

# The Emerging Field of Conservation Psychology

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## Abstract

*The growing recognition that the social sciences play a key role in conservation requires more efficient ways for working together toward a common mission. A new field of conservation psychology is proposed to create stronger connections between the natural and social sciences, between research and practice, and between psychology and the other social sciences. The purpose of such a network is to conduct psychological research that is directly oriented toward the goal of environmental sustainability. To better understand the promise of conservation psychology, it is compared to other fields, such as conservation biology and environmental psychology. Potential conservation psychology research topics are discussed in relation to two broad outcome areas: a) motivating people to act in more environmentally-friendly ways and b) encouraging people to care about the natural world and their role in it. Within these outcome areas, research can be focused at the individual or the group level. The type of research will range from more theoretical approaches to more applied, and examples are provided for such a continuum. The dynamic process by which social scientists and practitioners identify high-priority research questions is another important aspect of conservation psychology.*

**Keywords:** *conservation psychology, environmental psychology, sustainable relationship with nature, environmentally responsible behavior, human-nature relationships, environmental values*

As we begin a new century, environmental deterioration remains one of the most serious and daunting challenges facing humanity. Globalization and other factors have contributed to a future that is not sustainable,<sup>2</sup> and a different response is required from the sciences (Kates et al. 2001; Capra 2002). Not only is environmental sustainability an ecological crisis, it also includes the viability of socially shaped relationships between people and nature (Becker et al. 1999). The destruction of natural environments threatens the well-being of humans in ways we are only beginning to appreciate. We need sweeping changes in human behavior to lessen our collective impact on the natural environment. We also need a better understanding of the human-nature experi-

ence and a more compelling language to express what we value and love. The magnitude and urgency of these problems present new challenges and opportunities for the social sciences in general, and for psychology in particular.

The current frameworks for thinking about environmental research are grounded in the natural sciences. Yet, because humans are the source of the problems as well as the hope for solutions, the role of the social sciences has grown in importance. As experts in human behavior, psychologists have provided a number of approaches for understanding the cognitions, attitudes, motives, beliefs, values, and types of behaviors related to conservation issues (e.g., Cvetkovich and Werner 1994; Gardner and Stern 2002; Bechtel and Churchman 2002; Winter and Koger 2003; Nickerson 2003). Recently, there has been increasing attention to psychology's role in promoting environmentalism and environmental sustainability (e.g., Oskamp et al. 2000; Zelezny and Schultz 2000; Werner 1999; Kurz 2002; Schmuck and Schultz 2002).

Despite the ways psychology has explored conservation-related problems, it is far from reaching its full potential (Kidner 1994). The topic is not a priority for most psychologists because they tend to study relationships between people, rather than relationships between people and the natural world. Psychologists have much to offer in terms of understanding human-nature experiences and what motivates people to protect such relationships. Another problem is that like other scientists, psychologists are often content to describe how things are, rather than explore how to empower people to make different choices. Finally, we are all handicapped by the boundaries of our disciplinary homes and frameworks, even though we recognize the need for interdisciplinary thinking. Psychology needs to apply its extensive toolkit of constructs and methods more effectively toward conservation issues, and it needs to be aware of approaches by other disciplines.

A number of us have been exploring a new way for psychologists and other social scientists to organize ourselves, which we are calling Conservation Psychology. This area is emerging to join fields like Human Ecology to help forge additional strategic connections between the natural and social sciences, and between the applied and theoretical worlds. It is also a possible way to mobilize sub-disciplines within psychology toward sustainability issues. In this article, I attempt to articulate what this new field includes. I will start by offering a definition of conservation psychology and

describe its relationships to other fields. I will then speculate about the types of research topics that conservation psychology might address. I will propose that one of the fundamental characteristics of conservation psychology is the attempt to understand self-in-relation to nature in order to develop a more powerful vocabulary for influencing the public discourse and producing enduring behavior change. I will end with some ideas for how conservation psychologists might work together.

## Definition of Conservation Psychology

*Conservation psychology is the scientific study of the reciprocal relationships between humans and the rest of nature, with a particular focus on how to encourage conservation of the natural world. Conservation psychology is an applied field that uses psychological principles, theories, or methods to understand and solve issues related to human aspects of conservation. It has a strong mission focus in that it is motivated by the need to encourage people to care about and take care of the natural world. In addition to being a field of study, conservation psychology is also the actual network of researchers and practitioners who work together to understand and promote a sustainable and harmonious relationship between people and the natural environment.*

I would like to emphasize several aspects of the above definition.<sup>3</sup> First of all, the word conservation is associated with a rich scientific and philosophical history. Its primary historical meaning in the United States is the protection, improvement, and wise use of “natural resources” to provide the greatest value for the present and future. Conservation implies active management of human-nature interactions, as compared to “preservation,” which usually involves setting aside scenic or fragile areas to minimize human impact or for amenity or existence values. By its very nature, conservation is value-driven because it focuses on benefits. Usually those benefits refer to humans, but the emphasis could also be on creating a more sustainable world for the many life forms that share the planet. In his classic essay, Leopold (1949) argued for a new land ethic where humans live harmoniously within nature. Conservation psychology aims to understand and promote such human-nature connections. The fact that values guide the choice of conservation psychology research questions does not invalidate the research, as long as the analyses are conducted as objectively as possible. Values are actually a factor in all research.

