Conservation Biology

Essay

Use of a Business Excellence Model to Improve Conservation Programs

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Abstract: *The current shortfall in effectiveness within conservation biology is illustrated by increasing interest in "evidence-based conservation," whose proponents have identified the need to benchmark conservation initiatives against actions that lead to proven positive effects. The effectiveness of conservation policies, approaches, and evaluation is under increasing scrutiny, and in these areas models of excellence used in business could prove valuable. Typically, conservation programs require years of effort and involve rigorous long-term implementation processes. Successful balance of long-term efforts alongside the achievement of short-term goals is often compromised by management or budgetary constraints, a situation also common in commercial businesses. "Business excellence" is an approach many companies have used over the past 20 years to ensure continued success. Various business excellence evaluations have been promoted that include concepts that could be adapted and applied in conservation programs. We describe a conservation excellence model that shows how scientific processes and results can be aligned with financial and organizational measures of success. We applied the model to two well-documented species conservation programs. In the first, the Po'ouli program, several aspects of improvement were identified, such as more authority for decision making in the field and better integration of habitat management and population recovery processes. The second example, the black-footed ferret program, could have benefited from leadership effort to reduce bureaucracy and to encourage use of best-practice species recovery approaches. The conservation excellence model enables greater clarity in goal setting, more-effective identification of job roles within programs, better links between technical approaches and measures of biological success, and more-effective use of resources. The model could improve evaluation of a conservation program's effectiveness and may be used to compare different programs, for example during reviews of project performance by sponsoring organizations.*

Keywords: benchmarking, conservation effectiveness, conservation planning, EFQM, evaluation, excellence, leadership, management

Utilización de un Modelo de Excelencia Empresarial para Mejorar Programas de Conservación

Resumen: *El actual déficit de efectividad en la biología de la conservación está ilustrado por el creciente interés en la "conservación basada en evidencia," cuyos proponentes han identificado la necesidad de comparar las iniciativas de conservación con acciones que llevan a efectos positivos comprobados. La efectividad de las políticas, métodos y evaluación de la conservación está bajo escrutinio creciente, y los modelos de excelencia utilizados por empresas pueden ser valiosos en estas áreas. Típicamente, los programas de conservación requieren años de esfuerzo e involucran procesos de implementación rigorosos. El balance exitoso de los esfuerzos de largo plazo junto con el cumplimiento de metas de corto plazo a menudo es afectado por restricciones administrativas o presupuestarias, una situación también común en las empresas comerciales. La "excelencia empresarial" es un método que muchas compañías han utilizado durante los últimos 20 años para asegurar éxitos continuos. Se han promovido varias evaluaciones de excelencia empresarial que incluyen conceptos que podrían ser adaptados y aplicados a los programas de conservación. Describimos un modelo de excelencia de conservación que muestra cómo se pueden alinear*

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los procesos y resultados científicos con medidas de éxito financiero y organizacional. Aplicamos el modelo a dos programas de conservación de especies bien documentados. En el primero, el programa Po'ouli, se identificaron varios aspectos de mejoramiento, tales como mayor autoridad para la toma de decisiones en el campo y una mejor integración de los procesos de manejo de hábitat y recuperación de las poblaciones. El segundo ejemplo, el programa de Mustela nigripes, pudo haberse beneficiado del esfuerzo de liderazgo para reducir la burocracia y alentar el uso de métodos de recuperación más eficientes. El modelo de excelencia de conservación permite una mayor claridad en la definición de metas, una mejor efectividad en la identificación de las funciones dentro de los programas, mejores relaciones entres métodos técnicos y las medidas de éxito biológico y un uso más efectivo de los recursos. El modelo podría mejorar la evaluación de la efectividad de un programa de conservación y puede ser utilizado para comparar diferentes programas, por ejemplo durante las revisiones del funcionamiento de un proyecto por parte de las organizaciones financiadoras.

Palabras Clave: efectividad de la conservación, EFQM, evaluación, excelencia, manejo, planificación de la conservación, referencia

The Need for a Model of Conservation Effectiveness

There is an increasing expectation that conservation investments should pay their way (Nicholls 2004). Since the 1990s, the trend has been to monitor and evaluate conservation programs either to satisfy donors or to bring accountability to project managers (Kapos et al. 2008). The recent movement toward "evidence-based conservation" (Pullin & Knight 2001; Sutherland et al. 2004) reflects the previous lack of suitable approaches in conservation management to assess whether conservation action is effective or appropriate.

Conservation evaluations are now less focused on inventories of completed activities and dollars invested and are instead moving toward assessment of "outcomes" (species and habitat improvements), for which various approaches have been developed (Ferraro & Pattanayak 2006). Consequently, several good-practice frameworks have emerged in recent years. For example, the integrated coastal management framework, although specific to marine and coastal conservation, has been suggested as useful means with which to measure project sustainability (Pollnac & Pomeroy 2005). The IUCN framework for evaluating protected areas (Hockings et al. 2006), which evaluates management as a process within conservation organizations, and the Conservation Measures Partnership's (2007) open standards for the practice of conservation, which promotes best practice approaches, have both grown in use since their inception. Nevertheless, the experience of commercial- and public-sector organizations suggests that the implementation of such standards (e.g., ISO 9000 and ISO 14000 management standards) can be burdensome, restrictive, and counter-productive (Seddon 1997; Bansal & Bogner 2002; Rodriguez-Escobar et al. 2006). A different approach that can be used to quickly evaluate the achievements of a program, relative to its managed activities and stated purpose, could be beneficial to the conservation community.

