

# ENDANGERED SPECIES

## Technical Bulletin

U.S. Department of the Interior  
Fish and Wildlife Service



### Improved Status Leads to Reclassification Proposals for Two Plant Species

The status of two plant species currently listed as Endangered has improved enough that the Fish and Wildlife Service (FWS) recently proposed to reclassify them to the less critical category of Threatened:

#### Small Whorled Pogonia (*Isotria medeoloides*)

A small green orchid, this species is distinguished by the five or six leaves displayed in a whorl with a yellowish-green flower in the center. It grows in fairly young forests and in maturing stands of mixed-deciduous or mixed-deciduous/coniferous forests. Populations of the small whorled pogonia occur at sites from southern Maine through the Atlantic seaboard States to northern Georgia and southeastern Tennessee. Outlying colonies have been found in the western half of Pennsylvania, Ohio, Michigan, Illinois, and Ontario, Canada.

Concerns about habitat loss led to the listing of this species as Endangered in 1982. Among the recommendations contained in the 1985 Small Whorled Pogonia Recovery Plan were searches for additional populations, protection for a sufficient number of sites, and research into the plant's life history. Since 1985, botanists have located additional populations and sought to protect a number of sites. About 60 percent of the viable sites are now secure. Many of the protected populations are on public lands, though the voluntary cooperation of private landowners and conservation organiza-

tions continues to be vital to the recovery of the small whorled pogonia. Management will benefit from the increased knowledge of the species' habitat needs.

On November 29, 1993, in accordance with criteria in the 1992 revised recovery plan, the FWS proposed to re-



photo by Susanna von Oettingen

**Habitat protection and landowner cooperation have helped improve the status of this woodland orchid, the small whorled pogonia.**

classify the small whorled pogonia as Threatened. Although the species is no longer believed to be in imminent danger of extinction, complete delisting is not appropriate until additional sites are protected.

**Loch Lomond Coyote Thistle (*Eryngium constancei*)**  
Despite its common name, this plant is not a thistle but a perennial herb in the parsley family (Apiaceae). It occurs only on the floor of Loch Lomond, a vernal lake in California. Vernal lakes and pools are an unusual habitat type forming in areas with Mediterranean climates where slight depressions underlain with an impervious soil layer fill with water after fall and winter rains. These seasonal wetlands then dry slowly during the spring and summer. The cyclic wetting and drying create an unusual ecological situation supporting a unique biota. Many plants and animals are adapted specifically to this environment and cannot survive outside the temporary pools.

In 1985, after the lake bed was partially dredged and filled, and plans were made to fill the rest, the FWS listed the Loch Lomond coyote-thistle as Endangered. At the time, the plant's habitat was also threatened by off-road vehicles, hikers, highway maintenance, and trash dumping. Subsequently, the State of California purchased the lake and, with FWS assistance, installed a split-rail fence. Both of these actions greatly reduced the potential for disturbance of the lake floor.

Because the species is now believed to be more secure, the FWS proposed November 29 to reclassify the Loch Lomond coyote-thistle as Threatened. Complete delisting is not believed appropriate at this time due to occasional vandalism, the

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# Taiwan and Peoples Republic of China are Warned Against Continued Trade in Rhino Horn and Tiger Parts

by Denise Henne

Pursuant to the Pelly Amendment to the Fisherman's Protective Act of 1967, Secretary Babbitt certified to President Clinton on September 7, 1993, that Taiwan and the People's Republic of China are engaging in trade of rhinoceros and tiger parts and products, thereby threatening these animals with extinction. This certification states that the trade also diminishes the effectiveness of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), an agreement among 120

countries to prohibit trade in endangered wildlife species.

On November 8, in response to the Pelly certification, the President notified Congress that unless China and Taiwan demonstrate measurable, verifiable, and substantial progress in eliminating the trade by March 1994, the United States may impose import prohibitions against them as recommended by CITES.

Rhinoceros numbers have declined 90 percent within the last 23 years to the current level of fewer than 10,000 ani-

mals worldwide, and the tiger population has fallen 95 percent during this century to about 5,000. It is believed that wild populations of these animals may become extinct within 2 to 5 years if the trade in their parts and products, which includes rhinoceros horn and tiger bones, is not immediately eliminated. Although recent actions by Taiwan and the People's Republic of China indicate that some progress has been made in addressing their rhinoceros and tiger trade, neither government has fully implemented the international standards established by CITES for controlling the trade in these critically endangered species. Rhinoceros horn and tiger bone are used extensively in traditional Asian medicines.

The Secretary made his announcement of the Pelly certification in Brussels, Belgium, where he attended the meeting of the CITES Standing Committee with Fish and Wildlife Service (FWS) staff. The Standing Committee acts on behalf of the CITES Parties between the biennial Conference of Parties. After the Secretary's announcement, the Standing Committee unanimously recommended that CITES parties consider implementing "stricter domestic measures up to and including prohibition in trade in wildlife species" against China and Taiwan for their trade in tiger and rhinoceros parts and products.

