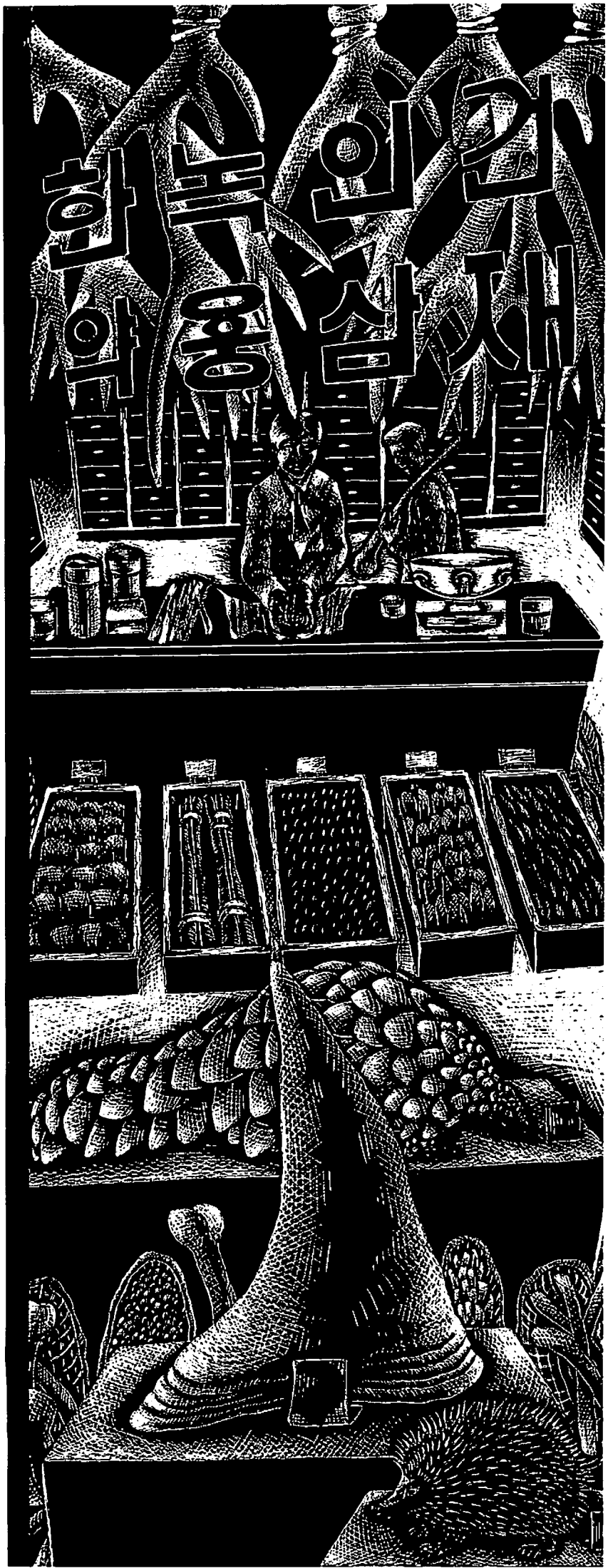

SPECIES IN DANGER

MARKET UNDER COVER:

THE RHINOCEROS HORN TRADE IN SOUTH KOREA

JUDY A. MILLS

A TRAFFIC NETWORK REPORT

TRAFFIC
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This report was published with the kind support of

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Judy A. Mills

The research for this report was supported financially by the Foreign and Commonwealth Office of the British Government.

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ACKNOWLEDGEMENTS

This project would not have been possible without the support of many people who were variously generous in terms of time, money, advice, political influence and personal support.

TRAFFIC International wishes to thank the UK Foreign and Commonwealth Office, especially Martin Warr and Frances MacLeod, for funding the project. TRAFFIC USA, especially Ginette Hemley, contributed supplementary funding, invaluable contacts in South Korea and technical support.

Young Soon Park provided translation and a tireless dedication to gathering factual information. Raekwon Chung of the South Korean Ministry of Foreign Affairs was not only generous in his assistance but also courageous. Members of Mr. Chung's staff gave of their time, energy and patience. Sang Don Lee warrants special mention for his time, insight and support. The postal survey of doctors surely would have been less successful without the co-operation of Drs. Duk Kyun Ahn and Ho Cheol Kim at Kyung Hee University College of Oriental Medicine. Staff at the South Korean Ministry of Health and Social Affairs were both helpful and patient. The British and American Embassies in Seoul and the US Consulate in Pusan were most helpful as well.

Timothy Swanson of Cambridge University provided counsel on aspects of economic inflation relevant to this report, and Jill Belsky of the University of Montana advice on research methodologies. Esmond Bradley Martin, Wei-Lien Chyi, Tom Milliken, Kristin Nowell, Chia-Jai Pei and Cecilia Song provided the foundation on which this research was built. Reviewers Nigel Leader-Williams and Tom Milliken are thanked for their most tenacious reviews. Finally, and above all, Jorgen Thomsen must be thanked for his encouragement, his technical support and his patient guidance.

Judy A. Mills

FOREWORD

South Korea remains a stronghold of the use of traditional medicines made from wild animals and plants. Because the rhinoceroses may be one of the first families of large mammals to disappear as a result of the demand for such medicines in Asia, investigators have been monitoring the rhinoceros horn trade in South Korea since the early 1980s. Given that the last investigation of the trade took place in 1988, it was time to re-assess the situation in 1993. While the present study is not a definitive work, it sheds some light on a black market which continues to fuel one of the world's most formidable and precarious wildlife conservation dilemmas.

Similar TRAFFIC studies have been conducted recently in Taiwan, another key rhinoceros horn consumer country (Nowell, *et al.*, 1992).

Jorgen B. Thomsen
Director
TRAFFIC International

EXECUTIVE SUMMARY

The traditional Oriental medicine of China made its way to Korea during the sixth century. Korean Oriental medicine has been customized somewhat but relies on the basic tenets, ingredients and prescriptions of Chinese medicine. Rhinoceros horn is an ingredient in five Oriental medicines still popular among doctors of Oriental medicine in Korea today. These rhinoceros horn derivatives are used to treat maladies including stroke, nosebleeds, dermatitis, headache, facial paralysis, high blood pressure and coma. The most popular of these medicines is *Woo Hwang Chung Shim Won*, a medicine ball made of rhinoceros horn, musk, cow gallstones and a number of herbs. *Woo Hwang Chung Shim Won* is commonly found in Korean households for use in emergencies, such as strokes, but is also used by some Koreans on a regular basis to promote overall robust health.

This investigation of the rhinoceros horn trade in South Korea took place during May and June 1993. Though the importation of rhinoceros horn into South Korea has been illegal since 1983, domestic trade in rhinoceros horn and medicines made with rhinoceros horn has continued. In November 1992, the USA threatened to impose trade sanctions against South Korea for its failure to police the trade in rhinoceros horn within its borders, poor enforcement which undermined the effectiveness of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). This economic threat brought under the US **Pelly Amendment to the Fisherman's Protection Act of 1967** prompted two significant repercussions: firstly, the retail price of rhinoceros horn doubled almost immediately from more than US$6 500 per kg to more than US$13 000 per kg and, secondly, in early 1993, Korean legislators banned all domestic trade in rhinoceros horn.

Some 7 000 licensed doctors practise Oriental medicine in South Korea today, while 4 751 clinics and 2 352 licensed pharmacies dispense Oriental medicines. In reaction to the Pelly petition, the Government of South Korea sent inspection teams to more than 5 000 Oriental-medicine establishments nationwide during the first half of 1993. In the course of these investigations, one shop was found to have rhinoceros horn (a quantity under 100g). The owner was arrested and the doctor associated with the shop lost his medical licence. By May 1993, using the results of these investigations as evidence, Government officials announced that the rhinoceros horn trade in South Korea had been eradicated.

By coincidence, the present study commenced just after the Government's proclamation of the end to rhinoceros horn trade within its borders. With the assistance of Korean nationals, the principal investigator conducted surveys of traditional-medicine shops in South Korea by both overt and covert means, as well as conducting a postal survey of a random sample of doctors of Oriental medicine. Though far from conclusive, the results of these surveys indicate that there is a continuing illegal trade in rhinoceros horn and its derivatives in South Korea, despite new laws and law enforcement efforts.

A total of 130 Oriental-medicine shops and clinics in five South Korean cities (Seoul, Inchon, Pusan, Taegu and Taejon) were visited during the present study. Of those, 56 (43%) claimed to sell medicines containing rhinoceros horn. Twenty-five of the establishments visited had been incorporated in the survey of the rhinoceros horn trade conducted in 1988, at which time 24 were selling horn. Of these, 12 (48%) continued to sell products purportedly made with rhinoceros horn in 1993. These results indicate that while the use of rhinoceros horn may have declined, a significant trade may continue.

Only 47 (18%) of 260 questionnaires posted to a random sample of doctors of Oriental medicine regarding their use of rhinoceros horn were returned. Of those, 37 respondents (79%) said they regarded rhinoceros horn as an essential medicine and thirty-three (70%) said they still used rhinoceros horn. Sixteen (34%)

said their was no substitute for rhinoceros horn as a medicine. It appears clear that some doctors of Oriental medicine in South Korea remain dedicated to the use of rhinoceros horn as a medicine.

A majority of *Woo Hwang Chung Shim Won* balls sold in South Korea today are made by licensed, closely regulated manufacturers, who no longer use rhinoceros horn. However, the making of *Woo Hwang Chung Shim Won* by South Korea's 4 751 Oriental medicine clinics and 2 352 Oriental medicine pharmacies is mostly unregulated and a significant number of those visited during the present study claimed to continue to use rhinoceros horn in their *Woo Hwang Chung Shim Won*. More comprehensive sampling should be conducted in order to determine the actual number of Oriental-medicine establishments in South Korea still using rhinoceros horn to make home-made *Woo Hwang Chung Shim Won*.

In the meantime, efforts should be made to document whether 63 *Woo Hwang Chung Shim Won* balls collected during the course of this study actually contain rhinoceros horn. All were purported to contain rhinoceros horn by sellers but only chemical analysis will provide conclusive proof of continuing trade in rhinoceros horn in South Korea. At the time of writing this report, the Government of South Korea had refused to issue proper CITES documents to allow the legal export of these samples to a forensics laboratory in the USA for definitive analysis.

This report concludes that there is strong evidence to suggest that a significant trade in rhinoceros horn continues in South Korea, which, even if small in volume, poses a danger to the fewer than 11 000 rhinoceroses remaining in the wild.

BACKGROUND: THE RHINOCEROSES' PLIGHT

More than 95% of Africa's Black Rhinoceroses *Diceros bicornis* have disappeared since 1970, and hundreds more are poached every year (Milliken *et al.*, 1993). In Southeast Asia, Javan Rhinoceroses *Rhinoceros sondaicus* number fewer than 100, while Sumatran Rhinoceroses *Dicerorhinus sumatrensis* have diminished to fewer than 1 000 in fragmented populations (Anon., 1993a). Only the Southern White Rhinoceroses *Ceratotherium simum simum* in southern Africa and the Indian Rhinoceroses *Rhinoceros unicornis* in India and Nepal have relatively stable populations (Leader-Williams, 1992), but even these populations have suffered recent spates of poaching (T. Milliken, pers. comm., October, 1993; A. Kumar, pers. comm., October, 1993). In total, wild populations of the world's five rhinoceros species comprise fewer than 11 000 animals (IUCN/SSC African and Asian Rhinoceros Specialist Groups, unpublished data).

Rhinoceros populations have decreased owing, in part, to destruction of habitat, especially of rainforest and flood plain in Asia. However, a far more important factor is the demand for rhinoceros horn for ornamental and medicinal purposes (Martin, 1980). Incomplete trade statistics prevent an exact sum of annual trade in rhinoceros horn worldwide, but it is estimated that an average of 8 000kg were traded annually in the 1970s. That figure is thought to have dropped to 3 000kg in the early 1980s (Milliken *et al.*, 1993), which still represents the death of more than 1 000 African rhinoceroses.

Rhinoceros horn has been used as an ingredient in traditional Chinese medicines for millennia (But *et al.*, 1988), and this practice spread throughout east and Southeast Asia and persists today. Contrary to popular myth, rhinoceros horn is not prescribed as an aphrodisiac in east Asian medicine. Rhinoceros horn is regarded as essential for the treatment of a wide range of ailments, including stroke, fever and convulsions (Read, 1982; Reid, 1993; Yum, 1992). Over the past 20 years, the most zealous users of rhinoceros horn as medicine have been the people of China, Hong Kong, Japan, Singapore, South Korea and Taiwan (Leader-Williams, 1992).

For use in medicines, rhinoceros horn is sold in slices or fine powder, at prices ranging from US$133 to nearly US$62 200 per kg in Taiwan (Nowell *et al.*, 1992). According to the tenets of Chinese medicine, rhinoceros horn is a "cold" medicine, meaning that it has antipyretic, antispasmodic and haemostatic effects that can "clear" or eliminate symptoms of internal "heat", such as nosebleeds, convulsions and fever (Reid, 1993). One of the more recent studies of rhinoceros horn's medicinal effects documents some antipyretic benefit in rats, but only at relative doses many times higher than those prescribed in traditional Oriental medicines (But *et al.*, 1990). However, the dearth of supportive scientific documentation does little to dissuade devotees of Oriental cures involving rhinoceros horn, as most are far more convinced by the test of time and tradition.

Other parts of the rhinoceros are commercially valuable in Asia, though none so prized as the horn. Culinary use of rhinoceros hide was popular among the emperors of China (Wong, 1986) and recently it was noted that a menu in Singapore included an entrée made of rhinoceros hide (pers. obs., 1991). Rhinoceros urine has been collected from zoo animals in Burma, India and Nepal for curing sore throats, fever and asthma (Martin, 1983a). Rhinoceros dung was at one time traded in India, while the stomach, blood, hooves, penis, flesh and bones had limited markets in other parts of Asia (Martin, 1983a).

Rhinoceros horn is also a coveted commodity in the Middle East, where it is made into handles for daggers or *jambias*, worn as status symbols by men in Yemen. Between the early 1970s and early 1980s, Yemen consumed nearly half the rhinoceros horn on the world market for the making of daggers (Vigne and

Martin, 1991). Evidence indicates a subsequent subsidence of the market for rhinoceros horn in Yemen. Annual imports dropped from an estimated 3 235kg in the early 1970s to approximately 330kg by 1990. Yemen imported approximately 750kg of rhinoceros horn during the 20-month period between August 1990 and March 1992 (Vigne and Martin, 1993).

Worldwide trade in rhinoceros horn trade in the twentieth century probably peaked in the late 1970s and 1980s (Milliken *et al.*, 1993). In 1976, the entire Rhinocerotidae family was listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), in effect banning the international trade in rhinoceros horn among Convention Parties (Milliken *et al.*, 1993). By 1987, all rhinoceros-consuming nations except North Korea had enacted national laws prohibiting the importation of rhinoceros horn. Since then, prices for rhinoceros horn have remained high in most countries (Leader-Williams, 1992) and poaching in many range states continues at alarming levels (Milliken *et al.*, 1993).

INTRODUCTION: KOREAN USE OF RHINOCEROS HORN

Rhinoceros horn is rarely used for ornamental purposes in South Korea and is mainly used as a component in Oriental medicines. Like Japan, Korea adopted, then adapted Chinese medicine to form its own traditional medicine, which is called *hanyak* ("hawn-yawk") and literally means Chinese (*han*) medicine (*yak*). In effect, Korea imported the idea of the use of rhinoceros horn as medicine from China. Though the word for rhinoceros is *kopulso* ("co-pull-so") in Korean, rhinoceros horn is referred to by a Chinese character, which the Koreans pronounce *sogak* ("so-gawk").

