

RISK: Health, Safety & Environment (1990-2002)

Volume 3
Number 4 *RISK: Issues in Health & Safety*

Article 4

September 1992


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Mountain Goat Removal in Olympic National Park: A Case Study of the Role of Organizational Culture in Individual Risk Decisions and Behavior*

**Seth Tuler, Gary E. Machlis
and Roger E. Kasperson****

Introduction

Why do individuals perform high-risk activities they perceive as disagreeable? Activities may be disagreeable because compensation is inadequate, health and safety are threatened, personal values and task requirements are in conflict or preferred alternatives are not allowed. Police may perform disagreeable high-risk activities when called upon to save dangerous criminals, volunteer fire fighters when asked to risk their lives for property of dubious worth, combat personnel when fighting a war whose goals they question, and search-and-rescue personnel when responding to accidents with ill-prepared victims. Similar types of activities occur in less exotic situations and ones in

* Funding in support of the social risk assessment of the Olympic National Park Mountain Goat Removal Project was provided by the National Park Service Pacific Northwest Region, U.S. Department of Interior, contract number CA-9000-8-E005. The authors would like to thank Todd LaPorte and Eugene Rosa for their helpful and constructive comments.

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which the consequences do not physically threaten the actor. For example, doctors may be called upon to perform procedures with which they disagree (or *not* to perform those with which they *agree*) such as abortions or certain types of surgery on terminally ill patients.

Will individuals in such situations perform the tasks with high reliability, dedication and care? And if so, why? We observed a high-risk activity simultaneously perceived as disagreeable and performed with professionalism and high reliability. Our observations were made during a social risk assessment of the Mountain Goat Removal Project (the project) of the National Park Service (NPS), performed in Olympic National Park, Washington (the park).

Sport hunters first introduced eleven or twelve mountain goats (*Oreamnos americanus*, hereafter goats) into the Olympic Peninsula in the 1920's.¹ By 1983, research scientists estimated a population of about 1,000 in the park and had documented extensive disturbance of the area's unique ecosystems.² The last ten years have witnessed the implementation of a variety of methods to minimize or remove the threat of the goats to the ecosystems of the park. In 1988, park personnel began a live-capture and removal program. It ended after the second season in 1989.

Mountain goat translocation requires innovative and high-risk activities at many points in remote backcountry areas.³ During the assessment, we became interested in the character of team members' performances. The project team performed the high-risk activities with dedication, care and high reliability, while at the same time questioning the project's necessity, value and ultimate social contribution. Moreover, they willingly undertook personal risks to reduce potential health threats to the goats. They did so, in fact, with full knowledge

¹ OLYMPIC NATIONAL PARK, MOUNTAIN GOAT MANAGEMENT IN OLYMPIC NATIONAL PARK: ENVIRONMENTAL ASSESSMENT (1987).

² B. Morehead, *Olympic NP Stages Well-Run Removal of Exotic Goats*, 2 PARK SCI. 5 (1981).

³ See, e.g., G.E. Machlis, S. Tuler & R.E. Kasperson, *A Social Risk Analysis of the Olympic National Park Mountain Goat Removal Project* (U.S. Dept Interior, NPS D-173, 1990).

that, in spite of their efforts, the goats would be placed in areas that would allow them to be hunted and perhaps killed.

Why did they perform so well in such circumstances? We addressed this question in a case study. By focusing attention on a particular individual, group or institution the case study allows the subject to be examined in some depth and with the kind of insight not available from other approaches, e.g., sample surveys. As Hobbs and Blank note:⁴

One case study by itself cannot prove much of anything. But if there are many case studies that tend to agree and that tend to provide insights to more general conditions, then sociologists are on the road to a generalization that could prove significant.

The case study is based on discussions with project personnel and other experts and a review of the literature on individual risk-taking behavior. Prior conceptualizations of risk-taking behavior have focused on individual, group and sociocultural aspects of a person's environment.⁵ Theories focused on the individual, however, seem unable to account satisfactorily for the actions of team personnel. Based on the assumptions of rational actors and utility theory, one takes risks only if perceptions of potential benefits outweigh perceived costs. To the extent that an activity is perceived as disagreeable, attempts to avoid it may be amplified. Social and cultural theories generally focus on judgments and decisions about risk-taking, rather than on the levels of professionalism or reliability during the activity.

In this case study, we found organizational culture to be an important mediating factor in determining both individual risk decisions of the team members as well as the level of their performance of risky activities. The organizational culture of the NPS enabled the extraordinary performance of risky activities beyond what traditional approaches to risk-taking behavior would suggest. Although organizational culture may not be the only factor that mediates these

⁴ D.A. HOBBS & S. J. BLANK, *SOCIOLOGY AND THE HUMAN EXPERIENCE* 18 (3d ed. 1982)

⁵ O. Renn, *Concepts of Risk: A Classification*, in *SOCIAL THEORIES OF RISK* 53 (S. Krimsky & D. Golding, eds. 1992); C.A. Heimer, *Social Structure, Psychology, and the Estimation of Risk*, 14 *ANN. REV. SOCIOL.* 491 (1988).

outcomes, it was critical in this case.⁶

Here we discuss the rationale and implications of our observations. We first provide a brief description of our methods and the Mountain Goat Removal project. Next, we review traditional characterizations and theories of risk-taking behavior. Individual, social and cultural theories do not satisfactorily account for the risk-taking decisions and quality of performance observed during the disagreeable activity of goat capture and removal. We then explore the role that organizational culture played in the highly reliable and dedicated individual performance of the project's high-risk activities. In essence, the case study suggests a mediating role by the organizational culture of the NPS on the actions of capture team personnel in performing risky tasks. Finally, we suggest that this case may illustrate broader implications of organizational culture for risk-taking behavior, risk management and cultural responses to risk more generally.

