Measuring The Effectiveness of State Wildlife Grant Projects

Phase 1 Report

TENTH 10 ANNIVERSARY
INVESTING IN WILDLIFE SINCE 2000
STATE WILDLIFE GRANTS

September 2010






ASSOCIATION of FISH & WILDLIFE AGENCIES

Measuring the Effectiveness of State Wildlife Grant Projects: Phase I Report

A product of the Association of Fish & Wildlife Agencies' Teaming With Wildlife Committee
September 2010

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ACKNOWLEDGEMENTS

This report was produced by the Effectiveness Measures Working Group of
The Association of Fish & Wildlife Agencies' Teaming With Wildlife Committee.

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EXECUTIVE SUMMARY

"Efficiency is doing things right; effectiveness is doing the right things" - Peter Drucker

THE NEED TO MEASURE AND REPORT EFFECTIVENESS OF CONSERVATION ACTIONS

The State Wildlife Grants (SWG) Program is the core federal program for preventing future endangered species listings and is a principal source of funding to implement and revise congressionally-mandated State Wildlife Action Plans (SWAPs). The development of SWAPs in every state and territory was a historic milestone which is helping state fish and wildlife agencies along with their partners improve management for the full array of fish and wildlife under their jurisdiction.

It has been an ongoing challenge to assess and communicate the effectiveness of the SWG program and SWAPs. Despite its importance to the conservation of fish and wildlife, the SWG Program may be vulnerable to reduction or elimination. A 2005 performance review of the US Fish & Wildlife Service's (USFWS) Wildlife and Sport Fish Restoration (WSFR) Program, from which SWG is administered, concluded that "results are not being demonstrated". With record high budget deficits, the Office of Management and Budget has instructed federal agencies to eliminate low-priority programs and activities that have the lowest impact on agency missions for fiscal year 2012. Programs that are deemed to be ineffective could lose funding or be terminated. Although complex biological and ecological interactions often make it difficult to attribute changes in species or habitat status to the effects of any single action, an agreed upon set of effectiveness measures would help ensure conservation actions taken lead to improved outcomes.

The Association of Fish and Wildlife Agencies (AFWA) Teaming With Wildlife (TWW) Committee formed the Effectiveness Measures Working Group (Working Group) in September 2009 to develop and test a framework for identifying effectiveness measures for SWG funded projects. The Working Group included representatives from six state fish and wildlife agencies and six conservation partners. The following report describes the framework and the Working Group's recommendations for its **voluntary** implementation. Effectiveness monitoring and performance reporting should not be additional activities added on top of existing project reporting requirements but instead, can take advantage of existing datasets and, with sufficient data management capabilities, be integrated into the project management and reporting cycle.

EXPECTED RESULTS AND BENEFITS OF THIS REPORT

Many state fish and wildlife Agencies are facing severe financial challenges. This is affecting the capacity of states to conserve fish and wildlife under their jurisdiction. Development and implementation of an effectiveness measures framework can help agencies in these trying fiscal times in the following ways:

- Provide a means to evaluate conservation actions so that successful activities/programs can be continued and communicated and less successful ones improved or abandoned;
- Establish a standardized and accessible body of project performance data to inform and guide actions by current and future policy makers and wildlife managers;

- Provide a cost-efficient mechanism for reporting data through regional and national level summaries that will help meet congressional reporting expectations and articulate the value of SWG, and potentially SWAPs, to policy makers, conservation partners, and taxpayers.

Recommended Actions

Although the Working Group completed the first phase of this project, additional work is needed to ensure it can be successfully implemented. The Working Group recommends that the TWW Committee endorse this Effectiveness Measures Framework, adopt the associated recommendations and extend the Working Group's Charter to facilitate implementation of the framework.

- **Adopt, Implement and Promote an Effectiveness Measures Framework.** A process that uses results chains to identify attainable, tested and reportable measures that can be applied to agreed upon generic conservation measures, should be adopted. If adopted, the framework should be used to construct a full set of tested effectiveness measures in close collaboration with the states. To facilitate awareness, understanding and use of the framework, outreach to the USFWS, Office of Management and Budget, Congress and state agency staff should be continued and training made available to agency staff.
- **Continue Coordinating with USFWS and Others to Develop Information Systems Capable of Supporting SWG Effectiveness Data.** Members of the Working Group should continue collaborating with the USFWS and other stakeholders to develop a reference of data standards for states and to provide input into the design of the Wildlife TRACS reporting tool and other relevant tools to ensure that they meet the needs articulated in this report.
- **Integrate Framework into Grant Application and Reporting Process.** Working Group members working in concert with staff from the USFWS Wildlife and Sport Fish Restoration Program and state federal aid staff should examine current grant making and reporting processes and make recommendations as to how these processes could be changed and potentially streamlined to accommodate the effectiveness measures framework and reporting processes.
- **Develop a Mechanism to Evaluate SWAPs.** While all SWAPs addressed the eight congressional elements, an evaluation of the plans would be useful as we approach the first decade of their implementation. The Working Group will take advantage of a previously scheduled meeting of wildlife diversity program managers and wildlife action plan coordinators in January 2011 to discuss the need for an evaluation and to determine how it might be conducted if an evaluation is deemed necessary.

Conclusion

Because of the severe economic constraints that states are currently facing, it may seem like the wrong time to implement an effectiveness measures framework. However, increased scrutiny on budgets and growing expectations by the public require that states be as efficient and effective as possible or risk losing hard fought and much needed funding. If adopted and implemented, this framework could lead to improved outcomes and help states better communicate results. We understand that the capacity to collect and report data on effectiveness will vary greatly between states so implementation must be voluntary. However, there is an opportunity to identify reporting redundancies and to use existing datasets in new ways that could result in streamlined reporting and enhanced usability of existing reports.

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1. Introduction

1.1 The Need to Track and Report Effectiveness of Conservation Actions

The State and Tribal Wildlife Grants (SWG) program was created by Congress in 2000 to address a longstanding need to plan and implement actions to conserve declining fish and wildlife before they become threatened or endangered. It is the core federal program for preventing future endangered species listings and is a principal source of funding to implement and revise congressionally-mandated State Wildlife Action Plans. Each state and territorial fish and wildlife agency receives an apportionment based on a state's population and its land area. Apportionments average about $1.2 million annually for each state/territory. State Wildlife Action Plans (SWAPs) were completed in 2005 and they identified more than 12,000 Species in Greatest Conservation Need (SGCN), their key habitats, priority threats, and thousands of on-the-ground conservation actions needed to stabilize or reverse declining species.

Despite the importance of SWG and SWAPs to the states and their partners, there is a need to better demonstrate effectiveness. In 2005, the U.S. Fish and Wildlife Service's (USFWS) Wildlife and Sport Fish Restoration Program (WSFR) that oversees SWG was assessed using the Office of Management and Budget's (OMB) Performance and Reporting Tool. The program was given a rating of "*Results Not Demonstrated*" because it lacked long-term outcome and annual output-oriented performance goals, lacked regular independent evaluation and did not have a strong accountability system. In 2007, the House of Representatives included report language in the bill funding the Department of Interior that requested the USFWS require regular performance reporting to measure the success of SWAP implementation.

In this era of record-high budget deficits, the Administration has asked federal agencies to develop their 2012 budgets against a backdrop of fiscal austerity. Budget guidance released in a June 8, 2010 memo from OMB instructed federal agencies to "eliminate low-priority programs and activities to free up the resources necessary to continue investments in priority areas." The guidance also directed agencies to "identify the programs accounting for five percent of their discretionary spending that have the lowest impact on agency missions." Programs considered low impact, ineffective, or low priority will likely be slated for reduction or termination.

During the first decade of SWG funding and after five years of SWAP implementation, state fish and wildlife agencies have made enormous strides conserving our nation's most at-risk fish and wildlife. However, it is an ongoing challenge to assess and communicate the effectiveness of these efforts. Disparate reporting measures, a lack of a robust reporting system and no national framework for identifying effectiveness measures make it difficult for state fish and wildlife agencies individually and WSFR program to demonstrate the importance and effectiveness of the SWG program. These deficiencies could put the program at-risk, particularly if significant federal budget cuts are on the horizon. This report recommends a framework that, if adopted, could help address these challenges.

In addition to demonstrating the effectiveness of SWG funded conservation actions to policy makers, there is also a need to help managers learn from and improve upon the conservation actions they implement. The framework proposed in this report can help managers learn from their successes and failures and share this information with their peers, so that they can become even more effective over time.

1.2 Using an Adaptive Management Approach to Measure Effectiveness

There are two principal monitoring types in conservation. *Status monitoring* identifies how species' populations, their habitats and natural processes on which they depend are doing, whereas *effectiveness monitoring* determines if conservation actions are having their intended impacts and how they can be improved.

State fish and wildlife agencies and their partners have a long history of collecting and reporting on measures that address status questions. They have also tracked the *implementation* and *immediate outputs* of conservation actions supported by funding through SWG and other sources (e.g. acres of land purchased, number of dams removed, etc.). Given the complexity of ecological and socioeconomic systems, rapidly changing circumstances, and the lengthy time frames in which conservation actions are generally implemented and their results achieved, it has been much more difficult to bring these two sets of data together to attribute changes in species or habitat status to the effects of any one action. It has been equally difficult to roll up the results of many different conservation actions into meaningful reports within and across state boundaries.

Systematically measuring the effectiveness of conservation actions requires specifying a "theory of change" linking these actions to their ultimate desired impacts (Figure 2) through a five-step process:

1. Define the conservation action;
2. Describe, via a results chain, the theory of change as to how the action will lead to desired impacts;
3. Identify a limited set of effectiveness measures to assess progress at key points throughout the life of the project;
4. Develop and test effectiveness measures to ensure they provide meaningful information within existing human, legal, and financial constraints, and;
5. Collect, analyze, and share data about the effectiveness measures to show whether or not the conservation action achieved the desired impact, why it succeeded or failed, and how implementation of the action can be improved over time under different conditions.

Figure 1. Key Terminology

The following definitions descibe terms used in this report.

Effectiveness measures: Measures or indicators needed to measure short and long term progress toward improving the status of a species of greatest conservation needs.

Framework: The process and products (definitions of actions, results chains, effectiveness measures, data questionaires, mockup report format) that are proposed to collect and report on effectiveness.

Generic (conservation) action: Used to describe a group of similar actions that would follow the same general theory of change.

Process: The five steps the Working Group used to develop and test results chains, effectiveness measures, and questionnaires.

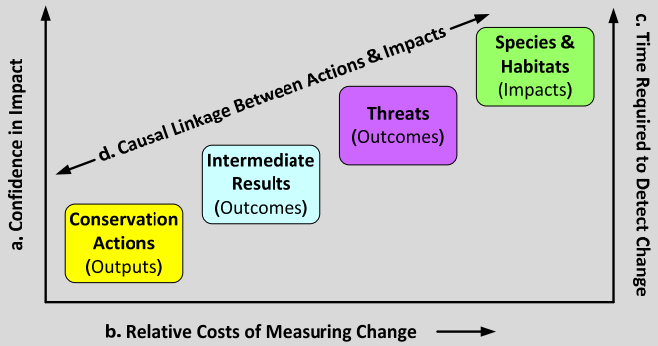
Questionnaires: A survey form used to provide a user-friendly way to collect data related to the measures.

Results chain: Graphical diagram that show a series of causal statements that link short, medium, and long-term results between an action and a desired impact in an if-then fashion.

Theory of change: The "if-then" logic that links an action to expected changes to a threat that is affecting a specific target.

Figure 2. Measuring Effectiveness Requires Linking Conservation Actions to Impacts

Measuring the effectiveness of a conservation action requires more than counting short-term outputs such as dollars spent, or the number of pamphlets distributed. As confidence in our measures increases the cost of measurement and the time required to detect change increase. To this end, the best effectiveness measures require defining a *theory of change* that links actions through outcomes to the ultimate impact, requiring data collection at key steps.



Source: Adapted from CMP 2008

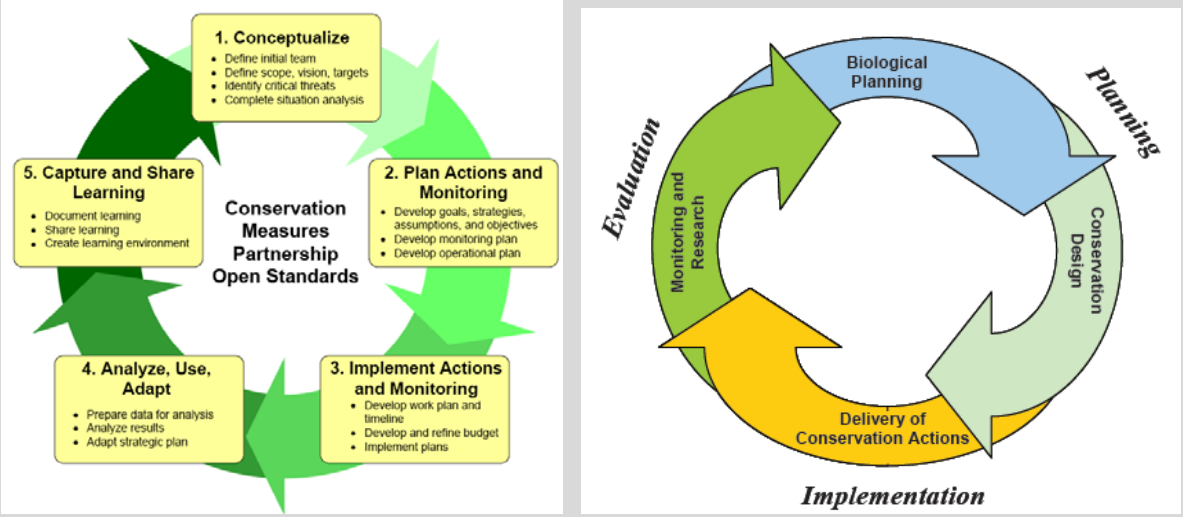
This process of measuring the effectiveness of conservation actions is the key to *adaptive management,* which requires building monitoring efforts into the overall project management cycle (Figure 3). Under an adaptive management approach, project teams state their theory of change behind each action and then collect the information required to evaluate its effectiveness. If the activity provides the expected results, effectiveness measures help communicate that success so others may follow suit. If, on the other hand, the action does not work as hypothesized, then managers can identify problems and either modify the action or try an alternative. The key to adaptive management is to learn from successes, informative failures and useless failures and respond accordingly so programs can become more effective and efficient over time.

Photo credit: Montana Fish, Wildlife & Parks

Figure 3. Effectiveness Measures Are Implemented in the Context of the Project Cycle

A key premise behind the framework proposed in this report is that effectiveness monitoring and performance reporting are not additional activities added on top of existing project management responsibilities. Instead, as shown in the following diagrams, they should be integrated into the project management cycle. The diagram on the left shows the adaptive management cycle developed by the Conservation Measures Partnership, a forum of key conservation NGOs, funders, and agencies. The cycle on the right shows the Strategic Habitat Conservation cycle developed by the US Fish and Wildlife Service. Although the two cycles use different terms, the steps of planning, implementation, and monitoring in an iterative cyclical fashion are largely equivalent. These cycles represent two ways of implementing Element 5 in SWAPs which requires states to monitor species, habitats, and the effectiveness of conservation actions, and then adapt conservation actions to respond to new information or changing conditions. In other words, to practice adaptive management.

CMP Open Standards for the Practice of Conservation **FWS Strategic Habitat Conservation**



Source: CMP 2007 & US FWS 2006

Expected Results and Benefits

By developing an appropriate set of effectiveness measures, conservation practitioners will be better able to articulate the value of SWG and potentially SWAPs to policy makers and taxpayers and ensure positive conservation impacts. This report provides **voluntary guidance to the states on how to measure the effectiveness of conservation actions funded through SWG and a mean to track and report that effectiveness**.

The recommendations provide a **cost-efficient mechanism for reporting within states and will allow rollup at a national level**. The effectiveness measures could help states **meet Congressional reporting expectations on the use of SWG and the effectiveness of that program for implementing state-driven conservation**. States can proactively demonstrate the benefits of SWG and SWAPs, rather than waiting for Congress and OMB to identify monitoring and reporting standards. The performance measures presented in this framework will **facilitate communication** about the importance of state fish and wildlife agency work to Congress, partners, and the public who will ultimately decide on continued funding for SWAPs.

1.3 The Effectiveness Measures Working Group

Although individually state fish and wildlife agencies use adaptive management to assess the effectiveness of the actions they implement, in the future state fish and wildlife agencies may be required to develop a system that reports on cumulative effectiveness across regions or nationally. The challenge for this project was to develop a framework that can be implemented voluntarily and that minimizes, or potentially even reduces, the reporting

burden on states while at the same time improves the overall effectiveness of conservation work and accountability to policy makers and the public.

With this challenge in mind, in September 2009 the Association of Fish and Wildlife Agencies' (AFWA) TWW Committee formed the Effectiveness Measures Working Group (Working Group) comprised of individuals with expertise in performance measurement from both state agencies and conservation partner organizations. Foundations of Success (FOS), a nonprofit organization that specializes in developing effectiveness measures for conservation work was hired to assist with the project. The Working Group's charge was to develop and test an effectiveness measures framework for assessing SWG and potentially the broader implementation of SWAPs. This report concludes with a draft set of recommendations to the Teaming With Wildlife Committee for consideration at AFWA's annual meeting in September 2010. These recommendations address the following:

- A proposed framework for evaluating the effectiveness of actions funded under SWG and broader SWAP's,
- Specific pilot-tested examples of how this framework can be applied to different types of conservation actions as well as a recommended process for extending this framework to cover other relevant actions,
- The Information Technology systems required to implement this framework, and
- Suggestions as to how this framework might best be implemented on a voluntary basis by state agencies.

If the TWW Committee accepts the recommendations, then the framework will be expanded to include a broader list of common conservation actions not covered in this report, and mechanisms and guidance for implementing the application of this framework will be developed.

2. Framework for Assessing Effectiveness of Conservation Actions

2.1 Overview of Assessing Effectiveness of Conservation Actions

State Fish and Wildlife Agencies are implementing thousands of specific conservation actions to address threats that affect more than 12,000 species identified as at-risk. Although each conservation situation is unique, there are common patterns in the **theory of change** (or results chain) behind all these actions. For example, an agency in the Northeast may promote awareness in boaters of the need to scrub their boat hulls when moving between waterways to minimize the spread of invasive aquatic weeds. An agency in the Northwest may launch a campaign to persuade homeowners to avoid over-fertilizing of lawns to reduce nutrient runoff into an estuary. Although these two actions take place in different ecosystems, are implemented by different agencies and are countering different threats, they are analogous and their respective theories of change would look very similar. Both actions involve outreach and education that is designed to raise awareness in a specific public sector with the goal of changing behavior. These two conservation actions could be lumped under a "**generic conservation action**" called *Outreach and Education*, and standard effectiveness measures could be developed that would allow these measures to be rolled up across ecological and sociopolitical boundaries.

This chapter describes a proposed voluntary **framework** that States and their partners can use to assess the effectiveness of conservation actions. This framework includes a list of common or generic conservation actions and a **process** for developing results chains, **effectiveness measures** and data collection **questionnaires.** If this framework is approved and implemented, then it can be applied to the full suite of generic conservation actions that are shared by all states. This chapter outlines the framework and provides recommendations as how to best apply it.

2.2 Expectations of States Under Framework to Assess Effectiveness of Conservation Actions

State fish and wildlife agencies will undoubtedly ask: "What does this proposed framework mean for my agency?" The following chapter describes the core of the framework that could be used by states to assess the effectiveness of their conservation actions. The part of the proposed framework which most states will actively use includes: a list of and definitions for generic conservation actions commonly implemented or funded by SWG (Appendix I); a set of effectiveness measures for each action (Appendix II); and specific questionnaires that provide data about these measures and the recommended databases to manage this information (Appendix V).

To illustrate this concept, consider an example case in which state agency staff in Minnesota and Wisconsin work to translocate greater prairie chickens from Minnesota to the Buena Vista Wildlife Area in Wisconsin in an effort to increase populations, as well as genetic diversity. This specific action would be classified more generically as "species restoration," based on the definitions in Appendix I. Reporting on effectiveness under this framework might include:

- **Provide action-specific information during the grant application process.** This might include baseline information about the actual state of prairie chickens, the expected duration of the translocation effort, and the expected population or recovery outcomes.

- **Provide data on progress of the action over the life of the grant.** For this example, some data that would be gathered might include:
    - *Plan for Restoring Species and Project Sites* – Is this project being implemented under an overall plan for restoring the species (i.e., prairie chickens)? Does this plan define clear biological objectives for the species and for the sites?
    - *Stakeholder Buy-In* – During the reporting period, were there any formal challenges by stakeholders to prevent the release of the target species into the restoration sites? If yes, was the project team able to mediate these challenges?
    - *Target Units of Species Released* – What percent of initial release work across all restoration sites has been completed? How many units (i.e., individuals, breeding pairs, communities) of the species have been reintroduced?
    - *Species Breeding at Restoration Sites* – Are the introduced populations breeding within the recovery site(s)?
    - *Population Viability* – Has the population goal for the target species within the restoration site(s) been achieved?
- **Contributing to "roll up" reports**. To the extent that states need to report data at a state or regional level, they may want compare data across the same actions within their state or region and then aggregate and report them in a succinct, visually-appealing and powerful manner that would effectively communicate results to policy makers, stakeholders, and the public. Figure 6 in Section 2.3 provides an example of such a report for species restoration

2.3 The Process

To develop the framework for assessing the effectiveness of conservation actions described in the previous section, the Working Group followed the 5 step process described in Chapter 1.2.

The Working Group used this process to pilot-test standardized measures for four generic conservation actions. If this proposed framework is accepted, it could be extended to all other conservation actions supported by SWG and other funding programs. This process would not need to be replicated by individual States, but rather a team of state representatives could implement the process on behalf of the broader community, saving considerable time and expense. To illustrate this process and the resulting products, a generic Species Restoration Example has been used.

Franklin Ground Squirrel / Indiana Division of Fish & Wildlife

Step 1: Define the Conservation Action

The Working Group identified 14 categories of conservation actions that are most commonly funded with SWG dollars. The group reviewed State Wildlife Action Plans and SWG performance reports to develop an initial list of commonly-mentioned actions. To provide a standard structure, the group categorized and synthesized these actions following the IUCN-Conservation Measures Partnership's Standard Classification of Conservation Actions (IUCN-CMP 2008). States and USFWS's WSFR Program provided additional input to further refine the list. The list is **not** meant to be exhaustive but rather represents the most common actions and will likely change over time. The actions include:

- Conservation Area Designation
- Acquisition/Easement/Lease
- Data Collection & Analysis
- Management Planning
- Direct Management of Natural Resources
- Species Restoration
- Create New Habitat/Natural Processes
- Training & Technical Assistance
- Outreach & Education
- Land Use Planning
- Environmental Review
- Economic Incentives
- Partner Engagement
- Data Management & Maintenance

* *A complete table of conservation actions, their associated definitions and a list of real-world examples can be found in Appendix I.*

Four of the 14 conservation actions were selected for pilot testing. These included Species Restoration; Acquisition/Easement/Lease; Outreach/ Education; and Data Collection/Analysis. These actions were selected because they are implemented with high frequency and/or represent critical components of a majority of SWG-funded activities. Additionally, these actions have proven difficult for states to evaluate. If the framework recommended by the Working Group is adopted, then it will have to be extended for the remaining conservation actions in the list, as well as any other actions for which it is necessary to track effectiveness.