In his November 8 message to Congress, the President noted the good faith efforts made recently by China and Taiwan, but he added that these efforts have yet to effectively reduce the rhinoceros and tiger trade. Actions that would demonstrate China's and Taiwan's commitment to eliminating the trade in parts and products of these animals could include, at a minimum, (1) consolidation and control of stockpiles; (2) formation of a permanent wildlife conservation law enforcement unit with specialized train-

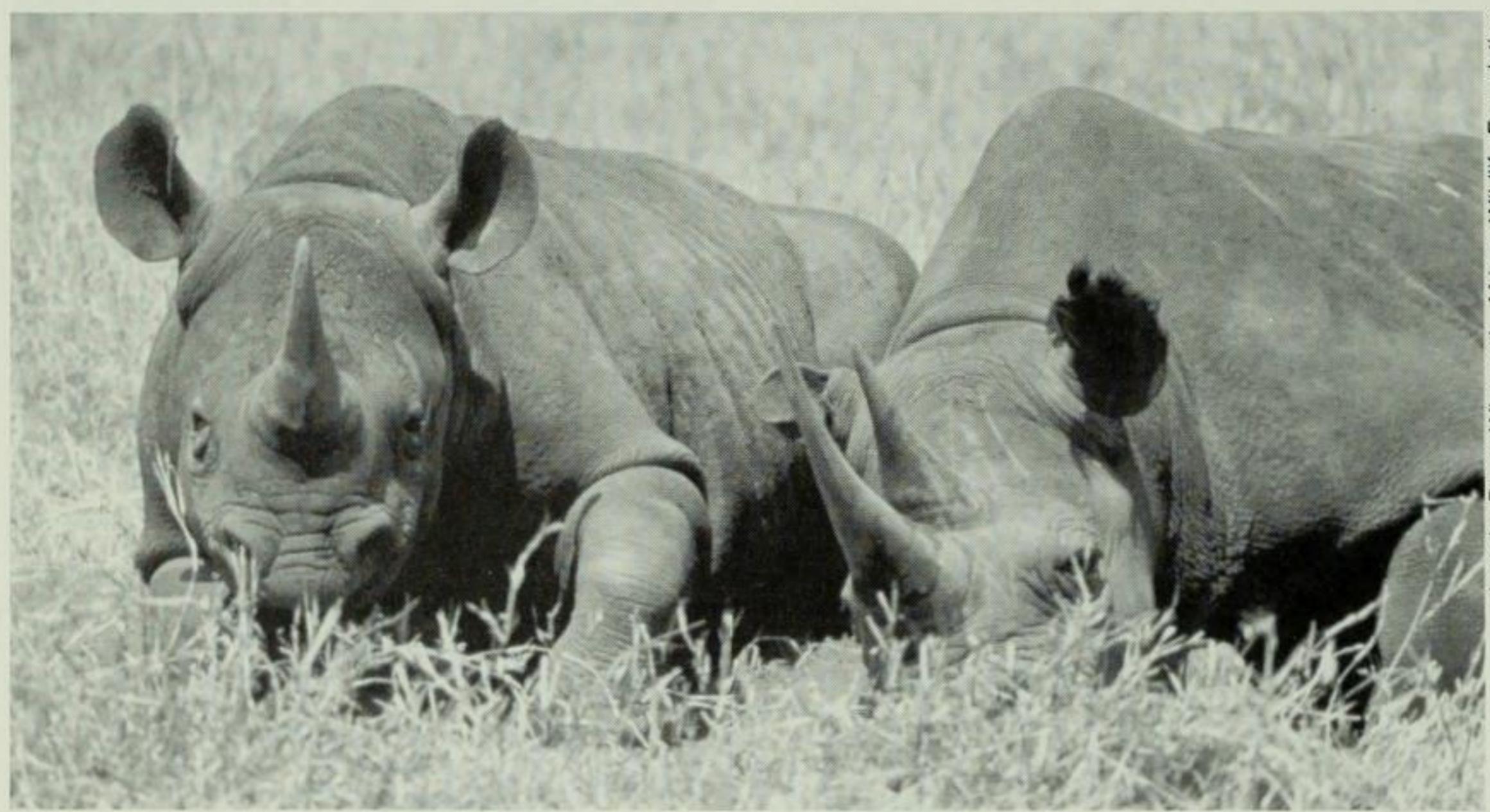


photo by Dusty Wissmath, African Wildlife Foundation

**According to the World Wildlife Fund, the number of black rhinos (*Diceros bicornis*) in Africa has plummeted from 65,000 in 1970 to fewer than 2,000 today, which would mean this species is declining faster than any other large land mammal in recent times.**