Usefulness of Evaluation Approaches in the Business World

In the past 20 years, many leading commercial and public-sector organizations have pursued a philosophy of business excellence and have used systematic management methods to improve capability and performance (Oakland 2000). Evidence from the business sector suggests that a business excellence approach increases business performance, such as profitability, sales growth, market share, and customer satisfaction (GAO 1991; ECBE 1999). The business excellence philosophy is actively promoted by regional networks through annual awards to recognize exemplary businesses. The Malcolm Baldrige National Quality Award is presented annually by the president of the United States, the European Excellence Award is promoted by the European Foundation for Quality Management (EFQM), and the Deming Prize is an international award that originates from Japan (Nakhai & Neves 1994). The most commonly used models for assessing and improving organizational effectiveness have arisen from the assessment criteria used in these management awards (Porter & Black 1994; Oakland et al. 2002). Business excellence models are useful in organizations of different sizes and types, across cultures and languages (Sila & Ebrahimpour 2003), and in sectors as diverse as manufacturing, education, health, and the arts (Zink & Schmidt 1995; Goldschmidt & Goldschmidt 2001; Vallejo et al. 2006). They might also be helpful in the conservation sector.

The EFQM excellence model is, internationally, probably the most widely used framework and, like the criteria of the Baldrige National Quality Award, is built on a set of beliefs and behaviors of organizations that over time have consistently good financial results, effective operations, and satisfied customers (GAO 1991; ECBE 1999). These beliefs and behaviors include visionary leadership, a focus on results, management by fact (rather than assumption or philosophy), a systems perspective (rather than viewing work as a set of unrelated specialist

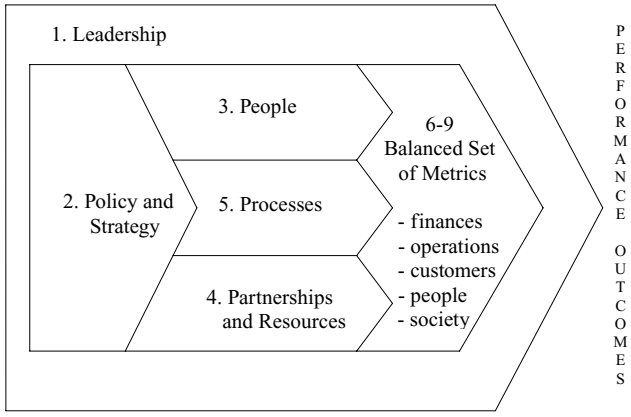

Figure 1. Concepts of a model of business excellence (Oakland et al. 2002) and the nine criteria of the European Foundation for Quality Management model.

functions), valuing employees, societal responsibility, and continuous improvement (Black & Porter 1996). Many of these beliefs and behaviors should resonate strongly with conservation biologists, so if the language of business excellence can be made relevant to conservation, then an excellence model may be an effective tool to identify activities and approaches that are underperforming in conservation programs.

The EFQM excellence model (EFQM 2003) is represented conventionally as a nine-box model in which each box represents a distinct aspect of management practice, that provides an overall set of criteria for establishing an organization's management system. The model includes detailed criteria for examining business practice and performance. The criteria can be used as part of a self-assessment approach (i.e., evaluation) that allows comparisons with other organizations and identifies areas for improvement. The "value chain" (Oakland et al. 2002) depicts the concepts in the EFQM excellence model simply (Fig. 1) and illustrates how strategy, processes, and results are linked and how leadership influences overall organization effectiveness. The causes of shortfalls in performance can be sourced to problems with policy, organizational processes, people management, or use of resources. The EFQM excellence model is not a prescriptive framework and does not demand implementation of supposed best practice. Instead, the model encourages users to focus on understanding their system of work to facilitate improvement, and it is this perspective that may offer new insights for managers of conservation programs.

Benefits of the Business Excellence Model

The EFQM model's structure allows an understanding of links between results achieved and approaches taken by an organization. Relevant approaches encompass a range of planning, people management, and technical and operational interventions. This range of activity covers all that is typically needed to manage practical conservation programs. Conservation activity in general demands flexible organizations that can learn from and adapt to changes in circumstances and knowledge. Species recovery in particular is not a routine task, so it is unsuited to traditional, bureaucratic organizational models (Clark 1997). The EFQM model defines an alternative framework in which learning and improvement can be integrated into the design, management, and evaluation of a program, its organization, and its systems. Overall, the direct benefits for managers using the EFQM model include rapid understanding of the wider issues concerning their organization; an efficient focus on relevant data and measures; a new understanding of links between results and the approaches taken; a balanced consideration of short- and long-term pressures; and a standard framework for discussing organizational improvement with outsiders.

