

the very fate of their existence might lie in these seemingly simple decisions that we make on our small properties. To underestimate the effect on the planet that each of us personally makes is perhaps one of our biggest downfalls as a species. This needn't be our fate.

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## 23 Bringing sustainability and science to the incarcerated

### The Sustainable Prisons Project

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243.

Scientists and sustainability experts tend to seek answers to their questions through collaborations with people of similar background, culture, and education. They also tend to disseminate their work to audiences that hold similar values and have common vocabularies. Increasingly, there is a need for scientists and sustainability experts both to engage nonscientists in the practice of research, and to communicate their work to those who are outside the choir (Leshner, 2007).

Public engagement and involvement in sustainability efforts are typically viewed by the scientific community as at best a duty and at worst a burden, although certain activities that engage the public have also been viewed as a benefit to the scientist. For example, the growing field of citizen science and sustainability has demonstrated that untrained citizens can carry out aspects of data collection concerning reduced energy use with rigor if they have the guidance of an interested scientist or sustainability expert. However, citizen-implemented projects nearly always include those who are already interested in ecology, nature, or an aspect of conservation or sustainability, even if they do not hold advanced degrees in science. A great challenge for science and sustainability educators is to engage those who come from other backgrounds and ethnic groups, and who lack a previous interest in the scientific endeavor.

This chapter discusses the challenges and benefits of a collaborative project among scientists, sustainability experts, conservationists, prison administrators, and inmates. We discuss the goals, practices, and results of our efforts in Washington State to interact with one of the most underserved public groups in the USA – incarcerated men and women – to provide education, research, and conservation opportunities, and to guide sustainable practices by prisons. A program that has been successful in engaging inmates in five prisons in Washington State serves as a successful proof of the concept of these efforts. There has been strong interest in the program among ecologists, conservationists, corrections administrators, and inmates in other states. A proposed conference would draw together the people and institutions needed to bring this concept and these practices to a national level.

## Incarceration, science, and sustainability

Locked away from contact with scientists and nature, incarcerated individuals are the most underserved and underutilized audience for science engagement in our country. Incarceration need not, however, preclude participation with science and sustainability. Since 2005, an innovative interdisciplinary project in Washington State – the Sustainable Prisons Project (SPP) – has shown that with minimal resources, scientists can raise the awareness of the importance of science, sustainability, and nature in the correctional population ([www.sustainableprisons.org](http://www.sustainableprisons.org); Bhattacharjee, 2008; Ulrich and Nadkarni, 2009). They can also inspire inmates to consider and plan for a future profession or further education in science. With some notable exceptions, prisons offer limited educational opportunities. Yet many inmates wish to forge new lifestyles and professions after their release; they make excellent candidates for outreach and training in science and sustainability.

Where there is limited access to nature and the outside world, prisons and other institutions have noted the positive impact of working with plants and animals. Horticultural therapy and activities involving the training of guide dogs, for example, have been shown to reduce aggression, increase patience and social contacts, and enhance empathy for other living things (Grinde and Patil, 2009; Lee *et al.*, 2009; Weinstein *et al.*, 2009). These are exactly the characteristics that are valued by corrections administrators who wish to reduce violence, increase social interaction, and ultimately reduce recidivism.

To fulfill the multiple goals of bringing science to an underserved audience, reducing violence and recidivism, enhancing sustainability, and providing scientists with a new set of collaborators, scientists from Evergreen State College and administrators with the Washington State Department of Corrections (WDOC) forged the SPP. Its mission is to “bring science and nature into prisons. We conduct ecological research and conserve biodiversity by forging collaborations with scientists, inmates, prison staff, students, and community partners. We help reduce the environmental, economic, and human costs of prisons by inspiring and informing sustainable practices” (Sustainability in Prisons Project, 2013).

The effort began as a single ecology research project in 2004, funded by a small portion of a Communicating Research to Public Audience (CRPA) grant supplement from the National Science Foundation (NSF). The project, implemented in a single minimum-security prison, was intended to teach inmates how to grow moss *ex situ* to help reduce the need to collect moss from old-growth forests for the horticulture trade. The project engaged ten inmates to carry out moss horticulture experiments that taught them about botany, experimental design, and the scientific process. It also provided new scientific knowledge for the ecologist (about which species of mosses grew fastest under which watering regimes) and showed prison administrators that inmates involved in the program exhibited good behavior and had “different conversations” in the prison yard. One of these

inmates was the co-author of a peer-reviewed paper, delivered a paper on the prison research at the annual meeting of the Ecological Society of America in 2008, and has since gone on to graduate school in molecular biology (Ulrich and Nadkarni, 2009).

