California Fish and Wildlife Strategic Vision Project
BRCC-SAG Science Discussion Notes and Worksheet

Revised January 11, 2012

KEY: DFG Recommendation (Jan. 5, 2012)

Potential Action from BRCC/SAG Survey (Dec. 2011); high/low priority responses in parentheses

BRCC = California Fish and Wildlife Strategic Vision Blue Ribbon Citizen Commission

SAG = California Fish and Wildlife Strategic Vision Stakeholder Advisory Group

DFG = California Department of Fish and Game

F&GC = California Fish and Game Commission

General Discussion

Question about how we move forward with specific recommendations. More general actions or series of specific actions? Recommendations would be different depending on which potential partners (i.e., university versus private landowner). Perception is that some stakeholders are not comfortable or don't understand how and what science is being used by DFG and F&GC. If even they just simply better understood it might be sufficient to improve perception and relationships.

Somehow need recognition of what is already happening, where there are deficiencies, and what is new. How do the recommendations reflect the distinctions?

Not being flippant, but why do I care that the science needs to be more rigorous, visible and robust? Because science should be a critical cornerstone of DFG and F&GC decision-making. In this discussion need to make the connection between recommendations and how they relate specifically to science, not across all segments of DFG and F&GC.

Recommend we ask Director Bonham to conduct a cost-benefit analysis of DFG being a premier science organization. Use DFG resources and talent to the extent possible and outside resources otherwise. What does it cost and what are the benefits of DFG being a premier science organization to allow more fully-informed decisions about investments in science.

Perhaps the recommendations in this list are too specific. Maybe step back and ask whether DFG should originate science and data or focus more on data and science generated outside the organization. Would like to see a high level discussion about the question of generating science versus utilizing outside science. Add cost and timing criteria to the discussion.

Whether science is internal or external, it still needs to be done according to clearly articulated guidelines and priorities. Currently science conducted by DFG is very broad and not all is applicable or useful to management decisions. Barriers to implementing these things needs to be considered. For example, (Unit 10, representing state scientists) collective bargaining issues prevent contracting out for some science. DFG has a science policy – are BRCC and SAG members aware of that policy? REQUESTED ACTION: Distribute DFG science policy to BRCC and SAG members.

In a strategic visioning process, first identify core values, vision, etc. to help establish what are priorities for the organization. Then develop potential recommendations to achieve goals and objectives.

Some capacities are lacking in DFG and others are strong. Not just better "science" but rather need to identify those specific scientific capacities that are needed.

Current employees do not reflect the citizens of California.

Why partner? Need to be more explicit. "Partner with educational institutions" is not helpful unless we know what is the desired outcome from the partnership. First define the desired outcome and then indicate suggestion for how to get there.

Don't think there is anyone in DFG who would disagree with using sound science for sound decision-making; requires resources and expertise. Will be difficult to identify what questions DFG and F&GC need answered and then expect the universities to immediately go answer those questions with their ever-dwindling resources. DFG has lots of potential partners, but doesn't have sufficient resources/capacity to be able to get out front and identify for potential partners what is needed. Often, as a result, potential partners tire of asking/waiting and go out and generate what they think DFG/F&GC need. DFG needs additional capacity to do what it does well (i.e., fisheries management). DFG is in the business of providing sustainable resources for human use and conservation; that is the focus of the organization. As a result, DFG needs to be somewhere in the middle with regard to how much science is developed internally versus externally.

Very difficult to provide an analysis of how science leads to better conservation, so urge caution with any request of Director Bonhan regarding a cost-benefit analysis. Want to encourage use of sound and objective science, which is not cheap. DFG doesn't always do science because of cost, and decisions reflect. There is a false dichotomy of external versus internal science; the answer can run the entire spectrum depending on the issue. Need to increase capacity to take up and incorporate external science. There are viable ways to leverage all scientific expertise without having to do it all themselves or contract out.

Why do we care about what science is collected and how? Again, because DFG bases decisions on that science; negotiate, write permits, make recommendations, etc. based on the science.

