



CALIFORNIA NATURAL RESOURCES AGENCY - MONITORING AND STEWARDSHIP UNIT
Resources Agency Project Tracking and Reporting (RAPTR) System
Stakeholder Workshop
AQUATIC HABITAT

SUMMARY

Tuesday February 23, 2021 | 9:30AM-3:30PM

Welcome, Logistics, and Introductions

Orit Kalman, facilitator, Sacramento State Consensus and Collaboration Program

Ms. Kalman welcomed participants to the Aquatic Habitat meeting, the third in a series of workshops supporting development of the Resources Agency Project Tracking and Reporting (RAPTR) system. She reviewed the workshop purpose, agenda, and guidelines for remote participation during the meeting.

Workshop participants included staff from offices under the California Natural Resources Agency (CNRA). The workshop was the first of two on habitat-focused projects, and centered on aquatic habitat; the second was held two days later and focused on terrestrial habitat. A majority of participants represented expertise in watersheds, tributaries/streams/riparian habitats, wetlands, and ocean/coastal, and some participants' expertise was in wildlife management, forest/fire, and agriculture/rangeland.

Welcoming Remarks

Wade Crowfoot, Secretary for California Natural Resources Agency

Amanda Martin, Deputy Assistant Secretary for Administration and Finance

Ms. Martin thanked participants for joining this and past RAPTR development workshops and introduced Secretary Crowfoot.

Secretary Crowfoot expressed his appreciation for all employees across CNRA for their perseverance in keeping the Agency moving forward during a very challenging year. He said that science is, and should be, the center of all that CNRA does in achieving its mission of stewarding natural, cultural, and historic resources in California.

Secretary Crowfoot highlighted *three key priorities* for the Agency: 1) building climate resilience, 2) maintaining the naturally rich biodiversity of the State, and 3) building equitable access for all Californians. These priorities have been and continue to be advanced through the tens of billions of dollars in investments that the Agency has made over the past few decades. Ensuring that these investments are as efficient and effective as possible is critical given the State's challenges related to the ongoing impacts of climate change, stressors on biodiversity, and continued inequity in access to California's natural resources. Secretary Crowfoot said that a key component to ensuring efficiency of the State's investments is the "Cutting Green Tape" initiative aimed at addressing the ways that well-meaning laws and regulations have posed



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challenges to the implementation of conservation efforts across the State. He further noted that a third of many project budgets are currently dedicated to planning activities alone. He believes that a cornerstone of ensuring the effectiveness of the State's investments (many of which are one-time capital investments) is the creation of a mechanism through which the Agency could determine whether projects were meeting their intended long-term goals over time; and that the RAPTR system will likely be that mechanism.

Secretary Crowfoot shared the Japanese business philosophy of *kaizen*, which is a commitment to continuous improvement of functions and involvement of all employees at every level in that improvement. He said this philosophy applies to all the Agency's work: not simply making investments but ensuring that their effectiveness is continually improving and ensuring that all employees have an opportunity to be a part of that process. Secretary Crowfoot emphasized that the perspectives of the Agency's employees are critical to development of the RAPTR system, as they are the experts on how complex projects with multiple objectives are tracked and reported. He emphasized that the first goal is to develop an implementable system and that it will continue to be improved after it is first rolled out.

Overview of RAPTR Development, Design, and Early Progress

Gina Ford, Senior Environmental Scientist (Supervisor), CNRA-MSU

Ms. Ford provided an overview of the RAPTR system, including background about the CNRA Monitoring and Stewardship Unit (MSU) and an overview of the strategy for developing the system. The MSU was tasked with developing a system to better tell the story of the impacts of the bond-funded grant projects under CNRA. MSU first evaluated how these projects are currently monitored and then developed a set of recommendations for future tracking and reporting. The results of this evaluation were published in a white paper, endorsed by Secretary Crowfoot, and recommended:

- Developing a centralized track and reporting system,
- Establishing standard protocols for data collection and management,
- Providing training, and
- Leveraging existing reporting systems to reduce redundant data entry

The tracking and reporting system is being developed through two parallel processes: identification of common suites of metrics across CNRA project themes and types, and development of the relational database and project management system. The RAPTR development workshop series are the start of the metrics identification process; it will also include working groups and possibly technical advisory committees to dig into the finer details.

Ms. Ford presented the conceptual design of RAPTR, which covers all phases of a project, from the pre-award phase (funding, application submission, and application processing) through the



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award phase (agreeing to fund the project and finalizing the agreement and classifying the project) and the post-award phase (implementation and monitoring of the project in progress, closeout, and post-project completion monitoring). Post-completion monitoring is a new piece that the Agency has not as yet been doing.

Ms. Ford reviewed anticipated benefits of RAPTR as well as concerns that the MSU team has heard about it. While there are many anticipated benefits, the concerns are fewer, and relate to logistics and operations, authority and mandates, and the scope of the system.

The MSU team is focused on ensuring that the metrics and methods for tracking are appropriate; the RAPTR workshop series is a first step in gathering feedback about harmonizing and standardizing metrics that can apply across projects. The system will also build on existing tracking efforts, focusing in on metrics that reflect the Agency's values and priorities. The metrics should support decision-making by answering State- and agency-level management questions, as well as program-level and project-level questions.

Ms. Ford gave an overview of the parallel metrics identification workshops process and RAPTR system development process. She also shared a timeline for the activities, including a final workshop in Spring 2021 and wrap-up meeting in Summer 2021 for the metrics identification process. RAPTR's soft launch is planned for spring 2022. Ms. Ford shared the objectives of the habitat workshops:

1. Cultivating a common understanding of ways to assess the performance of an individual project, and how that can be scaled to inform program and agency decision-making.
2. Identifying existing tools, systems, efforts and issues that inform development.
3. Providing clarity on RAPTR objectives.

Ms. Ford also shared the vision for the RAPTR system, including what participants can expect of RAPTR in the near term and what it might help with in the imagined future. In the near term:

- RAPTR will include:
 - A grant application portal
 - Grant application review
 - Project management and invoicing features
 - Document storage
 - Performance monitoring resources
 - Analytical opportunities
- RAPTR will help:



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- Consolidate data entry across multiple reporting systems
- Streamline State-funded grant management processes
- Track and evaluate project and program success

In the imagined future:

- RAPTR might:
 - Allow for interface and connection with advanced GIS tools; see projects with other relevant information.
 - Increase awareness between offices of shared project areas or adjacent projects that can coordinate activities
 - Provide ways to look at how projects are helping to accomplish state plans and goals.
 - Potentially interface directly with FI\$Cal or other statewide systems, further reducing duplicative data entry.
 - A mobile app
- RAPTR could help:
 - Further consolidate data entry across even more systems
 - Link directly to the State funding opportunity site run by state library
 - Track and evaluate project, program, and planning success.
 - Allow for easier collaboration between offices – leverage expertise and tools.
 - Help to establish baseline data on the status of ecosystems or watersheds.
 - Tell the story of what we all do.