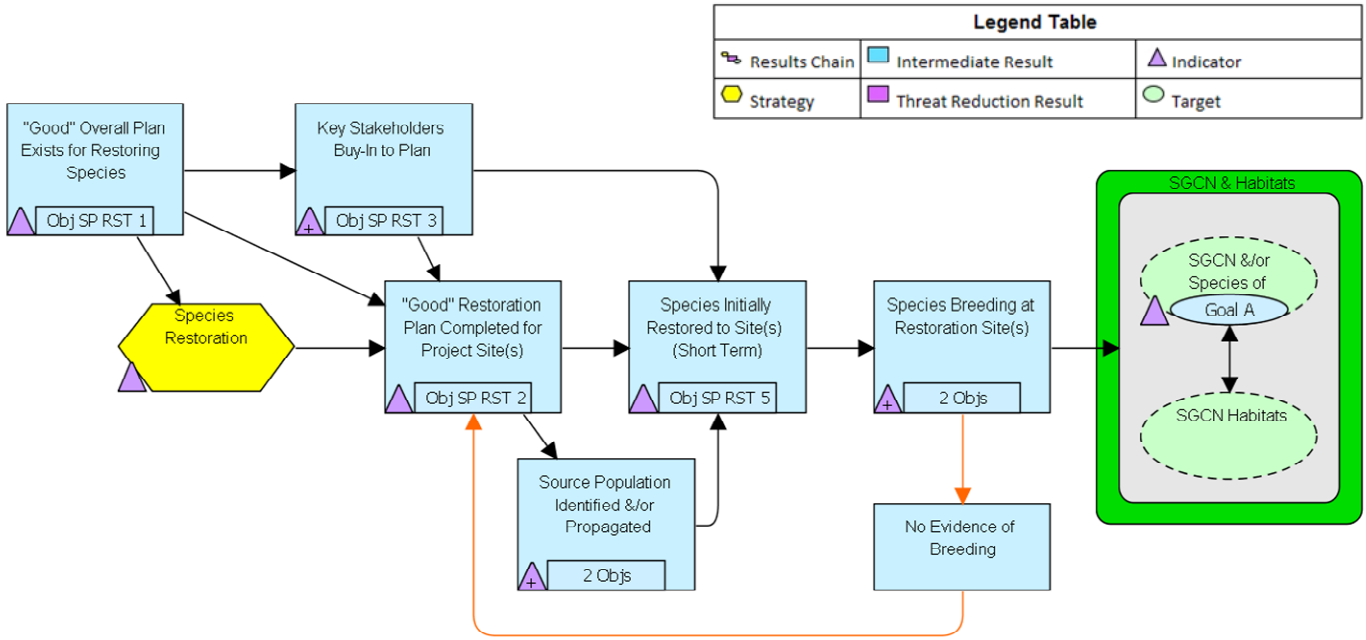
Step 2. Describe Via Results Chains the Theory of Change as to How Each Action Leads to Desired Impacts

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 desired impact in an if-then fashion. The Working Group evaluated several alternatives for constructing and depicting theories of change and ultimately decided to use Results Chains (FOS 2007) and software from Miradi (www.Miradi.org). Miradi uses a series of step-by-step interview wizards to guide the development of results chains, associated objectives and measures to assess the effectiveness of conservation actions.

The Working Group developed and pilot-tested results chains for four generic conservation actions. Figure 4 shows an example of the species restoration results chains completed for the pilot. The results identified for this action represented a compromise of what could practically be achieved and measured without being overly simple or complex. The chain illustrates that a restoration plan for the species, stakeholder buy-in, a plan for the specific restoration sites, and a source population are critical precursors for a species to be successfully reintroduced. The theory of change is based on the premise that once a species is reintroduced, then that species would breed at the site and the overall status of the species would improve. The results chain also shows a

potential consequence if there is no breeding and how this negative result would be used to modify the restoration plan.

Figure 4. Results Chain for Generic Species Restoration Actions



Each pilot-tested results chain went through several iterations, generally starting out in a more detailed and complex form, and then simplified to facilitate understanding and reporting. High level summary results chains and full results chains are included in Appendix II.

Step 3. Identify a Limited Set of Effectiveness Measures to Assess Key Points along Each Results Chain and Produce Desired Roll-Up Reports

Once the results chains for each conservation action were developed, the Working Group used the chain and assessments of what data might be realistically available to States to identify effectiveness measures for short- and medium-term results (blue boxes in the results chains). The following criteria were used in selecting measures:

- **Linked** – Tied to key factors in the theory of change laid out in the results chain
- **Measurable** – in either quantitative or qualitative terms
- **Precise** – defined the same way by all agencies
- **Consistent** – unlikely to change over time
- **Sensitive** – changing proportionately in response to actual changes in the condition or item being measured
- **Overarching** – available to be measured at various points throughout the life of a project
- **Achievable** – not onerous for States or their partners to report

To develop the effectiveness measures, the Working Group found it helpful to first think about generic objectives for each result in the chain and then extract the measures from those objectives (Table 1).

Table 1. Generic Objectives and Effectiveness Measures for Species Restoration

Result	Objective	Action Measure
"Good" Overall Plan Exists for Restoring the Species	Before implementation work starts, a "good" restoration plan exists for the species across all sites (developing this overall plan will usually not be part of the project).	Presence of plan; Assessment of plan quality against criteria
"Good" Restoration Plan Completed for Project Site(s)	Before implementation work starts, a "good" restoration plan has been developed for the specific project site(s).	Presence of plan; Assessment of plan quality against criteria
Key Stakeholders Buy-In to Plan	Prior to and following implementation of the plan, all relevant stakeholder groups are either supportive or at least non-hostile towards the reintroduction.	Evidence of actions taken by individuals or organizations that are against the restoration (e.g., formal legal challenges to the plan or hostile acts such as shooting restored animals).
Source population identified and/or propagated	Prior to implementation of the plan, a suitable source population to meet needs of all restoration sites has been identified.	Evidence of suitable source population being identified. % of total animals required to meet needs of all sites
Species initially restored to sites (short-term)	By specified target date, the target number of units (e.g. individuals, breeding pairs, communities, pounds of fish fry, etc.) has been introduced to sites.	% of target number of units that are released
Species breeding at restoration sites (medium-term)	Within a specified timeframe, the restored population is successfully breeding within the restoration site(s).	% of sites with restored population successfully breeding
GOAL Viable populations (long-term)	By plan target date, a viable population (e.g. meets defined viability criteria) of the target species exists at the restoration site(s).	Viability of target populations.

Step 4. Develop and Test Data Collection Questionnaires for Each Measure

Once the results chains were developed and measures identified, the Working Group created five on-line questionnaires to test and evaluate the proposed effectiveness measures using activities funded through SWG. Four questionnaires were specific to the four selected conservation actions and a fifth questionnaire collected general information about the process and overall framework. Figure 5 includes some sample questions developed for species restoration. Appendix III contains full questionnaires for species restoration and the three other pilot-tested actions. These questionnaires were then pilot-tested with real-world projects drawn from state members of the Working Group (MN, NY, TX, VA, WI) and four additional states (FL, GA, MO, NE).

Figure 5. Extract of Questionnaire for Species Restoration

Restoration Plan

10. Has the project developed a plan for restoration efforts at the specific project site(s)?

☐ Yes ☐ No

11. Does this restoration plan identify: 1) clear biological objectives, 2) appropriate source(s) of the species, 3) methods for transferring and introducing the species to the sites, 4) monitoring and follow-up methods, 5) a budget and work plan for this work, 6) clear exit criteria for the project (both unsuccessful and successful) , and 7) risk assessment and mitigation steps?

☐ Plan addresses all or almost all criteria ☐ Plan addresses most criteria

☐ Plan addresses some criteria ☐ Plan address few or no criteria

Notes:

12. What is the "unit" for defining restoration site(s)?

☐ Defined geographic locations ☐ Populations of animals

☐ Other Please describe if needed:

13. How many total site(s) is the project targeting for restoration efforts?

Number of sites:

Please describe if needed:

Viable Populations (Long-Term)

25. Are the introduced populations viable within the recovery site(s)?

☐ Yes, at all sites

☐ Yes, but only at some sites (% of sites)

☐ No documentation of viability

☐ Too early to expect viability

☐ Problems with restored population(s)

☐ Insufficient monitoring in place

Notes:

Step 5. Collect and Analyze Data and Use to Adapt Metrics

After collecting and analyzing monitoring data a project team would then adapt actions if needed to improve the overall effectiveness of its conservation efforts. In the pilot tests, there were no specific on-the-ground actions to adapt so instead the Working Group analyzed the responses from the surveys. This analysis helped determine if the measures were the "right" ones to evaluate effectiveness and to answer the following questions.

- Were the theories of change understandable?
- How much effort was required to report on the actions?
- Would it be feasible to report on actions in the future, especially if the measures were known from the start?

Finally, a key to communicating effectiveness measures is the ability to report the information in a clear, concise, factual and visually stimulating manner. Policy makers need information that is summarized and can be

assimilated and interpreted in as little time as possible. The mock-up report in Figure 6 (enlarged version found in Appendix IV) illustrates how species restoration efforts could be rolled up nationally and communicated to policy makers. The actual data is fictitious, though the group tried to use realistic information and draw on real-world examples. The intent of this mock-up is to provide an example of how state fish and wildlife agencies could communicate results to target audiences such as agency Directors, members of Congress or the Office of Management and Budget.

Mock-up Example of 2-Page Layout for Reporting on Conservation Actions

Effectiveness of Species Restoration Efforts

What Does This Include?

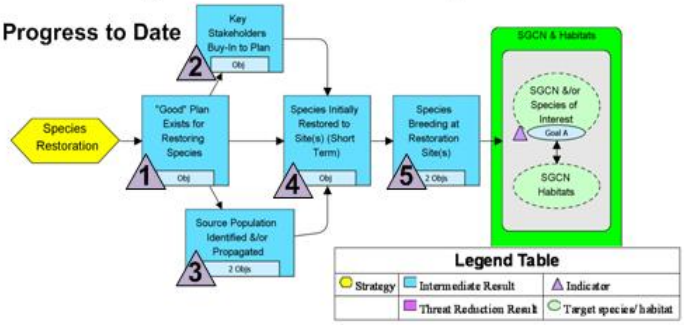
Efforts to reintroduce, relocate, or stock native animals or plants or translocate animals to an area where they are not currently found. Some examples include:

- Translocating/breeding in captivity black-footed ferrets to establish new populations in suitable habitat.
- Restoring mussel assemblages to historically occupied stream stretches

How Do We Measure Effectiveness?

Establishing good effectiveness measures for conservation actions requires being clear about the linkages among conservation actions, changes in threats those actions are designed to address, and the status of the relevant species and habitats. Laying out this "theory of change" isolates and limits the key factors that need to be monitored in order to assess whether our conservation actions are leading to the intended outcomes or changes.

Progress to Date



115 species restoration grants to 28 states were made from 2008-2010. The majority of those led to species breeding at restoration sites.

Effectiveness of Funded Species Restoration Efforts

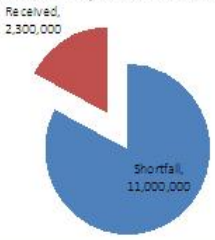
1. 90% of efforts have "good" plans that meet key criteria
2. 70% have stakeholder support to move the efforts forward
3. 81% have identified or propagated sufficient species to meet restoration needs
4. 65% have released sufficient species for initial restoration
5. 47% show restored species are breeding successfully

For more info: www.swgdb.org/species-restoration/

Where Do We Go From Here?

While much has been accomplished with funding for species restoration, the support is currently not adequate to meet conservation goals established by states to protect Species of Greatest Conservation Need and their habitats. Consequently, species restoration efforts are falling short. Specifically, it is estimated that states require an additional $11 million dollars to meet their goals for species restoration activities.

Funding Needs for Species Restoration



Stories from the Field

Washington Department of Fish and Wildlife and partners, with SWG support, are helping conserve and restore western pond turtle populations - a state endangered species that has been impacted by habitat loss and non-native predators like large-mouth bass and bullfrogs which eat young turtles.

As part of their recovery strategy, managers implemented a "head start" program for captive bred and wild hatchlings. The young turtles are raised in captivity until they are too large to be eaten by bass and bullfrogs – at which point, the turtles are released into suitable habitats to augment existing or create new populations.

In 2007, Washington achieved goals for restoring at least four self-sustaining populations in the Columbia Gorge. Although efforts to restore this species to Puget Sound recovery areas continue, meeting the Columbia Gorge recovery goals means it is unlikely this species will be extirpated or require protection under the Federal Endangered Species Act

Photos by Kate and Frank Slavens

Questions to Explore

- How can states better engage stakeholders and explain practical benefits of species restoration to improve support?
- Under what conditions does it make sense to do species restoration versus other less labor and cost intensive, like outreach or economic incentives?

2.4 Analysis of Pilot Test Results

Analysis of Testing Measures Framework with States

The pilot testing helped determine the feasibility and ease with which state agency staff could identify, track, and report on relevant effectiveness measures for select conservation actions. Nine states completed questionnaires on the four selected actions. The Working Group used the pilot test results to modify existing results chains, measures, and questionnaires that are presented in Appendix III.

All states were able to complete the surveys, although the level of difficulty in doing so varied. Most states reported that they had all or most of the data on hand to answer the questions. This included 71%of states for Outreach, 83% for Species Restoration, 60% for Land Acquisition, and 93% for Information and Data Collection. States gathered the data from existing reports, databases, or field interviews. Most states reported that it required one hour or less to gather the information. In those states where it was more difficult to acquire data, the difficulty stemmed from the need to involve multiple people in the process. Collection of financial data was cited as the greatest challenge.

There was a concern among the respondents that adopting this framework would be especially difficult if reporting requirements increase. In addition, concerns were raised that this project could lead to some duplication in databases and that some states would be resistant to making substantial changes to existing state databases to accommodate reporting of effectiveness measures. Pilot states that were part of the Working Group were more likely to report that data collection was relatively easy; those that were not part of the working group had more difficulties. About half of the states felt that some training would be needed on effectiveness measures data collection and reporting to help them successfully implement the framework.

Pilot testers recognized the need for monitoring and reporting and felt that adoption of the effectiveness measures framework would get easier over time, especially if data collection were built into existing grant application and reporting processes. Most respondents felt that the reporting format was feasible and would be a better way to capture progress and accomplishments than the current system. However, it was noted that narratives that are part of the existing grant reporting process should be retained. One of the most frequently mentioned benefits of the process was the ability to summarize data across states in a consistent and standardized way – an aspect pilot testers felt would greatly improve the efficiency of reporting and make it possible to demonstrate the effectiveness of SWG and SWAPs. Another benefit expressed was that the process would clarify objectives and expectations from the outset. Overall the most relevant findings from the pilot testing include the need for 1) consistent measures across states; 2) clear expectations from the start on the level of effort needed for data collection; 3) training on developing and reporting effectiveness measures; and 4) ensuring that database entry and reporting are not duplicative.

2.5 Using the Framework to Promote Improved Project Management

Although the primary purpose of the Working Group was to develop effectiveness measures for conservation actions funded by SWG or implemented as part of SWAPs, the team also recognized the potential for this approach to generally improve project management. If agency projects and programs use the effectiveness measures framework outlined in this report and the broader *Open Standards* on which they are based to define the context in which they are working, lay out their assumptions and collect specific data to test these assumptions, they should be able to determine whether these actions are working to achieve the desired results. If the actions are not working as predicted, hopefully project managers can determine how to appropriately adapt

their strategies. Furthermore, if managers share their results with other project leaders doing similar work in other states or regions, then these results can be collectively analyzed to determine the conditions under which the action is likely to work.

This kind of adaptive management would require managers to not merely report on the effectiveness measures for their specific actions, but also to take the underlying theories of change and adapt them to their specific circumstances. Getting managers to do this work would likely require additional training and support but could have huge potential payoffs in not just measuring the effectiveness of actions, but actually improving effectiveness over time.

2.6 Recommendations for Assessing the Effectiveness of Conservation Actions

Based on its work over the past year and the results of the pilot test efforts, the Effectiveness Measures Working Group offers the following recommendations for assessing the effectiveness of SWG-funded and SWAP-implemented conservation actions. It's understood that it is ultimately the choice of each state to decide whether or not to adopt these recommendations; they are strictly voluntary.

Recommendations: The Working Group makes the following recommendations to the Chair and Vice Chair of the Teaming With Wildlife Committee:

- **Extend the Charter of the Teaming With Wildlife Effectiveness Measures Working Group until September 2011.** Extension of the charter would allow the Working Group to complete results chains and measures for the remaining actions and take on other work associated with completing the framework.
- **Adopt the proposed effectiveness measures framework to improve accountability and project management.** If States want to compare, roll-up, and report on the effectiveness of conservation actions at regional and national scales, then all or a subset of representative states will need to 1) agree on specific generic conservation actions, 2) develop specific measures and data collection questionnaires for each action, and 3) collect and share data for all instances of that type of action being implemented. This framework will serve accountability functions, but equally important is its potential for learning and improving conservation actions. Part of the learning process will be openly identifying both successes and failures and distilling lessons that will improve future action.
- **Complete the framework for remaining generic conservation actions.** The Working Group has developed effectiveness measures for four of the 14 identified conservation actions. The process used to develop these four actions (including developing results chains, measures, pilot testing, etc.) should be extended to the remaining 10 conservation actions, as well as any additional actions for which it is necessary to track effectiveness. This work should be done by one or more teams on behalf of the broader community. Current Working Group members have expressed interest in being part of such a team.
- **Integrate Framework into Grant Application and Reporting Processes.** State Agency staff are already stretched thin. To ensure successful implementation, the effectiveness measures framework will have to become part of the routine work of states, replacing rather than adding to existing reporting requirements. Working Group members in collaboration with staff from the USFWS Wildlife and Sport Fish Restoration Program and state federal aid staff should examine current grant making and reporting processes and make recommendations as to how these processes could be changed to accommodate the effectiveness measures framework.

Principles: To implement these recommendations, the Working Group suggests that states consider the following principles:

- **Continue Coordinating with USFWS and Others to Develop Information Systems Capable of Supporting SWG Effectiveness Data** .As outlined in greater detail in Chapter 3, States may need to invest in new or change existing IT systems to collect and share data. Members of the Working Group will continue collaborating with the USFWS and other stakeholders to develop a reference of data standards for states, and to provide input to the design of the Wildlife TRACS reporting tool and other relevant tools to ensure that they meet the needs articulated in this report.
- **Collect only the minimum data needed to produce necessary reports.** Although it is tempting to add additional measures that may be useful in the future, each additional indicator increases the reporting burden and makes it less likely that important data will be collected. To this end, make sure that each datum collected will be used. Doing a mockup report in advance (Figure 6) is a great way to help identify unnecessary indicators.
- **Ensure reporting happens over the long term to capture results that require longer timeframes.** Many SWG-funded projects will require years or decades to achieve their intended results. While the results of these long-term efforts can be dramatic, current reporting processes are rarely able to capture these achievements. For these projects, additional logistical issues must be addressed to ensure that effectiveness is reported over time. These logistical issues include:
    - Establishing a standardized reporting interval, after the initial project is completed and the grant agreement has expired, when agencies will provide ongoing effectiveness updates; and
    - Creating a mechanism to ensure reporting responsibilities are recognized and maintained as personnel either leave the agency or assume different job duties.

Razorbill Decovs/ USFWS

2.7 Framework Materials Derived from the Four Pilot-Tested Conservation Actions

The following materials are the products of one pilot-tested action of Species Restoration. These products (Figure 8) include the definition for the action, examples of real-world conservation projects that would fall into the category, results chains for the generic action, generic objectives, measures, and associated questions for gathering data on the measures. In addition to products specific to the conservation action, a common set of general data fields were identified as critical information to be gathered on all conservation actions and can be found in Figure 7. Detailed materials for this conservation action and the remaining three pilot tested actions can be found in Appendix II.

Figure 7. General Data Fields for All Conservation Actions

The Working Group identified a common set of questions (see below) as critical information to gather on the project level when reporting on a conservation action. These questions are recommended to be consistent across all conservation actions and serve as precursor information that be captured in the application process of the grant. If this data cannot be captured on the front end due to limitations, then questions should be incorporated as general questions in every report

1. Project Title *(text field)*
2. Project Contact *(text field; capture contact information, including position title)*
3. Project Partners *(text field; capture contact for each partner org)*
4. Conservation Actions *(pick list of actions)*
5. General description of project (note: not just the action – max. 1000 characters)
6. Budget:
    a. Total Project Budget (grant + match) (*value field)*
    b. Cost of Conservation Action *(value field; one for each action)*
7. Sources of non-federal match funding (*pick list: Agency general fund, license plate revenue, private funds/NGO contributions, In kind/volunteer work hours, other)*
8. How does the *Conservation Action* address a specific goal/objective within the State Wildlife Action Plan (*pick list of the 8 Elements; descriptor box*)
9. *Threats* addressed by this *Conservation Action (pick list – IUCN CMP Taxonomy of threats, level 1 & 2)*
10. Identify the Primary SGCNs benefitting from this *Conservation Action (pick list of SGCNs within that state: generated from NBII database; include N/A)*
11. Identify the main habitat types (if any) that this *Conservation Action* addresses *(pick list of habitat types; include N/A*

Figure 8. Pilot-Project Product Examples for Species Restoration

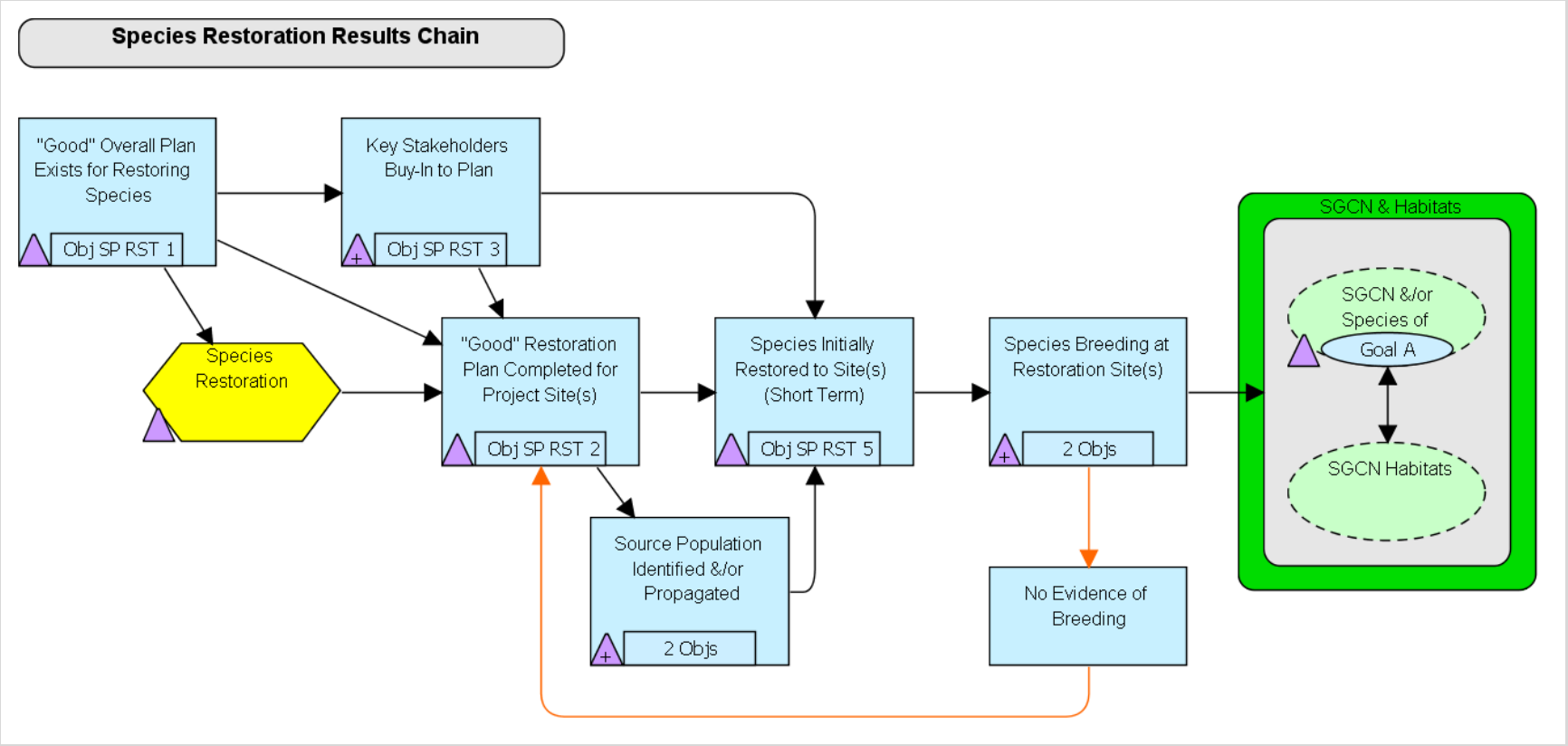
A. Definition:

Species Restoration is defined as "Reintroduction, relocation or stocking of native animals or plants or translocation of animals to an area where they are not currently found."