Over the next three years, the SPP was funded by a contract with the WDOC to expand to four other prisons (both men’s and women’s, minimum to maximum security; see Table 23.1). Different educational, conservation, and sustainability projects have been placed under the general umbrella of the SPP, and a variety of collaborating partners have joined the project to create the mosaic of activities described below.

## Education programs

The positive results of this preliminary collaboration led to the implementation of a monthly lecture series, “Sustainable Living, Sustainable Lives,” which brought scientists and sustainability experts to the prison. Scientists, prison staff, and inmates sat side by side, learning about topics that ranged from recycling to brown bear ecology. In addition to educating inmates, the SPP has been responsible for the instruction and support of graduate students. Six students in the Masters of Environmental Studies Program, a two-year professional degree that emphasizes environmental policy, have been directly engaged with the SPP for internships and their thesis work. They have provided the logistical and educational support for the conservation projects, serving as critical intermediaries between collaborating scientists from partner agencies and the inmates. They also organize and implement the lecture series and workshops. The success of the moss-growing project inspired other scientists to work with inmates. Conservation biologists at the Washington State Department of Fish and Wildlife provided expertise and a framework for inmates to captive-rear the endangered Oregon Spotted Frog. Four other captive-rearing facilities in Washington State were raising these animals to restore their dwindling populations in the wild. Inmates received training from herpetologists, and their work resulted in the largest populations with the lowest mortality rates; they won the “Best Captive Rearing Facility Award” in 2009 and 2010.

Similarly, the SPP engaged a nonprofit conservation group, the Nature Conservancy, and biologists at the Joint Base Fort Lewis McChord, which promotes an effort to restore relict prairie communities. Inmates at another prison have grown about 500,000 plugs of 16 species of prairie plants each year for three years for outplanting in the prairies. Bird conservationists have benefited from a project in which inmates built 500 bird boxes for the Western Bluebird and the Purple Martin. The most recent project involves an effort by women at a minimum-security prison to rear the endangered Taylor’s Checkerspot butterfly for release at Joint Base Fort Lewis McChord.

In 2009 and 2010, inmates successfully raised 149 frogs with a mean survivorship of 77 percent. Frogs raised in prisons were consistently larger than those

Table 23.1 Program facility locations, numbers, types, and activities

Facility	Number of inmates	Type of facility security	Sustainable activities
Cedar Creek Corrections Center	500 male	minimum	recycling, water conservation, gardening, beekeeping, tilapia farming, frogs
Stafford Creek Corrections Center	2,000 male	medium, maximum, supermax	recycling, gardening, beekeeping, lectures, prairie plants, bird boxes
McNeil Island Corrections Center	2,300 male	medium, maximum	gardening, lectures
Women's Correctional Center of Washington	1,700 female	medium, maximum, supermax	recycling, gardening, lectures
Mission Creek Corrections Center for Women	300 female	minimum,	gardening, lectures, butterfly biology

raised by local zoos. In 2011, field surveys revealed new frog egg masses, evidence that captive-reared frogs are reproducing. In addition, to reduce rearing and transportation costs, offenders raise crickets needed to raise frogs. In two years, inmates raised 515,000 native plants of 16 species for restoration of the South Sound prairie habitat.

The social climate of Washington State was conducive to instigating sustainable operations in all state agencies, including the Department of Corrections. The governor decreed that sustainability of water, energy, and materials was to be encouraged in all possible ways. Cost savings, always a goal of corrections departments, was also a driver in reducing the use of materials and shrinking the energy footprints of its facilities.

