High-Performance Teams in Wildlife Conservation: A Species Reintroduction and Recovery Example

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ABSTRACT / Reintroduction of animals to the wild to establish free-ranging viable populations is a valuable conservation tool, but ecological skills alone are not enough to ensure a successful reintroduction; also needed to do the work are effectively designed and managed programs. This article suggests general guidelines for organizing and managing reintroduction programs, reviews some basic organizational issues, and considers ways to develop high-performance teams. The need to integrate reintroduction programs into their larger interorganizational context is discussed. The reintroduction program's structure must be appropriate for its function and should be properly staffed, led, and buffered from its political environment. It should process information well, learn rapidly from its own mistakes, and be creative. A high-performance team devotes most of its energies to solving external rather than internal problems.

Reintroduction of rare and endangered species to the wild is an important technique for combating the current unprecedented extinction rate (Scott and Carpenter 1987, Wemmer and Derrickson 1987, D. E. Brown 1988). In the arsenal of conservation techniques, reintroduction is one of the most dramatic (Caldecott and Kavanaugh 1985), but the effectiveness of many past reintroductions is questionable (Booth 1988, Griffith and others 1989). The goal of reintroduction is to establish a free-ranging, viable, reproductive population of a species that can interact freely with its environment (Jungius 1985). There is a limited but growing history of reintroduction successes (Conway 1980). For example, the Bavarian National Park has been stocked with wolves (*Canis lupus*) from animals bred in German zoos; the Atlanta Zoo has reintroduced crocodiles (*Crocodylus moreletti*) into Mexico; the ibex (*Capra ibex*) and chamois (*Rupicapra rupicapra*) were reintroduced into former ranges from stocks bred at the Munich Zoo (Campbell 1980); the Mississippi sandhill crane (*Grus canadesis pulla*) and whooping crane (*G. americana*) were reintroduced by the US Fish and Wildlife Service (McMillen and others 1987, Derrickson and Carpenter 1983, 1987); and Kemp's Ridley sea turtle (*Lepidochelys kempi*) is being reintroduced (T. F. Clark and others 1988), as has been the red wolf (*C. rufus*), in North Carolina (Parker 1988, Phillips and Parker 1988). Additional successful reintroductions are cited by Fyfe (1977), Campbell (1980), and Jungius (1985). Reintroduction attempts are expected to increase significantly. For example, the California condor (*Gymnogyps californianus*) and black-footed ferret (*Mustela nigripes*) are known today only from small captive populations (Snyder 1986, T. W. Clark 1987). For these two endangered species, and many others, captive rearing in zoos and research facilities and reintroduction to the wild offers the sole hope of survival (Carpenter and Derrickson 1981, Carpenter 1983). In short, reintroduction is an important conservation tool, and it can work.

Unfortunately, it can also fail (Griffith and Scott 1987, Griffith and others 1989). In reviewing programs for the reintroduction of primates, Konstant and Mittermeier (1982) showed that some kinds of reintroduction efforts are bound to fail or are simply unwise on ecological grounds. In an extensive review of translocation of terrestrial vertebrates, Griffith and others (1989) identified many technical factors associated with successful translocation. They produced a "likelihood ratio contigency table" for successful translocations, which included the species designation as endangered or something else, habitat quality, location of release area in relation to historic species range, whether animals were exclusively wild-caught or exclusively captive-reared, presence of potential competitors, potential productivity, source population trend and density for wild-caught animals, food habits of translocated animals, and number of animals released. Technical or biological issues are important (see Nielsen and Brown 1988).

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The Human Factor

Reintroduction programs involve more than biological skills (Hanna 1988). Even if all the necessary background data on a species' habitat requirements, population, behavior, and genetic characteristics are understood, and even if socioeconomic concerns are favorable, bad management of programs can affect the program or even cause failure. In previous examinations of reintroductions, this human element has been underappreciated or neglected. For instance, Temple's (1983) four factors for reintroduction success included three biological concerns (e.g., are adequate release procedures available?) but only one organizational issue (are the human interest and dedication needed to sustain the effort present?), although many other human concerns need to be addressed. If biologists and wildlife management officials can understand effective program management as well as they understand ecology, they can increase their chances for success (T. W. Clark 1986, T. W. Clark and Harvey 1988, T. W. Clark and others 1989, T. W. Clark and Cragun 1989).

