Letters

Reader Commentary

RE: "TAKING ANIMAL TRAFFICKING OUT OF THE SHADOWS," BY DENER GIOVANINI

Dener Giovanini does an excellent job of describing the challenges—and risk—faced not only by RENCTAS, but by all conservationists who seek to protect wildlife from illegal take and trade. And like the illegal trade of drugs and guns, wildlife smuggling is a global business—one that often goes hand in hand with other criminal activities.

There is also no doubt that the smuggling of illegal wildlife products is a multi-billion dollar business. However, the $20 billion figure so often cited as an estimate for the value of such trade does need to be re-examined. Using data from the early 1990s, TRAFFIC, the wildlife trade monitoring network of World Wildlife Fund and IUCN, originally generated that estimate for the value for all wildlife trade, both legal and illegal, excluding commodities like timber and fish. The figure gained wide currency and was frequently quoted—and ultimately misquoted—as the value for illegal trade alone. The true value of illegal wildlife trade may, by now, indeed be that much. But we really don't know the exact number.

What we do know, however, is some of the same criminal syndicates dealing in drugs and arms smuggling are also involved in the illegal wildlife trade. From Asia to Africa to the Amazon, drugs, guns and animal parts are smuggled through the same networks, down the same jungle trails and often by the same people. The profits from one activity may finance another in a criminal cycle that weakens legal norms and saps the natural resource base. Drug cartels in Peru, for instance, are involved in mahogany smuggling.

There is one difference between the drug trade and the trade in wildlife: You can't buy heroin on e-Bay. But, as our TRAFFIC investigators found out a few years ago, you can buy animal products like ivory—much of it from sources that are believed to have obtained it illegally.

Therein lies the challenge. The Internet has transformed the world of wildlife smuggling in ways both good and bad. Conservationists have become cyber sleuths, with dedicated groups like RENCTAS creatively using the Internet for both investigative and informational purposes. Giovanini notes that the Internet has also helped in another way—offering a higher degree of anonymity, and therefore personal safety, to people passing along tips about instances of illegal animal trafficking. Yet this anonymity is double-sided, for equally cyber savvy smuggling networks also use it to create and expand their markets.

WWF began using the net as an investigative tool in the early 1990s, when our "Eyes and Ears" Campaign, a pilot project in the U.K., set up a web-based report-

ing system to receive tips and keep track of suspicious activity related to wildlife. Initially, most of the "tips" we received concerned common species that could be traded legally. But as both the Internet grew and public awareness increased as a result of our efforts, we began to see a profound change. On the one hand, the quantity and the quality of the information we received grew enormously. On the other hand, we soon discovered that the trade itself had also moved online.

The change, since the early days of the Internet, has been staggering. Today, much of the trade in wildlife is initiated on websites and negotiated via email and instant messaging. As the battle lines shift from the jungle to the chat room, the challenge moving forward lies in figuring out how to stay a step ahead of the traders.

Our own conviction is that the Internet may help us to win some battles but will not win the war. What else must we do?

It is generally acknowledged, among conservationists and law enforcement officials, that the best way to combat the wildlife trade is by following it from source to consumer and by putting intervention points in place along the way to impede it. If a shipment is missed at export it may be caught upon import. The key here lies in establishing and strengthening wildlife enforcement networks.

A good example is the Association of South East Asian Nations Wildlife Enforcement Network (ASEAN-WEN). Established little more than a year ago, it is already showing how working together within a region can achieve real results and deter wildlife criminals through cross border initiatives. It is a model that South America could easily adopt.

Conservation groups also need to network better. The models developed by national and regional groups like RENCTAS, and international ones like WWF, should be better integrated so that we can share information and coordinate our efforts across country and regional boundaries. This is what we've been asking governments and law enforcement agencies to do for years.

Let's stop asking and show them how to do it.

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RE: "WINNING CITIZEN TRUST: THE SITING OF A NUCLEAR WASTE FACILITY IN EURAJOKI, FINLAND" BY JUHANI VIRA

In his article on siting the Finnish repository at Eurajoki, Juhani Vira does an excellent job of describing of the elements that led to a major success, on which the Posiva staff are to be congratulated. The key components that he identifies can be summarized in the following points:

- Technology transfer from Sweden put the Finns in a good position to concen-

trate early on the non-technical aspects of siting. (Modestly, he does not emphasize that this transfer developed into a full and balanced bilateral cooperation between the two countries.)