The EFQM excellence model contains generic management terminology that has been applied successfully in organizations of different sizes and kinds in many countries; thus, the model can be applied to the types of organizations involved in conservation. The vocabulary of the model is broadly accessible, although conservation professionals will not be familiar with certain business terminology. Some translation is required if business-excellence concepts are to be considered and applied in a conservation context. We used our direct experience with the model in a variety of businesses and our professional involvement in management of conservation programs and conservation science to translate the model's terminology and criteria for use by conservation professionals.

The Conservation Excellence Model

A nine-box model of conservation excellence is presented in Fig. 2 in which EFQM concepts are translated into a conservation context. The model reflects the assertion that excellent results are achieved by involving people in continuous improvement of processes (Oakland et al. 2002). The nine criteria and 32 subcriteria are redefined in a conservation context and presented in Table 1. The subcriteria provide indicators to support a workable evaluation of a conservation program.

The right half of the model (Fig. 2) describes the results criteria. Practical, short-term operational results (usually with a 2- to 5-year horizon) are included in the criterion "conservation program results" and include measures of performance against objectives, financial results, and project milestones for which conservation managers are responsible. In contrast, biological results, trends, and

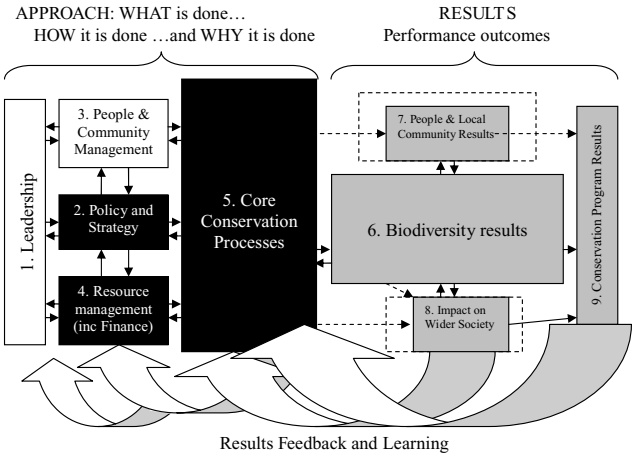

Figure 2. An interpretation of the European Foundation for Quality Management model in a conservation context (i.e., conservation excellence model), showing Oakland et al.'s (2002) categorization of people (white), process (black), and performance (gray) criteria, to demonstrate the link between "approach" (implementation) and "results" (value). The size of each box reflects the criterion's likely relative importance in a conservation context.

scientific models and projections relating to species or their habitats are included in "biodiversity results" (e.g., population sustainability, geophysical measures of ecosystem health) (Table 1). Community and societal results (where relevant) are separated into "people and local community results" and "impact on wider society," the latter relating to the public. In these cases, direct perceptions, derived from surveys and interviews, are considered separately from indirect measures such as human well-being (e.g., safety, welfare, income), levels of involvement in the program (e.g., numbers of community volunteers, participants in meetings), measures of conflict (e.g., predation, crop raiding, wildlife exploitation, or incidents of human interference and harassment), or human-use effects (e.g., hunting, harvesting). The approach criteria are used to assess activities carried out by an organization to achieve its purpose. Approach criteria consider both technical conservation activity (core conservation processes) and generic management activity (leadership, people and community management, resource management). If longer-term monitoring is required beyond the remit of the program, then this requirement and suitable exit strategies (e.g., hand over of data to local representatives) should also be evaluated relative to the approach criteria.

Additionally, the EFQM model includes a scoring structure devised for benchmarking companies for award purposes (EFQM 2003). Scoring is used by some companies as part of routine internal evaluations, and the approach could be adapted for use in conservation assessment, for example to compare and evaluate different programs. The system of scoring an organization is based on weighted scores for each of the nine EFQM model criteria. An assessor assigns a 0–100 score that is derived from the organizations performance in sets of subcriteria (Table 1). The data used to create scores are provided by the organization under assessment. Data on approach subcriteria (leadership, policy, people, processes, resources; Fig. 2) are scored by effectiveness of the approach and breadth of its implementation. Data on results criteria are scored on the basis of sustained level of performance over time across a range of relevant measures. The score for each of the nine overall criteria is the mean of the subcriteria scores multiplied by a criterion-specific weighting. For example, the EFQM scoring system applies weightings of 1, 0.8, 0.9, 0.9, 1.4, 2, 0.9, 0.6, 1.5 for criteria 1–9, respectively (EFQM 2003). Finally, an overall score out of 1000 is generated as the sum of all criterion scores. Organizations that achieve long-term success through highly effective management would be expected to generate a score of around 800 points, whereas less-effective organizations would score <250 points.