Jim Falter, Environmental Scientist, CNRA-MSU

Mr. Falter reviewed the current conceptual design of RAPTR including some of its proposed functionality. He first explained how relational databases like RAPTR translate descriptions of project activities written in a narrative form into interacting tables of parsed, machine-readable information. He then went through the overall architecture of RAPTR as proposed by the IT Development Team highlighting how the 'core' of RAPTR would likely consist of not one but several interacting relational database modules. Surrounding this data-rich 'core' would be a peripheral network of software service applications providing Agency staff with the ability to design and implement online grant applications as well as facilitate their review, scoring, and selection for funding. This same peripheral application network would also support the ability of program staff to store and manage project documents and media files, monitoring data, and geospatial data as well as support a number of other project management activities that would be described at a future date.



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Mr. Falter explained how RAPTR users could interact with RAPTR by presenting two different concept designs of potential User Interfaces (UI) noting that the final User Interfaces used to front the RAPTR system would be developed in close consultation with the IT Development Team and other experts in the management and visualization of geospatial information. The first UI would be a dashboard profiling all the key project data needed to holistically describe the project such its location within the California, a recent high-resolution geo-referenced aerial image showing the project footprint and surrounding landscape, its various funding sources (both from within and outside the State), and a brief narrative description of the project. This information would be further supplemented by important contextual social and environmental data such as the distribution of land cover, native biodiversity present, the proximity of California residents and Disadvantaged Communities, and the distribution of wildfire risk in and around the project area. A separate UI would allow RAPTR users to more broadly explore the distribution of Agency-led projects across the California landscape within the expanded context of the spatial distributions of land cover, water resources, monitoring activities, flood risk, wildfire risk, biodiversity and population demographics.

Given potential concerns or confusion about possible overlap between the functionality proposed for RAPTR and other third-party data commons that program staff are currently using to help manage their projects, Mr. Falter emphasized that *RAPTR would be focused solely on tracking the activities of Agency-led State projects*, not those activities being conducted independently by federal agencies and/or private organizations. RAPTR will no doubt import much of the data curated by external third parties (e.g., the CPAD and CCED as currently managed by GreenInfo Network and EcoAtlas as currently managed by the San Francisco Estuarine Institute) to illustrate to program staff how the projects they manage fit within the greater landscape of natural resources assets and activities. At the same time, however, it is expected that Agency programs will be able to share important project data with these same public data commons in support of larger State initiatives aimed at achieving greatly improved data transparency. Mr. Falter cautioned that a potentially significant downside of relying exclusively on such external data commons to manage Agency-led project data would be the uncoordinated development of a free-form distributed data network that would be too logistically complex and financially burdensome to maintain. One of the major advantages of a system like RAPTR would be its ability to take full advantage of the economies of scale associated with aggregating project data at the Agency level.

Finally, Mr. Falter stressed how RAPTR would help streamline data input, management and quality control in an effort to mitigate well-known issues with data attrition; thus, ensuring that the accuracy and completeness of project data would be maintained in perpetuity.



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Brad Juarros, Environmental Scientist, CNRA-MSU

Mr. Juarros shared an update on work related to tracking the State's acquisitions and easements. In 2020, the California Conservation Easements Database (CCED) was integrated with the [California Protected Areas GIS Dataset \(CPAD\)](#), a [Map Collaborator tool](#) was added, the RAPTR development workshop focused on acquisitions and easements was held, and a Working Group was established to continue the work started in the workshop.

Mr. Juarros reviewed additions made to the CPAD in 2020: approximately 67,000 total acres were added with 32,500 of those being conservation easements. He explained that there were some properties that had been incorrectly listed as State-owned whose title was found to be held by others, thus causing the appearance of a decrease in State-held acres in CPAD in 2020. Mr. Juarros also reviewed features of the CPAD map collaborator tool. He invited participants to reach out with any questions or to express interest in joining the Working Group.

Questions & Answers

A participant asked:

- Do you know already know which databases RAPTR will be pulling information from? Is there a list anywhere?
 - Mr. Falter said that there has not yet been a decision on which external geospatial or other data sets to bring into RAPTR. What he showed during the presentation were demonstrations of what is possible, but not a formal declaration of which data sets CNRA will prioritize. Such decisions will be informed by experts in each particular data domain (e.g., CDFW for biodiversity and DWR for flood risk and water resources).

Examples of Aquatic Habitat Monitoring and Evaluation Efforts – Presentations and Discussion

Andy Rehn, California Department of Fish and Wildlife (CDFW): Measuring Biological Integrity in California Streams

Mr. Rehn shared an overview of the State's Aquatic Bioassessment Program. The basis of the program's approach is to evaluate the overall condition, or health, of a waterbody based on the diversity and abundance of organisms living within it. Mr. Rehn said that being able to measure biological integrity is a critical component of restoring and maintaining aquatic habitats.

California's stream bioassessment program has focused on perennial wadable streams and use Benthic Macro-Invertebrates (or BMIs) as key ecological indicators. Mr. Rehn reviewed three key components of the measurement and assessment of biological integrity in the bioassessment program: the use of standard field and lab methods, the reference condition monitoring program (RCMP), and the Perennial Streams Assessment (PSA). The standardization



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of field and lab methods ensure that sampling and analysis of aquatic biodiversity across the state are done in a consistent and intercomparable manner. He further noted that all methods that the Bioassessment Program use are well-documented, made publicly available, and subject to periodic review and revision. The RCMP provides reference distributions of stream conditions according to the prevailing stream morphology and climate when human disturbance is absent or minimal. These reference conditions are then used to statistically predict the expected condition of streams subject to human disturbance or other natural stressors and, as such, form the foundation of the assessment program. Over the last 20 years, thousands of sites have been sampled statewide by various regional, state, and federal programs, developing a reference pool of 900 reference stream sites that comprehensively represent the State's diverse physiography.