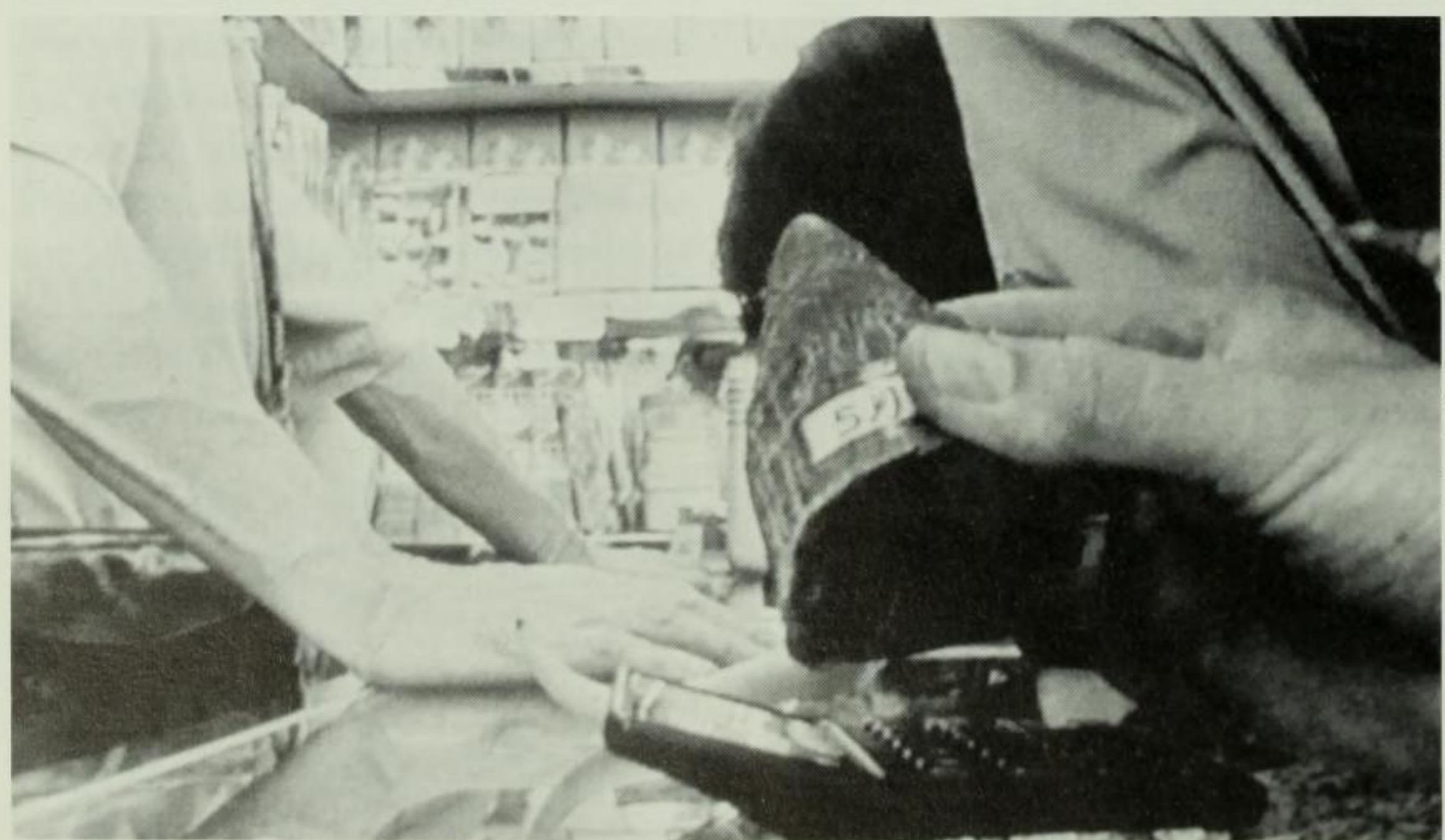


photo © Environmental Investigation Agency,  
World Society for the Protection of Animals

**This rhinoceros horn offered for sale in Hong Kong was photographed by hidden camera.**

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# In the Eye of the Beholder: Our Image of the African Elephant

