision makers’ needs. Thus, site-specific projects focusing on a particular agency, department, or group’s mission, were not included because their objectives did not have cross-agency relevance.
3. *Stated as an actionable item*: The science action is not stated as a high-level management need but is a research project or specific scientific question that can clearly be addressed in the form of a project or program.

Using the above criteria, the master list of more than 320 individual science actions was refined to 118. These remaining science actions were organized into 16 topic areas based on similar scope or issue. This interim draft list of 16 topics then was presented to the workgroup as the initial working document for 1) collective support and 2) recommendations regarding further refinement. During the discussion of the interim list, several topics were filtered out due to their updated status of being currently addressed. From the remaining topics, four priority areas were then identified. These four priority areas are a combination of one or more of the various remaining topics from the interim list of 16 and any additional high-impact Delta issues shared among the workgroup members. These four areas are (in no particular order):

- Assessing drought-related effects on the Delta
- Effectiveness and implications of habitat restoration actions
- Science support for management of estuarine and migratory species
- Science supporting flood risk reduction and the economies of Delta communities

Specific science actions in the form of projects corresponding to each of these priority areas were then identified. Some of these science actions are newly identified projects addressing immediate needs in the Delta, while others are based on the individual science actions identified in the ISAA that were placed within the 16 topics of the interim list.

The four priority areas and corresponding science actions have been organized into two tables, presented at the end of this document, according to potential funding mechanisms. The first table

includes science actions that are short-term and may be implemented through more rapid response mechanisms, such as a directed action or request for proposal. The second table includes science actions that have longer-term objectives and would be appropriate to implement through a more involved process, such as a proposal solicitation or science fellows solicitation. Together, the tables provide a suite of science actions ranging in implementation period and product time frame. The short-term science actions fulfill DPIIC's request of science actions providing near-term implementation and results and the longer-term science actions reflect the workgroup's opinion that investing in long-term projects and programs in the near-term are also crucial. Please note that the placement of the science actions within the respective tables are for organizational purposes only; a science action can be interchanged if it is found to be more appropriate to fund using a different mechanism. A list of potential implementation mechanisms is presented below with an explanation of each:

- *Directed Actions (DA)*: Provides funding for more focused studies where both the scope and research team have been identified. The administration process is completed in less than 2 months, the resulting grant or contract covering a variable time period ranging from one month to 3 years.
- *Request for Proposals (RFP)*: A funding process where the scope of research has been identified, but the project team is still unidentified. The administrative process takes approximately 6 months and the resultant grant or contract covers 1-3 years.
- *Proposal Solicitation Package (PSP)*: Provides funding for broader concepts where a scientific need has been identified but no specific study or project team has been chosen. The solicitation process takes approximately 6 months to complete and the respective research grants are for a 2-4 year study.
- *Delta Science Fellows Program*: This program brings young scientists and Delta agency scientists together to work collaboratively on data synthesis and research projects of importance to the management needs of the Delta. The Delta Science Fellows Program also trains young scientists to work in multidisciplinary, field-oriented research and provides opportunities for agencies to recruit talented scientists. The solicitation process, completed in approximately 6 months, results in the pairing of a post-doctoral researcher or Ph.D. candidate with an academic mentor; and an agency/NGO organization (community mentor).