- The relatively homogeneous geology in the Baltic Shield (and the low population densities) simplified the siting process to some extent.
- It was recognized early that a staged approach was appropriate and that open dialogue with stakeholders was crucial.
- The political system was favorable in that local communities had a powerful voice—including an absolute right of veto—and were not able to be overridden by larger but still sub-national political forces. The well known "donut effect" in which a State can prevent locally agreed developments (as is the case in Federal systems such as in the USA and Switzerland) did not occur.
- Siting options included existing nuclear communities, with a history of good relations to the power stations that they host.

This last point is related to another positive aspect that Vira does not emphasize—namely that, both nationally and also in the potential siting communities, the implementing organization had built up a sufficient level of trust. The commitment of Posiva to fostering local relations was underscored by their community actions at Eurojoki and also by the decision that the company should be domiciled at the site.

Juhani Vira points out himself very clearly that one should not assume that all of the Finnish experience can be transferred to other repository programs. Some of it can, however, and there are also some important lessons that can be learned. One important message is that repository implementation is a process that takes decades. In an article commenting on the Finnish paper, Alison Macfarlane criticizes the fact that after decades of nuclear power, no country has a repository for high level waste or spent fuel. This is no great surprise to most disposal programs, since they have realized for a long time that decades are in fact the right timescales for repository development. If geological repositories had been available 20 years ago, then most countries would have had no wastes to put in them. This is because small nuclear programs had not built up a significant inventory and also because most programs planned from the beginning to have around 40 years of surface storage to allow the decay of heat generation by the waste. The USA is a double exception here—lots of waste existed and disposal of relatively fresh spent fuel was planned. These are two reasons why the U.S. Department of Energy (DOE) aimed originally for 1998 as a deadline for starting disposal. The other reason was that the DOE was from the beginning over-optimistic about the duration of a siting process.

Finland laid out its current Program in 1983. At that date it fixed the year 2000 as the deadline for selection of a site. This subsequently proved to be the sole example of a national Program being able to achieve its siting goal in the time estimated. Moreover, the Finnish implementers also acknowledged already back in 1983 that operation of the repository would start only around 20 years after the site had

been selected. It may, of course, be feasible in other countries to shorten these timescales; indeed, given increased global security concerns about spent fuel in many surface locations, acceleration of the process should be a common goal. The from-the-outset realistic estimates of the Finns (and the revised, extended timescales of many other countries) do, however, illustrate the recurring over-optimism in the U.S. Program.

A further key point that is not discussed in the article on the Finnish repository concerns costs. Posiva has achieved another pioneering result in that it has shown that even a small nuclear Program of two to three power reactors appears able to finance a national repository without pricing nuclear electricity out of the market. In other very small nuclear programs (e.g. in the Netherlands or Slovenia) or in countries contemplating introducing nuclear plants, the impact of an expensive national repository on economic viability has been questioned. Accordingly, interest has been shown in concepts for multinational disposal that would benefit from economies of scale. It is interesting, therefore, to consider whether this favorable economic case in Finland is something that can be extrapolated to other programs. The estimated total deep repository costs for the Finnish geological repository are around one billion US dollars. This contrasts strongly with the big spenders such as the USA (which has already spent several billions just on Yucca Mountain, and will spend tens of billions on the whole geological disposal Program) or Japan, with estimated disposal costs of around 20 billion. The Finnish costs are also 2 to 5 times lower than those of programs such as those of Sweden, Belgium or Switzerland. The relatively modest Finnish costs are probably due to a combination of cost sharing in technological developments, focussed site investigations, good construction conditions in hard rock, highly trained specialists in all key disciplines, and long experience in underground excavations of this type.

