



## 8 Monitoring California's Conservation Strategies

Adaptive management is about continuous learning, not with the objective of finding the perfect final solution to a problem, but to navigate complexities, while keeping a direction toward improved environmental conditions.

Lisen Schultz and Ioan Fazey in *Adaptive Management: A Practitioners Guide* (Allan and Stankey, ed. 2009)

Natural communities, ecosystems, species population dynamics, and the effects of pressures or conservation actions on the environment are inherently complex. Wildlife and resource managers often need to engage in species or resource management even though scientific information may be incomplete and outcomes of the actions may be uncertain. Adaptive management is essential to implementing effective conservation programs in light of these challenges. Adaptive management of a conservation plan is a process to continually monitor and assess the environment, as well as the effect and effectiveness of conservation strategies, and to adjust the plan when improvement is needed to achieve the desired outcomes.

This chapter presents required Element 5 (monitoring) of the SWAP. The first section describes the statutory basis for how CDFW incorporates adaptive management into conservation planning and resource management. The second section describes the results of an evaluation of the implementation of the SWAP 2005, which were used to inform SWAP 2015. The third section describes the process for monitoring the effect and effectiveness of the conservation strategies included in SWAP 2015.

### **Monitoring Effects of Extreme Events on Wildlife**

A comprehensive monitoring program to detect the response of fish and wildlife to major pressures and stressors involves a multi-level approach. One that includes consistent landscape scale change detection, as well as more intensive or focused research to determine cause and effects and response to management actions. The program must be able to mobilize quickly in order to gather key information of the effects of extreme events on natural communities and SGCN and respond appropriately with necessary conservation actions.

In response to the extreme drought situation in California, Governor Brown declared a Drought State of Emergency on January 17, 2014. Within weeks, CDFW redirected staff to step up efforts to assess the impact of the drought on SGCN and establish plans for priority conservation actions in coordination with conservation partners.

For fish, this included statewide weekly river and fish population monitoring, relocation and rescue prioritization for native species, and focused evaluations of fish at risk in the Central Valley and

Sacramento-San Joaquin Delta. The monitoring and rescue evaluations resulted in a regional focus on native cold water fishes, including species of trout, salmon, and steelhead and enhanced real-time water and fish monitoring in the Sacramento River and Delta. Other fishes (e.g., unarmored three-spine stickleback) and amphibians and wetland reptiles (e.g., western pond turtle) have also been of focus since January 2014. Fisheries management actions have also been employed in conjunction with environmental monitoring and fish relocations and rescues. These include critical habitat restoration projects in the Sacramento River Valley, development of a re-introduction plan for winter-run Chinook salmon in Battle Creek, enhancement and infrastructure improvement of trout and salmon hatcheries statewide, two public grant solicitations for habitat restoration projects to address the current and future droughts, feasibility studies to improve the use of field technology to monitor fishes and water condition (e.g., acoustic, passive integrated transponder [PIT], and satellite tagging and tracking), and two studies to evaluate white and green sturgeon population conditions in the Delta and Sacramento River.

For wildlife, this included assessing SGCN (amphibians, reptiles, birds, and mammals) to determine their relative vulnerability to drought impacts. To do this each species was scored based on three effect-risk categories: annual survival, reproduction, and food production; and three inherent-risk factors: life span, population size, and range size. This resulted in 48 taxa being identified as the most at risk from drought related conditions and an additional 65 taxa that might be at risk in the case of prolonged drought. To help focus attention on areas where management actions may be best employed, increased risk from drought-related pressures were also identified, such as risk from a reduction of agricultural water, risk from increased wildfires, risk from wildlife disease exposure, or reliance on managed wetlands. Examples of initial management actions included wetland management infrastructure improvements on state-managed wildlife areas and expediting the captive breeding program for the critically endangered Amargosa vole by rescuing voles from the rapidly drying marsh at the core of the species population.

## 8.1 Adaptive Management

The narrative presented in this section is excerpted and adapted from "*Incorporation of Adaptive Management into Conservation Planning and Resources Management*," (CDFW 2014). It is available at <https://www.wildlife.ca.gov/Science-Institute>.

Pursuant to Fish and Game Code (FGC) section 703.3, resource management decisions by CDFW should incorporate adaptive management to the extent possible. CDFW's intent is to improve the management of biological resources over time by incorporating adaptive management principles and processes, as appropriate, into conservation planning and resource management. This includes:

- designing monitoring, research, and/or assessment studies that are integral to an adaptive management framework;
- improving CDFW's knowledge base by synthesizing new information gathered through monitoring, research, assessment, and credible scientific sources; and
- regularly re-evaluating, based on the best available science, and adjusting, if needed, conservation and management strategies and practices to meet long-term goals.

In September 2012, Governor Jerry Brown signed Assembly Bill 2402 (Statutes of 2012, ch. 559, Sections 1-28) into law, which made a number of changes to the FGC. Among other provisions, the bill makes statements of policy relating to the use of ecosystem-based management,

adaptive management, and credible science; and requires establishment of a Science Institute to assist CDFW and the Fish and Game Commission (Commission) in obtaining independent scientific review, advice, and recommendations to help inform their scientific work. Section 12 of the bill (FGC section 715, subdivision [b]) states that the objectives of the Science Institute shall include, but not necessarily be limited to, the following:

- providing independent scientific guidance on the scientific research, monitoring, and assessment programs that support CDFW and the Commission's work with fish and wildlife species and their habitats;
- providing the best available independent scientific information and advice to guide and inform CDFW and Commission decisions;
- promoting and facilitating independent scientific peer review;
- promoting science-based adaptive management; and
- ensuring scientific integrity and transparency in decision-making.

### 8.1.1 Definitions

Adaptive management is defined under several sections of the FGC and Water Code. These definitions are set out below.

- FGC section 13.5 (General Definitions. Added by Assembly Bill 2402, Statutes of 2012) – "'Adaptive management,' unless otherwise specified in this code, means management that improves the management of biological resources over time by using new information gathered through monitoring, evaluation, and other credible sources as they become available, and adjusts management strategies and practices to assist in meeting conservation and management goals. Under adaptive management, program actions are viewed as tools for learning to inform future actions."
- FGC section 90.1 (Marine Life Definitions) – "'Adaptive management,' in regard to a marine fishery, means a scientific policy that seeks to improve management of biological resources, particularly in areas of scientific uncertainty, by viewing program actions as tools for learning. Actions shall be designed so that even if they fail, they will provide useful information for future actions. Monitoring and evaluation shall be emphasized so that the interaction of different elements within the system can be better understood."
- FGC section 2852, subdivision (a) (Marine Life Protection Act – Definitions) – "'Adaptive management,' with regard to marine protected areas, means a management policy that seeks to improve management of biological resources, particularly in areas of scientific uncertainty, by viewing program actions as tools for learning. Actions shall be designed so that, even if they fail, they will provide useful information for future actions, and monitoring and evaluation shall be emphasized so that the interaction of different elements within marine systems may be better understood."

- ▲ FGC section 2805, subdivision (a) (Natural Community Conservation Planning [NCCP] Act – Definitions) – “Adaptive management’ means to use the results of new information gathered through the monitoring program of the plan and from other sources to adjust management strategies and practices to assist in providing for the conservation of covered species.”
- ▲ Water Code section 85052 (Sacramento-San Joaquin Delta Reform Act of 2009 – Definitions) – “Adaptive management’ means a framework and flexible decision making process for ongoing knowledge acquisition, monitoring, and evaluation leading to continuous improvements in management planning and implementation of a project to achieve specified objectives.”

U.S. Fish and Wildlife Service (USFWS) defines adaptive management as a systematic approach for improving resource management by learning from management outcomes. USFWS identifies the key aspects of adaptive management as: (1) helping science managers maintain flexibility in their decisions, knowing that uncertainties exist and provides managers the latitude to change direction; (2) improving understanding of ecological systems to achieve management objectives; and (3) taking action to improve progress towards desired outcomes (Williams et al. 2009).

## **Requirements of the Fish and Game Code**

The NCCP Act (FGC section 2800 et seq.) mandates that all NCCPs integrate adaptive management strategies, in which the results of monitoring, research, and experimental habitat management feed-back into decision-making, mediating uncertainty, and improving the effectiveness of NCCP implementation over time (FGC section 2820, subdivisions [a][2], [8]). NCCP documents must include a description of the plan’s comprehensive adaptive management and monitoring program(s). The FGC also includes legislative declarations and requirements concerning the use of adaptive management in conjunction with activities under the Marine Life Protection Act (FGC sections 2853 & 2856), the authorization of the taking of certain species in association with implementation of the Quantification Settlement Agreement (related to overall quantification, settlement, and transfer of various Colorado River water rights) (FGC section 2081.7), and trout management (FGC sections 1726.1, 1728 & 1729). The Marine Life Management Act, FGC sections 7050 to 7090, and specifically 7056(g) states “Fishery management decisions are adaptive and are based on the best available scientific information...” In addition, following the enactment of Assembly Bill 2402, the following definitions and provisions relevant to the conduct of adaptive management were added to FGC:

- ▲ FGC section 33 (Credible Science Defined) – “Credible science’ means the best available scientific information that is not overly prescriptive because of the dynamic nature of science, and includes the evaluation principles of relevance, inclusiveness, objectivity, transparency, timeliness, verification, validation, and peer review of information as appropriate. Credible science also recognizes the need for adaptive management, as defined in section 13.5, as scientific knowledge evolves.”
- ▲ FGC section 43 (Ecosystem-Based Management) – “Ecosystem-based management’ means an environmental management approach relying on credible science, as defined in Section

33, that recognizes the full array of interactions within an ecosystem, including humans, rather than considering single issues, species, or ecosystem services in isolation.”

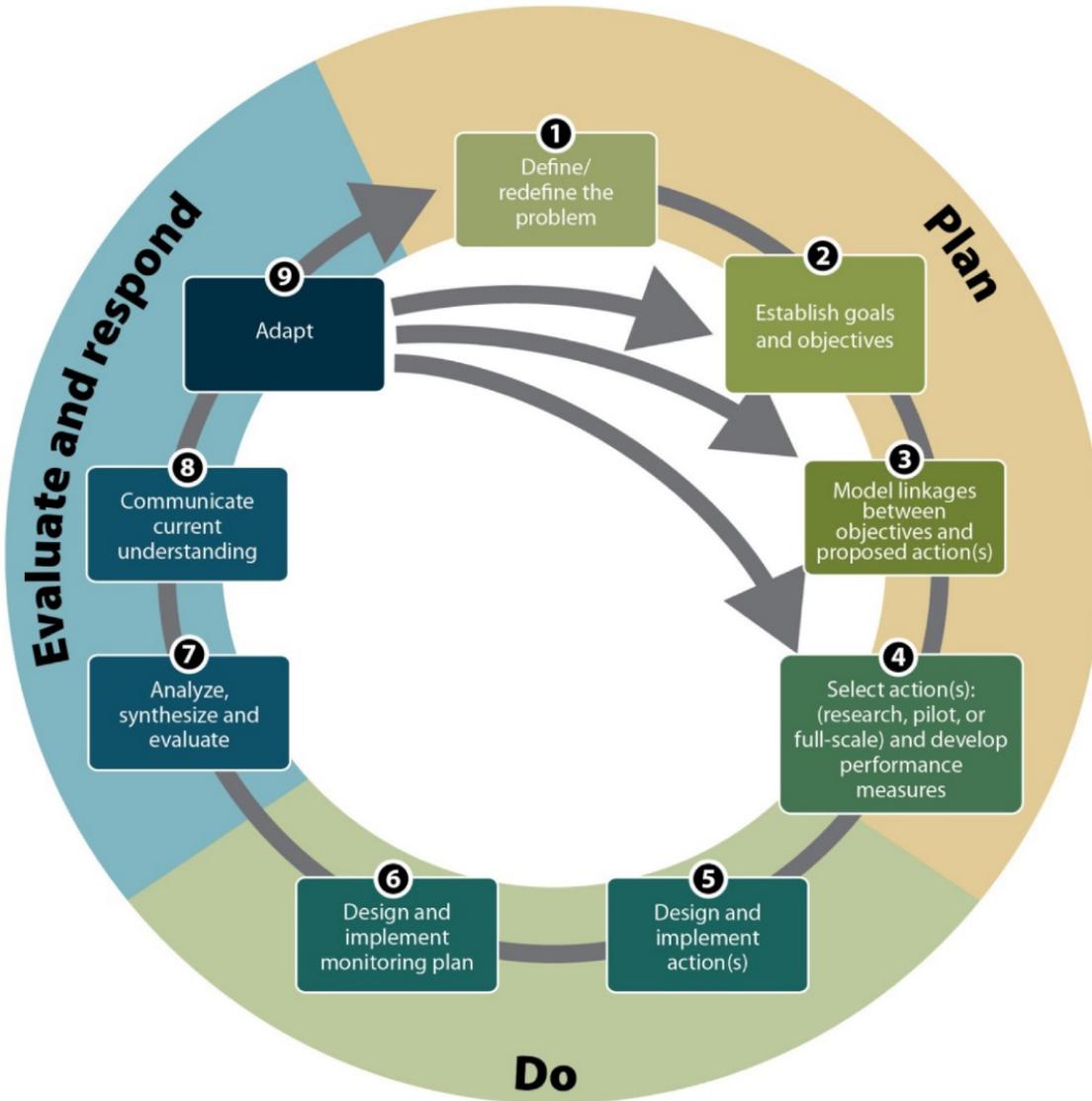
- ▲ FGC section 703.3 (Ecosystem-Based Management – Use Required in All Resource Management Decisions) – “It is the policy of the state that the department and commission use ecosystem-based management informed by credible science in all resource management decisions to the extent feasible. It is further the policy of the state that scientific professionals at the department and commission, and all resource management decisions of the department and commission, be governed by a scientific quality assurance and integrity policy, and follow well-established standard protocols of the scientific profession, including, but not limited to, the use of peer review, publication, and science review panels where appropriate. Resource management decisions of the department and commission should also incorporate adaptive management to the extent possible.”

