

California Fish and Wildlife Strategic Vision Project

Science Working Group Issues Framework

Revised October 17, 2011

Table 1: Science Working Group Issues Framework – Proposed New Version

ISSUE	PROBLEM(S)	GOAL(S) (preceded by Sci #)	EXAMPLE(S) OF WAYS TO ACHIEVE GOAL	TIE(S) TO DFG STRATEGIC INITIATIVES	IMPLEMEN- TATION SCALE CRITERIA	TIME SCALE CRITERIA	FINANCIAL SCALE CRITERIA
<p>Lack of trust in how DFG incorporates science in policy formulation and resource management.</p> <p>Public must be able to see and understand how science informs decisions.</p>	<p>Stakeholders and staff question whether all relevant and credible scientific information has been used to inform decision-making.</p>	<p>1. Decisions made by managers and policy-makers are transparently informed by credible science</p>	<p>New draft policies and resource mgmt plans are published with all scientific information cited, and a review period is provided for public comment.</p> <p>Draft policies and plans are reviewed by external organizations for scientific integrity, i.e. was trustworthy science used and was it reported accurately? This could be accomplished by external review panels contracted by DFG. An independent, trusted outside expert panel peer-reviews the scientific information and their report is published along with the decision/policies.</p> <p>Expanded use of CEQA or analogous public impact analyses is one way to achieve transparency and review.</p> <p>Acknowledge differences of scientific opinion and explain how these are resolved in decisions.</p>				
<p>Inadequacy of scientific capacity within DFG.</p> <p>Credible and relevant science must be available to decision-makers in a timely manner</p>	<p>Decisions are sometimes made with inadequate scientific information because it is unavailable in a timely manner.</p>	<p>2. Decision-making is adequately informed by science.</p>	<p>Assess the current scientific capacity and capability of DFG.</p> <p>Identify scientific disciplines for which there is insufficient capacity in DFG either to carry out research and other scientific activities directly, or to manage contracts or cooperative agreements with other scientific providers. Target recruitment to these specialties as financial opportunities become available.</p> <p>Develop job classifications that are competitive and will recruit</p>				

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to inform decisions.			<p>and retain scientists.</p> <p>Develop mechanisms to attract graduate university students to careers in DFG, and provide means for present employees to enroll in graduate programs while performing research in support of DFG as well as their degrees.</p> <p>To maximize in-house resources, require that all proposed scientific investigations be directly tied to an identified information need (i.e. no hobby science on government time); study plans are approved in advance of work. Seek to rebalance scientific staff to match present and anticipated needs.</p>				
<p>Lack of public understanding of role of science in DFG</p> <p>Science used in policy and management must be made understandable to the interested public, and used to enhance science education.</p>	<p>One source of the lack of public trust is lack of understanding of scientific findings and how they are used.</p>	<p>3. Science conducted and used by DFG is interpreted by education specialists to provide for public understanding and learning.</p>	<p>This is an opportunity for DFG to develop public appreciation for the job it does while strengthening public appreciation of science and its role in conserving and managing California's wildlife. There are a variety of inexpensive ways to share digestible information on the DFG web site. There is, of course, direct outreach to schools, interest groups, etc.</p>				

Table 2: Revised Science Working Group Issues Framework – Proposed Edited Version of October 11, 2011 Table