by Holly Dublin

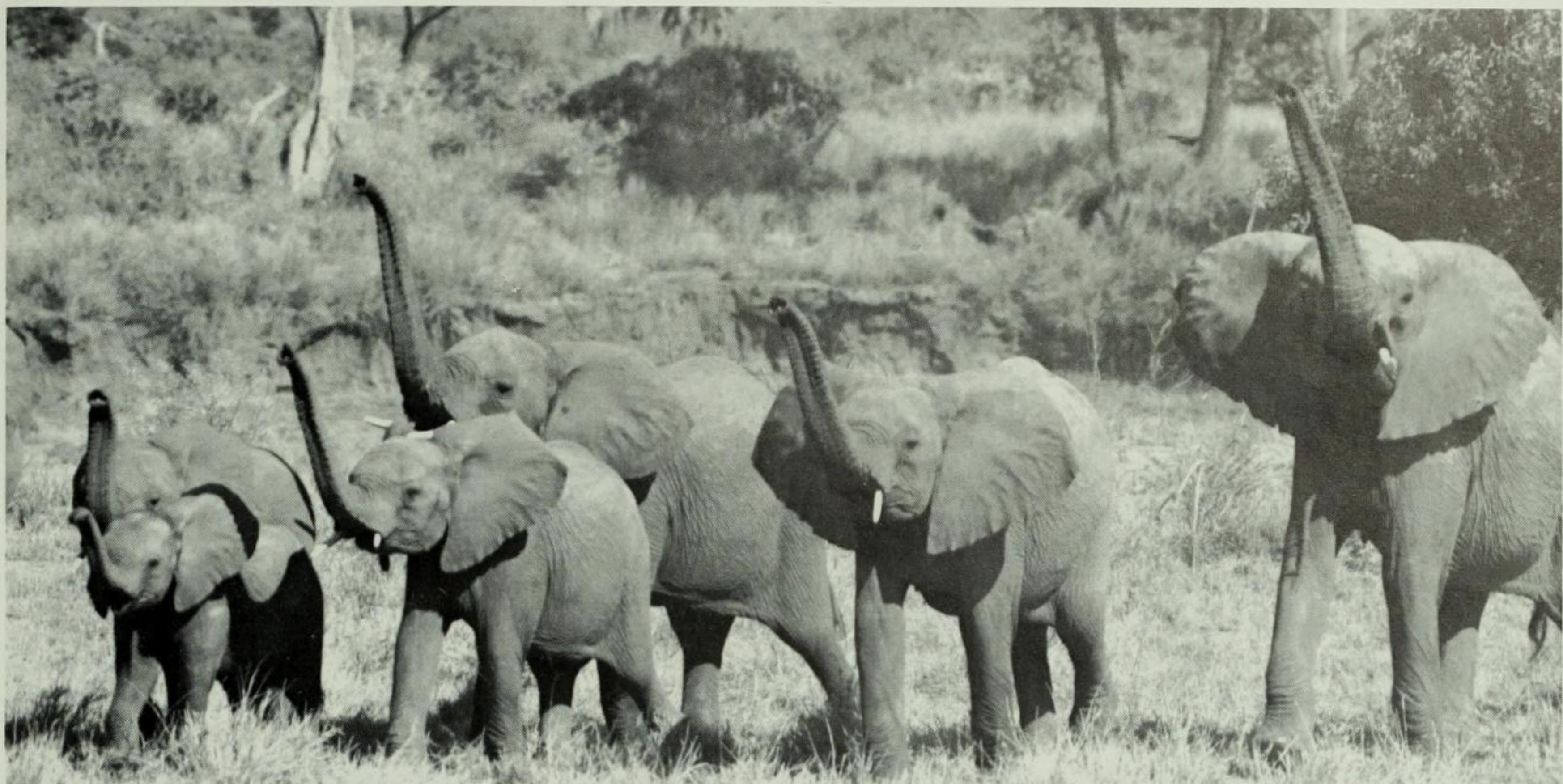


photo by Sven-Olof Lindblad, African Wildlife Foundation

No species of bird or mammal, extant or extinct, has elicited more human emotion than the African elephant (*Loxodonta africana*). In a world where most species are still unknown to the average person, something about this enormous but seemingly dignified pachyderm evokes a vast array of feelings. The African elephant is characterized by the most extreme of attitudes, and these extremes often follow the classic "north/south" split. But there are reasons, good reasons, for the gamut of opinions surrounding the species.

It is a common mistake for people living in the northern hemisphere to believe that everyone everywhere finds the same mystique in elephants. People whose entire exposure comes through television screens associate serenity and kinship with elephants. Given the enormous publicity surrounding the species over the past 5 years, it is no wonder the animal has become the "sweetheart" of the north.

Without a doubt, the African elephant possesses many admirable traits. These characteristics have never been brought to our attention more articulately and poignantly than through the writings and films of Cynthia Moss and Iain Douglas-Hamilton, both of whom have shared significant portions of their lives with elephants. These days, by simply taking the time to watch documentary television, even the average American can feel a connection with the species.

However, we must never lull ourselves into believing that all people feel the same empathy for elephants. Many neither revere elephants nor even care for them. Some people, in fact, fear and despise them. This is primarily the case for those who have to share their daily lives and often, involuntarily, their livelihoods with elephants. These individuals do not live among the elephants by choice but rather by circumstance. Today, in a growing proportion of the African elephant's range, people and elephants are

coming into conflict—a conflict brought about by the very nature of their codependence on the land and the resources sustaining them.

For a decade or more, the killing of African elephants by humans dominated our thoughts, but today the tables are turning. In many parts of Africa, attention is being drawn to the increasing destruction brought about by elephants. While the initial recovery of several elephant populations from years of unsustainable and illegal take is often viewed as a conservation success, it is only one part of a much bigger and more complex story that may spell the eventual decline of the species. While people and elephants share many of the more endearing traits of social mammals, their competition for declining land space fuels problems for both species. There is a "land hunger" in Africa, and both humans and elephants are the victims.

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## In the Eye of the Beholder

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As Africa's human population continues to grow, elephants will increasingly become limited to strictly protected areas. Their future will depend, in most cases, on their ability to survive in these restricted habitats and, to a lesser extent, to coexist in other areas with human populations wherever possible. The increasing confinement of elephants in areas set aside primarily to protect other wildlife and natural attributes presents yet another challenge: how can a loss in biodiversity be avoided as elephants fulfill their role as architects and agents of large-scale vegetation change?

The challenge is to chart a strategy that guarantees the survival of elephants while meeting the needs of people who inhabit the same region. Developing and implementing this strategy will neither be simple nor without controversy. One school of thought is that we must "use" elephants or "lose" them. Use in this case means the legal take of elephants, and the sale of their ivory, on a sustainable basis. This view is primarily associated with people who share their homelands with elephants and stand to profit directly from the sale or consumption of elephant products. Not surprisingly, this ideology is an anathema to many conservationists enjoying evenings with elephants by watching them on public television. There are also people with intermediate views that accept and promote limited use of the species through such activities as trophy hunting. So where does the solution lie?

There is an undeniable inequity in our world as it relates to elephants. The people who literally have to live with elephants are rarely seen or heard by an audience broader than the local wildlife management authorities mandated with solving their elephant-related problems. Those who "live among the elephants" vicariously, through books or television screens, have significant influence. There is a need to hear and address the concerns of both groups of people.

We have learned that the task of saving elephants is not a simple one. Although many had hoped the ban on the international sale of ivory and elephant products, effective January 1990, would ensure the conservation of African elephants, this has proven to be an oversimplified solution to a complex problem. As reports of illegal killing are on the increase again in many elephant range states in Africa, we must expand our horizon and look for longer-term solutions that encompass the complexity of issues confronting both elephants and humans.

These solutions will not be easy to find, as experience has shown. The most difficult task will be to reach a consensus on how to manage African elephants. Unfortunately, however, consensus is difficult to achieve. We must start small and move toward higher and higher levels of cooperation and collaboration. From now on, we must begin to hear one another's viewpoints and respect them. There has been far too much talking and not enough listening.