## **Requirements of the Water Code**

The Sacramento-San Joaquin Delta Reform Act of 2009 (Delta Reform Act) established as overarching state policy the coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem (Public Resources Code section 29702). The Delta Reform Act requires the Delta Stewardship Council to create and adopt a comprehensive and legally-enforceable management plan for the Delta (Delta Plan) to further the coequal goals (Water Code section 85300). Water Code section 85308, subdivision (f) states the Delta Plan must include “a science-based, transparent, and formal adaptive management strategy for ongoing ecosystem restoration and water management decisions.” In addition, the Delta Plan must be based on and implemented using best available science (Water Code section 85302, subdivision [g]). The Delta Plan (Policy G P1, Delta Stewardship Council 2013) and its supporting regulations (California Code of Regulations, Title 23. Waters, section 5002) require the use of the best available science and incorporation of adaptive management into ecosystem restoration and water management programs, plans, or projects that are subject to the Delta Plan and regulations. This requirement is satisfied through both of the following: (1) the adaptive management plan for the project must use an approach consistent with the adaptive management framework described in the Delta Plan, and (2) the program, plan, or project must document that there is access to adequate resources to implement the adaptive management process and delineated authority by the entity responsible for implementing the process.

### **8.1.2 Principles and Processes of Adaptive Management**

A rich literature regarding the theory and conduct of adaptive management exists and supports the principles and processes of adaptive management. While differences among the various frameworks exist, they generally contain three broad phases: *Plan, Do, and Evaluate and Respond* (Delta Stewardship Council 2013). Figure 8.1-1 provides a representative example of the adaptive management process, including the three broad phases and the individual steps within the process.



Source: Delta Plan (Delta Stewardship Council 2013).

**Figure 8.1-1 A Three Phase (Nine-Step) Adaptive Management Framework**

Adaptive management has become a well-established principle and process within the natural resource management community. An adaptive management approach provides a structured process that allows for taking action under uncertain conditions based on the best available science, and re-evaluating and adjusting decisions as more information is acquired. The structured decision-making process used in adaptive management, involving articulation of objectives, identification of management alternatives, predictions of management consequences, recognition of key uncertainties, and monitoring and evaluating outcomes, is what differentiates it from a trial and error approach (i.e., try something, and if it does not work, try something else) (National Research Council 2004; Williams 2011).

Implementation of adaptive management can be time-consuming and costly, but when it is appropriate and effectively applied, it has the potential to reduce uncertainty associated with

management actions, provide long-term cost savings, and improve conservation and management effectiveness (Williams et al. 2009). It is worth noting that despite its intuitive appeal, the application of adaptive management in some circumstances has been less successful than one would expect (Gregory et al. 2006; Walters 2007; Allen and Gunderson 2011). Additionally, not all resource management decisions warrant the use of adaptive management (discussed further below). Nevertheless, the use of adaptive management for managing declining species may be particularly appropriate as adaptive management explicitly acknowledges and attempts to address the uncertainty inherent in managing species where basic biological information and an understanding of appropriate management strategies are often lacking (Fontaine 2011).

### **Challenges and Lessons Learned**

In natural resource programs managed by CDFW, informal adaptive management has been used for decades. These programs typically consist of a resource management decision embedded in a management plan that includes species population objectives (e.g., harvest level recommendations in a timber harvest plan). These programs are supported by long-running population monitoring programs that are used to assess the results of previous management decisions and inform future management decisions.

An example of a well-established CDFW program that relies on adaptive management is the California NCCP Program. Effective conservation through regional habitat conservation plans, such as NCCPs, depends on their ability to confront the challenges of adaptively managing and monitoring complex ecosystems. Assessments of such plans indicate that adaptive management should include opportunistic learning, hypothesis testing, management, monitoring, and directing the results of analysis and assessment back into the program through decision makers (see Atkinson et al. 2004, page 6, for a schematic NCCP/Habitat Conservation Plan adaptive management feedback loop). The adaptive management framework implies an ongoing scientific commitment to the NCCP in perpetuity (Noss et al. 1997). This requires an institutional structure and process that remains flexible and is committed to scientific rigor and quality results (Atkinson et al. 2004).

The practice of building effective adaptive management programs for large-scale, multi-species NCCPs is an endeavor that continues to evolve. NCCPs in California are making real progress in designing adaptive management programs that work. For example, implementing partners of the San Diego Multiple Species Conservation Program (MSCP), through the San Diego Management and Monitoring Program, have demonstrated leadership in scientific collaborations and ecological applications that are informing strategic approaches to reserve management, monitoring, and habitat connectivity enhancement (details about the San Diego Management and Monitoring Program can be found at <http://www.sdmmp.com/>).

### **San Diego Multiple Species Conservation Program**

The San Diego Multiple Species Conservation Program (MSCP) was approved in 1998 as a collaborative effort between federal, state and local agencies, property owners, development industry, environmental groups and other stakeholders to comprehensively plan for and conserve native habitat, plants, and animals (including threatened and endangered species) throughout southern San Diego County, while accommodating for continued economic development. The MSCP covers approximately 900 square miles within southwestern San Diego County, and is composed of 10 subarea plans.

The MSCP is a Natural Community Conservation Plan (NCCP), a state program which permits the "take" of species that are covered by an NCCP as long as their conservation is provided for thorough ongoing protection, management and monitoring of a reserve system consisting of large, interconnected habitat areas, which are preserved in perpetuity. The MSCP is also a Habitat Conservation Plan (HCP) under the federal Endangered Species Act (ESA). The MSCP was one of the first approved NCCPs, and was part of the original NCCP pilot program established in 1993 to emphasize the conservation of coastal sage scrub habitat in southern California and the many species that use this diminishing habitat, including the federally threatened coastal California gnatcatcher, the cactus wren, and southern western pond turtle.

The MSCP covers 85 species of plants and animals, including three mammals, 27 birds, five reptiles and amphibians, four invertebrates, and 46 plants. Of these, 31 species are listed as endangered or threatened under the ESA and/or California Endangered Species Acts (CESA). NCCPs conserve entire natural communities, thereby benefitting not only sensitive and covered species and preventing future listings, but also supporting a large suite of other species; as such, the MSCP may ultimately result in the protection of habitat for over 1,000 plant species, 380 animals species, and thousands of invertebrate species.

By the end of the 50-year term of the MSCP, over 171,000 acres of natural habitat will be permanently conserved. This reserve system, together with other adjacent reserve systems associated with other NCCPs (such as the San Diego Multiple Habitat Conservation Program, San Diego North and East County MSCPs [currently in preparation], and the Western Riverside County Multi-Species Habitat Conservation Plan), will allow for the regional conservation of covered species, wildlife movement, genetic exchange, and adaptation to changing conditions, including climate change.

SWAP 2005 acknowledged that data used to support the iterative process inherent in adaptive management comes from monitoring the effectiveness of conservation actions directed at species and natural systems. Therefore, monitoring that measures ecosystem condition and response of the ecosystem to both intentional (management actions) and natural perturbations is a critical piece of the adaptive management feedback loop (CDFG 2005). The steps for creating functional and scientifically defensible monitoring and adaptive management programs (Atkinson et al. 2004), as conceptualized and applied in SWAP 2005, are now being applied to conservation strategies under development for SWAP 2015.

### **Identifying When Adaptive Management Should Be Used**

As identified above, certain CDFW activities are mandated by FGC to include an adaptive management program (e.g., FGC sections 2820 and 2856). FGC sections 33, 703.3, and 715 define and promote the use of adaptive management in resource management decisions, to the extent feasible, but do not further define those decisions or provide more specific guidance.

The adaptive management literature cautions that not all resource management decisions/actions are amenable to adaptive management (Gregory et al. 2006; Williams et al. 2009; Allen et al. 2011; Allen and Gunderson 2011; Williams 2011). For example, policy and technical documents prepared by the U.S. Department of Interior (DOI) state that for adaptive management to be operationally appropriate and effective, there must be a mandate to take action in the face of uncertainty, and there must be institutional capacity and commitment to undertake and sustain an adaptive program (Williams et al. 2009). If no decision is necessary, if there is little uncertainty about what management actions to take and what outcome to expect, or if management cannot be adjusted in response to what is learned, non-adaptive management approaches may be appropriate (Williams 2011).

The DOI technical guide (Williams et al. 2009) identifies several considerations for determining whether adaptive management represents a suitable approach to decision-making.

Adaptive management is most applicable when:

- ▲ A management decision, involving a choice between alternative actions, needs to be made.
- ▲ Decision-making is confounded by uncertainty about potential management impacts.
- ▲ The institutional capacity and commitment to undertake and sustain an adaptive program exists. For example, there is institutional support, including adequate and sustainable funding, to implement a monitoring program of sufficient intensity and scope to detect changes in biological response to management actions and to measure progress towards achieving management objectives.
- ▲ Stakeholders can be effectively engaged.
- ▲ Clear, measureable, and agreed-upon conservation or management goals and objectives can be established.
- ▲ Resource relationships and predicted management impacts, along with the associated uncertainties, can be explicitly represented in conceptual and/or quantitative models.
- ▲ A monitoring program can be designed to reduce uncertainty and inform decision making, and progress towards achieving the management objectives can be measured.
- ▲ Management actions can be adjusted in response to what has been learned (i.e., there are opportunities for iterative decision-making).
- ▲ The entire process fits within the appropriate legal framework (i.e., can be conducted in full compliance with applicable laws, regulations, and authorities).

SWAP 2015 uses the *Open Standards for the Practice of Conservation* framework, which is based on the principles of adaptive management.

### 8.1.3 Implementation of Adaptive Management

Increasing the use of adaptive management processes within CDFW will require a significant commitment to ensure that those charged with implementing adaptive management have the appropriate training, expertise, and resources (e.g., funding). A variety of technical resources is available and can serve as a foundation upon which CDFW can build and maintain the necessary infrastructure to support implementation of adaptive management. The effectiveness measures for the categories of conservation strategies explained in Section 8.3 provides details on how the SWAP intends to incorporate adaptive management into the implementation of the conservation strategies. Indicators were identified for each key ecological attribute to monitor the change in condition of the target over time and as a result of the conservation strategies (see Table 1.5-2 and Section 8.3).

## 8.2 Monitoring Effectiveness of SWAP 2005 Implementation

As part of developing SWAP 2015, Blue Earth Consultants, LLC (Blue Earth) performed a neutral, third-party, independent evaluation to assess the state's effectiveness in implementing the State and Tribal Wildlife Grant (SWG) Program and SWAP 2005 (Appendix I). The evaluation encompassed a wide range of criteria that measured the progress and effectiveness of SWAP implementation; identified major outcomes, key challenges, and areas for improvement; and, delivered recommendations to inform the development of SWAP 2015 update and its later implementation. The evaluation was critical in that the results is helping CDFW to align conservation efforts with the desired outcomes expressed in SWAP 2015 with high efficacy. This evaluation is part of the adaptive management process of SWAP itself.

Blue Earth undertook five primary activities to inform the evaluation. These activities included:

- developing an evaluation steering committee;
- reviewing documents on the past 81 SWG funded projects;
- interviewing 51 key staff and partners (28 CDFW staff including SWG recipients, five non-governmental organization [NGO] representatives, five non-CDFW government staff, four non-CDFW proposal partners, four SWAP evaluation steering committee members, four private funders, and one tribal member);
- conducting additional web-based research and document review; and
- synthesizing and analyzing gathered information.

## 8.2.1 Limiting Factors of the Evaluation

Blue Earth identified specific information gaps that affected the effectiveness and completeness of the evaluation. These included:

- ▲ lack of clear goals, objectives, metrics to measure progress of implementing conservation actions, and lack of identifying priorities for conservation actions in SWAP 2005;
- ▲ challenges differentiating between conservation actions recommended by SWAP 2005 and CDFW day-to-day actions;
- ▲ inadequate and inconsistent SWG proposal and reporting documentation;
- ▲ lack of awareness of SWAP across CDFW and non-CDFW staff and partners;
- ▲ limited connection between funding availability and amount of funds leveraged for SWAP 2005 implementation; and
- ▲ lack of explicit descriptions of SWG outcomes in grant documents.

## 8.2.2 Conservation Action Categories Used for SWAP 2005 Evaluation

SWAP 2005 identified statewide and regional conservation actions based on stressors found at the statewide and regional scales (SWAP 2005 defined “stressors” to mean problems and pressures that may adversely affect wildlife and their habitats). To determine if CDFW achieved specific conservation actions, Blue Earth synthesized both regional and statewide actions into 14 conservation action categories as found below.

- ▲ **Policies and Management Actions** includes activities such as facilitating integration of wildlife conservation needs into local or regional land-use planning, developing agricultural and rangeland Best Management Practices (BMPs) protocols that are compatible with ecosystem needs, assisting in the implementation of BMPs on working landscapes, and implementing conservation actions recommended in management plans and policies.
- ▲ **Enforcement** includes activities such as increasing funding and staffing (CDFW and non-CDFW agencies) to enforce regulations that protect the environment or prevent negative impacts to natural resources. Please note: Although we include the Enforcement category in our assessment of SWAP 2005 implementation, for SWG analyses, we do not include the Enforcement category because SWG funding cannot be utilized for enforcement activities.
- ▲ **Infrastructure, Land-use, and Permitting** includes activities such as permitting agencies, county planners, and land management agencies working together to ensure infrastructure and development projects avoid or minimize negative impacts on native species and habitats.
- ▲ **Habitat Conservation and Restoration** involves securing, restoring, or enhancing sensitive wildlife habitats or preserving key habitat linkages. Examples include restoring groundwater levels to support riparian vegetation, as well as protecting and restoring critical habitat linkages that assist wildlife movements or vegetation distribution shifts because of climate change.