Case-Study Methods

We reviewed the project to provide an assessment and safety recommendations of the social (human factors) risks associated with goat capture and removal.⁷ Primary data about the project were gathered from two site visits and seven phone interviews. The second visit afforded personnel the opportunity to correct the authors' representations of activities performed during capture and removal activities.

We conducted in-depth interviews of individuals involved closely in the planning and implementation of the project, e.g.:

- the Chief Ranger, administrator of the project,
- a ranger, the primary park employee responsible for the design and implementation of the project. He developed the operational requirements and modified equipment necessary for project implementation. For its duration, he was the primary employee responsible for capturing and removing the goats, and

⁶ Our emphasis on organizational culture does not rule out, e.g., the influence of personality variables.

⁷ See Machlis et al., *supra* note 3; S. Tuler et al., *Olympic NP Mountain Goat Removal Project Subject of Risk Assessment Report*, 11 PARK SCI. 14 (1991).

- a park research scientist, who participated in the design and annual evaluations of project tasks and outcomes.

We also interviewed the owner/operator of the helicopter company that participated. He had piloted the helicopter for capture and removal missions prior to 1989. In addition, the helicopter pilot for the summer of 1989 was interviewed.

Secondary data were collected from phone interviews with several other individuals experienced in animal capture and removal projects and hazards of helicopter operation. These included individuals from the NPS, the Department of Interior Office of Aircraft Safety, helicopter pilot associations, and outdoor safety and rescue associations. Other data were derived from texts about the NPS and available surveys of NPS employee attitudes. We also reviewed prior articles and reports concerning the project.

Interviewer bias was not a significant barrier to the collection of data. The park had initiated our project evaluation, and personnel were dedicated to the improvement of both safety and performance. Because we were not NPS employees, informants freely discussed their attitudes and experiences with us. None of us participated in any capture missions.

The Mountain Goat Removal Project

As mentioned, goat capture and removal required innovative and difficult activities in remote and rugged backcountry and entailed high risks. Briefly, a pilot and “gunner” used helicopters to identify, select, pursue and capture goats. After goats were darted or netted, the gunner had to alight from the helicopter and restrain, “bag” and secure the goat to the helicopter. The goat was then flown to a staging area and transferred to another agency, e.g., the Washington State Department of Wildlife, for release into native populations elsewhere.

Important task characteristics included:

- Helicopter chases were conducted in very rugged backcountry at high elevations. Low altitude flights along ridges and cliffs and in the vicinity of trees were frequent. Pilots flying these missions said that they were often pushing their physical and experiential limits and the helicopter’s performance limits.

- Helicopter landings were frequently required on steep slopes. Gusts of wind, up and down drafts and loose rock increased the danger of an accident during required full-power landings. In areas in which operations usually occurred, rotor clearance from obstruction, e.g., ledges or rock out-croppings, was often minimal.
- The gunner had responsibility for physical restraint and preparation of the goat for transportation. Frequently, the gunner had to attempt physical restraint with limited working space and on steep slopes, loose rock or hard snow. Additional care had to be taken to avoid injury by goats' horns.
- Fuel management was a critical aspect of the pilot's activities. Fuel constraints became increasingly difficult as goat captures occurred in more remote areas of the park.
- Teams frequently worked twelve to fourteen hour days. Full days began at 5 AM and ended in early afternoon. It was not uncommon for the pilot to work extra jobs during the rest of the day. As a non-park employee, the pilot was often responsible for completing work for other clients.
- Two methods for goat capture were net gun and dart gun. Each presented unique risks. The active ingredient used in the dart gun was 10,000 times more powerful than morphine. Accidental human exposure was apt to be deadly. Similarly, a net fired at the wrong angle could have become entangled in the rotors or skids and caused a crash.

The basic sequence of activities involved in the project is shown in Table 1.

Table 1
Stages of Mountain Goat Removal Tasks

-
1. Ground activity
 - Advance preparation
 - Decision to fly
 - Mobilization of personnel
 2. Flight to backcountry
 3. Search and selection
 - Search and capture evaluation
 - Decision to attempt capture
 4. Capture and restraint
 - Pursuit
 - Darting/netting
 - Hovering/landing
 - Alightment
 - Terrain crossing
 - Physical restraint
 5. Medical assessment and preparation
 6. Goat transport
 7. Crew recovery
 8. Flight to base
 9. Demobilization and post-capture tasks
-

Sequences often formed a loop when multiple goat captures occurred during one day. Also, some operations used two “gunners.” The process of capture and removal was made more complicated since only two “bodies” in addition to the pilot could be transported at any one time, i.e., one goat and one gunner, or two goats or gunners.