For other small or new nuclear programs, it will be difficult or impossible to simultaneously benefit from all these advantages. Accordingly, the concept of shared multinational repositories continues to be of wide interest, as acknowledged by both the IAEA and the European Commission. Finding sites where such facilities can be located with the consent of the national and local populations will be a huge challenge—but a challenge that differs from national siting in its scale rather than in its nature. Therefore, we can legitimately ask whether lessons can be learned from the Finnish experience also for the case of siting multinational facilities. I believe that they can. A trusted implementer is the starting point. There is none at present. A single country may have problems in assuming this role, unless it is judged as unusually trustworthy by the international community. Australia might do; Russia would not, unless significant new oversight measures were introduced. A multinational organization with the strong support of the IAEA seems more promising. Other aspects of the siting process used by Finland are transferable. Volunteering is for multinational hosting a condition *sine qua non*. There needs to be intensive dialogue in an extended staged process. Benefits have to be apparent for both the host and the users. Finally, the consequences of hosting a geological repository must be acknowledged to be acceptable with regard to the

short term environmental impacts and negligible with regard to long term radiological safety.

The Finnish repository is a national facility that is strictly limited to accepting only spent fuel from the Finland. Its successful implementation will provide a positive example to other countries, both large and small, that are aiming to have their own repository. The facility itself and the process used to site it in a socially acceptable way can also provide valuable input for initiatives tackling the further challenge of siting multinational repositories.

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RE: "OPEN STANDARDS, OPEN SOURCE, AND OPEN INNOVATION," BY ELLIOT MAXWELL

Elliot Maxwell's article on "Open Standards, Open Source, and Open Innovation," should be required reading for any government policy maker seeking to understand the changing nature of software and innovation (particularly in the IT sector). His comprehensive tour of the horizon illustrates the interplay between open standards, open source software, and intellectual property policy—and the impact that each is having on innovation. The trend towards openness is increasingly important because: (1) it could accelerate the shift of software applications off of the desktop and into the "cloud," and (2) enable a new model for globally integrated corporations and the growth of virtual companies and institutions.

The Internet is no longer just a communication network—it has become a platform for computing and collaboration—a vast, interconnected, virtual supercomputer. Many different terms have been used to describe this development: Cloud computing, Web 2.0, Software as a Service, Web Services, the Grid—but the result is all the same. Internet users are able to use the Web to combine software, data, and computing power scattered in multiple locations across the network.

The continued evolution of this new paradigm depends critically upon open standards—truly open standards, implemented in open source software. With open standards for Web Services, users will be able to combine thousands of pieces of software and databases available on the Web to create millions of different customized solutions—but only if the building blocks they use are truly interoperable. It is not enough for companies to develop software that is "based on open standards"—and then add special proprietary features. IBM's Robert Sutor has distinguished between true interoperability, where software is designed to work with all similar products and intraoperability, where vendors use open standards, but only in order to ensure their own products work together. In the evolving world of cloud computing, there is going to be a continuing struggle between those of want

to exert control through proprietary solutions and those of us who strive for true interoperability. In the next two or three years, critical choices around the Open Document Format, authentication and identity management standards, security standards, privacy-enhancing technologies, and network management tools will define the next phase of the Internet and whether it continues to be an open, user-centric platform for collaborative innovation.

This next phase of the Internet will also enable a major shift in the nature of global corporations. As Sam Palmisano pointed out in his *Foreign Affairs* article, "The Globally Integrated Enterprise," the multinational corporation is evolving from a collection of relatively independent national entities into a single, integrated enterprise in which virtual teams of employees, business partners, and contractors scattered around the globe are able to work across national boundaries almost as easily as if they were in the same building. Thanks to the Internet, every team member can get the computing power, the data, and the software he or she needs—and use those tools to collaborate with their colleagues. By fostering collaborative innovation in this way, more powerful software applications, which meet a wider range of needs can be more quickly developed and deployed. A recent report from Harvard's Berkman Center on "open ICT Ecosystems" (http://cyber.law.harvard.edu/epolicy/) highlights the opportunities and describes how governments can help.