The other part of the name, psychology, is defined as the scientific study of human thought, feeling, and behavior

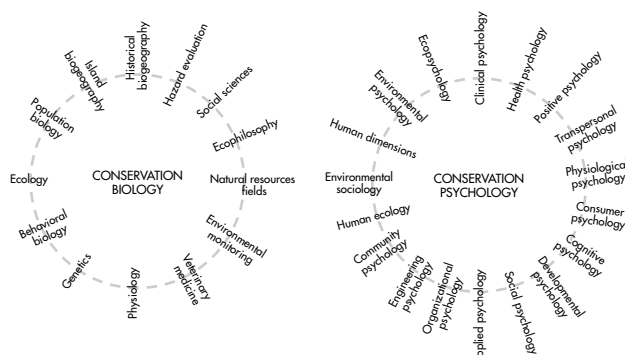
(Myers 2003). Psychology is comprised of both pure and applied sciences, and both aspects are found within conservation psychology. Sommer (2000) observed that many apparent disagreements over the names of specialty areas are the result of inconsistent use of terms such as discipline and field of study. Using his distinctions, psychology is a discipline because it is a branch of instruction where members are trained and they use a shared epistemology. There are many subdisciplines within psychology such as experimental psychology, developmental psychology, and environmental psychology. In contrast, people in a field of study have been trained in various disciplines and professions but all focus on a common problem area. It seems that the most appropriate way to think about conservation psychology is as a field of study. It has a strong psychology focus but not exclusively so.

Conservation psychology can also be defined by how it functions as a network of researchers and practitioners. The researchers include psychologists and other social scientists. The practitioners (non-scientists) can represent many perspectives, ranging from environmental educators and environmental communicators to policy makers. Possible partners include any entities or settings that communicate to, or empower, audiences about conservation. The iterative way the research questions are identified is key to the process. While most academic scientists engage in investigator-initiated research, it is important for conservation psychologists to focus on high priority, real-world issues by being attentive to problems identified by practitioners. Likewise, practitioners should be applying the most current principles from the research literature, which in turn creates an experimental setting for further research. I like the metaphor suggested by Soule (1986) for conservation biology of “a shuttle bus going back and forth, with a cargo of ideas, guidelines, and empirical results in one direction, and a cargo of issues, problems, criticism, constraints, and changed conditions in the other.” The result is high-quality research that addresses urgent and practical needs.

## Relationship to Other Fields

### Comparison to Conservation Biology

There are many similarities between conservation psychology and the established field of conservation biology (see Saunders and Myers 2001). Conservation biology was originally conceptualized as a “crisis” discipline, with the goal of providing principles and tools for preserving biodiversity (Soule 1985). The mission of preserving biodiversity is clearly value-driven and implies an urgency, and yet the techniques of conservation biology are scientific ones. The research questions and methods are derived from a broad range of pure and applied fields (see Figure 1). Most of the



**Figure 1.** Conservation biology and conservation psychology are both synthetic fields that mobilize contributions from other fields and subdisciplines toward conservation-related missions.

content areas contributing to conservation biology are related to the natural sciences, but conservation biologists have acknowledged that biological knowledge alone is not sufficient to solve conservation problems (e.g., Mascia et al. 2003). In fact, Lidicker (1998) concluded that “conservation needs conservation biologists for sure, but it also needs conservation sociologists, conservation political scientists, conservation chemists, conservation economists, conservation psychologists, and conservation humanitarians.”

Like conservation biology, conservation psychology has a mission focus, which is to conduct psychological research that is oriented toward environmental sustainability. This mission directly complements that of conservation biology. It is driven by problem situations where humans are challenged to live in greater harmony with land and other species. As a result, conservation psychologists will have to be at least minimally conversant with the natural scientists with whom they work. A promising approach that draws on both biological and social sciences to support conservation practitioners is adaptive management (Salafsky et al. 2002; Norton unpublished paper; see also earlier work by Lee 1993).

Another similarity with conservation biology is the way conservation psychology is organized. It intersects with a variety of subdisciplines within psychology, each with theoretical frameworks and methodologies that could contribute toward its mission (see Figure 1). For example, many contributions have already been made by the subdisciplines of social and environmental psychology about environmental attitudes, values, and how to encourage environmentally-responsible behavior (e.g., Gardner and Stern 2002; Bechtel and Churchman 2002; Schultz and Oskamp 2000). Social psychologists also study how the natural environment plays a part in personal and social identities (Clayton and Opatow in press). More attention is needed from developmental psychologists on how relationships with the natural world develop (e.g., Kahn 1997, 1999; Nevers et al. 1997; Myers 1998).

Tools provided by cognitive and physiological psychologists can help reveal underlying mechanisms for how humans experience nature. Organizational psychologists could offer insights about how to promote pro-environmental values and inspire conserving practices within organizations. Clinical and health psychologists could join efforts by ecopsychologists to better understand the restorative and healing aspects of nature (e.g., Irvine and Warber 2002; Roszak et al. 1995). Newer subdisciplines of positive psychology (Seligman and Csikszentmihaly 2000), community psychology (Dalton et al. 2001), and transpersonal psychology (Braud and Anderson 1998) all might provide useful ways of conceptualizing the relationship between people and the natural world. There are many other possibilities.