We have heard wildlife personnel insist that their situations are unique because the species is unique and the personalities involved are unique. Thus, these workers feel powerless, hopeless, and tradition-bound in their failing wildlife programs because they have no vision of how shared, common experiences from other programs, or even from other disciplines, might solve their problems. We argue that despite unique elements in every program, there are a large number of common elements among endangered species cases and conservation programs in general. So, are there general guidelines that future programs could use? To derive such guidelines, we might review the lessons of past programs—failures as well as successes. Unhappily, few case histories give attention to organizational variables (we encourage colleagues to alert us to such studies). Scientific papers tend to be written in a tight, expository style; rarely do they examine the human dynamics directly and usefully, especially decision making (e.g., Jackson 1986, Snyder 1986). In fact, the scientific method, our code of professionalism, and good journal editors all work to demand strict "objectivity" in our accounts of wildlife programs (Latour 1987).

Our concern here, though, is precisely the kind of human organization issues that bear enormously on such wildlife programs as reintroduction successes. We believe that certain organizations are much more likely to be effective than others, and we will try to show why. We will review some basic organizational issues and consider ways to develop high-performance teams. Finally, we will discuss integrating reintroduction programs into their larger organizational context.

Effective Organizations

We become aware of ineffective organizations most strongly when public failures reveal internal weakness. The destruction of the space shuttle Challenger in 1986 was a dramatic example of technical failure. Programs involving technology often provide more direct indicators of failure than human services. One can debate the success of social programs, but a destroyed spacecraft is unequivocal. The Challenger tragedy was the result of faulty communication, "flawed" decision making, and lack of "hands on" management, as well as more basic problems in technology selection and procurement (Broad 1986, H. S. F. Cooper 1986, Presidential Commission 1986). Yet the shuttle is only one of several important government programs that have been mismanaged (Squires 1986). Partial or hidden program failures are more difficult to recognize than blatantly disastrous ones. One reason is that, with enough effort, criteria for success can be generated in almost any program, even in those dealing with intangibles.

In wildlife management, there have also been failures traceable to organizational weakness. The poorly performing recovery program for the black-footed ferret population in Wyoming is arguably the result of inappropriate management strategy based on ineffective organization for preservation and recovery (D. Weinberg 1986, May 1986, T. W. Clark and Westrum 1987, T. W. Clark and Harvey 1988, T. W. Clark and others 1989).

We would expect an effective organization to show certain characteristics. First, it would be well matched to its task, its structure being appropriate for its function (Nadler and Tushman 1980). Second, it should be properly staffed, led, and buffered from its political environment. Third, it should process information well and learn rapidly from its own mistakes. It also should be creative. Because of the complexity and urgency of some recovery efforts, properly managed programs are imperative.

Teams and Networks

Reintroduction programs of different sizes operate on multiple levels in different time frames. Every species recovery effort will include not only people directly involved in the recovery effort (the team) but also a larger network of influential people and organizations (the network). For instance, suppose the

Northern Rocky Mountain wolf (*C.l. irremotus*) were to be introduced into Yellowstone National Park, as called for by the US Fish and Wildlife Service's Recovery Plan. We might expect to see represented on the project team such professional specialties as wolf ecologists and behaviorists, as well as elk (*Cervus elaphus*), deer (*Odocoileus* spp.), and moose (*Alces alces*) biologists. By law, the National Park Service, the US Fish and Wildlife Service, the US Forest Service, and the game and fish departments of surrounding states would also have to be involved. Many biological issues would need attention.