Traditional medicine in Korea

Hanyak was Korea's predominant medical system from its arrival in the sixth century until the introduction of Western medicine in 1894 (Hong, 1989). Western medicine became Korea's dominant medical option during Japanese colonial rule, 1910-1945, on the mandate of the imperialist government. The dominance of Western medicine continued beyond Korea's liberation from the Japanese and persists today. A shortage of Western doctors prevented Oriental medicine from being supplanted entirely, however, and there has been a resurgence of interest in Oriental medicine in South Korea since the end of the Korean War (1950-53). While South Korea has become highly industrialized, its people have at the same time re-embraced ancient traditions, such as the worship of ancestors, filial obedience and devotion, and Oriental medicine (N.J. Han, pers. comm., 1991). One Korean sociologist concluded that "economic development in Korea in recent years and the urbanization and industrialization in (South) Korea in general has strengthened the traditional medical system. ....traditional Asian medicine was able not only to survive but to stage a comeback, competing head-on with Western medicine...." (Hong, 1989).

South Korea's first college of Oriental medicine was established in 1948. A second was founded in 1972 (Hong, 1989). By 1993, South Korea had 11 colleges with standard six-year Oriental-medicine programmes, 7 000 licensed doctors of Oriental medicine and 3 900 students enroled in schools of Oriental medicine (Hong, 1989; Korean Oriental Medical Association; D.K. Ahn, pers. comm., 1993). There were also 4 751 operational Oriental-medicine clinics known as *hanweewons* ("hawn-ee-wahns"), 2 352 licensed Oriental-medicine pharmacies, called *hanyakbangs* ("hawn-yawk-bong"), and approximately 20 Oriental-medicine hospitals, *hanbangbyongwons* ("hawn-bong-bee-yong-wahns"), housing 1 333 beds (S.H. Kim, pers. comm., 1993; H.S. Lee, pers. comm., 1993). All Oriental-medicine clinics and hospitals

are run by licensed Oriental-medicine doctors and Oriental-medicine pharmacies can technically only prescribe traditional medicines under the supervision of a licensed Oriental-medicine doctor.

Several research projects over the past 20 years have examined Korean attitudes toward the use of Oriental medicine (Hong, 1989). A survey of urban residents, conducted in 1986 over an 18-month period by the Korean Gallup Research Institute, found that 21% of those questioned had used Oriental medicines for an illness and 26% had taken traditional concoctions in the form of *boyak* ("bow-yawk"), which means health tonic or vitamin (Hong, 1989). A survey conducted during August 1988 in Taegu, South Korea's third largest city, found that among a random sample of 350 respondents, more than two-thirds (69%) viewed Oriental medicine as more effective than Western medicine in promoting vigour and preventing illness (Hong, 1989). A substantial majority (85%) said they believed that Oriental medicine can sometimes cure diseases that cannot be remedied by Western medicine. Whereas respondents looked to Western medicine for treatment of acute conditions, such as heart failure and bone fractures, they often chose Oriental medicine for chronic ailments, such as paralysis and rheumatism. Among the 102 respondents who said they used some form of Oriental medical treatment, 63% used Oriental medicine as a treatment for disease. Oriental medicines used by these respondents averaged US$70 per treatment – a sum that easily could cover the cost of rhinoceros horn derivatives. An allegiance to Oriental medicine persists among Taegu residents, regardless of age, gender, education, social environment or income (Hong, 1989).

Doctors of Oriental medicine and proprietors of pharmacies dispensing Oriental medicine interviewed during the course of the present study insisted that users of traditional medicines rarely know or enquire about the contents of the medicines they purchase, but simply follow their doctor's instructions for a cure. It would be highly unusual for a Korean patient even to know that a medicine contained a particular ingredient and virtually unheard of for a customer to ask to buy a single medicinal component, such as rhinoceros horn. In most cases, a doctor prescribes a particular combination of herbs and/or animal parts, which is made up in the pharmacy of his clinic, or else the patient is sent to a nearby Oriental-medicine pharmacy. Customers rarely request medicine from such a pharmacy without a prescription, though items for tonic use such as *Woo Hwang Chung Shim Won* and bear gall bladders seem to be exceptions to that rule. Most Oriental medicines, including those that contain rhinoceros horn, come in the form of medicine balls for oral ingestion or bundled in packets for boiling into a tea-like decoction. The latter are are so popular that South Korea now manufactures small machines, similar to coffee-makers, for brewing Oriental medicines at home.

Rhinoceros horn as medicine

Although Song and Milliken (1990) identified 16 different rhinoceros horn medicines in the Korean pharmacopoeia, only five are commonly used by doctors of Oriental medicine in South Korea at present (Table 1). These prescriptions were first published in *Dongeui Bo Gam*, the most venerated of Korea's traditional medicine texts, which was printed around the year 1600. The most popular medicines from *Dongeui Bo Gam* are now included in *Bangyak Hap Pyun* (1992), known as the modern "bible" of Korean medicine and found in nearly every South Korean medicine shop and clinic today (Anon., 1992). The five rhinoceros-based medicines used most often are prescribed for maladies ranging from nosebleeds to stroke to dermatitis, and daily doses of rhinoceros horn contained in these medicines range from 0.08g to 18g.

Of these five medicines, the two most frequently prescribed are *So Gak Jee Hwang Tang* and *Woo Hwang Chung Shim Won* (H.G. Cho, pers. comm., September, 1993). *So Gak Jee Hwang Tang* is a boiled herbal

decoction prescribed for children's nosebleeds. Treatment calls for 12g of rhinoceros horn per day, usually over one or two days. The far more popular medicine is *Woo Hwang Chung Shim Won*, which is used in emergency cases involving stroke, fever, facial paralysis and coma. *Woo Hwang Chung Shim Won* is also used for nosebleeds and common headaches, and some Koreans take it weekly, or even daily, as a tonic for overall good health, to counteract fatigue, dizziness, fever and colds, to encourage appetite and to control high blood pressure (Pang, 1984). Some doctors interviewed during the course of this study recommended *Woo Hwang Chung Shim Won* to reduce stress and boost brain power before examinations. *Woo Hwang Chung Shim Won* has been described as "an indispensable household medicine in Korean families" (Pang, 1984). The annual *Woo Hwang Chung Shim Won* market is valued at W150 trillion (nearly US$19 million) for South Korea's licensed pharmaceutical companies, which are strictly regulated and probably do not use rhinoceros horn (Ministry of Health and Social Affairs, September 1993). There are nonetheless thousands of Oriental-medicine clinics and pharmacies which make medicines by hand, some of which claim to use the original *Woo Hwang Chung Shim Won* recipe calling for rhinoceros horn.

Table 1

Most commonly prescribed rhinoceros horn derivatives in Korean traditional medicine

Name*	Indications	Amount rhinoceros horn per daily dose or ball
Boiled decoctions		
So Gak Jee Hwang Tang	Nosebleeds, especially in infants and children	12g/day
So Gak So Tok Yun	Dermatitis	18g/day
So Gak Sung Ma Tang	Headache, facial paralysis	18g/day
Balls		
Ku Mee Chung Shim Won	Stroke	0.75g/ball**
Woo Hwang Chung Shim Won	Stroke, nosebleeds, fever, facial paralysis, high blood pressure, loss of consciousness	0.08g/ball**

* Romanized spellings differ from those in earlier TRAFFIC publications.

** Normally one or two balls used in the case of an emergency, though *Woo Hwang Chung Shim Won* is sometimes used daily as a health tonic.

Sources: *Bangyak Hap Pyun* (1992 edition) and Kyung Hee University College of Oriental Medicine Department of Herbology.

South Korea was described in the early 1980s as one of the world's major consumers of rhinoceros horn, more than 90% of which went into the manufacture of *Woo Hwang Chung Shim Won* balls (Martin, 1983a; Martin, 1986). Yet rhinoceros horn may not have been commonly used by Koreans until well after the Korean War. Although the use of rhinoceros horn was described and recommended in traditional Chinese medical literature, Korea remained largely isolated from trade with the rest of the world for centuries. The tenets of Korea's version of Chinese medicine encouraged isolationism by insisting that ingredients

indigenous to the Korean Peninsula, on which there were no rhinoceroses, were far more healthy for Korean people than exotics imported from abroad. Korea's meagre economy up to and beyond the Korean War may have further prevented any substantial importation of items as costly as rhinoceros horn (Martin, 1983a).

Trade statistics indicate that South Korea did not officially import rhinoceros horn until 1970, during which it imported three kilogrammes (Table 2). However, Customs categories may not have included a specific category for rhinoceros horn prior to that year. As a means of comparison, Japan was at the same time already importing more than 400kg per year, while Taiwan's imports also amounted to hundreds of kilogrammes (Leader-Williams, 1992). In 1971, South Korea's imports rose sharply to 52kg. From 1970 until the importation of rhinoceros horn was banned in 1983, South Korea's imports averaged 204kg annually. During that same period, Japan's rhinoceros horn imports are thought to have averaged about 740kg and Taiwan's 526kg per year (Leader-Williams, 1992). One could conclude that while South Korea was a significant consumer of rhinoceros horn for a time, it was never as substantial a buyer as its east Asian neighbours. South Korea's imports of rhinoceros horn during this period may have been under-reported, however, as in 1973 a 20% tariff was levied on all imports of rhinoceros horn. From 1977 to 1982, the tariff on rhinoceros horn doubled to 40%, which could have encouraged smuggling long before South Korea banned the import of rhinoceros horn (South Korean Customs Administration, *in litt.*, 14 June 1993; Martin, 1983a). Based on market surveys in 1980 and 1982, Martin (1983a) estimated actual imports to be twice the official figures.

Table 2

Official South Korean imports of rhinoceros horn, 1975-1984

Year	Total Kg	Value (US$)	Price/kg	% increase in price
1970	3	89	30	N/A
1971	52	4 737	91	203
1972	248	8 486	34	-63
1973	253	9 382	37	9
1974	214	8 079	38	0.3
1975	212	12 270	58	53
1976	277	13 467	49	-15
1977	307	52 759	172	251
1978	51	14 492	284	65
1979	318	112 828	355	25
1980	217	70 818	326	-8
1981	142	75 207	530	63
1982	263	135 807	516	-3
1983	300	161 209	537	4
1984	Import ban in effect/no imports recorded from this point			

Total imports over 14 years = 2 857kg

Average annual imports for period = 204kg

Source: *Statistical Yearbook of Foreign Trade*, South Korean Customs Administration.

South Korea's ban on rhinoceros horn

South Korea did not accede to CITES until mid-1993. However, it banned importation of rhinoceros horn 10 years earlier, in July 1983, under the **Pharmaceutical Affairs Law of 1953**. Accordingly, the Ministry of Health and Social Affairs (hereafter referred to in the text of this report as MOHSA) prohibited the use of rhinoceros horn in patented medicines. From that point forward, the 15 large-scale pharmaceutical manufacturers who made *Woo Hwang Chung Shim Won* under licence dropped rhinoceros horn from their list of ingredients. Still, the change in law did not forbid the domestic trade in rhinoceros horn stocks imported before the ban, which were being used in rhinoceros horn derivatives made to order in small quantities by thousands of Oriental-medicine shops and clinics nationwide. In other words, manufactured rhinoceros horn medicines were outlawed, but sale over the counter of home-made rhinoceros horn medicines was untouched by the domestic ban. Imports for any purpose, of course, were forbidden. Not surprisingly, Customs statistics from 1984 onwards list no imports of rhinoceros horn to South Korea, except a shipment in 1988 that later was confirmed to be cow horn (Song and Milliken, 1990).

The South Korean Government apparently instituted the 1983 ban as a response to pressure from the international conservation community (S.D. Lee, pers. comm., 1993). Although officials involved in the decision have now retired and there were no press reports on the subject at the time, officials in the current administration believe that the deciding impetus came in the form of a formal admonishment from either the CITES Secretariat or WWF International (S.D. Lee, pers. comm., 1993; S. Choi, pers. comm., 1993).

The import ban instituted under the **Pharmaceutical Affairs Law** was replaced three years later, in 1986, by a similar ban under the **Wildlife Protection and Hunting Law of 1967**. This change shifted responsibility for the ban from MOHSA to the Forestry Administration. The reasoning behind this change was said to be based on the fact that rhinoceros horn was no longer a material legally used for the manufacture of medicines and therefore it no longer fell under the purview of MOHSA (S.D. Lee, pers. comm., 1993). A major loophole was introduced with the change of jurisdiction, however, owing to the fact that the **Wildlife Protection and Hunting Law** has no provision for policing domestic trade in animals or animals parts whose import is banned. Critics also say the Forestry Administration, charged with domestic reforestation and game control, had neither interest nor infrastructure to deal either with foreign species or the Oriental medicines in which they are used (S.D. Lee, pers. comm., 1993).

During 1986, an investigator returned to Seoul to assess the availability of rhinoceros horn under the ban and concluded that the demand for rhinoceros horn in South Korea had decreased (Martin, 1986). A survey of 108 Oriental-medicine establishments in Seoul's two main medicine districts found that 55 (51%) were selling rhinoceros horn, most of which was in the form of *Woo Hwang Chung Shim Won* balls. By contrast, a survey of 30 Seoul medicine sellers in 1980 had found 19 (63%) selling rhinoceros horn. In 1982, queries at 76 shops and clinics documented 47 (62%) with rhinoceros horn. The investigator cited as further evidence for optimism in 1986 a Customs Administration official who insisted that the smuggling of rhinoceros horn into the country had dwindled to "a very small amount", and conversations with scholars of Oriental medicine enthusiastic about substituting water buffalo horn for rhinoceros horn (Martin, 1986).

Other investigators went to South Korea two years later, in Autumn 1988, to assess the rhinoceros trade (Song and Milliken, 1990). The principal investigator, a South Korean who posed as a customer seeking medicines for sick relatives in Japan, did not ask for rhinoceros horn directly, nor for any rhinoceros-based medicines by name. Instead, she described illnesses for which medicines containing rhinoceros horn are generally prescribed and waited for doctors to raise the subject of rhinoceros horn. This method of enquiry

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Horns from water buffalo are a popular substitute for rhinoceros horn among some Oriental-medicine doctors in South Korea, although many feel there is no effective substitute.

differed from previous surveys where a foreigner, through an interpreter, specifically asked to see rhinoceros horn (Martin, 1986). The survey in 1988 found 71 (64%) of 111 Oriental-medicine outlets in five cities purporting to sell rhinoceros horn or its derivatives (Song and Milliken, 1990). In Seoul, 86% of the shops surveyed claimed to have rhinoceros horn products. Investigators concluded that rhinoceros horn was "still widely available" throughout South Korea and that "consumer demand has not abated", despite legal prohibitions and a 76% price increase, compared with prices previously documented by Martin. Based on these results, TRAFFIC Japan called for South Korea to register and license current stocks of rhinoceros horn nationwide and researched Hong Kong's trade controls in response to Korean officials' request for more information on how they might regulate the rhinoceros horn trade (Milliken, pers. comm., 1993). TRAFFIC Japan also urged the South Korean Government to regulate the rhinoceros horn trade, asking HRH Prince Philip, in his capacity as President of the World Wide Fund for Nature, to write letters in this regard to South Korea's President, but the Koreans did nothing of note in response (Milliken, pers. comm., 1993).

International criticism

In the summer of 1992, reports of widespread poaching of rhinoceroses in Zimbabwe (Milliken, *et al.*, 1993) began to reach the international conservation community, inducing fear about the security of the last stronghold of Black Rhinoceroses. On 12 November 1992, WWF US and the National Wildlife Federation of the USA filed a petition with the US Secretary of the Interior asking that trade sanctions be brought under the US **Pelly Amendment to the Fisherman's Protective Act of 1967** against China, South Korea, Taiwan and Yemen for their continuing trade in rhinoceros horn. "There is ample evidence that nationals of South Korea, China, Taiwan and Yemen engage in extensive international trade in rhinoceros horns", the petition read. The 1988 market survey (Song and Milliken, 1990) comprised the evidence cited against South Korea.