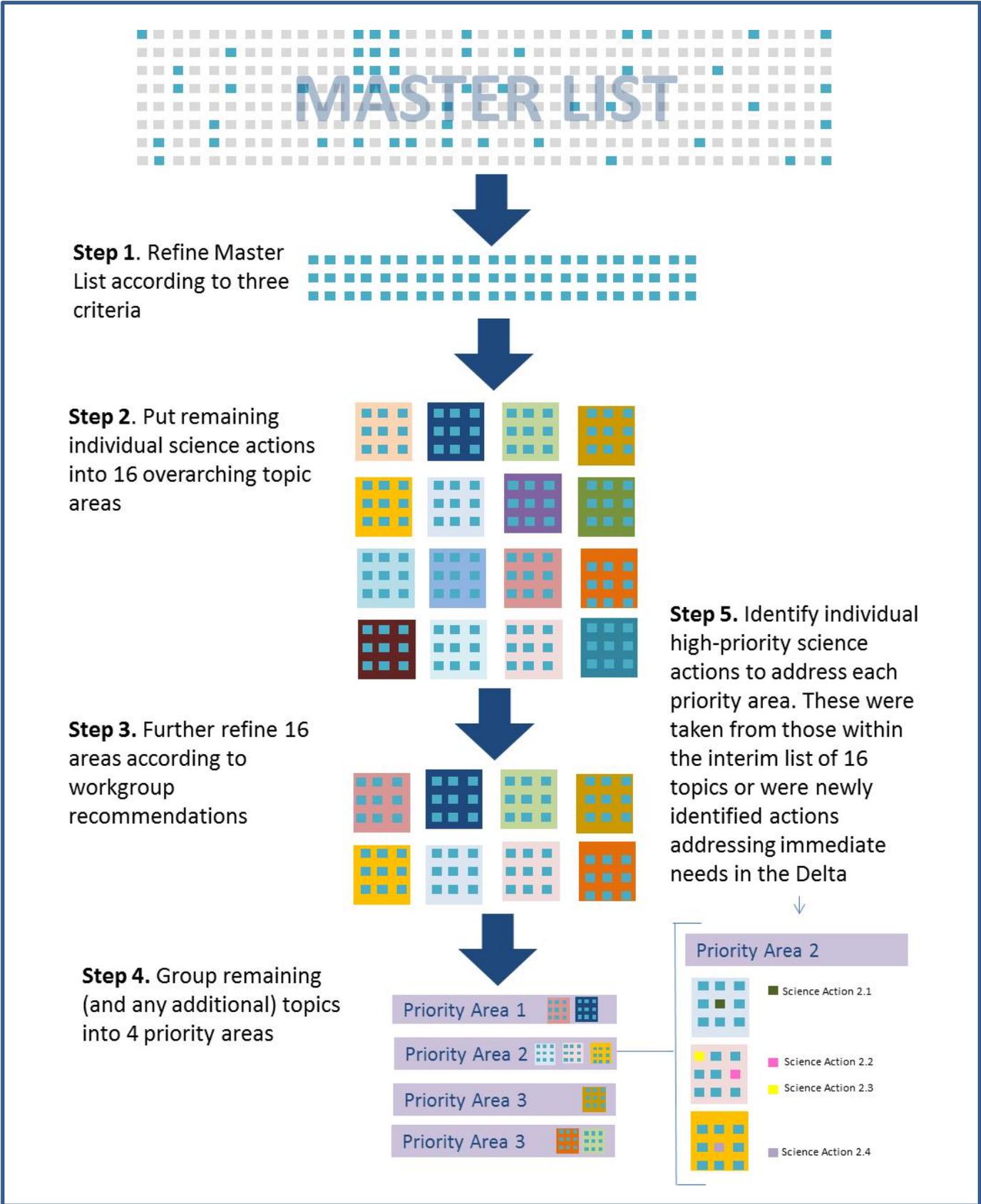


Figure 1. Schematic of draft list refinement process.

Table 1. High Impact Science Actions That May Be Addressed by Rapid-Response Implementation