A scoring system for the conservation excellence model may need to include weightings to reflect different priorities (Fig. 2). For example, sustainability of results is important in the context of conservation practice, so an evaluation may need to place greater weight on biodiversity results (criterion 6) and core conservation processes (criterion 5: natural processes, managed conservation activities, or human activities such as hunting or development) than it does on criteria such as short-term conservation program results (criterion 9) and policy and strategy (criterion 2).

The broad scope of the conservation excellence model ensures that it includes several new criteria over and above the issues addressed by existing frameworks, which allows comprehensive examination of a program in terms of links among people, processes, and performance. We compared the conservation excellence model with the International Union for Conservation of Nature (IUCN) framework for assessing effectiveness in protected areas (Hockings et al. 2006) and with the open standards for the practice of conservation (CMP 2004) (Table 2). The IUCN framework assesses only management processes, whereas the open standards do not consider several important issues, such as human resources and budget management. Our conservation excellence model focuses on the effectiveness of the overall system or organization that embodies a conservation program.

The conservation excellence model provides a framework for management by fact (rather than by personal or political agenda); a focus on biodiversity, species survival, and habitat needs; a focus on results and creation of a value chain (Fig. 1) to deliver outcomes; a focus on the future and sustainability of species populations

Table 1. Conservation excellence model approach and results criteria.

Approach and result criteria	*Subcriteria*
Approach	
1. leadership	a. leaders demonstrate commitment to conservation
	b. provision of resources or assistance (finance, people)
	c. direct involvement with conservation organizations and stakeholders
	d. recognition and encouragement of efforts, achievements, and ideas
2. policy and strategy	
	a. policy, strategy, and plans use relevant, comprehensive information
	b. policy, strategy, and plan development involves relevant people
	c. policy and strategy are effectively communicated and implemented
	d. policy, strategy, and plans are updated with new knowledge
3. people and local community management	
	a. planning and improvement of people resource (workers, volunteers)
	b. people's capacity is sustained and developed (training, education)
	c. people agree on targets and review results (in project and
	d. people are involved and empowered (roles, decision making, rights)
	e. people have effective communication and decision-making
	f. well-being of people planned, managed, and monitored
4. resource management (including finance)	
	a. financial management (budgets, accounts, records, authorization)
	b. information management: access, structure, validity, security
	c. supplier and materials management (selection, contracts, storage)
	d. buildings, equipment, and asset management (maintenance and use)
	e. intellectual property (relevant information used and protected)
5. core conservation processes	
	a. core processes identified systematically on research basis
	b. processes and responsibilities managed systematically
	c. processes reviewed (technical results, adaptive management)
	d. processes improved through innovation and creativity
	e. processes improved (change implemented, monitored, evaluated)
Results	
6. biodiversity results	
	a. biodiversity response to program actions (habitat, population, range)
	b. other measures (e.g., ecosystem function, geophysical measures)
7. people and local community results	
	a. staff and community perceptions of the program (e.g., via surveys)
	b. other measures (community involvement, conflict, well-being)
8. impact on wider society	
	a. perception of wider society (awareness, attitudes, political support)
	b. indirect measures (threats, legislation, donations, volunteers, press)
9. conservation program results	
	a. financial measures of success (income, funds, investment, budgets)
	b. nonfinancial measures (program targets achieved, milestones)

and landscapes; continuous improvement, adaptability, and innovation in management interventions; a systems perspective that accounts for effects internal and external to the program; and valuing staff and community partners and engaging them to improve the social-responsibility aspect of the program.

The Conservation Excellence Model can be used by managers to (1) identify whether the correct approaches and relevant performance measures are being applied to a program, (2) decide whether the design of a program and its organization of policy, people, and activities is consistent with its overall intended purpose, and (3) rate the program (or a range of different programs) to evaluate overall effectiveness or to make comparisons. These assessments can be achieved through reviews of existing data, policy, budgets, and reports and through interviews with key personnel and other stakeholders. The information gathered is then aligned with the model criteria. An assessment is carried out in a five-step process.

A Five-Step Approach for Assessment against the Conservation Excellence Model

The Conservation Excellence Model can be used when planning a conservation program, to assess effectiveness during program implementation, and as part of a post-program assessment. The following are the five steps in an assessment of a program.

Table 2. Comparison of the conservation excellence model with examples of current frameworks for evaluating conservation.