ISSUE	PROBLEM(S)	GOAL(S) (preceded by Sci #)	EXAMPLE(S) OF WAYS TO ACHIEVE GOAL	TIE(S) TO DFG STRATEGIC INITIATIVES	IMPLEMEN- TATION SCALE CRITERIA	TIME SCALE CRITERIA	FINANCIAL SCALE CRITERIA
<p>Improve the scientific capacity of DFG</p> <p>(To assure that the process of science and information derived from scientific studies provide basis for and guide policy development and resource management carried out by DFG)</p>	<p>Lack of funding and loss of key personnel coupled with many new unfunded mandates have hampered DFG's ability to <u>meet-achieve</u> its mission.</p>	<p><u>1. Integrated resource management</u></p>	<p>Establish a matrix that describes the interactive hierarchical structure of California agencies and extant offices within and outside DFG that use guidance from science in their oversight of, obligations for, and authorities for conservation and management of California's natural resources.</p> <p><u>and identify overlaps and potential gaps to allow streamlining of efficiency.</u></p>				
	<p>DFG lacks the scientific capacity in certain areas, <u>(e.g. modeling expertise)</u></p> <p><u>There is current disorganization of how science is managed within DFG</u></p> <p><u>Generating the science or using science generated by others is sometimes viewed with distrust (depending on</u></p>	<p>Ensure decisions made by managers are informed by science</p> <p>Restore (increase?) the core capacity of DFG to produce science for areas that relate back to primary goals.</p> <p><u>2. Core areas – retain and expand internal science capacity.</u></p>	<p>1. Assess the current scientific capacity and capability of DFG.</p> <p><u>a2. Create database of current employees with procedural (e.g., permit processing and issue; coordination of issues and needs among offices and external organizations) and substantive (e.g., assess needs for directed scientific studies; develop plans for scientific studies; conduct or collaborate in directed scientific studies) scientific roles in developing and implementing DFG policy.</u></p> <p><u>23. Recruit, hire, and retain personnel with expertise in designing scientific studies, conducting rigorous data collection, understanding and developing scientific models, analyzing data obtained from research and monitoring, and</u></p>	<p>3, 7</p>			

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	source or lack of peer review or other factors)	<u>3.</u> External/peripheral areas – use cooperative agreements <u>or</u> <u>contracts</u>	reporting and interpreting scientific studies generated from DFG staff and outside collaborators. <u>3. Prioritize research needs</u> <u>4.4.</u> Ensure internal capacity to manage cooperative agreements. Positive example is the Condor Program.				
<u>Improve scientific capacity</u>	<u>Include an education component on modeling within the field.DFG lacks scientific modeling expertise</u> <u>There is current disorganization of how science is managed within DFG</u>	<u>Understanding/interpret ing</u> <u>4. Ensure understanding and accurate interpretation of the science</u> <u>5.</u> Establish scientific program offices	Establish appropriate scientific program offices and entities, including: 1. An <i>Office of Resource and Population Assessment</i> (in support of scientifically rigorous modeling efforts). 2. A <i>Research Branch</i> (to promote scientifically rigorous studies and other data collection efforts). 3. A <i>Monitoring Branch</i> as either stand alone entity with direct integration with the <i>Research Branch</i> or as a sub-group of the <i>Research Branch</i> . 4. An independent multidisciplinary <i>Science Advisory Panel (i.e., SAP; or a Science and Biostatistics Committee)</i> to provide independent scientific review and guidance on DFG planning products, management plans, monitoring designs, and focused studies (see 2.ii). a. Ensure that the SAP adopts multidisciplinary approaches that include contributions from appropriate disciplines of population biology, oceanography, ecology, economics, statistics, modeling, and social sciences. b. Ensure that the SPS coordinates the review of efforts with other federal and state review capacities.	3, 7			

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<p>Improve scientific capacity Improve scientific capacity of DFG</p>	<p>DFG is losing scientific expertise DFG uses science and produces science, which can cause perception problems</p>	<p>6. <u>Improve recruitment and retention of qualified biologists</u> Clearly define the mix of scientific information gathered versus that generated. A matrix to define who does what and how it is interpreted.</p>	<p>1. <u>Become competitive with other state agencies and the private sector in pay scale. Classifications need to be on par (equity and financially) with state and federal agencies</u></p> <p>2. <u>Provide for the continuing education of technical staff (including attendance at appropriate scientific conferences)</u></p> <p>3. <u>Establish basic requirements and appropriate incentives for personnel to publish in peer-reviewed scientific journals and deliver reports of similar quality.</u></p> <p>4. <u>Establish mechanisms that enhance recruitment of personnel from University of California and California State University campuses.</u></p> <p>5. <u>Encourage technical personnel to pursue advanced degrees.</u></p> <p>Establish standards for personnel performance, review, and advancement that consider scientific contributions and application of science. Partner with the appropriate entities to produce science for the other goals. Facilitate (enhance/reestablish collaborative partnerships (specifically for modeling — needs to be in-house — both staff who can do the modeling as well as understand it if being done outside)</p>				
<p>Improve scientific capacity of DFG</p>	<p>Databases don't talk to each other <u>share standardized, integrated format</u> – siloining issue within the</p>	<p>7. <u>Enhance data management systems employing new technologies (i.e. GIS databases, Marine Map)</u> For</p>	<p><u>Establish methods, guidelines, and policies for collecting, analyzing, and archiving data and other information generated by research, monitoring, and modeling efforts by DFG personnel.</u></p> <p><u>Coordinate/integrate methods, guidelines, and policies with other scientific data collection and archiving efforts to the</u></p>				

