

# California Fish and Wildlife Strategic Vision Project

## Science Working Group Issues Framework

Revised November 4, 2011

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

ISSUE	PROBLEM(S)	GOAL(S) (preceded by Sci #)	OBJECTIVES	EXAMPLE(S) OF WAYS TO ACHIEVE GOAL [TOOLS]	TIE(S) TO DFG STRATEGIC INITIATIVES	IMPLEMEN- TATION SCALE CRITERIA	TIME SCALE CRITERIA	FINANCIAL SCALE CRITERIA
<p>I. The capability of the California Department of Fish and Game (DFG) to design and perform sound scientific studies, to produce sound scientific results, and to evaluate scientific studies and results produced by third parties (i.e., scientific capacity).</p> <p><u><a href="#">[Moved to Common Themes Table 5 Staff Development]</a></u></p>	<p>I. The science capacity of DFG has been substantially eroded during the past two decades owing to <u>multiple</u> sev factors (e.g., leadership and supervisory personnel, <u>internal and external pressures</u> resulting in the exodus of personnel trained in scientific disciplines, inadequate financial resources). <u><a href="#">[Moved to Common Themes Table 5 Staff Development]</a></u></p>	<p>I. Restore and enhance the scientific capacity of DFG to assure that the process of science and information derived from best available scientific studies provide a key foundation for and adequately informs, development and implementation of policy and guides management of natural resources of California.</p> <p><u><a href="#">[Moved to Common Themes Table 1 Partnerships]</a></u></p>	<p>I.1. Identify and assess the current scientific capacity and capability of DFG.</p> <p><u><a href="#">[Moved to Common Themes Table 1 Partnerships]</a></u></p> <p>I.2. Enhance the scientific capacity of DFG.</p> <p><u><a href="#">[Moved to Common Themes Table 1 Partnerships]</a></u></p>	<p>I.1.A. 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 development and implementation of department policy. (Table 2, Goal 2) <u><a href="#">[Moved to Common Themes Table 5 Staff Development]</a></u></p> <p>I.1.B. Establish a matrix that describes the interactive hierarchical structure of California agencies and extant offices within DFG that use guidance from science in their oversight of, obligations for, and authorities for conservation and management of California's natural resources, and identify <u>potential to coordinate with other agencies</u>, overlaps and potential gaps to allow streamlining of efficiency. (Table 2, Goal 1) <u><a href="#">[Moved to Common Themes Table 1 Partnerships]</a></u></p> <p>I.1.C. Prioritize research needs. (Table 2, Goals 2 and 3) <u><a href="#">[Moved to Common Themes Table 1 Partnerships]</a></u></p> <p>I.2.A. 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 reporting and interpreting scientific studies generated from DFG staff and outside collaborators. (Table 2, Goal 2)</p>				

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			<a href="#"><u>Themes Table 1 Partnerships</u></a>	<p><a href="#"><u>[Moved to Common Themes Table 1 Partnerships]</u></a></p> <p>I.2.B. Provide for the continuing education of technical staff (including attendance of appropriate scientific conferences). (Table 2, Goal 6) <a href="#"><u>[Moved to Common Themes Table 1 Partnerships]</u></a></p> <p>I.2.B.i. Establish basic requirements and appropriate incentives for personnel to publish in peer-reviewed scientific journals and deliver reports of similar quality. (Table 2, Goal 6) <a href="#"><u>[Moved to Common Themes Table 5 Staff Development]</u></a></p> <p>I.2.B.ii. Establish mechanisms that enhance recruitment of personnel from University of California and California State University campuses. (Table 2, Goal 6) <a href="#"><u>[Moved to Common Themes Table 5 Staff Development]</u></a></p> <p>I.2.B.iii. Encourage technical personnel to pursue advanced degrees. (Table 2, Goal 6) <a href="#"><u>[Moved to Common Themes Table 5 Staff Development]</u></a></p> <p>I.2.B.iv. Establish standards for personnel performance, review, and advancement that consider scientific contributions and application of science. (Table 2, Goal 6) <a href="#"><u>[Moved to Common Themes Table 5 Staff Development]</u></a></p> <p>I.2.C. Establish appropriate scientific program offices and entities, including <a href="#"><u>[Moved to Common Themes Table 1 Partnerships]</u></a></p> <p>I.2.C.i. An <i>Office of Resource and Population Assessment</i> (in</p>				