Mr. Rehn explained how the California Stream Condition Index (CSCI) helps translate complex data about BMIs in a stream to an indicator of overall stream health and its potential response to human activities. The component indices are taxonomic completeness (i.e., diversity of BMIs present) and measures of ecological structure and function. Statistical models predict the kinds of species and attributes expected in a particular stream, based on natural environmental variables like elevation, climate, geology, and watershed size, to prevent conflation of natural variation with human disturbance. Results are interpreted from a regional perspective to set meaningful objectives.

Mr. Rehn noted that the bioassessment tools he described could be used as stream restoration performance measures "out of the box", suggesting that similar performance measures could be developed for other aquatic habitats. He emphasized that while using consistent, standardized observations in combination with a pool of diverse reference sites would no doubt allow resource managers to set scientifically justifiable thresholds for disturbance, such thresholds are generally based on the best professional judgement of a relatively small group of people and alternate thresholds may produce equally valid assessments. He concluded by saying that implementing tools to inform management is more important than reaching a specific management objective.

Daniel Schultz, California State Water Resources Control Board (SWRCB): Overview of the California Environmental Flows Framework

Mr. Schultz shared an overview of the California Environmental Flows Framework (CEFF), which was developed by a Technical Advisory Committee with representation from State agencies, academic institutions, and environmental organizations. Environmental flows describe the quantity, timing, quality of water allocated to the environment at levels capable of sustaining the health of aquatic ecosystems but, at the same time, support the social, cultural and economic needs of adjacent populations. At present, there are many programs that attempt to



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define target environmental flow conditions; however, achieving this goal in practice is challenging given California's diverse habitats and native taxa as well as the currently inconsistent application and poor coordination of environmental flow approaches.

The recently released [draft CEFF Guidelines](#) provides technical guidance that managers need to develop scientifically defensible environmental flow recommendations using a science-based [Functional Flows](#) approach. This approach decomposes a tributary's hydrograph into five flow components that can be defined and analyzed in terms of their ability to support critical biological, chemical and physical functions: 1) fall pulse flow, 2) wet-season base flow, 3) wet-season peak flow, 4) spring recession flow, 5) and dry-season base flow. These five components are then further divided into individual scalar metrics that define the characteristic of each component including flow magnitude, timing, and duration, as well as the specific rate of change for spring recession flows.

The steps of the CEFF are grouped into three sections, covering science-based and sociopolitical considerations:

1. Identify ecological flow criteria using natural functional flows where the ecological management goals for a given project or program are defined, natural ranges for each of the five flow components in a hypothetically unaltered state are predicted based on a [statistical model](#), non-flow factors affecting observed ranges of natural flows are identified, and the specific ecological flow criteria requiring further evaluation are subsequently identified [Section A].
2. Develop ecological flow criteria for focal flow components requiring additional consideration where a conceptual model relating functional flow components to ecological management goals is defined, key flow-ecology relationships are defined, and individual flow criteria for focal functional flow components are defined [Section B].
3. Developing environmental flow recommendations whereby the target management objectives are identified, the degree of flow alteration is assessed, management scenarios are evaluated to assess tradeoffs, consequent environmental flow recommendations are made, and an implementation plan is developed [Section C].

The outcomes of CEFF include:

- Ecological flow criteria for areas of interest
- Environmental flow recommendations as defined through stakeholder engagement
- Recommended mitigation measures as defined through stakeholder engagement
- Plans for subsequent implementation, monitoring and adaptive management



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Mr. Schultz emphasized that while CEFF is not meant to be a regulatory document, it could be used for regulatory purposes. Nonetheless, it is also useful as tool for managing California's complex network of tributaries. The final CEFF document and frequently asked questions are slated for release in Spring 2021, however it is intended to be a living document that will be updated even as it is in use - multiple case studies are already under development. Mr. Schultz shared online tools related to CEFF:

- Natural flows database/web viewer (rivers.codefornature.org)
- Functional flow calculator (eflows.ucdavis.edu)
- Information repository (ceff.ucdavis.edu)

CEFF may be useful in evaluating effectiveness of projects related to both research and planning as well as project implementation. While CEFF does not establish 'out-of-the-box' standards, it could be used as a planning tool to develop environmental flows standards through a stakeholder-driven process. Natural Flow Metrics could be used to directly inform benefits of non-contentious flow enhancement projects. For example, shifting small-scale dry and large-scale wet season diversions to off-stream storage to mitigate against natural variations in water supply and demand. Ecological flow criteria and environmental flows developed using CEFF through research and planning grants or other process could be used to measure effectiveness of grants for more complex or contentious flow enhancement projects. For example, large restoration projects or other management activities implemented specifically to offset the impacts of large-scale water management projects.

Evyan Sloane, California State Coastal Conservancy: Using CRAM for Assessing the State's Wetland Restoration Efforts

Ms. Sloane presented the California Rapid Assessment Method (CRAM), a method for monitoring conditions of wetlands throughout the State. The State Coastal Conservancy (SCC) is primarily a funding agency that engages in monitoring to support adaptation and development of robust restoration projects.

Wetland regional monitoring allows SCC to compare projects across the state within the agency and between agencies, address increasing monitoring needs due to sea level rise and other climate change stressors, help the State understand how wetlands are faring to provide resilience, support high level funding & management decisions through monitoring information, and provide information beyond individual projects to help answer key State management questions. SCC uses CRAM because it is widely used, relatively inexpensive, easily and quickly done, scientifically defensible, standardized (there are many trained practitioners across the state), and project data can be accessed on EcoAtlas. Ms. Sloane said that despite these benefits and the role that it plays in allowing comparisons to be drawn across projects,



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CRAM does not replace project-level monitoring.

In 2016, SCC started requiring pre- and post-construction CRAM surveys for all wetlands projects. At the project level, SCC uses CRAM to evaluate high-level project success, identify additional monitoring needs, identify adaptive management needs, evaluate habitat evolution, help project leads make site-specific decisions, and understand the regional context within which a project is situated. At the Agency level, CRAM may help demonstrate SCC's contribution to improving wetland condition and resiliency, advance wetland science and design better projects, and allow for project comparisons across sites.

Ms. Sloane advocated for advancing regional monitoring, building upon existing systems (for example building application programming interfaces that can pull information from existing databases such as EcoAtlas), providing financial support for the frameworks that have been developed, and leading management agencies by building in consistent monitoring requirements like CRAM.