Complex helicopter flights, difficult capture from the air, and handling goats on rugged terrain combined with social factors to influence the capabilities of personnel to operate safely and reliably for intensive periods during the summer months. The specific requirements of each stage of the task potentially created a complex and dangerous set of activities.

Hazards to individuals arose from potential task failures. The two principal types of hazards to personnel in the project were:

- physical injuries, including back pain, abrasions, sprains, fractures, broken bones, accidental drug overdose consequences and death, and
- psychological, social or economic impacts, such as a loss of confidence in management or one’s peers, loss of wages

or career opportunity, loss of self-image, impacts on one's family, stress and anxiety.

Table 2 provides examples of hazards that could have occurred during each stage of capture and removal.

In 1988, capture missions were flown on eleven days and, in 1989, on ten days. In spite of the danger and complexity of the tasks, no accidents or mishaps occurred either in flight or with equipment. There were no injuries to personnel. In 1988, 80 goats were captured, and, in 1989, 67 were captured. Mortality rates were 9% and 19%, respectively.

Yet, the perceptions of capture team personnel reflected their degree of anxiety about the dangers of goat removal. For example, one ranger discussed how personnel risks, goat mortality and cost-per-goat captured changed over time. Initially, mountain goats were captured with netting and other "passive techniques." However, as easy-to-capture goats were removed, personnel were forced to search more remote and rugged areas. In the late 1980's, the park began to use darting and netting capture techniques from helicopters. Consequently, risks, costs and goat mortalities increased. By 1989, the ranger believed the costs and risks of these measures to be very high and increasing rapidly. As the Chief Ranger stated, "the general impression was that the goats were in less accessible areas of the park, they were harder to get to, and we were forced to take greater risks with the animals and staff in order to get them."⁸ At the same time, risk exposure varied from mission to mission because of specific characteristics of, e.g., weather and terrain.

⁸ B. Sleeper, *Out on a Ledge*, 123 ANIMALS 18, 24 (1990).

Table 2
Potential Hazards During Different
Stages of Capture and Removal of Mountain Goats

<i>Task Stage</i>	<i>Potential Hazards</i>
1. Ground activity	Anxiety from delays, lost wages, accidental exposure to carfentanil, helicopter accident
2. Flight to backcountry	Pilot backache, thermal stress, slip/fall by ground crew member
3. Search and selection	Stress from not finding suitable goats, helicopter accident from fuel mismanagement
4. Capture and restraint	Sprained ankle during alightment, frustration because of goat death or miss, helicopter accident, windchill, interpersonal conflict over failed attempt, injury from goat's horns
5. Medical assessment and preparation	Back strain while loading goat into goat-bag; depression over need to destroy goat
6. Goat transport	Helicopter accident, carfentanil exposure, injury to gunner while sling loading goat into helicopter, ground crew injury from helicopter
7. Crew recovery	Hearing loss, helicopter accident, hypothermia, frustration from inability to retrieve goat
8. Flight to base	Backache, helicopter accident, hearing loss
9. Demobilization and post-capture tasks	Helicopter accident, paperwork, demoralization at lack of success, automobile accident

A pilot's comments about the flights illustrated similar attitudes toward risk. He felt he was performing at 85% of the capacity of both his skills and the helicopter's design. His view was that very little room for error existed and the risks were very high. Expressions such as "fear" were used by interviewed individuals normally not inclined to express deep personal beliefs. They expressed their belief that the 25% hazard pay bonus was insufficient to warrant the risk. When queried about potential benefits, one stated that each project member had other job requirements and that "this is incidental" and not for job security: no promotions and no rewards were expected for participating.

Our observations indicate that personnel voluntarily performed goat removal. There were no requirements that specific individuals participate, and written orders, performance standards such as number of goats to capture and performance evaluations were absent. In fact, the

Chief Ranger was especially careful to create an atmosphere in which administrative expectations for participation were absent. Also, complete control over project design and implementation were clearly in the hands of the team leader. Statements by team members also reflected the absence of perceptions of administrative requirements. For example, personnel said they would stop participation if complete control over the project were removed or if performance standards were imposed.

Team personnel were highly committed to the NPS, their jobs and the task of goat capture and removal. They were long-time employees of the NPS, dedicated to the “total preservation” of the park, and saw no room for non-native species of mountain goats. The Chief Ranger has been quoted as saying that “the question all along has never been should we remove the goats. Most people understand that exotics have no place in a national park. The tough moral, ethical and political question has been how to remove them.”⁹

Although they wished to remove the goats from the park, team personnel were also deeply concerned about the welfare of the animals. For example, extensive attempts were made to reduce goat mortality. Yet, for some, shooting continues to be preferred for removal because it is considered more “humane.” In fact, the extra efforts entailed by live capture increased the personal risk of team personnel. Outside contractors were not used in part because during a test-project phase they “brutalized” the goats during capture. They were unfamiliar with both the characteristics of goat biology and the backcountry of the park.

Theories of Risk-Taking Behavior

Individual professionalism and risk-taking observed during the project present a paradox. The paradox arose from the ambivalent attitudes and behaviors of team members who:

- had high commitment to the task,
- performed nearly error free in complex, stressful and high-risk settings,
- perceived the economic benefits from their participation in the project as small and inconsequential to their participation,

⁹ *Id.*, at 21.

