



United States Department of the Interior



NATIONAL PARK SERVICE
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IN REPLY REFER TO:

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27 JUL 1992

Memorandum

To: Regional Directors
Attn: Regional Chiefs of Natural Resources Management
Regional Chief Rangers

From: Associate Director, Operations
Associate Director, Natural Resources

Subject: Report on Native Plant Protection in NPS Units

An extensive international market in plants has been flourishing in recent years. A preference for wild-harvested plants over cultivated or artificially propagated plants has led to extensive collection of plants for trade from the wild. A Native Plant Protection Questionnaire was sent to the parks in the spring of 1992 in order to assess the impact of the trade in plants on units of the National Park System.

Attached is a report, compiled by Jen Coffey of the Wildlife and Vegetation Division, on the results of the Native Plant Protection Questionnaire. For some species of native plants, illegal plant collection represents a significant threat. And, although the illegal collection of native plants was found to occur on a more regional basis than the poaching of wildlife, both occur throughout the National Park System. The Service needs to focus more effort on the protection of both the plant and wildlife resources from illegal harvest in the parks. Please ensure that the parks in your Region are aware of the results of this survey.

Attachment

**NATIONAL PARK SERVICE
RESULTS OF SURVEY ON NATIVE PLANT PROTECTION
IN UNITS OF THE NATIONAL PARK SYSTEM**

In the spring of 1991, a Wildlife Protection Needs Assessment showed a critical need to focus more effort on preventing the poaching of wildlife in the parks. Just like the illegal wildlife trade, there is an extensive illegal plant trade. In order to determine the extent and magnitude of the illegal collection of native plants within units of the National Park System, a Native Plant Protection Questionnaire was sent to the parks in the spring of 1992.

In addition to looking at the extent and magnitude of the illegal collection of native plants, the survey also assessed the park's needs to adequately protect the native plant resources from poaching. It should be noted that the collection of plants includes the illegal harvest of timber. The following is a summary of the results of the Native Plant Protection Questionnaire by topic.

Current Status of the Illegal Collection of Native Plants

The following is based on the replies to the Native Plant Protection Questionnaire, with nine regions replying to the questionnaire. In 1989, 108 citations were reported as being issued for the illegal collection of plants in units of the National Park System. In 1990, 127 citations were reported as being issued, and in 1991 184 citations were reported as being issued. Although it varied each of the three years, between approximately 90% to 95% of the citations were issued in three regions: the Southeast Region, the Western Region, and the Pacific Northwest Region. The only arrests reported for the illegal collection of plants were three at Great Smoky Mountains National Park in 1991. (See Exhibit I)

Although the number of citations issued was requested for a three year period, the species of native plants illegally collected was requested only for the years of 1990 and 1991. Ninety-nine species of native plants were reported as being illegally collected in thirty-seven units of the National Park System in 1990 (See Exhibit II). Eighty-eight species were reported illegally collected in forty-one units of the National Park System in 1991 (See Exhibit III). The species reported by the most parks as being illegally collected was ginseng, with seven parks reporting it being collected both in 1990 and 1991. Other plants in the east which were most reported as being poached included the lady's slipper orchid, rhododendron, iris, and jack-in-the pulpit. In the Pacific Northwest, various species of trees and ferns were most reported being poached. In the southwest, yuccas and cacti were the most reported, with at least 13 different species of cacti being reported as illegally collected in parks in 1990 and 1991.

Six parks reported having a monitoring program in place, with ten different species of native plants that are being illegally collected being monitored. The only research on the effects of collection on plants that was reported was research conducted by Dr. Susan Bratton on habitat preference and collection by visitors of Cypripedium acaule and Galearis spectabilis. The results of this research were published in 1985 in a paper entitled "Effects of Disturbance by Visitors on Two Woodland Orchid Species in Great Smoky Mountains National Park, U.S.A." (Biological Conservation, Vol. 31, pp.211-227).

Market for Native Plants

An extensive international trade in medicinal plants has been flourishing in recent years. A preference for wild-harvested over cultivated or artificially propagated plants has led to extensive collection from the wild. This section of the Native Plant Protection Questionnaire assessed the possible impact of the growing trade in plants on the illegal collection of native plants from units of the National Park System. The parks reported a total of 142 species of plants in the parks which are of known market value (See Exhibit IV). Significant among these were plants such as ginseng, Pacific yew, orchids, rhododendron, iris, lupine, pines, grapes, yucca, and many cacti.