Lori Clamurro-Chew, Department of Water Resources: Tracking Central Valley Flood Protection Plan Performance in Promoting Ecosystem Functions

Ms. Clamurro-Chew presented on how the Department of Water Resources (DWR) is tracking the performance of implementation of the Conservation Strategy for the Central Valley Flood Protection Plan (CVFPP) in promoting ecosystem functions. The CVFPP was mandated by the 2008 Central Valley Flood Protection Act, with the primary goal of improving flood risk management by improving operations and maintenance, promoting ecosystem functions, improving institutional support, and promoting multi-benefit projects. Since its first release in 2012, the CVFPP has included a conservation framework and/or strategy to promote ecosystem functions which, in turn, informs the overall plan.

Ms. Clamurro-Chew noted that foundational themes included in the 2022 update of the CVFPP include climate resilience, reporting project implementation accomplishments and outcomes (i.e., performance tracking), and alignment of CVFPP implementation efforts with other State efforts. Performance tracking in particular supports allows DWR to 1) assess their progress toward achieving the State's conservation strategy measurable objectives, and 2) assess their ability to respond to inquiries from the legislature, funders, and others about the outcomes of investments as well as provide the basis for future adaptive management and learning.

The 2017 CVFPP update included recommendations on performance tracking including to track outcomes from flood investments to demonstrate values and to monitor and track outcomes of multi-benefit projects over time. The 2016 Conservation Strategy, which was adopted as part of the 2017 update, identified targeted ecosystem processes, habitats, species, or stressors for



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each ecological goal within the legislation to guide investments in meeting the intent of the legislation. Performance metrics were identified for each of these and measurable objectives based on:

- Estimating need and opportunities
 - Size of conservation need (i.e. amount needed by target species)
 - Size of opportunities for multi-benefit flood projects to contribute to need
- Identifying opportunities such as:
 - Basin-Wide Feasibility Studies
 - Floodplain Restoration Opportunity Analysis (FROA)
 - Other potential opportunities
- Setting a measurable objective quantity equal to the *need* or the *opportunity*, whichever is smaller

Specific measurable objectives were developed for each metric within each of the State's five conservation planning areas. Ms. Clamurro-Chew shared an example of how project contributions to the Conservation Strategy's measurable objectives are evaluated.

A tracking system specifically designed to meet the needs of the CVFPP is in development, currently in draft conceptual form. The system will be connected to existing GIS infrastructure within DWR and will have the ability to locate projects using a map, list view, or a search bar. The system might have capacity to generate a report, in response to a simple query, showing progress toward meeting measurable objectives within a specified geographic area and date range.

Panel Discussion

Participants shared questions for the panelists:

- Do you think it is possible to assess the habitat quality of a stream using just the CSCI, or is it now required to measure the ASCI and IPI as well?
 - Mr. Rehn: CSCI responds to habitat quality but is not a measure of habitat quality itself; there is a separate habitat quality index to assess that. The more lines of evidence indicating the same condition, the more confident one can be about the finding.
- Would requiring all aquatic or in-stream projects to report on the 16 hydrological model prediction metrics in the CEFF improve understanding of a project's impacts on in-stream flow?
 - Mr. Schultz: This may vary by project. The first step is to move through the CEFF document to establish the metrics, and the recommendation is to develop the criteria for all flow components during that process. However, some smaller projects might not have sufficient funding to go through the more detailed

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process, instead relying on the “out of the box” modeled metrics.

- Does the SCC require its funding recipients to perform CRAM and other monitoring methods as a condition of receiving grant funds? If not, how else do you pay for and accomplish monitoring on all of your "earth-moving" projects? Have any of the grantees had any issue with the SCC requiring them to do CRAM and report to EcoAtlas?
 - Ms. Sloane: Yes, SCC does require CRAM for all applicable projects. There are no across-the-board Level 3 monitoring requirements, but they may be included based on a grant’s scope and budget. Grantees have not had issues with the requirement because SCC provides funding for CRAM; it is cheap and fast and if the grantee does not have internal capacity to carry it out, they can hire a consultant to do the assessment. Some project managers within SCC did not initially understand its benefits, so internal training was conducted and successfully eased their concerns.
- Once it is setup to function with DWR’s internal GIS efforts, will the new Performance Tracking System have any external (non-DWR) State or public users?
 - Ms. Clamurro-Chew: The system is currently intended to be internal to DWR, but a public facing version is anticipated, which would be linked with RAPTR.
- How do you use the regional bioassessments to evaluate program-level success?
 - Mr. Rehn: The regional bioassessments provide site- or project-level evaluation rather than program evaluation. Indices from each restoration site within a program could be taken together to evaluate the program’s overall effect.
- Currently, how are you aware (if at all) of in-stream projects that may impact or benefit the flow requirements?
 - Mr. Schultz: There are few flow requirements in California at this time. However, on a site-by-site basis, a project can be used to improve flows. For example, SWRCB worked on a grant that evaluated instream flows as part of the grant and connected this evaluation to infrastructure improvement work that ultimately improved instream flows while providing a better facility for the diverter.
- How much area can an individual CRAM assessment cover? And how does that compare with the spatial scale of a typical wetlands restoration project?
 - Ms. Sloane: The CRAM survey is done by a set “assessment area”; however, multiple assessment areas may be needed depending on the size of a wetland. Many projects have to do two to three assessment areas, which would add up to between \$4,000-\$6,000 total for the assessments.
- Might habitat quality or other ecological metrics be incorporated into the CVFPP monitoring and tracking to evaluate program performance?
 - Ms. Clamurro-Chew: Yes, DWR is in the process of looking into adding ecological components. Due to the program’s origins it is currently focused on quantity [or acreage], but there is interest in developing a habitat health component for



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future updates of the conservation strategy.

Guiding Principles and Screening Criteria for Monitoring and Evaluation Metrics

Elea Becker Lowe, Environmental Scientist, CNRA-MSU

Ms. Becker Lowe provided an introduction to the breakout sessions, which included one session on measuring project-level success and informing adaptive management and one on the RAPTR system and its functionality. She said that the MSU team recognizes the challenges of developing a Statewide tracking and reporting system yet believes that the challenges are manageable and the benefits of the system warrant working through the challenges together.

During the first breakout session, participants were asked to share how they monitor their projects, how they use the information they monitor, and what would be most beneficial for the RAPTR system to capture. The information gathered in RAPTR will support an adaptive management process by helping evaluate projects' contributions to management priorities. Ms. Becker Lowe highlighted how State-level policy and initiatives shape project-level priorities; she said that the metrics RAPTR tracks should be informed by State and program management priorities and contribute to answering their management questions. Participants were asked to provide input on metrics and methods:

- Metrics
 - Metrics that reflect our values and priorities.
 - Metrics that measure project performance over time.
 - Metrics that can inform and harmonize project-, program- and agency-level analysis.
- Existing tools, systems, and methodology that could be leveraged, not recreated.
- The information, analytical capabilities, and project management resources you need to conduct your work most effectively.