- ▲ **Species Conservation and Restoration** involves protecting and recovering sensitive species. Examples include the CDFW and other agencies and organizations working together to implement region-wide recovery plans.
- ▲ **Coordination, Collaboration, and Stakeholder Engagement** involves partners working together to conserve natural resources and implement recommended conservation actions. Examples include securing co-funding for priority conservation actions, streamlining permitting processes, supporting data sharing, or implementing aligned management plans together to directly protect and restore wildlife and habitats.
- ▲ **Addressing Conservation Priorities and Stressors in SWAP 2005** includes efforts to address identified SWAP 2005 recommended conservation action priorities and emerging stressors directly. Examples of SWAP 2005 stressors include Growth and Development, Climate Change, Invasive Species, and Water Management Conflicts. (In SWAP 2015, the conditions described by the term, stressors, are identified by the terms, stresses or pressures.) Examples include coordinated control and eradication of invasive species and implementation of conservation plans that incorporate BMPs for addressing growth and development.
- ▲ **Education, Outreach, and Capacity-building** includes offering education on wildlife and habitat conservation, building capacity to implement conservation actions through staff training and new hires, and assisting local agencies and landowners in their planning and implementation of wildlife and habitat conservation efforts. Please note that the SWG program sets limitations on funding activities under this category, meaning only a small portion of SWG funding can be used to address Education, Outreach, and Capacity-building activities.
- ▲ **Wildlife Resource Assessment** involves scientific activities, for example, gathering baseline information on species or habitats, and identifying critical wildlife corridors to prioritize activities for habitat connectivity enhancement.
- ▲ **Conservation Planning/Plans** involve planning efforts and plans to conserve species, habitats, and ecosystem functions. Examples include development and implementation of regional plans such as HCPs, NCCPs, and species and habitat recovery plans.
- ▲ **Funding and Leveraged Funding** includes allocating adequate funding for conservation activities or working together to co-fund and/or leverage funding for shared priority projects to conserve natural resources.
- ▲ **Knowledge to Implement SWAP 2005** involves activities performed that increase relevant and applied science and information relevant to effective SWAP 2005 implementation. For example, conducting scientific studies to perform restoration activities and increasing available information for improving management efforts to recover species addressed under SWAP 2005. Many past activities focused on gathering baseline information on wildlife and associated habitats to support development of species and habitat conservation plans. Please note that this category also includes science and information collected through wildlife resource assessments.
- ▲ **Monitoring and Evaluation** involves having evaluation processes and tools in place for collecting relevant data and analyzing information to assess and understand trends in

natural resource conditions and effectiveness of SWAP implementation. For example, federal, state, and local agencies continue to collect and evaluate monitoring information to inform conservation action plans and decision-making.

- Adaptive Management** involves having processes in place for strategically adjusting activities, conservation priorities, expectations, management activities, and decision-making to address SWAP 2005 recommended conservation actions more effectively as new information is acquired. For example, state and federal wildlife agencies and land managers endeavor to choose the most scientifically defensible projections of climate change impacts, identify responses to adapt their program activities, and achieve their program goals based on these adaptations.

Table 8.2-1 shows how these categories of conservation actions from SWAP 2005 correspond to the conservation strategy categories used in SWAP 2015.

SWAP 2005 Conservation Action Categories	SWAP 2015 Strategy Category										
	Direct management	Data collection and analysis	Economic incentives	Environmental review	Land acquisition, easement, lease	Land use planning	Law enforcement, law and policy	Management planning	Outreach and education	Partner engagement	Training and technical assistance
Policies and Management Actions	X			X		X	X	X		X	
Enforcement							X				
Infrastructure, Land-use, and Permitting				X	X	X		X			
Habitat Conservation and Restoration	X				X						
Species Conservation and Restoration	X				X						
Coordination, Collaboration, and Stakeholder Engagement										X	
Addressing Conservation Priorities and Stressors in the SWAP 2005	X	X		X	X	X	X	X	X	X	X
Education, Outreach, and Capacity-building									X		X
Wildlife Resource Assessment		X									
Conservation Planning/Plans						X		X			
Funding and Leveraged Funding			X							X	
Knowledge to Implement SWAP 2005		X		X							
Monitoring and Evaluation		X									
Adaptive Management	X					X		X			

Conservation action categories used in SWAP 2015 can be further grouped into enabling conditions and implementing actions (Table 8.2-2). Enabling conditions include having the resources (human or financial), data, and information to implement conservation

actions. Implementing actions are direct activities taken to promote conservation of natural and cultural resources that achieve the desired conservation goals, objectives, and outcomes. Although some conservation action categories may address both enabling conditions and implementation actions, they were grouped based on the category with which they most align.

Table 8.2-2 Classification of Conservation Action Categories in SWAP 2005 as Enabling Conditions or Implementation Actions	
Theme	Conservation Action Category
Enabling Conditions	<ul style="list-style-type: none"> <li>● Coordination, Collaboration, and Stakeholder Engagement</li> <li>● Education, Outreach, and Capacity-building</li> <li>● Wildlife Resource Assessment</li> <li>● Funding and Leveraged Funding</li> <li>● Knowledge to Implement the SWAP 2005</li> </ul>
Implementation Actions	<ul style="list-style-type: none"> <li>● Policies and Management Actions</li> <li>● Enforcement</li> <li>● Infrastructure, Land-use, and Permitting</li> <li>● Habitat Conservation and Restoration</li> <li>● Species Conservation and Restoration</li> <li>● Addressing Conservation Priorities Stressors in the SWAP 2005 under "major wildlife stressors identified by region" (SWAP 2005 stressors)</li> <li>● Conservation Planning/Plans</li> <li>● Monitoring and Evaluation</li> <li>● Adaptive Management</li> </ul>

### 8.2.3 Key Findings of the SWAP 2005 Evaluation

Key findings from the evaluation of SWAP 2005 implementation primarily drew upon interviews and SWG document review. Together, the data collected indicated limited documentation of overall progress and results; however, a majority of interviewees indicated SWAP implementation is making a positive overall impact statewide as well as at the regional level.

Limiting factors (listed in Section 8.2.1) in the evaluation process hindered identification of strong linkages between SWAP implementation, progress, and results. For example, when statewide and regional interviewees described their familiarity with SWAP 2005, less than half of interviewees indicated familiarity with SWAP 2005 and its recommended conservation actions. Of these interviewees, more regional interviewees indicated familiarity with SWAP 2005 and its recommended conservation actions than statewide interviewees. (Statewide interviewees were people who could provide input related to SWAP implementation across the entire state or in more than one SWAP 2005 or CDFW region; regional interviewees were people who understood SWAP issues and implementation at a more localized or SWAP 2005 or CDFW regional scale.)

Key findings of the evaluation include:

- ▲ More regional interviewees indicated familiarity with SWAP 2005 and its recommended conservation actions than statewide interviewees.
- ▲ A majority of interviewees indicated SWAP implementation is making a positive overall impact at a statewide and regional level.
- ▲ Overall progress towards conservation action categories has been limited.
- ▲ Interviewees indicated progress made towards the conservation action categories of Habitat Conservation and Restoration; Coordination, Collaboration, and Stakeholder Engagement; and Knowledge to Implement SWAP 2005.
- ▲ Forty-five percent of CDFW and non-CDFW interviewees indicated progress in the conservation action categories addressing the theme of Enabling Conditions.
- ▲ The most common SWAP 2005 stressor addressed was climate change, followed by growth and land development.
- ▲ CDFW staff indicated more progress was made in all 13 categories (excluding Enforcement) than non-CDFW staff, with the most progress made in Conservation Planning/Plans; Coordination, Collaboration, and Stakeholder Engagement; and Habitat Conservation and Restoration.
- ▲ Almost 70 percent of the SWAP 2005-recommended conservation actions included Addressing Conservation Priorities and Stressors, but only 44 percent of CDFW staff and 17 percent of non-CDFW staff indicated progress had been made.

Evaluation of the nearly \$37 million dollars in SWG funds indicated that state sources matched this federal funding with approximately \$19 million. Despite fluctuations in the total federal funding, the state match amount remained relatively consistent across years and grants. Statewide projects received the most funding, while the SWAP 2005 Marine Region received the least funding and grants. The majority of grants focused on mammals and birds, while invertebrates received the least focus.

The evaluation found that implementation of the SWAP from 2005-2014 was successful at developing:

- ▲ applied science and research,
- ▲ internal and external collaborative efforts,
- ▲ existing restoration projects and conservation plans,
- ▲ dedicated staff with topical knowledge and expertise, and
- ▲ access to federal funding.

The areas of improvement for SWAP implementation were in achieving:

- ▲ financial capacity;
- ▲ sufficient human capacity;
- ▲ clear conservation priorities and objectives;

- ▲ clearly articulated vision, mandate, champion, and accountability process;
- ▲ streamlined process for SWG application and administration; and
- ▲ monitoring metrics to measure progress.

## 8.2.4 Recommendations from the SWAP 2005 Evaluation

The following recommendations for CDFW for SWAP 2015 development and implementation were developed as a result of the evaluation of SWAP 2005 implementation:

- ▲ articulate SWAP 2015 vision, conservation goals, objectives, and metrics to measure progress that will guide future implementation;
- ▲ increase, balance, and/or leverage additional state human and financial resources to achieve SWAP goals and objectives;
- ▲ develop a SWAP strategic work plan, identify a program home, and assign staff to champion implementation of SWAP strategies;
- ▲ monitor and evaluate changes in ecosystem health, stressors, as well as SWAP implementation effectiveness, context, and use in adaptive management;
- ▲ strengthen grant administration, application, and reporting processes to improve grant implementation effectiveness;
- ▲ improve SWAP recognition to increase buy-in, support, and implementation success; and
- ▲ increase and leverage human and financial capacity by fostering coordination and collaboration among agencies and with partners to implement the SWAP.

CDFW is implementing these recommendations in SWAP 2015. By using *the Open Standards for the Practice of Conservation* framework, conservation goals, objectives, and monitoring indicators are clearly articulated and adaptive management is built into the implementation process (see Section 8.3 for specific details). Statewide goals and vision were provided in the Introduction and Vision Chapter. By use of strategic partnerships and implementation of SWAP 2015 through cross-sector companion plans, CDFW will be able to more efficiently work with other agencies and organizations, saving human and financial resources, to achieve SWAP 2015 goals and objectives. A permanent position has been dedicated to SWAP 2015 which will evolve, following approval of the SWAP, from planning to implementation.

Because of the multi-disciplinary focus of the SWAP, which addresses fish, wildlife, plants, and invertebrates species plus terrestrial, freshwater aquatic, and marine habitats, finding a home for SWAP in one of the existing resource branches of CDFW (Fisheries, Wildlife, Water, Habitat Conservation Planning), could possibly limit its implementation in one or more of these key areas over time. SWAP's multi-disciplinary focus may benefit from its assignment to an overarching program with equal access to all resources branches, similar to that of the CDFW's Science Institute. Important duties for the SWAP program during the implementation phase should focus on tracking progress, monitoring and adaptive management, and planning development of new or needed

conservations strategies and future revisions. This level of close coordination with CDFW staff and its partners, and SWG funding recipients will keep SWAP 2015 visible, relevant, and improving; while carefully tracking progress in this manner will enhance grant accountability and reporting.

### 8.3 SWAP 2015 Effectiveness Measure Framework

The following sections highlight effectiveness measures for conservation strategies that apply across all conservation efforts. CDFW has adopted an effectiveness measure framework for SWAP 2015 that is consistent with the *Open Standards for the Practice of Conservation* (<http://www.conservationmeasures.org>) and has been proposed by the Association of Fish and Wildlife Agencies (AFWA; 2011), consistent with CDFW mandates and the recommendations from the SWAP 2005 evaluation report. The selection of strategies and strategy categories are described in Chapter 4, and the specific conservation strategies for targets are identified in Chapter 5. This framework establishes a standardized and readily accessible monitoring and evaluation process to inform and guide SWAP implementation. Under the effectiveness measure framework, the information gathered through monitoring and evaluation can be used to identify successful strategies that should be continued and shared and also to identify less effective ones that should either be improved or abandoned. The effectiveness measure framework also provides a mechanism for CDFW to report on the status of SWAP implementation to USFWS, conservation partners, and the public.

SWAP 2015 employs three types of monitoring: (1) status monitoring, which tracks conditions of species, ecosystems, and other conservation factors (including negative impacts to ecosystems) over time; (2) effectiveness monitoring, which determines if conservation strategies are having their intended results and to identify ways to improve actions that are less effective (i.e., adaptive management); and (3) effect monitoring, addressing if and how the target conditions are being influenced by implementation of strategies. The effectiveness measure framework promoted by AFWA and adopted for SWAP 2015 brings these three types of monitoring together to (1) attribute changes in ecosystems and species status to the effectiveness of SWAP conservation strategies, and (2) roll up the results of many different strategies into statewide reports.

CDFW is using a “theory of change” to describe how strategies will lead to their ultimate desired outcomes and to measure systematically the effectiveness of the strategies. A limited set of effect and effectiveness measures for each type of strategy are identified to assess progress at key points in the implementation of strategies. CDFW will then collect, analyze, and share data on those measures to show what changes are induced by the strategy, whether or not the strategies are achieving the desired results, why they succeeded or failed or need additional monitoring to determine an outcome, and how implementation of the strategy could be improved over time under different conditions. This process of measuring effect and effectiveness, which is key to adaptive management, required CDFW to integrate monitoring into the design of the strategies themselves. The framework will not only allow CDFW to assess

the effectiveness of the individual actions, but also assess and report on the cumulative effectiveness of key strategies across the state.

Teams have identified many conservation strategies to address pressures that affect hundreds of SGCN. Although each province's context is distinct, there are commonalities in the theory of change behind these strategies. For example, teams in one province may be promoting awareness of landowners to minimize the spread of invasive weeds in adjacent riparian areas while in another province teams may be promoting awareness of farmers to use BMPs to prevent run-off into wetlands. Although these two actions take place in different ecosystems, are implemented by different teams, and are aimed at reducing the negative impacts of different pressures on different ecosystems, both strategies involve outreach and education that are designed to raise awareness of a specific audience with the objective of changing their behaviors to help improve ecosystem conditions. These two conservation strategies have been grouped under a SWAP conservation category called "Outreach and Education," and standard effectiveness measures have been developed that allow these measures to be monitored, analyzed, and aggregated for evaluation across the conservation units, provinces, and the state.

For each SWAP conservation target, teams identified key ecological attributes (KEAs), indicators for each KEA to measure the viability of the target, and goals which state the desired result of implementing the SWAP strategies over the next 10 years (see definitions in the text box below). These goals will serve as the ultimate measures of effectiveness of strategies.