The initial sustainability lectures at the SPP prisons inspired a variety of sustainability projects: organic gardens; worm composting recycling sheds; water catchment containers; and beekeeping. By installing ultra-low-flow toilets, the Cedar Creek Corrections Center (CCCC) has saved over 11.2 million litres (250,000 gallons) of water each year. The CCCC recycles over 907 kilograms (2,000 pounds) of paper and 1,950 kilograms (4,300 pounds) of carton per month. Stafford Creek Corrections Center uses push-blade mowers to reduce gas use. Based on data from internal tracking by the Department of Corrections staff from 2005 to 2010, sustainable operations have increased diversion to recycling by 90 percent, food waste diversion to composting operations by 90 percent, and biodiesel use by 9 percent (from 2009 to 2010); they have reduced solid waste to landfills by 30 percent, facility heating and energy consumption by 8 percent, all

transportation fuel consumption by 25 percent, and carbon emissions by 40 percent (from 2009 to 2010).

A wide range of institutions have collaborated with the project, including Amphibian Ark, the International Society for Arboriculture, Northwest Trek, the Center for Natural Lands Management, the Nature Conservancy, the Oregon Zoo, Point Defiance Zoo and Aquarium, Woodland Park Zoo, the US Fish and Wildlife Service, US Army Joint Base Lewis McChord, the Washington Department of Fish and Wildlife, and the Washington Department of Natural Resources.

The incarcerated men and women, though seemingly unreachable and unteachable, have proven to be interested, capable, and desirous of science education and sustainability practices. Scientists and sustainability experts see a number of important benefits: direct engagement and increased scientific awareness and appreciation in a hitherto underserved public audience (evaluations of prisoners showed significant integration of scientific content); potential new scientific insights gained from an audience approaching a topic with fresh eyes; much-needed restoration work for a large number of endangered plants and animals; fulfillment of broader impacts required for NSF grants in powerful and visible ways; and the possibility of recruiting new students to scientific study (some offenders expressed a keen desire to pursue scientific work after their release).

There are benefits for the corrections community as well: direct cost savings (e.g. from the cultivation of vegetables and honey); the chance to give inmates something to occupy their attention other than dissatisfaction with their condition; job skills for inmates after their release; and an improved image for prisons in the larger community because of positive media coverage, providing a sense of pride and accomplishment for a sector of society that rarely receives public approval.

Formal evaluation of the work to date was performed by a consultant, David Heil and Associates. Both types of programs, SPP lecture series and ERC Projects, appear to have resulted in increased awareness of the impact of their behaviors for participating offenders. For those who attend the lectures, this may simply mean that they better understand the impact of their personal choices on the environment. For those who participate in the more intensive ERC programs, this understanding of the impact of their behavior is also tied to a sense of ownership and responsibility for their work. These results suggest that the ties between environmental responsibility and personal and professional responsibility are an important element of the SPP. As the program moves forwards, efforts should be undertaken to enhance these outcomes and to further explore their implications.

The diverse perspectives reflected by the stakeholders in the SPP present a challenge to program development efforts to design a cohesive set of program activities. Nonetheless, the comprehensive program approach, including the lecture series, intensive ERC Projects, and efforts to support prison-wide sustainable practices, is already working to support these diverse goals, and focused program



development efforts will help to ensure on-going success in these areas. Although the program must be deliberate in efforts for expansion, stakeholders universally agree that the SPP program should continue to expand. Both offenders and prison staff provided recommendations for expanding the lecture series and ERC Projects and developing additional SPPs. As SPP staff undertake these efforts, it will be essential to involve the stakeholders in these efforts to ensure that the program reflects their diverse interests.

The SPP has gained professional respect and visibility when members of the project have presented results of the work at professional meetings and conferences in the areas of ecology and corrections. For example, Nalini M. Nadkarni organized a well-received symposium at a meeting of the Ecological Society of America in 2009. One of the inmates who had been involved in the sustainability work gave a talk at this symposium. Dan J. Pacholke, the Director of Prisons of Washington State and co-leader of the SPP, and Nadkarni were invited to give a presentation on the SPP to the western regional meeting of Association for State Corrections Administrators. At the end of the presentation, when superintendents and directors were asked how many of them were interested in having a project like the SPP in their facilities, every hand in the room was raised. As the SPP has matured, members of the project staff have received numerous queries from 14 other states and 3 countries about how to implement similar collaborative programs. The inquiries have come from corrections administrators, corrections staff, inmates, families and friends of inmates, ecologists, and conservation biologists.