Attribute	*Conservation excellence model*	*Open standards for the practice of conservation (CMP 2004)*	*IUCN framework for assessing effectiveness in protected areas (Hockings et al 2006)*
Focus	organization effectiveness with a systems perspective	project management best practices	management process (evaluation seen as part of protected area (PA) management)
Concepts	visionary leadership sustainable results management by fact value workforce and partners social responsibility improve, innovate, adapt	best-practice standards represent the ideal in the conservation community's collective knowledge of the process for designing, managing, and monitoring projects; projects evaluated by comparison with best practices; relevant practice adapted to an organizations' needs; iterative cycle of evaluation and improvement suggested	evaluation a regular exercise within planning cycles use of evaluation to adapt and improve use of cost-effective monitoring systems and indicators values: biological, cultural, socioeconomic for establishing PA
Source or theory	approaches identified by practitioners in leading business and public sector organizations in the European Foundation for Quality Management	review of good project design, management, and monitoring (in conservation, public health, education, business family planning, international development, social services); standards evolve with input from practitioners	guidelines for good practice drawn from experiences of many PA practitioners
Structure	nine-box model people–process–performance (leaders drive processes to achieve results and results inform future policy/improvement)	project standards of design, management, monitoring that guide programmatic decisions in project management (best interventions for conservation success); not designed to fully address administrative functions (e.g., budget, contract, human resources)	best-practice guideline; not intended as a how-to manual; no detailed methodology evaluation model presents stages of the "management cycle" of design and planning, appropriateness and adequacy, and delivery
Key criteria	leadership policy and strategy people management resource management processes biodiversity results people results impact on society overall program results learning and improvement	adaptive management based on a cycle of conceptualize project vision and context, plan actions and monitoring, implement actions and monitoring analyze, adapt, use data capture, share learning, involve stakeholders, cultivate partnerships, document decisions, adjust steps as necessary	management of context (PA values, threats, opportunities, stakeholders) planning (vision, goals, objectives, strategies) inputs–resources (staff, money, equipment) process (delivery of management actions) outputs (goods and services as defined in management plans) outcomes (impacts achieve defined goals/objectives) three "themes" of management: design (context and planning), appropriateness and adequacy (inputs and processes) and delivery (outputs and outcomes)
Approach	self-evaluation or 3rd party evaluation of program using model criteria (interviews, observation, consensus assessment)	common-property framework allied to Miradi Adaptive Management Software to define project scope, to prioritize threats, develop objectives and actions, and establish indicators to monitor and assess effectiveness of strategies	define assessment objectives, scope, and resourcing; select method (visits, workshops), choose team, set indicators; implement assessment in the field and office; interpret and communicate results

Step 1. Collate and Assess Data

Collate and assess data against the four results criteria (biodiversity, people, and community, impact on society, and conservation-program results; Table 1 & Fig. 2). This provides information on trends, threat status (biological or anthropogenic), successes, failures, and data. The information generated by this step provides a context for the program that will inform the next steps in the assessment.

Step 2. Assess Policy and Strategy Criteria

Assess whether policies and strategies address the program issues raised in the data and trends identified in step 1, consistent with the assertion that recovery goals

should be based on biology if possible (Boersma et al. 2001; Clark et al. 2002). The process of planning should also be examined because conservation plans and strategies frequently take too long to develop and should themselves be reevaluated regularly (Snyder & Snyder 2000).

Step 3. Identify and Review Core Conservation Processes

Identify and review core conservation processes in terms of the quality and innovation of the approach and efforts to improve the approach. Monitoring of management actions is often inadequate in conservation (Boersma et al. 2001). Variables which are chosen for measuring program performance need to match the purpose of the program, so that their monitoring drives improvements in method (Deming 1982). This principle broadly reflects a refinement of the practice of adaptive management in conservation (Groom et al. 2006).

Step 4. Review Management of Workforce, Communities, and Resources

Review people, community management, and resource management in terms of capacity and involvement of people, allocation of funds, and use of assets to run key processes and achieve program objectives. The human factors of these criteria have a greater influence on conservation than science (Clark 1997). In addition, conservationists learn from practical experience and apply improvements by understanding the system in which they are working (i.e., species and ecosystems). Adaptive management demands short chains of command, straightforward objectives, and resources.

Step 5. Assess Leadership

Assess leadership in relation to activities occurring in the organization and whether correct actions are (or are not) being reinforced by leaders. The leadership role is important in successful programs (Turvey 2008).

The areas critical for program improvement can be identified through these five steps and they may relate to policy, technical matters, conservation approach, measurement, learning, funding, resource allocation, organization management, or leadership. Assessment normally involves a combination of analysis methods, such as interviews and observation. A questionnaire or a facilitator-led process can also be used by an assessment team to conduct a systematic evaluation. The criteria and subcriteria (Table 1) can be used to create a checklist for each step in the assessment. Results criteria should be assessed in terms of how the data informs improvements in current and future processes.

To show how the five-step process can be used to assess effectiveness in conservation management, we present two case studies, the Po'ouli and the black-footed ferret. Both conservation programs have a species focus, but the model can be applied equally well to ecosystem-level or community-based conservation programs.

An Assessment of Conservation of the Po'ouli

The Po'ouli (*Melamprosops phaeosoma*), a Hawaiian honeycreeper endemic to Maui, was discovered in 1973 (Baker 1998). Soon after, the bird's apparent rarity precipitated its listing under the U.S. Endangered Species Act. A large reduction in population occurred between 1980 and 1981, and the species is now listed as possibly extinct, despite several attempts at recovery (Groombridge et al. 2003; VanderWerf et al. 2003; IUCN 2009). A journalist who studied the demise of this species said its extinction was caused by "pigs, rats and bureaucratic dithering" (Powell 2008).

In the Po'ouli example we applied the model criteria in reverse (Fig. 3). The assessment starts with results to emphasize investigation of whether results feedback informed and influenced approach and to determine whether leaders focused on facts to improve program effectiveness. Each criterion assessment pointed to actions that could have improved the probability of the program's success.