#### SWAP 2015 Categories for Conservation Strategies:

- ▲ Data Collection and Analysis
- ▲ Partnership Engagement
- ▲ Management Planning
- ▲ Direct Management
- ▲ Economic Incentives
- ▲ Environmental Review
- ▲ Land Acquisition, Easement, and Lease
- ▲ Land Use Planning
- ▲ Law and Policy
- ▲ Outreach and Education
- ▲ Training and Technical Assistance

Using the framework proposed by AFWA (2011) as a guide, CDFW has developed a list of common conservation categories and effectiveness measures. CDFW is using 11 SWAP categories for conservation strategies (see Chapter 4 for more details about these categories) that have been adapted from AFWA and are most commonly implemented under the SWAP. CDFW adapted the theories of change, represented as "results chains," developed by AFWA (2011; [http://www.fishwildlife.org/files/Effectiveness-Measures-Report\\_2011.pdf](http://www.fishwildlife.org/files/Effectiveness-Measures-Report_2011.pdf)) and the Conservation Actions and Measures Archetypes Library (CAML; <http://www.miradishare.org>) as the basis for determining effectiveness measures for each conservation strategy.

Results chains are graphical diagrams that map out a series of causal statements that link short, medium, and long-term results between an action and the ultimate goal related to the viability of the conservation targets. A results chain diagram and associated table are presented for each of the 11 conservation strategy categories (Figures 8.3-1 through 8.3-11). The left side of the results chain identifies the strategy category (shown as a yellow hexagon). From the strategy

category, arrows lead to a sequence of anticipated intermediate results (blue rectangle), which are numbered. These numbers correspond to the rows in the associated table. The intermediate results may create the enabling conditions for another conservation strategy category or another strategy category may also support intermediate results (yellow hexagon with green text). Ultimately the strategy and intermediate results lead to a reduction in the pressure(s) (pink rectangle) acting on the conservation target (green oval). The table provides details for the results, objectives, and measures related to the intermediate results displayed in the diagram.

### Important Definitions

**Conservation Target (or Target):** An element of biodiversity at a project site, which can be a species, habitat/ecological system, or ecological process on which a project has chosen to focus.

**Goal:** A formal statement detailing a desired outcome of a conservation project, such as a desired future status of a target. The scope of a goal is to improve or maintain *key ecological attributes* (defined below).

**Indicator:** A measurable entity related to a specific information need such as the status of a target/factor, change in a threat, or progress toward an objective. A good indicator meets the criteria of being measurable, precise, consistent, and sensitive.

**Intermediate Result:** A specific benchmark or milestone that a project is working to achieve en route to accomplishing a final goal or objective (in this case, "intermediate" typically refers to a temporal dimension).

**Key Ecological Attribute (KEA):** Aspects of a target's biology or ecology that if present, define a healthy target and, if missing or altered, would lead to the outright loss or extreme degradation of that target over time.

**Objective:** A formal statement detailing a desired outcome of a conservation project, such as reducing the negative impacts of a critical *pressure* (defined below). The scope of an objective is broader than that of a goal because it may address positive impacts not related to ecological entities (such as getting better ecological data or developing conservation plans) that would be important for the project. The set of objectives developed for a conservation project are intended, as a whole, to lead to the achievement of a goal or goals, that is, improvements of key ecological attributes. A good objective meets the criteria of being: results oriented, measurable, time limited, specific, and practical. If the project is well conceptualized and designed, realization of a project's objectives should lead to the fulfillment of the project's goals and ultimately its vision.

**Pressure:** An anthropogenic (human-induced) or natural driver that could result in changing the ecological conditions of targets. Pressures can be positive or negative depending on intensity, timing, and duration.

**Project:** A set of actions undertaken by a defined group of practitioners – including managers, researchers, community members, or other stakeholders – to achieve defined goals and objectives. The basic unit of conservation work.

**Results Chain:** A graphical depiction of a project's core assumptions, the logical sequence linking project strategies to one or more targets.

**Strategy:** A group of actions with a common focus that work together to reduce the negative impacts of pressures, capitalize on opportunities, or restore natural systems. A set of strategies identified under a project is intended, as a whole, to achieve goals, objectives, and other key results addressed under the project.

**Stress:** A degraded ecological condition of a target that resulted directly or indirectly from the negative impacts of *pressures* defined above (e.g., habitat fragmentation).

*See Glossary in Chapter 11 for a complete set of definitions.*

### 8.3.1 Effectiveness Measures - Data Collection and Analysis

The development and implementation of effective conservation strategies require that state natural resource managers and their partners have data available to them that answer specific resource management questions related to conservation targets and to the pressures that affect them. The results chain shown in Figure 8.3-1 outlines the steps to achieve the desired outcome. The critical first step in any data collection initiative is clearly defining the management needs and the questions the data collection and analysis will answer (1). As a result, the researchers address the relevant questions (2). This result will lead to the right data reaching the right people in the right format (3), who then apply it through recommending and implementing a course of action based on the data (4). Applying these practices to a data collection and analysis is anticipated to result in more effective conservation strategies that reduce the negative impacts of pressures and/or stresses (5) and improve or maintain the viability of conservation target(s) (6). Data collected may also be made accessible to others that might need them, and used to make other strategies more effective.

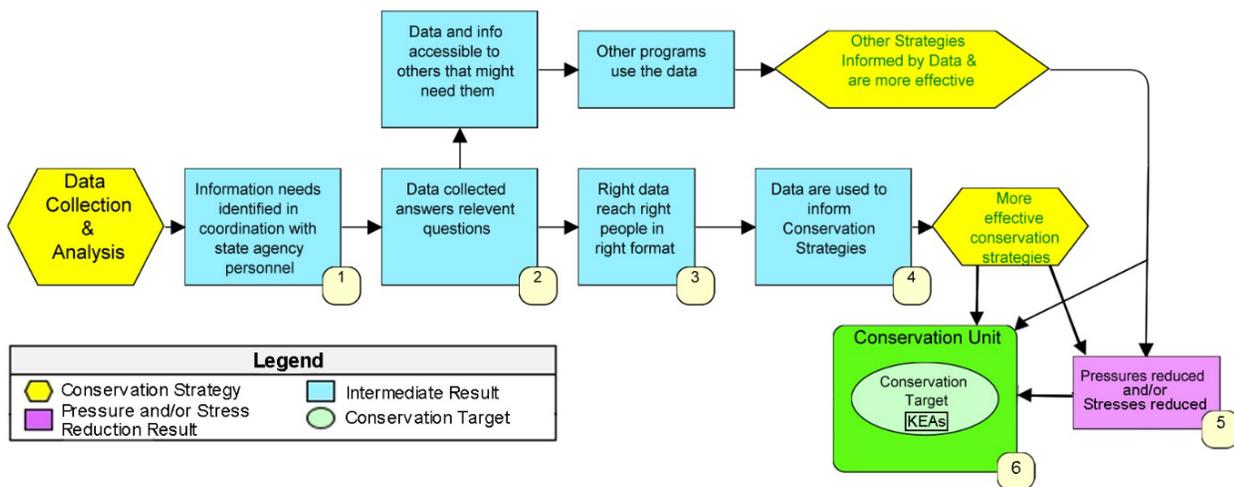


Figure 8.3-1 Results Chain for Data Collection and Analysis

Table 8.3-1 Results, Objectives, and Effectiveness Measures for Data Collection and Analysis			
Result*	Objective**	Specific Measure (Indicator)	Rolled Up Measure
1. Information needs identified in coordination with state agencies	Clear management needs and outcomes that have been identified with input from relevant data users	Qualitative assessment that clear management needs and outcomes have been identified with input from relevant data users	% of data collection and analysis strategies for which objectives are met for information needs identified
2. Data collected answers relevant questions	By the end of the project/grant funding cycle the researcher clearly provides answers to relevant questions on needs identified	Qualitative assessment that the researcher clearly provides answers to relevant questions	% of data collection and analysis strategies for which objectives are met for data answering relevant questions
3. Right data reaches right people in right format	Within X months/years of start of research, appropriate audiences are accessing data	Qualitative assessment that data are reaching relevant audiences (by audience)	% of data collection and analysis strategies for which objectives are met for right data reaching the right people in the right format
4. Data used to inform more effective Conservation Strategies	Within X months/years of the end of the data collection project, recommendations to revise or maintain conservation strategies have been developed	Qualitative assessment that data are being used to inform more effective conservation strategies	% of data collection and analysis strategies for which objectives are met for data used for informing conservation strategies
5. Pressure(s) reduced and/or Stress(es) reduced	Within X years of the data collection, the desired pressure and/or stress reduction is seen	Area affected by pressure(s) Pressure rating Area affected by the stress(es) Stress rating	% change in the area affected by the pressure(s) and/or stress(es) % pressures and/or stresses that fall into each rating category % complete of objectives for pressure and/or stress reduction
6. Viability of conservation target improved	Goal: By 2025, KEA has [desired condition] By 2025, area with desired condition of KEA has increased at least X% By 2025, desired condition of KEA is met (desired viability rating)	Desired condition of KEA Area with desired condition of KEA Viability rating of target	% change in the area with the desired status of KEAs % Conservation Targets showing improved viability status according to rating % complete of goals for the Conservation Target

\* Row numbers correspond to the results chain in Figure 8.3-1.

\*\*The "X"s used to describe objectives indicate placeholders where specific numbers are to be developed for individual result chains and provide a template for the specific regional strategies.

### 8.3.2 Effectiveness Measures - Partner Engagement

The Partner Engagement Category is a precursor that is intended to lead to the development and implementation of more effective conservation strategies. Shown in Figure 8.3-2, the outcomes that require partnership should be clearly identified as a result of partner engagement strategies (1). Identification of outcomes should result in the partners being identified and contacted (2), and engaged (3). If partners are engaged, then the assumption is that the desired outcomes for the partnership will be achieved (4), which will lead to the development and implementation of more effective conservation strategies. This practice should lead to a reduction in the negative impacts of pressures and/or stresses (5), which would improve the viability of the conservation target(s) (6). Table 8.3-2 lists the desired results of implementation, objectives, and indicators for the conservation strategies in the Partner Engagement category.

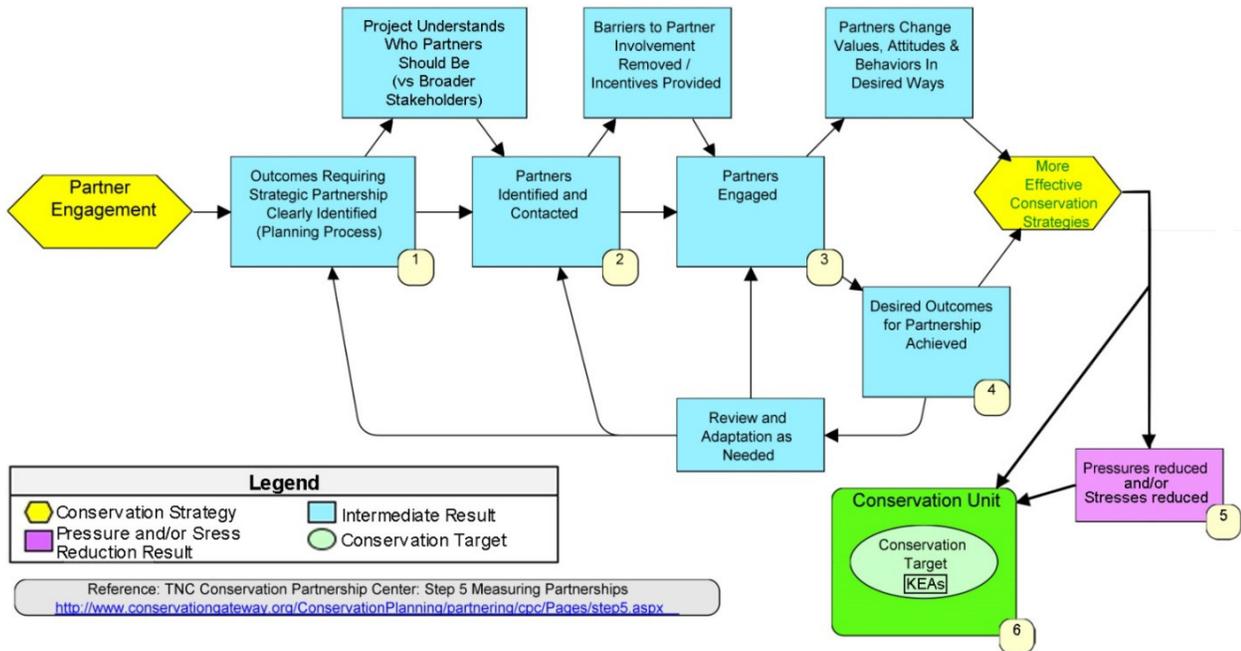


Figure 8.3-2 Results Chain for Partner Engagement

Table 8.3-2 Results, Objectives, and Effectiveness Measures for Partner Engagement			
Result*	Objective**	Specific Measure (Indicator)	Rolled Up Measure
1. Outcomes Requiring Strategic Partnership Clearly Identified (Planning Process)	Before partnership is initiated, the outcomes requiring strategic partnership are clearly identified	Qualitative assessment of identification of outcomes for strategic partnership	% of Partner engagement strategies for which objective is met for outcomes identified
2. Partners Identified and Contacted	Before the partnership is initiated, partners are identified and contacted	Qualitative assessment of partners identification	% of Partner Engagement strategies for which objective is met for partners identified
3. Partners Engaged	At initiation of partnerships, the partners are engaged in the right way	Qualitative assessment of partners engaged	% of Partner Engagement strategies for which objective is met for partners engaged
4. Desired Outcomes for Partnership Achieved	At the end of the training, at least X% of trainees demonstrate minimum proficiency in the needed skills	Qualitative assessment of achievement of partnership objectives for more effective Conservation Strategies	% of Partner Engagement strategies for which objective is met for outcomes for more effective Conservation Strategies
5. Pressure(s) reduced and/or Stress(es) reduced	Within X years of the outreach or education, the desired pressure and/or stress reduction is seen	Area affected by pressure(s) Pressure rating Area affected by the stress(es) Stress rating	% change in the area affected by the pressure(s) and/or stress(es) % pressures and/or stresses that fall into each rating category % complete of objectives for pressure and/or stress reduction
6. Viability of conservation target improved	<u>Goal:</u> By 2025, KEA has [desired condition] By 2025, area with desired condition of KEA has increased at least X% By 2025, desired condition of KEA is met (desired viability rating)	Desired condition of KEA Area with desired condition of KEA Viability rating of target	% change in the area with the desired status of KEAs % Conservation Targets showing improved viability status according to rating % complete of goals for the Conservation Target

\* Row numbers correspond to the results chain in Figure 8.3-2.