The Pelly Amendment provides for the Secretary of the Interior of the USA to investigate and, if warranted, to ask the President to suspend any wildlife and fisheries trade between the USA and any country responsible for diminishing the effectiveness of an international treaty designed to protect threatened or endangered species. The Pelly Amendment was altered in 1992 to allow sanctions on "any products from the offending country for any duration" (**High Seas Driftnet Fisheries Enforcement Act, Public Law 102-582**, 2 November 1992). In the case against China, South Korea, Taiwan and Yemen, the Pelly petition accused the four of undermining CITES efforts to save rhinoceroses from extinction (**Petition for Certification of South Korea, China, Taiwan and Yemen, Pursuant to 22 U.S.C. 1978, for Illegal Trade in rhinoceros Horn**, 12 November 1992).

Meanwhile, a coalition of animal welfare groups launched a publicity campaign calling for a consumer boycott of electrical and sporting goods made in Taiwan, as a means to encourage better policing of the rhinoceros horn trade in Taiwan. In a graphic brochure entitled, *Taiwan kills rhinos with your money: why you should boycott goods made in Taiwan*, the Environmental Investigation Agency (EIA) outlined the

dramatic decline in the number of rhinoceroses in the world and declared that "the greatest burden of responsibility lies with the consuming nations - Taiwan, China, South Korea, Thailand and Yemen." South Korean officials read this to mean that their country could become the next target of a consumer boycott (R. Chung, pers. comm., 1993; S.D. Lee, pers. comm., 1993).

On 21 January 1993, the US Fish and Wildlife Service held a public hearing in Washington DC about proposed sanctions against China, South Korea, Taiwan and Yemen under the Pelly Amendment. Both South Korea and Taiwan sent delegations to defend their countries against the allegations. In a written statement, the South Korean Government called the charges "malicious accusations" which were "based on neither fact nor verified information". The US Fish and Wildlife Service promised to investigate and make a recommendation to the Secretary of the Interior based on its findings within the following six months. A report in *The Korea Herald* about the hearing warned that, "Lax Wildlife Preservation Could Hurt Korea in Trade" (10 February 1993).

The CITES Standing Committee responded to the emergency at its meeting in March 1993 by directing its chairman to notify the Governments of China, South Korea, Taiwan and Yemen of the Committee's concern about their continuing tolerance of rhinoceros horn trade (Anon., 1993b). The United Nations Environment Programme (UNEP)'s Rhino Ambassador announced in the spring of 1993 that he would revisit South Korea to reiterate the need for better policing of the trade in rhinoceros horn.

The South Korean Government took none of these events lightly. International scorn, combined with the threat of trade sanctions under the Pelly Amendment and a possible consumer boycott of Korean-made goods, such as automobiles and semiconductors, immediately commanded the attention of Korea's new administration. Since taking office in February 1993, President Kim Young-sam had underscored his interest in cultivating a US market for Korean-made goods, as a means of restoring and maintaining South Korea's economic vitality (*The Korea Herald*, 30 May 1993). Possible certification under the Pelly Amendment and a potential consumer boycott campaign posed clear threats to this policy. According to an authorative Korean source, "the only thing that can move our Government in international environmental affairs is the threat of trade sanctions", an opinion which was to prove well founded.

Improved enforcement within Korea

Although South Korean officials claimed their country was wrongly accused of being a major player in the international rhinoceros horn trade, they nonetheless responded swiftly and decisively to foreign censure. Koreans officials took unprecedented political measures to close down domestic rhinoceros horn trade and publicly announced that South Korea would join CITES in early July 1993, after two decades of having refused to do so. "Rhinoceros could get in the way of the South Korea Government's effort to revive its ailing economy", began a news report by a Korean journalist, and a senior official of the Prosecutor General's Office is quoted as saying "I will leave no stone unturned in hunting down illegal traders of rhinoceros horn, if there are any" (*The Korea Herald*, 12 April 1993).

In terms of policing the rhinoceros trade, few governments can boast more immediate or intensive measures than those taken by South Korea in the first half of 1993 in response to the Pelly petition. In January 1993, the South Korean Government issued new ministerial decrees under the **Pharmaceutical Affairs Law**, making sale, display or possession with the intent to sell rhinoceros horn and products containing rhinoceros horn a crime punishable by up to six months in gaol or a fine of W1 million (US$1 255). In an "official document of instruction", the Government further decreed that all dealers in Oriental medicines be inspected at least once a year for possession of rhinoceros horn and that violations

would be prosecuted under the **Pharmaceutical Affairs Law**, Articles 55 and 76. Any rhinoceros horns found would be confiscated and destroyed (**Pharmaceutical Policy No. 65600-211/21**, January 1993).

Between January and June 1993, a majority of Oriental medicine shops and clinics in South Korea were inspected for rhinoceros horn at least once, according to Government records. Some were inspected as many as three times. Inspections of various sorts were carried out by MOHSA, the National Police Administration (NPA) and the Prosecutor General's Office (PGO). As a result of all of these inspections, a total of less than 100g of rhinoceros horn powder was found in one shop. The shop was promptly closed down and the owner gaoled. MOHSA later revoked the licence of the Oriental-medicine doctor who had worked in the shop, and the court system gave the owner a suspended two-year sentence (D.H. Lee, pers. comm., 1993). With written documentation of the results of their nationwide surveys in hand, Government officials pronounced South Korea completely free of rhinoceros horn commerce.

OBJECTIVES OF THE 1993 RHINOCEROS HORN MARKET SURVEY

Plans for this reassessment of the rhinoceros horn trade in South Korea were made independently of the filing of the Pelly petition in the USA. The study's objectives, under development months before calls for trade sanctions began in the autumn of 1992, were to monitor the current level of trade in rhinoceros horn as a follow-up to the last such study in 1988 (Song and Milliken, 1990). Given circumstances created by the Pelly petition and related events, however, the study's objectives had to shift somewhat from their original focus. The circumstances of the moment created a very biased environment in which to conduct a market survey, even though the pressure of the Pelly petition brought with it unprecedented co-operation from Government officials. In addition to international events concerning the rhinoceros trade, all of which were well publicized in the domestic mass media, South Korea's daily newspapers announced that investigators from an international non-governmental organization had come to monitor the rhinoceros horn trade (e.g. *YONHAP Wire Service*, 6 May 1993). The study proceeded with surveying trade to the extent possible and, at the same time, tried to assess how the legal and political climates were affecting the rhinoceros trade in South Korea. In addition, the South Korean Government's survey methods were examined in order to determine the reliability of results claiming South Korea had stopped all rhinoceros horn trade within its borders.

METHODOLOGY

The study employed both covert and overt methods, including a market survey of shops and clinics dealing in Oriental medicines, an analysis of trends in availability of rhinoceros horn products at shops and clinics previously surveyed (Martin, 1986; Song and Milliken, 1990), interviews with sellers of Oriental medicine and a postal questionnaire sent to doctors of Oriental medicine regarding their attitudes towards rhinoceros horn as a medicine. The reliability of Government survey techniques was assessed via personal interviews with appropriate Government officials and Oriental-medicine dealers.

Market survey

A market survey of 130 Oriental-medicine shops and clinics was conducted between 26 May and 15 June 1993 in South Korea's five largest cities: Seoul, Pusan, Taegu, Inchon and Taejon (Table 3). This number represents just under 2% of South Korea's 7 103 Oriental-medicine establishments (both clinics and pharmacies). Sellers were selected either on the basis of their having been visited by investigators in previous years, or simply at random, though no scientific randomizing process was used. Given the high degree of national and international controversy surrounding the trade in rhinoceros horn at the time, the

principal investigator decided against spending the time and money necessary to survey a nationwide, scientifically-selected random sample, which, in any case, had not been used in previous market surveys (Martin, 1986; Song and Milliken, 1990).

All 130 Oriental-medicine establishments surveyed were visited by a team of two Korean graduate students, one male and one female, from a university in Seoul. The students told Oriental-medicine sellers that one of their relatives regularly took *Woo Hwang Chung Shim Won* for his health. He was looking for a shop that could supply him with balls made from the original recipe which, they said, meant the balls must contain musk and rhinoceros horn. While requesting particular ingredients in a medicine is unusual for Koreans, there are aficionados who take *Woo Hwang Chung Shim Won* regularly for general vitality and presumably take a more detailed interest in the medicine than most occasional users. In addition, given the onerous atmosphere of the moment, it seemed unlikely that Oriental-medicine dealers would broach the subject of rhinoceros horn without prompting. Therefore, the students showed a photocopy of the original *Woo Hwang Chung Shim Won* prescription as printed in a respected Korean medicine text (Yum, 1992) and pointed out the necessity of rhinoceros horn and other precious ingredients. The students were encouraged to commiserate with the medicine sellers about the recent prohibition on rhinoceros horn and to say that their relative was worried that this would mean an end to his supply of authentic *Woo Hwang Chung Shim Won* balls. If the medicine dealer claimed to have *Woo Hwang Chung Shim Won* balls made with rhinoceros horn, the students then purchased one ball with the promise that they would return for more if their relative liked the effect. Purchases were made in order to make the students' story more credible but also, more importantly, to gather samples for laboratory analysis in order to determine positively whether trade in rhinoceros horn products persists in South Korea.

Survey of trade and price trends

In order to assess trends in the availability of rhinoceros horn, the student survey team attempted to visit 76 of the same shops and clinics surveyed by investigators in 1986 and/or 1988. Owing to the fact that some establishments had moved and others discontinued business in the interim, only 16 shops visited in 1986 were revisited and 25 shops from the 1988 survey. These 41 were among the 130 included in the overall market survey.

In addition, trends in retail prices for rhinoceros horn were documented for comparison with earlier surveys. All prices were adjusted for inflation (using a 1985 deflator) in order to standardize values.

Doctors' questionnaire

A Korean sociologist at Seoul's Yonsei University was consulted about the best method for eliciting an honest response from Oriental-medicine doctors regarding rhinoceros horn, given the fact that its use was both illegal and, because of the Pelly petition, a well-publicized issue that could affect the health of the national economy. Professor Young Hak Kim suggested that the strong bond that exists among university alumni in Korean culture be utilized and a graduate of a respected school of Oriental medicine be employed to canvass his fellow alumni about their use of rhinoceros horn. However, personal interviews were ruled out owing to limitations of time and money and, more importantly, because it was thought complete anonymity would evoke more forthright responses. Telephone interviews were not considered because Koreans do not generally give out personal information over the telephone and, again, because respondents could not feel confident of complete anonymity if their telephone number could somehow be tied to their answers.

A written questionnaire was chosen instead (see Appendices). A mailing list was drawn up using the list of alumni from Kyung Hee University College of Oriental Medicine, the oldest and most respected school of Oriental medicine in South Korea, whose approximately 3 000 graduates represent 43% of the coutnry's 7 000 licensed Oriental-medicine doctors. A covering letter and questionnaire were dispatched to 300 alumni of Kyung Hee University, whose names were chosen using a random numbers table.

The covering letter was signed by Dr. Duk Kyun Ahn, chairman of Kyung Hee's Department of Herbology, a professor both respected by and familiar to most alumni (see Appendices). The text stated that the questionnaire was being administered "in co-operation with" Kyung Hee University. In order to put respondents further at ease, the letter asked for their opinions on a limited and controlled legal trade in rhinoceros horn, a tactic which also served to gauge receptiveness to such a policy. Respondents were selected, the covering letter explained, because of the "high level of respect" Kyung Hee alumni receive in South Korea's Oriental-medicine community. Anonymity was promised and a response was requested within one week so that the answers could be tabulated before the late-June meeting of the United Nations Environment Programme (UNEP), during which limited trade in rhinoceros horn, among other options, was to be discussed. Respondents were asked to call Dr. Ahn if they had any questions about the questionnaire. Each questionnaire was accompanied by a stamped envelope for return to Dr. Ahn at Kyung Hee University.

The questionnaire included 12 questions. Key questions asked addressees whether they thought rhinoceros horn was an essential medicine, whether they still used rhinoceros horn, whether they had rhinoceros horn in stock and what quantity of rhinoceros horn they would use annually if its sale were legalized. Other questions concerned wholesale prices and possible substitutes.

Personal interviews

In order to corroborate findings of the student survey team, the principal investigator, an American working through a Korean interpreter, questioned the proprietors of 23 medicine shops and clinics located in Seoul and Taejon. The investigator identified herself as a scholar of traditional medicine interested in the use and making of *Woo Hwang Chung Shim Won* balls. The subject of several key ingredients which have become rare or expensive, including rhinoceros horn, musk, cow gallstone and iron oxide, was raised. Interviews ranged in length from five minutes to one hour, depending on the interviewee's willingness to talk.

Understanding Government methods of policing trade in rhinoceros horn

The study sought to understand the techniques employed by officials which led the Government to conclude that rhinoceros horn trade in South Korea had been eradicated. Agents from MOHSA, NPA and PGO were interviewed about the methodologies employed during their series of investigations to detect trade in rhinoceros horn in the first half of 1993. One field investigator and a field supervisor outside Seoul were also questioned about their execution of the inspections ordered by the central Government. Oriental-medicine sellers were questioned about techniques used by Government agents who had inspected their premises.

RESULTS

Market survey

Of the 130 Oriental-medicine shops and clinics surveyed covertly in May and June 1993, 56 (43%) claimed they used rhinoceros horn in their home-made *Woo Hwang Chung Shim Won* balls (Table 3). Of the 74 (57%) who said they did not have *Woo Hwang Chung Shim Won* containing rhinoceros horn, 42 (75%) said they had "run out" rather than saying they did not stock authentic *Woo Hwang Chung Shim Won* at all. The percentage of establishments purporting to use rhinoceros horn was higher in Seoul (53%) than in Pusan (26%), Taegu (43%), Inchon (29%) and Taejon (45%) - a pattern similar to that documented in 1988 (Song and Milliken, 1990). However, it should be noted that the sample size in Seoul of 53 shops was appreciably larger than the 17 to 21 shops surveyed in other cities.

Table 3

Number of Oriental-medicine shops/clinics selling rhinoceros horn medicines in South Korea, May-June 1993

	Seoul	Taegu	Pusan	Taejon	Inchon	Total(%)
Total number claiming to stock rhinoceros horn products	28(53%)	9(43%)	5(26%)	9(45%)	5(29%)	56(43%)
Total number allegedly without rhinoceros horn products	25	12	14	11	12	74(57%)
Total number of establishments visited	53	21	19	20	17	130

Source: TRAFFIC International, 1993.

In 1988, investigators reported that 71 (64%) of 111 shops and clinics in five South Korean cities claimed to sell rhinoceros horn or rhinoceros horn derivatives (Song and Milliken, 1990). The difference between 1988 and 1993 findings indicate a 21% decrease in the availability of rhinoceros horn products in South Korean medicine shops. However, new legal prohibitions, police inspections and international political pressure could have affected the results of the current study, since respondents may have been less inclined to disclose their dealings in rhinoceros horn products. No other survey of the South Korean rhinoceros horn trade had been conducted amid such an atmosphere of fear and intimidation. When looking exclusively at Oriental-medicine shops and clinics in South Korea's capital, however, availability of rhinoceros horn products appears to have remained relatively constant (63% in 1980, 62% in 1982 and 51% in 1986) until a peak (86%) in 1988, when a different methodology, using a Korean investigator, was introduced (Table 4).

Table 4

Comparison of numbers of Oriental-medicine shops and clinics purporting to sell rhinoceros horn or rhinoceros horn derivatives in Seoul, South Korea, in different years, 1980-1993

Year	No. of clinics /shops surveyed	No. selling rhinoceros products	% selling rhinoceros products	Average price (US$) per kg
Martin, 1980	30	19	63	1 436
Martin, 1982	76	47	62	1 797
Martin, 1986	108	55	51	1 771
Song and Milliken, 1990	59	51	86	4 410
Present study, 1993	70	38	54	13 383

Sources: Martin, 1986, Song and Milliken, 1990 and TRAFFIC International, 1993.