### Case study: teaching wildlife conservation and sustainability behind bars

Marc Bekoff

For more than ten years I've been teaching animal behavior and conservation biology at the Boulder (Colorado) County Jail as part of the Jane Goodall Institute's Roots and Shoots Program (<http://www.rootsandshoots.org>). The course is one of the most popular in the jail. Students have to earn the right to enroll and they work hard to get in it.

Teaching animal behavior and conservation to inmates is very educational and rewarding. While there's student turnover, jail workers and I remain pleasantly surprised at how this course connects the inmates to various aspects of nature. Many of the students find it easier to connect with animals than with people. The major reasons they give are that animals don't judge them and that the animals trust them; many of the inmates had lived with dogs, cats, and other companions who were their best, and in some cases their only, friends, and for some they were family. Many of the inmates trust and empathize with animals in ways they don't with humans.

I also try to correct a prevailing and distorted view of how animals treat one another. At one of the first meetings someone was talking out of turn as I was

setting up the video of the day. One of the guys yelled, "Hey, shut up, you're acting like an animal. This guy's here to help us." I immediately responded, "You've just paid him a compliment." I explained that animals are usually cooperative, kind, and empathic. While surely there is competition and aggression, there's also a lot of cooperation, empathy, and reciprocity observed during a number of social interactions, including social play. I explained that these "positive" or prosocial behaviors are examples of "wild justice" and this idea made them rethink what it means to be an animal (Pierce and Bekoff, 2009). They've had enough of nature red in tooth and claw, and many lament, "Look where that 'I'm behaving like an animal' excuse got me."

Topics we actively discuss include general aspects of animal behavior, the evolution of social behavior, evolution and creationism, biology and religion, sustainability, extinction, animal protection and environmental ethics, eugenics, environmental enrichment, balance in nature, complex webs of nature, cultural views of animals, and who we are in the grand scheme of things – anthropocentric influences on animals and the environment. When we discuss various aspects of wildlife conservation, almost all of the inmates have something to say. They're uniformly against killing wolves just because they kill livestock, and they get really upset when we discuss how destructive humans can be to animals and habitats. Our discussions about hunting are very interesting, and trophy and sport hunting are really frowned upon. Our exchanges rival those that I've had at university classes.

When we discuss environmental issues and sustainability, I frequently note a sensitivity rivaling that of former students at the University of Colorado. Most of the inmates have a working understanding of what it means to live sustainably, and all agree that the future of the planet relies on our living in such a way that we do not take more than we need. In fact, most of the men in the class note that what we think we need is more than we really do need, and that we need to change our ways so that we take less in the future.

Importantly, many of the students see the class as building community with animals and with people. They yearn to build healthy relationships. I use examples of the social behavior of group-living animals such as wolves as a model for developing and maintaining long-term friendships among individuals who must work together not only for their own good but also for the good of the group. The idea of a community working together fits in well with an attempt to live more sustainably in that the inmates realize that if we all take and use less, this will mean that we won't be as draining on limited resources. I believe that many of the guys are ready to make that change when they are released.

Occasionally, I ask the inmates what they get out of the class. Here are some of their responses:

- I've learned a lot about understanding and appreciating animals as individuals.
- The class gives us a sense of connection to webs of life.



Figure 23.1 Jane Goodall's Fifi. One of Jane Goodall's favorite chimpanzees drawn by Jeff, a student in Marc's Roots and Shoots class at the Boulder County Jail; presented with permission of Marc Bekoff

- The class helped me to think about how to live more sustainably.
- What I do counts. I now have a positive vision for the future.
- The class makes me feel better about myself.

It's clear that learning about animals inspires the students and gives them hope. I've been told that because of the class some of their kids are more likely to go into science. I know some students have gone back to school, while others have made contributions in time and money to conservation organizations. During the course, some have contributed to animal rescue programs, including one with which I work that's involved with rescuing and rehabilitating Asiatic moon bears. Some have gone on to work for humane societies. One student went back to school and received a master's degree in nature writing. When I ran into him in Boulder he was so proud of his accomplishments and incredibly enthusiastic, and he told me that he really considers how he's living so as not to take more than he really needs. He'd been able to stay out of jail and pursue his dreams.

My course has helped the inmates to connect with values that they otherwise wouldn't have. By discussing animal behavior and conservation, doors were

opened so that understanding, trust, cooperation, community, individual and global sustainability, and hope could be developed and dreams pursued.

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