- believed that preferable alternatives existed for the removal of goats from the park, e.g., shooting them
- chose voluntarily to increase their personal risks in order to decrease the health hazards to the goats, and
- realized that the goats not removed would in all likelihood be shot and that many they did try to save would either die in the process or subsequently.

Our attempt to explain this paradox led to exploring traditional conceptualizations of risk-taking behavior with a focus on the cognitive aspects of individual mental processing. The dominant psychological and economic perspectives of risk and risk-taking behavior are based on individual perceptions of and decisionmaking under uncertainty.¹⁰ According to these approaches, risks are accepted only when they are associated with larger rewards and, therefore, higher levels of expected utility (ratios of perceived benefits and costs).¹¹ Risk-taking behavior is generally expected when clearly identifiable benefits are perceived to outweigh risks. Individual perceptions of benefits and costs have been described as functions of external social forces,¹² of personality or of intrinsic factors, e.g., physiological, neurological and psychological.

For example, research suggests that, in some cases, people are risk-averse and, in others, they are risk-seeking. Early work on these types focused on personality dispositions that affect attitudes toward potential risks and benefits.¹³ Personality dispositions are viewed as moderator variables that both promote consistency across behaviors and lead to risk-seeking or risk-avoiding behaviors in specific situations. These

¹⁰ L. Ross, *The Intuitive Psychologist and His Shortcomings: Distortions in the Attribution Process*, 10 *ADVANCES IN EXPERIMENTAL SOCIAL PSYCHOLOGY* 173 (L. Berkowitz, ed. 1977); D. KAHNEMAN, P. SLOVIC & A. TVERSKY, *JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES* (1982); P. Slovic, B. Fischhoff & S. Lichtenstein, *The Psychometric Study of Risk Perception*, in *RISK EVALUATION AND MANAGEMENT* 3 (V.T. Covello, J. Menkes & J. Mumpower, eds. 1986).

¹¹ *Supra* note 5.

¹² Renn, *supra* note 5; M. DOUGLAS, *RISK ACCEPTABILITY ACCORDING TO THE SOCIAL SCIENCES* (1985); S. Rayner, *Management of Radiation Hazards in Hospitals: Plural Rationalities in a Single Institution*, 16 *SOC. STUD. SCI* 573 (1986).

¹³ N. KOGAN & M. WALLACH, *RISK TAKING: A STUDY IN COGNITION AND PERSONALITY* (1964).

variables include need achievement, locus of control, "subjective immunity" and "personal invulnerability." For example, the psychological construct of "locus of control" may be used to suggest why persons with higher degrees of internal control perform better in complex tasks and are more risk-seeking.¹⁴

Personality dispositions such as internal or external locus of control, subjective immunity and personal invulnerability do not adequately explain the level of performance observed in the project. In fact, project personnel were fully aware of the dangers and even expressed some fear. Personality dispositions did not lead them to choose project activities, although individual characteristics or personality dispositions may have been important determinants of individuals' choice of career or work. However, the desirability of a particular job does not provide an adequate explanation for the performance of a specific activity perceived as disagreeable.

In discussions of risk-seeking and risk-averse behavior, it is important to identify the dimensions upon which the risky activities are evaluated. In particular, both intrinsic and external factors establish a limited number of dimensions by which individuals evaluate risks. Yet, the choice of evaluation dimensions can affect evaluation outcomes. For example, "technical concepts" of risk suggest that individuals consider event frequencies and the magnitudes of a limited set of consequences, i.e., mortality, morbidity and property damage. Social psychologists have also investigated how qualitative characteristics of hazards influence risk perceptions.¹⁵ Qualitative characteristics include, e.g., perceptions of voluntariness, blame, dread and catastrophic potential. Evaluations of risks based on the technical concept of risk have been observed to differ markedly from those based on other qualitative dimensions.¹⁶

¹⁴ H. M. LEFCOURT, 1 and 3 RESEARCH WITH THE LOCUS OF CONTROL CONSTRUCT (1984); E. J. PHARES, LOCUS OF CONTROL IN PERSONALITY (1976).

¹⁵ Slovic et al., *supra* note 10; O. Renn, *Risk Perception and Risk Management: A Review*, 7 RISK ABSTR. 1 (1990).

¹⁶ Slovic et al., *supra* note 10; Renn, *supra* note 15.

These and similar approaches focus on the cognitive aspects of judgment and choice. Recently there has been increased attention on emotive factors in risk attitudes. This research suggests that factors other than cognitive evaluations of potential benefits and costs may be important in risk-taking behavior.¹⁷ Emotive factors may affect both the selection and valuation of different aspects of a risky situation. For example, fear may lead to stigmatization or to attenuation or amplification of perceived risks.¹⁸

Our interviews with project personnel suggest that they did not believe that their personal benefits outweighed their potential costs. For example, they stated that their decisions to participate would have no impact on their jobs, e.g., wages. In fact, a sophisticated risk-calculus incorporating many factors appears to have been used by team personnel. Of course, individual evaluations of behavioral alternatives may not lead to "optimal" choices because cognitive biases and heuristics can affect people's estimations, choices and perceptions of risk.¹⁹ Factors that affect decision and judgmental processes are found in "normal" routine and unfamiliar emergency situations and activities.²⁰ Both experts and lay people are susceptible to the effects of such factors.²¹ One type occurs, for example, when individuals attempt to reduce "cognitive dissonance" by interpreting phenomena so as to correspond to prior beliefs or values.²² Experimental data also suggest that individuals are risk-averse when faced with gains (benefits) and

¹⁷ A.C. Blomkvist, *Psychological Aspects of Values and Risks*, in RISK AND SOCIETY 89 (L. Sjoberg, ed. 1987); H. Lyttgens, *Human Anxiety*, op cit., at 115; L. Schierow, *The Role of Salient Fates and Anxiety in Hazard Perception*, in RISK ANALYSIS: PROSPECTS AND OPPORTUNITIES (C. Zervos, ed. 1992); P. J. Stallen & A. Tomas, *Public Concern About Industrial Hazards*, 8 RISK ANAL. 237 (1988).