Impact of Illegal Collection to Native Plant Populations

The Native Plant Protection Questionnaire showed that collection represents a significant threat to some species of native plants in units of the National Park System. Acadia National Park reported that plant poaching has most likely resulted in the extirpation of Cypripedium reginae, the showy lady's slipper orchid. Moores Creek National Battlefield reported that although none have been documented as being collected in the park, the Venus fly-trap, a plant which is popular in the wild plant trade, has virtually disappeared from the park. Monitoring of Zephyranthes atamasco, the Atamasco or Easter lily, at Congaree Swamp National Monument has shown a decline at the rate of two plants per year. Other plants, such as ginseng, have experienced a dramatic decline. According to a report on the status of American ginseng by Keith Langdon, the plant is rare in Shenandoah National Park and scarce in the Great Smoky Mountains National Park. Mammoth Cave National Park reported that it is rare to find ginseng plants more than one or two years old.

Of the plants which were reported being illegally collected from parks replying to the Native Plant Protection Questionnaire, at least twenty are Federally endangered, threatened, candidate species, and/or species protected by state law. Two are Federally listed as endangered, two are Federally listed as threatened, and five are candidates for possible addition to the Federal List of Endangered and Threatened Plants, while the remainder are protected

under state law. (See Exhibit V).

Servicewide Needs to Reduce the Illegal Collection of Native Plants in the Parks

Approximately seventy-seven percent of the parks reporting illegal collection of native plants, reported that the current staffing level is inadequate to address this issue. The parks need at least 74.71 additional FTEs in order to reduce the illegal collection of native plants. (See Exhibits VI and VII). Over twenty types of equipment are also needed by the parks, including vehicles, radios, remote sensing devices, and surveillance cameras. (See Exhibit VIII).

Other needs cited by the parks, excluding personnel and equipment, were also requested in the Native Plant Protection Questionnaire. The need for the inventory and monitoring of native plant populations was overwhelmingly identified by the parks as being necessary to determine the magnitude of plant poaching. The second most cited need was for a public information/education program and a need for training, with both being requested by a fairly equal number of parks. The training requested was in taxonomy/plant identification and resource protection techniques. Other needs identified by the parks included research, mapping (including the need for a GIS), interpretive materials, signs, and community outreach programs.

In addition, the Native Plant Protection Questionnaire showed that the need to protect native plants from illegal collection is not being adequately addressed in park planning processes. Only eleven parks with a documented problem with native plant poaching reported that the issue is addressed in the park's Resource Management Plan and only ten parks have addressed the issue in the park's Law Enforcement Needs Assessment.

Conclusion

Based on the results of the Native Plant Protection Questionnaire, the illegal collection of native plants in units of the National Park System occurs throughout, but is particularly a problem in the Southeast Region, the Western Region, and the Pacific Northwest Region. While the 1991 Wildlife Protection Needs Assessment showed 105 different species of wildlife being poached in units of the National Park System, the Native Plant Protection Questionnaire showed 99 different species of native plants being poached in 1990 and 88 different species being poached in 1991. Thus, the number of species of native plants being poached in the parks is not significantly less than the number of species of wildlife being poached in the parks.

Because plant collecting activities are driven by both the national and international markets, some species of plants are more

intensively collected than others. Ginseng, valued in the oriental market as an aphrodisiac, currently sells in the United States for approximately \$200 per pound. And the market price of ginseng increases overseas. Chinese government officials visiting Great Smoky Mountains National Park in 1990 reported that the retail price for ginseng in central China was approximately \$2,600 per pound. Mushrooms are similarly in demand due to the international market. Organized groups of pickers in the Pacific Northwest mass collect mushrooms which were then air-shipped to Japan where they sell for \$40 per pound.

The collection of some species may increase in the future as their value in the market increases. An example is the Pacific yew. Taxol, obtained from dried yew bark, is being researched for it's potential value as a cure for cancer. The removal of perennial plant parts such as bark, roots, and rhizomes where secondary compounds are often concentrated is of concern because the loss or removal of these tissues may impair the transport of photosynthates and nutrients and may weaken plant resistance to pests and diseases.

The extinction of plant species is increasing at a rapid rate on a global scale, and the rate of extinction is expected to increase even more in the future. Although the main cause of plant extinction is the loss of habitat, as habitat destruction accelerates in future decades, units of the National Park System will become ever more important as refugia where biological diversity can be protected. An important part of that protection is the protection of native plants in units of the National Park System from illegal collection.

EXHIBIT I

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National Park Service
Natural Resource Protection Program
Citations and Fines for
Illegal Collection of Native Plants