B. Real-world Examples of Species Restoration:

1. Translocate/breed in captivity black-footed ferrets to establish new populations in suitable habitat.
2. Restore mussel assemblages to historically occupied stream stretches

C. Simple Results Chain:



D. Summary Table of Proposed Generic Objectives, Measures and Questions

Result	Objective	Action Measure	Rolled Up Measure	Survey Questions (see Appendix III for detailed questionnaire)
Overall Plan Exists for Restoring the Species	Before implementation work starts, a "good" restoration plan exist for the species across all sites (developing this overall plan will usually not be part of this project).	Presence of plan; Assessment of plan quality against criteria	% of restoration efforts that are based on a "good" plan, by taxa and by region	• Is this project being implemented under an overall plan for restoring the species? • Does this overall restoration plan define clear biological objectives (number of populations/sites) required for recovering the species? • Approximately what percentage of the overall species recovery effort is represented by this project? • Does this restoration plan identify: 1) appropriate source(s) of the species, 2) candidate restoration sites, 3) methods for transferring and introducing the species to new sites, 4) monitoring and follow-up methods, and 5) risk assessment and mitigation steps?
Restoration Plan Completed for Project Site(s)	Before implementation work starts, a "good" restoration plan has been developed for the specific project site(s).	Presence of plan; Assessment of plan quality against criteria	% of restoration efforts that are based on a "good" plan, by taxa and by region	1. Has the project developed a plan for restoration efforts at the specific project site(s)? 2. Does this restoration plan identify: 1) clear biological objectives, 2) appropriate source(s) of the species, 3) methods for transferring and introducing the species to the sites, 4) monitoring and follow-up methods, 5) a budget and work plan for this work, 6) clear exit criteria for the project (both unsuccessful and successful) , and 7) risk assessment and mitigation steps? 3. What is the "unit" for defining restoration site(s)? 4. How many total site(s) is the project targeting for restoration efforts?
Key Stakeholders Buy-In to Plan	Prior to and following implementation of the plan, all relevant stakeholder groups are either supportive or at least non-hostile towards the reintroduction.	Evidence of actions taken by individuals or organizations that are against the restoration (e.g., formal legal challenges to the plan or hostile acts such as shooting restored animals).	Total number of projects that are being blocked by stakeholders, by taxa and region.	5. During the reporting period, were there any formal challenges by stakeholders to prevent the release of the target species into the restoration sites? 6. If yes, was the project team able to mediate these challenges?

Result	Objective	Action Measure	Rolled Up Measure	Survey Questions (see Appendix III for detailed questionnaire)
Source population identified and/or propagated	Prior to implementation of the plan, a suitable source population to meet needs of all restoration sites has been identified. If necessary, before restoration efforts start, sufficient animals have been propagated to meet needs of all restoration sites.	Evidence of suitable source population being identified. % of total animals required to meet needs of all sites	% of projects that are able to identify and/or propagate sufficient animals, by taxa and by region	7. Has the project identified a suitable source of animals to meet needs of all sites in the restoration effort? 8. If propagating animals: What percent of total animals required to meet needs of all sites in the restoration effort have been bred?
Species initially restored to sites (short-term)	By specified target date, the target number of units* have been introduced to Area(s) YYYY. * Units could be individuals, breeding pairs, communities, pounds of fish fry, or other measures as appropriate.	% of target number of units that are released	% of projects that are able to release sufficient animals, by taxa and by region	9. Has the project begun releasing species to restoration site(s)? 10. What percent of initial release work across all restoration sites has been completed? 11. What is the "unit" for measuring quantities of species released within restoration site(s)? 12. How many units of the species have been reintroduced? [we would need for up to 5 species]
Species breeding at restoration sites (medium-term)	Within xx years of introduction, the restored population is successfully breeding within the restoration site(s).	% of sites with restored population successfully breeding	% of all projects with restored species successfully breeding, by taxa and by region	13. Are the introduced populations breeding within the recovery site(s)? 14. What is the "unit" for measuring successful restoration of the species within restoration site(s)? 15. How many units of the species are present in the recovery sites? [we would need for up to 5 species]
GOAL Viable populations (long-term)	By xxxx (plan target date), a "viable" population of the target species exists at the restoration site(s). "Viable" = Meets defined viability criteria.	Viability of target populations.	% of all projects with restored species with viable population, by taxa and by region	16. Are the introduced populations viable within the recovery site(s)? 17. Has the population goal for the target species within the restoration site(s) been achieved? 18. Has this project contributed to any changes regarding the conservation priority status (SGCN priority, Threatened/Endangered, etc.) of the target species in your state?
Additional Information/ Narratives				19. Please provide any narratives, case studies, or additional comments you may have related to this outreach effort (optional)

3. Information Technology Needs

3.1 Overview of Information Technology (IT) Needs and Issues

Through report language in SWG appropriations, Congress has specifically instructed the US Fish and Wildlife Service to work with states to adopt common mapping, data, and measurement standards to facilitate national evaluation and reporting. In order to track and report on the effectiveness of SWG-funded conservation actions, appropriate data needs to be collected and aggregated from state and national level databases.

Databases will need to track results from specific management *actions* undertaken as part of individual *projects* and/or *grants*, as well as provide a consistent means for reporting these data at a local, regional, state, or national level in a meaningful way. For example, a state agency may be interested in tracking the effectiveness of its land protection actions to improve the status of SGCN by tracking the number of priority acres placed under easement, while at a national level the USFWS may be interested in learning what percentage of priority acres, in all states, have been protected using State Wildlife Grant funding. If each state were recording both total acres targeted and total acres protected in a similar manner in an accessible database, this information could be 'rolled-up' across states to capture information on SWG effectiveness at regional or national scales. The effectiveness data that should be captured and aggregated will need to include both quantitative indicators (e.g. number of acres protected, population estimates, financial records) as well as more qualitative assessments (e.g. a story or project narrative) that can meet the needs of different audiences.

To date, Federal, State, and Tribal agencies as well as national and regional conservation organizations have developed a variety of databases and other related Information Technology (IT) tools that support at least some of the data collection and storage needs for tracking and reporting on the effectiveness of conservation actions. No single database, however, currently exists that would enable States to meet all of the IT needs to support the framework for measuring the effectiveness of conservation actions outlined in previous sections of this report.

The Working Group reviewed the existing IT tools and provided guidance as to how states might select the tools that would make most sense for their overall IT needs, focusing in particular on databases that can aggregate, store, and manage information about wildlife conservation and management actions. The Working Group established criteria for the ideal database, reviewed how each candidate database performed against these criteria, and then developed recommendations about how states can work both individually and within larger partnerships to develop and deploy the best set of tools for their state's needs.

3.2 Evaluation of Existing IT Tools

Three fundamental principles guided our efforts to develop criteria and evaluate existing IT tools:

- There is a core set of data fields and functions that characterize the ideal database for assessing the effectiveness of wildlife conservation and management actions.
- There are many existing databases that already perform some of the required tasks, but none currently meet all the characteristics of a database for tracking the effectiveness of wildlife conservation and management actions.

- The most cost-effective approach for tracking the effectiveness of actions will be to use a suite of tools, taking advantage of their existing strengths, and to cooperate in advancing the interoperability and functionality of these tools to create a robust network that easily shares data and reduces the need for redundant data entry.

Characteristics of the Ideal Database

The Working Group developed criteria for the ideal database through an iterative process. Our starting point was the NEAFWA Performance Monitoring Framework, *Appendix 10: Proposed Data Fields for Strategy Effectiveness Database*. These were then refined based on the needs and priorities that emerged from the Working Group. A full set of the criteria recommended by this working group can be found in Appendix V of this report.

The five types of criteria to evaluate the existing databases include:

1. **Key data fields** that cover the range of information required to report on the effectiveness of wildlife conservation and management actions (e.g., actions, projects, conservation targets, viability, threats/stressors, work plan tools, budget tools, and project status).
2. **Spatial data** characteristics that are important for conveying mapped information (e.g., capability for spatial analysis, base maps, spatial import/export capability, and graphical diagrams such as results chains).
3. **System design and administration** characteristics (e.g., ease of use, privacy control, user access control, data quality control, and data import/export).
4. **Business model** characteristics (e.g., licensing structure, hosting model, and number of states currently using the system).
5. **Use of standard structures and terms** common within the conservation community (e.g., standard taxonomies for plants and animals, and standards adopted by the Conservation Measures Partnership).

Existing Data Management Tools

The Working Group reviewed eight existing or emerging data management tools most widely used by states or their conservation partners. This list is a subset of the many tools currently in use. In particular, several state agencies have implemented state-specific data management tools that are not covered here. However, one of the Working Group's desired outcomes is for more states to adopt common tools, or to design their own systems for full interoperability and data sharing. Thus, by highlighting tools in use across multiple states, the Working Group hopes to encourage their future adoption by others, or alternatively, the development of state-specific tools that are explicitly designed to be fully interoperable with multi-state norms.

This section summarizes the purpose of each data management tool, and the strengths of each for measuring effectiveness of wildlife conservation and management actions. Additional information about the strengths and weaknesses of each tool relative to the characteristics of the ideal database can be found in Appendix V.

A key way in which data management tools differ is in their units of analysis - what constitutes a record or row in the database. For instance, some are organized around species or ecosystems. Others are organized to track projects, actions, or specific grants. In general, data management tools that focus on projects and actions are the most appropriate for evaluating and reporting on the effectiveness of conservation actions. But tools that have species or habitats as their main unit of information provide an essential link between project databases and the impact of all, cumulative actions on the status of the species of greatest conservation need and their habitats.

The data management tools reviewed also represent the trade-offs inherent between power and simplicity. On the one hand there are tools that are very easy to use. They are designed to be intuitive, and useful to the lay person without any training. These tools are particularly suited to being implemented by large numbers of people who may use the system intermittently. But the focus on simplicity does impose constraints on the user's ability to customize the inputs, outputs and the user interface. Other tools are very powerful, offering the ability to manage complex spatial data sets and relationships between information elements, as well as a high degree of user flexibility for reporting and analysis. The consequence of this complexity is that these tools require users to have more expertise and training, and sometimes even require specialists to operate them, thus limiting the range of people who can have direct access to the source information.

Finally, it is worth noting that this assessment of existing data management tools generally focuses on their current capabilities. Yet all of these are "living systems" that continuously evolve to meet emerging needs in their intended user communities, and all aspire to be useful to state fish and wildlife agencies working to implement their SWAPs. The developers of the Conservation Registry, Miradi, Wildlife TRACS, and Biotics/NatureServe Explorer, in particular, have been deeply engaged with AFWA to keep abreast of State requirements and plan for future enhancements.

Database Systems that Use Projects as the Main Unit of Analysis
(Tools are listed in alphabetical order. Full descriptions of each tool are included in Appendix V.)

- **ConPro** (conpro.tnc.org) – ConPro is an online database originally developed by The Nature Conservancy to track its conservation projects. ConPro is working with the Conservation Measures Partnership and Miradi to open up the system to non-TNC users. This will include the ability for states to create custom portals for tracking conservation projects, as well as the ability to set granular data access controls.
- **Conservation Registry** (www.conservationregistry.org) – The Registry is an online application that states can use to share information and knowledge including text that describes each conservation project, the actions associated with the project, the status of the actions (e.g., "in progress"), and supplement the data with hot links and reference materials. The tool is maintained by Defenders of Wildlife (www.defenders.org), and there are no limitations on who can use the Registry.
- **HabITS** – HabITS is a centrally-hosted, geo-spatial database for the USFWS Partners for Fish and Wildlife and Coastal Programs to track agreements, projects and sites. HabITS also includes work plan and budgeting tools that track staff days and financial contributions. At this time, access to the system is limited to the Partners for Fish and Wildlife Program with a high level of privacy protection, but some level of public access is being considered for the future.
- **Miradi** (www.miradi.org) – Miradi is a project management, desktop software application designed to help program managers organize and track project activity through conceptual models and results chains (for example, all of the results chains diagrams in this report were produced using Miradi). Among all the software evaluated, Miradi has the most highly developed set of tools for documenting and tracking indicators of project performance. It does not include spatial GIS data, but that is a planned enhancement for the future.
- **Wildlife TRACS** (www.fws.ekosystem.us) – Wildlife TRACS is a new, online database under development by the USFWS and being piloted by Washington Department of Fish and Wildlife. A prototype is planned for release at the 2010 AFWA Annual Meeting, with full deployment to the states in 2011. Wildlife TRACS is the only data management tool that is explicitly being designed to facilitate WSFR/FWS tracking and reporting on federal assistance grants, including SWG. The design team includes representatives from state fish and wildlife

agencies, AFWA, and many of the organizations that maintain the other data management tools listed here (Conservation Registry, HabITS, Miradi, Biotics) to create a forum for planning future interoperability among these systems and incorporating key recommendations of this report.

Other Important Systems

- **Biotics 4** (www.natureserve.org/prodServices/biotics.jsp) – Biotics 4 is a desktop application designed to integrate into the workflow of state natural resource agencies. By using national standards to track changes in the status of conservation targets (species or ecosystems), Biotics fulfills a critical long-term requirement for measuring effectiveness. The system is currently deployed in 46 US states and Puerto Rico, as well as Canada and Latin America. The remaining states all use fully compatible and interoperable systems.
- **DataBasin** (http://databasin.org) – This is an online tool for sharing and visualizing spatial data. DataBasin's larger objective is to create a vibrant, online community of conservation practitioners who self-organize into interest groups that share and improve spatial data. Although DataBasin is not currently set up to deliver data via web services, it should be a valuable source of quality spatial data that states can integrate into their SWAP analyses.
- **NatureServe Explorer Web Service** (http://services.natureserve.org/index.jsp) – This tool provides free and open access to virtually all of the data maintained in the Biotics 4 data system, except for sensitive spatial data. This web service provides direct access to data on the status, distribution, range, taxonomy (including synonyms), habitat preferences, threats and management needs of over 53,000 species of the United States for incorporation into state-based data systems or other tools such as Wildlife TRACS.

Creating a Robust "IT Ecosystem"

As stated above, no single database currently exists that would enable states to meet all of the IT needs to support the framework for measuring the effectiveness of conservation actions outlined in previous sections of this report. Instead, there is an "IT Ecosystem" in which multiple databases and other tools fill different niches required by diverse agencies and organizations. The key is to ensure that the various components fit and link together to create a robust overall IT Ecosystem. In particular, we need to make sure that these different tools seamlessly hand-off information to one another. For example, projects that are managed locally in Miradi Software might then automatically upload their information to Wildlife TRACS, ConPro, or the Conservation Registry. These databases could then also pull in information about conservation targets from Biotics, and perhaps threat information from a map layer within Data Basin. They could then also export this information to www.grants.gov. There are many social, economic, and logistical issues that will need to be overcome in order to realize this vision and advance the conservation and stewardship of our fish and wildlife heritage, but the vision is technically feasible and will reduce costs and workload in the future.

3.3 Recommendations for IT Needs

Effective tracking and reporting of conservation actions will depend on the continued role of States in measuring SWG effectiveness and developing appropriate IT tools as described in this report. The Working Group offers three recommendations:

- **Use common mapping, data and measurement standards wherever possible.** Each state has its own unique requirements that drive its information technology needs. However, to facilitate data sharing and roll-up of effectiveness measures as requested by Congress, states with existing IT systems should incorporate standard data structures and terms in their own systems. States needing to develop new systems should consider

adopting one or more of the tools described in this report that meet these standards. If the Working Group is extended, a priority should be to develop a reference of data standards for states.

- **Work with the US Fish and Wildlife Service to ensure that Wildlife TRACS can collect and share effectiveness measures as outlined in this report.** The fish and wildlife conservation community has a unique opportunity to promote and influence the development of Wildlife TRACS to support effectiveness measures collection, data integration from existing tools, and reporting to meet various audiences' needs. If the Working Group is extended, members should collaborate with the US Fish and Wildlife Service and its contractors on AFWA's behalf to ensure that Wildlife TRACS meets the data collection and sharing needs articulated in this report. In addition, States should directly give input into the design of Wildlife TRACS, and address gaps in compatibility to make their current data systems interoperable with Wildlife TRACS.
- **Participate in development of IT systems that share data via linked networks.** To meet all of the IT requirements for tracking and reporting the effectiveness measures framework outlined in this report while minimizing redundant data entry, state fish and wildlife agencies should:
    - Establish data management practices that encourage participation in data sharing networks,
    - Support active participation of state information managers in groups that promote interoperability such as the Organization of Fish and Wildlife Information Managers (OFWIM), the Conservation Measures Partnership, and the state natural heritage data network, and
    - Collaborate with developers of relevant tools such as Wildlife TRACS, Biotics, Miradi, and the Conservation Registry to ensure that their tools meet state needs.


Longear sunfish/ Scott Wells

4. Extending the Framework to Assess Overall SWAP Effectiveness

4.1 Assessing Overall SWAP Effectiveness

When the State Wildlife Grants program was created, Congress required that eight elements be addressed within each Wildlife Action Plan. States used a variety of tools and techniques in drafting their SWAPs and the plans represent 56 different approaches to meeting a state's conservation priorities. As 2015 approaches, when all SWAPS must be updated, it seems an opportune time to evaluate the SWAPs to determine which aspects of the plans have been most effective at preventing species from becoming endangered. Such an effort could provide action plan coordinators and agency personnel with valuable insights. It would also provide Congress and the US Fish and Wildlife Service with data to help determine how to ensure these plans continue to be relevant.

As is the case with any evaluation or assessment, the methods that could be used to undertake this work vary in terms of their precision and cost. Depending on the audience and budget, this assessment could be done as a rapid self-assessment by one or more states or USFWS. Alternatively, it could be done as an extensive external third-party evaluation on behalf of one or more of the above groups. In all cases, however, the assessment would require laying out the core theory of change behind SWAPs as well as the indicators that could be used to assess whether this theory holds.

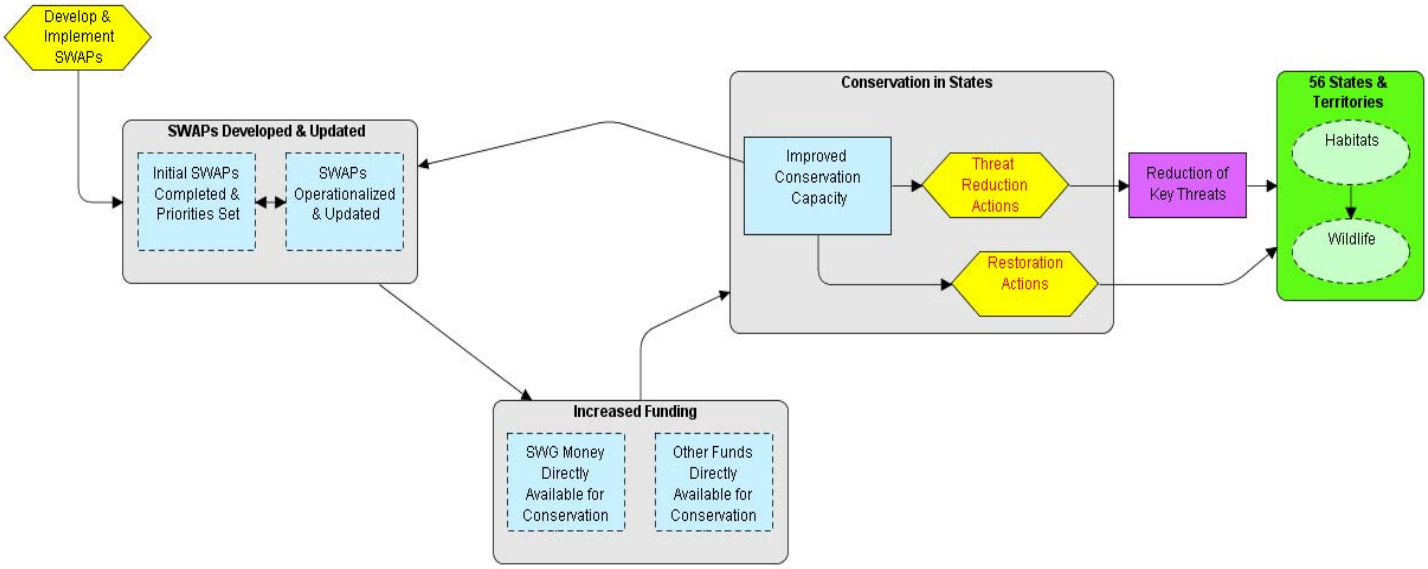
Although it was far beyond the charge of the Working Group to complete or even start such an assessment, the group did lay out the basic theory of change and present some options for how such an assessment might be done. It will be up to AFWA, the States, and the FWS to determine if and how these recommendations might be carried forward.

4.2 Proposed Results Chain and Indicators for Assessing SWAP Effectiveness

As outlined in the previous sections of this report, the basic approach for assessing the effectiveness of a given action involves laying out the theory of change in a results chain, and then determining the appropriate effectiveness indicators to monitor. This methodology can be extended to assess SWAP effectiveness by treating the development and implementation of SWAPs as one comprehensive action.