¹⁸ Lyttgens, *supra*; Schierow, *supra*.

¹⁹ Ross, *supra*, note 10; Blomkvist, *supra* note 17; A. Tversky & D. Kahneman, *Judgment Under Uncertainty: Heuristics and Biases*, 185 SCIENCE 1124 (1974).

²⁰ S. Tuler, *Individual, Group, and Organizational Decision Making in Technological Emergencies: A Review of Research*, 2 IND. CRISIS Q. 109 (1988).

²¹ B. Fischhoff, *Judgment and Decision-Making*, in THE PSYCHOLOGY OF HUMAN THOUGHT 153 (R. Sternberg & E. Smith, eds. 1988).

²² L. FESTINGER, A THEORY OF COGNITIVE DISSONANCE (1957).

risk-seeking when exposed to certain losses (costs).²³

Such biases and heuristics, however, do not seem appropriate explanations for the observed behavior of project personnel. Individual biases and heuristics, such as selective interpretation of information and prospect theory, do not appear to have attenuated perceived risks. For example, during capture and removal activities, personnel were well aware of their vulnerability when pushing the limits of, e.g., helicopter performance. Moreover, during the project team members neither faced nor perceived certain losses from refusal to participate in the project. For example, explicit and implicit administrative threats of job loss or against career promotion did not exist. Thus, prospect theory would seem inadequate to explain risk-taking behavior in this case.

A frequent distinction made in discussions of risk is between the voluntary or involuntary acceptance of phenomena that are perceived as risks.²⁴ Because the dominant characterizations of risk assume that risky phenomena are undesirable, voluntary risks are thought to be taken by an individual because the possible gains, e.g., money, status or pleasure, derived from the outcomes are expected to outweigh the possible losses. This conceptualization, however, suggests only a limited view of the factors that contribute to voluntary acceptance of risks such as observed in the project. As Heimer notes, "such a theory cannot explain why people would actively seek chances to face risks, for instance by choosing games with more risk designed into them, by gambling or by engaging in dangerous sports."²⁵

Recently, sociologists have extended our understanding of behavior in voluntary risk-taking contexts.²⁶ Anticipated benefits can be a

²³ D. Kahneman & A. Tversky, *Prospect Theory: An Analysis of Decision Under Risk Uncertainty*, 47 *ECONOMETRICA* 263 (1979); A. Tversky & D. Kahneman, *The Framing of Decisions and the Psychology of Choice*, 211 *SCIENCE* 453 (1981); B. Fischhoff, *Predicting Frames*, 9 *J. EXP. PSYCH., LEARNING, MEMORY & COGNITION* 103 (1983).

²⁴ Slovic et al., *supra* note 10; Renn, *supra* note 15.

²⁵ *Supra* note 5, at 509.

²⁶ G.E. Machlis & E.A. Rosa, *Desired Risk: Broadening the Social Amplification of Risk Framework*, 18 *RISK ANAL.* 161, 162 (1990); S. Lyng, *Edgework: A Social Psychological Analysis of Voluntary Risk Taking*, 95 *AM. J. SOCIOL.* 851 (1990).

function of the cognitive and emotive aspects of risk experience, e.g., excitement or challenge, or the ends toward which the risky behavior is directed.²⁷ “Desired risks” have been defined by Machlis and Rosa as “activities or events that have uncertainties of outcome or consequence, and where the uncertainties are an essential, sought component of the behavior.”²⁸ Thus, risk is not assumed to be something negative or dreaded, as in earlier conceptualizations of risk.

This characterization of risk-taking behavior fails to explain why individuals may purposefully increase personal risks when voluntarily performing an activity that is not desired. For example, park personnel were generally not in favor of, nor did they encourage the implementation of, a live capture and removal program. They preferred the alternative of shooting the goats. Moreover, personnel did not speak of the project or their tasks in terms of desired risks, e.g., thrills or excitement. At the same time, capture team personnel purposefully increased their risks in order to reduce the health hazards to the goats. They did this fully understanding the implications of their actions, with no desire for the added danger faced during a disagreeable task.

Of course, the notion of “voluntariness” raises questions about the overt and subtle coercive factors that can cause people to act under certain circumstances. Individual perceptions of potential negative consequences, such as loss of esteem by others, are important to the definition of voluntariness. Voluntariness of an activity also depends on the absence of perceptions of actual or potential retribution from others.