### Comparison to Environmental Psychology

Environmental psychology (EP) is the existing area within psychology that is most like conservation psychology. Defined as the study of the interactions between humans and the environment, EP includes the application of psychological approaches to the solution of environmental problems. During the 1970s, when there was increased interest in environmental issues, the American Psychological Association established Division 34 (Population and Environmental Psychology) as a subdisciplinary unit. Even before Division 34 was created, there was an interest in Environment and Behavior as a bigger umbrella concept, which was more like an organized field of study, open to people from many disciplines. The Environmental Design Research Association (EDRA) has provided a home for such a field. Because environmental psychology operates both as a subdiscipline within psychology and as a field, this has created some confusion (Sommer 2000).

A recent handbook edited by Bechtel and Churchman (2002) provides an idea of the current scope of environmental psychology. Much of the past emphasis has been on the built environment. Also there has been a tendency to look at the effects of environments on human behavior rather than the reverse, although there is a growing body of research devoted to environmentally-responsible behavior. Despite the overlapping interests, there are significant ways that conservation psychology (CP) differs from environmental psychology (EP). Most notably:

- CP emphasizes relationships with the natural world, whereas EP focuses on both the built and natural environments
- CP is envisioned to function more like a superfield rather than a subdiscipline
- CP actively recruits large numbers of other psychology specialists to apply their skills to conservation problems

- CP attempts to catalyze contributions from other social sciences by orienting more strongly around a conservation mission
- CP practitioners play a strong role in helping to shape the research questions

### Other Relationships

Conservation psychology will need to work closely with other social science umbrella groups that are devoted to conservation issues. Some of these groups are included in Figure 1.<sup>4</sup> While the boundaries between these fields are often fuzzy ones, there are many opportunities for cross fertilization and collaboration. In addition, the histories of these complementary areas provide insights about the struggles of maintaining a large enough vision and operating as a super-field.

Environmental Sociology is an area of research that emerged in the late 1960s when awareness of environmental problems was growing rapidly. While psychologists tend to focus on individuals, sociologists talk about groups, communities, and societies. Thus, the types of interactions studied by environmental sociologists are between the physical environment, social organizations, and social behavior. Much work has been done on public attitudes toward the environment, and assessment of the social impacts/dimensions of proposed projects that involve environmental change. Research related to the revised New Environmental Paradigm Scale (Dunlap et al. 2000), and the norm activation model of environmental concern and behavior from cultural psychology (Schwartz 1977) are examples of important intersection points for conservation psychology (see also Dunlap and Michelson 2002). Environmental sociology was originally considered a way to reorient sociology toward a more holistic perspective, but it is often viewed more like a sub-discipline rather than a scholarly cause (Buttel 1987). There is continued tension between fostering research at the sub-discipline level versus defining a stand-alone empirical field of research.

Also at the sociological/anthropological level, Human Ecology looks at how human systems relate to and interact with the ecological systems on which they depend (Marten 2001). Readers of this journal are no doubt familiar with the history of this field. Although the term human ecology was first introduced in the 1920s by a small group of urban sociologists, there was more emphasis in the 1970s on the fact that humans are subject to the same ecological limitations as other animals. By the 1980s, biological ecologists and social scientists were working together in multidisciplinary research teams addressing practical problems involving the environment. Human ecology often includes the social perception of material and energy flows as well as mediation by

institutional frameworks, economic processes, technologies, and cultural beliefs. Martinez-Alier (1999) talks about it as a transdisciplinary field that includes the intersection of ecological economics, political ecology, and more conventional approaches in human ecology. The human social system and ecosystem services are central concepts, but Human Ecology also includes other psychological variables.

Human Dimensions is another field of social science research. It studies human interactions with the environment, especially human behavior associated with natural resource management. This area of study exists in several forms, whether it is Human Dimensions of Wildlife<sup>5</sup> or Human Dimensions of Global Change<sup>6</sup> or some other focus. One of its goals is to apply concepts and empirical findings to real-world, contemporary problems of management. Although current research in this area often emphasizes public preferences regarding narrowly defined natural resources, there is a growing interest in the overall psychology of resource decision making. Research results are used in the policy development, implementation, and evaluation processes of a wide array of policymakers, especially those in state and federal agencies. Human dimensions professionals are found in different groups, including the International Association for Society and Natural Resources which promotes the application of social science in addressing natural resources issues and management problems.

The fact that there are a number of related specialty groups in a range of professional societies illustrates the interest in studying human aspects of conservation.<sup>7</sup> Having multiple lenses of social inquiry can be stimulating but it can also point to the lack of a cohesive community. Instead of leading to a further diffusion of efforts, we hope that conservation psychology will help facilitate some much-needed connections. It might even be a vehicle for more efficient sharing of research. To do this, we believe conservation psychology should be defined around outcome areas that support its mission. By addressing a more strategic set of problems, the specifics for how CP collaborates with practitioners and other specialists in the social and natural sciences will become more evident. In the next section, I will sketch a possible framework for conservation psychology research areas.