Only one of the 56 shops and clinics claiming to use rhinoceros horn in 1993 actually showed purported rhinoceros horn to researchers. This marks a dramatic decrease from the amount of rhinoceros horn seen in South Korea during previous studies. An investigator saw rhinoceros horns in every shop or clinic he counted as "selling" rhinoceros horn products during surveys in 1980, 1982 and 1986 (E.B. Martin, pers. comm., 1993). In 1988, investigators saw rhinoceros horn or rhinoceros horn powder in 40% of the shops claiming to sell rhinoceros horn products (Milliken, 1991). However, samples of *Woo Hwang Chung Shim Won* said to contain rhinoceros horn were obtained from 63 shops and clinics during the current study, though these have yet to be chemically analysed.

Prices noted during this study ranged from W2 000 (US$2.50) to W40 000 (US$50), per ball, with a mean price of W10 000 (US$12.50). When adjusted for inflation, the mean price per *Woo Hwang Chung Shim Won* ball can be seen to have increased by 36%, from W5 166 (US$6) to W7 700 (US$9.70), in the time between the 1986 and 1988 surveys (Table 5). From 1988 to 1993, however, the mean price per ball actually decreased by 9%, from W7 700 (US$9.70) to W10 000 (US$12.55), when inflation is taken into account. However, if one looks instead at the maximum cost per ball, the situation is quite different. Investigators in 1988 documented a maximum price of W18 000 (US$26), while the current survey found *Woo Hwang Chung Shim Won* balls as expensive as W40 000 (US$50) each - a 56% increase in actual value.

Table 5

Retail price comparisons for *Woo Hwang Chung Shim Won* balls in South Korea[1], in 1986, 1988 and 1993

Year	Price range won/ball (US$/ball)	Average price won/ball (US$/ball)	% increase/ball (in won)	% increase, adjusted for inflation[2]
1986	unknown	W5 166 ($6)	N/A	N/A
1988	W4 000-W18 000 ($6-$27)	W7 700 ($11.25)	60%	36%
1993	W1 200-W40 000 ($1.50-$50)	W10 000 ($12.55)	30%	*-9%

[1] exchange rates are based on average annual values published by the United Nations. Whenever possible, won values were converted to dollars. However, where previous research data were reported only in dollars, won values were calculated from dollar figures. This method of standardization has changed some dollar and won amounts from those previously published elsewhere (Martin, 1986; Song and Milliken, 1990).

[2] inflation rates for the Korean won based on GDP deflator from the International Monetary Fund.

* estimate

Sources: Martin, 1986, Song and Milliken, 1990 and TRAFFIC International, 1993.

The paucity of rhinoceros horn actually seen by investigators in 1993 may indeed mean that rhinoceros horn consumption in South Korea has diminished substantially. However, it is just as likely to mean that the Government's increased stringency has driven existing trade underground. Therefore, it is critically important that the *Woo Hwang Chung Shim Won* balls obtained during the 1993 market survey be analysed chemically to provide corroborating evidence of the presence or absence of rhinoceros horn trade in South Korea at present. (At the time of writing (December 1993), the samples were still in South Korea awaiting a CITES export permit from the South Korean Government. The US CITES Management Authority had given permission for importation of the samples under a CITES import permit issued to the National Fish and Wildlife Forensics Laboratory in Ashland, Oregon. Once the samples enter the USA, they will become the property of the laboratory, though results of the analysis will be freely available to the Government of South Korea).

Survey of trade and price trends

Of the 16 Oriental-medicine shops and clinics visited by investigators in 1986 and again in 1993, 5 (31%) said they continued to stock rhinoceros horn medicines; 3 (19%) said they had stopped stocking rhinoceros horn medicines; 3 (19%) had started offering rhinoceros horn medicines; and 5 (31%) continued not to stock such medicines (Table 6). Thus, half of those premises investigated in 1993 allegedly sold rhinoceros horn medicines, the same proportion as in 1986.

Among the 25 shops and clinics surveyed in 1988 and again in 1993, 12 (48%) claimed to continue to sell rhinoceros horn medicines. Another 12 (48%) claimed to have stopped selling rhinoceros products in

1993. One shop among the 25 reported that it did not stock rhinoceros horn nor its derivatives in either 1988 or in 1993 (Table 6).

The fact that nearly half the 25 shops and clinics visited in 1988 claimed to have discontinued the use of rhinoceros horn by 1993 could mark a significant drop in usage. On the other hand, given the unprecedented law enforcement efforts underway at the time, the results of the 1993 study may also reflect an increased reluctance on the part of Korean Oriental-medicine dealers to admit use of rhinoceros horn on account of a heightened fear of prosecution. Only future trade monitoring will provide a clear assessment of the situation. If usage has, in fact, declined dramatically, then lack of availability from wholesalers, exorbitant prices (Table 7) and/or the legal prohibition on possessing, displaying and selling rhinoceros horn may all explain the decline.

Table 6

Number of Oriental-medicine shops and clinics in Seoul selling rhinoceros horn derivatives, in 1986 compared with in 1993, and in 1988 compared with in 1993

Trends 1986 to 1993	
No. of shops/clinics continuing to stock rhinoceros horn derivatives	= 5 (31%)
No. of shops/clinics to have ceased stocking rhinoceros derivatives	= 3 (19%)
No. of shops/clinics to have started stocking rhinoceros derivatives	= 3 (19%)
No. of shops/clinics to have continued not to stock rhinoceros derivatives	= 5 (31%)
Total of shops/clinics revisited in 1993	= 16
Total of shops/clinics with rhinoceros products in 1986	= 8 (50%)
Total of shops/clinics with rhinoceros products in 1993	= 8 (50%)
Trends 1988 to 1993	
No. of shops/clinics continuing to stock rhinoceros horn derivatives	= 12 (48%)
No. of shops/clinics to have stopped stocking rhinoceros derivatives	= 12 (48%)
No. of shops/clinics to have started stocking rhinoceros derivatives	= 0 (0%)
No. of shops/clinics to have continued not to stock rhinoceros derivatives	= 1 (2%)
Total of shops/clinics revisited in 1993	= 25
Total of shops/clinics with rhinoceros products in 1988	= 24 (96%)
Total of shops/clinics with rhinoceros products in 1993	= 12 (48%)

Sources: Martin, 1986; Song and Milliken, 1990 and TRAFFIC International, 1993.

Table 7

Comparison of retail prices for rhinoceros horn in Seoul, South Korea, in six different years[1]

Year	Won/yang	US$/yang	Won/kg	US$/kg	% increase	%increase adjusted for inflation[2+]
1980	35 640	54	947 760	1 436	N/A	N/A
1982	42 693	67	1 345 953	1 797	20%	-4%
1986	56 82	666	1 524 831	1 771	33%	14%
1988	110 000	161	2 933 333	4 288	94%	76%
1992	200 000	254	5 333 333	6 768	82%	*29%
1993	400 000	502	10 666 666	13 383	100%	*96%

[1] exchange rates are based on average annual values published by the United Nations. Whenever possible, won values were converted to dollars. However, where previous research data were reported only in dollars, won values were calculated from dollar figures. This method of standardization has changed some dollar and won amounts from those previously published elsewhere (Martin, 1986; Song and Milliken, 1990).

[2] inflation rates for Korean won based on GDP deflator from the International Monetary Fund, adjusted to 1985 figures

[+] based on won

[*] estimate

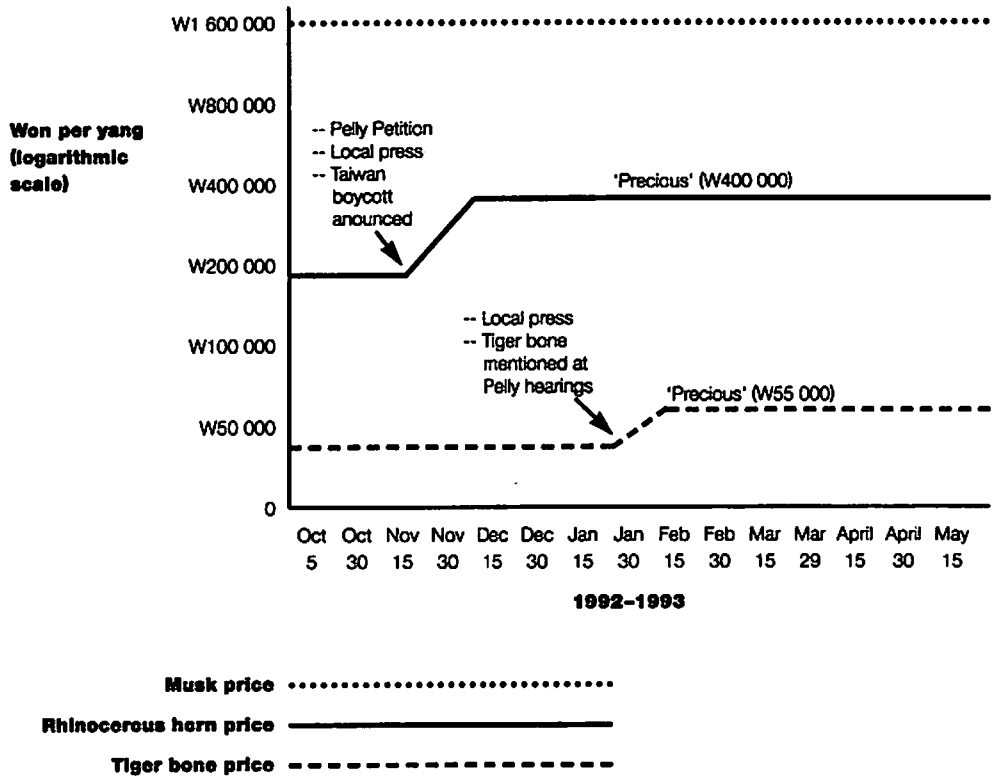
Note: 1 yang = 37.5g, 1kg = 26.7 yang

Sources: Martin 1986, Song and Milliken, 1990 and TRAFFIC International, 1993.

Price trends were most certainly upward during 1992-93. One company, which regularly publishes a generic price list of hundreds of Oriental-medicinal substances and, in effect, establishes a pricing standard for the entire South Korean industry, showed that the retail price of rhinoceros horn doubled at the time of the filing of the Pelly petition and the South Korean Government's subsequent decision to make possession of rhinoceros horn a crime (Figure 1). From 5 October to 15 November 1992, the published price for rhinoceros horn was W200 000 (US$250) per *yang* (37.5g). News of the Pelly petition, which was filed on 12 November, reached South Korea that week. The following week, the same published price list classed rhinoceros horn as "precious." An enquiry of the company which published that price list revealed that "precious" meant a 100% increase in price, to W400 000 (US$500) per *yang*. This might be taken as an isolated incident if not for a similar incident involving the published price of tiger bone, which had remained at W48 000 (US$60) per *yang* from 5 October 1992 to 30 January 1993. Korean news reports in early February, which detailed the Pelly petition hearing in Washington DC, also mentioned the possibility of trade sanctions against countries, such as South Korea, which trade in tiger bone. On 15 February 1993, the published price for tiger bone entered the "precious" bracket, which meant a 15% jump in price to W55 000 (US$70) per *yang*. While rhinoceros horn and tiger bone prices were listed as "precious," the price for musk, which had not yet made the news, remained static at W1.5 million per *yang* (Figure 1). Subsequent action by the CITES Standing Committee resulted in continuing mention of the rhinoceros horn and tiger bone trades in the South Korean press. Published prices for those materials remained "precious."

Figure 1

Price changes in rhinoceros horn, tiger bone and musk in relation to national and international political events and press reports



Note: 1 yang = 37.5g; approx. 800 Won = 1US$.

Source: Price list for Chin Hyung Dried Medicinal Materials Company, Seoul, South Korea, published in the *East Asian Medicinal Journal*, 5 October 1992 – 15 May 1993. The value of 'precious' was determined via personal communications with Chin Hyung Dried Medicinal Materials Company and other wholesalers.

Doctors' questionnaire

Of the 300 questionnaires posted nationwide to a random selection of alumni from Kyung Hee University College of Oriental Medicine, 40 were returned unopened owing to out-of-date addresses (Table 8). Because the college had not updated its address list of alumni for several years, a high rate of undeliverable questionnaires was expected and the total number of deliverable questionnaires was in fact 260. Of the 260 questionnaires that reached potential respondents, 47 (18%) were completed and returned. In 1991, a similar questionnaire regarding rhinoceros horn use was posted to 700 Oriental-medicine doctors in Taiwan (Nowell, *et al.*, 1992). Of those, only 41 (6%) were completed and returned. Social science research shows that a substantial drop in return rates can be expected if questions concern subjects regarded as private or unsafe by the potential respondent or his peer group (Miller, 1991). Given that trading in rhinoceros horn is now a criminal offence in South Korea and that questions about its usage could therefore lead to incriminating answers, an 18% response rate is considered acceptable.

Despite potential intimidation, some respondents who completed questionnaires did so with surprising candour. A few who admitted using rhinoceros horn dared to write their names and addresses on return envelopes and a couple included signed notes of greeting to the sender. This forthrightness on the part of a few could lead one to conclude that the small response rate may have been the result of only a small number of doctors using or even interested in the use of rhinoceros horn. Equally plausible is the possibility that most potential respondents continue to use rhinoceros horn but are reticent to risk admitting so for fear of personal reprisals or further restrictions on availability of the horn.

Among the 47 respondents, 28 (60%) said they find rhinoceros horn an effective medicine and 37 (79%) said they regarded it as essential for treating some diseases. Thirty-three (70%) admitted they still used rhinoceros horn in some cases. Fourteen of those who identified themselves as current users said they prescribed rhinoceros horn in cases of nosebleeds, seven in the case of stroke, six for making *Woo Hwang Chung Shim Won* balls and the rest for "other" maladies such as facial paralysis and inflammation. It should be noted that *Woo Hwang Chung Shim Won* is used to treat nosebleeds and stroke, so that 27 of the 29 doctors who noted how they use rhinoceros horn may actually use it for the same purpose - that is, for *Woo Hwang Chung Shim Won*. Only two respondents mentioned fever, for which rhinoceros horn is most commonly used in Taiwan (Nowell *et al.*, 1992).

The quantities used annually by each of the 33 who admitted using rhinoceros horn ranged from a "small amount" to 12kg per doctor, with a median of 75g per doctor, per year. If the use of rhinoceros horn were legal, 39 (83%) - an additional six - said they would use it. The remaining eight said they would not use rhinoceros horn even if it were legal. Ten of those using rhinoceros horn said they would use more if it were legal, some suggesting that their usage would double or triple. The amount of rhinoceros horn purportedly used collectively by the admitted users totalled 22kg per year. If the use of rhinoceros horn were legal, the total consumption by respondents would increase by 23% to 27kg, but with a median usage of 187g per doctor, per year.

Whether these usage figures reflect the habits of all 7 000 Oriental-medicine doctors in South Korea is only speculation without a larger sample size. If such an extrapolation were considered, then South Korea's Oriental-medicine community could be consuming rhinoceros horn at a rate higher than that of 1983, when the importation of rhinoceros horn as medicine was banned. Applying the above percentages to all licensed doctors of Oriental medicine in South Korea would mean 4 914 (70%) may currently use some rhinoceros horn. If they use the median amount of 75g per year, that would suggest an annual consumption rate nationwide of 368.5kg. If the use of rhinoceros horn were legal, 5 810 (83%) might use a collective

amount of 1 086kg annually, based on a median of 187g. Again, the rate of usage of rhinoceros horn by these doctors would have to be calculated from a larger sample size for such an extrapolation to gain validity.