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				<p>support of scientifically rigorous modeling efforts). (Table 2, Goal 5). (Modeling is one tool, an important one, but resource assessment should not be based entirely on modeling) <u>[Moved to Common Themes Table 2 Decision-making]</u></p> <p>I.2.C.ii. A <i>Research Branch</i> (to promote scientifically rigorous studies and other data collection efforts in support of DFG programs). (Table 2, Goal 5) <u>[Moved to Common Themes Table 2 Decision-making]</u></p> <p>I.2.C.iii. 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>. (Table 2, Goal 5) <u>[Moved to Common Themes Table 2 Decision-making]</u></p> <p>I.2.C.iv. An independent multidisciplinary <i>Science Advisory Panel (i.e., SAP; or a Science and Biostatistics Committee, consisting of external scientists,)</i> to provide independent scientific review and guidance on DFG planning products, management plans, monitoring designs, and focused studies (Table 2, Goal 5) <u>[Moved to Common Themes Table 2 Decision-making]</u></p> <p>I.2.C.iv.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. (Table 2, Goal 5) <u>[Moved to Common Themes Table 2 Decision-making]</u></p> <p>I.2.C.iv.b. Ensure that the review of efforts are coordinated</p>				

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				<p><del>with other federal and state review capacities. (Table 2, Goal 5).</del> <b><u>[Moved to Common Themes Table 1 Partnerships]</u></b></p> <p><del>I.2.D. Develop mechanisms to allow and facilitate collaborative partnerships between DFG personnel and scientists from other state and federal agencies, academic institutions, and other appropriate third party scientific organizations. (Table 2, Goal 8)</del> <b><u>[Moved to Common Themes Table 1 Partnerships]</u></b></p> <p><del>I.2.E. Establish methods, guidelines, and policies for collecting, analyzing, archiving, and serving data and other information generated by research, monitoring, and modeling efforts by DFG personnel. (Table 2, Goal 7)</del><b><u>[Moved to Common Themes Table 1 Partnerships]</u></b></p> <p><del>I.2.E.i. Coordinate/integrate methods, guidelines, and policies with other scientific data collection and archiving efforts to the extent possible. (Table 2, Goal 7)</del> <b><u>[Moved to Common Themes Table 1 Partnerships]</u></b> (Merge with above. 1.2.E says you will establish, here you say you will coordinate! Bass backwards.)</p> <p><del>I.2.F. Enhance and re-establish partnerships with academic institutions and other credible scientific organizations and stakeholders. (Table 2, Goal 8)</del> <b><u>[Moved to Common Themes Table 1 Partnerships]</u></b></p> <p><del>I.2.F.i. Identify needed capacity of partners (e.g., waterfowl endowment at UCD). (Table 2, Goal 8)</del> <b><u>[Moved to Common Themes Table 1 Partnerships]</u></b></p>				