The second breakout focused on the RAPTR system and its functionality and participants were asked to consider its benefits, challenges, and how those challenges might be addressed.

Small Group Discussion: Measuring Project-Level Success and Informing Adaptive Management

Attendees used Miro boards to share their feedback about:

- The purpose/objective/goals of their program.
- How they determine if their work was successful, including the specific variables (metrics) that they track to determine success and methods used for monitoring these.



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- What additional data could help inform the achievement of their project/program goals, including any particular metrics they do not already monitor but would like to track and any existing databases or systems that could be leveraged in pursuit of their stated metrics of interest.

See Appendix 1 for tables showing attendees' input on metrics and methods.

Small Group Discussion: The RAPTR System and its Functionality

As summarized in the table below, attendees again used Miro boards to share their feedback about:

- What other opportunities could the RAPTR System help to achieve, describing how the RAPTR System could be used to inform State programs and decision-making.
- What potential challenges or concerns (other than financial and staff capacity) should be considered throughout the system development and roll-out phases, including any suggested solutions.

See Appendix 2 for attendees' input on benefits and challenges related to RAPTR.

Takeaways for Day 1

Ms. Ford asked participants to share whether there were cultural elements that MSU would have to overcome in the RAPTR rollout related to reluctance to share information across agencies and the transparency about grant programs that would bring. Participants shared the following thoughts:

- Two participants noted there may be grantees concerned about legal jeopardy related to widespread distribution of project information, for example if neighbors became aware of a project happening in a particular area. This may be particularly true of acquisitions and in agricultural communities.
- Two participants said that their applications are already considered public once awards are made, since they are publicly funded. This information is subject to Public Records Act requests.
- A participant said that there will be challenges to accepting top-down standardization. Clear communication, including listening to and stakeholders' experiences and reflecting their input, are essential to receiving buy-in. If an approach is taken that does not align with stakeholder feedback, clearly describe why that decision was made. Additionally, buy-in from leadership is critical.
- A participant said that if the system aligns well with existing reporting and tracking requirements, such that it helps staff feed two birds with one scone, it will be readily



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adopted.

- A participant suggested that the MSU team reach out to the California Biodiversity Council and the Strategic Growth Council to ensure alignment and buy-in.

Closing Remarks

Ms. Ford thanked participants for joining the workshop and providing their input. She encouraged participants to join the Terrestrial Habitat workshop, held on Thursday of the same week, as well as share any additional feedback via email.



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Appendix 1. Breakout Outcomes: Measuring Project-Level Success and Informing Adaptive Management

#1 - First Breakout					
PROGRAM DESCRIPTION		EVALUATING SUCCESS		WISHLIST	
Program Name	Objectives/Goals	Metrics	Methodology	Desired Metrics	Possible Resources
CDFW Proposition 1 Delta & Watershed Grant Programs	Priorities: California Water Action Plan, State Wildlife Action Plan, Delta Conservation Framework; Wetland Grants: Anadromous Fish habitat, Coastal Estuaries, Mountain Meadows, Headwaters; Delta Grants: ecosystem restoration, water quality, science to support Delta Science Program & Delta management	Project Acres & linear feet by ecosystem type; wetland health: Level 3 varies by project objectives	EcoAtlas Project tracker data entry is required. Project shapefiles; CRAM, photopoints; Wide range of Level 3: vegetation monitoring, water quality grab samples,	long term response of fish & wildlife populations compared to reference sites; ecosystem function; Program-level rollup of all metrics	long term population monitoring programs
State Water Boards Wetland Permitting (CWA 401 Certification) program	Highest level: (1) No Net Loss of wetland structure and function: (2) Water Quality that supports beneficial uses (3) efficient regulatory/permitting processes	1) Permit Cycle time 2) Net Loss/Gain of wetlands 3) Water quality Monitoring required through permit	1) Internal project database 2) EcoAtlas (under development) 3) Various (typically visual inspection except in the case of spill or project upset)	1) Statewide wetland inventory 2) Consistent, cross agency measure of wetland health measure 3) Wetland specific water quality objectives	1) in development online application system that will facilitate collection of key datapoints (e.g. GIS data on wetland location and type) 2) Continued development of EcoAtlas and expansion



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#1 - First Breakout					
PROGRAM DESCRIPTION		EVALUATING SUCCESS		WISHLIST	
Program Name	Objectives/Goals	Metrics	Methodology	Desired Metrics	Possible Resources
					of use to other agencies
Delta Stewardship Council Delta Plan Performance Measures viewperformance.delta.council.ca.gov	Coequal Goals of increasing water availability and preserving ecosystem function	32 performance metrics or indicators to evaluated conditions of the Delta	<p>Metrics are quantifiable with time targets, based on best available science viewperformance.delta.council.ca.gov</p> <p>Highly recommend getting independent reviewers from academia to provide feedback</p>	Intermediate targets or milestones every 5 years to assess how the system is doing and adaptively manage	<p>Public facing website should be accessible and easy to use for public while also providing enough data, methods, graphs, for technical people</p> <p>Environmental Data Initiative is a data repository portal for many interagency ecological studies. Has data, code, metadata, maps, graphs, for different water quality, fish, plankton, veg, monitoring studies.</p>



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#1 - First Breakout

PROGRAM DESCRIPTION						EVALUATING SUCCESS		WISHLIST	
Program Name	Objectives/Goals	Metrics	Methodology	Desired Metrics	Possible Resources				
Dutch Slough Tidal Marsh Restoration Project	Benefit native species by re-establishing a natural ecological network, especially for Delta species currently in decline Contribute to scientific understanding of ecological restoration in the Delta Provide shoreline access, education, and recreational opportunities	wetland function and health, species specific monitoring	various, water quality, soil formation, vegetation establishment, carbon flux, aquatic and terrestrial species, monitoring, etc	long term marsh development trajectory and species diversity tracking	partnering with long term monitoring programs, monitoring grants, leverage publicly available data				
Dutch Slough Tidal Marsh Restoration Project			eDNA quantification, push net and high def imagery, beach seine at installed concrete ramps						
State Water Board Nonpoint Source Program	Funding mechanism for projects that reduce non-point sources of pollution through implementation of watershed-based water quality plans	Pollutant Load Reduction	Calculated using EPA models	Restoration success Metrics (i.e. did we get our money's worth)	Partnering with U.S. EPA on Greater use of Federal Grant Reporting and Tracking System				



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#1 - First Breakout					
PROGRAM DESCRIPTION		EVALUATING SUCCESS		WISHLIST	
Program Name	Objectives/Goals	Metrics	Methodology	Desired Metrics	Possible Resources
Multi-Benefit levees	Develop waterside levee habitat (riparian/SRA) to benefit native fish species by moving levee prisms landward and creating waterside habitat benches	Fish species presence, community structure. water quality		species present, change over time, locations, water quality, relative quantity of different fish species across enhanced habitat, standard rip rapped levee slopes, open channel, natural areas.	