## Outcome Areas for Conservation Psychology Research

The science of conservation psychology is oriented toward environmental sustainability, which includes concerns like conservation of resources, conservation of ecosystems, and quality of life issues for humans and other species.<sup>8</sup> There are many research pathways that will support the end goal of environmental sustainability. Not only will each sub-



discipline of psychology offer a different perspective, the research process itself can involve different levels of participation by non-scientists. What characterizes CP research is that in addition to descriptive and theoretical analyses, studies will explore how to cause the kinds of changes that lessen the impact of human behavior on the natural environment, and that lead to more sustainable and harmonious relationships (e.g., Zelezny and Schultz 2000; Werner 1999). This goal requires that psychologists play a more active role, focusing on conservation-related issues in the first place, and experimenting with different approaches to see their effect on desired outcomes.

Several authors have suggested possible research areas for psychologists interested in sustainability issues. Oskamp (2002) offers a number of specific ideas in terms of the level of the research questions (individual or group approaches) and the type of research needs (measurement research, correlational studies of naturally occurring relationships, or intervention research). Other topics for future psychological research have been identified by Cvetkovich and Werner (1994), Gardner and Stern (1996), Winter (1996), Werner (1999), Nickerson (2003), and others. Many of the research needs that have been identified would fit well under a conservation psychology umbrella.

For the purpose of discussion, I propose two broad outcome categories as a way to organize CP research questions. I recognize that much of my own thinking has concentrated on biodiversity issues and education/communication challenges involving American audiences, so I invite others to add to this framework. My suggestion is that many of the research topics addressed by conservation psychology will be related to:

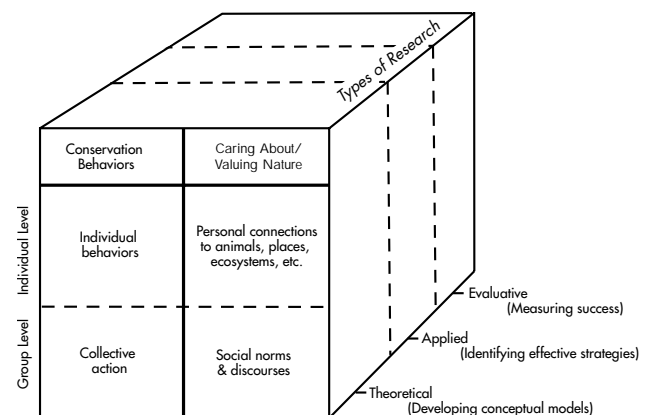
- how humans behave towards nature (with the goal of creating durable behavior change at multiple levels and sustainable relationships), and/or
- how humans care about/value nature (with the goal of creating harmonious relationships and an environmental ethic)

This distinction emphasizes the reciprocal quality of relationships between humans and the rest of nature. The first research area focuses on what humans do for nature, while the second category explores what nature means to humans. These outcomes are diagrammed in Figure 2. Obviously, there will be linkages between the two columns (i.e., caring might lead to behavior change and vice versa). Within the outcome areas, research questions might focus at the individual level or at the group level. For example, in terms of behavioral outcomes, models can address changing an individual's behavior as one focus, or the behaviors of businesses/governments and issues related to policy change. In terms of the caring about/valuing nature outcomes, individual-level

research is related to encouraging a person to bond with elements in nature, whether those elements are particular animals, plants, species, places, or ecosystems. Much of this research involves emotional connections with nature, environmental identity, value formation and the development of an environmental ethic. Group-level caring research is more related to establishing a richer human-nature language that might lead to changing the societal discourse/social norms related to nature. Finally, for both outcome areas, the type of research will range from more theoretical approaches to more applied, as indicated by the third dimension. I will use the framework provided in Figure 2 to discuss examples of conservation psychology research topics.

### Conservation Behaviors

A key assumption underlying environmental sustainability is the need to decrease the negative impact of humans, as well as the need to encourage environmentally-friendly behaviors. Collectively, any activities that support sustainability, either by reducing harmful behaviors or by adopting helpful ones, can be called conservation behaviors.<sup>9</sup> Achieving more sustainable relationships with nature will basically require that large numbers of people change their reproductive and consumptive behaviors. In the grandest sense, such behavior change is the ultimate outcome for a science of conservation psychology. But this outcome area quickly becomes complex as we try to identify the specific types of direct and indirect behaviors that are included. Both Stern (2000) and Gough (2002) have pointed out that pro-environmental behavior actually includes a number of dimensions, each associated with different causal factors. See Monroe (this issue) for a further discussion of this matter.



**Figure 2.** One way to organize possible Conservation Psychology research areas.

*Understanding the Psychology of Behavior Change.* An important research area for conservation psychology will involve contributions to the theoretical frameworks by which we understand conservation behaviors. There has been a rapid increase in the number of conceptual models and studies directed toward how to promote conservation behaviors, and psychological constructs are involved in every one. Recent reviews by Stern (2000), Vining and Ebreo (2002), and Kollmus and Agyeman (2002) provide helpful summaries of many of these approaches and offer steps toward more integrated conceptions. We will continue to need ways to compare these models and their underlying assumptions. For example, Kurz (2002) suggests there are four psychological approaches to environmentally sustainable behavior: 1) rational-economic models, 2) social-dilemmas models, 3) attitude models, and 4) models based on behavior modification and learning theory. Another example is the pro-social, altruistic context for Schwartz's (1977) norm activation model versus the cost/benefit assumption underlying Ajzen and Fishbein's (1980) theory of reasoned action.