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				<p><del>I.2.F.ii. Collaborate with University of California and California State University systems to facilitate modification and development of University curricula to help with DFG scientific needs. (Table 2, Goal 8) <b>[Moved to Common Themes Table 1 Partnerships]</b></del></p> <p><del>I.2.F.iii. Encourage and facilitate partnerships with stakeholders (e.g., consumptive and non-consumptive resource users) to effect cost-saving efficiencies in scientific data collection. (Table 2, Goal 8) <b>[Moved to Common Themes Table 1 Partnerships]</b></del></p> <p><del>I.2.G. Streamline MOU process. <b>[Moved to Common Themes Table 1 Partnerships]</b></del></p> <p><del>1.2.G.i Streamline and scientific collection permitting processes. (Table 2, Goal 8) <b>[Moved to Common Themes Table 1 Partnerships]</b></del></p> <p><del>(MOUs and collection permitting are fundamentally different processes. Need to separate)</del></p>				
II. Integrity and trustworthiness of scientific studies used to develop policies and to manage natural resources <b>[Moved to Common Themes Table 2 Decision-</b>	II. The scientific credibility of resource management decisions has been eroded during the past two decades owing to loss of scientific capacity	<p>II. Restore and enhance scientific credibility of DFG and the Fish and Game Commission</p> <p><b>[Moved to Common Themes Table 2 Decision-making]</b></p>	<p>II.1. Develop a functional paradigm for conducting sound scientific studies by DFG personnel <b>[Moved to Common Themes Table 2 Decision-making]</b> and for evaluation and use results of scientific</p>	<p>II.1.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). (Table 2, Goal 10) <b>[Moved to Common Themes Table 2 Decision-making]</b></p> <p>II.1.B. Require a procedural step of effects analysis or risk assessment in all agency determinations that rely on the use</p>				

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<u>making]</u>	<p>within DFG.</p> <p><u>-This loss of scientific capacity has lead to the and perception and evidence that development and implementation of policy in resource management processes have not been based on sound science nor on all relevant science, or that scientific methods, results and interpretations have been manipulated to achieved desired ends.</u></p> <p><u>[Moved to Common Themes Table 2 Decision-making]</u></p>		<p>studies conducted by third parties to develop policy and protocols for management of natural resources of California. <u>[Moved to Common Themes Table 1 Partnerships]</u></p> <p>II.2. Develop <i>Science and Biostatistics Committee Model</i> for DFG. <u>[Moved to Common Themes Table 2 Decision-making]</u></p> <p>II.3. Develop <i>Scientific Integrity Policy</i> to define ethical rules of</p>	<p>of information derived from scientific studies or use other sources of reliable knowledge (i.e., peer review). (Table 2, Goal 10). <u>[Moved to Common Themes Table 2 Decision-making]</u></p> <p>II.1.C. Define <i>Best Available Science, Best Available Scientific Methods</i>, and standards for applying them that conform to appropriate California and Federal standards (statutory and common law). (Table 2, Goal 10). <u>[Moved to Common Themes Table 2 Decision-making]</u></p> <p>II.2.A. Consult extant models in operation in other states and federal agencies <u>[Moved to Common Themes Table 2 Decision-making]</u></p> <p>II.2.B. Coordinate scientific determinations with other state and federal scientific bodies (i.e. PFMC SSC) <u>[Moved to Common Themes Table 2 Decision-making]</u></p> <p>II.3.A. Consult extant models in operation in other states and federal agencies and by primary scientific societies. <u>[Moved to Common Themes Table 5 Staff Development]</u></p>				

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			<p><del>conduct for scientists, science program managers and other senior supervisors and procedures for investigating conflicts of interest and disciplining misconduct. <b>[Moved to Common Themes Table 5 Staff Development]</b></del></p> <p><del>II.4. Develop Science Quality Assurance Plan to guide scientific efforts to produce timely, credible, objective results. <b>[Moved to Common Themes Table 5 Staff Development]</b></del></p> <p><del>II.5. Establish mechanisms to promote rigorous, thorough, independent scientific review of DFG resource</del></p>	<p><del>II.4.A. Quality Assurance: Rigorous internal and external review of study proposals. (Table 2, Goal 10)</del></p> <p><del>II.4.B. Quality Control: Rigorous administrative and peer review of completed studies. (Table 2, Goal 10)</del></p> <p><del><b>[Moved to Common Themes Table 5 Staff Development]</b></del></p> <p><del>II.5.A. Consult mechanisms and methods used by primary scientific organizations and Federal agencies charged with promoting and advancing science. <b>[Moved to Common Themes Table 5 Staff Development]</b></del></p>				