In planning such a program, we would need to think about the human aspects of the reintroduction effort too, focusing on the relatively well-defined reintroduction team and also on the larger network within which the team must operate. At the team level the major problems would center on the dynamics of group members who have to work together effectively in day-to-day decison making and on-the-ground action. The leader's task would be to ensure that effective small-group dynamics support the project goals.

At the network level, the project might involve a task force representing different organizations and agencies. Responsibility here would be more diffuse, although several agencies are required to participate by law, and the major problem would be maintaining cooperation and commitment to the program among the many individuals and organizations. The major management task would be "networking" to maintain this cooperation and commitment. Information flows would be more difficult to coordinate than in an intensive recovery team situation. On the other hand, ample resources would likely be present and available in the larger network.

We are thus led to two sets of problems: how to organize and manage a small high-performance team of professionals, and how to coordinate the actions and commitments of a larger network of persons and organizations (Westrum and Samaha 1984). Let us tackle the small team first.

Staffing the Team

Ideally, teams should consist of professionals with long formal training and experience. Members should be mature, well socialized, and dedicated to high standards of ethics and performance. Professionals should have extensive knowledge and the ability to work without supervision or extensive rules and regulations. Team members should be selected for their problem-solving ability and willingness to deal with the uncertain and ambiguous situations presented by recovery and reintroduction.

A key consideration is the individual's willingness to work as part of the interdisciplinary team that is necessary to address the many aspects of complex wildlife problems. Professionals are trained to make independent decisions and thus may not be used to having their judgment questioned by those from other disciplines. The ability to operate effectively in a group context is not a universal trait and demands prior experience and skills. The stress of high-risk situations such as reintroductions may inhibit the requisite mental flexibility. The data used in reintroductions may be ambiguous and confusing. For example, counting the small numbers and fates of a few reintroduced animals may be impossible, yet the success of the effort requires it. Two ineffective responses to this situation might be: (1) "let's wait for complete information," or (2) "let's pretend that the information we have is sufficient." Both responses can lead to serious problems, either paralyzing efforts in the first case or permitting serious missteps in the other. Effective team members are willing to deal with such incongruities and pitfalls honestly, while lesser individuals respond to minor failures by engaging in fault-finding or personal criticism. This may lead to tensions that seriously disrupt group functioning. Equally ineffective, however, is the unsure team member who is unwilling to question team actions in spite of personal doubts. Intellectual conflict is normal and may be constructive in a team, but it must be handled in a professional way. Reintroducing a species is much like introducing a new product to the market (Souder 1987) and involves many of the same uncertainties and risks.

The goal in staffing, then, is to provide team members who can handle the ambiguities and risks without becoming rigid or "burning out." Ideally, they would be the "reflective practitioners," discussed by Schon (1983), who learn quickly in action. The key traits are maturity, flexibility, and willingness to contribute to team efforts.

In an important but neglected paper, Peter Vaill spelled out the characteristics of organizations and groups that others viewed as "high performing" (Vaill 1978). He listed 43 characteristics of these groups, including traits related to synergy, specialized team culture, and "doing the impossible." Since these features seem to be emergent rather than designed, it is tempting to dismiss them as ideals attainable only by luck, charismatic leadership, or special circumstances. Nevertheless, the design of reintroduction teams can take the principles of such groups into account, even if perfection is elusive. By designing groups so that they can perform well, we at least load the dice in favor of success. So what characteristics should we seek? Viewing the team as an information-processing and

high-performance system made up of people, these traits fall naturally into two categories: the management of information and the management of emotions.

The High-Performance Team

Cognitive Characteristics

Two important cognitive traits of high-performance recovery and reintroduction are rapid decision cycling time and maximum use of the team's cognitive resources, i.e., the team has to be able to make decisions fast, and it has to base decisions on its total information resources.

