

### Faculty Sex Ratios in U.S. Conservation Education Programs

If the description of U.S. graduate programs in conservation biology by Jacobson et al. (1995, *Conservation Biology* 9:5-17) "foretell(s) what will be on our plate in the future" then we have a great deal to worry about. Certainly the menu provided represents a diverse array of possibilities in graduate training, but it also provides stark documentation of two points ignored in the presentation: the dominance of conservation biology by WASP males and the apparent failure of affirmative action programs.

Using first names given in the listings of faculty for each institution, I assigned gender to 342 of the people listed for 50 institutions. One university provided only initials, and gender could not be assigned to 23 people because of ambiguity (names such as Chris). The sex ratio was F:M 1:5.45 (53 women, 289 men) for listed faculty and 1:6 (7 women, 42 men) for the listed "contact" people.

If we take the perspective of a potential graduate student who would prefer to work with a woman, then that list does not provide a diverse array of possibilities. Seventeen institutions are rejected immediately because they list no identifiable women. A further 20 list 1 woman, 9 list 2, and 5 list 3. For no institution was the sex ratio equal or woman-biased. In reality some choice is offered for a mere 14 institutions.

For ardent feminists, results like these have an all-too-familiar ring. For people sitting on appointments committees who regard academic excellence as the only criterion worth considering it is irrelevant. For those of us sitting somewhere in between it is frustrating and depressing.

Has affirmative action failed? In two recent job searches for an environmental scientist that I have been involved in, the sex ratio among the

applicants was considerably worse than those listed above (both jobs were advertised internationally). In the most recent search, about 8% of the applicants were women. If these numbers mean anything then affirmative action may actually be having some impact in the United States. But there is a long way to go. In particular women need to be encouraged to work toward and apply for faculty positions. I suggest that some responsibility lies with institutions and/or appointments committees who need to make faculty positions more attractive to women.

A curious twist on this analysis is that all three authors of the article on which it is based are women. Two of them are not listed on the faculty of their university and are presumably not yet in tenure track positions; I hope they are applying.

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Increasing participation by women and minorities would certainly enhance the field of conservation biology. The dearth of female faculty listed in Jacobson et al. (1995) may reflect the lack of women with senior-level faculty status at many universities. For example although 33% of the listed faculty at the University of Florida are female, in actuality 45% of the tenure-track faculty in my department, Wildlife Ecology and Conservation, are women as are more than half of our graduate students.

I believe affirmative action programs have assisted with the recruitment of women in our field. We remain, however, dismally unsuccessful in our efforts to recruit and

retain minorities. This will hinder the efficacy of conservation biology in the future.

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### Appeal to Morality or Resort to Legislation

The excellent and well-balanced review of property rights and the Endangered Species Act by Dwyer et al. (1995, *Conservation Biology* 9: 725-741) raises many issues that should be put in a wider context.

The question remains, How can we get the resource users and property owners to act in the long-term interests of society? There are two ways to approach the problem: we can resort to legislation or we can appeal to moral values. Traditionally the emphasis has been on moral values. This is not always adequate for several well-known reasons so legal measures have become increasingly frequent. The ESA is a case in point because it is a legal measure passed with minimal attempt to ground it in the moral sense of the people who have to deal with its provisos.

Unfortunately, local landowners and land-users—not just in the United States—have become increasingly alienated by what they see as a rapid increase in federal micromanagement. This can lead to serious problems. Here in Riverside County, local federal officials apparently prevented several small landowners from clearing firebreaks in the brush around their homes because it would threaten the habitat of the endangered Stephens' kangaroo rat. The homes were subsequently lost in a brush

fire. The irony is that the kangaroo rat does not live in brush. Officials later denied they really meant to prevent all brush clearing, but the homeowners certainly understood them to so order. Needless to say, the ESA now has minimal support in Riverside County.

This sort of alienation of landowners is an unnecessary but serious feature of government attempts at environmental protection around the world. The United States is not the only country dealing with environmental problems through legislation rather than through problem solving with local people. I have spent my anthropological career working in parts of the world where central governments are much less strong than in the United States and people are correspondingly left more to their own devices. In these areas leaving control to the locals is inevitable—government micromanagement by fine-tuned legislation is simply impossible. One can then only appeal to grassroots moral conscience and knowledge of the long-term consequences of short-term foolishness. Unlike giant American corporations, most small-scale and indigenous land users in isolated parts of the world have a very thorough knowledge of the consequences of their actions and a strong felt need to conserve at least some resources for the future. Unfortunately, they typically have little support in attempts to conserve and are often forced by political or economic pressures to act in a way that they know is suicidal in the long term. They need support in their moral and sustainable efforts.