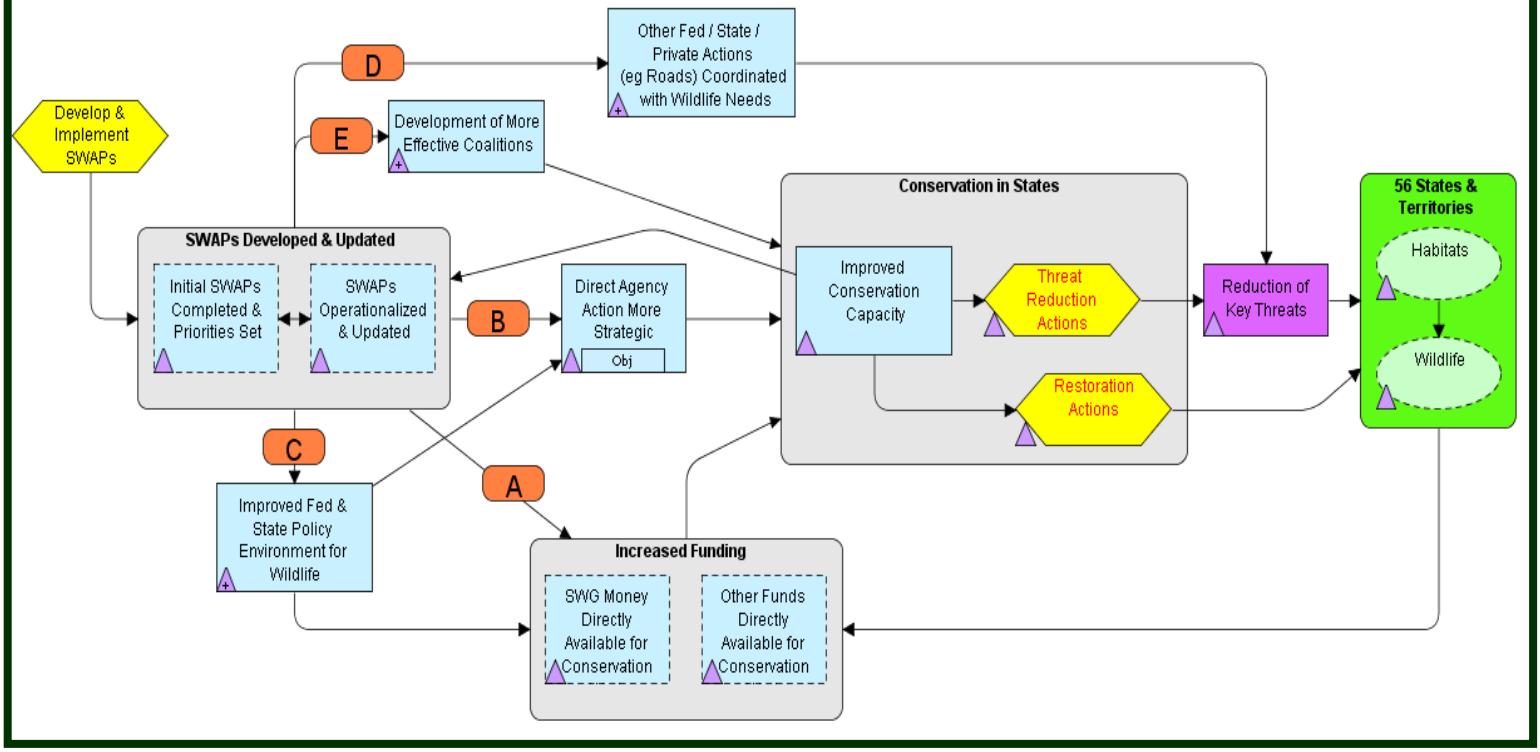
As shown on the right hand side of Figure 9, the ultimate goal of SWAPs is to improve the conservation of wildlife and their habitats in the 56 States and Territories. To achieve this ultimate goal, SWAPs are designed to improve the capacity of State Fish and Wildlife Agencies and their partners to take action to restore degraded species and habitats and to counter threats to wildlife. One main pathway by which the SWAPs lead to better Conservation in States is through Increased Funding available for conservation work through SWGs and other sources of funds. Based solely on this pathway, the net impact of the SWAP program is the "sum of the effectiveness" of these funded actions.

Figure 9. State Wildlife Action Plans Lead to Increased Funding for Conservation Work in States



However, increased funding is not the sole path by which SWAPs can improve ***Conservation in States.*** Instead, as shown in Figure 9 below, there are a series of other pathways by which SWAPs can affect ***Conservation in States***. Perhaps the simplest is Path B, which assumes that if states implement SWAPs, they will be able to be more strategic in the actions they take and fund to support wildlife conservation. Under Path C, as they implement their SWAPs, they improve the policy environment which in turn creates more funding for conservation work. Following Path D, SWAPs also enable States to better coordinate the work done by other state agencies and other actors – for example, ensuring that roads built by the transportation department take into account wildlife needs. And finally, following Path E, SWAPs enable the development of more effective coalitions of agencies and organizations, thus enhancing the ability to do better conservation.

Figure 9. Overall Results Chain and Indicators for State Wildlife Action Plan Effectiveness



Based on this chain, there are a number of indicators that could be collected to assess progress. For example, along Path B, an evaluator might assess a sample of state projects to see what percentage conform to SWAP plans. Obviously, this work would have to take into account the differing level of investment that states have for their work. Table 2 lists key indicators that could potentially be used to track progress along each of these paths.

Table 2. Key Indicators for Results Chain in Figure 9

Measure	Objective	Details
1. # "good" plans completed	Initial SWAPs Completed & Priorities Set	Need to define criteria for "good"
2. Evidence that SWAPs are Living Docs	SWAPs Operationalized & Updated	- priorities and "battle plan" (1 = no prioritization; 4 = very clear priorities) - folks refer to it in the state / incorporated into and reported on other plans - measures being collected and used
A1. Amt of SWG $$ (absolute and change)	SWG Money Directly Available for Conservation Work	
A2. $$ Available (total and change)	Other Funds Directly Available for Conservation Work	
B1. Evidence that work plans support SWAP priorities	Direct Agency Action More Strategic	Sample agency and organizational work plans in relation to SWAP priorities.
C1. Evidence of changes in Policies and Procedures and Regulations	Improved Fed & State Policy Environment for Wildlife	
C2. Improved Leadership Buy in	Improved Fed & State Policy Environment for Wildlife	
D1. % of other agency activities that "contravene" SWAP priorities	Other Fed / State / Private Actions Coordinated with Wildlife Needs	- Dept 1 (eg Transportation) - Dept 2 (eg Urban Planning)
D2. Assessment of "cooperation" by other agencies	Other Fed / State / Private Actions Coordinated with Wildlife Needs	Do agencies at least consult with SWAP before road building? Are SWAPS cited in development plans or EIAs?
E1. #s of new coalitions or coalitions that cite SWAPs	Development of More Effective Coalitions	
E2. Evidence as aggregation device...	Development of More Effective Coalitions	Are SWAPS a aggregation device for NGOs and agencies to work together???
E3. Evidence that SWAPS feeding into NGO work	Development of More Effective Coalitions	
F1. Capacity of Conservation Actors	Improved Conservation Capacity	
F2. # of / $'s Spent on Different Actions	Threat Reduction Actions	
F3. # of / $'s Spent on Different Restoration	Restoration Actions	
F4. Threat Status	Reduction of Key Threats	
F5. Habitat Conservation	Habitats	
F6. Wildlife Conservation	Wildlife	

4.3 Recommendations for Assessing Overall SWAP Effectiveness

As stated previously, it is beyond the charge of this Working Group to decide whether AFWA, WSFR, or other key players should undertake an evaluation of the effectiveness of the overall SWAP program. With that in mind, our recommendation is the following:

Authorize the Working Group to work with the Wildlife Action Plan Coordinators during their January 2011 conference to apply the methods used to craft SWG effectiveness measures and produce measures to evaluate the effectiveness of SWAPs.

Before 2015, states and partners will revise their SWAPs. During the last five years of SWAP implementation, the plans have been implemented, likely with varying degrees of success.

In preparation for the revision of all SWAPs, an evaluation of overall SWAP effectiveness could be for the following reasons:

- Inform conservation practitioners of tools, techniques approaches that were particularly successful or unsuccessful;
- Provide Congress and USFWS with clear state-supported guidance regarding the eight elements; and,
- Establish a framework for programmatic evaluations by Congress, the Administration, and others interested in the success of SWAPs.

Working Group efforts with Action Plan Coordinators would be designed to:

Recommend specifically how and if USFWS Guidelines for SWAPs should change to enhance information sharing, adaptive management and effectiveness reporting;

- Define which SWAP elements, organization, and content should be evaluated for effectiveness;
- Recommend which entities or organizations have the capacity, knowledge and resources to evaluate the effectiveness of SWAPs;
- Identify the timeframe for activities to include in the evaluation;
- Define the scope of SWAP evaluation [limited to plan or extended to the administrative structures that support them (e.g., budgeting, project prioritization processes, data management)];
- Identify which states could participate in a pilot of SWAP effectiveness measures; and,
- Define the timeline for conducting a pilot, refining measures, and rolling out the measures for future use.

5. Summary Recommendations and Proposed Next Steps

5.1 Summary of Working Group Recommendations

The following are the bottom-line recommendations drawn from each of the above sections of this report. Note that each set of bottom-line recommendations is also augmented by additional related principles that are not repeated here.

Assessing the Effectiveness of Conservation Actions

Based on its work over the past year and the results of the pilot test efforts, the Effectiveness Measures Working Group offers the following recommendations for assessing the effectiveness of conservation actions. It is ultimately up to each State to decide whether or not to implement these recommendations on a strictly voluntary basis. The Working Group's three bottom-line recommendations are:

- **Adopt the proposed voluntary effectiveness measures framework to improve accountability and project management.** In order to report on the effectiveness of conservation actions at a national scale, States or a subset of representative States should 1) adopt generic conservation actions for reporting; 2) use specific effectiveness measures and data collection questionnaires for selected actions; and 3) collect and share data on conservation actions being implemented. This framework will improve accountability and conservation outcomes.
- **Complete the framework so it applies to all generic conservation actions.** Results chains were completed for four of the fourteen identified generic conservation actions. The process used to identify measures for the four generic actions should be extended to the remaining ten actions, as well as any additional actions for which it is necessary to track effectiveness.
- **Examine how to integrate the collection of effectiveness measures data into existing grant application and reporting processes.** Most State Agency staff and budgets are already stretched thin. Successful implementation of the effectiveness measures framework will require that it become part of the routine work of grant managers and practitioners. The framework should replace rather than add to or duplicate reporting requirements. To do this, an examination of current grant application and reporting practices will be needed.

Information Technology Needs

Tracking and reporting on the effectiveness of State Wildlife Grants and other conservation actions undertaken by states agencies and their partners will ultimately require that states enter appropriate information about each action into appropriate electronic databases. The Effectiveness Measures Working Group offers three bottom line recommendations:

- **Use common mapping, data and measurement standards wherever possible.** Each state has its own unique requirements that drive its information technology needs. However, to facilitate data sharing and roll-up of effectiveness measures as requested by Congress, states with existing IT systems should incorporate standard data structures and terms in their own systems. States needing to develop new systems should consider adopting one or more of the tools described in this report that meet these standards. If the Working Group is extended, a priority should be to develop a reference of data standards for states.

- **Work with the US Fish and Wildlife Service to ensure that Wildlife TRACS can collect and share effectiveness measures as outlined in this report.** The fish and wildlife conservation community has a unique opportunity to promote and influence the development of Wildlife TRACS to support effectiveness measures collection, data integration from existing tools, and reporting to meet various audiences' needs. If the Working Group is extended, members should collaborate with the US Fish and Wildlife Service and its contractors on AFWA's behalf to ensure that Wildlife TRACS meets the data collection and sharing needs articulated in this report. In addition, States should directly give input into the design of Wildlife TRACS, and address gaps in compatibility to make their current data systems interoperable with Wildlife TRACS.
- **Participate in development of IT systems that share data via linked networks.** To meet all of the IT requirements for tracking and reporting the effectiveness measures framework outlined in this report while minimizing redundant data entry, state fish and wildlife agencies should:
    - Establish data management practices that encourage participation in data sharing networks,
    - Support active participation of state information managers in groups that promote interoperability such as the Organization of Fish and Wildlife Information Managers (OFWIM), the Conservation Measures Partnership, and the state natural heritage data network, and
    - Collaborate with developers of relevant tools such as Wildlife TRACS, Biotics, Miradi, and the Conservation Registry to ensure that their tools meet state needs.

Assessing Overall SWAP Effectiveness

It is beyond the charge or authority of this Working Group to decide whether AFWA, WSFR, or other key players should undertake an evaluation of the effectiveness of the overall SWAP program. With that in mind, our bottom line recommendation is:

- **Authorize the Working Group to work with the Wildlife Action Plan Coordinators during their January 2011 conference** to apply the methods used to craft SWG effectiveness measures and produce measures to evaluate the effectiveness of SWAPs. Working Group efforts with Action Plan Coordinators would be designed to recommend specifically how and if USFWS Guidelines for SWAPs should change to enhance information sharing, adaptive management and effectiveness reporting.

5.2 Proposed Next Steps

If the recommendations in this report are approved, then the Working Group proposes the following steps be taken.

- **Complete the Effectiveness Measures Framework.** The Working Group identified an additional 10 generic conservation actions that are frequently funded by SWG. The Working Group could help assemble and coordinate teams of state agency staff and other key partners to develop results chains and effectiveness measures for the remaining conservation actions. The teams could conduct limited pilot testing in their respective states and develop mockup reports to ensure products are practical and meet state needs. A previously scheduled meeting of wildlife diversity program managers and wildlife action plan coordinators in January 2011 could serve as a forum to review the work of the teams.
- **Continue Coordinating with USFWS on Development of Wildlife TRACS.** Members of the Working Group will continue collaborating with the USFWS and other members of an advisory committee in developing the

Wildlife TRACS reporting tool to ensure the effectiveness measures framework can be integrated into this system.

- **Integrate Framework into Grant Application and Reporting Process.** In order to facilitate the efficient collection and reporting of effectiveness measures data, changes to state and federal grant making processes may be needed. Working Group members and others should examine current grant making and reporting processes and make recommendations as to how these processes could be changed to accommodate the effectiveness measures framework and to streamline grant making and reporting processes. The Working Group would work closely with staff from the USFWS's Wildlife and Sport Fish Restoration Program and state federal aid staff.
- **Conduct Communication & Outreach Efforts.** Although the Working Group regularly communicated with the TWW Committee, agency directors, action plan coordinators and others, outreach will need to continue throughout the rollout of the framework. AFWA could hold informational web meetings in Fall 2010 to provide agency staff and others an opportunity to learn about and discuss the recommendations of the Working Group and the framework itself. The meetings would provide an opportunity for states to learn about the framework and identify potential barriers to implementation. AFWA and the Working Group could conduct briefings to the US Fish and Wildlife Service, Office of Management and Budget, congressional appropriations staff and others on the effectiveness measures framework.
- **Develop Training Materials and Coaches.** Based on the pilot test, there is a need for training to raise awareness and knowledge about results chains and effectiveness measures as they relate to the overall project cycles. The Working Group could develop materials, provide software training and serve as coaches to build capacity as appropriate. The Working Group could collaborate with ongoing related training efforts through the National Conservation Training Center and the Conservation Measures Partnership.
- **Facilitate Dialogue on the Need for Evaluation of Overall SWAP Effectiveness.** The Working Group could facilitate a discussion with states to determine if there is a need to evaluate the effectiveness of SWAPs. If a need is determined, then the Working Group could develop a scope of work and seek outside funding to assist with an evaluation in preparation for the 10 year anniversary of SWAPs.

Osprey / MI DNR

APPENDIX

APPENDIX I. PRINCIPAL CONSERVATION ACTIONS FUNDED UNDER STATE WILDLIFE GRANTS

The following 14 categories of conservation actions were identified by the Working Group as most commonly funded with SWG dollars
GREEN = pilot tested and refined; ***ORANGE*** = draft measures developed

Conservation Action	Draft Definition	Examples
Conservation area designation	Designation of a site or landscape as having unique and important value to wildlife with or without legal protections.	• Designate an area as an Important Bird Area • Designate an area as an Important Reptile/Amphibian Area • Add an area to a State Natural Area registry
Acquisition/ Easement/ Lease	Protection of land or water real property or rights through fee title acquisition, permanent easement, lease, contract, or a related means.	• Purchase land in a corridor connecting a Wildlife Management Area and a National Wildlife Refuge • Establish a perpetual easement restricting land conversion and development on a remnant tall grass prairie • Place a 20-year term contract on a privately-owned wet meadow for protection and recovery of bog turtles
Data collection and analysis	Collecting data about species and habitats and the threats to them to fill information needs; includes compilation, management, synthesis, analysis, and reporting of spatial and nonspatial data. Stand-alone research conducted to fill basic knowledge gaps; does not include research that is a minor component of implementing another action.	• Gather data on the Shenandoah salamander to define current distribution, survey methodologies and understand habitat use, and threats • Conduct surveys & genetic assessments of three North American minnow SGCNs to determine baseline population data to assist in the establishment of conservation units
Management planning	Development of management plans for species, habitats and natural processes.	• Develop a management plan for longleaf pine habitat • Develop a management plan for endangered mussels
Direct management of natural resources	Stewardship of terrestrial and aquatic species, habitats and/or natural processes to maintain populations or restore ecological functions. Includes restoration of degraded species & habitats.	• Conduct controlled burns • Manage invasive species • Remove dams and other barriers
Species reintroduction	Reintroduction, relocation or stocking of native animals or plants or translocation of animals to an area where they are not currently found.	• Translocate/breed in captivity black-footed ferrets to establish new populations in suitable habitat • Restore mussel assemblages to historically occupied stream stretches
Create new habitat/natural processes	The creation or establishment of *new* habitats or natural processes to mitigate loss of ecological functions elsewhere.	• Carry out wetland mitigation for highway construction • Create new habitat for species translocation due to climate change adaptation

Conservation Action	Draft Definition	Examples
Training & technical assistance	Provide professional training to managers, key stakeholders or others to facilitate improved or new management activities and techniques. Includes stand-alone training efforts; does not include training that is a minor or routine component of implementing another action.	• Provide technical guidance to private land owners • Provide training to managers and agency staff on new management techniques (prescribed burning, new trapping methods, etc)
Outreach & education	Outreach and education efforts targeted to specific groups, communities, resource users, policy makers, stakeholders and/or the public to improve awareness and change knowledge, attitudes and behaviors. Includes both formal (classroom) and non-formal education efforts.	• Educate boat owners on need to "scrub their bottoms" before changing locales • Conduct outreach to landowners to implement land management practices to benefit species • Providing decision makers with data about pollution impacts on at-risk aquatic species to help them set water quality standards for key water bodies
Land use planning	Leading or participating in land use planning for rural, urban, or agricultural lands.	• Develop county-wide zoning plans • Participate in workgroup regarding low impact development siting • Develop city plan for implementing best management practices for stormwater management
Environmental review	Review of non-conservation oriented policies, projects and plans to help ensure impacts to wildlife are minimized and benefits maximized.	• Review state highway plans • Review forest concession management plans • Review transmission corridor siting
Economic incentives	Development and delivery of economic incentives to private landowners to influence responsible stewardship of land/water and specific species	• Provide financial compensation for livestock loss due to the reintroduction of wolves • Stewardship payment to a landowner practicing sound resource management
Partner engagement	Engaging state and federal agencies, tribal entities, the NGO community and other partners to achieve shared objectives and broader coordination across overlapping areas. Includes actions that primarily focus on collaboration; does not include collaboration efforts that are part of other conservation actions.	• Establish decision making processes with state agencies • Outreach with tribal governments • Convene an advisory committee to assist with implementation of a State Wildlife Action Plan
Data management and maintenance	Information technology support that includes database development and data management in support of projects This is different from data collection & analysis in that it refers to the hardware, software, and supporting infrastructure that might be developed	• Develop Wildlife TRACS (Tracking and Reporting Actions for Conservation of Species) • Develop Geographic Information System to store and map data across a single state or region

Appendix II. a: Products from Outreach & Education

A. Definition:

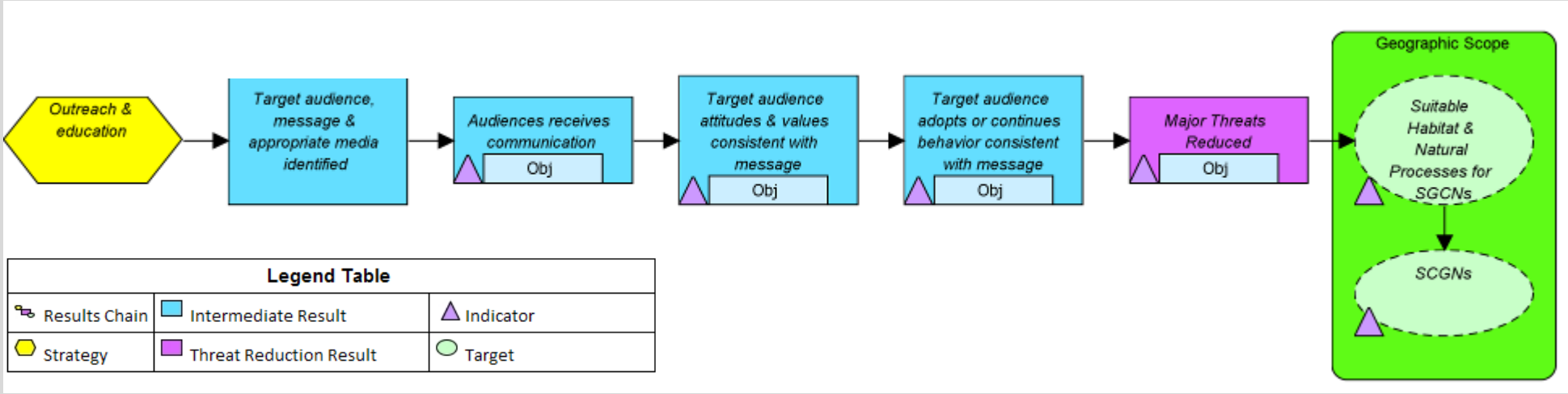
Outreach & Education is defined as "Outreach and education efforts targeted to specific groups, communities, resource users, policy makers, stakeholders and/or the public to improve awareness and change knowledge, attitudes and behaviors."

Includes both formal (classroom) and non-formal education efforts.

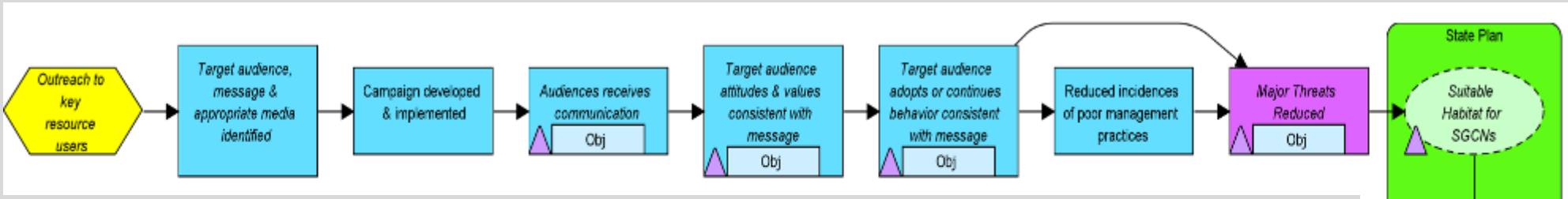
B. Real-world Examples of Outreach & Education:

1. Education of boat owners of need to "scrub their bottoms" before changing locales
2. Outreach to landowners to implement land management practices to benefit species
3. Providing decision makers with data about pollution impacts on at-risk aquatic species to help them set water quality standards for key water bodies

C. Simple Results Chain:

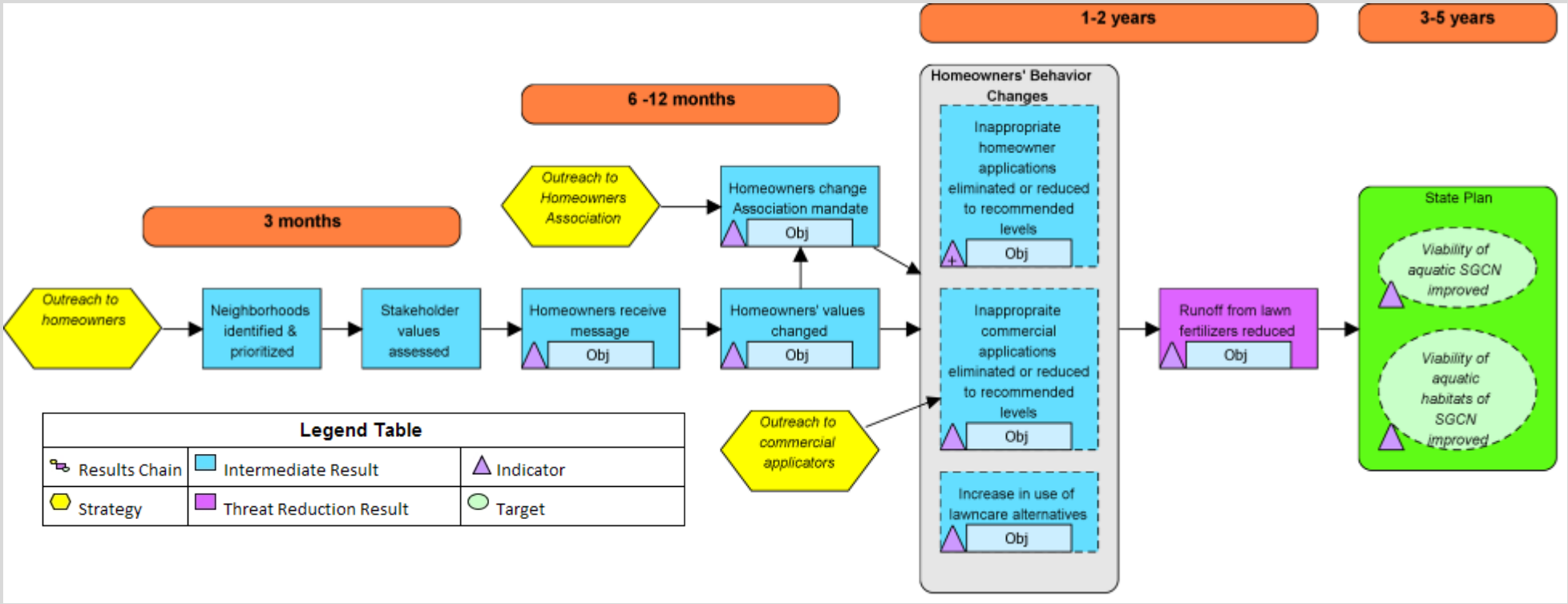


D. Complex Results Chain:



E. Example Results Chain

This example is based on a case of conducting outreach to homeowners to reduce conventional fertilizer use.