The reconstruction of the African Elephant Specialist Group (AESG), part of IUCN—The World Conservation Union, has provided at least the rudimentary beginnings of a forum for both giving and receiving technical information. The focus of the AESG is on prioritizing conservation issues facing the species and formulating technically sound ideas. Implicit in this approach has been an honest attempt to reconcile past differences between experts in elephant range states and those in other regions through open dialogue, with the freedom to agree or disagree on the basis of technical, rather than emotional, grounds.

The AESG has been assisted in its auspicious new mission by generous and timely funding from the U.S. Fish and Wildlife Service, the World Wide Fund for Nature (WWF), the European Community, and the government of Germany. This assistance enabled the AESG to hold a very productive meeting in Zimbabwe in late 1992. The meeting focused on the more technical aspects of

the interaction between elephants and habitats, current elephant survey techniques, and future data needs for the conservation and management of elephants in Africa. At the next meeting, the AESG will address human/elephant conflicts, update information on elephant status and distribution, and debate any explicit technical matters that require consultation. In doing so, the AESG will lay the groundwork for further actions that may take place at the next Conference of Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which will be held in November 1994. Additionally, the AESG office in Nairobi, Kenya, has become a central repository for books, articles and current ideas; a think-tank for the review and generation of research proposals on key topics; the creative center for the compilation of AESG's newsletter, *Pachyderm*; and a meeting place for people who share an interest and concern in the fate of the African elephant.

The target is still moving, and there are many obstacles to be tackled. All solutions have a beginning, and we can only hope that—given productive dialogue and a willingness to hear one another—we are standing at the threshold of understanding the way forward. This truly magnificent species deserves our time, our concern, and our continued efforts on its behalf.

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Dr. Dublin is the Co-chair of IUCN's African Elephant Specialist Group.

*The opinions expressed by Ms. Dublin are not necessarily those of the Fish and Wildlife Service. Her article is part of an effort by the Bulletin to explore some of today's more challenging wildlife conservation issues by soliciting material representing independent viewpoints. If you would like to contribute by proposing an article, write the Editor, Endangered Species Technical Bulletin, U.S. Fish and Wildlife Service, 320 ARLSQ, Washington, D.C. 20240, or call 703/358-2166. See Bulletin Vol. XVIII, No. 4, for style guidelines.*

# Partnership for Pachyderms

by Mary Maruca

What do elephants and architecture have in common? If you answered with the word "keystone," you're right. The keystone — a wedge-shaped piece at the crown of an arch that holds the other pieces in place — has become an apt metaphor for elephant conservation. In an era increasingly concerned about the complex interrelationships shaping the natural environment, the elephant is conspicuous for its ability to terraform the landscape through which it moves, converting woodlands to grasslands, dispersing seeds, and creating waterholes. Innumerable species depend on the continuance of the elephant's biological patterns for the maintenance of habitat. They thrive in the elephant's shadow, so to speak.

However, the African elephant's ability to function as a keystone species became severely threatened during the decade of the 1980's. Wide-spread illegal ivory trade decimated populations. From an estimated 1.2 million, numbers dropped to fewer than 600,000. As the legislative body of the world's third largest consumer of ivory products, the United States Congress responded to this decline in 1988 by enacting the African Elephant Conservation Act, supporting the conservation programs of African countries and upholding CITES. In so doing, the Congress chose the quintessential animal through which to address biodiversity, creating keystone legislation for a keystone species.

Integral to the effectiveness of the African Elephant Conservation Act was the African Elephant Conservation Fund, established by the Act as a funding source to assist range countries with their elephant conservation priorities. Administrated by the Fish and Wildlife Service, through the Department of the Interior, a grant program supported by the Fund has proven to be an easily mobilized, on-the-ground operation capable of responding quickly to immediate needs. For relatively small sums of money, the program has enabled range countries to implement their highest priority projects aimed at maintaining the critical role of elephants as a keystone species.

Since its initial funding in 1990, the grant program has supported 33 projects in 11 of the 34 range countries with African elephant populations. Key criteria consistent throughout the program's several years of operation have helped identify viable projects and contributed to success. First, the host country must have demonstrated commitment to elephant conservation, expressed through (1) its establishment of local elephant management programs, (2) the dedication of its own economic resources, within budgetary constraints, to elephant conservation, and (3) its availability as a participant in elephant projects.

Secondly, to qualify for funding, projects must fit within the parameters established by a range country's elephant conservation plan. Early on, the Fund recognized the context this could provide for project planning, and dedicated resources to assist range countries wishing to develop such plans. All countries within the current range of African elephants have plans in place. This effort has given elephant conservation visibility at the highest levels of government, helped establish national priorities, and provided target goals against which individual projects can be evaluated.

It has also enabled the grant program to work in partnership with range countries, responding to their own priorities rather than intervening to set priorities for them. From the start, the intent of the program has been not to dictate conservation priorities, but to work within the priorities already established by host countries meeting African Elephant Conservation Act criteria. Elephant conservation plans have helped this to occur effectively. Also, the availability of the plans to other bilateral donors has made it possible for those interested in elephant conservation to become familiar with specific projects and coordinate assistance.

Third, the Fund's capability to generate contributions from the private sector, other governments, non-government organizations, and the host country remains one of its greatest assets. Money donated from various sources is pooled to improve opportunities for key elephant populations. More than \$2 million have been generated as matching funds. Although there is not enough money to fund every project, the program attempts to balance the needs of elephant conservation throughout the species' range. With partners, the Fund cooperates on projects from Senegal in the west to Tanzania in the east and Namibia in the south.