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			management, scientific studies and reports, and monitoring programs and the methods and results of scientific studies conducted by third parties and adopted by DFG. <u>[Moved to Common Themes Table 5 Staff Development]</u>					
III. The ability of DFG scientists, partners, and contracted third parties to conduct and interpret scientific studies free from political influence  <u>[Moved to Common Themes Table 2 Decision-making]</u>	III. Evidence and perception support substantial concern <u>There is a concern</u> that at political influence and pressure on DFG scientists, partners, and contracted third parties have produced agenda-driven outcomes and have influenced the decision-making process.	III. Integrate science (as defined as best available science and best available scientific methods) from all relevant biological and physical scientific disciplines directly into development of policy without political influence by policymakers on the conduct and interpretation of scientific studies, while promoting appropriate dialogue between scientists and policymakers.	III.1. 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 CES) but ensuring independence of scientific programs from political	III.2.A. 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.				



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			influence.					
<b>THEME: Science and Technology</b> [The Science and Technology Tools are being considered by the Science WG] <i>[Moved from NRS WG]</i>  <u>[Moved to Common Themes Table 2 Decision-making]</u>	Need to integrate multi-disciplinary approach to science-based resource management	Develop a science & biostatistical committee, including population biology, ecology, oceanography economics and social sciences to review and advise DFG and Commission on 'best available science'  [Developing an advisory group is only one way to achieve a specific goal of including sound, independent science in informing management decisions. HOW this body is used is critical – forming the body is not the end point. a problem statement. Should this be “Many outside parties see DFG’s use of science as difficult to understand.” The goal would then be “promote transparency and accessibility with respect to DFG’s requests for and use of science to inform management decisions”]		Science advisers to DFG, F&GC, must include independent experts in economics and the social sciences as well as ecology and population biology, etc. (workgroup should focus on DFG and F&GC)				

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<b>Science and Technology</b> <i>[Moved from NRS-WG]</i> <i>[Moved to Common Themes Table 2 Decision-making]</i>	Political implications – Ensure that science conclusions are not “dictated” by policy-makers	Establish mechanism to separate science findings from policy decisions		<del>Fix institutional impediments between good science and outcomes (e.g. establish an independent science &amp; biostatistical committee to peer review and advise on ‘best available science’)</del>				
<b>Science and Technology</b> <i>[Moved from NRS-WG]</i> <i>[Moved to Common Themes Table 2 Decision-making]</i>	Transparency and accessibility	Establish separate ‘research unit’ within DFG		<ul style="list-style-type: none"> <li>– <del>Establish clearer connections between science and agency decisions (e.g. establish an independent science &amp; biostatistical committee to review and advise on ‘best available science’)</del></li> <li>– Improve scientific support of harvest programs, ocean conservation, and measuring climate change effects</li> </ul>				
<b>Science and Technology</b> <i>[Moved from NRS-WG]</i>	DFG authority and expertise to conduct science-based management of marine resources needs to be restored. [This is not a problem statement. It’s a goal that is better stated in the form of “seek the	Partner with resource users, universities, Tribes, other agencies, etc. (i.e. memoranda of understanding).  <u><i>[Already covered under partnerships]</i></u>						

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	restoration of DFG's authority..."  What would the problem statement in this case be? That DFG lacks sufficient authority to conduct science-based management? Or that DFG lacks the human resources to conduct science, reach out consistently to the scientific community for help, etc.? Or both?  <u>[Expertise and capacity already covered]</u>							
<b>Science and Technology</b> <i>[Moved from NRS-WG]</i>	There is a need for increased use of spatial tools.			Support and expand use of GIS tools such as Marine Map.  <u>Covered under supporting success.</u>				
<b>Science and Technology</b> <i>[Moved from NRS-WG]</i>	There is a need for data and technology to be accessible to the general public.	Establish methods, guidelines and policies for collecting, analyzing and archiving data and other		Integrate methods, guidelines and policies with other scientific data archives, to the extent possible.  <u>Covered under supporting success.</u>				

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		<del>information generated by research, monitoring and modeling efforts by DFG personnel</del>						
<b>Science and Technology</b> <i>[Moved from NRS WG]</i>	There is a need to build on existing tools							