F. Cross-walk of Generic and Real-world Results, Objectives and Measures

Type	Result	Objective	Action Measure	Rolled Up Measure	Survey Questions
Generic	Target audience, message & appropriate media identified	None – should be part of application and review process	N/A	N/A	• Identify your target audiences for this outreach effort (incl. how many you intend to reach) • Identify what message you intend to share and the expected change • Identify how you will share that message • Identify how many individuals' attitudes and values you expect to influence • Identify how many individuals' behaviors you expect to influence *Note: these are suggested questions for the SWG application process. If the application process changes to incorporate these, duplicate questions below for the reporting process should be removed*
Generic	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 actions where target audience "reach" objectives were met	1. Identify your target audiences for this outreach effort *(picklist)* 2. For each target audience, identify the primary methods used to reach the audience *(picklist)* 3. For each target audience, identify approximately how many individuals or entities you: a. Wanted to reach with this effort *(numerical value)* b. Were able to reach *(numerical value)* *(% objective met autocalculated and categorized: Completely, Mostly, Somewhat, or Did not meet)* 4. If *Somewhat* or *Did not meet*: a. Indicate why your outreach effort did not reach as many individuals or entities as hoped. *(pick list)* b. Describe what you learned and whether you would (or did) do anything differently based on what you learned. *(text box)* 5. Additional comments or anecdotes (optional)
Fertilizer	Homeowners receive message	Within 4 months of the start of the fertilizer campaign, at least 90% of homeowners receive message about fertilizer impacts and alternatives	% of homeowners that receive message about fertilizer impacts and alternatives		

Type	Result	Objective	Action Measure	Rolled Up Measure	Survey Questions
Generic	Target audience attitudes & values consistent with message	Within X months/years of campaign, we increase from X% to Y% increase in target audience desired attitudes & values	% of target audience that has desired attitudes & values	% of outreach actions where target audience attitude/value objectives were met	6. For each target audience, identify approximately how many individuals with the desired **attitudes and values**: a. You had before your campaign *(numerical value)* b. You *wanted* to have after the campaign *(numerical value)* c. You *actually* had after your campaign. *(numerical value)* 7. What is the perception of **attitudes and values** based upon? *(pick list)* 8. If *Somewhat* or *Did not meet*: a. Indicate why your outreach effort did not lead to the changes in **attitudes and values** you had hoped. *(pick list)* b. Describe what you learned and whether you would (or did) do anything differently based on what you learned. *(text box)* 9. Additional comments or anecdotes (optional)
Fertilizer	Homeowners' values changed	Within 6 months of fertilizer campaign, at least 70% of homeowners surveyed has attitudes & values supportive of limiting conventional fertilizer use and/or using alternatives	% of homeowners surveyed that has attitudes & values supportive of limiting conventional fertilizer use and/or using alternatives		
Generic	Target audience adopts or continues behavior consistent with message	Within X months/years of start of campaign, we increase from X% to Y% the amount of our target audience that has adopted or continued the desired behavior	% of target audience that has adopted or continued desired behavior	% of outreach actions where target audience behavior objectives were met	10. For each target audience, identify approximately how many individuals with the desired **behaviors**: a. You had before your campaign *(numerical value)* b. You *wanted* to have after the campaign *(numerical value)* c. You *actually* had after your campaign. *(numerical value)* 11. What is the perception of **behaviors** based upon? 12. If *Somewhat* or *Did not meet*: a. Indicate why your outreach effort did not lead to the changes in **behaviors** you had hoped. *(pick list)* b. Describe what you learned and whether you would (or did) do anything differently based on what you learned. *(text box)*
Fertilizer	Homeowners change Association mandate	Within 1 year of fertilizer campaign, homeowner association creates progressive policies that support alternatives to conventional fertilizers and limit excessive use of conventional fertilizers	Existence of progressive policies that support alternatives to conventional fertilizers and limit excessive use of conventional fertilizers		
Fertilizer	Inappropriate homeowner applications eliminated or reduced to recommended levels	Within 1 year of fertilizer campaign, at least 50% of homeowners state they no longer use or have reduced their use of conventional fertilizers	- % of homeowners who state they no longer use conventional fertilizers - % of homeowners who state they have reduced their use of conventional fertilizers		
Fertilizer	Inappropriate commercial applications eliminated or reduced to recommended levels	Within1 year of fertilizer campaign, the # of orders placed with commercial applicators has decreased by 25% per year	# of orders placed with local commercial applicators per year		

Type	Result	Objective	Action Measure	Rolled Up Measure	Survey Questions
Fertilizer	Increase in use of lawn care alternatives	Within 1 year of fertilizer campaign, at least 25% of homeowners indicate they are using lawn care alternatives instead of conventional fertilizers	% of homeowners who indicate they are using lawn care alternatives instead of conventional fertilizers		
Generic	Threats reduced	Within X years of the start of the action, the desired threat reduction is seen	Threat reduction measures	% of initiatives that show a marked reduction in key threats being addressed by outreach efforts	13. Do you have evidence of this outreach action leading towards reductions in any of these threats? Y/N; Please describe **NOTE: This question could be moved under Question 8 of "General Questions"**
Fertilizer	Runoff from lawn fertilizers reduced	Within 18 months of start of fertilizer campaign, concentration of fertilizers in runoff from target neighborhoods has decreased by 25% at discharge point	Concentration of fertilizers in runoff from target neighborhoods at designated discharge point		
Generic	**Viability of SGCN habitats improved**	Goal: Within X years of the start of the action, the desired habitat improvement is seen	Habitat measures (e.g., size, condition)	Status measure – will not be rolled up	
Fertilizer	**Viability of aquatic habitats of SGCN improved**	Goal: Within 5 years of the fertilizer campaign, water quality has improved by at least 20%, compared to 2002 levels and as evidenced by the index of biotic integrity	Index of biotic integrity		
Generic	**Viability of SGCN improved**	Goal: Within X years of the start of the action, the species of interests have improved viability	Species measures (e.g., population size, reproductive success)	Status measure – will not be rolled up	
Fertilizer	**Viability of aquatic SGCN improved**	Goal: Within 5 years of the fertilizer campaign, water quality has improved by at least 20%, compared to 2002 levels and as evidenced by the index of biotic integrity	Index of biotic integrity		

G. Refined Pilot Questionnaire

This questionnaire is designed to collect the data needed for the measures listed above.

Target Audience Reach

1. Identify your target audiences for this outreach effort

   Audience 1: ☐

   ☐ Add another audience

Programming note: Allow them to identify as many audiences as they wish. Then, ask the following questions for each audience. Ideally, the audiences would be identified in the grant application process and could be auto-filled here.

2. For each target audience, identify approximately how many individuals or entities you wanted to reach with this effort and how many you were able to reach.

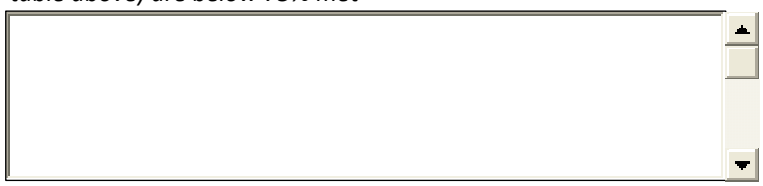
Audience	**Target # individuals to reach**	**Actual # reached**	**% Objective Met**
Audience 1 *(programming note: autopopulate from response above)*	☐ Individuals/ entities	☐ Individuals/ entities	Autofilled with % and category (see programming note)
Audience 2 *(programming note: autopopulate from response above)*	☐ Individuals/ entities	☐ Individuals/ entities	Autofilled with % and category (see programming note)
Etc.			

Programming note: Divide actual # reached/ target number to get % objective met and classify as follows:
Completely met: 100% or more of target individuals reached
Mostly met: 75-99% of target individuals reached
Somewhat met: 30-74% of target individuals reached
Did not meet: 29% or fewer of target individuals reached

3. Please indicate why your outreach effort did not reach as many individuals or entities as expected. Check all that apply. *Programming note: Show this question if one or more audience reach objectives (col. 4 in table above) are below 75% met.*

   ☐ Too early in the process to expect to meet our objective
   ☐ Audience was more difficult to reach than expected
   ☐ Wrong audience was defined
   ☐ Insufficient funding to reach as many individuals/entities as hoped
   ☐ Logistical problems in reaching the audience
   ☐ Internal agency or project management issues
   ☐ Other (Please specify _____)

4. If applicable, please describe what you learned and whether you did (or would do in the future) anything differently based on what you learned. *Programming note: Show this question if one or more audience reach objectives (col. 4 in table above) are below 75% met*



5. Additional comments or anecdotes (optional)

Target Audience Attitudes and Values

6. For each target audience, please identify approximately how many individuals had the desired **attitudes and values** before and after your outreach effort.

Audience	**# individuals with desired attitudes before outreach**	**Target # individuals for desired attitudes**	**Actual # individuals with desired attitudes after outreach**	**% Objective Met**
Audience 1 *(programming note: autopopulate from response above)*	Individuals/ entities	Individuals/ entities	Individuals/ entities	*Autofilled with % and category (see programming note)*
Audience 2 *(programming note: autopopulate from response above)*	Individuals/ entities	Individuals/ entities	Individuals/ entities	*Autofilled with % and category (see programming note)*

Programming note: Divide actual # reached/ target number to get % objective met and classify as follows:
Completely met: 100% or more of target individuals reached
Mostly met: 75-99% of target individuals reached
Somewhat met: 30-74% of target individuals reached
Did not meet: 29% or fewer of target individuals reached

7. What is the perception of **attitudes and values** based upon?

- ○ Rough guess
- ○ Attitude survey or similar data collection effort
- ○ Other (please specify _____)

8. Please indicate why your outreach effort did not lead to the changes in **attitudes and values** you had expected. Check all reasons that apply. *Programming note: Show this question if one or more attitude/values objectives are below 75% met (col. 5 above).*

- ☐ Too early in the process to expect to meet our objective
- ☐ Change in context affected attitudes and values
- ☐ Target audience was more resistant to adopting values and attitudes than expected
- ☐ Internal agency or project management issues
- ☐ Not as successful in reaching target audience as expected
- ☐ Other (Please specify _____)

9. If applicable, please describe what you learned and whether you did (or would do in the future) anything differently based on what you learned. *Programming note: Show this question if one or more attitude/values objectives are below 75% met (col. 5 above).*

10. Additional comments or anecdotes (optional)

Target Audience Behaviors

11. For each target audience, please identify approximately how many individuals had the desired **behaviors** before and after your outreach effort.

Audience	**# individuals with desired behaviors before outreach**	**Target # individuals for desired behaviors**	**Actual # individuals with desired behaviors after outreach**	**% Objective Met**
Audience 1 *(programming note: autopopulate from response above)*	Individuals/ entities	Individuals/ entities	Individuals/ entities	*Autofilled with % and category (see programming note)*
Audience 2 *(programming note: autopopulate from response above)*	Individuals/ entities	Individuals/ entities	Individuals/ entities	*Autofilled with % and category (see programming note)*
Etc.				

Programming note: Divide actual # reached/ target number to get % objective met and classify as follows:
Completely met: 100% or more of target individuals reached
Mostly met: 75-99% of target individuals reached
Somewhat met: 30-74% of target individuals reached
Did not meet: 29% or fewer of target individuals reached

12. What is the perception of **behaviors** based upon?

- ○ Rough guess
- ○ Attitude survey or similar data collection effort
- ○ Other (please specify _____)

13. Please indicate why your outreach effort did not lead to the changes in **behaviors** you had expected. Check all reasons that apply.
Programming note: Show this question for those efforts that fall into the somewhat met or did not meet categories.

- ☐ Too early in the process to expect to meet our objective
- ☐ Change in context affected behaviors
- ☐ Target audience was more resistant to adopting behaviors than expected
- ☐ Obstacles to behavior adoption were too great
- ☐ Internal agency or project management issues
- ☐ Not as successful in reaching target audience as expected
- ☐ Not as successful in changing attitudes or values as expected
- ☐ Other (Please specify _____)

14. If applicable, please describe what you learned and whether you did (or would do in the future) anything differently based on what you learned.
Programming note: Show this question for those efforts that fall into the somewhat met or did not meet categories.

15. Additional comments or anecdotes (optional)

Threat Reduction

16. What threat(s) were you hoping to address through behavioral changes related to this outreach effort?
Programming note – provide check box of IUCN CMP Taxonomy of threats (level 1 or level 2)

17. Do you have evidence of this outreach action leading towards reductions in any of these threats?
☐ Yes ☐ No

If yes, please describe:
Programming note: Only show this question if they checked "yes" above

Additional Information

18. Please provide any narratives, case studies, or additional comments you may have related to this outreach effort (optional)

Appendix II. b: Products from Data Collection & Analysis

A. Definition:

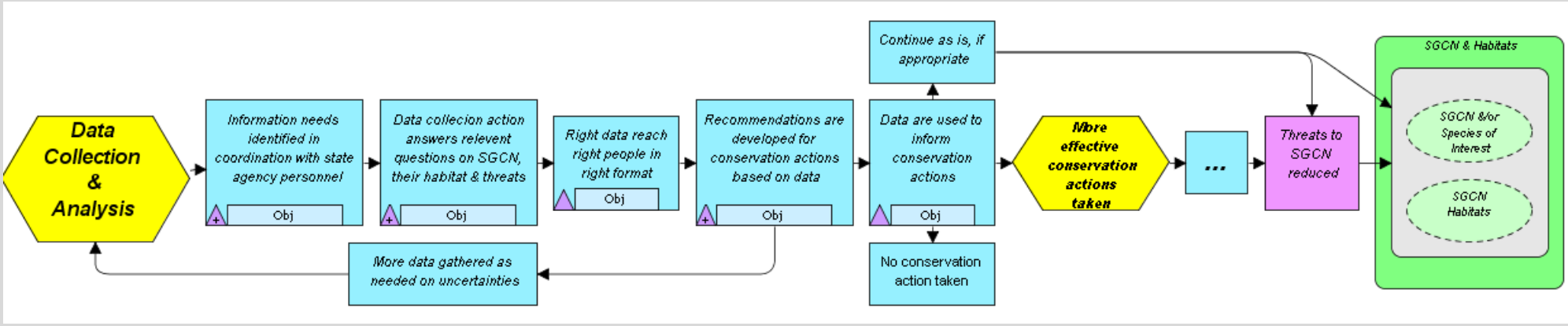
Data Collection and Analysis is defined as "Collecting data about species and habitats and the threats to them to fill information needs; includes compilation, management, synthesis, analysis, and reporting of spatial and nonspatial data."

B. Real-world Examples of Data Collection and Analysis Actions:

Gather data on the Shenandoah salamander to define current distribution, survey methodologies and understand habitat use, and threats

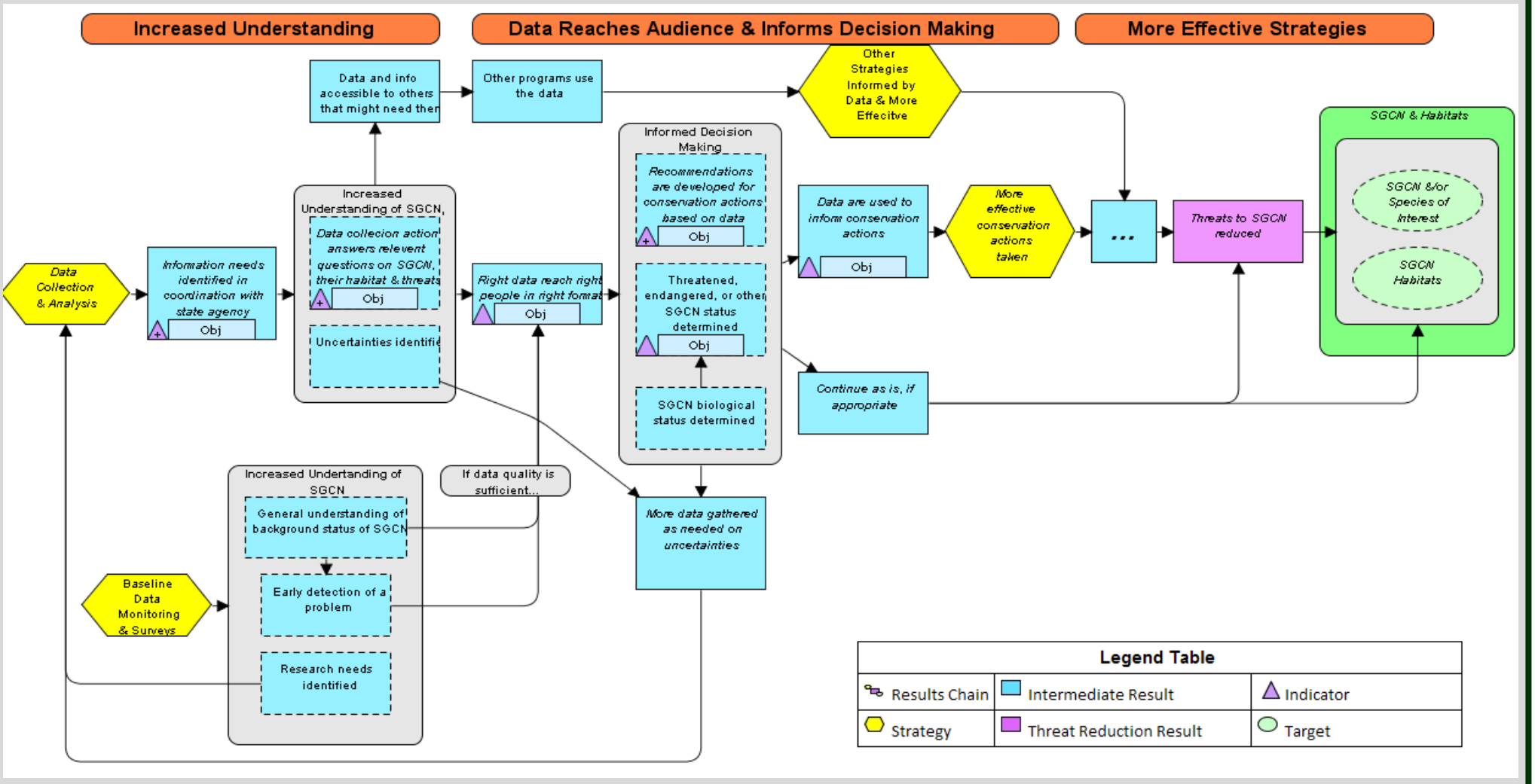
Conduct surveys and genetic assessments of three North American minnow species of greatest conservation need to determine baseline population data to help establish conservation units

C. Simple Results Chain:

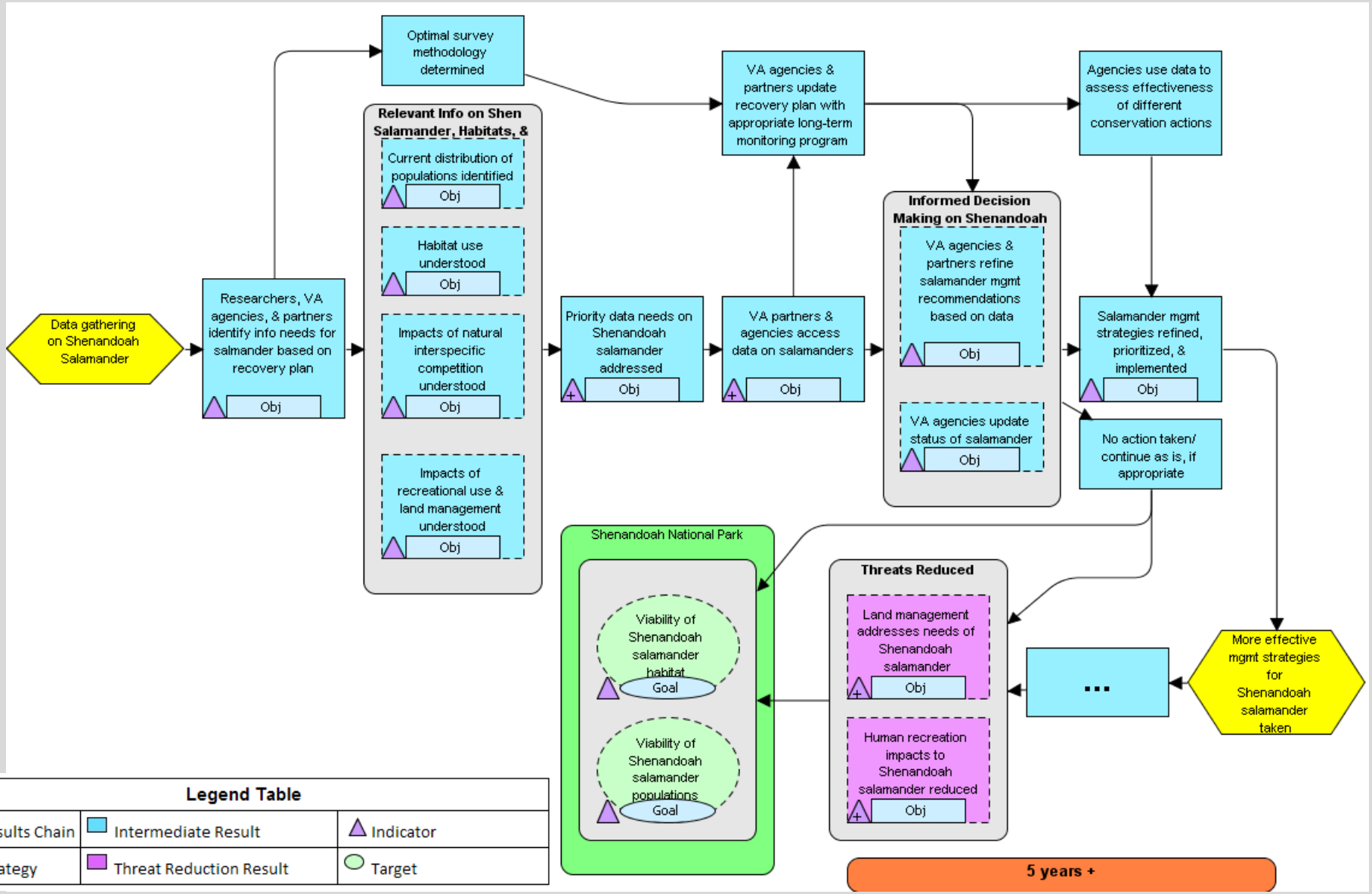


Legend Table		
Results Chain	Intermediate Result	Indicator
Strategy	Threat Reduction Result	Target