Step 1: Context and results indicate that both habitat protection and ecological study was appropriate for Po'ouli in the 1970s and was achieved (albeit slowly and erratically). By the mid-1980s survey data revealed the population was in rapid decline. At this time, little was known about the species or its habitat, so assuming a worst-case status, the precautionary principle (Foster et al. 2000) perhaps should have been applied that involved a strategy to directly increase the number of birds. Helpful actions would have been to identify critical results and outcomes from available species and ecological data and set objectives relative to time, quantity, quality, and costs, rather than biased towards a philosophical stance.

Step 2: The program's strategy of long-term habitat restoration was maintained from the 1970s through the late 1990s, but context data (i.e., biological survey results) indicated a need for a different strategy: emergency population recovery. The management team failed to understand and renew its purpose, and the recovery plan was too restrictive, which prevented timely action. A fundamental weakness in the Po'ouli program was a failure to identify and carry out its goals. Helpful actions would have been to devise objectives and measures that relate to the defined purpose of the program and revise plans according to feedback from data or changes in the wider context of the program.

Step 3: Assessment of conservation processes considers how results inform improvements in methods. Fencing and habitat-renewal processes were successful. The objectives that focused on habitat processes, however,

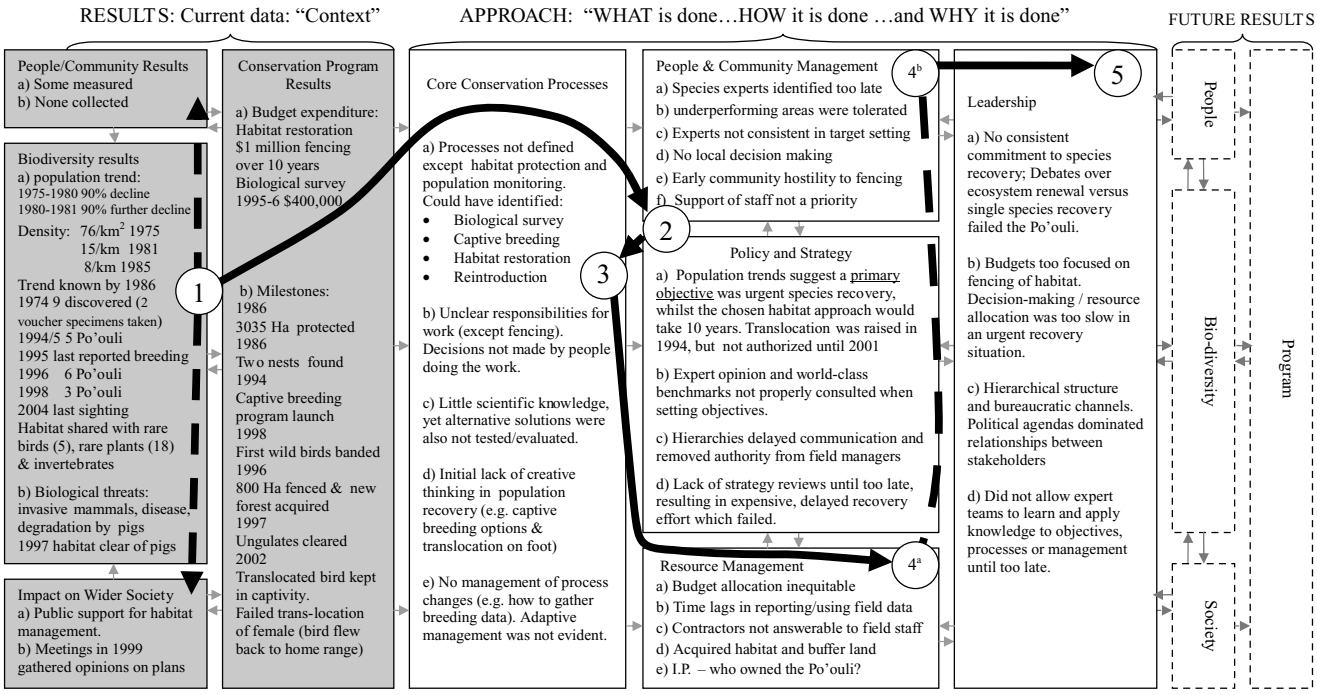

Figure 3. Representation of the assessment of the Po'ouli program (DLNR 1999; DLNR & USFWS 1999; Baker 2001; VanderWerf et al. 2003) with the conservation excellence model. Thick arrows indicate the assessment progression from step 1 through 5 across the criteria of the model. Action points arising from each step include: (1) identify priorities (species recovery) and data needs (species ecology), (2) focus aims and objectives on priorities, within practical and time constraints, (3) identify processes and provide resources to deliver objectives and ensure results drive improvement in both approach and strategy, (4) allocate people, responsibilities, and resources; (5) leaders must drive priorities through strategy and resource provision.

were identified as erroneous in step 2. Although the population was declining continually, there were no processes in place to address this problem until the late 1990s. Helpful actions would have been to identify and implement best practice processes that would deliver new knowledge or data (even negative outcomes) to improve understanding of the biology of the Po'ouli or to deliver tangible population increases. Results feedback should be used to inform change and improvement of methods as required.