\*\*The "X"s used to describe objectives indicate placeholders where specific numbers are to be developed for individual result chains and provide a template for the specific regional strategies.

### 8.3.3 Effectiveness Measures - Management Planning

The results chain for the Management Planning Category describes the outcomes needed for developing management plans for conservation targets that will lead to the development and implementation of more effective conservation strategies (Figure 8.3-3). First, a “compelling” need for management planning should be identified (1) and then, as a result, the key stakeholders should be involved in developing or otherwise supporting the plan (2). As a result, a “complete” management plan is developed (3). A good planning process also considers and evaluates alternative strategies (4). Once the plan is developed, key agencies and stakeholders agree to implement the plan (5), which leads to more effective conservation strategies. If this happens, then the negative impacts of pressures and/or stresses will be reduced (6) leading the improved viability of the conservation target(s) (7). It is also important to monitor the status of the conservation targets and the relevant pressures, as well as the effectiveness of implemented actions to be able to adjust and adapt the plan as needed over time (8). Table 8.3-3 lists the desired results of implementation, objectives, and indicators for the conservation strategies in the Management Planning category.

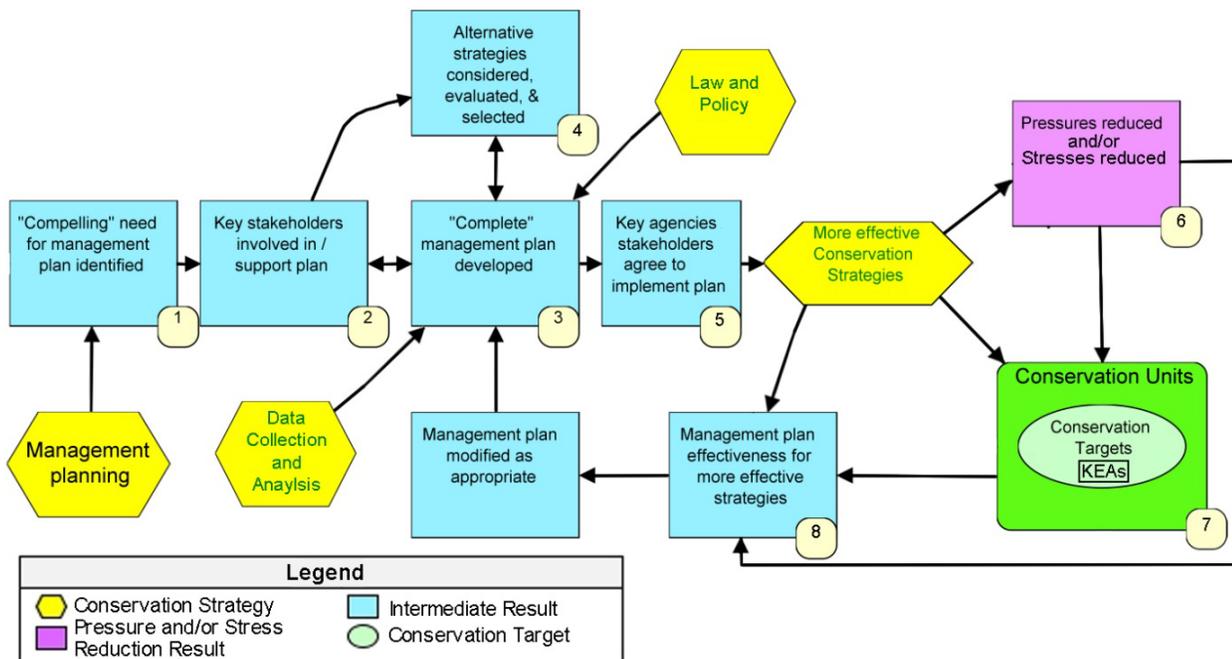


Figure 8.3-3 Results Chain for Management Planning

**Table 8.3-3 Results, Objectives, and Effectiveness Measures for Management Planning**

Result*	Objective**	Specific Measure (Indicator)	Rolled Up Measure
1. "Compelling" need for management plan identified	Before the planning work, an analysis of the situation is completed that outlines a "compelling" need for the management plan to meet specific and measurable threat reduction / restoration goals	Qualitative assessment of "compelling" argument developed: why plan is needed to meet specific and measurable threat reduction / restoration goals	% Management planning strategies for which objectives are met for need for plan identified
2. Key stakeholders involved in / support plan	Before drafting the plan, key agencies and other stakeholders are involved in drafting plan and/or supportive of the plan (or at least not hostile)	Qualitative assessment of "Key" stakeholder involvement in the plan	% Management planning strategies for which objectives are met for stakeholder involvement
3. "Complete" management plan developed	"Complete" management plan is developed that includes viability and threats analyses, situation analysis, SMART objectives, strategy recommendations, work plan, budget, and monitoring plan	Qualitative assessment of elements of management plan against standards for "complete" plan	% Management planning strategies for which objectives are met for complete plans developed
4. Alternative strategies considered, evaluated, and selected	Alternative strategies considered, evaluated, and selected based on includes viability and threats analyses, situation analysis, SMART objectives, strategy recommendations, work plan, budget, and monitoring plan	Qualitative assessment of elements of management plan against standards for "complete" plan (3)	% Management planning strategies for which objectives are met for complete plans developed
5. Key agencies / stakeholders agree to implement plan; key agencies / stakeholders actually implement agreed upon actions	Key agencies and other stakeholders receive the plan and agree to implement it in a timely basis	Qualitative assessment of degree to which responsible agencies incorporate plan elements into their own work plans and resource it appropriately	% Management planning strategies for which objectives are met for implementation of plans
6. Pressure(s) reduced and/or stress(es) reduced	Within X months/years of the improved management, the desired pressure and/or stress reduction is seen	Area affected by pressure(s) Pressure rating Area affected by the stress(es) Stress rating	% change in the area affected by the pressure(s) and/or stress(es) % pressures and/or stresses that fall into each rating category % complete of objectives for pressure and/or stress reduction
7. Viability of conservation target improved	<u>Goal:</u> By 2025, KEA has [desired condition] By 2025, area with desired condition of KEA has increased at least X% By 2025, desired condition of KEA is met (desired viability rating)	Desired condition of KEA Area with desired condition of KEA Viability rating of target	% change in the area with the desired status of KEAs % Conservation Targets showing improved viability status according to rating % complete of goals for the Conservation Target
8. Management plan leads to more effectiveness conservation strategies	The plan is evaluated and updated on an ongoing basis on its effectiveness for leading to more effective conservation strategies	Qualitative assessment of appropriate monitoring and evaluation of effectiveness leading to more effective conservation strategies	% Management planning strategies for which objectives are met for plan leading to more effective conservation strategies

\* Row numbers correspond to the results chain in Figure 8.3-3.

\*\*The "X"s used to describe objectives indicate placeholders where specific numbers are to be developed for individual result chains and provide a template for the specific regional strategies.

### 8.3.4 Effectiveness Measures – Direct Management

Direct management is one of the most common and fundamental conservation strategies used by CDFW to manage ecosystems and their associated SGCN. In some cases before implementing a direct management action, a management plan may need to be completed or management is directed through the Commission process (yellow hexagon in green text, Figure 8.3-4), which has its own results chain (see Management Planning) and will inform the direct management strategy. Ideally, all direct management actions should be implemented, but that is not always possible. Part of the monitoring of implementation includes identifying the percentage of management actions that are being implemented over a predetermined time span. Upon implementation of direct management (1), the negative impacts of pressures will either be reduced or not reduced (2). If the negative impacts of pressures are reduced, then the stresses to the conservation targets will be abated (3). For climate adaptation strategies, this would mean that conservation targets that are sensitive to a climate change exposure would have greater resilience to that exposure, if other pressures that contribute to those stresses are reduced. If the negative impacts of pressures or resulting stresses are not reduced, then adjustments in the management action or in planning will be needed (4). If the negative impacts of pressures and/or resulting stresses are reduced (2 and 3), then the viability of the conservation target(s) is improved or maintained (5). Table 8.3-4 lists the desired results of implementation, objectives, and indicators for the conservation strategies in the Direct Management category.

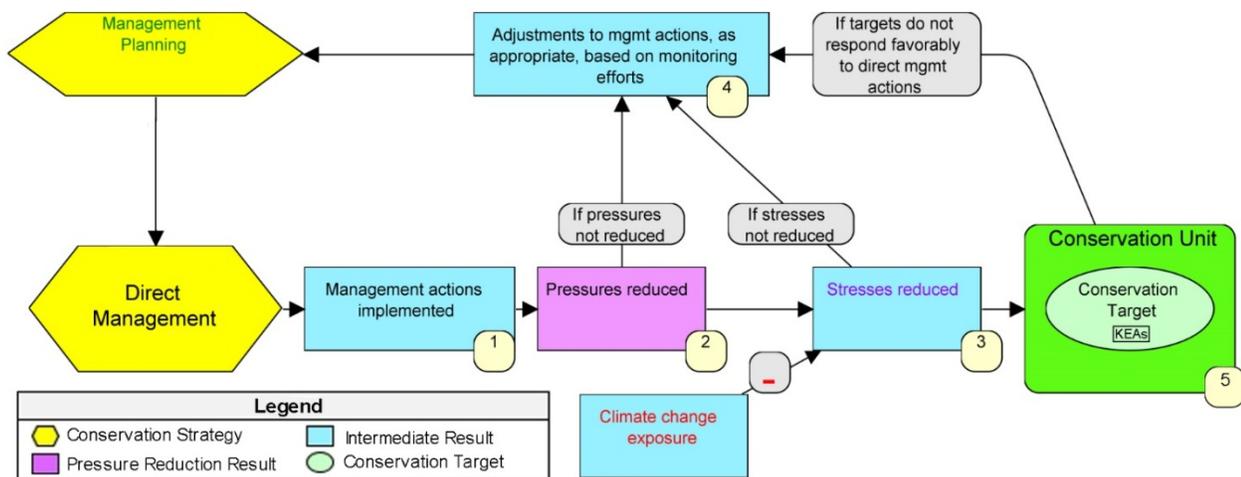


Figure 8.3-4 Results Chain for Direct Management

Table 8.3-4 Results, Objectives, and Effectiveness Measures for Direct Management			
Result*	Objective**	Specific Measure (Indicator)	Rolled Up Measure
1. Management actions implemented	Within X months/years of receiving funding, at least X% of management actions are being implemented as planned	% management actions implemented as planned Progress status of management action	% management actions implemented as planned % management actions that fall into each category of progress status % complete of objectives for management actions implemented
2. Pressure(s) reduced	Within X years of the start of the management action, the desired pressure reduction is seen as a result of the management actions	Area affected by pressure(s) Pressure rating	% change in the area affected by the pressure(s) % pressures that fall into each rating category % complete of objectives for pressure reduction
3. Stress(es) reduced	Within X months/years of implementing direct management actions, the desired stress reduction is seen as a result of the management action	Area affected by the stress(es) Stress rating	% change in the area affected by the stress(es) % of stresses that fall into each rating category % complete of objectives for stress reduction
4. Adjustments to management actions, as appropriate, based on monitoring efforts	If the desired stress reduction is not seen as a result of the management action, then adjustment is made.	Qualitative assessment of adjustment is made to management action as a result of monitoring	N/A
5. Viability of conservation target improved	Goal: By 2025, KEA has [desired condition] By 2025, area with desired condition of KEA has increased at least X% By 2025, desired condition of KEA is met (desired viability rating)	Desired status of KEA Area with desired status of KEA Viability status of target	% change in the area with the desired status of KEAs % Conservation Targets showing improved viability status % complete of goals for conservation target

\* Row numbers correspond to the results chain in Figure 8.3-4.

\*\*The "X"s used to describe objectives indicate placeholders where specific numbers are to be developed for individual result chains and provide a template for the specific regional strategies.

### 8.3.5 Effectiveness Measures – Economic Incentives

In the use of economic incentives, it is first expected that a project team would clearly define appropriate incentives for “good” stewardship that is designed to improve the status of conservation targets (Figure 8.3-5). If those are defined, then the next assumption holds that stakeholders or land managers receive those incentives (1). Those incentives can come in a variety of forms, including: compensation for stewardship or loss of income; assistance with efficient compliance with environmental regulations, which can save money and/or time; added value from “good” stewardship (e.g., ability to get certified, attract hunters, attract ecotourists); and technical assistance, which could also help them to apply for money or other incentives programs. Safe harbor agreements are another example of an incentive program in which CDFW and private landowners collaborate to conserve, protect, restore, and enhance listed species and their habitats. Assuming the stakeholders or land managers receive the incentives, then it is expected that they would continue “good” stewardship during the timeframe in which they are receiving the incentive (2). It is intended that the incentive provides the impetus to start or continue good management, but that stakeholders or managers would see benefits in continuing those practices over the longer term (3/4). Table 8.3-5 lists the desired results of implementation, objectives, and indicators for the conservation strategies in the Economic Incentives category.