D. Complex Results Chain:



E. Example Results Chain:



F. Cross-walk of Generic and Real-world Results, Objectives and Measures

	Result	Objective	Measure: Project Level	Measure: Rolled – up	Survey Questions
Generic	Information needs identified in coordination with state agency personnel	The grant application includes clear management needs and outcomes that have been identified with input from relevant data users	Evidence that clear management needs and outcomes have been identified with input from relevant data users	** This measure is not intended for Roll-up purposes, but is designed to act as a "filter" for grant applications	1. What relevant question or information need is this Conservation Action addressing? (*Pick list of data uses; brief description of research questions)*
Shenandoah Salamander	Researchers, Virginia agencies, & partners identify information needs for salamander based on recovery plan	Within 3 months of the start of the salamander data collection effort, clear research needs and desired outcomes have been identified with input from the VA Dept of Game & Inland Fisheries, USFWS, and NPS	Evidence that the salamander data collection effort has clear research needs and desired outcomes identified with input from VA Dept of Game & Inland Fisheries, USFWS, and NPS		
Generic	Data collected answers relevant questions on SGCN*, their habitat and threats	By the end of the project/grant funding cycle the researcher clearly provides answers to relevant questions on needs identified	Evidence that the researcher clearly provides answers to relevant questions.	% of Information and Data Collection Actions in which researcher provided relevant answers to questions.	2. Did the Information and Data Collection Action appropriately answer the relevant research question? (Scale)
Shenandoah Salamander	Current distribution of populations identified	Within 6 months of the start of the data collection, researchers clearly provides data on the current distribution of Shenandoah salamander populations	Evidence that researcher provided data on the current distribution of Shenandoah salamander populations		
Shenandoah Salamander	Habitat use understood	Within 6 months of the start of the data collection, researchers clearly provides data on habitats used by Shenandoah salamander populations	Evidence that researcher provided data on habitats used by Shenandoah salamander populations		
Shenandoah Salamander	Impact of recreational use & land management understood	Within 2 years of the start of the data collection, researchers provide data on impacts of recreational use & land management on Shenandoah salamander populations	Evidence that researcher provided data on impacts of recreational use & land management on Shenandoah salamander populations		
Generic	Right data reach right people in right format	Within X months/years of start of research, appropriate audiences are accessing data	Evidence that data are reaching relevant audiences (by audience)	% of data collection efforts in which data are reaching relevant audiences (by audience)	3. For each audience, please answer the following: 4. Who is the intended end user of the data? (pick list) 5. Which end users have access to the data (pick list)
Shenandoah Salamander	VA partners & agencies access data on salamanders	Within 2.5 years of the start of the Shenandoah salamander data collection, a reporting framework for synthesizing and sharing data is in place, and appropriate audiences are accessing that data	Evidence that data are reaching VA Dept of Game & Inland Fisheries, USFWS, and NPS Existence of a reporting framework for synthesizing and sharing data on Shenandoah salamander populations		

	Result	Objective	Measure: Project Level	Measure: Rolled – up	Survey Questions
Generic	Recommendations are developed for Conservation Actions based on data	Within X months/years of the start of the data collection effort, (delete unless we can define good quality) recommendations for conservation action have been developed	Evidence that data collection effort resulted in conservation action recommendations Utility of recommendations	% of *Information and Data Collection Actions* that resulted in recommendations % of info/data actions in which recommendations were useful or appropriate for the conservation action	6. Were recommendations developed? Y/N (pick list with Y/N options)
Shenandoah Salamander	VA agencies & partners refine salamander management recommendations based on data	Within 3 years of the start of the data collection effort, VA agencies & partners develop &/or refine Shenandoah salamander management recommendations based on data collected	Evidence of management recommendations for Shenandoah salamander based on data collected		
Generic	Data are used to inform conservation actions	By the end of the project, data are being used to inform conservation actions	Evidence data are being used to inform conservation actions	**Not practical for complete roll-up	7. Has the data from this project been used to inform conservation actions? Y/N (pick list with Y/N options); If yes, tell us how
<EXAMPLE>	Salamander mgmt strategies refined, prioritized, & implemented	At least 60% of management recommendations developed for the Shenandoah salamander as a result of the data collection are being implemented	% of management recommendations developed for the Shenandoah salamander as a result of the data collection that are being implemented		
Additional Information/ Narratives					8. Please provide any narratives, case studies, or additional comments you may have related to this outreach effort (optional)

G. Refined Pilot Questionnaire

This questionnaire is designed to collect the data needed for the measures listed above.

Research Need

1. What relevant question or information need is this Data Collection & Analysis effort addressing? Check all *uses of information* that apply:

- ☐ Inform habitat acquisition
- ☐ Inform habitat management
- ☐ Inform status of habitat quality
- ☐ Track habitat status
- ☐ Inform species and habitat interactions
- ☐ Track species population status or distribution
- ☐ Inform species management
- ☐ Inform species vulnerability assessment
- ☐ Inform species relocation
- ☐ Inform efforts to mitigate a threat and/or stressor
- ☐ Adding new SGCN species
- ☐ Removing SGCN species
- ☐ Support environmental review
- ☐ Inform new state or federal legislation or policy
- ☐ Inform species or habitat recovery plan
- ☐ Assess effectiveness of previously applied conservation actions
- ☐ Other (please describe:_____)

Describe the specific research question or information need (max 1000 characters): *(programmers note: a text box should director the reporter to enter this question in the Project Description)*

2. Did the data collected appropriately answer the relevant research question(s)?

- ○ Fully answered all research questions
- ○ Mostly to Somewhat answered all research questions
- ○ Provided partial answers to research questions
- ○ Did not appropriately answer the research questions

Intended Users

3. Who is the intended **end user(s)** of the data?
Check all *intended users* that apply:

- ☐ Agency Administrators (Director, Deputies, Chiefs, etc)
- ☐ Agency Program Managers
- ☐ Agency Regional Supervisors
- ☐ Agency Field Biologists/Land Managers
- ☐ Agency Environmental Review staff
- ☐ Private Landowners
- ☐ Local, State or Federal Elected Officials
- ☐ State or Federal Regulators
- ☐ Municipality/County Land Use Planners
- ☐ Federal Partners
- ☐ Federal Funders
- ☐ NGO Partners (Private Sector)
- ☐ NGO Funders (Private Sector)
- ☐ Law Enforcement Personnel
- ☐ Colleges/Universities
- ☐ Environmental Regulators
- ☐ Other (please describe:_____)

4. Which **end user(s)** have access to the data?
Check all *intended users* that apply:

- ☐ Agency Administrators (Director, Deputies, Chiefs, etc)
- ☐ Agency Program Managers
- ☐ Agency Regional Supervisors
- ☐ Agency Field Biologists/Land Managers
- ☐ Agency Environmental Review staff
- ☐ Private Landowners
- ☐ Local, State or Federal Elected Officials
- ☐ State or Federal Regulators
- ☐ Municipality/County Land Use Planners
- ☐ Federal Partners
- ☐ Federal Funders
- ☐ NGO Partners (Private Sector)
- ☐ NGO Funders (Private Sector)
- ☐ Law Enforcement Personnel
- ☐ Colleges/Universities
- ☐ Environmental Regulators
- ☐ Other (please describe:_____)

Management Recommendations

5. Have recommendations for *Conservation Actions* (other than additional research) been developed based upon the data provided by this Information Collection and Analysis effort? (*Programmers note: flag this question for follow-up inquiries by the Service. Were recommendations made at the end of the project? Within three years of the project's end? Within five years of the project's end?)*

- ○ Yes, recommendations made
- ○ No, because: *(programming note: if "no" selected, auto drive back to project description w/ prompt – "you're being taken back to justify why recommendations were not made. If Reasoning and justification has already been made, click here↑")*
  - ☐ Too early in the process to make recommendations
  - ☐ Inadequate funding to complete data collection or analysis
  - ☐ Logistical obstacles prevented sufficient completion of the data collection or analysis
  - ☐ Data collected did not meet management objectives
  - ☐ data collected insufficient for management decision
  - ☐ Other (please describe:_____)

6. Have *end users* used the data to inform *conservation actions*? (*Programmers note: flag this question for follow-up inquiries by the Service. Were recommendations made at the end of the project? Within three years of the project's end? Within five years of the project's end?)*

- ○ Yes, *end users* have used the data
- ○ No, because: *(programming note: if "no" selected, auto drive back to project description w/ prompt – "you're being taken back to justify why recommendations were not made. If Reasoning and justification has already been made, click here↑")*
  - ☐ Spatial scale of data collected was not adequate to inform agency actions
  - ☐ Agency or *end user* priorities no longer required the data provided
  - ☐ Recommendations for data use were not in line with Agency or *end user* priorities
  - ☐ Agency had insufficient personnel to help end users incorporate the data into their conservation priorities.
  - ☐ End users did not have the ability/capacity to incorporate the data into their conservation priorities.

  Other (please describe:_____)
- ○ Unknown

If "Yes," Tell us how! (*1000 character limit)*

Appendix II. c: Products from Land Acquisition

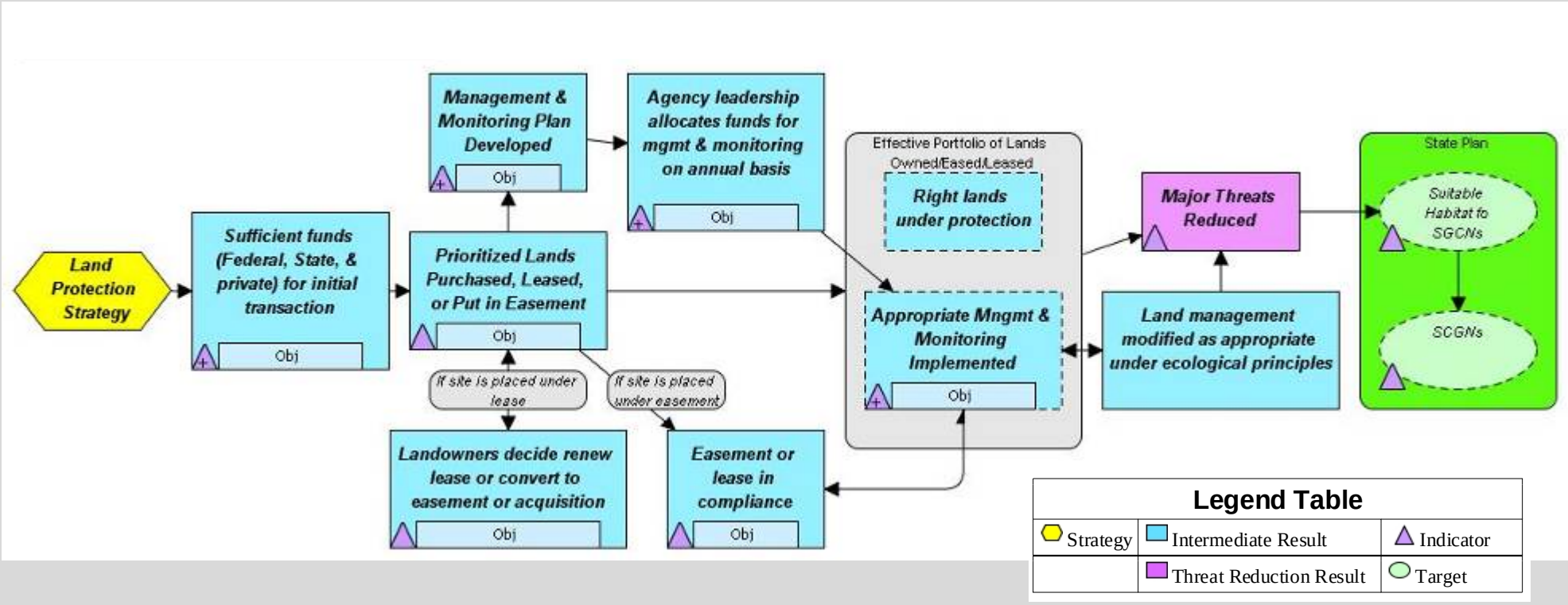
A. Definition:

Acquisition/Easement/Lease is defined as "Protection of land or water real property or rights through fee title acquisition, permanent easement, lease, contract, or a related means."

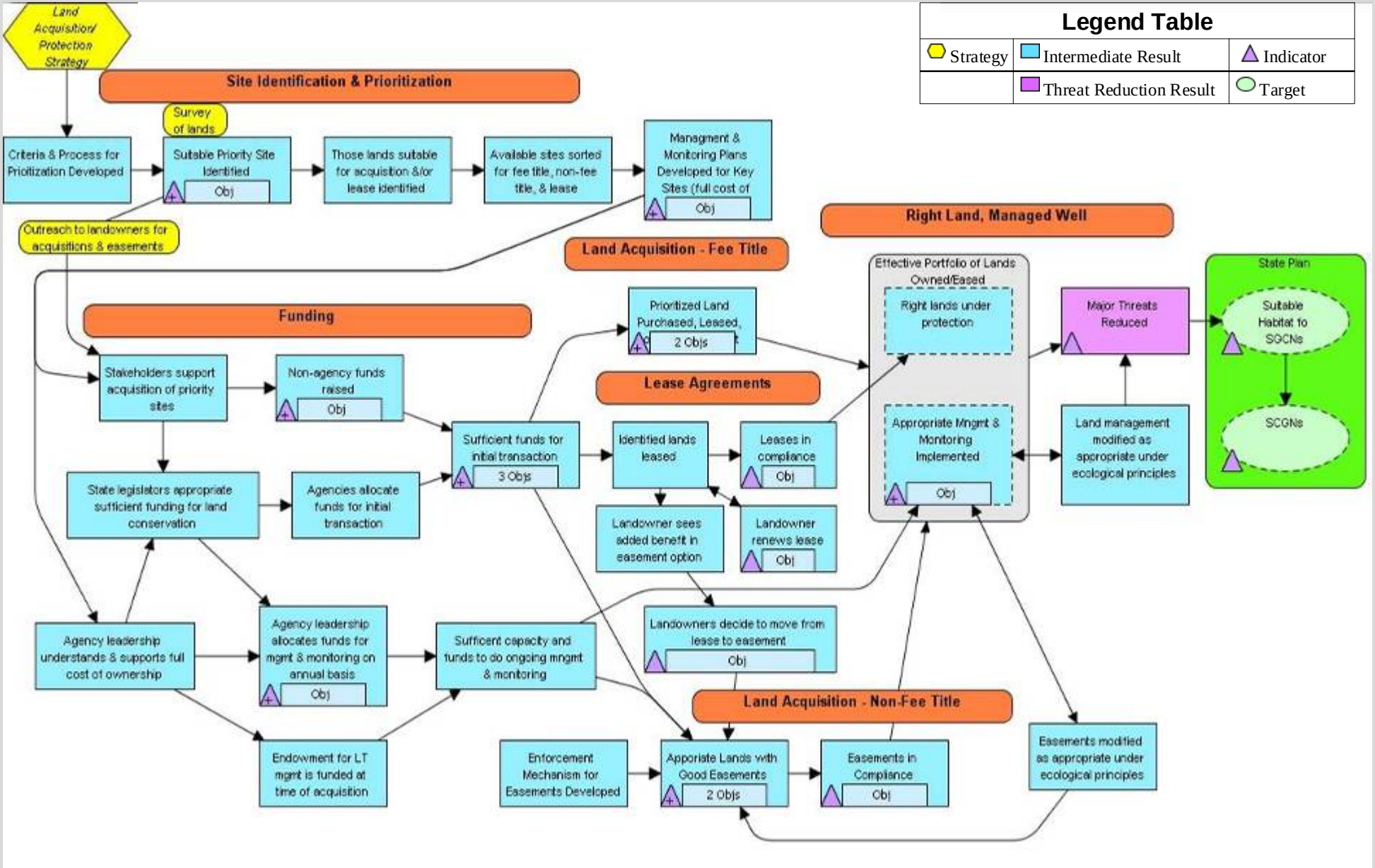
B. Real-world Examples of Acquisition/Easement/Lease Actions:

1. Purchase of land in a corridor connecting a Wildlife Management Area and a National Wildlife Refuge
2. A perpetual easement restricting land conversion and development is placed on a remnant tall grass prairie
3. A 20-year term contract is placed on a privately-owned Pennsylvania wet meadow for protection and recovery of bog turtles

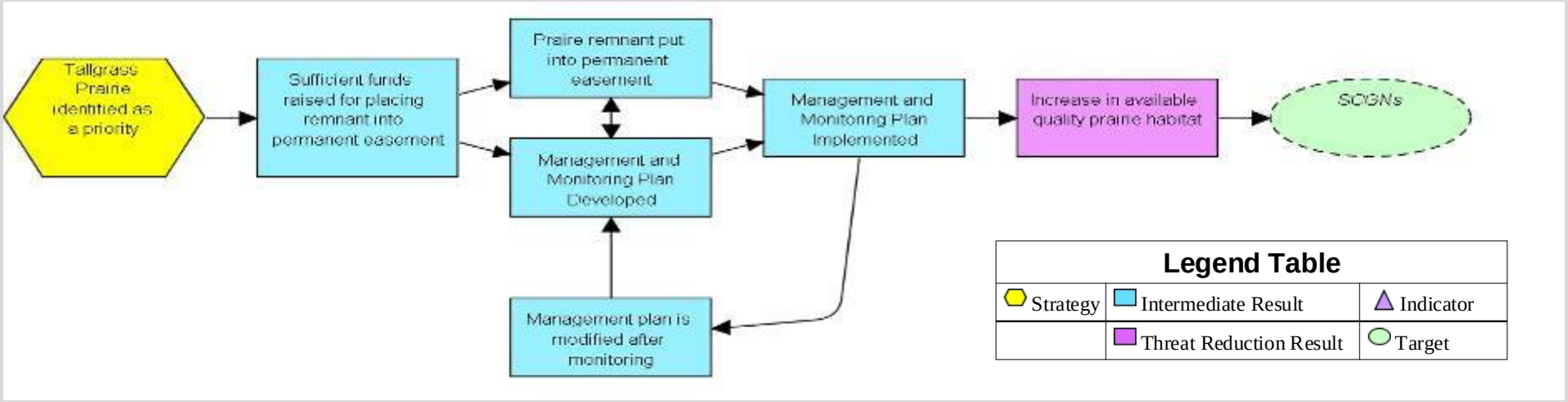
C. Simple Results Chain:



D. Complex Results Chain:



E. Example Results Chain



F. Cross-walk of Generic and Real-world Results, Objectives and Measures

Type	Result	Objective	Action Measure	Rolled Up Measure	Survey Questions
Generic	Sufficient funds (federal, state, & private) for initial transaction	At least X % of needed transaction cost comes from non-federal partnership with SWG	Amount needed/received for initial transaction	%/# of acquisitions that acquired X % of needed transaction cost with non-federal partnership	1. What is the total cost (dollar amount) of the initial transaction for purchase, lease or easement? (numerical value) 2. What is the amount received for initial transaction? (numerical value) 3. For funding sources associated with this Land Protection/Acquisition effort, estimate the dollar amount associated with each source (numerical value for each category)
Prairie	Sufficient funds (federal, state, & private) raised for placing remnant into permanent easement	At least 50% of easement fees come from non-federal partnership with SWG	Amount needed/received for initial transaction of permanent easement	% of easements acquired that raised at least 50% of needed transaction costs with non-federal partnerships	
Generic	Prioritized land is purchased, leased or put into easement	Priority site is purchased, leased, or put in an easement within X months/year of site being identified	# acres purchased, leased, or put in easement	% of prioritized land purchased, leased, or put into easement	4. Was the site identified as a priority in the State Wildlife Action Plan? a. If NO, why? (pick list) 5. Type of land protection strategy (pick list) 6. How many acres were purchased, leased or put in easement? a. Dominant habitat types and number of acres (coarse-scale pick and numerical value) 7. If lease or easement a. Date of transaction (numerical value) b. Length of contract (numerical value) c. Date of expiration (numerical value)
Prairie	Important prairie remnant is put into easement	Prairie easement is put into place within 12 months of being identified	# prairie acres put in easement within 12 months of prioritization	% of prioritized land purchased, leased, or put into easement	

Type	Result	Objective	Action Measure	Rolled Up Measure	Survey Questions
Generic	Management and monitoring plan developed	Within X months of priority site being identified, clear management and monitoring plans have been developed	Existence of a management and monitoring plan that outlines steps required leading to desired conservation results	% of protected land with a management and monitoring plans that outline steps required leading to desired conservation results	8. Was a management plan created that outlines steps required leading to desired conservation results (eg SGCN populations and habitat conditions)? Y/N; Please describe 9. Was there a monitoring plan created? Y/N; Please describe 10. Who is responsible for implementing this monitoring plan? (pick list)
Prairie	Management and monitoring plan developed	Within 12 months of priority site being identified, clear management and monitoring plans have been developed	Existence of a management and monitoring plan that outlines steps required leading to desired conservation results	% of protected land with a management and monitoring plans that outline steps required leading to desired conservation results	
Generic (not part of *this* example)	Landowners decide to renew lease or convert to easement or acquisition	At lease renewal time, landowner decides to either: a) renew lease; b) convert least to easement; or c) offer leased land up for acquisition	Evidence of lease renewal or conversion to easement or acquisition	% of protected lands that at the time of renewal are: a) renewed; b) converted from lease to easement or c) converted to acquisition	11. For lease strategies 12. Has the lease contract expired? (Y/N) 13. If the lease contract has expired has the agency attempted to renew the agreement? (Y/N) 14. If landowner has renewed was the agreement: lease or convert to easement/acquisition? (pick list) 15. If landowner has not renewed agreement, why not? (pick list; Please describe)
Generic	Easement or lease is in compliance	Each year after the easement or lease is established the easement is shown to be in compliance	Evidence of lease compliance per year	% of easements or leases in compliance	16. What proportion of years since the easement/lease contract beginning has the landowner remained in compliance? (pick list; Please describe) 17. During the past three years, has the agency had to initiate legal action to compel a landowner to comply with the terms of this easement/lease agreement? Y/N; Please describe
Generic	Agency leadership allocates funds for management & monitoring on an annual basis	At least X % of funds requested for annual management & monitoring are being spent	Amount of funding requested for management & monitoring annually; Amount of funding that that was spent on management and monitoring annually	% of requested funding that was spent on management and monitoring annually	18. How much funding was requested for managing and monitoring this lease, easement, or acquisition? (numerical value) 19. How much funding was allocated for this lease, easement, or acquisition? (numerical value)

Type	Result	Objective	Action Measure	Rolled Up Measure	Survey Questions
Generic	Appropriate management and monitoring implemented	Within X months/years of land acquisition/lease/ easement, agency is implementing appropriate management and monitoring plans at that site	Evidence of management plan being implemented	% of management plans being implemented	20. What is the extent that the management and monitoring plan is being implemented? (pick list); Please describe 21. If the management plan is being implemented, are the actions achieving the desired goals identified in the plan? (pick list, text box) 22. If management plan is not achieving desired goals, why not?(pick list, text box) 23. If the management is not having the desired effect, are management plans being updated to reflect new information? Y/N; Please describe
Additional Information/ Narratives					24. Please provide any narratives, case studies, or additional comments you may have related to this outreach effort (optional)

G. Refined Pilot Questionnaire

1. What is the total number of acres protected through this action?

2. Was the site(s) identified as a priority in the State Wildlife Action Plan?

- ☐ YES
- ☐ NO
- ☐ Not Applicable

3. IF NO, Why?

- ☐ State Wildlife Action Plan did not identify priority sites
- ☐ Site is meeting an emerging need not identified in State Wildlife Action Plan
- ☐ Other (please describe in the space below)

Comments

4. Please identify the type of Land Protection Strategy:

- ☐ Fee Title Acquisition
- ☐ Perpetual Conservation Easement
- ☐ Term Conservation Easement
- ☐ Lease/agreement/contract
- ☐ Other

If "other," please describe:

5. Please further specify the type of land protection strategy pursued:

- ☐ Term Conservation Easement
- ☐ Lease
- ☐ Agreement
- ☐ Contract
- ☐ Other (please explain)

6. What is the length (in years) of the easement, lease, agreement or contract?

7. What year does this easement, lease, agreement or contract expire?

8. What proportion of years since the easement/lease contract beginning has the landowner remained in compliance?

- ☐ Fully compliant (96-100% of years under contract)
- ☐ Mostly compliant (76-95% of years under contract)
- ☐ Somewhat compliant (46-75% of the years under contract)
- ☐ Rarely compliant (26-45% of the years under contract)
- ☐ No evidence of compliance (less than 25%)
- ☐ Unknown

If "somewhat," "Rarely," "No-evidence" or "Unknown," please explain:

9. During the past three years, has the agency had to initiate legal action to compel a landowner to comply with the terms of this easement/lease agreement?