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	<p>dept</p> <p><u>Data are collected and filed away unused/shoebox problem</u></p> <p><u>Don't always know why data is being collected</u></p> <p><u>For data/ information gaps, and filling monitoring needs. partnerships should be established to determine who will gather scientific information – avoid duplication of efforts</u></p>	<p><u>data/ information gaps, and filling monitoring needs. Partnerships should be established to determine who will gather scientific information – avoid duplication of efforts</u></p>	<p><u>extent possible. Develop mechanisms to allow and facilitate collaborative partnerships between DFG personnel and scientists from other state and federal agencies, academic institutions, and other credible scientific organizations and stakeholders.</u></p> <p><u>1. Identify needed capacity of partners (e.g., waterfowl endowment at UCD).</u></p> <p><u>2. Collaborate with University of California and California State University systems to facilitate modification and development of University curricula to help with DFG scientific needs.</u></p> <p><u>3. Encourage and facilitate partnerships with stakeholders (e.g., consumptive and non-consumptive resource users) to effect cost-saving efficiencies in scientific data collection.</u></p> <p><u>Streamline MOU and scientific collection permitting processes.</u></p>				
<p><u>Improve scientific capacity</u><u>Improve scientific capacity of DFG</u></p>	<p><u>Serious reduction in funding and staff, coupled with expanded unfunded mandates, has caused redundancies in some areas and gaps, inefficiencies in other areas</u> <u>Don't always know why data is being collected</u></p>	<p><u>8. Facilitate partnerships to expand DFG capacity</u></p>	<p><u>Develop mechanisms to allow and facilitate collaborative partnerships between DFG personnel and scientists from other state and federal agencies, academic institutions, and other credible scientific organizations and stakeholders.</u></p> <p><u>1. Identify needed capacity of partners (e.g., waterfowl endowment at UCD).</u></p> <p><u>2. Collaborate with University of California and California State University systems to facilitate modification and development of University curricula to help with DFG scientific needs.</u></p>				

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			<p><u>3. Encourage and facilitate partnerships with stakeholders (e.g., consumptive and non-consumptive resource users) to effect cost-saving efficiencies in scientific data collection.</u></p> <p><u>Streamline MOU and scientific collection permitting processes</u> <u>Coordinate/integrate methods, guidelines, and policies with other scientific data collection and archiving efforts to the extent possible</u></p>				
<p><u>Improve scientific credibility of DFG</u></p>	<p><u>It is important to separate science from policy, esp. in processes funded by outside sources that also fund the science used.</u></p> <p><u>Need to avoid practice or perception of agenda-driven science</u></p>	<p><u>9. Ensure separation between science and policy</u></p>	<p><u>Clearly identify the mix of scientific information gathered and used, and its source..</u></p> <p><u>Integrate all relevant science in policy decisions to the degree possible. Develop matrix to define science used, w/ clear rationale for relevant science not used in decision-making, to ensure transparency.</u></p> <p><u>Partner with the appropriate entities to produce science for non-core goals. Facilitate (enhance/reestablish collaborative partnerships (specifically for modeling – needs to be in-house – both staff who can do the modeling as well as understand it if being done outside)</u></p>				
<p><u>Improve scientific capacity-credibility of DFG</u></p>	<p>Analysis does not always include peer review</p> <p>Public distrusts the <u>department decision-making process</u></p> <p>Perception that science</p>	<p><u>10. Ensure decisions made by managers are informed by best available, peer reviewed science</u></p> <p><u>Science that DFG produces is trustworthy</u></p>	<p><u>Establish methods, guidelines, and policies for collecting, analyzing, and archiving data and other information generated by research, monitoring, and modeling efforts by DFG personnel.</u></p> <p><u>Improve transparency of how science information is used in decision-making.</u></p>				