Reintroduction may require rapid decision making, since the external situation may change rapidly (e.g., the species may experience a rapid die-off and rescue of individuals is possible only with a rapid decision). A useful concept is "minimum decision cycle time." The idea of rapid decision cycling is derived from tactical principles of aerial combat, specifically John Boyd's "O-O-D-A" loop: observe, orient, decide, act (Fallows 1981). Every situation that demands action can be roughly modeled by a diagram such as that in Figure 1, in which D1, D2, and D3 are the delays in decision-making. After the group takes action, there is a delay (D1) before its effects appear in the system. A second delay (D2) occurs while the team suffers the effects of its actions on the system. And a third delay (D3) before corrective action can take place, and the cycle starts over again. The cycle time, equal to the sum of the three delays, must be kept short.

Oral communication, absence of personalized fault-finding, and a willingness to examine any and all alternatives are essential parts of rapid-cycling decision systems. The ability of the system to cope with a dynamic environment can be expressed by a simple comparison—the rate at which the team can react compared to the rate at which the environment changes. If the group's ability to act and react is quick relative to the environment's rate of change, it can stay on top of the situation.

One key aim here would be to lower the team frictions that cause delays D2 and D3, since D1 is usually a parameter outside the team's control. Problems must be rapidly spotted, and the team needs to converge and act on them quickly. This implies a free flow of information with a strong emphasis on oral communication. Written communications should be kept to a minimum, recording only the essentials. A good model would be the famous and successful project team called the "skunk works" at Lockheed (Johnson 1985).

A second requirement is to maximize use of the entire group's cognitive skills. All group members must be encouraged to use their eyes, ears, and brains. The ability to perceive insights and the willingness to place one's observations in front of the group are essential. Otherwise, the dominant intellectual or political members of the group become the filter through which all communications must pass. This underutilization of the group's total brainpower must be avoided. Communication practices that facilitate high creativity, such as emotional supportiveness, brainstorming, and nonpersonally directed evaluation of ideas, are helpful (Prince 1972, Stein 1975). This will aid in spotting problems and formulating hypotheses. The major danger to be avoided is that the group will engage in the pathology that Irving Janis has labeled "groupthink" (Janis 1972), in which the urge to maintain group cohesion channels and stereotypes group decison making. Disagreements and conflicting perceptions are muted in the interest of unity. Similar problems occur on airliner flight decks when crew members' suggestions would threaten the captain's authority (G. E. Cooper and others 1979). Groupthink can lead to poor group performance and failure.

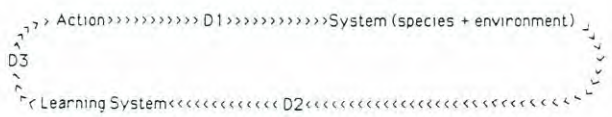

Figure 1. A schematic diagram of a decision cycle.

Related concepts are involved. Because reintroductions present complex biological challenges, group creativity needs to be high. Solutions to presented problems must be rapidly generated, sifted, and implemented. The team needs to have a high flow of useful ideas and to maximize the entry points for new ideas and perceptions into its awareness, including ideas from both the inside and the outside. While leadership is important, excessive leadership may result in the stifling of some members' contributions. In an earlier paper, the authors suggested the idea of "generative rationality" to enhance the resources of decision making, rather than simply depending on past experiences (T. W. Clark and Westrum 1987, T. W. Clark and others 1989). Donald Schon has suggested something very similar with his idea of "reflective practice" (Schon 1983, see also Argyris and others 1985). Openness, flexibility, and a willingness to admit biases are essential in coping with the uncertainties of the recovery and reintroduction process. By contrast, closure, rigidity, and defensiveness are an open invitation to outcomes in which "the operation was a success but the patient died."

Emotional Characteristics

Just as the high performance team requires certain mental features, it also requires certain emotional traits. Reintroduction is a risky and uncertain task fraught with emotional dangers: (1) probability of rapid changes in field conditions, (2) inability to foresee consequences of team actions, (3) a high risk of partial or complete failure, and (4) politicized context.