Step 4: A review of people and local community management (staff and community volunteers) and resources management in the Po'ouli program suggests that decisions were made only at senior levels and resources and permissions were granted only after significant delays (e.g., permission to pursue captive breeding, nest site management). Helpful actions would have been to ensure that resources (i.e., equipment, staff, data) were available for priority processes, that the right experts were involved to deliver program objectives, and that their expertise was used to ensure an immediate increase in population size. To support this action, decision-making authority should have been passed to experts doing the work, so their action would have been focused, timely, and effective. (Decision making to protect habitat on Maui was effective, but similar authorizations for population recovery were rarely given, if ever, to field teams.)

Step 5: Assessment of leadership influences includes a reflection on shortfalls identified in steps 1–4. Bureaucratic hierarchies and philosophical preferences of leaders had a negative effect and caused ineffective approaches to be applied across the program. Helpful actions would have been to establish clear, purposeful leadership with decision-making authority and reasonable resources focusing effort on the most critical objectives (using known data or data gaps). Leaders should have made their own actions, priorities, and effort consistent with the stated objectives and have delegated authority to experts in the field.

A number of the helpful actions follow similar themes (e.g., delegation of authority to field managers), so an overall integrated action plan would have addressed the overarching priorities in the program. If these actions had been applied in the Po'ouli program, separating the goal of saving the population from the goal of habitat protection, a completely different set of priorities, success measures, budget allocations, and methods of implementation would have arisen.

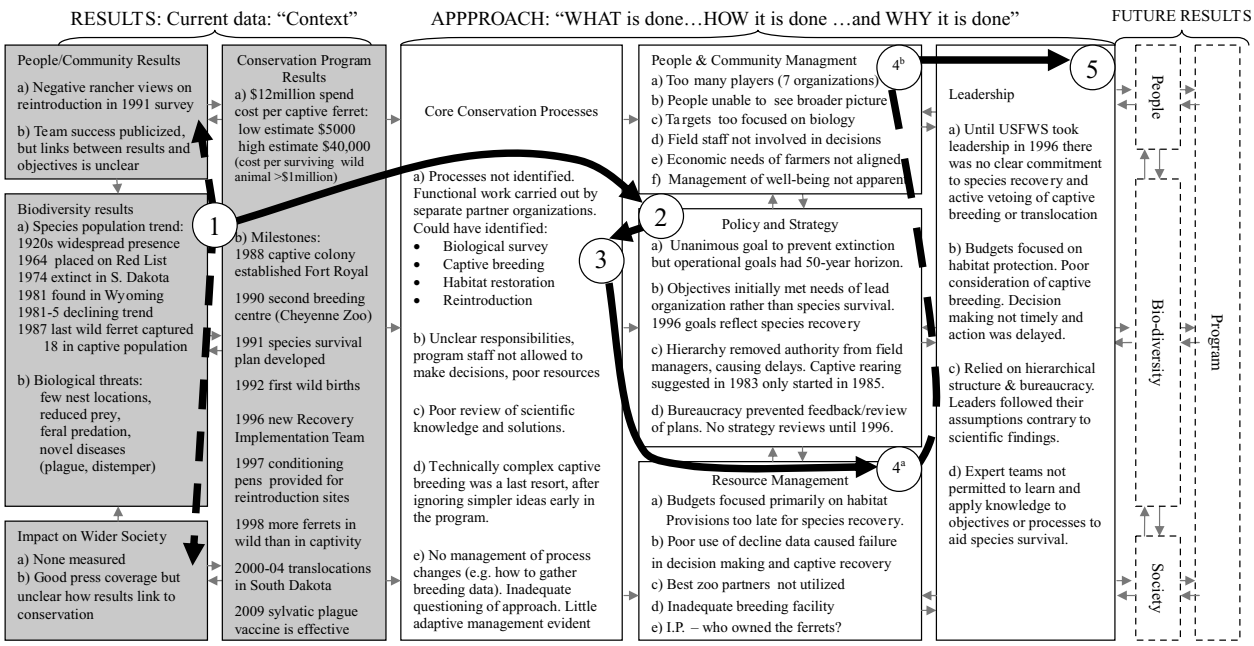

Figure 4. Representation of the assessment of the black-footed ferret program (Anderson et al. 1986; Reading & Kellert 1993; Williams et al. 1994; Clark 1997; BFFRIT 2009; Hess 1995) with the conservation excellence model. Thick arrows indicate the assessment progression from step 1 through 5 across the criteria of the model. Action points from each step: (1) balance priorities (species recovery and habitat protection), (2) communicate plans and implement resources according to agreed aims and objectives, (3) identify and resource key processes, use the best approaches, and ensure results inform future actions, (4) allow people to make decisions and use resources, and (5) ensure policy, plans, resources, and authority focus on priorities.