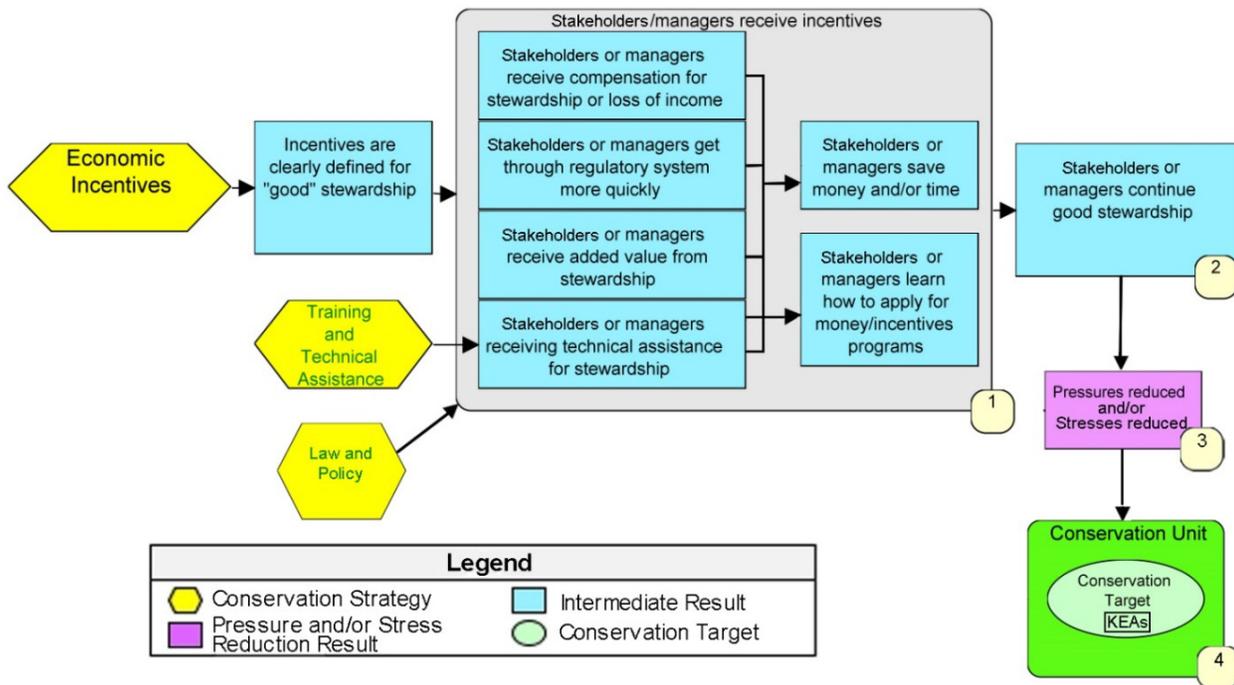


Figure 8.3-5 Results Chain for Economic Incentives

Table 8.3-5 Results, Objectives, and Effectiveness Measures for Economic Incentives			
Result*	Objective**	Specific Measure (Indicator)	Rolled Up Measure
1. Stakeholders/managers receive incentives	Within X timeframe, sufficient incentives are available to get enough stakeholders to participate	% of targeted stakeholders/ managers receiving incentives	% Economic incentive strategies for which objectives are met for incentives received
2. Stakeholders/managers continue "good" stewardship	Within X timeframe of receiving the incentive, at least 90% of stakeholders/managers are complying with their incentive agreement	% of stakeholders/managers who are complying with their incentive agreement	% Management planning strategies for which objective are met for "good" stewardship continued
3. Pressure(s) and/or stress(es) reduced	X Within years of receiving the incentive, the desired pressure and/or stress reduction is seen	Area affected by pressure(s) Pressure rating Area affected by the stress(es) Stress rating	% change in the area affected by the pressure(s) and/or stress(es) % pressures and/or stresses that fall into each rating category % complete of objectives for pressure and/or stress reduction
4. Viability of conservation target improved	<u>Goal:</u> By 2025, KEA has [desired condition] By 2025, area with desired condition of KEA has increased at least X% By 2025, desired condition of KEA is met (desired viability rating)	Desired condition of KEA Area with desired condition of KEA Viability rating of target	% change in the area with the desired status of KEAs % Conservation Targets showing improved viability status according to rating % complete of goals for the Conservation Target

\* Row numbers correspond to the results chain in Figure 8.3-5.

\*\*The "X"s used to describe objectives indicate placeholders where specific numbers are to be developed for individual result chains and provide a template for the specific regional strategies.

### 8.3.6 Effectiveness Measures - Environmental Review

As outlined on the right-hand side of the results chain (Figure 8.3-6), the Environmental Review Category is fundamentally intended to avoid, minimize, or mitigate/compensate for pressures that may adversely affect conservation targets. The Environmental Review Category may be supported by laws and policy strategies that trigger reviews (0). Law and policy strategies have their own results chain. Important elements in this chain include the availability of sufficient staff expertise (1) and information (2) needed to conduct the review. Once the review has been completed (3), the recommendations can be delivered (4). The results chain diverges in the cases of statutory guidance in which the regulatory agency has the authority to require incorporation of recommendations (5a) versus voluntary guidance in which case no regulations require the implementer to comply with the agency recommendations (5b). Finally, if recommendations are incorporated, then the implementers apply the recommendations and modify their development plans or policies as appropriate (6). Monitoring, including evaluation of the effectiveness of how the implementers are applying the recommendations, reporting, and modification of the recommendations, may be needed, as well as verification or enforcement may be needed. If the recommendations are applied then the negative

impacts of pressures are reduced or avoided (7), and the viability of the conservation target is improved or maintained (8). Table 8.3-6 lists the desired results of implementation, objectives, and indicators for the conservation strategies in the Environmental Review category.

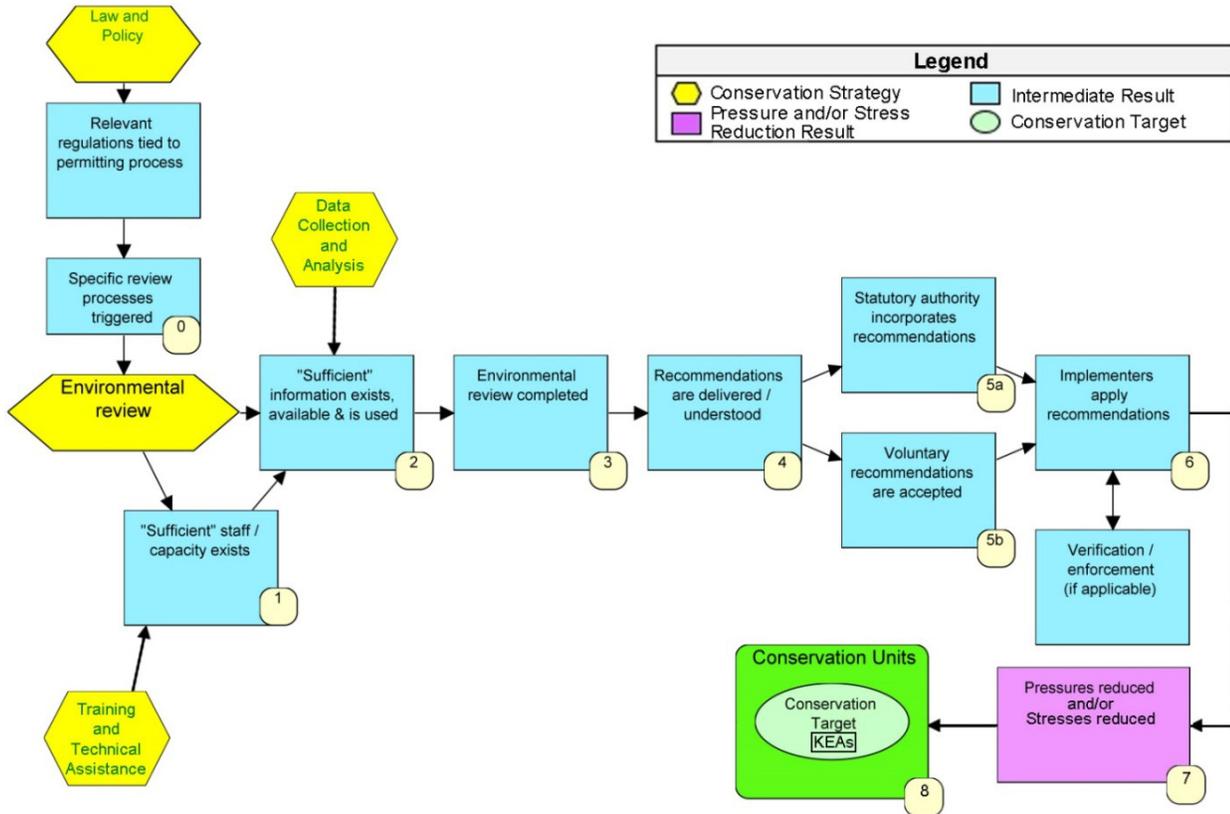


Figure 8.3-6 Results Chain for Environmental Review

Table 8.3-6 Results, Objectives, and Effectiveness Measures for Environmental Review			
Result*	Objective**	Specific Measure (Indicator)	Rolled Up Measure
1. "Sufficient" staff / capacity exists	Following initiation of Environmental Review, reviewers ensure "sufficient staff" or capacity exists in terms of number of staff and the specific skills they possess	Qualitative assessment of available staff / capacity	None
2. "Sufficient" information exists, is available, and is used	Before the review, "sufficient" information about affected species and habitats, potential impacts and sites affected, mitigation/compensation options and alternatives are identified and accessible	Qualitative assessment of availability of information	None
3. Environmental review completed	Review completed within established deadlines that addresses all potential impacts / concerns, and makes recommendations for avoidance, minimization and/or compensation / mitigation as needed	Qualitative assessment of degree to which review is timely, complete, comprehensive	% of Environmental review strategies for which objectives are met for review completed
4. Recommendations are delivered / understood	Following review, recommendations are produced and communicated to the implementer in an appropriate fashion	Qualitative assessment of delivery of recommendations	None
5a. Statutory authority incorporates recommendations	Following the review, relevant permitting entity(ies) or regulatory agency(ies) accept and incorporate recommendations into their review/ permit process and documentation	Qualitative assessment of degree to which recommendations are incorporated into relevant permits and documentation	% of Environmental review strategies for which objectives are met for recommendation incorporated
5b. Voluntary recommendations are accepted	Following review, the project implementers agree to accept all recommendations	Qualitative assessment of degree to which recommendations are accepted by implementer	% of Environmental review strategies for which objectives are met for recommendations accepted
6. Implementers apply recommendations	Following review, the project implementers incorporate all recommendations into project plan or policy	Qualitative assessment of degree to which implementers apply statutory recommendations from the permitting agency into project plan or policy	% of Environmental review strategies for which objectives are met for recommendations applied
7. Pressure(s) and/or stress(es) reduced	Within X years of the environmental review, the desired pressure and/or stress reduction is seen	Area affected by pressure(s) Pressure rating Area affected by the stress(es) Stress rating	% change in the area affected by the pressure(s) and/or stress(es) % pressures and/or stresses that fall into each rating category % complete of objectives for pressure and/or stress reduction
8. Viability of conservation target improved	Goal: By 2025, KEA has [desired condition] By 2025, area with desired condition of KEA has increased at least X% By 2025, desired condition of KEA is met (desired viability rating)	Desired condition of KEA Area with desired condition of KEA Viability rating of target	% change in the area with the desired status of KEAs % Conservation Targets showing improved viability status according to rating % complete of goals for the Conservation Target

\* Row numbers correspond to the results chain in Figure 8.3-6.

\*\*The "X"s used to describe objectives indicate placeholders where specific numbers are to be developed for individual result chains and provide a template for the specific regional strategies.

### 8.3.7 Effectiveness Measures - Land Acquisition, Easement, or Lease

As outlined in the results chain (Figure 8.3-7), the success of the conservation strategies in the Land Acquisition, Easement, or Lease Category depends on securing sufficient funds for the initial property transaction (1), identifying land or water with high conservation values (2), and then purchasing, leasing, or obtaining an easement for the prioritized lands or water rights (3). The agency then needs to develop a management and monitoring plan (4) and allocate funds to implement it (5). The agency next needs to implement management and monitoring work (6) to mitigating the negative impacts of pressures and/or stresses on the land (7). If the site or water is leased, over time the landowners need to renew the lease or convert to a more permanent form of protection (8a). If the site or water is placed under easement, the easement needs to stay in compliance (8b). If the negative impacts of pressures and/or stresses are reduced (7), then the viability of the conservation target(s) is improved or maintained (9). Table 8.3-7 lists the desired results of implementation, objectives, and indicators for the conservation strategies in the Land Acquisition, Easement, or Lease category.