- ☐ YES
- ☐ NO
- ☐ Unknown

Please explain if necessary:

10. Has the original lease agreement expired?

- ☐ YES
- ☐ NO

11. If "YES," when the lease agreement expired, did the agency attempt to renew this agreement?

- ☐ YES
- ☐ NO
- ☐ Unknown

12. If "YES," was the lease agreement officially renewed?

- ☐ YES
- ☐ NO
- ☐ Unknown

13. If the lease agreement was not renewed, please explain why:

- [ ] Economic - lease fee insufficient
- [ ] Changing ownership - new owner not interested
- [ ] Landowner unhappy with the lease terms or process
- [ ] Lease converted to a permanent easement
- [ ] property acquired by agency or partner
- [ ] Property no longer meets conservation goals
- [ ] Poor relationship between the landowner and the agency
- [ ] Management objectives have been met
- [ ] Other (please specify below)

Comment:

14. Has a management plan been created for this property?

- [ ] YES
- [ ] NO (please explain below)
- [ ] Unknown

If "NO" or "Unknown," please explain:

15. Who is responsible for implementing this management plan?

- [ ] Wildlife Agency
- [ ] Landowner
- [ ] Other (please specify)

16. What is the extent to which the management plan is being implemented?

- [ ] Fully
- [ ] Mostly
- [ ] Partially
- [ ] Not at all

If "Mostly," "Partially" or "Not at all," why?

17. If the management plan is being implemented, are the actions achieving the desired goals based on the plan(s)?

- Fully
- Mostly (explain below)
- Partially (explain below)
- Not at all

If "Mostly," "Partially" or "Not at all," please explain:

18. If "Not at all," why?

- Not enough time has passed
- Management actions weren't appropriate
- Funding requested for management wasn't adequate
- Weather or unpredictable hazards impeded management activity
- Unknown
- Other (please specify below)

Comments:

20. If management is not having the desired effect, have management plans been updated to reflect new information?

- YES
- NO (please explain below)
- Unknown

If "No," please explain:

21. Is there a monitoring plan in place that includes either a species or habitat monitoring component?

- YES
- NO (please explain below)
- Unknown

If "No" or "unknown," why not?

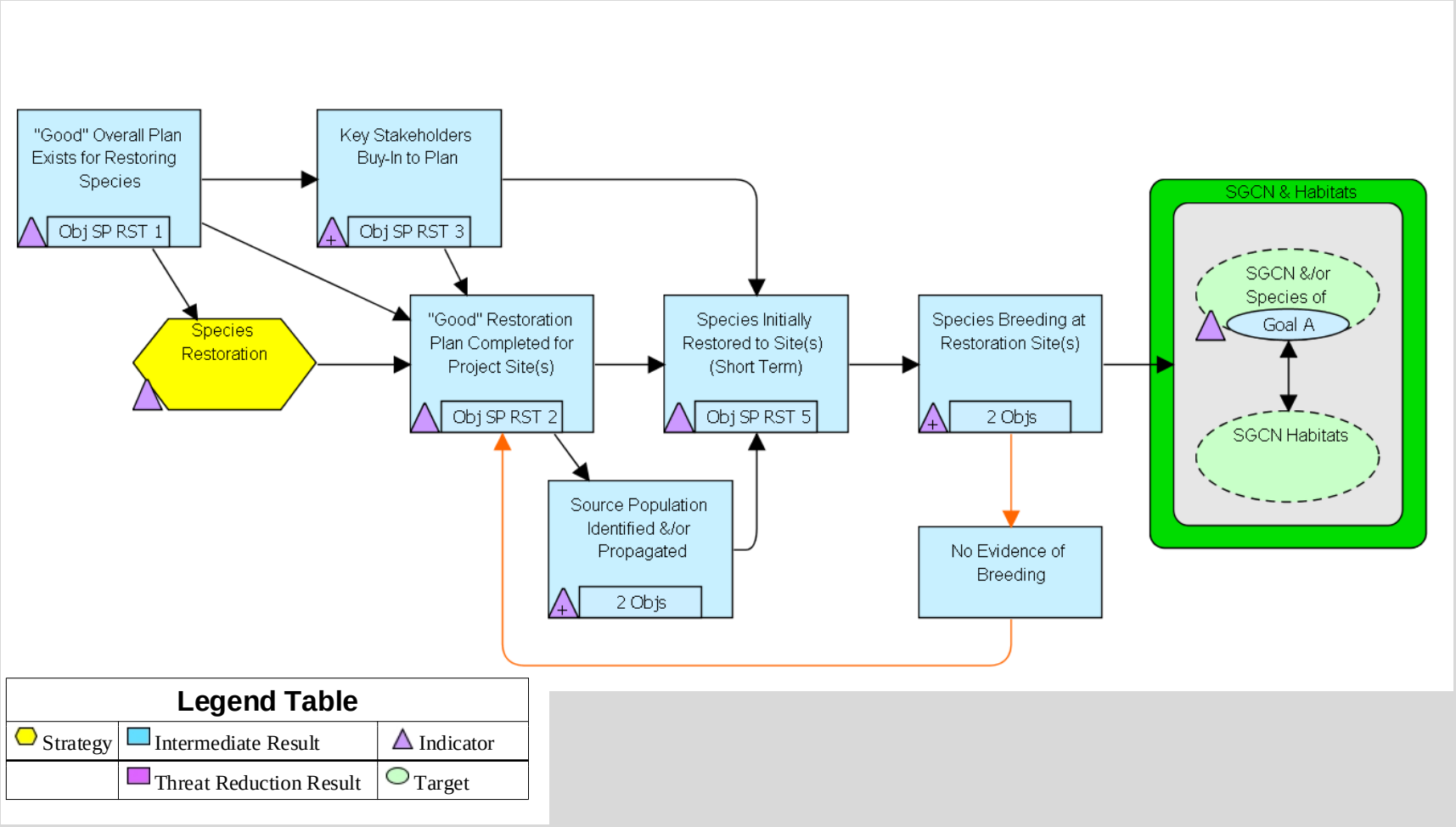
22. What is the extent to which the monitoring plan is being implemented?

- Fully
- Mostly
- Partially
- Not at all (please explain below)

If "mostly," "partially" or "not at all," why not?

Appendix II. c: Products from Species Restoration

A. Simple Results Chain



C. Cross-walk of Generic and Real-world Results, Objectives and Measures

Type	Result	Objective	Action Measure	Rolled Up Measure
Generic	SP RST 1 “Good” Overall Plan Exists for Restoring the Species	Before implementation work starts, a "good" restoration plan exists for the species across all sites (developing this overall plan will usually not be part of this project).	Presence of plan; Assessment of plan quality against criteria	% of restoration efforts that are based on a “good” plan, by taxa and by region
Generic	SP RST 2 “Good” Restoration Plan Completed for Project Site(s)	Before implementation work starts, a "good" restoration plan has been developed for the specific project site(s).	Presence of plan; Assessment of plan quality against criteria	% of restoration efforts that are based on a “good” plan, by taxa and by region
Generic	SP RST 3 Key Stakeholders Buy-In to Plan	Prior to and following implementation of the plan, all relevant stakeholder groups are either supportive or at least non-hostile towards the restoration.	Actions taken by individuals or organizations that are against the restoration (eg formal legal challenges to the plan or hostile acts such as shooting restored animals).	Total number of projects that are being blocked by stakeholders, by taxa and region.
Generic	SP RST 4 Source population identified and/or propagated	Prior to implementation of the plan, a suitable source population to meet needs of all restoration sites has been identified. If necessary, before restoration efforts start, sufficient animals have been propagated to meet needs of all restoration sites.	Evidence of suitable source population being identified. % of total animals required to meet needs of all sites	% of projects that are able to identify and/or propagate sufficient animals, by taxa and by region
Generic	SP RST 5 Species initially restored to sites (short-term)	By specified target date, the target number of units* have been introduced to Area(s) YYYY. * Units could be individuals, breeding pairs, communities, pounds of fish fry, or other measures as appropriate.	% of target number of units that are released	% of projects that are able to release sufficient animals, by taxa and by region
Generic	SP RST 6 Species breeding at restoration sites (medium-term)	Within xx years of introduction, the restored population is successfully breeding within the restoration site(s).	% of sites with restored population successfully breeding	% of all projects with restored species successfully breeding, by taxa and by region
Generic	GOAL Viable populations (long-term)	By xxxx (plan target date), a "viable" population of the target species exists at the restoration site(s). "Viable" = Meets defined viability criteria.	Viability of target populations.	% of all projects with restored species with viable population, by taxa and by region

E. Questionnaire

This questionnaire is designed to collect the data needed for the measures listed above.

Basic Action Information

1. **This project involves…:**

- ☐ Relocation of wild animals from an occupied habitat to one or more restoration sites.
- ☐ Captive propagation of animals to be released into one or more restoration sites.
- ☐ Both relocation of wild animals and release of captive raised animals into one or more restoration sites.
- ☐ Other (Describe: ____)

Notes: ____

2. What species (or other taxonomic units) are expected to benefit from this project?
   (Repeat up to 5; if more than 5 then please combine as higher level units – e.g. mussel assemblage)

Genus: ____ Species: ____ Other Units: ____

Notes: ____

3. What is the expected duration of the restoration effort in this project?

____ Years

4. What is the time frame that this report covers?

Start Date: ____ End Date: ____

5. What stage in the restoration process is this project currently in? (check the most "advanced option" reached)

- ☐ Overall Planning for Restoring the Species
- ☐ Planning for Specific Project Site(s)
- ☐ Source Population Development
- ☐ Species Actively Being Restored to Site(s)
- ☐ Active Restoration Complete; Monitoring and Follow-Up

Management Plan

6. Is this project being implemented under an overall plan for restoring the species?

- ☐ Formal Recovery Plan — Plan's title: ____
- ☐ Draft Recovery Plan
- ☐ Other Restoration Plan — Explain: ____
- ☐ No Plan

7. Does this overall restoration plan define clear biological objectives (number of populations/sites) required for recovering the species?

- ☐ Yes
- ☐ No

8. Approximately what percentage of the overall species recovery effort is represented by this project?

____ % in our state ____ % nationally Notes: ____

9. Does this restoration plan identify: 1) appropriate source(s) of the species, 2) candidate restoration sites, 3) methods for transferring and introducing the species to new sites, 4) monitoring and follow-up methods, and 5) risk assessment and mitigation steps?

☐ Plan addresses all or almost all criteria
☐ Plan addresses some criteria
☐ Plan addresses most criteria
☐ Plan address few or no criteria

Notes:

Restoration Plan

10. Has the project developed a plan for restoration efforts at the specific project site(s)?

☐ Yes
☐ No

11. Does this restoration plan identify: 1) clear biological objectives, 2) appropriate source(s) of the species, 3) methods for transferring and introducing the species to the sites, 4) monitoring and follow-up methods, 5) a budget and work plan for this work, 6) clear exit criteria for the project (both unsuccessful and successful) , and 7) risk assessment and mitigation steps?

☐ Plan addresses all or almost all criteria
☐ Plan addresses some criteria
☐ Plan addresses most criteria
☐ Plan address few or no criteria

Notes:

12. What is the "unit" for defining restoration site(s)?

☐ Defined geographic locations
☐ Other
☐ Populations of animals

Describe if needed:

13. How many total site(s) is the project targeting for restoration efforts?

Number of sites:

Describe if needed:

Key Stakeholders Buy-In to Plan

14. During the reporting period, were there any formal challenges by stakeholders to prevent the release of the target species into the restoration sites?

☐ Yes
☐ No

15. If yes, was the project team able to mediate these challenges?

☐ Complete
☐ Some
☐ Most
☐ Few or none

Source Population Identified and/or Propagated

16. Has the project identified a suitable source of animals to meet needs of all sites in the restoration effort?

☐ Source(s) identified to provide all of the animals needed (100%)
☐ Source(s) identified to provide some of the animals needed (approximately %)
☐ Source(s) not yet identified to provide needed number of animals
☐ Captive breeding/propagation required to augment source population

If propagating animals:

17. What percent of total animals required to meet needs of all sites in the restoration effort have been bred?

%

Notes:

Species Initially Restored to Sites (Short-Term)

18. Has the project begun releasing species to restoration site(s)?

☐ Yes ☐ No

19. What percent of initial release work across all restoration sites has been completed? (combines both within site and across sites)

_____% Notes: _____

20. What is the "unit" for measuring quantities of species released within restoration site(s)?

☐ Individuals ☐ Communities

☐ Breeding pairs or units ☐ Other (eg pounds of fish fry)

Please describe if needed: _____

21. How many units of the species have been reintroduced? [we would need for up to 5 species]

_____ total units across all sites Notes: _____

Species Recruitment (Medium-Term)

22. Are the introduced populations breeding within the recovery site(s)?

☐ Yes, at all sites ☐ Yes, but only at some sites (_____% of sites)

☐ No documentation of breeding occurring

☐ Too early to expect breeding ☐ Insufficient monitoring in place

☐ Problems with restored population(s)

Notes: _____

23. What is the "unit" for measuring successful reintroduction of the species within restoration site(s)?

☐ Individuals ☐ Spatial coverage (eg miles of stream)

☐ Breeding pairs or units ☐ Other

☐ Populations Describe if needed: _____

24. How many units of the species are present in the recovery sites?

_____ total units across all sites Notes: _____

Viable Populations (Long-Term)

25. Are the introduced populations viable within the recovery site(s)?

☐ Yes, at all sites ☐ Yes, but only at some sites (_____% of sites)

☐ No documentation of viability

☐ Too early to expect viability ☐ Insufficient monitoring in place

☐ Problems with restored population(s)

Notes: _____

26. Has the population goal for the target species within the restoration site(s) been achieved?

- ☐ Yes, at all sites for all species
- ☐ Yes, but only at some sites or for some species
- ☐ No

Notes:

27. Has this project contributed to any changes regarding the conservation priority status (SGCN priority, Threatened/Endangered, etc.) of the target species in your state? (Check all that apply)

- ☐ No change to SGCN priority, State ESA priority, or Federal ESA priority
- ☐ Remove from state ESA list
- ☐ Remove from Federal ESA list
- ☐ Change to lower SGCN priority within the Wildlife Action Plan
- ☐ Change to higher SGCN priority with the Wildlife Action Plan
- ☐ Change to higher priority within state ESA list
- ☐ Change to higher priority within Federal ESA list

Notes:

APPENDIX III. DRAFT RESULTS CHAIN, OBJECTIVES & MEASURES FOR DIRECT MANAGEMENT OF NATURAL RESOURCES

Products from Direct Management of Natural Resources

A. Definition

Direct Management of Natural Resources is defined as "Stewardship of terrestrial and aquatic species, habitats and/or natural processes to maintain populations or restore ecological functions."

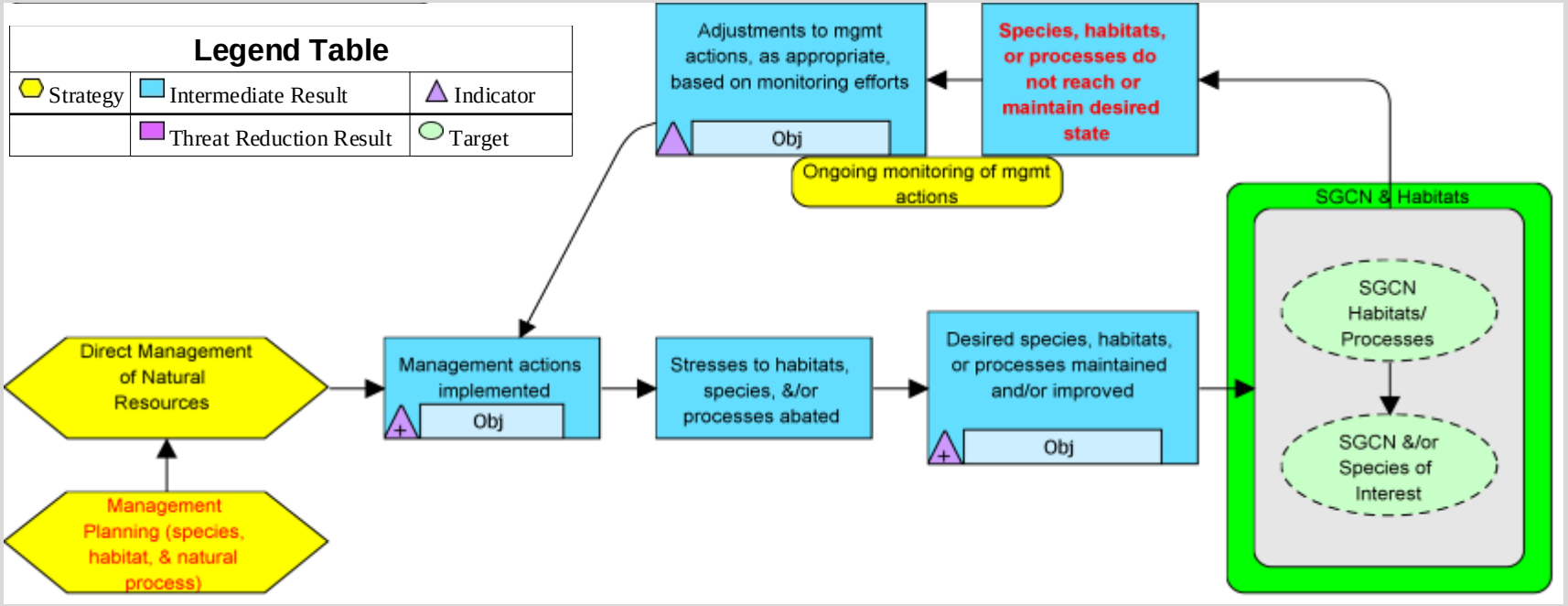
Includes restoration of degraded species and habitats that are at the site, but not reintroductions of species or creation of new habitat.

B. Real World Examples of Direct Management Actions

1. Conduct controlled burns
2. Manage invasive species
3. Remove dams and other barriers

C. Simple Results Chain

Note that this chain starts at the actual implementation of species/habitat/process management and maintenance. We are assuming that an application or review process would determine the degree to which this is an appropriate conservation action. As such, this chain does not address the preliminary planning and review phases.



D. Summary Table of Draft Generic Objectives and Measures

This table is based off the results chain above and summarizes, by result (blue box) a generic objective and associated measure for the action. It also includes the "rolled up" measure to be used when summarizing results across states and/or regions. This is a draft chain that has not been widely vetted and should be considered a starting point for further work in the future.

Result	Objective	Action Measure	Rolled Up Measure
Management actions implemented	Within X months/years of receiving funding, at least X% of mgmt actions are implemented	# mgmt actions implemented # mgmt actions proposed	% of management/ maintenance efforts that are meeting their action implementation objectives (implementing the desired percentage of management actions)
Desired species, habitats, or processes maintained and/or improved	Within X months/years of implementing actions, at least X% of desired species, habitats, or processes are maintained or improved	# of species, habitats, or processes that project maintains or improves # of species, habitats, or processes that project wants to maintain or improve	% of management/ maintenance efforts that are meeting their species/habitat/ process maintenance/improvement objectives (implementing the desired percentage of management actions)
Adjustments to mgmt actions, as appropriate, based on monitoring efforts	Within X timeframe of monitoring results, project team has adjusted management actions in those cases where habitat, species, &/or processes are not maintained or improving as expected	Evidence that project team has adjusted mgmt actions in those cases where habitat, species, &/or processes are not maintained or improving as expected	% of management/ maintenance efforts in which evidence exists of adjustments to management actions in those cases where habitat, species, &/or processes are not maintained or improving as expected

Mock-up Example of 2-Page Layout for Reporting on Conservation Actions

Effectiveness of Species Restoration Efforts

What Does This Include?

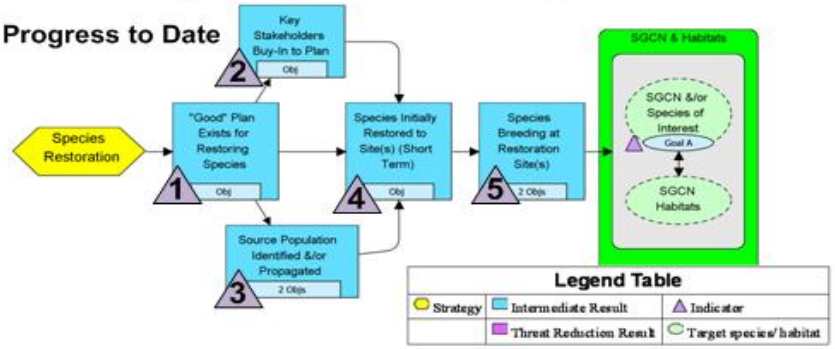
Efforts to reintroduce, relocate, or stock native animals or plants or translocate animals to an area where they are not currently found. Some examples include:

- Translocating/breeding in captivity black-footed ferrets to establish new populations in suitable habitat.
- Restoring mussel assemblages to historically occupied stream stretches

How Do We Measure Effectiveness?

Establishing good effectiveness measures for conservation actions requires being clear about the linkages among conservation actions, changes in threats those actions are designed to address, and the status of the relevant species and habitats. Laying out this "theory of change" isolates and limits the key factors that need to be monitored in order to assess whether our conservation actions are leading to the intended outcomes or changes.

Progress to Date



115 species restoration grants to 28 states were made from 2008-2010. The majority of those led to species breeding at restoration sites.

Effectiveness of Funded Species Restoration Efforts

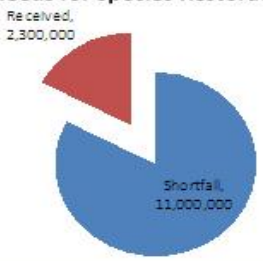
1. 90% of efforts have "good" plans that meet key criteria
2. 70% have stakeholder support to move the efforts forward
3. 81% have identified or propagated sufficient species to meet restoration needs
4. 65% have released sufficient species for initial restoration
5. 47% show restored species are breeding successfully

For more info: www.swgdb.org/species-restoration/

Where Do We Go From Here?