An Assessment of Conservation of the Black Footed Ferret

The black-footed ferret (*Mustela nigripes*) is an endangered North American mustelid that experienced a population crash to about 10 individuals (Clark 1997). From 1987 to 1990 the population was maintained entirely in captivity (Wisely et al. 2008). This ferret species is a predator of prairie dogs and has been greatly affected by agricultural land use, subsequent eradication of their prey species, and diseases such as canine distemper and sylvatic plague (Williams et al. 1988, 1994). The ferret population, however, experienced a more gradual decline than the Po'ouli.

Step 1: Context data showed negative rancher views, reduced prey and nest sites, and a small population. These conditions suggest a need to balance priorities. Helpful action would have been to identify which critical factors needed to be addressed to ensure both species recovery and habitat protection.

Step 2: Policies and strategies were aimed at preventing ferret extinction, but different messages were communicated in objectives and deployment of resources. Helpful action would have been to include the management of objective setting, budget approval, and resource allocation to ensure consistency of approach with the overall purpose of the program. Planning is not finished after production of the plan itself, but should include how the implementation of the plan is monitored.

Step 3: Core processes were not identified or funded, and comparisons with other approaches and programs were not made. Helpful action would have been to identify the correct processes and use them to implement the desired plan. Additionally, knowledge of core processes should have been used to inform policy and future program direction (a learning process).

Step 4: People and resources assessment identifies limitations of the program's hierarchical bureaucracy. Action to address this would include simplification of the overcomplex set of partner organizations (Clark 1997); use of relevant experts, even in a consultative capacity; and decision making by people on the ground.

Step 5: The leadership team did not appear to be compelled to tackle problems with human processes such as organization, politics, information flow, decision making, resource allocation, and external communication. Helpful action would have been leadership efforts to remove the hierarchical structures that exacerbated problems in the program. Additionally, leaders could have used technical information rather than political preferences to influence decisions to achieve conservation goals.

In the case of the black-footed ferret program (Fig. 4), problems with policy, resources, and authority were not

addressed (Clark 1997) because the issues generally sat outside the specific conservation remit of the program. In contrast, a comparison of the program with the conservation excellence model would have encouraged managers to consider, assess, and address the question: Is the organization operating successfully and learning to improve? The poor results, slow decision making, poor resource use, weak technical approaches, and ineffective leadership evident in the program up to the mid 1990s would have been consistently revealed by assessment with the conservation excellence model. Since 1996 a more balanced approach has been applied to the recovery of black-footed ferrets (BFFRIT 2009). There have been successful reintroductions in a number of separated sites in Wyoming, Arizona, and South Dakota (Wisely et al. 2008).

Conclusions

Gray wolf (*Canis lupus*) reintroductions ($6.7 million over 8 years) and Californian condor (*Gymnogyps californianus*) conservation efforts in the United States ($1 million per year), and golden lion tamarin (*Leontopithecus rosalia*) recovery initiatives ($22,000 per surviving individual) in the Atlantic Coastal Forests of Brazil are good examples (Fischer & Lindenmayer 2000) of how costly some conservation programs can be. Projects that are overly bureaucractic or inefficient consume resources at the expense of other conservation initiatives. For the Po'ouli, significant investments in scientific resources and habitat protection were still insufficient to prevent the species' extinction. Recent recovery and reintroduction of the black-footed ferret followed previously complex conservation plans, which caused decades of delays, increased costs, and compromised the genetic health of the population. We have introduced a new management framework that may help bring about increased effectiveness in the conservation sector. Assessment methods are yet to be determined, but they should be designed carefully to avoid bureaucracy.

An initial step toward implementation of the conservation excellence model might be for conservation practitioners to ask themselves the following questions relative to their own programs. Are all aspects of the model managed within my program? Which aspects are being managed ineffectively? If some aspects are not managed, what is the impact of these omissions? Are program objectives reflected in the actions being carried out and monitored? Are we measuring and monitoring the correct factors? Does the project team review progress, analyze data, and identify improvements? Do team members communicate ideas and problems to each other? Is the program delivering meaningful conservation outcomes?

For programs at the design or start-up phase, the overall management of the program can be shaped around the conservation excellence model (e.g., define objectives; identify success measures and feedback data; implement key processes, technical interventions, and community engagement; delineate the roles of leaders and staff; and establish management reviews). For organizations managing multiple programs, an evaluation of each program could be conducted using standard criteria from the conservation excellence model to compare and contrast the reasons for relative successes in programs. Furthermore, the model could be developed as a generic framework for identification and comparison of exemplary conservation successes. By improving knowledge exchange across the conservation community, these comparisons would overcome a major shortfall with respect to learning from the mistakes and experiences of others (Clark 1997; Snyder & Snyder 2000).

Conservation professionals need to understand both the organizational system and the biological system in which they work. We hope our conservation excellence model will allow conservation biologists to understand how people, processes, and performance are linked and to examine these broader management topics. Future conservation efforts may avoid failure by applying some of the lessons learned from business excellence.

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