	Science Action	Example products	Potential Implementation Mechanism
Topic 1. Assessing drought-related effects on the Delta			
A	Conduct a technical review of current reports that identify what is known about effects of drought on flow, water quality, contaminants, water supply, emergency response efficiency, entrainment, and survival rates of species, as well as identify topics that have not been covered in past synthesis efforts. Using results of the review, conduct a "lessons learned" workshop using key findings of the review.	Report that identifies ongoing gaps in knowledge regarding drought effects providing insight for future research needs and information to create a metrics system to monitor key indicators of drought to aid future management efforts.	Directed Action/Request for Proposal
B	Evaluate tools for real-time operations management, monitoring, reporting, and data management and accessibility related to drought such as pilot studies to investigate appropriate locations to install monitoring equipment and test efficacy of new tools and techniques; review the best approaches to improve data access and methods to streamline data synthesis.	Report on real-time management tools such as acoustic arrays and technology to improve salinity and Delta outflow measurements to provide information regarding current monitoring capacity.	Directed Action/Request for Proposal
Topic 2. Effectiveness and implications of habitat restoration actions			
C	Synthesize established knowledge about designing effective habitat restoration projects in the Delta.	Report outlining lessons learned from past restoration studies and efforts, providing a list of specific knowledge gaps and design principles for habitat restoration. This information can be used to adaptively guide the design of habitat restoration monitoring efforts and provide recommendations for effective adaptive management.	Directed Action/Request for Proposal
D	Enhance current and promote additional monitoring efforts in the Delta and Suisun Marsh to gather pre-restoration baseline data.	A plan for baseline monitoring needed for pre/post habitat restoration analyses.	Directed Action/Request for Proposal
Topic 3. Science support for management of estuarine and migratory species.			
E	Conduct follow-up work to improve collaborative temperature modeling for improving cold water forecasting for the Sacramento River and Shasta Dam releases.	Synthesis report of current temperature modeling efforts and recommended improvements to better forecast cold water release.	Directed Action/Request for Proposal
F	Peer-review of the Southwest Fisheries Science Center's Winter-Run Chinook salmon life-cycle model.	A scientifically robust salmon life-cycle model to inform decisions to adapt water operations and prescribed RPA actions.	Directed Action/Request for Proposal
G	Fund research identified within the next 6-12 months by various efforts such as Salmon/Steelhead/Sturgeon Assessment of Indicators by Life stages (S.A.I.L) and Interagency Ecological Program's Management, Analysis, and Synthesis Team (MAST).	Information to fill knowledge gaps identified by respective synthesis efforts for informing management actions intended to protect key species and habitat.	Directed Action/Request For Proposal
Topic 4. Science supporting flood risk reduction and the economies of Delta communities			
H	Consolidate the current state of knowledge regarding economic analysis of the potential to reduce flood damage through strategic levee setbacks and expanding wetland and floodplain acreage.	Report identifying knowledge gaps and research recommendations addressing wetland and floodplain restoration and management.	Directed Action/Request for Proposal

Table 2. High Impact Science Actions That May Be Addressed Through Longer-Term Implementation

Science Action	Example research projects	Example products	Potential Implementation Mechanism
Topic 1. Assessing drought-related effects on the Delta			
I	Investigate effects of drought-induced flow changes on native fish survival and migration patterns.	Effects of temperature changes on juvenile green sturgeon recruitment, effects of flow and increased salinity on population distribution of Chinook salmon during summer months.	Additional knowledge to inform water management, species needs, and emergency response.
J	Advance models that assess effects of changes in flow, entrainment, water quality, and contaminants on juvenile fish using recent data from drought-related projects.	Investigate potential alternate mechanisms and factors affecting juvenile fish mortality, such as pathogens, in addition to temperature when running juvenile health condition models.	Additional information for juvenile health condition models to improve monitoring and management efforts.
Topic 2. Effectiveness and implications of habitat restoration actions			
K	Understand the effectiveness of habitat restoration in the form of increasing wetland acreage on farmland on subsidence reversal, increase in carbon sequestration, effects on reducing mercury methylation, providing flood protection, and improving levee stability.	Assessment of increased habitat acreage in relation to flood protection and levee integrity.	Improved understanding of the relationship between habitat restoration and the Delta landscape and potential effects on flood security in the face of seismic flood events. Information may be used in improving design of habitat restoration efforts.
L	Invest in decision-support tools to explore alternative Delta habitat restoration designs and potential regional effect of multi-project implementation on water quality, contaminants, flow, and species population dynamics.	Studies focused on projects that if implemented will have synergistic effects on system; develop models that identify tradeoffs among habitat restoration designs.	Increase understanding of the relationships between the working landscape and habitat restoration to improve strategic geographic placement of projects and increase awareness in management of sites to minimize adverse effects on Delta system. Maximize multi-project benefits and opportunities for landscape-scale habitat restoration.
Topic 3. Science support for management of estuarine and migratory species.			
M	Support new innovations such as real-time tracking devices and adjustments to monitoring and survey designs to aid in determining temporal and spatial distribution of fish at a finer scale that is not habitat based.		Innovative technologies that support refinement of distribution and abundance survey design, enhanced real-time and decision support tools.
Topic 4. Science supporting flood risk reduction and the economies of Delta communities			
N	Economic impact assessment of Invasive Aquatic Vegetation (IAV).	Focused assessments: IAV effects on boating, recreation, operations and management	Increased understanding of economic impacts of IAV to inform management decisions.