#2 - First Breakout					
PROGRAM DESCRIPTION		EVALUATING SUCCESS		WISHLIST	
Program Name	Objectives/Goals	Metrics	Methodology	Desired Metrics	Possible Resources
Coastal Conservancy Wetland Condition Assessment - Level 2 Monitoring	To assess the overall condition of all voluntarily restored wetland habitats funded by the Coastal Conservancy.	Hydrology, Buffer, Vegetation, & Structural Heterogeneity	CRAM	Wishlist: More agencies, including regulatory and funding, requiring CRAM to make better comparisons across agencies	cramwetlands.org; https://www.mywaterquality.ca.gov/monitoring_council/wetland_workgroup/docs/cram_bull.pdf ; ecoatlas.org
Southern California Wetlands Recovery Project - Level 1 Monitoring	To monitor and track changes in wetland location, size, and habitat types across Southern California	Wetland area	USFWS National Wetland Inventory; new mapping project with SFEI (funded by OPC); & Project Tracker on EcoAtlas	Wishlist: More up-to-date, available mapping data; more agencies requiring projects to be uploaded to EcoAtlas's Project Tracker	https://ptrack.ecoatlas.org/



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#2 - First Breakout

PROGRAM DESCRIPTION						EVALUATING SUCCESS		WISHLIST	
Program Name	Objectives/Goals	Metrics	Methodology	Desired Metrics	Possible Resources				
Parks, Statewide Bond Office (SBO)	Monitor bond funding and spending by program.	Cash balances, semi-annual spending reports, individual program/project monitoring.	ABCRS	Ability to track spending more accurately, monitor progress and diversity of programs, observe "big picture" milestones in programs, and post-program monitoring, integration with ABCRS to avoid duplicative data entry.					
Southern California Wetlands Recovery Project - Level 3 Monitoring	To monitor changes in So Cal wetland function in the face of sea level rise in a standardized manner across state and federal agencies	Resilience metrics: wetland elevation, accretion, erosion/shoreline progradation, water levels, vegetation shifts	TBD	Wishlist: Follow SF WRMP model of monitoring resilience metrics at a network of reference sites and restoration sites; agreement across agencies to require/use resilience metrics in wetland projects & permits	https://www.sfestuary.org/wrmp/#:~:text=The%20charge%20of%20the%20Wetlands,voluntary%20tidal%20wetland%20restoration%20projects				

#3 - First Breakout

PROGRAM DESCRIPTION						EVALUATING SUCCESS		WISHLIST	
Program Name	Objectives/Goals	Metrics	Methodology	Desired Metrics	Possible Resources				
CVFPP Conservation	Promote dynamic	floodplain inundation -	acres or miles of	widely agreed-upon,	coordination with other				



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#3 - First Breakout

PROGRAM DESCRIPTION						EVALUATING SUCCESS		WISHLIST	
Program Name	Objectives/Goals	Metrics	Methodology	Desired Metrics	Possible Resources				
Strategy	hydrologic and geologic ecological processes - Improve quality, quantity, connectivity, and diversity of floodplain and riparian habitats - Contribute to recovery and sustainability of native species and overall biotic community diversity'	Riverine geomorphic processes - SRA cover - Riparian vegetation - Marsh and wetland - Revetment - Levees - Fish passage barriers - Invasive plants'	inundated floodplain, natural and riparian-lined bank, SRA cover, riparian vegetation, marsh/wetlands, invasive plants; # of fish passage barriers'	scientifically supported metrics for habitat quality, connectivity, diversity - species-specific metrics (??)'	agencies' efforts (e.g. CDFW) and use of their data sets'				
CA SWAP (State Wildlife Action Plan 2015 Update)	The tracking system has been on the top of our wish list, exactly the level addressed in CNRA, SWAP is statewide but regional level conservation strategy blueprint Regional goals are summarized into three state goals that are integrated into the CNRA CA Biodiversity Initiative	we have been working with a few grant programs to try creating such a database	We have mid-level standardized indicators and SMART goals /objectives/strategies/ actions items. (biotic/abiotic) standardizing language/process. We also have Chapter 8 dedicated for adaptive management and all the high-level performance metrics/items listed	Metrics discussed earlier today could be nested into our mid and high levels, they were pretty consistent to our efforts, grad to see that. Those indicators are tied to our regional goals, those goals are further tied to CA/Federal Climate Change Adaptation Strategy.	As all the conservation efforts across the states would potentially advance our efforts, connecting the dots of individual efforts to SWAP and vice versa is super important.				



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#3 - First Breakout

PROGRAM DESCRIPTION		EVALUATING SUCCESS		WISHLIST	
Program Name	Objectives/Goals	Metrics	Methodology	Desired Metrics	Possible Resources
DWR Riverine Stewardship - Urban Streams Restoration Program	Provides grants to local communities for projects to reduce flooding, erosion, and associated property damage; restore, enhance, or protect the natural ecological values of streams; and promote community involvement, education, and stewardship.	Project completion LF of streambank enhanced/restore LF of erosion-controlled Acres of wetlands created/improved Etc.	Largely limited to the dimension of completed habitat improvements and flood repairs. Performance monitoring metrics may be developed by funding recipients on a project by project basis.	Ecological and hydrological performance metrics to show return on investment. (Bioassessment or CRAM)	coordination with other agencies' efforts (e.g., CDFW) and use of their data sets'
DWR Riverine Stewardship - San Joaquin Fish Population Enhancement Program	The San Joaquin Fish Population Enhancement Program implements grant projects that benefit native fish populations, with a focus on salmon and steelhead in the lower San Joaquin River watershed.	Project Completion: Dimensions of specific habitat types created, restored, or improved	DWR tracks project completion, including the areas/dimensions of habitat elements. Performance monitoring metrics are developed by funding recipients.	Fluvial geomorphic changes, spawning productivity, long-term temperature, primary and secondary productivity, etc.	coordination with other agencies' efforts (e.g., CDFW) and use of their data sets'