Within the models, we will need more precise articulations of the psychological constructs and of the causal pathways. This will involve more careful operational definitions of the dependent variable(s) and the hypothesized determinants of pro-environmental behavior, as well as clearer descriptions of how these factors relate to each other. Many of the earlier models were exploratory attempts to look at relationships between knowledge, attitudes, beliefs, values, and behaviors, while more recent models take advantage of well-established theories from social psychology, cognitive psychology, and other disciplines. Nevertheless, there is still much room for theoretical development. For example, one of the variables in the Hungerford and Volk (1990) model for environmentally responsible behavior is "environmental sensitivity" and yet we know little about what that construct includes, or the nature of the linkages between caring about nature and conservation behavior. Work in this area has been very preliminary (e.g., Kals et al. 1999; Schultz 2002).

*Developing Behavior Change Strategies and Measuring Success.* Additional research areas related to conservation behavior will focus on 1) how to identify the most appropriate strategies for producing environmental behavior change and 2) how to measure the success of those applications with respect to the CP mission. Because of the variety of circumstances and plethora of research findings and models, this will require that researchers and practitioners work closely together. McKenzie-Mohr observes that:

*Although a cornerstone of sustainability is behavior change, psychology has yet to make a major contribution to the design and delivery of programs to fos-*

*ter sustainable behavior...Psychologists need to participate with program planners in an ongoing dialogue to ensure that their research efforts are both informed and informative.* (2000)

Werner (1999), Kaplan (2000), DeYoung (2000), Bator and Cialdini (2000), and McKenzie-Mohr (2000) are some of the researchers who have attempted to identify behavior change strategies based on principles derived from the literature. Strategies range from creating a sense of "being needed" (Kaplan 1990) to social marketing (McKenzie-Mohr 2000), which is a technique for targeting a specific behavior by understanding the barriers and benefits of doing that behavior. See Monroe (this issue) for an overview of some of the more commonly advanced models, along with related behavior change strategies.

We also need more studies that directly compare the explanatory power of the various models empirically (e.g., Stern et al. 1999; Bamberg and Schmidt 2003), as well as studies that allow us to match models to critical contextual variables. We can then use those results to create more effective behavior change strategies. However, rather than choosing the one best model, it is more likely that practitioners will use a combination of strategies, based on the empirical results and the specifics of the need.

Stern (2000) argues that psychology's tendency to focus at the individual level can under-emphasize some of the important causes and solutions of environmental problems. For example, there are external forces operating on groups of individuals or social systems, such as prices, technology changes, laws, and regulations. Also, some of the biggest threats to environmental degradation occur at the level of organizations. There has been research regarding corporate sustainability (e.g., Sharma and Starik 2003) and studies linking developments in organizational theory with corporate environmentalism and environmental policy (e.g., Hoffman and Ventresca 2002). There has also been extensive research of common-pool resources (natural resource systems used by multiple individuals) that identifies the variables underlying the formation of self-governing associations and the psychological factors that influence cooperation in commons dilemmas (see Ostrom et al. 2002). Whether the focus is at the individual or at the group level, Gardner and Stern (1996) suggest an "environment-first" research strategy that begins by identifying environmentally important activities and determining whose actions and which actions matter most.

The ultimate success of conservation psychology will be based on whether its research resulted in programs and applications that made a difference with respect to environmental sustainability. We need to be able to measure the effectiveness of the programs in terms of their impact on behavior formation or behavior change, using tools developed by conser-

vation psychologists. This also means working with natural scientists to determine that the behavior changes have positive effects on high-priority ecological functions and features.

### Caring About/Valuing Nature

In the previous section, I emphasized behavior-oriented research related to the conservation of resources and ecosystems. I would now like to focus on the quality of life aspects of sustainability. By definition, environmental sustainability is a relational term. It is about creating viable and harmonious relationships between humans and nature over long periods of time. It includes concerns about quality of life for humans and other species, as well as the quality of the human-nature relationship itself.

Usually when we think of human impacts on the environment, we think of consequences such as the loss of biodiversity. However, not only are we losing components of the natural world, we are also losing certain experiences with nature. Pyle (1993) speaks of the “extinction of experience” as humans have fewer direct, personal contacts with living things. This can lead to environmental generational amnesia, where each generation regards the degraded environment they inherit as the normal experience (Kahn 1997).

Psychology is as much about human experience and relationships as it is about human behavior. The relationship between humans and nature develops over the course of an individual’s lifetime, and these relationships are also socially and culturally shaped. Understanding our relationship to the natural world well enough so that we have a language to celebrate and defend that relationship is another research area for conservation psychology. Schultz comments on the need for such research:

*At the heart of the discourse on human-nature relations is the recurring theme about a relationship with nature. Philosophers talk about this in terms of ethics, or morality. Sociologists talk about culture, values, and the ways in which societies interact with nature. Conservationists talk about land ethics, and the experiences that result from encounters with nature. But at the core is the individual and his or her understanding of his place in nature. So far, psychologists have had little to say about this connection.* (2002)

The ways that people care about and/or value nature have been included as important variables in behavior change models. For the sake of outlining a research agenda, I would like to highlight this area as its own outcome category. We can think of two pathways leading toward environmental sustainability. One involves emotional connections with nature, identity and value formation, and the development of an envi-

ronmental ethic. The other involves the adoption and maintenance of conservation behaviors. These pathways are related, but they tend to operate over different time frames and they usually require different research approaches.