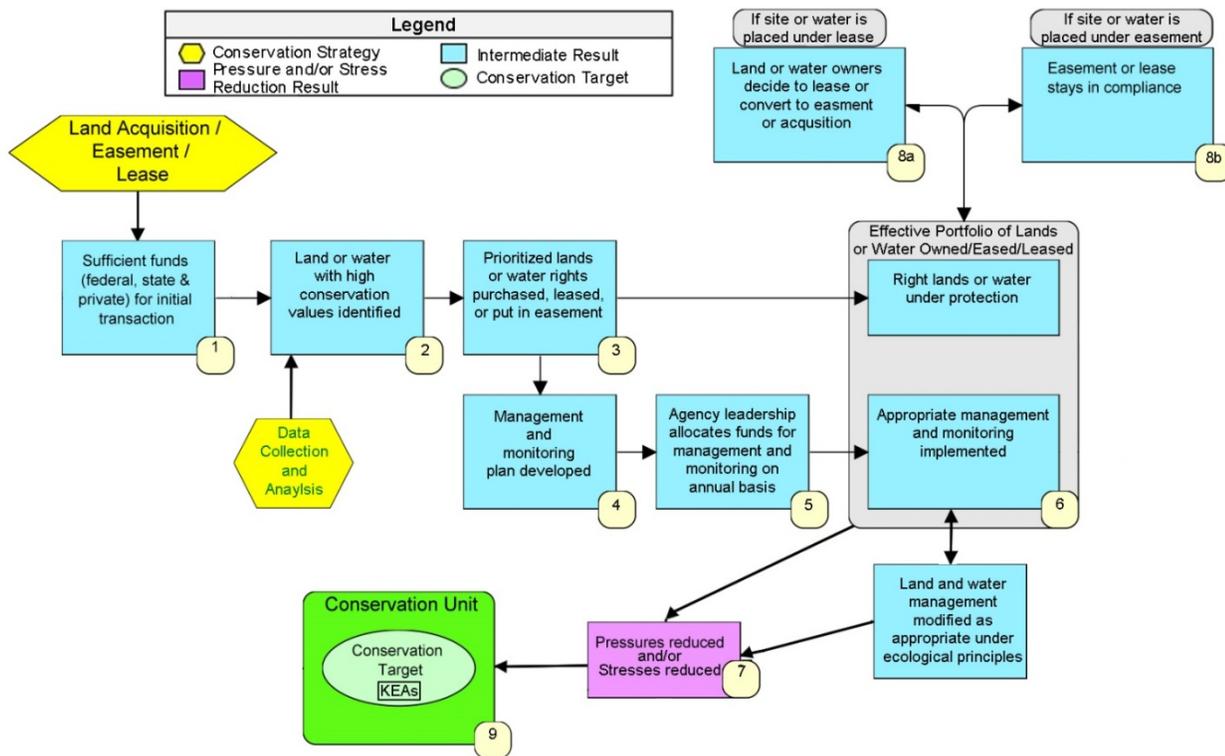


Figure 8.3-7 Results Chain for Land Acquisition, Easement, or Lease

**Table 8.3-7 Results, Objectives, and Effectiveness Measures for Land Acquisition, Easement, or Lease**

Results*	Objectives**	Effectiveness Measure (Indicator)	Roll-up measure
1. Sufficient funds are obtained for initial transaction	By (date), sufficient funds are obtained	Qualitative assessment of sufficient funds obtained	% of strategies for which objective is met for planned acquisitions/easements/ leases receiving sufficient funds
2. Priority lands or waters with high conservation value(s) are identified	Within X months of obtaining funds, priority site(s)/water are identified	Qualitative assessment of prioritization	None
3. Priority lands or water rights are purchased, leased, or put in an easement	Within X months of obtaining funds, priority site(s)/water purchased, leased, or put in an easement	Qualitative assessment of lease renewal or conversion to easement or acquisition	% of strategies for which objective is met for prioritized land purchased, leased, or put into easement
4. Management and monitoring plan is developed	Within X month of transaction, management and monitoring plans are developed	Qualitative assessment of a management and monitoring plan that outlines steps required leading to desired conservation results	% of strategies for which objective is met for acquisitions/easements/leases that have management plans
5. Agency leadership allocates funds for management and monitoring on an annual basis	Within X months of transaction, agency allocates funds for management and monitoring	Qualitative assessment of adequate funding requested for management and monitoring annually	% of strategies for which objective is met for acquisitions/easements/leases that are managed annually
6. Appropriate management and monitoring implemented	At each annual review, property management is consistent with management plan	Qualitative assessment of appropriate property management per year	% of strategies for which objective is met for management actions implemented and for acquisitions/easements/leases
7. Pressure(s) and/or stress(es) reduced	Within X years of the start of the management action, the desired pressure reduction is seen as a result of the management actions	Area affected by pressure(s) Pressure rating Area affected by the stress(es) Stress rating	% change in the area affected by the pressure(s)and/or stress(es) % pressures and/or stresses that fall into each rating category % complete of objectives for pressure and/or stress reduction
8a. Landowners decide to renew lease or convert to easement or acquisition	At the time of lease renewal, landowner decides to either: a) renew lease; b) convert least to easement; or c) offer leased land up for acquisition	Qualitative assessment of lease renewal or conversion to easement or acquisition	% of strategies for which objective is met for protected lands at the time of renewal that are: a) renewed; b) converted from lease to easement or c) converted to acquisition
8b. Easement or lease stays in compliance	At each annual review, easement or lease is shown to be compliant	Qualitative assessment of that lease is in compliance	% of strategies for which objective is met for acquisitions/easements/leases that are in compliance
9. Viability of conservation target improved	<u>Goal:</u> By 2025, KEA has [desired condition] By 2025, area with desired condition of KEA has increased at least X% By 2025, desired condition of KEA is met (desired viability rating)	Desired condition of KEA Area with desired condition of KEA Viability rating of target	% change in the area with the desired status of KEAs % Conservation Targets showing improved viability status according to rating % complete of goals for the Conservation Target

\* Row numbers correspond to the results chain in Figure 8.3-7.

\*\*The "X"s used to describe objectives indicate placeholders where specific numbers are to be developed for individual result chains and provide a template for the specific regional strategies.

### 8.3.8 Effectiveness Measures – Land Use Planning

As outlined in Figure 8.3-8, the Land Use Planning Category involves understanding the decision-making process and identifying a mechanism to inform decisions (1). It may also involve using data collection and analysis to identify wildlife needs and habitat priorities within the various political jurisdictions (2). Sufficient funds and resources must be available (2a). It is intended that these results will lead to approved land use plans that are consistent with input (3). If this happens as anticipated, it is expected that the land use plan is implemented consistent with input (4). If this happens, then the negative impacts of pressures will be reduced (5). If the negative impacts of pressures are reduced, then the stresses to the conservation target(s) will be abated (6). If other negative impacts of pressures or resulting stresses are not reduced, then adjustments in the land use planning actions will be needed (7). If negative impacts of pressures and/or resulting stresses are reduced (5 and 6), then the viability of the conservation target(s) is improved or maintained (8). Table 8.3-8 lists the desired results of implementation, objectives, and indicators for the conservation strategies in the Land Use Planning category.

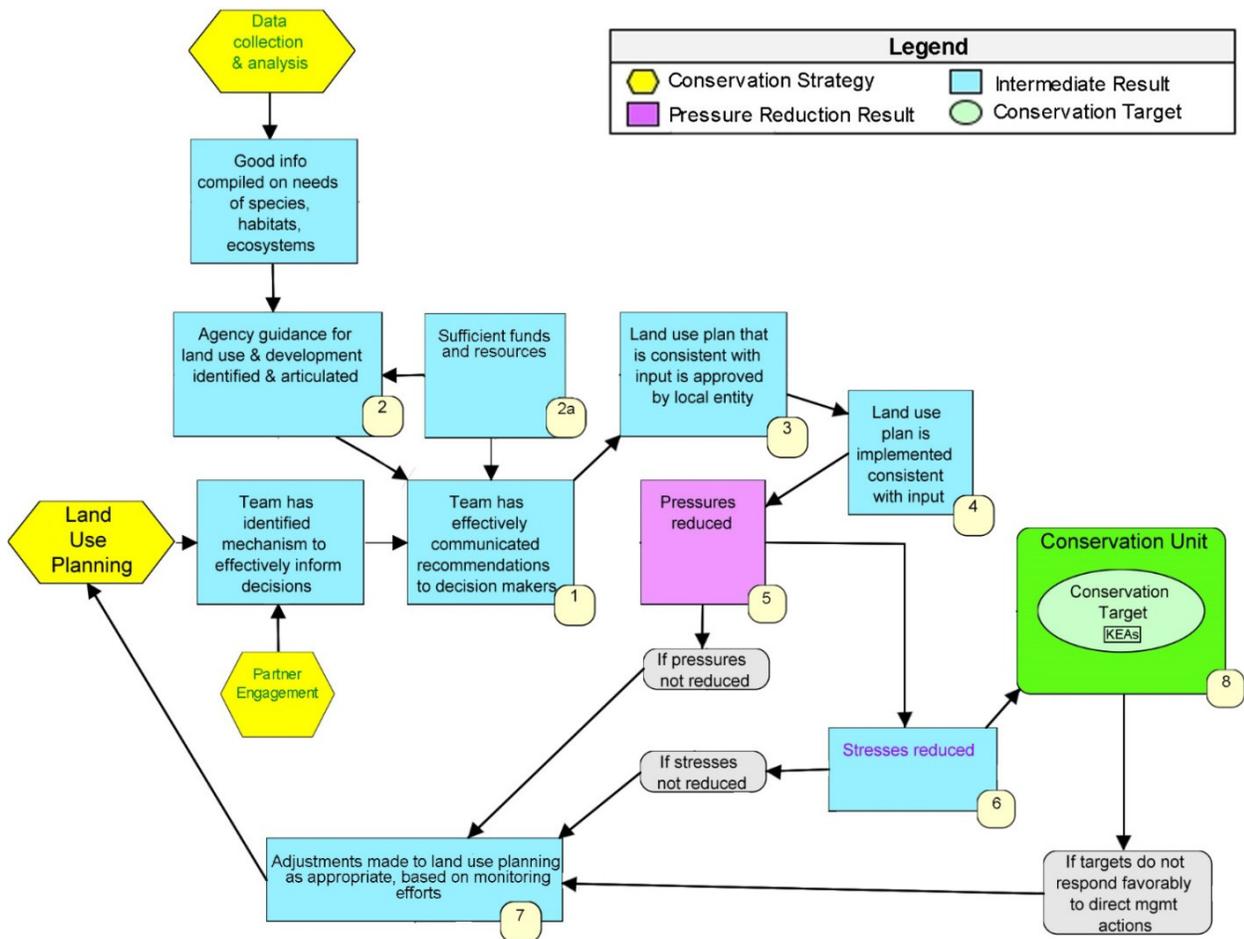


Figure 8.3-8 Results Chain for Land Use Planning

<b>Table 8.3-8 Results, Objectives, and Effectiveness Measures for Land Use Planning</b>			
<b>Result*</b>	<b>Objective**</b>	<b>Specific Measure (Indicator)</b>	<b>Rolled Up Measure</b>
1. Team has identified mechanism to effectively inform decisions	Within X months/years of starting the land use planning initiative, there is a strategy in place for how to most effectively inform key decision makers	Qualitative assessment that a strategy is in place for how to most effectively inform key decision makers	% of Land Use Planning strategies for which objectives are met for evidence of a strategy in place for how to most effectively inform key decision makers
2. Agency guidance for land use & development identified & articulated	Within X months/years of starting the land use planning initiative, agency land use planning guidance is based on information resources describing the needs of species, habitats, and ecosystems, as well as identified priority places	Qualitative assessment that agency guidance is based on information resources describing the needs of species, habitats, and ecosystems, as well as identified priority places	% of land use planning strategies for which objectives are met for evidence that agency guidance is based on information resources describing the needs of species, habitats, and ecosystems, as well as identified priority places (% of each category identified)
2a. Sufficient funds and resources are available for data collection and land use planning to occur	By (date), sufficient funds are obtained	Qualitative assessment of sufficient funds obtained	% of strategies for which objective is met for land use planning receiving sufficient funds
3. Land use plan that is consistent with input are approved by local entity	Within X months/years of starting the land use planning initiative, key decision makers incorporate X% of recommendations into approved land use plan	% of recommendations incorporated into land use planning decisions	% of Land Use Planning strategies for which objectives are met for incorporating recommendations into land use planning decisions
4. Land use plan is implemented consistent with input	At each annual review, plan is implemented consistent with input	% of plan recommendations implemented consistent with input	% of Land Use Planning strategies for which objectives are met for recommendation being implemented consistent with input
5. Pressure(s ) reduced	Within X years of the land use planning, the desired pressure reduction is seen	Area affected by pressure(s) Pressure rating	% change in the area affected by the pressure(s) % pressures that fall into each rating category % complete of objectives for pressure reduction
6. Stress(es) reduced	Within X months/years of implementing direct management actions, the desired stress reduction is seen as a result of the management action	Area affected by the stress(es) Stress rating	% change in the area affected by the stress(es) % of stresses that fall into each rating category % complete of objectives for stress reduction
7. Adjustments to land use plans, as appropriate, based on monitoring efforts	If the desired stress reduction is not seen as a result of the management action, then adjustment is made.	Qualitative assessment of adjustment is made to management action as a result of monitoring	N/A
8. Viability of conservation target improved	<u>Goal:</u> By 2025, KEA has [desired condition] By 2025, area with desired condition of KEA has increased at least X% By 2025, desired condition of KEA is met (desired viability rating)	Desired condition of KEA Area with desired condition of KEA Viability rating of target	% change in the area with the desired status of KEAs % Conservation Targets showing improved viability status according to rating % complete of goals for the Conservation Target

\* Row numbers correspond to the results chain in Figure 8.3-8.

\*\*The "X"s used to describe objectives indicate placeholders where specific numbers are to be developed for individual result chains and provide a template for the specific regional strategies.

### 8.3.9 Effectiveness Measures – Law and Policy

Table 8.3-9 lists the desired results of implementation, objectives, and indicators for the conservation strategies in the Law and Policy Category. The first step in any Law and Policy strategy, besides requiring substantial political and constituent support, is to gather input from appropriate agencies and/or stakeholders (1). As a result, the law or policy being approved will be consistent with agency and/or stakeholder input (2). This result will lead to the law or policy effectively being enforced (3), which results in improved compliance (4). Through improved legislation, regulations, policy, and enforcement, the negative impacts of pressures and stresses on conservation target(s) will be reduced (5) and improve or maintain the viability of conservation target(s) (6). Table 8.3-9 lists the desired results of implementation, objectives, and indicators for the conservation strategies in the Law, and Policy category.

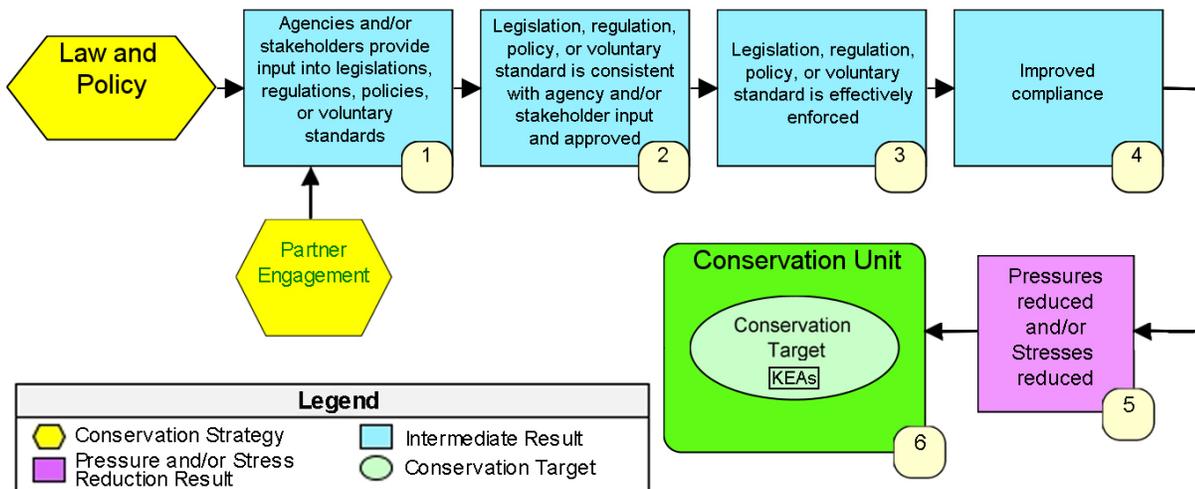


Figure 8.3-9 Results Chain for Law and Policy

Table 8.3-9 Results, Objectives, and Effectiveness Measures for Law and Policy			
Result*	Objective**	Specific Measure (Indicator)	Rolled Up Measure
1. Agencies and/or stakeholders provide input into legislation, regulations, policy, or voluntary standards	Within X timeframe, input from relevant agencies and/or stakeholders is received	Qualitative assessment that clear input has been received on legislation, regulation, policy, or voluntary standard	None
2. Legislation, regulation, policy, or voluntary standard is consistent with agency and/or stakeholder input and approved	Within X month/years of improved knowledge, policies, laws, and regulations are improved and approved	Qualitative assessment of improvement in the specific policy and law	% law and policy strategies for which objectives are met for improvement in the policies or law
3. Legislation, regulation, policy, or voluntary standard is effectively enforced	Within X month/years of improved capacity, there an increase in the number of enforcement actions under the policy/law	% increase in the number of enforcement actions under the specific policy/law	% law and policy strategies for which objectives are met for improved enforcement
4. Improved compliance	Within X month/years of improved enforcement, there is improved compliance	% decrease in the rate of infringements	% law and policy strategies for which objectives are met for improved compliance
5. Pressure(s) and/or stress(es) reduced	Within X months/years of the improved compliance, the desired pressure and/or stress reduction is seen	Area affected by pressure(s) Pressure rating Area affected by the stress(es) Stress rating	% change in the area affected by the pressure(s) and/or stress(es) % pressures and/or stresses that fall into each rating category % complete of objectives for pressure and/or stress reduction
6. Viability of conservation target improved	<u>Goal:</u> By 2025, KEA has [desired condition] By 2025, area with desired condition of KEA has increased at least X% By 2025, desired condition of KEA is met (desired viability rating)	Desired condition of KEA Area with desired condition of KEA Viability rating of target	% change in the area with the desired status of KEAs % Conservation Targets showing improved viability status according to rating % complete of goals for the Conservation Target

\* Row numbers correspond to the results chain in Figure 8.3-9.