(Estimates of usage could also be guessed on the basis of *Woo Hwang Chung Shim Won* consumption. The original *Woo Hwang Chung Shim Won* prescription calls for only 0.08g of rhinoceros horn per ball. A person who takes *Woo Hwang Chung Shim Won* made to the original recipe daily for a year would consume 29.2g of rhinoceros horn. If only 0.05% of South Korea's 44 million residents (22 000) used authentic *Woo Hwang Chung Shim Won* daily as a tonic, annual consumption would total 642kg of rhinoceros horn - or 237 African rhinoceroses. A more conservative estimate might be calculated by presuming that each of South Korea's 7 000 Oriental-medicine establishments makes one batch of 100 *Woo Hwang Chung Shim Won* balls annually. That quantity would require 56kg of rhinoceros horn.)

Only five (16%) of the doctors surveyed who claimed to use rhinoceros horn said they actually had it in stock. This could mean that doctors who use rhinoceros horn obtain a specified amount from wholesalers only when a patient needs it. It may also indicate that respondents were reluctant to admit to possession in the light of the newly imposed legal prohibition.

Sixteen respondents (34%) said there is no substitute for rhinoceros horn. Among the 12 (25%) who thought there were adequate substitutes, six favoured cow horn. Two preferred water buffalo horn, and one relied on plant material. The remaining three did not list their substitute of choice. Thirty-seven (79%) favoured legalization of rhinoceros horn for use in Oriental medicines. However, only five of those who favoured legalization admitted having rhinoceros horn in stock. Again the question arises whether this is the truth or a reply designed to protect the respondents from legal repercussions. Only 14 respondents (30%) said they had stopped using rhinoceros horn. One claimed to have done so in 1965. Others said they ceased usage in the 1970s or 1980s. Four said they had stopped after the Pelly petition was filed in 1992.

Twelve respondents disclosed wholesale price information. Prices per *yang* (37.5g) of rhinoceros horn ranged from W10 000 (US$12.55) to W500 000 (US$627), giving an average of W248 750 (US$312). The lower figure in this range may have been for rhinoceros horn purchased decades ago, or the current price of water buffalo horn, or simply a wild guess. The average indicates that most purchases were made prior to the announcement by South Korea, in late 1992, that it would ban all domestic trade in rhinoceros horn in January 1993, after which time prices doubled (Figure 1).

Given the guarantee of anonymity provided respondents to the questionnaire and its endorsement by a respected figure of authority, it seems reasonable to assume that the results give a more honest assessment of the amount of rhinoceros horn used in South Korea than the non-random, door-to-door market survey conducted by people unknown to respondents. Indeed, several informants interviewed by the principal investigator said rhinoceros horn was only being bought and sold between acquaintances at the present time. With 70% of respondents saying they used rhinoceros horn, it appears that consumption of rhinoceros horn within South Korea's Oriental-medicine community may remain substantial.

Table 8

Summary of doctors' questionnaire, Seoul, South Korea, 1993

Response rate	
Total number of questionnaires posted	= 300
Total number returned on account of out-of-date addresses	= 40
Adjusted total	= 260
Total number completed and returned	= 47
Percentage completed and returned	= 18%
Answers	
Doctors believing rhinoceros horn is effective medicine	= 28 (60%)
Doctors believing rhinoceros horn is essential medicine	= 37 (79%)
Doctors believing no substitute for rhinoceros horn	= 16 (34%)
Doctors using rhinoceros horn as medicine	= 33 (70%)
Doctors prefering rhinoceros horn trade be legalized	= 37 (79%)
Doctors who would use rhinoceros horn if it were legal	= 39 (83%)
Doctors using and keeping rhinoceros horn in stock	= 5 (16%)
Uses for rhinoceros horn among admitted users:	
nosebleeds	= 14 (43.7%)*
stroke	= 7 (21.9%)*
CSW balls	= 6 (18.7%)*
fever	= 2 (6.2%)

* It should be noted that *Woo Hwang Chung Shim Won* (CSW) is also used to treat nosebleeds and stroke, so that 27 (93%) of the 29 doctors reporting how they use rhinoceros horn may use it for *Woo Hwang Chung Shim Won*.

Source: TRAFFIC International, 1993.

Personal interviews

Face-to-face interviews with 23 doctors of Oriental medicine in South Korea revealed that, unlike such doctors in Taiwan (Nowell *et al.*, 1992), Korean doctors do not distinguish between Asian ("fire") and African ("water") rhinoceros horn (H.G. Cho, pers. comm., 1993). In fact, some said that their rhinoceros horn comes from South America, where rhinoceroses probably never lived - at least not since the late Eocene epoch to Pleiocene epoch (Nowak and Paradiso, 1983). Most of those who claimed to know the origin of their rhinoceros horn supplies specified Africa. (Earlier research showed no evidence of Asian rhinoceros horn in South Korea and concluded that most of the supply of African horn came in via Hong Kong (E.B. Martin, pers. comm., 1993). Nonetheless, official Customs statistics from 1970 until the ban on rhinoceros horn imports in 1983 showed a majority (66%) of imports coming from Indonesia (Table 9), which indicates that South Korea's primary source of rhinoceros horn may have been the more endangered Asian species. However, trade volumes are so large, that they do not correlate with reported rates of poaching nor with the decline in the number of Asian rhinoceroses in Indonesia or other Asian range states during this period.) Some Oriental-medicine doctors interviewed differentiated between "black" and "white" rhinoceros horn, though this distinction refers to the colour of the horn rather than the species of rhinoceros from which the horn is taken. One doctor explained that there are two kinds of rhinoceros horn, one hollow and the other "packed" inside (H.G. Cho, pers. comm., 1993). Rhinoceros horn is not hollow inside so references to hollow horn may be to cow or water buffalo horn.

Table 9

Countries officially exporting rhinoceros horn to South Korea from 1970 until the 1983 import ban

Country	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	Total kg	% of total
Japan	1	2	31	9	6	12	8	15			89		28		201	7.0%
Hong Kong	2				30							5			37	1.3%
Singapore		50	197												247	8.6%
Indonesia				214	97	200	204	207	51	208	93	127	200	300	1901	66.5%
India				30				19		20					69	2.4%
Thailand				81			65	66		40	4				256	9.0%
Malaysia										30	21				51	1.8%
Burma										20	10				30	1.4%
China												10			10	0.35%
Kenya													35		35	1.2%
Total, kg, for year		**352**	**248**	**253**	**214**	**212**	**277**	**307**	**51**	**318**	**217**	**142**	**263**	**300**	**2857**	

Source: *Statistical Yearbook of Foreign Trade*, South Korean Customs Administration.

J. Thomsen

Whether most of the rhinoceros horn used in South Korea came from African species, like the Black Rhinoceros seen here, or from Asian species is unclear. Import statistics prior to the 1983 ban show that a majority of official imports came from Indonesia.

South Korean doctors of Oriental medicine prize rhinoceros horn for its sedative and antibiotic effects, its ability to stop children's nosebleeds, to relieve dermatitis, to revive stroke victims from unconsciousness and to correct facial paralysis and slurred speech caused by stroke. Interviewees emphasized that Korean patients almost never ask for rhinoceros horn and that only doctors revere its efficacy.

Many doctors who claimed to have discontinued use of rhinoceros horn said they did so because of limited availability and exorbitant prices rather than because of the recent legal prohibition. One doctor, in business 13 years, said rhinoceros horn had always been difficult to obtain (H.G. Cho, pers. comm., 1993). Another said he would not buy rhinoceros horn because, as it grows rarer, its authenticity is impossible to guarantee. A doctor who claimed to use rhinoceros horn in *Woo Hwang Chung Shim Won* balls said he was using the last of a horn he had purchased 30 years before. A doctor who now keeps a whole rhinoceros horn as a precious *objet d'art* in his home said rhinoceros horn was far easier to obtain 15 years ago. However, when the principal investigator asked this doctor whether she could buy a piece of rhinoceros horn, he had only to dial a number from his personal telephone directory to have one delivered the next morning. As a result, one 37.5-gram (one *yang*) piece of supposed rhinoceros horn was purchased for W200 000 (US$251). While Korean law does not prohibit the purchase of rhinoceros horn, it does make the selling of rhinoceros horn or its derivatives a crime. The seller was aware of the law and unwilling to be seen or questioned about the horn and expressed deep concern about his safety in selling rhinoceros horn to a stranger, especially a foreigner.

Several doctors insisted that rhinoceros horn was far more popular in Taiwan than in South Korea because Taiwan's hotter, more humid climate causes more "heat" disorders, for which a "cold" cure like rhinoceros horn is required (D.K. Ahn, pers. comm., 1993). One doctor explained that the rhinoceros regulates its own body temperature by burying its horn in cool dirt which, he said, accounts for the horn's antipyretic effect in human disease (K.C. Han, pers. comm., 1993). These testimonies, coupled with those which insisted that rhinoceros horns come from South America, suggest that doctors of Oriental medicine in South Korea may know very little about the biology of the species they use in medicine.

South Korea's colleges of traditional medicine still teach students about the uses, efficacy and side effects of rhinoceros horn (D.K. Ahn, pers. comm., 1993). They also teach about the prohibition on its use and recommend cow horn as a substitute. A study comparing the efficacy of rhinoceros, cow and water buffalo horn in counteracting thrombosis showed that cow and water buffalo horn actually had greater efficacy than rhinoceros horn in preventing life-threatening blood clots (Lee, 1988). These results remain inconclusive, however, because the researcher used a smaller quantity of rhinoceros horn than of the other materials (B.J. Lee, pers. comm., 1993). Some doctors said they substitute cow horn for rhinoceros horn, although two to 10 times as much cow horn is necessary for the same effect (H.G. Cho, pers. comm., 1993; B.J. Lee, pers. comm., 1993). Other doctors said they simply leave rhinoceros horn out of prescriptions which call for it. Among these, some complained of reduced sedative effect, while others said they could detect no loss of efficacy.

The owner of an Oriental-medicine shop in Seoul's Tongdaemun medicine district boasted of his use of rhinoceros horn in his *Woo Hwang Chung Shim Won* balls but said he kept his supply of rhinoceros horn in powder form at his home. He was willing to show it to anyone who placed an order for *Woo Hwang Chung Shim Won* of 100 balls or more. An Oriental-medicine doctor in the same district brought out a piece of charcoal-grey horn that he claimed was rhinoceros horn from Africa. He insisted "black" horn from Africa is better than "grey" horn from South America and that rhinoceros horn is essential for treating stroke. Another shopkeeper showed off a bag of light grey powder weighing 37.5g which he claimed was rhinoceros horn from Africa. Another said he could easily obtain rhinoceros horn, then jokingly added he could do so only if the buyer was willing to bail him out of gaol, should he be caught. Rhinoceros horn is readily available in Seoul, one informant said, but only "a fool" would keep it on the premises of his shop or clinic. Only one shop, in Pusan, openly displayed what may have been a whole rhinoceros horn, though the proprietors first claimed it was an antelope horn and later said it had come from a water buffalo.

Understanding Government methods of policing trade in rhinoceros horn

Ministry of Health and Social Affairs investigation

Teams made up of MOHSA staff and municipal officials conducted two on-site tours of inspection of Oriental-medicine shops and clinics in four major cities. The first inspection tour, which took place on 13 and 14 January 1993, included 264 shops and clinics in the Oriental-medicine districts of Seoul and Taegu, both centres for the nation's trade in Oriental medicine. Investigators in this initial round of inspections posed as patients and either asked to buy *Woo Hwang Chung Shim Won* balls containing rhinoceros horn or simply asked to purchase rhinoceros horn - the latter of which would no doubt have caused suspicion. Upon being told rhinoceros horn was not available, which occurred in every case, inspectors then identified themselves as being from the Government and reminded merchants of the legal prohibition on trade in rhinoceros horn (S.H. Kim, pers. comm., 1993).

Between 21 and 24 April, MOHSA teams inspected a random sample of 626 shops and clinics in Seoul, Taegu, Pusan and Taejon. Investigators again posed as customers interested in buying rhinoceros horn products. Upon hearing that no rhinoceros horn products were available, which again happened in every case, the proprietor of each shop and clinic visited was asked to place his signature stamp on an affidavit which read, "In compliance with the **Pharmaceutical Affairs Law**, Article 55, we do not sell, store or display rhinoceros horn for the purposes of sale so that Korea will not be blamed internationally for the illegal trade in rhinoceros horn. If the above is violated, we confirm that we will accept any penalties described under the **Pharmaceutical Affairs Law**, Article 76 (i.e., servitude of up to six months or a fine of W1 million)."

In an even more comprehensive round of inspections which was still underway in June 1993, MOHSA field agents visited 6 432 Oriental-medicine establishments, throughout the country, to enquire about the availability of rhinoceros horn (MOHSA, *in litt.*, 1993). No rhinoceros horn was encountered. Annual on-site inspections will continue indefinitely (S.H. Kim, pers. comm., 1993).

A field inspector in Inchon, a port city west of Seoul, was interviewed about his experience in the Government's search for rhinoceros horn. Joo Hyoun Im of the Inchon Health Department's Chung Ku office was responsible for inspecting 19 Oriental-medicine businesses over a three-day period in April. Im, accompanied by a woman colleague, visited these businesses unannounced and asked to inspect the premises, including medicine drawers and safes - a further variation of methodology used in Government inspection procedures. He said all of the proprietors were co-operative and he had the feeling they were

expecting him. Im confessed he had never seen a rhinoceros horn, rhinoceros horn powder or so much as a picture of either one. That did not bother him, he said, because he felt the purpose of his inspections was more to deter use of rhinoceros horn than to detect it. Im's comment suggests a decided bias on the part of Government authorities against catching anyone in possession of rhinoceros horn and may explain why only one merchant in all of South Korea was found in possession.

A field supervisor in the Inchon Health Department's Nam Ku office, whose staff had responsibility for inspecting 65 Oriental-medicine businesses, also admitted his inspectors were unfamiliar with the appearance of rhinoceros horn. However, he believed that every rhinoceros horn remaining in South Korea had been ground into powder and was impossible to detect in any case (J.D. Kae, pers. comm., 1993).

Table 10

Government surveys of rhinoceros horn in South Korea, January-June 1993

Agency	Dates of investigation	No. *Hanyak* dealers visited	Cities included	Amount of rhinoceros horn found
NPA	1-31 January	5 200	nationwide	none
MOHSA	13-14 January	264	Seoul, Taegu	none
NPA	1-30 April	5 200	nationwide	none
PGO	mid-April	11	Seoul	60 g 32 CSW balls
MOHSA	21-24 April	626	Seoul, Taegu, Pusan, Taejon	none
Local health departments	current	6 432	nationwide	none

Key: MOHSA = Ministry of Health and Social Affairs, NPA = National Police Administration, PGO = Prosecutor General's Office;
CSW = *Woo Hwang Chung Shim Won*

Sources: South Korean Ministry of Health and Social Affairs, National Police Administration and Prosecutor General's Office.

Doctors and shopkeepers in Inchon, Seoul and other cities confirmed that they had been inspected and re-inspected for rhinoceros horn throughout the first half of 1993. One doctor in Inchon said inspectors simply asked if he had rhinoceros horn on the premises but did not conduct an inspection of his records, medicine drawers or safe (K.S. Ko, pers. comm., 1993). At a neighbouring clinic, however, inspectors not only inspected medicine drawers but also receipts for medicinal materials purchased by the clinic and recipes for the medicines it dispensed (Young Jae Chinese Medicine Clinic, Inchon). Another nearby clinic reported two thorough inspections of its premises (Dae In Chinese Medicine Clinic, Inchon).

National Police Administration investigation

Between 1 and 31 January 1993 and 1 and 30 April 1993, NPA conducted supposedly surprise inspections of 5 200 Oriental-medicine sellers throughout the country. Given that there are 150 000 police officers in South Korea, this was a relatively easy undertaking (C.S. Jeong, pers. comm., 1993). Plain-clothes officers entered Oriental-medicine businesses unannounced, presented their police identification and proceeded to search the premises for evidence of rhinoceros horn. Safes, medicine drawers and paperwork were inspected. No rhinoceros horn was found. However, one high-ranking official of NPA noted that dealers need only grind their rhinoceros horn into powder and keep it outside the safe to hide it effectively from police investigators (Y.H. Sung, pers. comm., 1993).