#### *Understanding the Psychology of Caring About Nature.*

The theoretical frameworks for understanding the connections and caring relationships between humans and the natural world are not as well developed as the theoretical models for conservation behaviors. Research questions include things like:

- What are the effects of experiences with the natural environment?
- What do we mean when we say “care about the natural world”?
- How do people develop caring relationships with animals, places, and nature?
- How do environmental values develop?

One body of research related to forming connections with nature has looked at the psychological benefits of experiences in nature. There have been a number of studies that document human preference for natural settings (e.g., Kaplan and Kaplan 1989), how humans benefit from and are affected by the natural world (e.g., Ulrich 1993), how interactions with nature positively affect multiple dimensions of human health (see review by Irvine and Warber 2002), and the effect of nature on spiritual well-being (e.g., Driver et al. 1996). Nevertheless, this literature could be better integrated, and there are still many unanswered questions. For example, as human society moves more toward technology and nature experiences decrease, how does this affect the individual?

There are a number of assertions about the value of the natural world, but little empirical evidence. According to the biophilia hypothesis, the human species evolved in the company of other life forms, and we continue to rely — physically, emotionally, intellectually — on the quality and richness of our affiliations with natural diversity. A healthy and diverse natural environment is considered an essential condition for human lives of satisfaction and fulfillment (Kellert and Wilson 1993). Kahn (1999) reviews some of the empirical support for these claims. This seems to be an area where positive psychology and health psychology research could be especially helpful.

Although we know that strong emotional ties exist between people and living creatures and/or natural settings, our culture has not developed a vocabulary for an appreciation of the non-human. Not only do we have a shallow language for caring relationships with the living world, this topic has only recently started to receive more research attention. See Vining (this issue) for a discussion of research related to connections to other animals. Similarly, Bott et al.

(this issue) and Giuliani (2003) provide overviews of research related to connections to place. Studies by conservation psychologists can contribute toward our ability to express the essence of such caring experiences.<sup>10</sup> This in turn can provide more compelling communication tools for shaping our societal stories about human-nature relationships. Forbes (2001) claims that “the lack of language to adequately express our love of the land is the clearest indication that, despite our enormous successes in saving land across the country, we are losing the battle for the souls of America.”

In terms of the language of science, we need better operational definitions of the dependent variables we are studying, and better measures. Rabb and Saunders (in press) use the language of caring as a way to conceptualize some of these relationships. The word “care” can be used in different ways related to thinking, feeling, and acting towards animals and nature (e.g., Geller 1995; Brown 1997). Schultz (2002) refers to similar cognitive, affective and behavioral dimensions in his psychological model for understanding environmental inclusion. Myers and Saunders (2002) point out that the object of care can vary from individual animal level to the ecosystem level, and they speculate about possible pathways from natural care to environmental care. As Noddings (1984) notes, care most naturally extends to individuals that visibly respond to the caring. Abstract entities such as ecosystems do not provide such tangible feedback.

An increasing number of researchers are studying how caring about the natural world develops (see examples in Kahn and Kellert 2002), the formation of an environmental identity (see examples in Clayton and Opatow in press), relationships between a psychological connection with nature and environmental sustainability (see examples in Schultz 2002), significant life experiences as precursors of environmental concern (e.g., Chawla 1980, 1999; Tanner 1998; Gough 1999), development of a sense of place (see Bott et al. this issue), moral development (Kahn 1999; Nevers et al. 1997) and moral functioning (Opatow and Weiss 2000) in relation to the natural environment, and the links between environmental values, concern, and action (e.g., Kempton et al. 1995; Schultz and Zelezny 1998). Norton (1991) suggests the intriguing notion of “transformative values” where certain experiences of nature could provide opportunities for forming and criticizing our values. A helpful review of the development of environmental values and the translation of values into behavior is provided by Doremus (2003).

In general, the development of a caring relationship with nature is related to the formation of an environmental ethic. Aldo Leopold (1949) argued that an ethic of care was an essential part of humanity’s relationship with the natural world. At the heart of Leopold’s ethic was an understanding of land as something more than just a set of resources. He

talked about having an ecological aesthetic — experiencing the landscape as an active participant and as a set of interactions and relationships. He pursued careful first-hand knowledge of his surrounding ecology, which included humans. He argued that the ability to perceive beauty in nature may be one factor that leads people to develop the kind of love that includes voluntary self-restraint for the sake of long-term, distant ecological needs. As mentioned before, research is needed to explore the relationships between caring and action.

*Developing Strategies to Foster Caring, Shape Values, and Measure Success.* In addition to creating better conceptual models, more applied research is needed to: 1) identify the most promising strategies for fostering ways of caring about nature, 2) find ways to reframe debates and strategically communicate to the existing values that people have, 3) identify the most promising strategies for shifting the societal discourse about human-nature relationships, and 4) measure the success of these applications with respect to the CP mission. In Figure 2, this would include the applied and evaluative research for either individual or group level approaches to caring about nature. Because this is a very broad category, I will only be able to suggest a few representative types of research. Just like the research associated with developing behavior change strategies, this research will require that researchers and practitioners work closely together.