\*\*The "X"s used to describe objectives indicate placeholders where specific numbers are to be developed for individual result chains and provide a template for the specific regional strategies.

### 8.3.10 Effectiveness Measures – Outreach and Education

This category involves providing information and materials to key resource users, with the expectation that they will use that information and material to adopt or reinforce behaviors supportive of SGCN and their habitats. As outlined in Figure 8.3-10, the start of any outreach initiative involves clarity about the target audience, messages they need to hear, and the most appropriate method of reaching them (1). The remainder of the chain follows a typical “knowledge-attitudes-practices” model for behavior change or reinforcement. If the audience receives the message (2), then the first expectation is that they will have the desired knowledge, attitudes, and values (3). This will, in turn, lead them to adopt or continue a practice that is consistent with the message (4). The practice should lead to a reduction in the negative impacts of pressures and/or stresses (5), which would improve the viability of the conservation target(s) (6). Table 8.3-10 lists the desired results of implementation, objectives, and indicators for the conservation strategies in the Outreach and Education category.

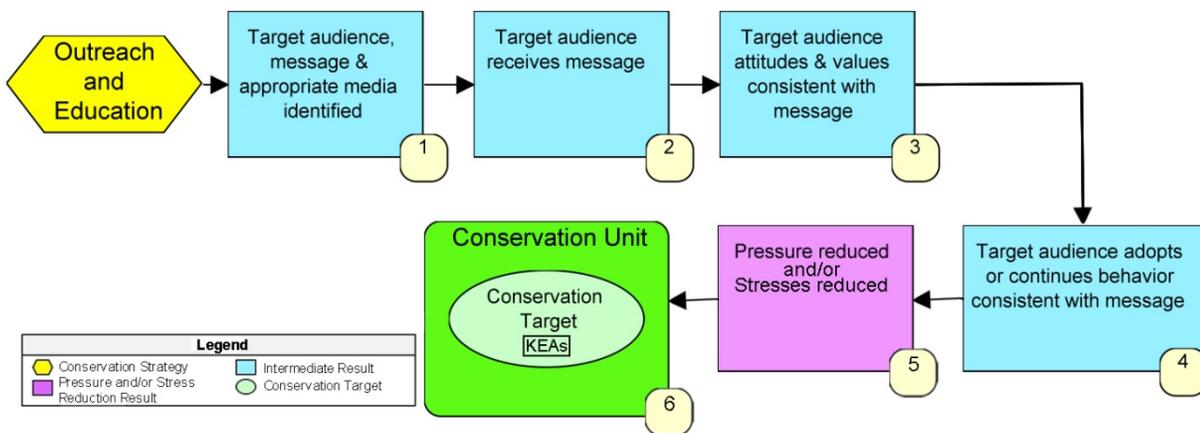


Figure 8.3-10 Results Chain for Outreach and Education

Table 8.3-10 Results, Objectives, and Effectiveness Measures for Outreach and Education			
Result*	Objective**	Specific Measure (Indicator)	Rolled Up Measure
1. Target audience, message, and appropriate media identified	Before outreach or education is initiated, the target audience, message, and appropriate media are identified	Qualitative assessment of target audience, message, and appropriate media identified	N/A
2. Target audience receives message	Within X months/years of campaign, at least X% of target audience receives the message	% of target audience that receives message	% of Outreach and Education strategies for which objectives were met for target audience receives message
3. Target audience adopts attitudes and values consistent with message	Within X months/years of campaign, there is an increase from X% to Y% in target audience desired attitudes & values	% of target audience that has desired attitudes & values	% of Outreach and Education strategies for which objectives were met for target audience attitudes/values
4. Target audience adopts or continues behavior consistent with message	Within X months/years of start of campaign, there is an increase from X% to Y% in the amount of target audience that has adopted or continued the desired behavior	% of target audience that has adopted or continued desired behavior	% of Outreach and Education strategies for which objectives were met for target audience behavior
5. Pressure(s) and/or stress(es) reduced	Within X years of the outreach or education, the desired pressure and/or stress reduction is seen	Area affected by pressure(s) Pressure rating  Area affected by the stress(es) Stress rating	% change in the area affected by the pressure(s) and/or stress(es) % pressures and/or stresses that fall into each rating category % complete of objectives for pressure and/or stress reduction
6. Viability of conservation target improved	<u>Goal:</u> By 2025, KEA has [desired condition]  By 2025, area with desired condition of KEA has increased at least X%  By 2025, desired condition of KEA is met (desired viability rating)	Desired condition of KEA Area with desired condition of KEA Viability rating of target	% change in the area with the desired status of KEAs % Conservation Targets showing improved viability status according to rating % complete of goals for the Conservation Target

\* Row numbers correspond to the results chain in Figure 8.3-10.

\*\*The "X"s used to describe objectives indicate placeholders where specific numbers are to be developed for individual result chains and provide a template for the specific regional strategies.

### 8.3.11 Effectiveness Measures – Training and Technical Assistance

The Training and Technical Assistance Category is defined as efforts to develop the skills for professionals, key stakeholders, or others to create and implement more effective conservation strategies. As shown in Figure 8.3-11, before developing and conducting the training sessions, a justification or compelling argument for training must be created, and specific skills to be delivered and audiences to receive these must be identified (1). Once these are determined, the curricula can be selected from existing sources or newly developed, and suitable trainers must be identified (2). Once the training itself takes place (3), trainees must demonstrate learning of the new skills (4) and then ultimately apply these skills (5) to development and implementation of more effective conservation strategies. As depicted in the Technical Assistance (TA) results chain, technical assistance follows a similar pattern to training, but focused more on solving immediate problems and practical skills delivery “on the ground” rather than developing capacity. First, a justification or compelling argument for technical assistance must be created, and specific skills to be delivered and audiences to receive these must be identified (1<sup>+</sup>). Once these are determined, the modality and providers must be identified (2<sup>+</sup>) before the technical assistance takes place (3<sup>+</sup>). Once the technical assistance takes place, trainees must demonstrate learning of the new skills (4) and then ultimately apply these skills (5) to development and implementation of more effective conservation strategies. This practice should lead to a reduction in the negative impacts of the pressure (6), which would improve the viability of the conservation target (7). Table 8.3-11 lists the desired results of implementation, objectives, and indicators for the conservation strategies in the Training and Technical Assistance category.

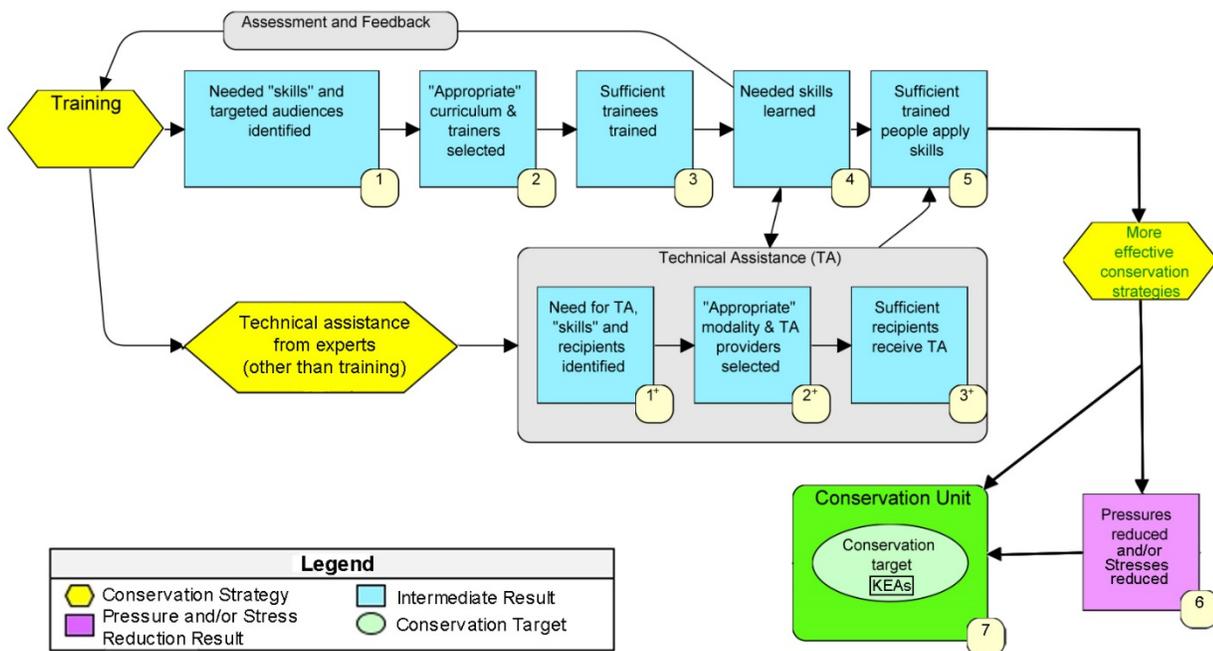


Figure 8.3-11 Results Chain for Training and Technical Assistance

**Table 8.3-11 Results, Objectives, and Effectiveness Measures for Training and Technical Assistance**

Result*	Objective**	Specific Measure (Indicator)	Rolled Up Measure
1. Needed "skills" and targeted audiences identified	Before training is initiated, a compelling argument is laid out for specific "skills" needed by specific targeted individuals who will reduce threats / do restoration	Qualitative assessment of "compelling" argument development, appropriate needs / skills to solve a pressing pressure reduction or restoration problem, and appropriate audience identified	% of Training & Technical Assistance strategies for which objective is met for needed skills and target audience
2. "Appropriate" curriculum selected and trainers selected	Before the training is initiated, an "appropriate" curriculum is selected or developed for the audience's learning style including delivery method, location, timing, examples and "appropriate" trainers are selected.	Qualitative assessment of "appropriate" curriculum development and trainers selected	% of Training & Technical Assistance strategies for which objective is met for curriculum and trainers selected
3. Sufficient trainees trained	At the end of the training period, X% of targeted individuals have attended required number of training modules	% of targeted audience trained	% of Training & Technical Assistance strategies for which objective is met for sufficient trainees trained
4. Needed skills learned	At the end of the training, at least X% of trainees demonstrate minimum proficiency in the needed skills	% of trainees demonstrating proficiencies	% of Training & Technical Assistance strategies for which objective is met for needed skills learned
5. Sufficient trained people apply skills	Within X months of the training, X% of trainees successfully apply their new skills at least once to appropriate problems Within X months of the end of the training, there are sufficient numbers of trained individuals to meet the pressure reduction / system restoration needs who are actively applying their skills	% of trained individuals applying skills % increase in capacity of people with skills	% of Training & Technical Assistance strategies for which objective is met for sufficient trained people applying skills
6. Pressure(s) and/or Stress(es) reduced	Within X years of the training or TA, the desired pressure and/or stress reduction is seen	Area affected by pressure(s) Pressure rating Area affected by the stress(es) Stress rating	% change in the area affected by the pressure(s) and/or stress(es) % pressures and/or stresses that fall into each rating category % complete of objectives for pressure and/or stress reduction
7. Viability of conservation target improved	<u>Goal:</u> By 2025, KEA has [desired condition] By 2025, area with desired condition of KEA has increased at least X% By 2025, desired condition of KEA is met (desired viability rating)	Desired condition of KEA Area with desired condition of KEA Viability rating of target	% change in the area with the desired status of KEAs % Conservation Targets showing improved viability status according to rating % complete of goals for the Conservation Target

**Table 8.3-11 Results, Objectives, and Effectiveness Measures for Training and Technical Assistance**

Result*	Objective**	Specific Measure (Indicator)	Rolled Up Measure
1 <sup>+</sup> . Need for TA, "skills" and recipients identified	Before TA is initiated, a compelling argument is laid out for specific "skills" (skills, knowledge, advice) needed by specific targeted individuals that are needed to reduce pressures / do restoration	Qualitative assessment of "compelling" argument developed, appropriate needs / skills to solve a pressing threat reduction or restoration problem, and appropriate recipients identified	% of Training & Technical Assistance strategies for which objective is met for need for TA, "skills" and recipients identified
2 <sup>+</sup> . "Appropriate" modality selected and TA providers selected	Before the TA is initiated, an "appropriate" modality is selected and TA provider(s) are selected	Qualitative assessment of "appropriate" modality selection and trainers selection	% of Training & Technical Assistance strategies objective is met for "appropriate" modality selected and TA providers selected
3 <sup>+</sup> Sufficient recipients receive TA	At the end of the TA period, X individuals have received needed TA	% of targeted recipients receiving TA	% of Training & Technical Assistance strategies for which objective is met for sufficient recipients receive TA

\* Row numbers correspond to the results chain in Figure 8.3-11.

\*\*The "X"s used to describe objectives indicate placeholders where specific numbers are to be developed for individual result chains and provide a template for the specific regional strategies.