Fisheries science in the federal arena, how science is incorporated. Consider reviewing a model in the federal fisheries management process, using an ad hoc scientific committee for specific topic areas. Not maintained on a formal, standing basis, but still a robust and rigorous review. A second review then takes place by a standing scientific committee. Suggest a more ad hoc structure for DFG and F&GC in order to be timely and responsive.

Item 8D-13.

SAG member indicated that recommendation about general science panel was intended to help avoid politics in some cases. In other cases folks don't always trust DFG science and this would be a way to ensure validation of DFG scientific products to end quarreling about validity. Want to find ways to ensure independent review and validation of science being used by DFG and F&GC.

Expense of science is shared; there is a cost to certain stakeholders when science is not good or not applied. Administrative capacity is part of the picture; need more capacity and efficiency to manage contracts, etc., which would allow more time for actual science. Science panel idea is not new, but a good one that as a scientist can support.

What would be the extent of expertise and responsibility of this kind of panel? Every regulatory decision subject to a science review? Only larger scale programs? DFG is already using independent scientific advice in the delta program, conservation planning, monitoring for adaptive management, etc. What do we mean when we say "science?" Do we mean resource assessment and monitoring or, at other end of the spectrum, hypothesis-driven experimentation? DFG is at the resource assessment end of the spectrum, which is appropriate given its mission.

Some of the problems are real and some are perceived, which then become real. Capacity – perhaps could develop consensus around better using existing science, learn more about the costs and barriers to internal versus external science, set scientific priorities, and identify gaps in current capacity?

Transparency – request to increase access to science (data and studies) being used by DFG, increase access to scientists themselves, create a mechanism for ad hoc or semi-permanent science board or panel (another way for disagreements about science to be vetted), and use DFG website to better articulate scientific needs and capacity.

There are best achievable technologies for preventing oil spills, oiled wildlife, etc. that are legislatively mandated. DFG has a scientific study and evaluation program where it provides grants to third parties for research that answers management questions. Suggest that this is a good way to bring science into DFG.

Much of the conversation has focused on DFG and seems to ignore F&GC. F&GC makes decisions based on science as well. Need a good process for using science in the deliberations of F&GC.

Seem to be some semantics issues for some of these recommendations. Perhaps use "enhance" rather than "establish" since some of these actions may already exist in DFG. Example, 8B-15 to identify gaps in capacity and where there is mutual benefit create partnerships. Partnerships are already a reality at DFG.

Issue with CEQA docs where science is challenged, need to extend the deadline for CEQA review in order to incorporate the science review period. Don't know any scientist in DFG that does not make effort to use best available science, but how do we share and convey those behaviors/actions to public? Experts will disagree, so will never make the process 100% bullet-proof.

DWR experience – have increased sharing with public which has increased collaboration and sharing of ideas, problems and solutions. Lack of trust is primarily lack of communication, not because DFG has not been doing the best it can with the resources available. DWR's experience suggests that greater information sharing can lead to better understanding, collaboration, and solutions.

Science panel – what kinds of decisions would be applicable? Some decisions have short timeframe for responding. Identify what DFG needs in day-to-day decision-making and provide that to the public, which might be more helpful than having a science panel. Staff members have found ways to obtain access to best available science, but requires workarounds, borrowing from other colleagues or organizations, etc. when it would be best for all staff to have regular access to a database (example of USFWS staff access to JSTOR).

Trust seems to be a huge issue in the north state with private landowners. Some do not seem to have the money to do what is being asked of them. Since they make a living from the land, they don't want to do anything to potentially damage that ability. Need more transparent decision-making in which it is easier to participate.

Common theme being heard in room is that certain things are already being done, yet stakeholders do not believe or perceive same. Sounds like more of a communication issue. Perhaps some simple fixes to website? Are the suggestions in the potential actions for implementation by existing staff or are new positions being proposed? How does this stuff get done if no new bodies, since staff already have more work waiting in the wings when finish current projects.

Two different opposing views requires trust that you are using sound decision-making; identify problem and potential solutions together, again requires trust. Need to do a better job communicating that, in fact, DFG is using sound science.