While much has been accomplished with funding for species restoration, the support is currently not adequate to meet conservation goals established by states to protect Species of Greatest Conservation Need and their habitats. Consequently, species restoration efforts are falling short. Specifically, it is estimated that states require an additional $11 million dollars to meet their goals for species restoration activities.

Funding Needs for Species Restoration



Stories from the Field

Washington Department of Fish and Wildlife and partners, with SWG support, are helping conserve and restore western pond turtle populations - a state endangered species that has been impacted by habitat loss and non-native predators like large-mouth bass and bullfrogs which eat young turtles.

As part of their recovery strategy, managers implemented a "head start" program for captive bred and wild hatchlings. The young turtles are raised in captivity until they are too large to be eaten by bass and bullfrogs – at which point, the turtles are released into suitable habitats to augment existing or create new populations.

In 2007, Washington achieved goals for restoring at least four self-sustaining populations in the Columbia Gorge. Although efforts to restore this species to Puget Sound recovery areas continue, meeting the Columbia Gorge recovery goals means it is unlikely this species will be extirpated or require protection under the Federal Endangered Species Act

Photos by Kate and Frank Slavens

Questions to Explore

- How can states better engage stakeholders and explain practical benefits of species restoration to improve support?
- Under what conditions does it make sense to do species restoration versus other less labor and cost intensive, like outreach or economic incentives?

APPENDIX V. CRITERIA FOR EVALUATING DATABASES

This Appendix contains a brief summary of the characteristics and criteria we developed for evaluating databases. State IT developers and their partners in federal and private organizations should design systems based on the following best practices:

- **Wherever possible, integrate use of information systems into existing business processes.** One challenge will be to fit data needs into a broader system that are beyond the control of individual agencies (e.g. integrating basic information about a grant application collected at grants.gov with more specific information needed for state wildlife agency purposes).
- **Focus on collecting data with known uses.** Instead of trying to collect all possible data, design systems to collect data that will be used by key audiences. It is often helpful to design the final reports that the system will produce before building the system.
- **Avoid double entry of data.** Whenever possible, it is better to link to existing data sets than to have users enter the data manually. For example, rather than try to collect new information about the distribution of key species, link to the existing NatureServe databases and natural heritage program databases that already contain this information.
- **Develop systems looking forward, not backward.** It is often more effective to design systems to collect future data, without worrying about the backlog of existing information.
- **Ensure long-term access to both data and information systems.** Data from projects and actions funded with public dollars need to be placed in data systems that guarantee appropriate access, with safeguards for legitimately sensitive information.

As an aid to states in using common data structures and terms, the Working Group identified the following characteristics and criteria to guide the selection of tools best suited for measuring effectiveness.

CHARAC-TERISTIC	DEFINITION	CRITERIA			
		Poor	Fair	Good	Ideal
KEY DATA FIELDS					
Units of Analysis	Basic units for records within the database e.g. actions, projects, sites or targets				
Systems Supported	Types of planning systems supported by the database, e.g. Open Standards, Logic Models				
What is the model of the unit of analysis	Description for each system				
Basic Information	Basic project summary info and meta data	None	Some fields	All fields	Many more
Context Information	Targets, viability, threats, contributing factors	None	Some fields	All fields	Many more
Action Information	Description of actions being taken with target, threats and actions	None	Some fields	All fields	Many more
Workplan Tools	Levels of effort going into the action; ability to assign tasks to different people; Ability to assess work load	None	Some fields	All fields	Many more

CHARAC-TERISTIC	DEFINITION	CRITERIA			
		Poor	Fair	Good	Ideal
Budgeting Tools	Ability to track funds needed	None	Some fields	All fields	Many more
Actual Financials	Actual funds spent	None	Some fields	All fields	Many more
Action/Project Status	Fields for tracking the current status of the action or project	None	Some fields	All fields	Many more
SPATIAL DATA					
Spatial Data	Degree to which the system allows spatial data analyses	None or basic project coordinates	Allows map-based search for projects	Allows import/export and basic GIS capabilities (e.g. points and polygons on a base map)	Full GIS capabilities
Base Maps	Types of spatial base maps that the system supports, e.g. ESRI, Google	None	Only custom	One standard	All standard
Graphical Diagrams	Support for results chains and similar graphical data, e.g. Miradi, Visio	None	Static images (JPG, PNG, etc)	Full Files	Editable in place
Reports	Support for standard and custom reports	None	Limited standard reports from templates	Full standard reports and limited custom	Full suite of standard -AND- Custom
Customizability	Ability to add custom fields and terms	None	Custom programming work	User experts	All users
DATA MNGMT					
Ease of Use	Degree to which system is easy to use	Extensive training required	Some training required	Easy for most users	Easy for all users
Granularity of Data Privacy Flags	Level at which data can be tagged as private	None	Entire record	Certain types of fields within a record	All fields
Levels of Privacy	Different settings for data privacy	No control	Little control	Some control	Full control
Public Input of Data	Degree to which public can add data	None	Selected public can apply to enter data	Most can enter data	Anyone can enter data
Project Data QA/QC	Degree of editorial control over data	None – project team enters data	Some – Data entered through external site	Basic – Editor gives review (flagging)	Editor gives full review plus peer reviewed
Data Importing	Capacity to import data in a variety of formats, e.g. sql, mpz, xls, shp	No formats	Some formats	Most formats	All formats
Data Export	Capacity to export data in various formats, e.g. sql, mpz, shp	No formats	Some formats	Most formats	All formats
BUSINESS MODEL					
License Type	License type and requirement, e.g. none, commercial, open source				
Hosting Model	Hosted, on individual server				
License Cost	Cost per user or organization over time (all in)	Very expensive	Expensive	Moderate	Free
Funding source	Sources of funding for the database, e.g. user fees	None	Limited	Short-term secure	Long-term secure
Current status	Current status of the system development	Planned	Pilot	Deployed 1-3 years	Deployed > 3 years
Number of users	How many organizations, or projects are using the database	None	Some	Few	Many

Database Systems that Use Projects as the Main Unit of Analysis
(Tools are listed in alphabetical order)

- **ConPro** (conpro.tnc.org) – ConPro is an online database originally developed by The Nature Conservancy to track its conservation projects. The basic unit of analysis is the project. Project records are based on TNC's Conservation Action Planning (CAP) methodology, which is closely related to the Open Standards for the Practice of Conservation. Project records contain summary information about the project, as well as specific details about facets of the project including scope, targets, target viability, threats, contributing factors, goals and objectives, strategies, monitoring plan, work plan and budget, and progress reports. Users can attach maps, results chain diagrams, and other information to project records. ConPro has a powerful search tool that enables users to find projects based on any combination of the above facets. Projects are also geo-referenced and can be found using a map interface. Users can seamlessly upload and download data between ConPro and Miradi Software. ConPro is now working with the Conservation Measures Partnership and Miradi to open up the system to non-TNC users under a business model currently in development. This will include the ability to create custom portals for organizations as well as the ability to set granular data access controls. There are currently over 1000 projects in ConPro from around the world, several hundred of which are currently available to the public.

- **Conservation Registry** (www.conservationregistry.org) – The Registry is an online application designed to promote sharing of information and knowledge about conservation actions. As such, the Registry aims for broad access and ease of use. There are no limitations on who can use the Registry. The tool uses Google Maps to map the locations of projects. The mapped projects are accompanied by text that describes each project, the actions associated with the project, and the status of the actions (e.g., "in progress"). Project descriptions can be supplemented with hot links and reference materials. All projects must have at least one conservation target using common ecological classifications at both national and state scales. Species targets are supported, but not required. Threat/stressor data are not yet included, but this is a desired future component. Organizations can use the standard portal, or set up a customized portal that contains the basic Registry data fields but is otherwise designed to meet their specific needs. Custom portals also enable users to set access restrictions on the data. The tool can import/export spatial data in ESRI formats as well as KML. The system is maintained by Defenders of Wildlife (www.defenders.org) with funds from a variety of sources, including Oregon Department of Fish and Wildlife SWG funds and NFWF. Although the tool is free now, the business plan calls for a yearly maintenance fee to ensure long-term viability. The Registry was developed using all open source technology, written in Ruby. The back-end database is postgre SQL/postgis, with Rex Space cloud hosting.

- **HabITS** – HabITS is a centrally-hosted, geo-spatial database for the USFWS Partners for Fish and Wildlife and Coastal Programs to track agreements, projects and sites. Actions, conservation targets, and monitoring design are defined, prioritized and tracked spatially within the system. Base maps include ESRI files and Bing. The conservation targets are all USFWS trust species that are expected to benefit from the actions, which are defined as habitat treatments in the field. HabITS also includes work plan and budgeting tools that track staff days and financial contributions (both USFWS funds and partner match). Reporting is highly flexible, including standard and user-defined formats, as well as charts (pie, bar, etc.). At this time, access to the system is limited to the Partners for Fish and Wildlife Program with a high level of privacy protection, but some level of public access is being considered for the future. HabITS is easy to use. There are approximately 700 users within the USFWS, all of whom received training aimed mostly at quality control. The business model is based on organizational support from USFWS, leveraged across ECOS programs.

- **Miradi** (www.miradi.org) – Miradi is a project management, desktop software application designed to help program managers organize and track project activity based on the Conservation Measures Partnership's Open Standards for the Practice of Conservation. It is not a database in the strict sense, but rather is a data aggregation tool that can then feed into other databases. It includes several views of a project including summary information, diagrams (conceptual models and results chains), and planning/work plan tools (for example, all of the results chains diagrams in this report were produced using Miradi). Users typically develop strategies for conservation, specific actions within the strategies and indicators of project effectiveness. Strategies are explicitly structured to lead toward improvement in the viability of conservation targets, and the system can track supplementary information about the targets and their viability status.

Threats/stressors are classified and prioritized using open standards. Among all the software evaluated, Miradi has the most highly developed set of tools for developing and tracking indicators of project performance. It does not include spatial GIS data, but that is a planned enhancement for the future. Nor does it include any data security tools/restrictions, beyond the fact that it resides on a desktop. Built-in wizards help guide users through the software's planning and reporting modules. Miradi produces XML output that can be imported into other databases. For example, Miradi currently produces an XML output that can be directly imported into TNC's ConPro system. Miradi is a non-profit joint venture between the Conservation Measures Partnership (conservationmeasures.org) and Benetech (www.benetech.org). Miradi runs on Windows, Mac, and Linux Operating Systems. Miradi is released under an Open Source License. Although the source code is freely available, Miradi's business model involves having user fees support the ongoing development and improvement of the software. Compiled versions of the software are available for a small annual fee. Organizational licenses that allow unlimited ability to use the software and custom data fields and training are also available.

- **Wildlife TRACS** (Tracking and Reporting Actions for Conservation of Species) (www.fws.ekosystem.us) – Wildlife TRACS is a new, online database under development by the USFWS and being piloted by Washington Department of Fish and Wildlife. A prototype is planned for release at the 2010 AFWA Annual Meeting. Completion of a version deployable to the states is expected in 2011. Wildlife TRACS is the only data management tool that is explicitly being designed to facilitate WSFR/FWS tracking and reporting on federal assistance grants, including SWG, with the ultimate purpose of strategically directing SWG funds to meet SWAP priorities. The design team includes representatives from state fish and wildlife agencies, AFWA, and many of the organizations that maintain the other data management tools listed here (Conservation Registry, HabITS, Miradi, Biotics) to create a forum for planning future interoperability among these systems. Because the design of Wildlife TRACS is occurring in concert with the AFWA Effectiveness Measures Working Group, it will incorporate most or all of the key recommendations of this report over time, including capability to manage data about projects, actions, conservation targets (in the context of projects), threats/stressors, monitoring design, and project context. The tool will have both a public access interface, as well as a more controlled, security enabled interface for the States and WSFR. Only the States and WSFR will be able to enter or edit data. States and WSFR will have control over the types of data displayed on the public website. The business model is based on organizational support by the USFWS, including implementation assistance to the states. The USFWS will hold all rights to the software in perpetuity.

Other Important Systems

- **Biotics 4** (www.natureserve.org/prodServices/biotics.jsp) – Biotics 4 is a desktop application designed to integrate into the workflow of state natural resource agencies for tracking the location and status of species and ecosystems. The fundamental data unit is the conservation target, which can be either a species or ecological element. The targets are mapped in GIS following published standards for Element Occurrences (www.natureserve.org/prodServices/eodata.jsp) and are accompanied by extensive text information in an Oracle database. Users can add their own, custom data tables to the standard core without restriction. Data security tools are highly refined to support the variety of state-specific data privacy rules, and most states restrict access to the primary data set. To provide data access, NatureServe and the states publish Biotics data through websites such as NatureServe Explorer (www.natureserve.org/explorer) or the Montana Online Field Guide (fieldguide.mt.gov). Biotics 4 incorporates open standards for a variety of data types, including species taxonomy, ecological classification, threats/stressors, conservation status, population viability and ecological integrity, spatial data formats, and metadata. Data about actions are captured in unstructured text fields. Project descriptions, budget and work plan details are not part of the data model. System enhancements under development include improved handling of field observation data, as well as a significant redesign to a hosted web application with a streamlined user experience. Biotics's contribution to measuring SWG/SWAP effectiveness is its ability to track changes in the status of a conservation target over time based on scientifically sound, nationally consistent, peer reviewed methods that allow status and trends to be compared among places and among conservation targets, and support rollup for multi-state reporting and analysis. Biotics 4 installations are licensed from NatureServe (www.natureserve.org) for an annual maintenance fee. The system is currently deployed in 46 US states and Puerto Rico, six Canadian provinces, three countries in Latin America, and a handful of other institutions (e.g., Navajo Nation and Parks Canada). The remaining states all use fully compatible and interoperable systems. Biotics 4 is relatively complex,

and requires user training that emphasizes data QA/QC. Most states employ a full-time or part time Biotics data manager. Licensed users receive full support services including online help, regularly-scheduled webinar training, customer service/phone support during business hours, system maintenance upgrades, and have the opportunity to participate in system design teams.

- **DataBasin** (http://databasin.org) – This is an online tool for sharing and visualizing spatial data, currently in beta version. DataBasin's larger objective is to create a vibrant, online community of conservation practitioners who self-organize into interest groups that share and improve spatial data, thereby reducing the time and effort it takes to find and access relevant data sets. The general public can browse the available datasets and preview maps, but users must register (for free) to access interactive maps, upload or download spatial data. Attributes of the data sets are not standardized, so DataBasin requires users to provide metadata with uploaded data sets to ensure proper use. The current version of the tool was built by the Conservation Biology Institute in partnership with ESRI, and is powered by ArcServer and ArcGIS Online. Thus registering with DataBasin also registers users with an ESRI global account, which includes 2 GB of free, personal data storage space for uploaded data. Although DataBasin is not currently set up to deliver data via web services, it should be a valuable source of quality spatial data that states can integrate into their SWAP analyses.
- **NatureServe Explorer Web Service** (http://services.natureserve.org/index.jsp) – This tool provides free and open access to virtually all of the data maintained in the Biotics 4 data system, except for sensitive spatial data. This web service provides direct access to data on the status, distribution, range, taxonomy (including synonyms), habitat preferences, threats and management needs of over 53,000 species of the United States in easy to manipulate XML format for incorporation into state-based data systems or other tools such as Wildlife TRACS. This information and the full national vegetation classification are also freely searchable by the public on the NatureServe Explorer website (www.natureserve.org/explorer) with search results downloadable in PDF or XML formats.

APPENDIX VI. WORKING GROUP CHARTER

Purpose

The Working Group will develop, test, and roll-out a performance reporting framework for assessing the effectiveness of State Wildlife Grants and the broader Wildlife Action Plans.

Working Group Members

AFWA Staff: Mark Humpert, Terra Rentz
Contractor-Foundations of Success: Nick Salafsky, Caroline Stem
Working Group Members:

Chris Burkett, Virginia DGIF	Tara Bergeson, Wisconsin DNR	Matthew Birnbaum, NFWF
Eric Rickerson, Oregon DFW	Wendy Connally, Texas PWD	Mary Klein, NatureServe
Faith Balch, Minnesota DNR	Amielle DeWan, DOW	Shelly Green, TNC
Tracey Tomajer, New York DEC	Karl Hess, USFWS	Tess Present, Audubon

Working Group Advisors:

Jon Kart, Vermont	Cindi Jacobson/Mary Rabe, Alaska	Kelly Rezac, Florida
Jon Ambrose, Georgia	Dennis Figg, Missouri	Jeff Lerner, Doris Duke Charitable Foundation**
Dee Blanton, USFWS	Mike Hickey, OMB**	** ex officio

Working Group/Advisor Roles

Working group members will collaboratively develop effectiveness measures and an implementation plan for rollout of an effectiveness measures framework. Working group members will attend monthly conference calls, attend 2-3 multiday working group meetings, assist with work products and contribute knowledge and expertise. Advisors will serve as first-line reviewers, contribute their knowledge and expertise and potentially serve on subcommittees. Advisors may be invited, but not required, to attend conference calls or a workshop.

Relationship of Working Group to AFWA

The Effectiveness Measures Working Group under the Teaming With Wildlife Committee (approval by Directors)

Background

State Wildlife Action Plans were completed for all states and territories in 2005. In the plans states were required by Congress to include a proposed monitoring plan for at-risk species and their habitats and for monitoring the effectiveness of proposed conservation actions and for adapting these conservation actions to respond appropriately to new information or changing conditions (Required Element 5). Arguably implementation of the monitoring plan has been one of the greatest challenges that states have faced. In addition, reporting of performance measures for federal programs has taken on greater significance during the last four years. There is a need to demonstrate that federal investments in Wildlife Action Plans through the State and Tribal Wildlife Grants are having a measureable impact. This project will build on and use the processes developed in the northeast as part of the Regional Monitoring and Performance Reporting Framework project. The ultimate goal of the project is to develop an agreed upon effectiveness measures framework that is national in scope and can be used to report progress and successes of Wildlife Action Plans and the State and Tribal Wildlife Grants Program.

Workgroup Charges:

1. Develop an initial iteration of a monitoring framework that strategically prioritizes audiences, information needs, methods and potential indicators to measure the effectiveness of conservation interventions.
    a. Identify who the audiences are
    b. Clearly define what each audience needs to know and how each audience will use the information they get and how detailed an answer they will need
    c. Review current monitoring efforts and identify additional monitoring needs to feed the framework
2. Test this monitoring framework with a mixture of different kinds of projects
3. Agree on process and next steps for implementing this framework across all states.
4. Identify pilot program states to initiate roll-out of monitoring framework

Who Will Be Served

Member states of the Association of Fish and Wildlife Agencies, US Fish and Wildlife Service, Office of Management & Budget, Congress, Partners

Measures of Success

To be determined by Working Group

Products/Deliverables

Final Report & Implementation Plan

Duration

The working group was established at AFWA's Annual meeting in Austin, TX in September 2009. It will remain active until AFWA's 2010 Annual meeting unless extended by the establishing committee. An interim report will be presented at the 2010 North American Fish and Wildlife Conference in Milwaukee, WI.

Anticipated Timeline

Timeframe	Task	Location	Milestone
September 2009	AFWA & FOS staff meet	DC	Initial Scoping – develop plan; identify working group needs; review background information
September 2009	TWW committee approval	Texas	Working group established by the Teaming With Wildlife Committee
Mid-October '09	Meet with FOS to complete charter/determine working group members	DC	First draft of Charter is completed; working group members identified and confirmed
November 19, '09	Conference call with working group members	N/A	Review/revise draft charter; draft agenda for first in-person meeting; reading assignments
December 8-10, 2009	First working group meeting	DC	Introductions, ID audiences, examine past work on indicators, begin developing indicators
Mid-Jan, Feb & Mar '10	Web/conference call	N/A	Report on work assignments
March	North American NRE Conference	Wisconsin	Interim progress report at TWW Committee mtg.
Mid-April '10	Web/conference call	N/A	Report on work assignments
Mid-May '10	Second working group meeting	N/A	Pilot measures developed
Mid-June '10	Web/conference call	N/A	Report on work assignments
Mid-July '10	Third Working group meeting	TBA	Measures and framework refined
Mid-August '10	Web/conference call	N/A	Develop final report; identify next steps
Mid-Sept '10	Presentation/ Approval at AFWA Annual Mtng	Michigan	Present final product at AFWA Annual meeting
Oct-December '10	TBD		Implement roll out plan

Objectives from Policy Grant from Doris Duke Charitable Foundation.

Issue 4-Develop Indicators of Success. Development of State Wildlife Action plans in each state and territory was a major milestone. However the success of this planning effort is dependent on showing results to policy makers, partners and the public. To date there are no national effectiveness indicators that can be used to show progress. The development of measures would enable AFWA, the states and its partners to assess performance and communicate successes.

Background: Increasingly federal and state governments are using performance and effectiveness measures to assess how well programs are working. The use of performance measures gained attention in the Clinton Administration which used balanced measures as part of its National Partnership for Reinventing Government. The Bush administration has been using the Program and Reporting Tool (PART) for its performance based budgeting process. President-elect Obama has stated his intent to make government more accountable and efficient so it's likely that the use of performance measures to assess government programs will continue. The Northeast Association of Fish and Wildlife Agencies contracted with Foundations for

Success to develop performance measures for State Wildlife Grants, the only regional association to do so. We propose to work with Foundations of Success to develop national effectiveness measures for State Wildlife Action Plan implementation using a similar process that was used in the Northeast.

Goal: Develop key national effectiveness measures to help assess and communicate the performance of State Wildlife Action Plans.

Proposed Action: Assemble a national workgroup to develop measures and communicate State Wildlife Action Plan effectiveness.

Strategy 1. Hire a contractor (i.e. Foundations of Success) to assemble a workgroup and facilitate a process to develop and test national effectiveness measures for State Wildlife Action Plans.

Strategy 2. Develop and implement a communication strategy for implementing national effectiveness measures.

Strategy 3. Provide training to interested states on how to use and report State Wildlife Action Plan performance.

Strategy 4. Begin rollout and implementation of effectiveness measures in interested states.

Regional Monitoring and Performance Reporting Framework (Northeast States)

The Regional Monitoring and Performance Reporting Framework project will assist Northeastern states meet the species, habitat and conservation action effectiveness monitoring and performance reporting requirements of the State Wildlife Action Plans (SWAP). Every state recently developed a SWAP, which pro-actively plot out the steps required to conserve wildlife and vital wildlife habitat before they become more rare and costly to protect.

The Regional Monitoring and Performance Reporting Framework is a collaborative effort of Northeastern states, federal land management agencies, non-governmental organizations and academics. Working together, partners will develop a mechanism to meet monitoring and performance reporting requirements in an effective and cost-efficient manner that allows for:

- Collecting baseline data to assess status and condition of resources
- Tracking rare, wide-ranging, and other species that don't recognize state boundaries but may be vital to ensuring conservation success.
- Compiling region-wide data to increase sample sizes and the statistical power to detect changes in population sizes or condition over time.
- Improved chances for rapid detection of status change for species and habitats.
- Increased abilities to compare the effectiveness of strategies and programs through standardized protocols and measures and improved data sharing among states.
- Simplified roll-up and reporting by state and region to make report generation easier and improve response time to Congress.
- More affordable data collection and analyses for all participating states through increased economies of scale.

Additional Resources available at http://rcngrants.org/node/37

APPENDIX VII. REFERENCES

Conservation Measures Partnership. 2007. Open Standards for the Practice of Conservation (version 2.0). http://www.conservationmeasures.org/wp-content/uploads/2010/04/CMP_Open_Standards_Version_2.0.pdf (accessed July 2010).

Salzer, Daniel and Nick Salafsky. 2006. Allocating Resources Between Taking Action, Assessing Status, and Measuring Effectiveness of Conservation Actions. Natural Areas Journal 26:310–316.

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