The problem, then, is one of balancing moral appeals to local residents with legal restrictions on everyone. The ideal mix will probably never be found, but we can do a great deal better. Failure to appeal to property owners sends them to the venal politicians and media figures who are eager to exploit hatred of government. In this context, it is worth remembering that whereas giant corporations control a huge

share of American land, the vast majority of rural property owners are small operators. Many of them are not driven by the profit motive but by their desire for a rural lifestyle. This applies not only to rusticated yuppies but to a large percentage of the small farmers and ranchers of the United States. These people used to be, broadly, environmentalist—at least they could be counted on to plant trees, support soil erosion control, and protect deer from poachers. (Past efforts by more community-sensitive governments had a lot to do with this.) Now, the majority are ranked against environmentalists in all forms.

This brings me to the bit of bias in the article by Dwyer et al. In their conclusion they blame the “free market” for our ills. The problems they raise are real and very well stated, but it is desirable to remember that some of our worst problems in the United States are caused by government management. Grazing and logging on public lands, for instance, are so heavily subsidized that they count as “socialism” by any reasonable definition, and big dams are hardly the result of free markets at work. Environmentally destructive aspects of agribusiness and oil production are also heavily subsidized.

The situation is worse in other countries. Where I do research in Mexico, for instance, the government has constantly promoted costly and ecologically devastating schemes against both free-market forces (the schemes are economic disasters) and local community attitudes and values. Additionally the free market has been very helpful to conservation, especially with the rise of ecotourism, which is the last best hope for much of the third world however much we may worry about the destructive potential of hordes of tourists in fragile environments. We also recall the Aral Sea catastrophe and other examples of non-market environmental development.

We will never succeed by imposing micromanagement on resistant

land users. It may be a good idea in the abstract (or it may not), but in the real world it just won't work. I welcome the efforts by Dwyer et al. to clarify the legal issues and to introduce many good ideas into the debate. In a worldwide context we must work together with local landusers to find economic, political, and moral incentives to manage their own resources wisely (Pinkerton 1989). Biologists have, in my experience, often shown resistance to this—perhaps in part because of the naive appeals to fuzzy ethics and to “indigenous harmony with nature” that characterize much of the pop environmentalist literature. In the end, though, there is no alternative: we have to work with the people on the ground to create both legal and moral institutions.

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#### Recovering Wolf Populations

We were pleased to read “The Challenge and Opportunity of Recovering Wolf Populations” (Mech, L. D., *Conservation Biology* 9:270–278). The essay provided an adequate historical perspective to wolf populations and recovery and a comprehensive discussion of future management zoning. However, we did find several weak points.

Mech builds the foundation of wolf-human conflicts on seemingly misleading information. The reported 15% increase in the Minnesota wolf population (1988–1993) was compared with the increase (223%) in

the number of wolves killed by the U.S. Department of Agriculture Animal Damage Control (ADC) during 1988–1993. We question how a 223% increase was calculated based on the data presented (i.e., 59 wolves killed in 1988 and 139 wolves killed in 1993 equals a 135% increase). However, we believe the point is moot. What purpose does it serve to compare a wolf population increase to the number of wolves killed by ADC? This comparison may provide some indication of increased conflicts, although we believe it highlights increased trap effort and efficiency on the part of ADC. We believe it is more appropriate to compare the Minnesota wolf population increase relative to the number of ADC-verified depredations. From 1988–1993 the number of wolf-caused depredations verified by ADC increased from 50 to 70, or 40%. Thus, as the Minnesota wolf population increased by approximately 15%, the number of depredations increased by approximately 40%. The difference between these percentages likely reflects the expansion of wolves from semi-wilderness lands into semi-agricultural lands. The difference, however, is not as extreme as Mech suggests.