Recognizing that conservation needs expressed in elephant conservation plans

Photo by Linblad/African Wildlife Foundation



## Partnership for Pachyderms

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far exceed available funding, the grant program has sought to supply the operational needs of projects capable of continuing their work once set-up funds have been provided. This has translated into financial support for anti-poaching activities and status surveys requested by range countries. Recently, however, as elephant populations have begun to stabilize, the focus has shifted somewhat — from requests to fund anti-poaching efforts to projects addressing human/elphant conflicts as elephants begin to return to parts of their former range. One priority for the current allocation is the selection of projects that concentrate on elephant conservation while benefiting rhinoceros populations. Once again, inherent in this effort is recognition of the elephant's role as a keystone species upon which the well-being of other species depends.

Perhaps one of the most complicated and most innovative projects funded by the pro-

gram to date has involved the translocation of an estimated 1,000 elephants in Zimbabwe. During the drought of 1991-1992, the government of Zimbabwe determined that elephant population levels in Gonarezhou National Park exceeded the carrying capacity and, if left unmanaged, could lead not only to species decline in that area but also to significant habitat loss. The demise of local sheep and cattle during the drought provided the Zimbabwean wildlife department with an opportunity to negotiate with ranchers for the benefit of native species. The result was agreement to work cooperatively, creating tracts of open rangeland to meet the needs of translocated elephants and other species.

Once again, the grant program responded in conjunction with other matching funding sources, doubling the benefits to the species. The grant covered such essentials as helicopters and other equipment needed to herd and tranquilize the animals. The ranchers receiving the animals provided transport costs.

The successful Zimbabwean translocation effort holds promise as an manage-

ment approach to herd reduction when numbers exceed an area's normal carrying capacity, and may serve as a model for other countries within the species' range. It also leaves open the possibility that populations on the decline in some countries feasibly may be restocked with translocated groups. Although not all the results are in, this creative use of funding not only has made the future brighter for the Gonarezhou elephants but also for the other species that depend on them.

All in all, the African Elephant Conservation Fund has become an important vehicle through which money for the conservation of a keystone species reaches on-the-ground projects that take into account not simply the elephant but also the complex environment it shapes. The grant program is proving to be an effective partnership, one acknowledging Aldo Leopold's injunction that "the first precaution of intelligent tinkering" is keeping all the pieces — especially when one of the major piece happens to be elephants.

## Mammoth or Elephant Ivory? Forensics Provides the Key

by Edgard O'Niel Espinoza and Mary-Jacque Mann

Due to threats posed by habitat loss and overexploitation, importation of African elephant (*Loxodonta africana*) ivory was prohibited in 1989. Imports of ivory from Asian elephants (*Elephas maximus*) had already been banned for similar reasons. Immediately after the 1989 ban took effect, U.S. ports began receiving large shipments of carved "mammoth" or "mastodon" ivory instead of the usual African elephant ivory.

Although U.S. Fish and Wildlife Service (FWS) wildlife inspectors at ports of entry strongly suspected that these shipments were actually illegal elephant ivory, there was no analytical technique available to test the importers' claims. The FWS Division of Law Enforcement therefore requested the assistance of the newly established Clark R. Bavin Na-

tional Fish and Wildlife Forensics Laboratory in Ashland, Oregon. Scientists at the facility were asked to develop a reliable, non-destructive method to differentiate the ivories of mammoths and modern elephants.

Mastodons, mammoths, and modern elephants are all members of the Proboscidea order of mammals. Mammoths lived during the Pleistocene Epoch and have been extinct for approximately 8,000 to 10,000 years. Mastodons coexisted with mammoths for part of the Pleistocene, occupying a different niche before becoming extinct themselves. Although there were several species of mammoth, the "woolly" or "hairy" mammoth (*Mammuthus primigenius*) from the Alaskan and Siberian tundras is the only known source of commercially significant

extinct proboscidean ivory. Despite occasional claims that mastodons have contributed to the ivory trade, mastodon ivory has not survived the millennia with enough preservation for commercial uses.

The woolly mammoth roamed Siberia and other parts of northern Asia, Europe, and North America. Early humans probably pursued the mammoth and other game across the Bering land bridge to the new world. Published descriptions of frozen mammoth carcasses found in Siberia date back to the eighteenth century. These frozen remains portray a powerful animal about 12 feet in height weighing up to 15,000 pounds (slightly larger than an African bull elephant), bearing deeply curved tusks that measured as much as 16 feet in length. The wooly mammoth

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## Mammoth or Elephant Ivory?

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was well protected from its frigid tundra environment by extra fat reserves and two thick layers of hair.

Woolly mammoth ivory has been in significant commercial demand for centuries, and the trade may have existed as early as the Roman era. From 1809 to 1910, 6,000 metric tons of ivory were "mined" from the Siberian tundra, the equivalent of tusks from an estimated 46,000 mammoths. Over the last 350 years, approximately 7,000 tons of mammoth ivory have been imported into China. Current predictions estimate that 550,000 tons of mammoth tusks have yet to be recovered from a single 1,000-kilometer coastal strip between the Yana and Kolyma rivers in Siberia.