DFG having issues with recruitment, retention and enabling staff to build their professional skills. Look to other agencies (i.e., DWR) for models to address these issues? Science review panel needs to be timely for meeting regulatory requirements. Also challenging in that experts in particular subject areas are not always willing to participate in reviews.

Might be helpful to have DFG go through the worksheet and aggregate the potential actions into common subjects, then report back on what DFG is currently doing in those areas.

Integrated resource management (IRM). DFG and F&GC do no operate in a vacuum. Other state and federal agencies also have natural resource management responsibilities. Part of the dueling science is different agencies working in their individual spheres and not sharing/working well together. Part of this process should identify the need to create a process where natural resource stewardship can be attained in partnership with other state and federal agencies without bumping into one another, duplicating effort, etc. Come together, determine what everyone is doing, identify gaps, and then work together on how to fill gaps.

DFG does some IRM but could definitely improve.

Questions and discussion about what kinds of recommendations and in what time frame.

Capacity, credibility and efficiency to meet science mandate; temporary help (largely scientific aides) is the most volatile and most difficult to count on, yet that is who is mostly doing the "science." Have had several sweeps of scientific aides. Other avenues for obtaining that help? Sending people to other agencies to take advantage of funding; increased overhead. Increase in delegated authority? Increase classifications of temp help (duration)? Broader range of classification that don't contribute to the PY count for political reasons. Currently $12/hour cap on temp help (below subsistence wages). Need to accept that there are going to be rooms of angry people on certain issues, people who are not interested in seeing the science conducted.

DFG represents about 18% of Unit 10, others less than 1% to about 4% of other units (so little or no voice in collective bargaining).

Science is not deemed good or bad depending on whether it can survive in a court of law. Good lawyering is taking advantage of uncertainty, yet science is full of uncertainty. Depending on what we are doing science for, might also need to consider whether it is good science as well as what can stand up in court; these are different things.

Partnership is not a parent/child relationship. Definition includes mutual goals and interests, collaboration, etc. Statements being made that partnerships are already taking place, but the quality of those partnerships needs to be considered. Suggest that we consider the Public Records Act in considering how to attain transparency, especially in the context of data sharing. Resource assessments are absolutely something DFG should be doing. Want transparency and access to things like job descriptions; what does that person do in his/her job?

What do we mean by science? In college it had a very narrow definition, but over the years it seems to have been broadened to include many other things. Not all data and information constitutes science. A good question is, are we going to apply science to all decisions; not all decisions require the same level of scrutiny. Should require, however, at least some description of what information was used in a decision. Human resources and planning for the future requires adapting.

See the potential actions as tactics; like the idea of DFG taking a shot at re-working the worksheet. For transparency, suggest having one or two BRCC/SAG members be part of that exercise.

Distinction between conducting science versus the interpretation and application of science (the latter tends to contribute the most controversy).

Support collaborative science to support the work of all our agencies, especially in tight economic times.

Seems like much of what has been heard today is not new; have heard similar things with the DFG Seven Strategic Initiatives and other internal planning efforts. Think there are lots of ideas to work with moving forward.

Much of what heard today has to do with communication. Enforcement and wardens have similar problem to Armand's with scientists having to do lots of administrative work, which is not a good use of staff resource.

Standardize methods for using and providing data to public and methods for incorporating feedback and dialogue.

Need both communication and engagement to increase ownership, not just communication.

Homework Recommendations:

1. *Capacity*
    - *Increase use of exiting and available science (i.e., access to JSTOR)*
    - *Request a CBA of what is involved in internal v external development as well as barriers to improvement/making changes*
    - *Focus and direct scientific capacity around established priorities*
    - *Identify gaps and needs in scientific capacity i.e., IRM)*
2. *Transparency*
    - *Increase access to data and studies (i.e., proactive)*
    - *Increase access to scientists*
3. *Credibility*

- *Create mechanism for scientific review, advice and appeals (i.e., science panel)*
- *Develop mechanism for F&GC consumption of science*