C. Allan

South Korean police say that most of the rhinoceros horn left in the country may be ground down into small bits and powder, making it virtually impossible for inspectors to recognize.

Prosecutor General's Office investigation

The Prosecutor General's Office conducted its own investigation of the rhinoceros trade independently of MOHSA and NPA investigations. This operation was the smallest in scope but the most meticulous and covert. PGO investigators first tracked down a list of 30 Oriental-medicine shops without proper licensing. One could argue that this was an astute method for locating business people with unscrupulous tendencies. On the other hand, authorities may have been looking for scapegoats outside the recognised community of practitioners of Oriental medicine.

Whatever the actual motive, 11 of these illegal businesses were searched in April 1993. On 14 April, investigators found approximately 60g of rhinoceros horn powder and 32 *Woo Hwang Chung Shim Won* balls allegedly containing rhinoceros horn at the Kyung Dong Chinese Medicine Shop in Seoul's Tongdaemun medicine district. The following day, owner, Su Nam Chung, 49, was arrested and charged under the **Pharmaceutical Affairs Law** with possession of an illegal substance and with conducting business without an appropriate licence. Chung was later given a two-year suspended sentence for possession of rhinoceros horn with intent to sell and for practising business without a proper licence, the latter of which carries a much stiffer penalty. The doctor who worked for Chung at the time the rhinoceros horn was found in his shop was fined W2 000 000 (US$2 509) and lost his licence to practise medicine (D.H. Lee, pers. comm., 1993).

These actions appear to have had a chilling effect on Chung's neighbouring Oriental-medicine dealers. The principal investigator found nearby shopkeepers reluctant to even admit to making *Woo Hwang Chung Shim Won* balls without rhinoceros horn.

Anti-smuggling measures

In its written "position" addressing the accusations against South Korea outlined in the Pelly petition, the Government said the Customs Administration has "enforced [a] more strict and rigorous investigation of rhinoceros horn smuggling". In 1992, the Customs Administration detected US$28 million in smuggled goods entering South Korea (*The Korea Times*, 4 May 1993) but no rhinoceros horn (Customs Administration, pers. comm., 1993). Since the 1983 ban on import of rhinoceros horn was instituted, no

rhinoceros horn has been confiscated at any Customs checkpoints in South Korea (Customs Administration; R. Chung, pers. comm., 1993).

Co-operation of the Oriental-medicine establishment

The South Korean traditional-medicine establishment officially supports the Government's total ban on rhinoceros horn (e.g., P. Lee, pers. comm., 1993; C.S. Lim, pers. comm., 1993). The Korea Oriental Medical Association (KOMA) sent a letter dated 19 October 1992 to its chapters nationwide asking them to discourage their members from using rhinoceros horn. However, another such letter was sent by MOHSA in April 1990 to six associations dealing in Oriental medicine, including KOMA, discouraging the use of rhinoceros horn as medicine (Milliken, 1991), which indicates that such letters may have minimal effect.

Further evidence of the inability of official pleas and mandates to change behaviour in the Oriental-medicine community comes from its own hierarchy. At the same time as the Secretary General of the CITES Secretariat was staying in Seoul in May 1993, during a mission to discuss South Korea's accession to CITES, an Oriental-medicine store in his hotel's shopping complex was openly selling *Woo Hwang Chung Shim Won* balls purportedly made with rhinoceros horn. The store's doctor, a president emeritus of KOMA, claimed that *Woo Hwang Chung Shim Won* without rhinoceros horn is ineffective and said he resented the Government's continuing inspections of his shop for rhinoceros horn derivatives.

DISCUSSION AND CONCLUSIONS

Two very different conclusions could be drawn from this examination of the rhinoceros horn trade in South Korea. Optimists could use results of the market survey to conclude that trade is diminishing. Sceptics will gravitate toward the doctors' questionnaire, which suggests trade persists at levels close to those recorded in 1988, despite Government attempts to repress it. It seems clear that the trade in rhinoceros horn in South Korea has not been eradicated and indeed that some Oriental doctors feel rhinoceros horn is essential medicine for which there is no substitute. The rhinoceros horn market can only be described as resilient given its persistence in the face of the South Korean Government's efforts to discourage it. There are good reasons to suspect that the present use of rhinoceros horn was under-reported in this study, since it coincided with door-to-door police inspections and publicity in the national press. Even without these complications, illegal activities of any kind are difficult to monitor and document scientifically. Until forensic analysis can isolate the presence of rhinoceros horn in sample medicines purchased during the course of this study, there is little absolute proof that trade in rhinoceros horn persists in South Korea. Nonetheless, there are strong indications that this is the case.

Sensitivity to international opinion

It appears that the rhinoceros horn trade in South Korea is influenced by political opinion. Whether as a result of accusations at an international level or as a result of the Government's domestic law enforcement efforts, or a combination of the two, commerce in rhinoceros horn has become more covert in South Korea. Rhinoceros horn is no longer displayed in front windows for sale and is probably no longer even stored in Oriental-medicine establishments at all. If there are stockpiles of rhinoceros horn in South Korea, they are likely to be in powder form and hidden off the premises of shops and clinics. Such trade in rhinoceros horn as continues probably does so between traders, doctors and patients who know one another. It is equally apparent that retail prices for rhinoceros horn are influenced by political change and that South Korea's ban on the domestic trade, at least temporarily, caused prices to soar.

J. Mills

South Korea's Government crackdown on the sale of rhinoceros horn has driven the merchandise out of shop-front windows, but evidence indicates a significant trade behind the scenes.

Resilience of tradition and culture

While the Government of South Korea has made unprecedented efforts to discourage the trade in rhinoceros horn, the trade is probably sufficiently entrenched to defy legal prohibition. One prominent American sociologist wrote that "lawways cannot change folkways" and "laws that violate custom are resisted with as much ingenuity and zeal as is necessary to preserve those customs" (Kidder, 1983). The use of Chinese remedies has been a custom in Korea for more than 500 years. In addition, use of rhinoceros horn is a custom that is believed to save lives, especially in the case of stroke. One doctor in Seoul who was willing to show a piece of rhinoceros horn was unwilling to sell as much as a gram of it, explaining that even such a small amount may one day save a patient's life. Sociological studies suggest that "the effective reduction of the wildlife product trade will require a change in the attitudinal basis of consumer demand" (Kellert, 1985). Given the depth of entrenchment of the use of medicines like rhinoceros horn in the culture of the Korean Oriental medicine community, attitudinal change will be difficult, if not impossible. Some Koreans say that their use of wildlife in medicine is a practice that will die out with those users and doctors currently over the age of 40 years (S.D. Lee, pers. comm., 1993). Even if that is true, and research into Asian attitudes towards such medicines calls this assumption into question (Hong, 1988; Ohnuki-Tierney, 1984), some rhinoceros populations may not have the numbers and biological viability to outlast South Korea's middle-aged population.

Lack of public awareness

Public awareness of the plight of rhinoceroses in South Korean society, up to and including the higher echelons of Government, would seem to be minimal. When MOHSA instructed municipal and provincial officials to inspect all Oriental-medicine establishments, it did so by a written statement which explained that there was an international effort to save rhinoceroses from extinction because they are valued for "sightseeing" in Africa and Southeast Asia. Furthermore, when the Korea Oriental Medicine Association sent out its letter asking member chapters to discourage the use of rhinoceros horn, it did so with the argument that South Korea's international reputation was at stake. Neither the document issued by MOHSA, nor the letter from the Medicine Association mentioned the possibility of extinctions as a result of Korea's trade in rhinoceros horn. Government officials, members of the Oriental-medicine establishment and the public at large need a greater understanding of the extreme vulnerability of rhinoceros populations and of the benefit of global biodiversity to all, especially to a country like South Korea which has lost much of its own indigenous wildlife.

This is a pivotal time in South Korea's history in terms of environmental awareness. Two years ago, there were virtually no Korean press reports about environmental issues. Today's newspapers feature articles on pollution almost daily. In June 1993, Japan and South Korea were poised to sign an accord to jointly combat acid rain (*The Korea Herald*, 1 June 1993). Sixty delegates from nine Asian countries met in Seoul to "achieve harmony between the environment and development" (*The Korea Herald*, 5 June 1993) and

thousands of Korean "environmentalists" turned out in central Seoul to acknowledge World Environment Day (*The Korea Herald*, 6 June 1993). The director of the Ministry of Foreign Affairs Science and Environment Division has requested that an international conservation organization bring an exposition on endangered wildlife to South Korea (R. Chung, pers. comm., 1993). A reporter for one of South Korea's most influential daily newspapers requested that the principal investigator send him as much information as possible so that he could generate more stories about threatened and endangered species - a subject he said was virtually unknown to the vast majority of South Koreans (S.K. Ahn, pers. comm., 1993).

Market under cover

In response to law enforcement efforts, the rhinoceros horn trade in South Korea, in essence, has taken cover. It has at least gone underground to the extent that it is probably impossible to monitor with accuracy - a danger inherent in prohibitions on anything precious to humanity (Milliken *et al.*, 1993). Because Oriental-medicine merchants are now reluctant to disclose any rhinoceros horn in their possession, developing a convenient means of chemically identifying rhinoceros horn in composite products such as *Woo Hwang Chung Shim Won* is essential for reliable monitoring. Indeed, some Government officials in South Korea now discount the results of the 1988 survey of rhinoceros horn trade (Song and Milliken, 1990), insisting that doctors and merchants only claimed to have rhinoceros horn in order to boost sales (S. Choi, pers. comm., 1993; R. Chung, pers. comm., 1993). Without a chemical means to identify rhinoceros horn and rhinoceros horn powder conclusively and to confirm the presence or absence of rhinoceros horn in Oriental medicines, the truth of the matter will remain obscure. Certainly the ultimate credibility of the results of the current market survey depends on proving that rhinoceros horn is an ingredient in at least some of the *Woo Hwang Chung Shim Won* samples collected.

The US Government deserves some credit for its action under the Pelly Amendment, as does the CITES Standing Committee, for prompting the South Korean Government to focus on the rhinoceros horn trade and to accede to CITES, a move which it had resisted for years. While some in the South Korean Government criticized the Pelly petition as a form of "environmental imperialism" (R. Chung, pers. comm., 1993), other Koreans give Pelly credit for its power to move their Government on conservation issues (S.D. Lee, pers. comm., 1993). Regardless of the arguments for and against use of the Pelly Amendment, tying rhinoceros conservation to conditions of international trade agreements is an effective tool, at least in the short term and at a political level, for turning a government's attention towards the illegal trade in endangered species. Whether that attention is translated into an actual reduction of illegal trade deserves further examination. The results of this study indicate that law enforcement efforts prompted by the Pelly petition may simply have driven the rhinoceros horn trade underground and prices up, rather than diminishing trade to a substantial degree.

The questionnaire used in the current study proposed the idea of a limited legal trade in rhinoceros horn. Candid replies indicate that doctors would be more forthcoming about their preference for and use of rhinoceros horn in a less hostile environment - one in which frankness would not jeopardize their licence to practise. In other words, banning the internal trade in rhinoceros horn may have done more in South Korea to hinder trade monitoring than to diminish trade. However, there is also an indication that more doctors would use more rhinoceros horn if it were legal. Thus, two important considerations are highlighted: firstly, South Korea's ban on trade in rhinoceros horn may, in fact, be lowering consumption of rhinoceros horn and, secondly, legalization of even a limited sort may stimulate demand for rhinoceros horn.

Unique aspects of the South Korean market

The rhinoceros horn trade in South Korea differs from that in Taiwan, China and elsewhere, in that the South Korean Oriental-medicine community uses rhinoceros horn for somewhat different purposes. Moreover, the infrastructure of the Oriental-medicine community differs from that of its east Asian neighbours in terms of licensing and the way in which medicines are dispensed. More fundamentally, Korean culture is derived from, but also distinct from Chinese cultures in terms of language, social structure and foreign influences. It is also important to note the high number of police per capita in South Korea and the influential role of the police in post-war Korean society.

For the above reasons, caution is advisable when extrapolating from illegal trade in rhinoceros horn in one distinctive Asian market to another. For instance, Milliken, *et al.*, 1993 estimate the annual consumption of rhinoceros horn in South Korea to be between 372 and 794kg, by means of "an educated guess based on Taiwan data" (p.56). While the lower figure is within a few kilogrammes of estimates derived in this study, it nonetheless is speculative and should be validated through further research in South Korea. For now, it is the conclusion of this report that South Korea's consumption of rhinoceros horn continues and that the true extent of the trade is yet to be documented.

RECOMMENDATIONS

South Korea will continue to offer an interesting case study of government attempts to ban rhinoceros horn trade as a matter of political urgency. While the Government's efforts to implement restrictive measures were not flawless, nor were they as effective as they might have been with greater stealth and a better understanding of the Oriental-medicine industry, they were nonetheless some of the most comprehensive used to date to deter consumption of rhinoceros horn. It is essential that these measures be sustained, improved and monitored. If the rhinoceros horn trade has in fact declined in South Korea, then efforts to diminish rhinoceros horn trade in other major markets will benefit from knowing why it declined and whether the decline can be sustained once South Korea is no longer targeted for international trade sanctions. If the rhinoceros horn trade in South Korea is able to continue by simply becoming less visible and beyond the reach of law enforcement, then the failure of current tactics should be more closely documented and examined and perhaps new strategies for consumer markets will need to be contemplated.

The following points should be considered as part of any future efforts to assess and reduce demand for rhinoceros horn in South Korea:

- **Continued monitoring** of the rhinoceros horn trade in South Korea should remain an international conservation priority. An infrastructure must be established in South Korea whereby the trade in rhinoceros horn can be more consistently monitored. The South Korean Government must continue to refine and expand efforts begun in 1993 to discourage the illegal trade in rhinoceros horn. Without a permanent and constant trade monitoring and policing programme in South Korea, the success of current regulatory laws will be minimal. Furthermore, the regulation of trade in rhinoceros horn and other rare wildlife parts will not remain a long-term priority for the South Korean Government without oversight by either a Government agency specifically assigned to the task or by some non-governmental organization with a trade monitoring mandate (S.D. Lee, pers. comm., 1993).

- **Increased quantitative and comprehensive trade monitoring** is essential. A scientific random sample of Oriental-medicine sellers nationwide should be surveyed regularly and systematically to document trends in the rhinoceros horn trade in South Korea. To date, trade monitoring has furnished only snapshots of the trade at given times rather than reliable longitudinal data that can be used to

extrapolate about the habits of South Korea's Oriental-medicine community as a whole. Until this sort of quantitative research is accomplished, monitoring efforts can provide only suggestions of patterns and trends to which no tests of statistical significance will apply.

- **Technology for positively identifying rhinoceros horn**, rhinoceros horn powder and rhinoceros horn derivatives found in trade should be created and made readily available to law enforcement agencies and trade monitoring entities in and outside South Korea. If possible, this technology should be simplified so that the process is not only reliable, but also timely enough to allow successful prosecutions of rhinoceros horn traffickers and confirmation of trade monitoring ventures such as that described in this report.

  The National Fish and Wildlife Forensics Laboratory in the USA already offers its services to CITES Parties, although the laboratory needs both a mandate from the US Fish and Wildlife Service and supplemental funding to make identification of rhinoceros horn a priority and a service which can be promptly utilized.

