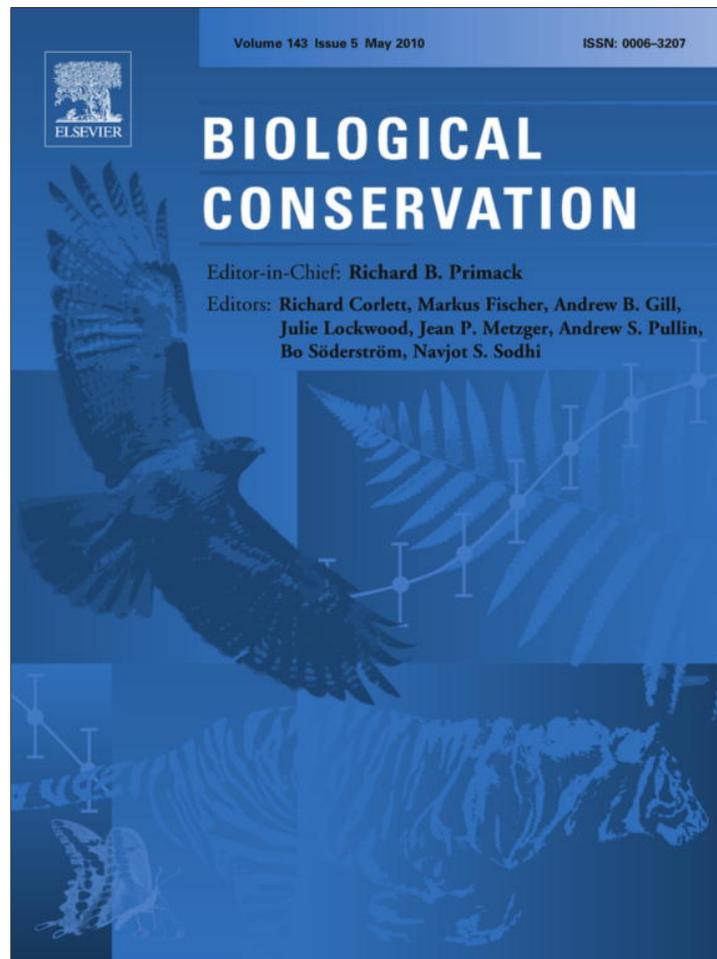


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# Biological Conservation

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## Editorial

### Empowering women facilitates conservation

The present scenario of global change caused by unprecedented habitat loss, species declines, climate warming, and pollution with culminating in an environmental crisis that needs to be addressed with innovative and radical solutions. At least some failures of conservation can be attributed to poor involvement of women. To improve the role of women in conservation, we need to better understand and target the reliance of women on natural capital, involve women more effectively in natural resource governance, and build the capacity of women in conservation science and its application.

Understanding the role of gender in humans relationships with natural resources is one of the precursors to more sustainable management of the environment. Men and women may differ in their attitudes toward natural resources: for instance rural women near a Tiger Reserve in India tended to be more supportive of wildlife and forest conservation than men because they felt that the tiger (proxy for wildlife) had a right to live (Arjunan et al., 2006). In general, our understanding of gender differences in attitudes toward conservation, especially in tropical communities, is poor (Martino, 2008), and this can impede conservation outcomes. For example, a reforestation project in rural Kenya almost failed because women were not given the choice of species to be planted, the decision of which was controlled by men. Therefore the women were unwilling to spend the extra time to irrigate the seedlings resulting in a large scale mortality of seedlings (Anonymous, 2001). However, the second phase of this project was successful because seedlings of tree species preferred by women were planted. This example highlights that it is important to engage rural women in the decision-making processes in conservation projects.

It has been suggested that rural people should be monetarily compensated for safeguarding biodiversity (du Toit et al., 2004). Because financial assets held by rural women are generally spent on food, medicine, and housing (Kristof and WuDunn, 2009), including women in conservation payments schemes may sustain livelihoods and result in reduced reliance on forests. Similarly, while designing comprehensive sustainable harvesting regimes, gender differences in resource-harvesting behavior must be carefully considered.