For example, in a recent sociological review of risk, Heimer suggested that decisions by British offshore workers to take risks are based on fear of being fired if they refuse rather than on desire for a bonus if they take the risk.²⁹ Thus, “the quick decision to accept an especially dangerous task is motivated by a desire to avoid a certain loss (being fired or punished). Workers choose to gamble rather than to accept certain losses.”³⁰ In the case of offshore workers the certain

²⁷ Lyng, *supra*.

²⁸ Machlis & Rosa, *supra* note 26.

²⁹ *Supra* note 5.

losses are a direct result of the exercise of administrative control.

Traditional conceptualizations of risk suggest, moreover, that coerced participation in high-risk activities can lead to negative attitudes and decreased quality of performance by those involved.³¹ For example, perceived or actual coercion could lead to:

- personnel refusal and “acceptance” of retribution,
- grudging performance, with externalized or internalized anger, or
- good performance, with negative attitudes or low satisfaction.

As stated before, however, in this case no explicit or implicit administrative threats of job loss or against career promotion existed. Project personnel characterized their participation as voluntary. The Chief Ranger established an atmosphere lacking administrative expectations that particular individuals participate or that predefined goals be reached within a certain time period. The capture team personnel were left the option of refusing to participate. They stated that only under certain conditions were they willing to participate. Given this control over project design and implementation they exhibited strong dedication to the project.

Organizational Culture

So far, we have reviewed the literature that focuses on the individual aspects of psychological functioning that mediate risk-taking decisions and behavior. However, there are also factors related to the social and cultural aspects of a person’s environment that can influence personal decisions and behaviors. Social and cultural processes may subtly shift individual perceptions of benefits, costs, acceptability and voluntariness of activities and situations.³² Worldviews and cultural beliefs can frame perceptions and establish meanings and experiences attached to risks, which in turn can determine behavior. For example, attitudes of duty and dedication may reflect cultural belief patterns and affect the perceptions of and responses to risky situations.

³⁰ *Supra* note 5, at. 504.

³¹ O. Renn, personal communication (1991).

³² Douglas, *supra* note 12; Rayner, *supra* note 12; P.L. BERGER & T. LUCKMANN, *THE SOCIAL CONSTRUCTION OF REALITY* (1966).

In particular, an organization's shared history and stability can contribute to the internalization and institutionalization of specific attitudes in individuals.³³ "Organizational culture" is the pattern of basic assumptions that are invented, discovered or developed to help cope with problems of external adaptation and internal integration within an organization.³⁴ The patterns of assumptions may incorporate values, norms, rules, myths, stories and rituals; must have worked well enough in the past to be considered valid; and must be taught to new members as the correct way to perceive, think and feel in relation to the external and internal problems encountered by the organization.

Little of the prior work on organizational culture has focused on contexts involving high risk or commanding high reliability. Moreover, the organizational culture literature usually addresses the issue of organizational decisions rather than individual decisions. The exceptions have focused on police,³⁵ combat teams and military organizations,³⁶ crisis management³⁷ and "high-reliability organizations."³⁸ For example, Roberts reports that high-reliability organizations, such as naval aircraft carriers, public electrical utilities and air traffic control, can develop cultures that support personnel innovation, risk-taking and

³³ L. Smircich & M.B. Calas, *Organizational Culture: A Critical Assessment*, in HANDBOOK OF ORGANIZATIONAL COMMUNICATION 228 (F. M. Jablin et al., eds. 1987); E. Schein, *Organizational Culture*, 45 AM. PSYCHOLOGIST 109 (1990).

³⁴ Schein, *supra*.

³⁵ J. van Maanen, & R. Katz, *Police Perceptions of their Work Environment*, 6 SOCIOL. WORK & OCC. 31 (1979).

³⁶ M. Janowitz, *Military Organization*, in HANDBOOK OF MILITARY INSTITUTIONS 13 (R. Little, ed. 1971); A. L. George, *Primary Groups, Organization, and Military Performance*, op cit., at 293; C. W. Greenbaum, *The Small Group Under the Gun: Uses of Small Groups in Battle Conditions*, 3 J. APPL. BEHAV. SCI. 392 (1979).

³⁷ I.I. Mitroff et al., *Do (Some) Organizations Cause Their Own Crises? The Cultural Profiles of Crisis-Prone vs. Crisis Prepared Organizations*, 3 IND. CRISIS Q. 269 (1989); D. Smith, *Beyond Contingency Planning: Towards a Model of Crisis Management*, 4 IND. CRISIS Q. 263 (1990).

³⁸ K.H. Roberts, *New Challenges in Organizational Research: High-Reliability Organizations*, 3 IND. CRISIS Q. 111 (1989); D.M. Rousseau, *The Price of Success? Security-Oriented Cultures and High-Reliability Organizations*, 3 IND. CRISIS Q. 285 (1989).

teamwork.³⁹ Similarly, Greenbaum emphasizes the roles and functions of primary groups in the behavior of soldiers under dangerous conditions.⁴⁰ These studies suggest the important role that organizational culture can play in promoting motivation and commitment for the performance of risky activities.

Organizational Culture of the National Park Service

In this section we overview briefly the NPS and its organizational culture.⁴¹ This culture, we argue, influenced the capture team's attitudes toward mountain goat capture and removal and helped to shape their assumptions and values toward the undertaking.