- **Establishment of communication and co-operation between the Oriental-medicine community and trade monitoring and law enforcement agents** is necessary for both raising the awareness of the Oriental-medicine community about rhinoceros conservation and for improving law enforcement efforts. This dialogue should begin with a workshop or seminar that brings together all interested parties for discussion and sharing of information. Participants would include members of the Oriental-medicine industry, Government agencies charged with regulating that industry, wildlife conservationists and consumers of rhinoceros horn, among others. The overall purpose of this event would be to engender better understanding of the magnitude of the problem among all factions concerned and to stimulate creation of viable, culturally-sensitive solutions.

- **Substitutes for rhinoceros horn should be researched and promoted.** While some in the conservation community feel this is a tried and ineffective method, it is one that has not been utilized to its fullest potential. For instance, the only research on substitutes for rhinoceros horn published in South Korea to date has been an obscure study comparing the efficacy of rhinoceros horn with the horn of domestic Bovidae (Lee, 1988). There are several research institutions in South Korea, such as Korea-China Collaboration Centre for Traditional Medicines Research and the Natural Products Research Institute, which might take up the research, if requested by an influential party, such as the Government, and if given the necessary funding. Results should then be published in South Korea's traditional-medicine journals and newspapers.

- **Intelligence between South Korea and countries supplying rhinoceros horn should be shared.** Trade networks for rhinoceros horn should be traced backwards from Korean users to transhipment points and original range states. Such a project could be carried out as a co-operative effort between law enforcement, trade monitoring experts and a Korean sociologist whose speciality is tracing trade networks in this fashion. Once trade routes are learned, the ability of Customs officials to intercept shipments of rhinoceros horn entering South Korea could be greatly enhanced.

- **An endangered species enforcement unit within the National Police Administration should be created** to co-ordinate and supervise full-time efforts to infiltrate and police the trade in rhinoceros horn. This unit would be modelled on similar wildlife police units in South Africa and the USA.

In addition, all South Korean law enforcement and Customs personnel should be better trained to recognize rhinoceros horn and encouraged to conduct more effective overt and covert inspections for rhinoceros horn, both within the country and at key ports of entry. Such training could be obtained from law enforcement agencies in other countries.

- **Culturally-sensitive publicity should be disseminated in South Korea to discourage usage of rhinoceros horn** and to explain the intricacies of rhinoceros conservation to Government officials, the traditional-medicine community and the general public. However, before any such campaigns are tried, research should be conducted to examine the feasibility of dissuading Korean audiences - both doctors and the public - from using rhinoceros horn as medicine. Given the Korean devotion to the tradition of Oriental medicine and, in particular, to the use of rhinoceros horn as medicine, this will not be easy. Though such changes may prove impossible, they nonetheless should be attempted in conjunction with other rhinoceros conservation measures.

  The fastest, most cost-effective techniques would utilize pilot groups to test which messages and media might alter Korean attitudes towards consumption of rare species. Because rhinoceros horn is a medicine little known to Korean patients, the audience of such a campaign initially should be the Korean Oriental-medicine community.

GLOSSARY OF KOREAN TERMS

Boyak Korean tonic medicine, taken prophylactically to promote overall good health and stamina

Don a unit for dry measurement, commonly used in Korean traditional medicine, equal to 3.75g. There are 10 *don* to one *yang*.

Hanyak Korean traditional medicine, literally meaning "Chinese" (*han*) "medicine" (*yak*)

Hanyakbang shop that sells traditional Korean medicine, under the supervision of a licensed doctor of Oriental medicine

Hanweewon Korean traditional-medicine clinic, operated by a licensed doctor of Oriental medicine

Kopulso rhinoceros

Sogak the Korean pronunciation of the Chinese character for rhinoceros horn

Woo Hwang Chung Shim Won
Korea's most popular Oriental medicine, which traditionally includes rhinoceros horn as a key ingredient. It is usually used in emergency cases, such as a stroke, though is sometimes taken as a tonic to promote health and clear thinking.

Yang a unit for dry measurement, commonly used in traditional Korean medicine, equal to 37.5g. There are 26.7 *yang* to one kilogramme.

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Appendix 1

Covering letter for Oriental-medicine doctors' questionnaire (English version)

1 June 1993

Dear Kyung Hee Oriental Medical College Alumnus,

This survey is being conducted in cooperation with Kyung Hee University as a means of assessing the idea of legalizing a limited and controlled trade in rhino horn for use in traditional Korean medicines. This is an approach that will be put forth by countries in southern Africa at the June meeting of the United Nations Environment Program (UNEP). Alumni of Kyung Hee University Oriental Medical College were selected as subjects for this survey because of the high level of respect their opinions carry within the traditional medicine community in South Korea.

Please rest assured that your answers will be completely anonymous. The protection of your identification has been ensured through a process of random selection. Therefore, we invite you to answer freely and to provide any extra information that you feel would be useful in considering this subject.

Completing this questionnaire should take no more than 5 or 10 minutes of your valuable time. Given the short period before the UNEP meeting, I would ask that you complete and return this questionnaire in one week. Thank you for your time and assistance. Should you have any questions, please call my department.

Sincerely,

Dr. Ahn Duk Kyun
Kyung Hee University
Oriental Medical College
Department of Herbology

Appendix 2

Oriental-medicine doctors' questionnaire (English version)

Respondent No. _____

Rhino Horn Survey

1. In my experience, rhino horn is a very effective medicine.

___ Strongly agree
___ Agree
___ Undecided
___ Disagree
___ Strongly disagree

2. Is rhino horn essential for treating some illnesses.

___ Yes
___ No
___ Don't know

2a. If yes, for which diseases is rhino horn essential?
_____
_____
_____

3. Are there substitutions for rhino horn that have an equivalent effect?

___ Yes
___ No
___ Don't know

3a. If yes, what is the most effective substitution?
_____
_____
_____

4. Should the sale of rhino horn be legalized for limited use as medicine?

___ Yes
___ No
___ Don't know

4a. If yes, why? _____
_____

4b. If no, why not? _____
_____

Appendix 2

Oriental-medicine doctors' questionnaire (English version)

Seogak survey
Page 2
Respondent no. _____

5. Do you use rhino horn as a medicine in some cases?

___ Yes
___ No

5a. If yes, in what cases? _____

_____

_____

5b. If no, when did you stop using it? _____

6. Do you have rhino horn in stock at this time?

___ Yes
___ No

6a. If no, do you know places in Korea where you can easily obtain rhino horn should a patient need it?

___ Yes
___ No

7. Please estimate the number of yang of rhino horn you would use each year if the sale of rhino horn were legalized.

_____ dons

8. How much do you currently use annually? _____ dons

9. What is the current wholesale price of rhino horn? _____

_____

Appendix 3

Covering letter for Oriental-medicine doctors' questionnaire (Korean translation)

친애하는 경희대 한의과대학 동창회원 여러분

본 연구는 1993년 6월 28일 아프리카 나이로비에서 개최될 유엔환경계획(UNEP)에서 다루어질 '서각 무역의 합법화' 논의에서 한국이 취할 입장을 결정함에 있어서 한국 한의학계의 의견을 최대한 반영코저 시행하는 것입니다.
여러분노 알고 계시듯이 현재 '서각'은 그 무역 및 사용이 금지되어 있읍니다.
이번 회의에서 그 합법화를 추진함에 있어 한의학계의 기본입장을 진단코저 시행하는 것이므로 여러분의 의견이 국정에 반영됨을 인지하시고 한의학계를 대변하여 진지한 답변을 부탁드립니다.

이에 본 경희대학 한의과 대학 동창회가 한국 의학계에서 차지하는 막대한 비중과 높은 평판으로 인하여 본 연구의 대상으로 선택되었읍니다. 귀하는 철저한 무작위 추출방법에 의해 선정된 것이며 본 설문지는 시종일관 익명으로 처리될 것이므로 아무런 부담없이 귀하의 의견을 솔직히 기입해 주시고 이 주제에 도움이 되리라 사려되는 정보는 무엇이든 제공해 주시기를 부탁드립니다.

여러분은 본 설문에 대해 10분 이내에 답안작성을 끝내실수 있을 것입니다. 현재 유엔환경계획 개최일까지는 20여일이 남아 있을 뿐이므로 본 교실은 이연구를 1주일 이내에 완성해야만 하는 급박한 입장에 처해 있읍니다. 촉박한 시일을 감안하시어 설문지를 받으시는 즉시 답안을 기입하신후 곧바로 돌려보내 주시기를 간곡히 부탁드리는 바입니다.

바쁘신 중에 시간을 내어 협조해 주신데 대해 깊은 감사를 드리며 의문사항이 있으신 경우에는 본 교실로 문의 주시기 바랍니다.

경희대학교 한의과대학 본초학교실

교수 안덕균

Appendix 4

Oriental-medicine doctors' questionnaire (Korean translation)

서각에 관한 설문지

1. 내 경험에 비추어, 서각은 매우 효과가 있는 약이다.

_____ 확실히 그렇다.

_____ 그렇다.

_____ 모르겠다.

_____ 아니다.

_____ 확실히 아니다.

2. 서각은 어떤 질환을 치료하는 경우 반드시 써야한다.

_____ 예

_____ 아니오.

_____ 모르겠다.

3. 서각과 유사한 효과를 가지는 대체재가 있다.

_____ 예

_____ 아니오.

_____ 모르겠다.

3a. 있다면 무엇이 가장 효과적인 대체재인가?

_____

_____

_____

4. 약으로 사용하는 경우에 한해 '서각'의 판매는 합법화되어야 한다.

_____ 예

_____ 아니오.

_____ 모르겠다.

Appendix 4

Oriental-medicine doctors' questionnaire (Korean translation)

5. 필요한 경우라면 '서각' 을 사용하십니까?

_____ 예

_____ 아니오.

5a. '예' 인 경우, 어떤 경우에 사용하십니까?

_____

_____

5b. 매년 얼마나 많은 양을 사용하십니까?

_____ 돈

5c. 현재 서각의 도매가격은 어느정도 입니까?

_____ 돈당 _____ 원

5d '아니오' 인 경우, 언제 그 사용을 중지하셨읍니까?

_____

6. 필요한 경우 사용하기 위해 비축해 놓은 서각이 있다.

_____ 예

_____ 아니오.

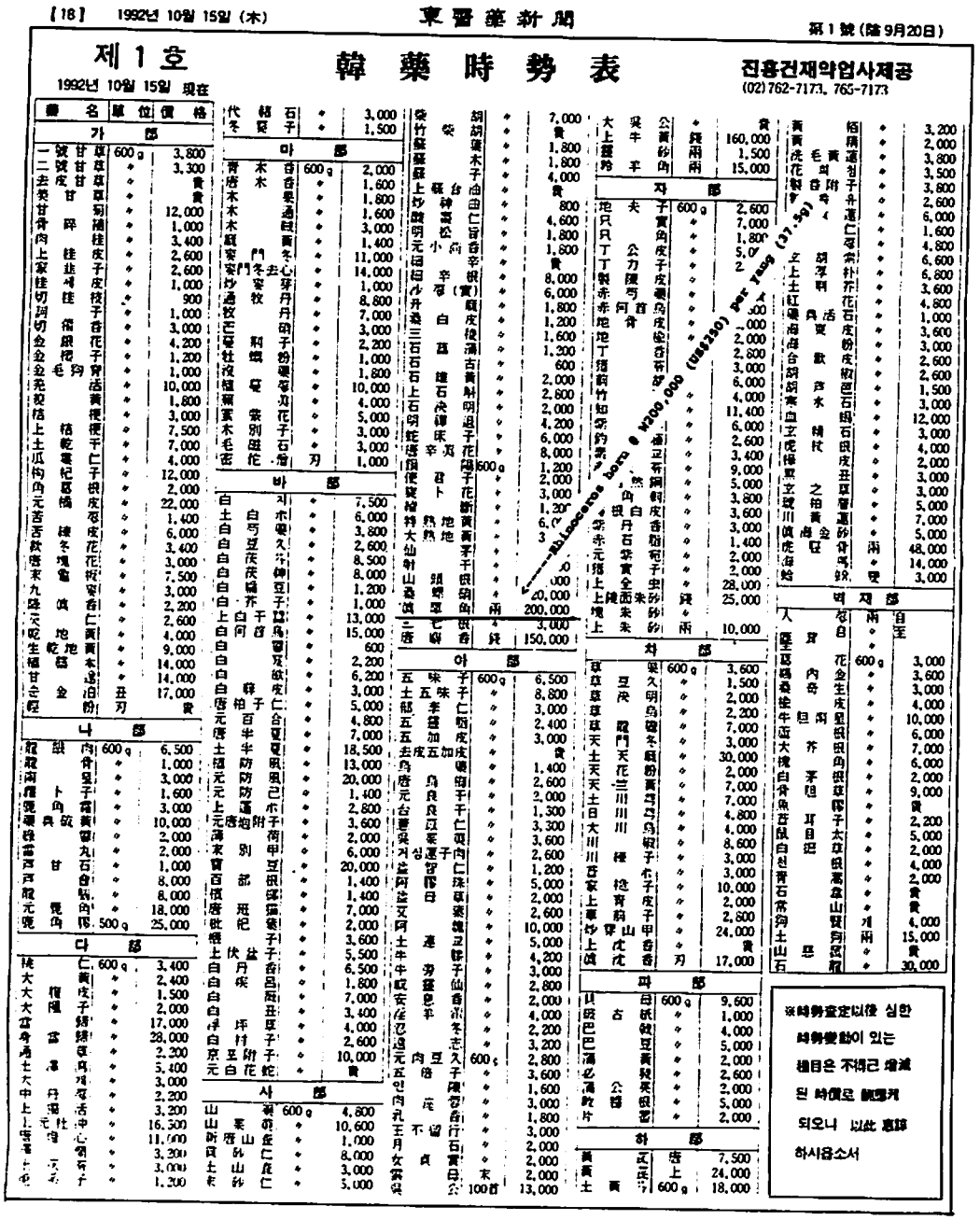
7. 만약 '서각' 의 판매가 합법화된다면 귀하는 1년에 얼마나 사용하실 것으로 추정하십니까?