Contrary to popular opinion, most commercially significant mammoth ivory is preserved rather than fossilized (*i.e.*, petrified). This preservation is credited to the frozen tundra environment in which the ivory has been buried for thousands of years. Carved and polished mammoth ivory is nearly indistinguishable from carved and polished elephant ivory. Both ivories have a creamy color and a unique "texture" or pattern of stacked chevron-like lines in cross-section. This pattern of lines, called the Schreger Pattern, is found only in proboscidean ivories. Analysis of the Schreger Pattern is the basis of a method developed by FWS Forensics Laboratory scientists to distinguish mammoth from modern elephant ivory.

Proboscidean tusks are actually modified maxillary incisors (front upper teeth). Like any mammalian tooth, tusks are permeated by microscopic structures called dentinal tubules. Proboscidean dentinal tubules are unique because they are sinusoidal (wavy). The Schreger Pattern is actually an illusion of crossing shadow lines created by the wavy underlying microscopic dentinal tubules. When examined by scanning electron microscopy, the dentinal tubules are shown to be more tightly packed in mammoth ivory than in elephant ivory.



*The woolly mammoth abounded in northern latitudes during the Pleistocene. This mount is a composite from several sets of skeletons uncovered near Fairbanks, Alaska, during the gold-mining days at the turn of the century. Mammoth tusks weighed up to 600 pounds per pair.*

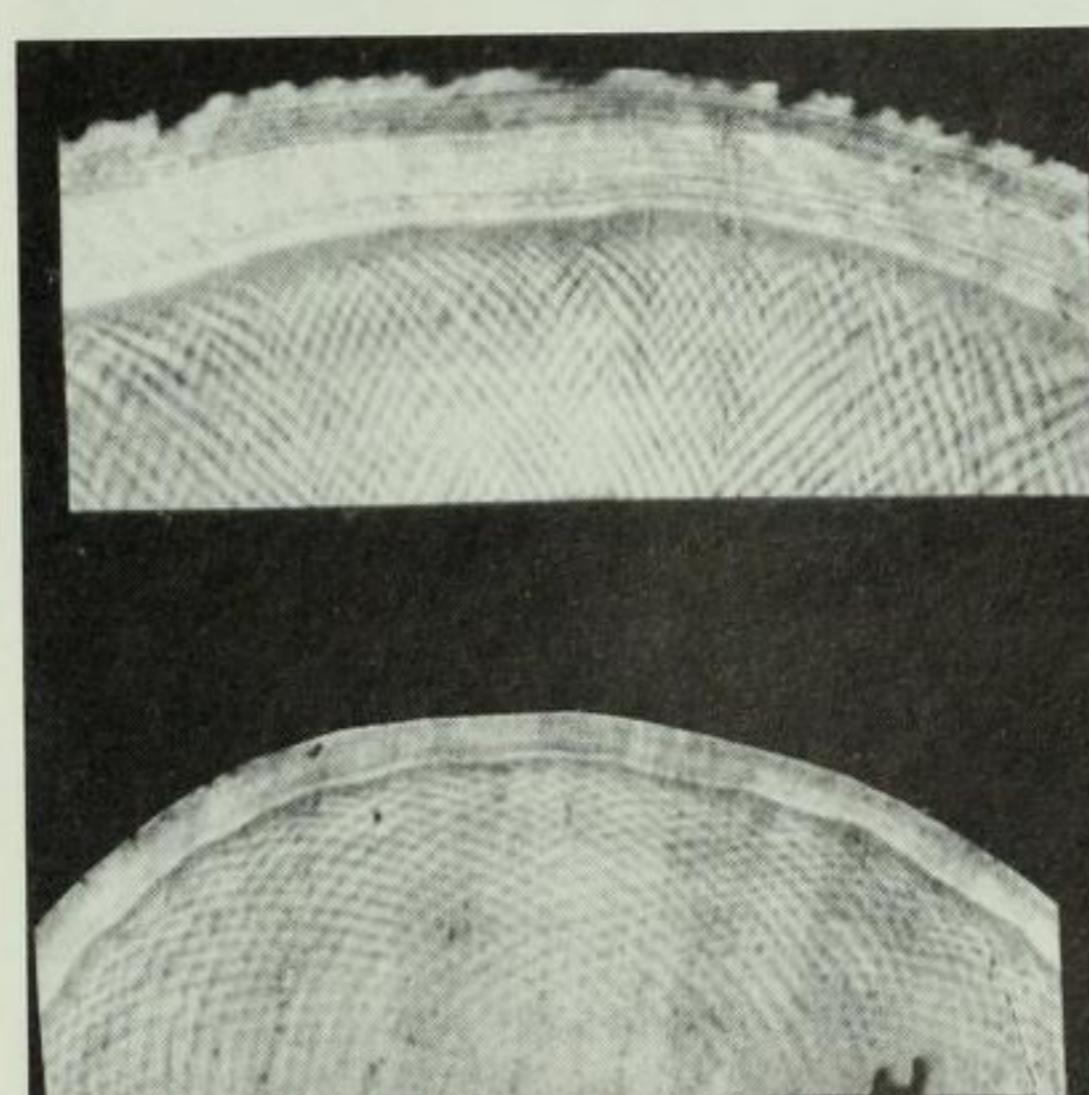
The angles that appear at the intersections of the Schreger lines in mammoth ivory are therefore consistently smaller (more acute) than those of elephant ivory. Using a protractor, FWS Forensics Laboratory scientists measured hundreds of Schreger Pattern angles from known samples of elephant and mammoth ivories. Statistical analysis of these measurements revealed that mammoth ivory angles averaged 73 degrees while the angles of elephant ivory averaged 124 degrees.