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#3 - First Breakout

PROGRAM DESCRIPTION						EVALUATING SUCCESS		WISHLIST	
Program Name	Objectives/Goals	Metrics	Methodology	Desired Metrics	Possible Resources				
State Water Board's Cannabis Program	Development of instream flow and water quality related requirements to ensure cultivation does not negatively impact aquatic ecosystems	1. Instream flow requirements for surface water diversions 2. Discharge prohibition requirements	1. Online tool to tell cultivators whether they can divert on given day and diversion records 2. Monitoring and Reporting Program	Evaluating groundwater diversion impacts on surface water to determine need for groundwater diversion restrictions	Develop statewide mapping tool to identify locations with high probability of significant groundwater/surface water connectivity				

#4 - First Breakout

PROGRAM DESCRIPTION						EVALUATING SUCCESS		WISHLIST	
Program Name	Objectives/Goals	Metrics	Methodology	Desired Metrics	Possible Resources				
Forest Inventory and Analysis (FIA)	Monitor and track changes in forest conditions	Plot data Condition data Tree/Vegetation data	https://www.fia.fs.fed.us/library/field-guides-methods-proc/	Additional information on the timing, location, area and amount of material burned in piles					
State Water Board's Surface Water Ambient Monitoring Program (SWAMP)	To assess, restore and protect the health and overall ecological condition of California's wadable streams and tributaries	California Stream Condition Index (CSCI), Algal Stream Condition Index (ASCI), Physical Habitat (PHAB) Index of Physical Integrity (IPI)	https://www.waterboards.ca.gov/water_issues/programs/swamp/bioassessment/	Stressor-specific metrics or indices that might help diagnose the cause(s) of biological impairment	California Environmental Exchange Network (CEDEN), California Data Exchange Center (CDEC), National Hydrography Dataset (NHD), Bioassessment Scores Map				



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#4 - First Breakout					
PROGRAM DESCRIPTION		EVALUATING SUCCESS		WISHLIST	
Program Name	Objectives/Goals	Metrics	Methodology	Desired Metrics	Possible Resources
Fisheries Restoration Grant Program (FRGP)	Fund actions that will recovery endangered and threatened salmonids	NOAA Performance Measures, implementation Monitoring, and Monitoring Effectiveness of salmonid habitat Restoration (MESHR)	Monitoring Effectiveness of salmonid habitat Restoration is also a methodology	We also use grantee proposed deliverables to measure if the project accomplished their goal.	FRGP uses a WebGrants Database with 40 years of grant data.
Environmental Enhancement and Mitigation Program	Monitor changes in channel stability and erosion rates, water quality impacts	long profile, channel cross sections		More satellite or drone derived metrics, to more easily repeat measurements	
River Parkways Program	Evaluate changes in ground water levels and supply Improve or restore riverine or riparian habitat Mitigate for the loss of, or detriment to resource lands	ground water levels, water availability in meadows Acres of invasive removal along waterways and remain removed	Before-after-control-impact (BACI) Intensely monitored Watersheds (IMWs)		MESHR has 16 years of effectiveness monitoring for FRGP funded projects (https://www.calfish.org/ProgramsData/ConservationandManagement/RestorationProjects/tabid/500/Agg1618_SelectTab/4/Default.aspx)
Sierra Meadows Partnership (SMP) is developing a Monitoring Program	Consistent and comparable metrics to evaluate meadow protection and restoration across the Sierra	includes metrics related to hydrology, geomorphology, aquatic habitat, vegetation, soils, wildlife, carbon	In development, but info here: https://www.sierrameadows.org/research-monitoring	carbon sequestration rates	



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#4 - First Breakout					
PROGRAM DESCRIPTION		EVALUATING SUCCESS		WISHLIST	
Program Name	Objectives/Goals	Metrics	Methodology	Desired Metrics	Possible Resources
WCB Climate Adaptation and Resilience Program	Fund projects that provide climate adaptation and resilience on California's natural and working lands	Increases in habitat complexity and biodiversity in the face of climate impacts.	Habitat characteristics/conditions outlined in the project's monitoring plans. (there is no specific habitat type targeted by this funding program).		
Parks Natural Resources Statewide Programs	Fund projects that restore natural processes/protect existing resources	Limited generally completion of project as scoped	Not centralized, Varies by district		
WCB grant funding programs (there are between 15-16 funding programs under WCB)	Simple implementation metrics might be easiest to start with, such as miles or acres protected or restored				
FRGP	FRGP Funds California Monitoring Plan (CMP) to monitor salmonid population trends				
Lake Tahoe Environmental Improvement Program (EIP)					



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Appendix 2. Breakout Outcomes: The RAPTR System and its Functionality

Group 1

RAPTR Benefits

- Improved coordination between agencies; opportunity to develop common metrics; opportunity to identify opportunities for coordinated long term monitoring - increased efficiency of scale; opportunity to share lessons learned and adaptively manage monitoring and restoration practices.
- Improved consistency of data collected collaboration and access to data
- Common data standards for restoration performance, mapping, quality, etc.
- Intermediate targets or milestones every 5 years to assess how the system is doing and adaptively manage

RAPTR Challenges

- Incorporating climate resilience into project selection. Identifying a standard ecosystem classification; Identifying a list of standard project activity classifications applicable to all programs (see EcoAtlas Project Tracker); Creating a product that allows sufficient flexibility for programs with a wide range of objectives; project data storage & access; identifying common metrics; program compliance with data entry; QA/QC
- Making a user-friendly platform
- Public facing website should be accessible and easy to use for public while also providing enough data, methods, graphs, for technical people
- Coordinating across so many agencies
- Multiple existing/incompatible tools
- Making data available and comparable across programs
- Consistent and Reliable funding for ongoing system maintenance (not just for system creation)
- make sure RAPTR continues to evolve with the programs it serves



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Overcoming Challenges

- Coordination with existing efforts like California Wetland Monitoring Workgroup and EcoAtlas Project Tracker. Link grant programs with existing long-term data collection programs, especially fish and wildlife. Incorporate a communication & collaboration tool. Start with a core set of required monitoring such as photo points, and CRAM where appropriate.
- Incorporate existing programs when possible and make new compatible. Use what was successful about other programs
- Highly recommend getting independent reviewers from academia to provide feedback
- Don't reinvent the wheel - use existing tools and standards wherever possible, even if it means letting go of some of the agencies wish list (i.e., data integration is likely more valuable than tier II priorities.
- Hiring more scientist to analyze and synthesize data to see what they mean, not just collect data. A lot of data is stored in derelict places. Methods should be recorded, accessible, and reproducible.