_____ 돈

Appendix 5

Retail price list of an Oriental-medicine raw materials company in Seoul, South Korea

(as published in *East Asian Medicine Journal*, 15 October 1992)



【18】 1992년 10월 15일 (木) 東醫藥新聞 第1號(陸9月20日)

제 1 호

韓藥時勢表

1992년 10월 15일 現在

진흥건재약업사제공
(02) 762-7173, 765-7173

품 명	단 위	價 格
가 部		
草烏草烏製	600 g	3,800
草烏草烏製	″	3,300
甘草	貫	貫
甘草	″	12,000
桂皮	″	1,000
桂枝	″	3,400
桂皮	″	2,600
桂枝	″	2,600
桂心	″	1,000
桂心	″	900
桔梗	″	1,000
桔梗	″	3,000
枸杞	″	4,200
枸杞	″	1,200
毛	″	1,000
枸杞	″	10,000
枸杞	″	1,800
乾	″	3,000
乾	″	7,500
乾	″	7,000
乾	″	4,000
龜板	″	12,000
龜板	″	2,000
龜板	″	22,000
龜板	″	1,400
龜板	″	6,000
龜板	″	3,400
龜板	″	3,000
龜板	″	7,500
龜板	″	3,000
龜板	″	2,200
龜板	″	2,600
龜板	″	4,000
龜板	″	9,000
龜板	″	14,000
龜板	″	14,000
龜板	″	17,000
나 部		
牛膝	600 g	6,500
牛膝	″	1,000
牛膝	″	3,000
牛膝	″	1,600
牛膝	″	3,000
牛膝	″	10,000
牛膝	″	2,000
牛膝	″	2,000
牛膝	″	1,000
牛膝	″	8,000
牛膝	″	8,000
牛膝	″	18,000
牛膝	500 g	25,000
다 部		
丹皮	600 g	3,400
丹皮	″	2,400
丹皮	″	1,500
丹皮	″	2,000
丹皮	″	17,000
丹皮	″	28,000
丹皮	″	2,200
丹皮	″	5,400
丹皮	″	3,000
丹皮	″	2,200
丹皮	″	3,200
丹皮	″	16,500
丹皮	″	11,000
丹皮	″	3,300
丹皮	″	3,000
丹皮	″	1,200
石子	″	3,000
石子	″	1,500
마 部		
麻黃	600 g	2,000
麻黃	″	1,600
麻黃	″	1,800
麻黃	″	1,600
麻黃	″	3,000
麻黃	″	1,400
麻黃	″	11,000
麻黃	″	14,000
麻黃	″	1,000
麻黃	″	8,800
麻黃	″	7,000
麻黃	″	3,000
麻黃	″	2,200
麻黃	″	1,000
麻黃	″	1,800
麻黃	″	10,000
麻黃	″	4,000
麻黃	″	5,000
麻黃	″	3,000
麻黃	″	3,000
麻黃	″	1,000
바 部		
白朮	″	7,500
白朮	″	6,000
白朮	″	3,800
白朮	″	2,600
白朮	″	8,500
白朮	″	8,000
白朮	″	1,200
白朮	″	1,000
白朮	″	13,000
白朮	″	15,000
白芷	″	600
白芷	″	2,200
白芷	″	6,200
白芷	″	3,000
白芷	″	5,000
白芷	″	4,800
白芷	″	7,000
白芷	″	18,500
白芷	″	13,000
白芷	″	20,000
白芷	″	1,400
白芷	″	2,800
白芷	″	3,600
白芷	″	2,000
白芷	″	6,000
白芷	″	20,000
白芷	″	1,400
白芷	″	1,400
白芷	″	7,000
白芷	″	2,000
白芷	″	3,600
白芷	″	5,500
白芷	″	6,500
白芷	″	1,800
白芷	″	7,000
白芷	″	3,400
白芷	″	4,000
白芷	″	2,600
白芷	″	10,000
사 部		
山藥	600 g	4,800
山藥	″	10,600
山藥	″	1,000
山藥	″	8,000
山藥	″	3,000
山藥	″	5,000
山藥	″	7,000
山藥	″	6,000
山藥	″	3,000
山藥	″	2,000
山藥	″	2,000
山藥	″	2,000
山藥	″	13,000
山藥	″	7,000
山藥	″	1,800
山藥	″	3,000
山藥	″	2,000
山藥	″	2,000
山藥	″	2,000
山藥	″	2,000
山藥	″	13,000
아 部		
牙子	600 g	6,500
牙子仁	″	8,800
牙子仁	″	3,000
牙子仁	″	2,400
牙子仁	″	3,000
牙子仁	″	貫
牙子仁	″	1,400
牙子仁	″	2,600
牙子仁	″	2,000
牙子仁	″	1,300
牙子仁	″	3,300
牙子仁	″	3,600
牙子仁	″	2,600
牙子仁	″	1,200
牙子仁	″	5,000
牙子仁	″	2,000
牙子仁	″	2,600
牙子仁	″	10,000
牙子仁	″	5,000
牙子仁	″	4,200
牙子仁	″	3,000
牙子仁	″	2,800
牙子仁	″	2,000
牙子仁	″	4,000
牙子仁	″	2,200
牙子仁	″	3,200
牙子仁	″	2,800
牙子仁	″	3,600
牙子仁	″	1,600
牙子仁	″	3,000
牙子仁	″	1,800
牙子仁	″	3,000
牙子仁	″	2,000
牙子仁	″	2,000
牙子仁	″	2,000
牙子仁	″	13,000
자 部		
紫胡	600 g	7,000
紫胡	″	貫
紫胡	″	1,800
紫胡	″	1,800
紫胡	″	4,000
紫胡	″	貫
紫胡	″	800
紫胡	″	4,600
紫胡	″	1,800
紫胡	″	1,800
紫胡	″	貫
紫胡	″	8,000
紫胡	″	6,000
紫胡	″	1,800
紫胡	″	1,200
紫胡	″	1,600
紫胡	″	1,200
紫胡	″	600
紫胡	″	2,000
紫胡	″	2,800
紫胡	″	2,000
紫胡	″	4,200
紫胡	″	6,000
紫胡	″	8,000
紫胡	″	1,200
紫胡	″	2,000
紫胡	″	3,000
紫胡	″	1,200
紫胡	″	6,000
紫胡	″	3,000
紫胡	600 g	貫
紫胡	″	20,000
紫胡	″	200,000
紫胡	斤	3,000
紫胡	斤	150,000
차 部		
車前子	600 g	3,600
車前子	″	1,500
車前子	″	2,000
車前子	″	2,200
車前子	″	7,000
車前子	″	3,000
車前子	″	30,000
車前子	″	2,000
車前子	″	7,000
車前子	″	7,000
車前子	″	4,800
車前子	″	4,000
車前子	″	8,600
車前子	″	3,000
車前子	″	3,000
車前子	″	10,000
車前子	″	2,000
車前子	″	2,600
車前子	″	24,000
車前子	斤	貫
車前子	″	17,000
파 部		
巴戟天	600 g	9,600
巴戟天	″	1,000
巴戟天	″	4,000
巴戟天	″	5,000
巴戟天	″	2,000
巴戟天	″	2,600
巴戟天	″	2,000
巴戟天	″	5,000
巴戟天	″	2,000
하 部		
黃芪	唐上	7,500
黃芪	600 g	24,000
黃芪	″	18,000
黃芩	″	3,200
黃芩	″	2,000
黃芩	″	3,800
黃芩	″	3,500
黃芩	″	3,800
黃芩	″	2,600
黃芩	″	6,000
黃芩	″	1,600
黃芩	″	4,800
黃芩	″	6,600
黃芩	″	6,800
黃芩	″	3,600
黃芩	″	4,800
黃芩	″	1,000
黃芩	″	1,600
黃芩	″	3,000
黃芩	″	2,600
黃芩	″	2,600
黃芩	″	1,500
黃芩	″	3,000
黃芩	″	12,000
黃芩	″	3,000
黃芩	″	4,000
黃芩	″	2,000
黃芩	″	3,000
黃芩	″	3,000
黃芩	″	5,000
黃芩	″	7,000
黃芩	″	5,000
黃芩	″	48,000
黃芩	″	14,000
黃芩	″	3,000
자 部		
紫石英	600 g	2,600
紫石英	″	7,000
紫石英	″	1,800
紫石英	″	5,000
紫石英	″	2,000
紫石英	″	2,800
紫石英	″	3,000
紫石英	″	6,000
紫石英	″	4,000
紫石英	″	11,400
紫石英	″	6,000
紫石英	″	2,600
紫石英	″	3,400
紫石英	″	9,000
紫石英	″	5,000
紫石英	″	3,800
紫石英	″	3,600
紫石英	″	3,000
紫石英	″	1,400
紫石英	″	2,000
紫石英	″	2,000
紫石英	″	28,000
紫石英	″	25,000
紫石英	″	10,000
차 部		
車前子	600 g	3,600
車前子	″	1,500
車前子	″	2,000
車前子	″	2,200
車前子	″	7,000
車前子	″	3,000
車前子	″	30,000
車前子	″	2,000
車前子	″	7,000
車前子	″	7,000
車前子	″	4,800
車前子	″	4,000
車前子	″	8,600
車前子	″	3,000
車前子	″	3,000
車前子	″	10,000
車前子	″	2,000
車前子	″	2,600
車前子	″	24,000
車前子	斤	貫
車前子	″	17,000
파 部		
巴戟天	600 g	9,600
巴戟天	″	1,000
巴戟天	″	4,000
巴戟天	″	5,000
巴戟天	″	2,000
巴戟天	″	2,600
巴戟天	″	2,000
巴戟天	″	5,000
巴戟天	″	2,000
하 部		
黃芪	唐上	7,500
黃芪	600 g	24,000
黃芪	″	18,000
黃芩	″	3,200
黃芩	″	2,000
黃芩	″	3,800
黃芩	″	3,500
黃芩	″	3,800
黃芩	″	2,600
黃芩	″	6,000
黃芩	″	1,600
黃芩	″	4,800
黃芩	″	6,600
黃芩	″	6,800
黃芩	″	3,600
黃芩	″	4,800
黃芩	″	1,000
黃芩	″	1,600
黃芩	″	3,000
黃芩	″	2,600
黃芩	″	2,600
黃芩	″	1,500
黃芩	″	3,000
黃芩	″	12,000
黃芩	″	3,000
黃芩	″	4,000
黃芩	″	2,000
黃芩	″	3,000
黃芩	″	3,000
黃芩	″	5,000
黃芩	″	7,000
黃芩	″	5,000
黃芩	″	48,000
黃芩	″	14,000
黃芩	″	3,000
백 部		
白芍	600 g	3,000
白芍	″	3,600
白芍	″	3,000
白芍	″	4,000
白芍	″	10,000
白芍	″	6,000
白芍	″	7,000
白芍	″	6,000
白芍	″	2,000
白芍	″	9,000
白芍	″	貫
白芍	″	2,200
白芍	″	5,000
白芍	″	2,000
白芍	″	4,000
白芍	″	2,000
白芍	″	貫
白芍	″	4,000
白芍	″	15,000
白芍	″	貫
白芍	″	30,000

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Appendix 6

Korean press reports regarding threats of economic sanctions in relation to trade in rhinoceros horn

The Korea Herald
10 February 1993

Lax Wildlife Preservation Could Hurt Korea in Trade

Trade in endangered species not only threatens wildlife with extinction, but could hit Korea where it really hurts — in the trade balance, Yonhap News Agency reported yesterday.

The Convention on International Trade in Endangered Species of wild fauna and flora (CITES) is expected to pass strong measures against Korea for using wild animals to make medicine at a meeting in Washington on March 1-5, according to government sources.

Britain recently passed legislation that paved the way for trade sanctions such as revocation of most-favored nation (MFN) status against countries that fail to halt the trade in prohibited animal products, including rhinoceros horn, tiger bones, bear's gall and ivory.

The United States has a similiar bill pending in Congress that will allow retaliation against countries exchanging banned animal products.

Global organizations, including the world wildlife fund, called for punitive measures against Taiwan, China, Korea and South Africa at a hearing on preservation of the rhinoceros in Washington on Jan. 21, accusing the four nations of using rhinos.

Activists have lobbied the CITES members to consider all available steps like nullification of MFN status and retaliatory trade measures before drawing up an international law to crack down on nations that trade in endangered species.

It was decided that the issue should be resolved at a meeting of the standing committee next month.

Korea told the January hearing that it should be excluded from retaliation because it banned all rhino imports in 1983 and enacted a law prohibiting the use of rhinoceros in making medicines.

The environmentalists replied that they had proof that Korea still used rhinoceros horns, tiger bones, bear's gall and antlers in oriental medicine.

The government is preparing domestic laws to join CITES, but signing is being delayed because some interest groups are opposed.

CITES went into effect in 1975.

The Korea Herald
14 April 1993

Crackdown launched against rhino horn traders

Int'l environmental group threatens to impose sanctions on Korea

By Yoo Cheong-mo
Staff reporter

Rhinoceros could get in the way of the South Korean government's effort to revive its ailing economy, said a senior prosecutor at the Prosecutor General's Office (PGO).

"A 118-nation environmental group agreed in principle to impose trade sanctions on Korea and three other nations for their alleged abuse of rhinoceros," said Kim Hee-ok, chief of PGO's Environmental Crimes Division in an interview with this paper yesterday.

Kim Hee-ok

Member nations of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) met in Washington last month and threatened to punish Seoul unless it improves its record in protecting rhinos.

CITES environmentalists fear that rhinos will face extinction soon because poachers kill them off for their horns. Rhino horns have been highly prized for pharmaceutical purpose.

"CITES activists have branded South Korea, along with China, Taiwan and Yemen, as an illegal trader of rhino horns," said prosecutor Kim.

The prosecution will crack down on the smuggling and trade of the horns of rhinoceroses, an endangered species. The horns are believed by many to be good for health. Pictured is a rhinoceros at Seoul Grand Zoo in Kwachon, south of Seoul.
Korea Herald

Trade in rhino horns has been banned since 1983, according to an official at the Ministry of Health and Social Affairs.

Ministry inspectors have since conducted on-the-spot searches of herb clinics across the country for rhino horns, the official said.

About two months ago, the inspectors made raids on over 300 herb clinics, finding no evidence of the use of rhino horns, the official noted.

But CITES environmentalists still suspect that South Korea is one of the final destinations of rhino horns poached in India and Africa, prosecutor Kim said.

"So, the PGO, the nation's top investigation organ, is working to dispel all suspicions of wildlife conservationists," stressed the senior prosecutor, who launched a wholesale crackdown on traders of rhino horns last week.

Prosecutor Kim suspects that the contraband rhino horns might have been smuggled into Korea from Hong Kong if the allegation is true that rhino horns are in circulation among Koreans.

The history of rhino horns dates back as far as 1,300 years to the Shilla Dynasty. Rhino horns started to be imported from the China's Tang Dynasty to be used in medical preparations, says a Seoul herb doctor.

Rhino horns had been one of 27 ingredients of "woohwangchongshimwon" for more than 1,000 years until it became banned in 1983.

"Woohwangchongshimwon, a wonder drug in Oriental medicine made mainly of ox bezoar, is effective in treating high blood pressure, paralysis, some mental diseases and others," said Won Dok-kwon, a researcher at Daewoong Pharmaceutical Co.

Won said rhino horn is said to help rid human blood of impurities, which has yet to be proved by modern science.

Rhino horn used to retail for 5,000 won per gram in the past, according to a herb doctor in Seoul.

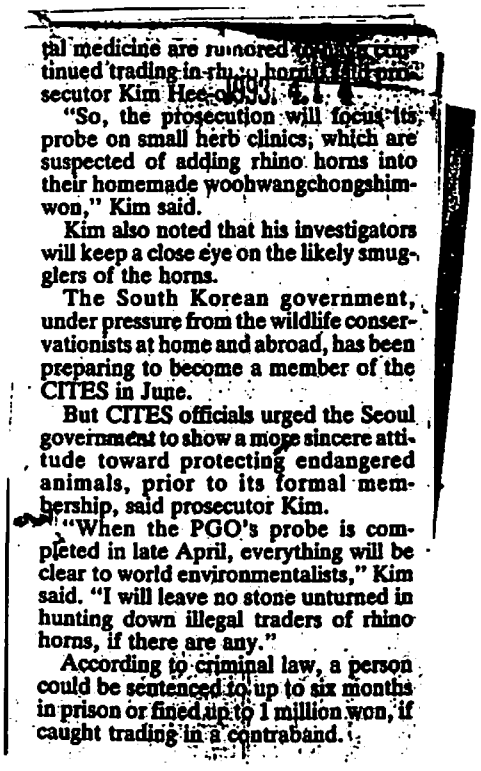
South Korea's major pharmaceutical firms have abstained from using rhino horns in the making of woohwangchongshimwon, complying with the government ban.

But herb clinics and dealers in Orien-

(Continued on Page 9)

Appendix 6

Korean press reports regarding threats of economic sanctions in relation to trade in rhinoceros horn



tal medicine are rumored to be continued trading in rhino horns, the prosecutor Kim Hee-[illegible]

"So, the prosecution will focus its probe on small herb clinics, which are suspected of adding rhino horns into their homemade woohwangchongshimwon," Kim said.

Kim also noted that his investigators will keep a close eye on the likely smugglers of the horns.

The South Korean government, under pressure from the wildlife conservationists at home and abroad, has been preparing to become a member of the CITES in June.

But CITES officials urged the Seoul government to show a more sincere attitude toward protecting endangered animals, prior to its formal membership, said prosecutor Kim.

"When the PGO's probe is completed in late April, everything will be clear to world environmentalists," Kim said. "I will leave no stone unturned in hunting down illegal traders of rhino horns, if there are any."

According to criminal law, a person could be sentenced to up to six months in prison or fined up to 1 million won, if caught trading in a contraband.