These problems can result in anxiety. While the task calls for mental flexibility and ingenuity, it can also lead to emotional rigidity and defensiveness. This may take the form of adherence to ineffective policies in the face of contrary evidence or an unwillingness to admit mistakes or failures. The more politicized the context, the more natural it would be to find team members taking refuge in denial or fault-finding (the problem, apparently, is always somewhere else). We need to know how to minimize the frequency of their occurrence.

Two keys to team effectiveness in handling emotions are internal support and external buffering. Internally, there must be a strong, mutually supportive atmosphere on the team, including the attitudes that: (1) team members are jointly responsible for outcomes; (2) they are highly competent, but can and do make occasional mistakes; (3) just as the team takes collective credit for success, it also takes collective responsibility for mistakes—making a mistake will not result in withdrawal of group support; and (4) when failure occurs, it must not be denied but investigated since it may reflect system problems. The system can be changed to avoid making similar mistakes. Thus, mistakes are an occasion for learning, and they must be examined so the system can improve.

Mutual respect is thus an important requisite for effective team functioning. It aids in rapid repair of system defects. Indeed, it is the basic glue that provides strength in the face of adversity; it is what makes a team. But respect may be difficult to achieve if the team is assembled from persons unfamiliar with each other. Different coping styles may well lead to suspicion, fault-finding, and scapegoating. The mutual dependence of team members on each other needs emphasis, so that heterogeneity is seen as a group strength. Only by objective assessment of strengths, skills, and weaknesses can the group avoid divisions due to differences of approach. The team thus requires an effective leader.

Leadership of High-Performance Teams

The leader of a high-performance team needs to have the respect of team members. In a scientific context, this usually means that the leader must have superior technical skills to be able to help team members with technical problems (G. M. Weinberg 1986). Specific leadership skills are also necessary: the willingness to be objective, fair, and to take responsibility for the overall mission. Being right is not a substitute for being effective.

A leader sets the focus of a high-performance team. To function well, such a group must be future-oriented and resist rationalizing its past failures to make its performance look good. Failures are a constant hazard, which must be squarely faced, effectively grieved, and then left behind as new solutions are developed. This forward movement is particularly difficult when the environment is politicized. One resolution to this problem is a dual posture. The group can maintain maximal openness inside but can present a solid front to the outside. The danger is always that the group will take seriously the image of confidence that it must project to the outside and fail to consider its problems dispassionately.

The team, in turn, must be protected from outside interference. The leader must act as a buffer to provide this protection. The willingness to reexamine failures objectively and to learn from them is unusual, and a group that cultivates it is exceptional. Thus, it is likely to happen only if the leader insists on supporting the group even in the face of adversity.

Group success may also present problems. If the group is successful, then the high-performance quality of the group may seem like magic. Inexperienced individuals may find this degree of success destabilizing (Wambaugh 1984). There can be a tendency toward external overconfidence accompanied by inner doubt, leading to bragging on one hand and anxiety on the other. Risky operations, by their very nature, will provide a mixed crop of successes and failures. In an uncertain environment, only some sources of variability are under group control. Thus, it must be emphasized that success is only partly to be explained by group skill. Similarly, failure may be due only in part to group mistakes. The role of the leader is particularly important here in providing a steadying influence and explaining the group to itself. The leader must maintain a realistic assessment of the degree of control the group has and keep its expectations within reasonable limits.

An important part of the leader's role is the management of conflict. Conflict in a recovery and reintroduction team is likely to be high and constant. This is essential to keep the group fluid. It will also be a natural result of differing orientations. However, this conflict must be skillfully managed so that it produces

ideas and solutions and does not degenerate into personality issues and scapegoating. Conflicts that are mild when the group is beginning may become serious in the face of imminent failure or political pressure from outside. Leaders who provide for effective resolution of conflicts are likely to free the team from preoccupation with its own problems (L. D. Brown 1983).