Group 2

RAPTR Benefits

- #1 RAPTR could develop a mobile app that would allow for remote access to system
- Develop efficiencies by collaborating with other offices to fund projects
- Standardize wetland assessment across state agencies
- Grantee performance, especially between departments (identify poor performers and minimize opportunities for funding multiple times.)
- review
- Rolling up similar benefits across departments so the "State" can see how it is doing overall.
- What is the program's progress to meeting the goals identified in the legislation?
- Enhanced bond fund monitoring
- Will RAPTR be tracking the invoices or payments data?

RAPTR Challenges

- Potential overlap with other grant tracking systems



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- #1 choosing metrics that are easy information to gather
- Choosing Metrics That Grantees Can Gather Easily.
- Learning A New System; And Cultural Shifts to Work Together With Other Offices.
- Fits Well with Remote Working; Easy Access To Information From Any Location
- Overburdening Agency Staff with New Project Requirements - I.E. New Monitoring Methods And/Or Inputting Data into RAPTR System
- Less momentum or abandonment of other tracking tools (e.g. EcoAtlas) if RAPTR is required
- The goals of the state change over time and often change before a program has distributed all the money for one legislation. In the meantime, the legislature is setting new goals and expecting existing programs to address these new goals.
- Resistance to using electronic systems. Programs have their own way of accepting and reviewing applications and are resistant to change.
- Programs enter their grant application scores into spreadsheets that are program and solicitation specific. They view entering scores into an online system as redundant.
- Integration with ABCRS, potential for duplicative work, compatibility with existing reports and processes
- Based on the track record in my Department, unless you mandate that an online system be used, it will not be used by all programs.

Overcoming Challenges

- #1 develop TACs or working groups to determine some standard metrics within groups of projects or project areas.
- Opportunity for collaborative effort to develop scientific metrics to evaluate performance with Subject Matter Experts (SMEs).
- MSU has been doing a good job using existing forums and SMEs to message and keep departments informed. I encourage you to continue that effort as part of your change management
- Opportunity to build on existing frameworks/ methods
- Additional funding to support staff on regional tracking/ monitoring including RAPTR?



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- There is time to message the benefits Departments will get by using RAPTR. If we can focus on how RAPTR will make their work easier (like reporting for drills). E.g. Programs that use RAPTR, didn't have to respond to the drill, but Programs that aren't had to respond.
- Is there a need for a State monitoring program that would monitor a subset of grants for each proposition? (Grantees monitor and State monitors too)
- Collaborative effort with ABCRS programming team, friendly API(s), streamlining data across systems (e.g., ABCRS, Fi\$Cal, RAPTR).

Group 3

RAPTR Benefits

- Availability of data sets and monitoring reports - standardized reporting on financial and ecological outcomes of projects
- Assist programs with recurring program reporting to depts., agency, DOF, and the legislature.
- Create the opportunity for programs to tag projects according to their reporting areas for statewide (water resilience portfolio) and department (DWR strategic plan) reporting areas to aid programs in our multiple reporting obligations.
- Improve communication, set common standards, collaboration improvement.
- Flexibility to add information at different times.

RAPTR Challenges

- Which 'authoritative' data sets to use?/ how to tell whether regulatory agencies "approve" use of the tools - crosswalk among different data sets that are unique to different programs
- How to ensure regular updating by programs
- Provide flexibility to allow for changes to project level information in the system after its initial project ID entry.
- How to align indicators.
- Framing high/mid-level metrics
- Buy-in to provide data
- The more people that participate, the harder to standardize



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- Understanding/What to measure and use as an indicator to track ecosystem services - biological benefits (consider ocean elements)

Overcoming Challenges

- Link regional monitoring programs with funding to Programs that cannot provide substantial or long-term monitoring funding for projects.
- Allow for multiple project types/purposes to be tagged to entries, since many of our multi-benefit project purposes are lost in the mix when we report to internal DWR templates that don't provide flexibility for more than one or two target benefits.
- Allow multiple levels of metrics to be tracked to better align project types, benefits, depending on the reporting sought. For instance, managed freshwater marsh, intertidal marsh, and seasonal wetlands are all different types of wetlands; however, if the system allows for these to be accumulated by each subtype, it gives users the flexibility to use the reporting outputs for multiple uses. I suspect you've already thought of this!
- Discussions in biodiversity council (under Dep. Sec. Norris)
- Coordinate with SGC and other agencies focused on development (land use)
- Clear standards and language
- Need to understand other efforts. Coordinate as an agency/ keep track of as a whole.
- Develop first version, keep incorporating input, sharing it.
- Transparent process about selecting indicators
- Need to identify the gaps to know where to focus going forward

Group 4

RAPTR Benefits

- It could be used to develop heat maps for any of the data points to identify what, where, and how much of one thing is being funded.
- And compare to need, such as in the fire risk examples Jim showed
- One application platform for applicants. Less confusion for stakeholders.



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- Potential to aggregate data across programs with overlapping goals/objectives to inform statewide policy
- Track history of projects geo-spatially
- Making data available in central database (communication, collaboration) minimizes doing the same work twice & saves money
- Standardize reporting to help with statewide efforts such as 30 by 30
- Stakeholders would have fewer different platforms to remember/learn for granting
- Consolidate project location and output/outcome data.
- Reference or "target" can be upheld by scientific standard (i.e., If you want this fishery to thrive there needs to be this condition of water quality)
- Quicker assessment of any project activities previously accomplished in a given focus area.
- Ability for anyone to view/query data

RAPTR Challenges

- Buy-in
- Data/applicant confidentiality during the pre-award process
- Communication
- Customer service and tech support will be a needed. WRGB has 4+ people dedicated to such activities for one CDFW Branch.
- Duplication of other efforts!
- Who would conduct QC and how often?
- Technical assistance. CNRA has tech assistance lines for the public however, Agency grant staff will also need assistance.
- User friendly platform
- Resources needed for populating the RAPTR database (compatibility?).
- Accounting for projects partially funded by other sources
- System compatibility
- Accounting for different project phases



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- Assuring that partners are reporting consistent standardized data (basically QC)
- Allowing programs to easily query data but ideally, we could have Realtime dashboards of program data

Overcoming Challenges

- Having lots of beta testing with different potential users, of all types. And iterative reviews
- To overcome the challenge; use/train program staff, i.e., the 4+ staff from WRGB to maintain that Branch's data.