Perhaps the most significant weakness of Mech's essay is the suggestion that lethal wolf control is the only solution available to solve wolf-human conflicts. We suggest that lethal wolf control alone is a short-term solution and only addresses the symptoms of a larger problem. Mech fails to include any mention of poor livestock husbandry practices as a significant contributing factor in wolf-caused depredations (contrary to Fritts, S. H., W. J. Paul, L. D. Mech, and D. P. Scott. 1992. Trends and management of wolf-livestock conflicts in Minnesota. Resource publication 181, U.S. Fish and Wildlife Service, Washington, D.C.). We believe the long-term solution to preventing and/or reducing depredations must be multifaceted. Improved livestock husbandry practices, ade-

quate compensation for livestock losses, education, use of nonlethal control measures, and the selective removal of depredating wolves can aid in significantly reducing depredations. In 1994 we initiated, with assistance from the Wisconsin Department of Natural Resources (WDNR) and ADC, the Wisconsin-Minnesota Depredation Option Plan in east-central Minnesota. This plan was necessary to provide additional protection to wolves living in the Wisconsin-Minnesota border region. The plan offers livestock owners in east-central Minnesota two options when faced with a wolf-caused depredation: (1) Minnesota option, the standard option or (2) Wisconsin option, the alternative option. The Minnesota option provides  $\leq$  \$400 as compensation for losses, and wolves are trapped and killed by ADC. The Wisconsin option provides full compensation to fair market value, except \$600 is offered for calves (i.e., fall market value). Furthermore, wolves are trapped, radio collared, and released by WDNR personnel. Funding for the Wisconsin option is provided through a cooperative agreement between the WDNR Bureau of Endangered Resources and the Wildlife Science Center. The Wisconsin-Minnesota Depredation Option Plan received 100% acceptance from east-central Minnesota farmers in 1994 and 1995. We have proposed a 5-year pilot run of this plan in order to study its effectiveness in preventing wolf-caused depredations. The Wisconsin-Minnesota Depredation Option Plan will also address livestock husbandry practices. We have initiated an extensive education campaign to provide farmers with information on basic wolf ecology, proper husbandry and carcass disposal practices, and the importance of the wolf population in east-central Minnesota. Furthermore, we have proposed an incentive plan to decrease significantly livestock carcass dumps and other poor husbandry practices.

Our philosophy is that an inte-

grated approach will aid in addressing the complex issue of wolf-caused depredations. Contrary to Mech's suggestions and the current wolf management policy in Minnesota, lethal control alone has not and cannot fully address the root problems associated with the depredation symptom. We suggest that further discussion concerning the development of long-term solutions should ensue before the Great Lakes wolf population reaches the federal recovery goals.

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I was pleased to see the letter by Gehring et al. in reply to my article. Aside from correcting a numerical error, for which I thank them, Gehring et al. begin the much-needed discussion about wolf management in the Lake Superior states.

I do not believe it correct to characterize the information I presented as misleading, however. Whether we use my figures or those of Gehring et al., the point is still supported: the recent increase in Minnesota wolves in semiagricultural areas has led to disproportionately more conflict with livestock and higher kill rates of wolves by depredation controllers. Because the only Minnesota areas left for future wolf colonization are primarily agricultural, this trend can be expected to continue.

Contrary to Gehring et al., I did discuss several nonlethal methods of wolf-depredation control, although I did indicate that none is a panacea

and that lethal control will also be necessary given our present state of knowledge. The authors seem to agree with this multifaceted approach.

The Gehring et al. plan to provide farmers options regarding the type of wolf control they prefer is a useful variation on the compensation theme. The more flexibility and local prescription that can be built into any type of management the better. I would caution, however, that the Gehring et al. plan costs some 50% more than the government program and has only been tried with two farmers in <1% of Minnesota's wolf range.

However, there is a larger biological problem with the Gehring et al. plan. Wolf numbers will expand to the extent resources allow. The compensate-and-release plan merely subsidizes the wolf population with artificial food. Although this may be

temporarily valuable to help restore an endangered population, where does it end? With 2000 wolves occupying all the nonagricultural areas of Minnesota, realistically I am not sure how long the public will support subsidizing wolves in agricultural areas so they can increase, spread, cause more conflict, and cost more money. The resulting backlash could bring a new cycle of persecution.

Ironically, the Gehring et al. call for proper livestock husbandry and disposal of carcasses, which I have long supported, will help reduce wolf food and thus wolf numbers. The main difference between the Gehring et al. plan and outright lethal control, therefore, is in whether the lethality will be direct or indirect. Both approaches ultimately result in fewer wolves.

I thank Gehring et al. for the opportunity to further air this important issue.

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### Erratum

In the December 1995 (volume 9, number 6) issue of *Conservation Biology*, Figure 1 in Fuller on page 1429 was misprinted. This is a printer error that occurred after the author, the editorial office, and the publisher made corrections on and approved page proofs. A corrected page is provided at the back of this issue. Subscribers may remove this page and paste it over page 1429 in their December 1995 issues. The publisher regrets this error.