4. *Communication: Better communicate existing partnerships and identify additional partnership needs (i.e., post info to website)*

Homework Volunteers: Helen Birss, Karen Buhr, Jennifer Fearing, Dave Graber, Steve Juarez, Eric Loft, Tom Lupo, Skyli McAfee, Becky Ota, Terri Stewart

TOPIC	POTENTIAL RECOMMENDATION(S) TO ACHIEVE GOAL(S)	GOAL AND OBJECTIVE
Determining scientific capacity (internal or external or both)	**(Number 11, bullet 1) Develop a more robust and interactive web presence that describes the extensive partnerships already underway and identifies areas where more effective partnership opportunities may exist.** **(Number 11, bullet 2) Continue the conservation assessment partnership between Caltrans and the Department.** 8A: 21. Partner with educational institutions (from elementary thru university levels) and existing environmental education programs (like the California Envirothon) (3 – 0) 8B: 15. Pursue formal and informal partnership/collaboration opportunities with all levels of government agencies (federal, tribal, state, local), stakeholder groups, private landowners, etc. (10-0) 8B: 7. Enhance and re-establish partnerships with organizations that have scientific capacity (such as academic institutions, other credible scientific organizations and stakeholders, in order to expand ability to make decisions based on best readily available science) (6-0) 8B: 8. Develop mechanisms to facilitate collaborative partnerships between DFG personnel and scientists from other state and federal agencies, academic institutions, and other appropriate third-party scientific organizations (3 - 1) 8B: 10. Promote active involvement of DFG employees in the larger scientific community (3-1) 8B: 9. Encourage and facilitate partnerships with stakeholders (e.g., consumptive and non-consumptive resource users) to participate in data collection (2-0) 8B: 29. For data/ information gaps, and filling monitoring needs, establish partnerships and determine who will gather scientific information (avoid duplication of efforts) (1-1) 8B: 19. Collaborate with the University of California and California State University systems to facilitate modification	**Goal 1:** **Strong Relationships with Other Agencies, Organizations and the Public:** **Objective 6:** **Share data, processes, tools, knowledge, expertise and information**

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	and development of university curricula to help with DFG research, monitoring and evaluation needs (1-2) 8B: 30. Reach out to the scientific community for assistance in designing management plans and conducting environmental reviews (0-2) 8C: 4. To the extent possible, coordinate/integrate methods, guidelines, and policies with other scientific data collection and archiving efforts (7-0) 8C: 5. Improve coordination with the University of California for increased science and data assistance (5-0) 8C: 16. Develop Science Quality Assurance Plan to guide scientific efforts to produce timely, credible and objective results (Quality Assurance is rigorous internal and external review of study proposals, while Quality Control is rigorous administrative and peer review of completed studies) (5-2) 8C: 9. Ensure that any science advisory panel adopts multidisciplinary approaches that include contributions from appropriate disciplines of population biology, oceanography, ecology, economics, statistics, modeling, and social sciences (3-1) 8C: 10. Integrate the scientific method into DFG research, monitoring and evaluation of management actions (can include rigorous design and testing of null hypotheses, as well as incorporating other sources of scientific information as appropriate, such as descriptive studies, traditional ecological knowledge, strong inference, social science) (2-1) 8C: 3. Increase the use of "other science" such as traditional ecological knowledge from Native Americans (1-7) 8C: 11. Increase the use of consultants for scientific research and monitoring (0-6) 8E: 21. Coordinate scientific determinations with other state and federal scientific bodies (i.e. PFMC Science and Statistical Committee) (2-0) 8E: 1. Identify the potential to coordinate with other agencies by developing a matrix that describes the interactive hierarchical structure of California agencies and extant offices within DFG that use guidance from science in conserving and managing California's natural resources (3-2)	
Transparency in scientific deliberations	**(6, bullet 2) Review existing monitoring and other scientific endeavors within DFG to affirm scientific rigor and applicability to decision recommendations.** **(Number 6, bullet 3) Develop and implement a mechanism to improve the Department's scientific capability, including**	**Goal 2: Highly Valued Programs and**