The prevailing organizational culture of the NPS attracts and fosters particular values, attitudes and skills among the rangers. This culture was established 75 years ago:⁴²

behind the romanticism surrounding the National Park idea stand the individual employees of the NPS. Over the past 71 years, these employees have developed a strong sense of family and tradition. Stephen Mather and Horace Albright, the first directors, are still revered as father figures and dynamic leaders who provided the agency with clarity and vision. Many children have followed parents into NPS careers. The mission of the Service is vivid and alive. The deep respect agency employees feel for the resources they protect and visitors they serve results in collective agency pride that is unusual among bureaucracies.

The concept of "total preservation" of representative ecosystems, including both biotic and abiotic environments, has become an increasingly important objective within the NPS. Foresta observes that the internalization of this value is suggested by a survey finding 84% of agency personnel polled agreed that "preservation is the major purpose

³⁹ Roberts, *supra*.

⁴⁰ Greenbaum, *supra* note 36.

⁴¹ These issues are discussed more fully elsewhere. See NATIONAL PARKS IN CRISIS (E.H. Connally, ed. 1982); R.A. FORESTA, AMERICA'S NATIONAL PARKS AND THEIR KEEPERS, 104 (1984); W.C. EVERHART, THE NATIONAL PARK SERVICE (1972); A. RUNTE, NATIONAL PARKS: THE AMERICAN EXPERIENCE (1979).

⁴² NATIONAL PARKS AND CONSERVATION ASSN., 9 THE NATIONAL PARK SERVICE: ITS ORGANIZATION AND EMPLOYEES v (1988).

of the National Park Service.”⁴³ The survey sample included rangers as well as administrative and other support staff.

The value of total preservation has been translated into action with attempts to remove non-native animals from park areas.⁴⁴ This attitude has been expressed by individuals at the park involved in the project. For example, Mark Sheehan, manager of the Washington Natural Heritage Program, has stated that “Olympic National Park’s rare alpine plants are relics from the Ice Age that have survived several episodes of glaciation. It would be a shame to have them perish due to the impact of this exotic species.”⁴⁵

Mountain goat capture and removal illustrates park rangers’ critical role in the “front lines” of park management. Yet, they have a diverse set of responsibilities that include not only resource management but education and visitor safety and protection as well. They are characterized by a diverse set of backgrounds, creative problem-solving skills, independence and high degrees of self motivation. Two of the “prime qualities of the park ranger are independence and adaptability to work in isolated regions.”⁴⁶ These characteristics are reflected in both behavior and expressed attitudes. One park employee stated that the project was “a challenge to our rangerhood.”

In summary, park rangers form an important subculture within the NPS. They consider themselves professionals dedicated to the goals of the NPS. Often, they are drawn to work for the NPS out of appreciation for the natural world and “altruistic missionary reasons.” Loyalty is high and turn-over is low. Some NPS personnel we spoke to believe there is an “elite, behind-the-scenes” group of core professionals selected for prestigious positions in the “gem” parks.

⁴³ Foresta, *supra* note 41.

⁴⁴ Separate personal communications from C. Janda and M. McCurry (1990).

⁴⁵ Sleeper, *supra* note 8, at 20.

⁴⁶ B. Caldwell, *Development of Models for Park Rangers’ Perceived Isolation of National Park Service Areas*, 22 ENV. & BEHAVIOR 636 (1990).

Discussion

Conceptualizations of risk-related behavior that focus on the individual's mental processing are unable to explain fully the actions of personnel during the project. Analyses of risk-taking behavior generally expect the existence of clearly identifiable benefits that outweigh perceived risks. Yet, during the project, personnel perceived few benefits from the activity. The project conflicted with the values that led them to prefer the alternative of shooting the goats. The benefits that they perceived were marginal and related to the social context of participation, e.g., increased prestige and self-esteem.

A fuller explanation of risk-taking decisions and highly reliable performance and professionalism requires discussion of the situational understanding of team personnel. In particular, the beliefs and practices of an organization create a set of limits within which social behavior must be contained, and they establish a pervasive, but subtle, system of control. The values, assumptions, symbols, myths, norms and rules of the NPS help explain ranger willingness to perform risky activities by establishing specific types of perceived responsibilities. In addition, they assist our understanding of reliability in performance and dedication to the high-risk activity of goat removal.

The argument that undesired, high-risk activities were performed because of the NPS organizational culture rests on two propositions. First, observations led us to conclude that the high-risk task of goat removal was undesired. For example, the language of desired-risk was not used in any of the interviews. There was no mention of thrill, excitement or other similar terms that often appear in descriptions of desirable risks.⁴⁷ In addition, the project was a result of forces external to the park, e.g., public interest groups. In no way did park personnel actively seek or encourage the live capture and removal project. Satisfaction of the value of "total preservation" of the park's ecosystem did not depend on the live capture and removal of the goats to hunted populations elsewhere. Preferred alternatives could have been implemented with less risk to personnel. Finally, park personnel did not

⁴⁷ Machlis and Rosa, *supra* note 26.

actively pursue involvement. Instead, the Chief Ranger asked the team leader if he were willing and gave him complete control over the project's design and implementation.