As soon as the Schreger Pattern angle method for differentiating mammoth and elephant ivories became available, incoming shipments of carved "mammoth" ivory were shunted to the FWS Forensics

Laboratory by FWS wildlife inspectors. The first shipment originated from Hong Kong and contained 500 carved objects. FWS Forensic Laboratory scientists identified all 500 objects as being modern elephant in origin. The next Hong Kong shipment contained 400 "mammoth" pieces, 200 of which had actually been carved from elephant ivory. The following shipment of 600 items contained 597 mammoth ivory carvings and only three elephant ivory carvings. The other 1989 shipments were genuine mammoth in origin.

A booklet outlining the simple, non-destructive Schreger Pattern angle measurement method was written by FWS Forensics Laboratory scientists and published by the World Wildlife Fund in 1991. This booklet also contains methods for the identification of the other types of natural and man-made materials appearing in the ivory trade.

It is interesting to note that since reliable identification methods have been applied to the ivory trade, FWS Forensics Laboratory scientists and wildlife inspectors have observed that the legal commerce in carved "ivory" objects has gradually shifted from mammoth tusks to include bone, warthog tusks, and hippopotamus teeth.



*Measuring the angles formed by lines that make up the Schreger Pattern allows wildlife inspectors to distinguish mammoth ivory (top) from elephant ivory (bottom).*

*Edgard Espinoza and Mary-Jacque Mann are with the Clark R. Bavin National Fish and Wildlife Forensics Laboratory.*

## Diseases Cited in Sea Otter Deaths

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larly the Central Valley of California, this disease is only sporadically reported in other areas of the State. Every year since 1971, a few cases of human coccidioidomycosis were reported in San Luis Obispo County; however, there were dramatic increases in such cases in 1978 and 1992. One sea otter found in San Luis Obispo County in 1976 had this disease, although as far as we know it is not a common diagnosis as a cause of morbidity or mortality in the animals.

Five sea otters—1 adult and 4 immature—were diagnosed as dying from aberrant acanthocephalan parasite migration into the abdominal cavity. While certain species of acanthocephalans are normal inhabitants of the intestinal tract of sea otters, the aberrant migrating acanthocephalans are larval stages that have passed through the intestinal wall and attached to many abdominal organs. Parasitologists at the University of Nebraska have tentatively identified the migrating acanthocephalans as belonging to a group that usually infects birds—primarily gulls or scoters—and may be transmitted through ingestion of anomuran sand crabs. Although this problem has rarely been cited in individual sea otters in the past, it may be emerging as a potentially significant population health problem.

Two sea otters found convulsing on a beach in San Luis Obispo County were found to have encephalitis caused by a protozoal parasite, not definitely identified to date. This is a newly identified problem in the otters.

Causes of death in 12 sea otters included emaciation or mating wounds or both (7), various types of trauma (4), and intestinal perforation with twisting of the intestine (1). These causes of mortality have been reported in sea otters in the past.

"When monitoring the status of Endangered, Threatened, or candidate species, we are constantly challenged with early detection of insidious threats," said

Carl Benz, wildlife biologist at the Ventura, California, field office. "Because of the support of the National Wildlife Health Research Center, the Service can be attentive to the problem of infectious and parasitic diseases and their threat to the recovery of the southern sea otter and the health of the nearshore ecosystem."

Necropsies of southern sea otters at the National Wildlife Health Research Center in 1993 have documented some of the same disease problems, including coccidioidomycosis, acanthocephalan peritonitis, and protozoal encephalitis. The Center will continue comprehensive necropsies in order to provide important information to aid the recovery of this Threatened species.

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*Material for this article was provided by Dr. Lynn Creekmore, Wildlife Disease Specialist, and Dr. Nancy Thomas, Endangered Species Pathologist, both of whom are with the National Wildlife Health Research Center in Madison, Wisconsin. The Center is a unique Federal research facility dedicated to research, diagnosis, and prevention of disease in free-ranging wildlife. Carl Benz, the FWS Southern Sea Otter Recovery Program Coordinator from 1979 to 1993, also provided material. Mr. Benz is now executive secretary to the recovery team and Assistant Supervisor of the FWS Ventura, California, Office.*

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## Reclassification Proposals

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possibility of erosion from logging within the lake watershed, and the potential damage or destruction of the single population from chance events.

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The reclassification proposals recognize the improved status of these plants. Even if reclassified, however, both species will continue to receive Endangered Species Act protection until they are fully recovered. With the continued cooperation of Federal and State agencies, conservation organizations, and concerned landowners, the FWS will work to restore both plants as secure, self-sustaining members of their ecosystems.

## Taiwan and China Warned

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ing; (3) development and implementation of a comprehensive law enforcement and education action plan; (4) increased law enforcement penalties; and (5) prompt termination of amnesty periods for illegal holding and commercialization.

The FWS is participating in two CITES delegations to China and Taiwan, as well as to Korea. The first is to provide technical assistance, and the second is to evaluate their progress between now and the upcoming March 1994 CITES Standing Committee meeting. In addition, the United States is sending its own delegation, consisting of FWS CITES and law enforcement experts, and staff from the Department of Justice, to help these countries make progress in ending the trade. The FWS is also participating with the Department of Interior's Office of Policy Analysis in an interagency task force led by the National Security Council to assist China and Taiwan in eliminating their illegal wildlife trade and to evaluate their progress by the March 1994 deadline.

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