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	<p>is being manipulated</p> <p>Transparency of science and decision making is inadequate</p> <p>Science information is not applied or not available in a timely manner</p>	<p>(it has rigorous quality assurance/quality control), accessible (data management) and useful (science that needs to get done is done and the information gathered is used to inform decisions after being peer reviewed):</p> <p>Science needs to be completely transparent and trustworthy.</p>	<ul style="list-style-type: none"> - 3. Establish proper procedures to ensure a <u>system decision-making process and use of science</u> that is transparent, trustworthy and is useful. - 4. Require Independent, external peer review of the science should improve this problem. 5. Prioritize research needs. 6. More consistent and documented processes. Broader transparency of data. - Prescribe a paradigm for conduct and use of science in developing policy and implementing resource management. <ul style="list-style-type: none"> a. Integrate the scientific method into research, monitoring and management activities of DFG by rigorous design and testing of null hypotheses and incorporation of other sources of scientific information as appropriate (e.g., descriptive studies, traditional ecological knowledge, strong inference, social science). - Require a procedural step of effects analysis or risk assessment in all agency determinations that rely on the use of information derived from scientific studies or use other sources of reliable knowledge. <ul style="list-style-type: none"> b. Define <i>Best Available Science</i> and standards for its application that conform to federal standards (statutory and common law). - 2. Develop <i>Science and Biostatistics Committee Model</i> for 				

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			<p>DFG (see 1.b.ii.4)</p> <ul style="list-style-type: none"> - 3Develop <i>Scientific Integrity Policy</i> to proscribe ethical rules of conduct for scientists, science program managers and other senior supervisors and procedures for investigating conflicts of interest and disciplining misconduct. - 4Develop <i>Science Quality Assurance Plan</i> to guide scientific efforts to produce timely, credible, objective results. <ul style="list-style-type: none"> - <i>Quality Assurance</i>: Rigorous internal and external review of study proposals. - <i>Quality Control</i>: Rigorous administrative and peer review of completed studies. - 5Establish mechanisms to promote rigorous, thorough, independent scientific review of DFG resource management, scientific studies and reports, and monitoring program. (see 1.b.ii.4) - 6Provide appropriate separation in tasking but consistent dialogue between scientific staff that design, conduct, analyze, and interpret scientific studies and resource managers, regulators, and policy-makers 				
<p>Integrate science (as defined as best available science; 2.i.3) from all relevant disciplines into policy</p>	<p>In some cases, the science that informs decisions has not been fully integrated from all relevant disciplines.</p>	<p><u>11.</u> DFG policy makers are fully informed by science across disciplines from all relevant sources.</p>	<ul style="list-style-type: none"> - Modify decision-making processes to facilitate integration across disciplinary and administrative boundaries (i.e., balancing test for sufficient time versus efficiency; e.g. one-year status review under CES). - Ensure independence of scientific programs from political influence. 				

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development (includes economic and social as well as state versus federal)							
	There are disagreements/ disputes among the science	<u>12.</u> Publicly acknowledge that there are disagreements within the science – be transparent about those choices.	<ul style="list-style-type: none"> – California Council on Science and Technology (equivalent of National Academies of Science) – peer review – use science consistencies (use independent scientific review) – Credible, published scientific data is produced in a scientific document. Both scientific methods are described. – Decision-making body acknowledges the differences in the science and explains the reason for why they chose the science used. 				

Table 3: Items to Potentially Move to Other Working Group(s)

ISSUE	PROBLEM(S)	GOAL(S)	EXAMPLE(S) OF WAYS TO ACHIEVE GOAL				
Governance and Mission Working Group?	Losing good employees	Improve employee recruitment and retention	1. Become competitive with other state agencies and the private sector in pay scale. Classifications need to be on par (equity and financially) with state and federal agencies 2. Provide for the continuing education of technical staff (including attendance at appropriate scientific				

			<p>conferences)</p> <p>3. Establish basic requirements and appropriate incentives for personnel to publish in peer-reviewed scientific journals and deliver reports of similar quality.</p> <p>4. Establish mechanisms that enhance recruitment of personnel from University of California and California State University campuses.</p> <p>5. Encourage technical personnel to pursue advanced degrees.</p> <p>Establish standards for personnel performance, review, and advancement that consider scientific contributions and application of science.</p>				
Governance and Mission Working Group?	There are not enough positions in certain departments to do the mandated work, including DFG.	Ensure that DFG has the staff capacity to do its mandated work.					

Homework Volunteers

Dave Graber (review and edit)

Diane Pleschner-Steele (review and edit)