Conservation Medicine: a Veterinary Perspective

We were encouraged by Gary Meffe's recent editorial, "Conservation Medicine" (Meffe 1999), in which he highlighted the growing awareness of the value of integrating biomedical sciences into mainstream conservation. We write not to disagree with Meffe but to supplement his summary with a perspective provided by veterinary medicine. The application of the biomedical arts to conservation is certainly not a new phenomenon for those engaged in wildlife medicine (Karesh et al. 1987; Jessup 1992; Karesh & Cook 1995; Kock 1996).

Clinical veterinary medicine is a truly applied science, focused on preventing and actively solving problems. Until relatively recently, conservation biology has not been so much about prevention or intervention as about description and understanding. Concerns over the state of academic conservation biology have been covered well in recent editorials in this journal (Noss 1997; Meffe 1998). One of our objectives is to strengthen the argument that a biomedical practitioner's world view is a valuable one to add to one's team in the face of all-too-many overwhelming conservation challenges around the globe. "Critical clinical problems mandate a rigorous diagnostic plan, a multi-faceted therapeutic plan, clear communication, and short- as well as long-term monitoring. Critical conservation problems deserve no less" (Osofsky 1997). In fact, conservation practitioners outside North America may be more experienced with the type of interdisciplinary approach under discussion.

Clearly, we advocate our profession's ongoing proactive role in contributing to the understanding and maintenance of ecosystem health in a world full of perturbations. We do have one concern, however, regarding how "conservation medicine" eventually gets defined (not an easy task). The field is not a new one with, to name a few interdisciplinary organizations, the Wildlife Disease Association having been founded in 1951 and the (Royal) Society of Tropical Medicine and Hygiene having arisen in 1907. In regard to the linkages described in Meffe's editorial, at least one risk merits mentioning. It would not be surprising if medical schools and government agencies focusing on human health quickly dominated consortia established to address "ecosystem health" or "conservation medicine" or whatever name is adopted for this critical multidisciplinary approach. The concern we express should not be misinterpreted as misanthropic.

With reports of chimps as reservoirs for Human Immunodeficiency Virus (HIV), to cite a contemporary example, and with the threats to humanity a global cornucopia of new and emerging diseases may pose, there is a real risk that conservationists (including wildlife veterinarians) whose primary focus is actually wildlife will increasingly find themselves to be outliers. The fact that there is so much renewed attention to the bushmeat trade in general and chimpanzees in particular now that they have been linked to HIV has both positive and negative implications for the future of conservation priority setting in the face of limited resources—*triage* in medical parlance.

We desperately need the public to understand that the survival of future human generations is inextricably linked to an earnest global stewardship that has thus far eluded modern *Homo sapiens.* We think that Meffe's editorial made that point well. There is some risk, however, that "important conservation work" (i.e., work meriting funding) could become synonymous with "work that clearly improves human health." Our intuition of course tells us that important conservation usually does relate to improved prospects for human health, that all of these dots do indeed connect, but those linkages are usually not easy to unravel, describe, or understand, because of their complexity, not their absence. Society cannot afford to become so anthropocentric as to burden conservationists with some sort of ecological geometry in order to "prove" that their work is worth doing.

In a "use it or lose it" world, clearly demonstrating that a given conservation effort is in the interest of human health could become burdensome and dangerous if such proof became the major criteria for funding agencies. Of course we hope that any such narrow approach to defining conservation priorities is never broadly adopted, but such possibilities are worth considering. We mean this only as a caution. We believe that linking human and wildlife health specialists with other professionals (including economists and sociologists, to name a few more critical disciplines beyond the obvious basic sciences) in the name of conservation is a logical and worthy idea. We need to be prepared for disparities in objectives, however, and to be able to find the most productive common ground between, for example, the mandates of human public health institutions (such as eradication of disease) and an ecological approach (disease organisms are part of the web of life and represent important cogs in the bigger picture that we need to understand and monitor). In short, we must avoid speciesism if we are to have any chance of coming through the other side of this current extinc-

Conservation Biology, Pages 336–337
Volume 14, No. 2, April 2000

tion crisis with any semblance of a world worth living in.

Our sense is that there will in all likelihood continue to be funds for research on zoonotic diseases and on other biomedical issues that relate directly to human health in the developed as well as the developing world. Other environmental health issues are also extraordinarily important. With the drastic expansion of the interface between livestock and wildlife, for example, animals face ever-increasing risks of infectious disease transmission as well as ever more intense competition for grazing and water resources. Animal disease control measures necessitated by unsustainable land-use choices and supported by perverse economic incentives have devastated wildlife, particularly in marginal, semiarid lands in parts of southern Africa, to name an obvious example among many possible ones. With better understanding of disease epidemiology and the true costs associated with disease control and environmental degradation (neither human nor conservation medicine can be separated from economics), land-use decisions might more often favor a return to natural production systems. Veterinary issues are fundamental to any hope conservationists might have for defining and managing truly sustainable, "sustainable-use" schemes. On another front, introduced (nonendemic) diseases have caused and will continue to cause local extinctions of wildlife populations, and only with the best science can we hope to mitigate such losses.

Our point is that, although support for conservation is ultimately based on human values and needs in the real world, conservation medicine must not lose sight of the vast diversity of wild animals and plants whose survival or extinction is in our hands—even those populations threatened by diseases or other insults only indirectly or minimally of consequence (at least in the short term) to human health, or those species for which no beneficial human use has thus far been clearly identified. Similar arguments have been made regarding the need to avoid overemphasizing bioprospecting as conservation's salvation. We agree with Meffe that "many arguments for protecting biodiversity can be rejected by uninformed individuals on selfish grounds. . . ." The idea that "human health transcends all of these," although it may reflect significant realities, scares us a bit.

Many of us with battle experience on conservation's front lines recognize that academic conservation biology has operated for too long without recognizing and recruiting a variety of other valuable disciplines and skills. We agree with Meffe wholeheartedly that our "conservation toolboxes" would benefit greatly from the formal addition of some veterinary and medical tools. The boxes would still be incomplete, but this would undoubtedly be a step in the right direction.

Steven A. Osofsky

World Wildlife Fund, 1250 Twenty-Fourth Street, NW, Washington, D.C. 20037–1132, U.S.A., email steve.osofsky@wwfus.org

William B. Karesh
Sharon L. Deem

Wildlife Conservation Society, 185th and Southern Boulevard, Bronx, NY 10460, U.S.A.

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