Here it might be useful to propose one criterion for healthy group functions. This criterion is that a healthy group spends most of its energies solving external problems rather than working on itself. If the group is well structured and managed, most of its mental and emotional energies will be focused on the reintroduction rather than its own dynamics. Neurotic groups, by contrast, will spend most of their energies on internal structuring, conflict, and fault-finding. In neurotic groups, minor failures are a signal for increased group conflict just as in the healthier ones they are a signal that something needs investigating. Leaders can do a great deal to set the focus of the group either on solving system problems or on studying its own internal performance.

Management of Network Relations

Another important task of leadership is the management of relations within the network that provides an organizational context for the recovery and reintroduction team. The best teamwork in the world will be useless if the authorities decide to terminate the effort or to take conflicting actions. Thus, explaining the team's operations and getting cooperation from outside agencies and the public is a necessary task for a team's leader. The key ability is to provide links to these outside sources of power, influence, and knowledge. To get resources, gaining commitment from outsiders will be necessary. Probably the most important contact is that with the agency or task force that funded and initiated the reintroduction effort in the first place. If it feels the team is not carrying out or is exceeding its directive, it may withdraw the necessary support. Regular reports on progress are important but may need to be supplemented with visits and presentations in person. Maintaining support is key. Wildlife specialists may pride themselves on being unpolitical, but political skills are absolutely essential in maintaining support for the project.

Other sources of power are also important. Federal and state regulators, wildlife organizations, industry, universities, ranchers, farmers, and private individuals may feel their vested interests are threatened by the reintroduction effort. Reintroduced species may be predators or may have harmful effects on vegetation, livestock, and economic interests. In many cases, reintroduction efforts may be impaired by the activities of these institutions. Again, for the leader to act as public relations arm and apologist to these groups may be absolutely essential for the project's success. In some case, compromises or what Mary Parker Follett (1940) called "integrations of divergent objectives" may be necessary for the project's continuance.

Conclusions

Reintroduction of rare and endangered species back to the wild will undoubtedly become a more widely used conservation technique for species recovery in the future. In fact, reintroduction may be the most important technique for restoring some species to the wild in free-living viable populations (Griffith and others 1989). Both ecological strategies based on the species' characteristics and successfully organized and managed programs are essential ingredients in recovery and reintroductions. Regardless of the biological uniqueness of the species being introduced, there are probably many programmatic similarities with other endangered species and conservation programs. Most existing case studies emphasize or only describe biological or ecological concerns of recovery or reintroduction, creating the misimpression that it is only a biological task. So few useful case studies exist that describe human actions, especially decision making and its outcomes, that our collective experience is of little use (Scott and Carpenter 1987). We must develop the ability to recognize poorly performing programs caused by internal weaknesses or other causes so that we can take remedial steps.

This requires a knowledge of organization and management, as well as biological subjects. A program's size and intensity must be matched to the reintroduction task. A relatively well-defined team is needed and its major problem will center around the dynamics of group members who work closely together. The team leader's job is to effect productive intergroup dynamics that support the reintroduction goal. Staffing the team with high-performance and self-starting professionals is essential. Members must be able to deal with uncertainty and risk. The team must use its full cognitive resources effectively, including development of a decision process that allows a quick response since the pace at which external situations change can be rapid. The team's total brain power must be tapped. Individual members should use their independent abilities and be willing to place their perceptions before the team. Reintroduction of

rare species, as well as most species recovery work, is tricky, uncertain, and fraught with emotional pitfalls that can cause frustration and anxiety. These can result in rigidity and defensiveness. Team members need internal support and external buffering. Team leadership is critical, requiring special knowledge and skills, including the willingness to be objective, fair, and take responsibility for the overall mission. The leader must steady the team and explain the team to itself, including the internal and external conflict that results. The team is part of a larger network of people and organizations that make up the context of reintroduction. Explaining team actions, generating support and cooperation from outside is imperative, and a job for the team leader. The reintroduction task involves many organization and management issues and concerns that must be successfully addressed, if the program is to be a biological success. To be a highly effective recovery and reintroduction program of rare and endangered species, both biological and organization and management concerns need simultaneous professional attention.

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