The kind of open innovation that Maxwell describes is not restricted to the private sector. Indeed, by harnessing the power of openness and the Internet, governments and non-governmental organizations can better collaborate to develop innovative policy and societal solutions. For instance, in late 2005, in preparation for the World Urban Forum, the United Nations held a three-day Habitat Jam in which tens of thousands of people shared ideas on urban sustainability and outlined more than 70 specific proposals for action. Governments and international organizations are actively exploring virtual worlds, chat rooms, and other collaboration tools, many of which are based on open standards implemented in open source software. The use of the Internet to enable more broad-based collaboration among governments, the private sector, non-governmental organizations, academia, and the technical community is particularly crucial for international organizations like the OECD, ICANN, and the Internet Governance Forum, which are dealing with policy issues related to the global Internet, which cannot be addressed on a solely national basis. So in addition to Maxwell's excellent policy recommendations on open innovation, I would suggest that governments can and should become "early adopters" and embrace open collaborative innovation whether in developing software for government use or in drafting policy proposals.

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RE: "SCIENCE AS SOCIAL ENTERPRISE: THE CAMBIA BIOS INITIATIVE," BY RICHARD JEFFERSON

One mechanism for improving human welfare in African countries is to expand the amount of essential information that is in the public domain, that is, to expand the "knowledge commons."

A remarkable example of the use of publicly available information was the so-called Green Revolution that helped such countries as Mexico and India become self-sufficient in food production. The Green Revolution relied heavily on publicly-available knowledge. But the publicly available knowledge could be put to practical use only through the creation of local research institutions.

The knowledge commons is thus a critical foundation from which innovation develops. The well-established practice of providing an expiry date for intellectual property rights, after which knowledge becomes publicly shared, is an illustration of the importance that society has historically attached to the role of the knowledge commons.

Every year, the expiration of thousands of patents brings into the public domain new knowledge that had been available only on royalty payment. That knowledge constitutes an important reservoir of ideas that can be used to meet development needs.

Scientific and medical research articles—a treasury of medical and scientific knowledge—should surely be part of the knowledge commons. For the scientific and technologic communities, open-access publishing unleashes full-text literature into a single information space (open-access articles are immediately archived into full-text public repositories, such as PubMed Central).

Unrestricted access to repositories of scientific data, such as genetic and molecular information, has revolutionized life-science research in recent years and has helped to establish new fields, such as proteomics and genomics.

In the Fall 2006 issue of *Innovations*, Richard Jefferson describes in detail another approach for directing science to the goals of development: the Canberra-based Biological Innovation for Open Society (BiOS) project. The BiOS project extends the open-source software concept to the life sciences with an emphasis on finding solutions for challenges of the developing world. It seeks to free up the rights to patented DNA sequences and the methods needed to manipulate biologic material. Open-source biology users own the patents on their creations but cannot hinder others from using the original shared information to develop similar products.

Another variant of the open access model is GenBank, a public database of DNA sequences that is freely accessible to all scientists without restrictions. Academic institutions and commercial companies worldwide are licensed to use the database for product development. Open access to the broader scientific and health literature will have equally profound benefits for research on challenges faced by developing countries.

Inventors and innovators are increasingly interested in making their ideas available free of royalty for use in meeting the needs of developing countries. The Nairobi-based African Agricultural Technology Foundation, is focusing on making proprietary technologies available royalty-free for developing new technologies for small-scale farmers.

An equivalent revolution is taking place in medical and scientific publishing. A growing number of open-access publishers not only make information free, but publish it under innovative copyright licenses which allow readers to use the results of research in innovative ways. With those licenses, authors grant the public the right to use published work for any legal purpose, provided that they cite the source and credit the author.

Such licenses maximize the usefulness, impact, and value of the literature. For example, African health ministers are licensed to make millions of copies of the report of the first randomized trial of circumcision for HIV prevention, to give a copy to every health professional in their country, to translate it into local languages without restrictions, or to create locally relevant derivative articles.

Those examples of "open access" and "open source" illustrate the growing interest in expanding the space for creativity by promoting flexible intellectual property systems that seek to balance public and private interests.

The main concerns of developing countries are related to having the capacity to access knowledge and building institutions that convert knowledge into goods and services, such as public-health care and education.

Once the entire scientific and medical literature becomes truly open, there will be new opportunities for collaboration between developed and developing countries. The challenge now is for African countries to provide the infrastructure and incentives needed by their scientific community to join the global knowledge economy.

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