Some of the psychological research that can be used to encourage personal connections to nature includes: significant life experience research (Tanner 1980; Chawla 1999), research about the restorative qualities of nature (Kaplan and Kaplan 1989), environmental identity research (Clayton and Opatow in press), and biophilia research (reviewed by Kahn 1997; Kellert and Wilson 1993). Monroe (this issue) provides examples of research that has helped create strategies for building environmental literacy. Vernon et al. (1997) show how principles derived from similar research have been applied in a zoo setting, using a process of collaboration between researchers and educators.

In addition to finding ways to foster emotional connections with nature, psychology can help identify currently-held values that are directly or indirectly related to the environment or environmental action. Schultz and Zelezny (this issue) provide an overview of commonly shared American values and their relationship to environmental attitudes and behaviors. By understanding the dimensions of such values, psychologists can suggest and test strategies for framing environmental messages in ways that speak to those values. Environmental communication could be much more strategic if it were better informed by how people see themselves in relation to self, other people, and the biosphere.



In terms of research oriented toward reshaping the relations between humans and the natural environment at a group level, psychology can help society create a new vocabulary and powerful communication strategies. We know that the way words are put together constrains our perceptions of the problem and its potential solutions (Doremus 2000). Principles from psychology can reveal the assumptions in our current discourses and help us tell different stories. An example is the work being done by the Trust for Public Land that they are calling conservation sociology.<sup>11</sup> They distinguish between saving land without people, saving land for people, and saving land and people (the latter being most like Leopold's conception). In addition, we can structure our legal policies to encourage regular unplanned contact with nature, as well as vigorous public discussions of values (Doremus in press).

Psychology can assist by providing insights into moral reasoning and moral functioning, which lie at the heart of human-nature relationships. Encouraging public dialogue about challenging issues would allow people to develop a more powerful language. Werner (1999) provides examples of psychological research that is needed to influence general social awareness and concern about a problem. Studies can range from analyses of social change and innovation diffusion to cross-cultural analyses of underlying values and ways of thinking. She suggests that research is needed to understand how groups reach a common understanding, and to determine how best to make resource problems visible and convincing.

In sum, I have suggested that conservation psychology research questions could be organized by two broad outcome areas: how humans behave toward nature and how humans care about/value nature. Within these two areas, research can focus at the individual or the group level. Considered together, CP research will include: 1) research that helps to clarify key concepts related to conservation behaviors and to ways of caring about nature, 2) research on behavior change strategies and strategies for fostering environmental care, and 3) research that measures the success of any programs toward conservation psychology goals.

### **Possible Ways to Work Together**

Because of its focus on mission-driven research questions and problem-solving, conservation psychology will need efficient ways to facilitate cooperation between researchers and practitioners, and between the researchers themselves. Given the inherent complexity of environmental problems, there will be many research needs and opportunities. I expect that the process of blending researcher and practitioner voices will sometimes be similar to how scientists and managers work together for adaptive management or

action research projects; other times researchers will work more directly with each other. (See Salafsky et al. 2002, for a conceptual framework and research agenda for a conservation science that uses the principles of adaptive management.) Although the degree of involvement of the practitioners and the form of cooperation between the researchers will vary, a common theme will be an orientation towards a conservation mission.<sup>12</sup> Becker and his colleagues (1999) provide additional ideas for how to reorient the social sciences to better address sustainability issues.

A sample recipe for a conservation psychology project might be: 1) gather a team of researchers and practitioners around a conservation problem so that each individual brings their knowledge and experiences to help frame an approach to the problem, 2) clarify the fundamental questions being asked by practitioners and blend in what is known from a psychological perspective to create research questions that have practical and theoretical value, 3) fold what is known from the research literature into the design of educational/communications programs or other approaches to the problem, 4) mobilize a team of researchers to measure the success of the approach, using whatever methods are appropriate or creating new ones, 5) look for opportunities to test models and/or develop new theories, and 6) share results and implications with other researchers and practitioners.

Whatever the approach, the trick will be to take advantage of existing infrastructures and form new linkages between them. In many cases, internet communication systems can help. Researchers and practitioners can thereby maintain their professional identities but work together in new ways. For example, a group of practitioners could send ambassadors to existing conferences, enlisting the aid of researchers who attend those conferences to help them organize panels around their problem topic. Another example might be for conservation psychologists to work at the bioregional level by providing insights about the knowledge, attitudes, values and behaviors of different stakeholders in the communities. Also, institutions that have similar wildlife conservation missions, such as national parks and zoos, could form partnerships and enlist the aid of conservation psychologists to better understand their collective impact on shared audiences. Other examples are provided in this issue.

Finally, networking efforts will need to include different cultural/international perspectives. Different viewpoints will lead to a richer vocabulary for describing the human relationship to nature, although efforts to achieve cross-cultural relevance will add layers of complexity. The Journal for Nature Conservation is one example of an international, interdisciplinary vehicle for encouraging communication between scientists and practitioners in order to explore new research avenues.