Conservation initiatives can also achieve broader environmental goals by targeting women more effectively. Growing human populations threaten natural habitats. Investments in educating women and providing them with job opportunities can delay child-bearing (Kristof and WuDunn, 2009) or reduce the number of children. Thus success of conservation initiatives will undoubtedly be enhanced by parallel programs such as small business development through micro-financing, better access to healthcare services such as family planning, efficient and sustainable agricultural techniques, and literacy programs for women. Recognizing the impor-

tance of educating underprivileged women and engaging them in conservation activities, the World Wide Fund for Nature (WWF) runs a multi-pronged program in various developing countries, which includes Girls Education Program ([www.worldwildlife.org/what/communityaction/people/phe/women/girlseducationprogram.html](http://www.worldwildlife.org/what/communityaction/people/phe/women/girlseducationprogram.html)). The program aims to help women achieve financial independence and become better stewards of the environment. We hope that other agencies will promote the implementation of similar programs ensuring that they are linked to enhanced conservation outcomes.

Women are not well represented in the governance of natural resources at local to global scales ([www.unep-wcmc.org/resources/PDFs/EOTEII/SECTIONS/5\\_Fuller.pdf](http://www.unep-wcmc.org/resources/PDFs/EOTEII/SECTIONS/5_Fuller.pdf)). Probably women are often not included in decision-making or conservation planning because given limited resources and looming deadlines, many conservation organizations tend not to alter prevalent social and cultural norms (Belsky, 2003). However, inclusion of women in executive committees of community forest initiatives resulted in improvements in forest condition in India and Nepal (Agarwal, 2009). The presence of women improved forest condition because of enhanced forest patrolling and rule compliance. Similarly, a pan-tropical study reported high levels of collaboration, solidarity, and conflict resolution in natural resource management groups that involved women (Westermann et al., 2005). Clearly, the representation of rural women in the governance of natural resources should be increased. However, such an engagement would require adjustments such as organizing community meetings when women are relatively free or providing assistance such as childcare during the meetings.

It is difficult to estimate the proportion of women in undergraduate and graduate programs in conservation biology, conservation organizations, and academia. But it is probable that women are not equally represented in the field, especially in the developing world ([sites.nationalacademies.org/PGA/cwsem/PGA\\_049131](http://sites.nationalacademies.org/PGA/cwsem/PGA_049131)). Women in conservation biology may face impediments such as hiring biases, challenges related to field work (e.g., lack of safety at some research sites or family commitments), and male dominance both in academia and in governmental and non-governmental conservation agencies. However, more women are needed in conservation biology at least for three reasons: women are better at communicating with women regarding environmental issues (Hunter et al., 1990), women may be more adept at identifying female-related issues in conservation thereby bringing fresh angles to solving environmental problems, and women can provide leadership and serve as role models for younger female conservation professionals. Highlighting gender issues and research by women in textbooks may be one of the ways to encourage female undergraduates to pursue conservation science (Damschen et al.,

2005). Additionally, to ensure that research conducted by women remains accessible to the scientific community, conservation journals need to determine and rectify if there is a gender bias in the editorial process. Biological Conservation has been proactive in this regard (Primack and Marrs, 2008; Primack et al., 2009).

The marginalization of women is ubiquitous outside the conservation realm (Kristof and WuDunn, 2009), so it will be challenging to mainstream women in conservation. We are not overlooking the contributions that men have made to conservation or arguing that they should not be involved in conservation, but that more equitable and complementary participation by both genders will benefit conservation. To improve conservation outcomes we need to promote the participation of women in all aspects of conservation.

We thank E. Fleishman, R. Primack and three anonymous reviewers for comments.

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Available online 5 March 2010