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and decision-making	**developing practices that ensure a rigorous science program within the Department that informs management and policy.** 8A: 4. Make information available in a regionally and culturally appropriate method, including written materials in geographic areas with limited Internet access (0-2) 8C: 15. Prioritize research, monitoring and evaluation needs for species and habitat trends analysis (ensure that the review of efforts are coordinated with other federal and state review capacities) (8-0) 8C: 16. Develop Science Quality Assurance Plan to guide scientific efforts to produce timely, credible and objective results (Quality Assurance is rigorous internal and external review of study proposals, while Quality Control is rigorous administrative and peer review of completed studies) (5-2) 8C: 9. Ensure that any science advisory panel adopts multidisciplinary approaches that include contributions from appropriate disciplines of population biology, oceanography, ecology, economics, statistics, modeling, and social sciences (3-1) 8C: 10. Integrate the scientific method into DFG research, monitoring and evaluation of management actions (can include rigorous design and testing of null hypotheses, as well as incorporating other sources of scientific information as appropriate, such as descriptive studies, traditional ecological knowledge, strong inference, social science) (2-1) 8D: 24. Link to or post online at the DFG website all reports and publications from DFG-sponsored projects (6-0) 8D: 2. Establish science advisory panel from multiple disciplines to advise DFG director on major issues (7-2) 8D: 13. Establish an independent multidisciplinary Science Advisory Panel (i.e., SAP; or a Science and Biostatistics Committee) to provide independent scientific review and guidance on DFG planning products, management plans, monitoring designs, focused studies, and "best available" science (consult extant models used in other states and federal agencies) (5-0) 8D: 15. Establish mechanisms to promote rigorous, thorough, independent scientific review of DFG resource management, scientific studies and reports, and monitoring programs (5-0) 8D: 26. Consult adopted state and federal agency standards and appropriate codes of ethical conduct to develop guidelines and formal rules to develop DFG codes to buffer DFG scientists, partners, and contracted third parties from political influence while promoting dialogue between scientists and policy makers. (4-0) 8D: 27. Modify decision-making processes to facilitate integration across biological and physical scientific disciplines	**Quality Services** **Objective 7: Engage in broadly-informed and transparent decision-making (multiple sciences, public attitudes, traditional knowledge, etc.)**

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	while promoting interactions between scientists and policy makers (i.e., balancing test for sufficient time versus efficiency; e.g. one-year status review under California Endangered Species Act) but ensuring independence of scientific programs from political influence (4-0) 8D: 11. Use consistent applications of science and be transparent in the determination of listing a species and the areas of potential habitat mitigation needs (3-0) 8D: 17. Establish methods, guidelines, and policies for collecting, analyzing, archiving, and serving data and other information generated by research, monitoring, and modeling efforts of DFG personnel (3-0) 8D: 14. Define Best Available Science, Best Available Scientific Methods, and standards for applying them that conform to appropriate California and federal standards (statutory and common law) (4-2) 8D: 18. Establish a standard procedure for data sharing (3-1) 8D: 16. Establish mechanisms to promote rigorous, thorough, independent scientific review of methods and results of scientific studies conducted by third parties and adopted by DFG (2-0) 8D: 28. Provide scientific advisers to DFG and F&GC who are independent experts in economics and other social sciences, ecology and population biology (3-2) 8D: 19. Publish guidelines for ensuring the quality, objectivity, utility and integrity of information used or disseminated by DFG (2-2) 8D: 25. Develop scientific integrity policy to define ethical rules of conduct to ensure quality and credibility of information and procedures for investigating and disciplining misconduct (0-0) 8D: 23. Require that all data collected in sponsored scientific investigations be entered into BIOS or another appropriate accessible database (1-3)	
Credibility in scientific deliberations and decision-making	**Duplicate actions from Goal 2 (above)** 8C: 16. Develop Science Quality Assurance Plan to guide scientific efforts to produce timely, credible and objective results (Quality Assurance is rigorous internal and external review of study proposals, while Quality Control is rigorous administrative and peer review of completed studies) (5-2) 8C: 9. Ensure that any science advisory panel adopts multidisciplinary approaches that include contributions from appropriate disciplines of population biology, oceanography, ecology, economics, statistics, modeling, and social	**Goal 3: An Effective Organization** **Objective 7: Improve and maintain**