## Concluding Remarks

In this essay I have argued that psychology needs a better way to organize an applied focus centered on conservation, and conservation needs it to produce one. The magnitude and urgency of the sustainability issues facing humanity demands more attention from psychologists and other social scientists. The emerging field of conservation psychology provides an effective applied focus that welcomes all of the resources within psychology to the service of a conservation mission. The following summarizes some characteristics of this new field:

- Conservation psychology is mission-driven, with a focus on research committed to encouraging conservation of the natural world
- It is an applied field that makes use of scientific approaches to study cognitive, affective and behavioral aspects of the human-nature relationship; the type of research is based on psychological frameworks and methods
- It involves an active exchange between researchers and practitioners during all stages of the research; this iterative approach to problem solving is necessary because of the urgency and complexity of conservation problems
- Desired outcomes from CP research include 1) a new vocabulary for helping humans express and value personal relationships to nature, and 2) principles for encouraging the adoption and maintenance of pro-environmental behaviors

In many ways, psychology represents our culture's formalized conceptions of what it means to be human, and that most certainly includes our relationships with the rest of the living world (see Myers 1998, 18, 20). One of the masters at articulating those connections, E.O.Wilson claims that humans are currently:

*inside a bottleneck of overpopulation and wasteful consumption...In order to pass through the bottleneck, a global land ethic is urgently needed...based on the best understanding of ourselves and the world around us...We will be wise to listen carefully to the heart, then act with rational intention.*  
(2002)

It is my hope that conservation psychology can provide insights about what it means to listen carefully to the heart and how to act with rational intention.

When Conservation Biology was forming, it served as a rallying point for biologists to pool their knowledge and techniques to solve problems. Soule made the following observation about the process:

*Disciplines are not logical constructs; they are social crystallizations which occur when a group of people agree that association and discourse serve their interests. Conservation Biology began when a critical mass of people agreed that they were conservation biologists. There is something very social and very human about this realization.* (1986)

Soule and Wilcox also spoke about the value of having a useful label. "A community of interest and concern is often crystallized by a simple term... Conservation biology is such a term" (1980).

I believe that Conservation Psychology is an equally useful term and that there is a critical mass of people interested in working together under a Conservation Psychology umbrella. This overview suggests the types of research that might be included and provides a framework for considering and using such research. This is an ongoing evolution and part of the process will be to define what Conservation Psychology is together. The challenge is to listen carefully and create useful processes for accomplishing our goals, rather than fragmenting our energies. The intent of conservation psychology is to fill a need, not duplicate efforts by other groups. My current thoughts are very much a reflection of the input by a number of colleagues, and I welcome the opportunity provided by this forum to further refine these ideas.

## Endnotes

1. E-mail: casaunde@brookfieldzoo.org
2. Sustainability has been defined in many ways, even pre-dating the concept of sustainable development that was presented to the United Nations in 1987 in the Brundtland report. I like the four domains summarized by Oskamp (2002): ecological, social, economic, and political/institutional/cultural. Most of my comments in this article will refer to ecological/environmental sustainability, although conservation psychology will need to address all four domains. In fact, it is not really possible to consider any one of these domains in isolation.
3. Further discussions about the term "conservation psychology" itself and debates about what should be included are presented in a special issue of the Population and Environmental Psychology Bulletin (Brook 2001; Myers 2001; Reser 2001).
4. In addition to the subdisciplines within psychology and the social science umbrella groups mentioned in Figure 1b, there are many other important intersection groups, including Geography, Ecological psychology, Ecotherapy, Environmental education research, Environmental communication, Environmental anthropology, Environmental economics, Environmental ethics, and Environmental law to name a few.
5. There is a journal called *Human Dimensions of Wildlife* as well as several research units in universities devoted to this area of research. A textbook on the subject has been produced by Decker, Brown and Siemer (2001).

6. The Committee on the Human Dimensions of Global Change is a standing committee that was established in 1989 to help guide research in the United States on the interaction between human activity and global environmental change.
7. Examples of social science special interest groups with an environmental focus include the Nature and Ecology Network of EDRA (Environmental Design Research Association), the Environmental Psychology division of IAPS (International Association of Applied Psychology), the Environmental Education Research Commission of NAAEE (North American Association of Environmental Education), the Ecological and Environmental Education Special Interest Group of AERA (American Educational Research Association), the Environmental Program Evaluation of AEA (American Evaluation Association), the Environmental Communication Commission of NCA (National Communication Association), the biennial multidisciplinary Conference on Communication and Environment (COCE), the Anthropology and Environment Section of AAA (American Anthropological Association), and the newly formed Social Science Working Group of SCB (Society for Conservation Biology).
8. As a network of researchers and practitioners, the mission of CP is to encourage sustainable and harmonious human relationships with nature. The goal of CP research is to support that mission by conducting studies that have direct relevance.
9. Other terms that can be used include pro-environmental behaviors, environmentally responsible behaviors, environmentally friendly behaviors, and environmentally sustainable behaviors.
10. Interestingly, some cultures have words for caring about nature. For example, in Hawaiian, *malama ke kai* literally means "to care for the sea," where "care" includes both a management/stewardship context and a love/spiritual connection context; a similar word in the Solomon Islands is *puava* (Parks, pers. commun.)
11. Rogers (2000) describes conservation sociology as "a philosophical and practical base, from which we hope meaningful action can grow. Many of the ideas and actions that are so essential to the nurturing of healthy relationships between land and people are already in place and in practice. Other concepts and practices, including a more compelling land and people vocabulary, have yet to be developed or tested."
12. Although it is important to choose research questions that matter to the solution of real-world conservation problems, this does not imply that people in this field will impose particular views about what conservation is, how trade-offs should be made between conservation and other societal goals, or how conservation should be best established (Doremus, pers. commun.).

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