The second proposition is that participation in the project was voluntary. We evaluated the possibility of coercive forces that underlie capture personnel participation because this seemed the first obvious explanation. The evidence, however, convinced us that participation was genuinely voluntary. As we noted previously, the Chief Ranger established an atmosphere lacking in normative expectations that certain individuals participate. For example, while it was to his advantage to require participation, he went out of his way to ensure that administrative control was absent. There were no written orders, no performance standards and no performance evaluations. The Chief Ranger's success was reflected by team personnel who stated their beliefs that there was no administrative control, e.g., the team leader noted that his job evaluations would not reflect his successful implementation and performance of the project.

Why, then, were capture team personnel willing to place themselves at high risk? We have suggested that the performance of high-risk activities is usually related to the attainment of important benefits. In this situation, the identification of benefits is difficult and they are ambiguous. However, statements of project personnel suggest that the NPS organizational culture created specific benefits to the individual. These included enhanced self-perceptions and perceptions of others. Esteem in the NPS is developed by being "good soldiers" and achieving task goals that support the belief that "rangers can do anything." The activity of goat capture and removal is regarded by peers as "real" ranger activity — the epitome of ranger professionalism. In addition, project personnel believe that they have developed new "cutting edge" techniques in live capture of wildlife in general and mountain goats in particular. Perceptions of professionalism are related to the ability to avoid unnecessary animal mortality. The development of successful techniques can also increase their prestige among the "elite" of the NPS.

The structure of the project also affected willingness to perform the high-risk activities. In part, the structure derived from the organizational culture that encourages independence and a “can-do” attitude. Project personnel had significant independent control over task design, implementation and operation. Once the project was under way, they were free from constraints placed by administrative or outside agents. In fact, project personnel stated that without complete and independent control over the project, they “probably wouldn’t have done it at all or for very long.” Internalized organizational values of loyalty and professionalism combine to form the attitude that “if you get involved, you can’t do any less than your utmost.” Thus, organizational culture also helps to explain the dedication of project personnel as well as the high degree of “team” morale and the confidence shared among rangers, pilots and supervisors.

Conclusion

The Mountain Goat Removal Project in Olympic National Park suggests a set of cases where organizational cultural may play an important role in mediating individual risk-taking decisions as well as in influencing the quality of individual performance. Traditional theories for explaining individual risk-taking behavior are dominated by assumptions of rational actors and utility theory. Yet, as we have seen, individuals may actively pursue a task perceived as disagreeable even when potential costs appear to outweigh expected benefits. During the project, organizational culture was critical to participants’ understanding of the project and their roles in it.

Additional research is needed to understand better the role and importance of organizational culture in risky tasks. Important questions to address further include identification of when organizational culture is important in mediating risk-taking behaviors and task performance. For example, when and how might organizational culture enable extraordinary performance of high-risk and disagreeable tasks? What aspects of organizational culture matter most and how are they related to other mediating factors such as personal values, available alternatives or job satisfaction? Performance of undesired risks may be part of an

interaction between personality dispositions and organizational culture. For example, individual self-selection may result from personality dispositions, which in turn become reinforced by an organizational culture that reflects a set of values that initially attracted the individual. The congruity between personality factors and organizational culture may make it easier to internalize and reinforce the values that result in the performance of undesired tasks.

A similar issue concerns how aspects of organizational culture may be related to a task's outcome. For example, how is reliability a function of organizational culture? A high degree of professionalism may seem at first glance to reduce the likelihood of errors in task performance. However, the expertise engendered by professionalism may also be understood as a trained incapacity to see new threats and thus act to increase the likelihood of some types of errors.⁴⁸

Further research can help clarify the processes by which organizational cultures influence how social meanings are attached to particular risks. Organizational culture may amplify or attenuate perceptions of specific attributes of a risky activity and the way the attributes are weighed.⁴⁹ It may also affect perceptions of the need for risk-reducing measures,⁵⁰ e.g., organizational culture may lead to strong risk management even when personal calculations about the specific risks and benefits of an activity may suggest otherwise.

Similarly, individual decisions can frequently reflect the values of larger social groups. For example, organizations may establish "correct" core values for members. Personnel values can become carriers of organizational culture, thus affecting individual calculations of benefits

⁴⁸ B. Means et al., *Training Decision Makers for the Real World*, in DECISION MAKING IN ACTION: MODELS AND METHODS (G. Klein, J. Orasanu & R. Calderwood, eds. *in press*); J. REASON, HUMAN ERROR (1990).

⁴⁹ R.E. Kasperson et al., *The Social Amplification of Risk: A Conceptual Framework*, 8 Risk Anal. 177 (1988); R.E. Kasperson, *The Social Amplification of Risk: Progress in Developing an Integrative Framework of Risk*, in SOCIAL THEORIES OF RISK 153 (S. Krinsky & D. Golding, eds. 1992).

⁵⁰ J.X. Kasperson & R.E. Kasperson, *Corporate Culture and Technology Transfer*, in CORPORATE ENVIRONMENTALISM IN A GLOBAL ECONOMY (H.S. Brown et al., eds. *in press*).

and costs. Thus, park rangers may readily perceive high risks of goat capture and removal tasks, yet identify with core NPS values that call for highly professional behavior even in questionable or high-risk situations. These issues are not specific to the performance of activities within the NPS, but may reflect a general phenomena of organizations with strong cultures and clear missions. Consequently, additional understanding of organizational culture may have important practical implications for improvement of hazard management, task design and occupational safety in high-risk contexts.