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	sciences (3-1) 8C: 10. Integrate the scientific method into DFG research, monitoring and evaluation of management actions (can include rigorous design and testing of null hypotheses, as well as incorporating other sources of scientific information as appropriate, such as descriptive studies, traditional ecological knowledge, strong inference, social science) (2-1) 8E: 21. Coordinate scientific determinations with other state and federal scientific bodies (i.e. PFMC Science and Statistical Committee) (2-0) **Duplicate actions from Goal 3 (above)** 8C: 16. Develop Science Quality Assurance Plan to guide scientific efforts to produce timely, credible and objective results (Quality Assurance is rigorous internal and external review of study proposals, while Quality Control is rigorous administrative and peer review of completed studies) (5-2) 8C: 9. Ensure that any science advisory panel adopts multidisciplinary approaches that include contributions from appropriate disciplines of population biology, oceanography, ecology, economics, statistics, modeling, and social sciences (3-1) 8C: 10. Integrate the scientific method into DFG research, monitoring and evaluation of management actions (can include rigorous design and testing of null hypotheses, as well as incorporating other sources of scientific information as appropriate, such as descriptive studies, traditional ecological knowledge, strong inference, social science) (2-1) 8D: 24. Link to or post online at the DFG website all reports and publications from DFG-sponsored projects (6-0) 8D: 2. Establish science advisory panel from multiple disciplines to advise DFG director on major issues (7-2) 8D: 13. Establish an independent multidisciplinary Science Advisory Panel (i.e., SAP; or a Science and Biostatistics Committee) to provide independent scientific review and guidance on DFG planning products, management plans, monitoring designs, focused studies, and "best available" science (consult extant models used in other states and federal agencies) (5-0) 8D: 15. Establish mechanisms to promote rigorous, thorough, independent scientific review of DFG resource management, scientific studies and reports, and monitoring programs (5-0) 8D: 26. Consult adopted state and federal agency standards and appropriate codes of ethical conduct to develop guidelines and formal rules to develop DFG codes to buffer DFG scientists, partners, and contracted third parties	**credibility (scientific, decision-making, fiscal, etc.)**

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	from political influence while promoting dialogue between scientists and policy makers. (4-0) 8D: 27. Modify decision-making processes to facilitate integration across biological and physical scientific disciplines while promoting interactions between scientists and policy makers (i.e., balancing test for sufficient time versus efficiency; e.g. one-year status review under California Endangered Species Act) but ensuring independence of scientific programs from political influence (4-0) 8D: 11. Use consistent applications of science and be transparent in the determination of listing a species and the areas of potential habitat mitigation needs (3-0) 8D: 17. Establish methods, guidelines, and policies for collecting, analyzing, archiving, and serving data and other information generated by research, monitoring, and modeling efforts of DFG personnel (3-0) 8D: 14. Define Best Available Science, Best Available Scientific Methods, and standards for applying them that conform to appropriate California and federal standards (statutory and common law) (4-2) 8D: 18. Establish a standard procedure for data sharing (3-1) 8D: 16. Establish mechanisms to promote rigorous, thorough, independent scientific review of methods and results of scientific studies conducted by third parties and adopted by DFG (2-0) 8D: 28. Provide scientific advisers to DFG and F&GC who are independent experts in economics and other social sciences, ecology and population biology (3-2) 8D: 19. Publish guidelines for ensuring the quality, objectivity, utility and integrity of information used or disseminated by DFG (2-2) 8D: 25. Develop scientific integrity policy to define ethical rules of conduct to ensure quality and credibility of information and procedures for investigating and disciplining misconduct (0-0) 8D: 23. Require that all data collected in sponsored scientific investigations be entered into BIOS or another appropriate accessible database (1-3)	