Park	Citations 1989	Citations 1990	Citations 1991	Fines 1989	Fines 1990	Fines 1991
** Region AR						
GAAR	0	0	0	0	0	0
KLGO	0	0	2	0	0	100
** Subtotal **	0	0	2	0	0	100
** Region NAR						
ACAD	2	3	0	100	150	0
CACO	0	0	0	0	0	0
SAIR	0	0	0	0	0	0
SARA	0	0	0	0	0	0
** Subtotal **	2	3	0	100	150	0
** Region NCR						
CATO	0	0	1	0	0	75
CHOH	0	0	0	0	0	0
GREE	0	1	0	0	0	0
HAFE	0	0	0	0	0	0
NCPE	1	1	0	0	0	0
** Subtotal **	1	2	1	0	0	75
** Region PNW						
CODA	4	1	1	3240	100	100
MORA	15	4	24	750	200	1200
OLYM	3	2	3	0	0	0
** Subtotal **	22	7	28	3990	300	1300
** Region RMR						
ARCH	0	0	1	0	0	25
BADL	0	0	0	0	0	0
COLM	3	0	3	200	0	200
CURE	2	1	1	50	25	25
NABR	0	0	0	0	0	0
PISP	0	0	0	0	0	0
THRO	0	0	0	0	0	0
YELL	0	0	0	0	0	0
** Subtotal **	5	1	5	250	25	250
** Region SER						
BISO	0	0	2	0	0	150
BLRI	36	50	60	585	1340	2000
CAHA	4	4	4	0	0	0
CANA	3	5	7	150	250	400

National Park Service
Natural Resource Protection Program
Citations and Fines for
Illegal Collection of Native Plants

	Park Citations 1989	Citations 1990	Citations 1991	Fines 1989	Fines 1990	Fines 1991
CARL	0	0	0	0	0	0
COSW	0	0	0	0	0	0
CUGA	12	3	2	1860	900	400
GRSM	5	14	10	515	7225	1950
MACA	0	0	0	0	0	0
NATR	10	7	15	0	0	0
RUCA	0	0	0	0	0	0
** Subtotal **	70	83	100	3110	9715	4900
** Region SWR						
AMIS	1	0	1	100	0	100
BIBE	1	7	0	0	0	0
ELMA	0	0	1	0	0	50
GUMO	0	0	0	0	0	0
JELA	0	0	1	0	0	0
LAMR	0	0	0	0	0	0
** Subtotal **	2	7	3	100	0	150
** Region WR						
CABR	0	0	0	0	0	0
GRBA	0	3	0	0	200	0
HALE	0	0	0	0	0	0
JOTR	2	15	32	50	5775	1700
LABE	0	0	0	0	0	0
LAME	4	4	11	150	575	675
SAGU	0	2	2	0	300	150
YOSE	0	0	0	0	0	0
** Subtotal **	6	24	45	200	6850	2525
*** Total ***	108	127	184	7750	17040	9300

EXHIBIT II

NATIVE PLANT SPECIES ILLEGALLY COLLECTED IN UNITS OF THE NATIONAL PARK SYSTEM IN 1990

<u>Species</u>	<u>Common Name</u>	<u>Park(s)</u>
<u>Abies balsamea</u>	balsam fir	ACAD, BLRI
<u>Abies fraseri</u>	Fraser fir	GRSM
<u>Acer rubrum</u>	red maple	NCPE
<u>Acer saccharinum</u>	silver maple	NCPE
<u>Acer saccharum</u>	sugar maple	SARA
<u>Agave lechuquilla</u>	lechiguilla	BIBE
<u>Allium tricoccum</u>	ramps (or wild leeks)	GRSM
<u>Arctostaphylos uva-ursi</u>	bearberry	CACO
<u>Arisaema stewardsonii</u>	northern jack-in-the-pulpit	ACAD
<u>Arisaema triphyllum</u>	jack-in-the-pulpit	RUCA, COSW
<u>Arundinaria gigantea</u>	switch cane	COSW
<u>Asplenium kentuckiense</u>	silver pine fern	BISO
<u>Betula papyrifera</u>	white birch	ACAD
<u>Cereus giganteus</u>	saguaro ribs	SAGU
<u>Cerocarpus ledifolius</u>	mountain mahogany(carving)	LABE
<u>Chamaecyparis nootkatensis</u>	Alaska cedar	OLYM
<u>Clarkia lingulata</u>	Merced River Clarkia	YOSE
<u>Conradina verticillata</u>	Cumberland rosemary	BISO
<u>Cornus florida</u>	flowering dogwood	NCPE
<u>Cornus nuttallii</u>	mountain dogwood	YOSE
<u>Coryphantha missouriensis</u>	ball cactus	THRO
<u>Coryphantha vivipara</u>	desert spinystar cactus	GUMO
<u>Cypripedium acaule</u>	pink lady's slipper	CARL, ACAD, GRSM
<u>Cypripedium calceolus</u>	yellow lady's slipper	ACAD
<u>Cypripedium kentuckiense</u>	Kentucky lady's slipper	BISO
<u>Cypripedium pubescans</u>	yellow lady's slipper orchid	GRSM
<u>Dasyllirion leiophyllum</u>	Sotol	BIBE
<u>Dipsacus fullonum</u>	teassel	SAIR
<u>Echinocactus horizionthalonius</u>	Turks head cactus	GUMO
<u>Echinocereus chisoensis</u>	Chisos hedgehog cacts	BIBE
<u>Echinocereus lloydii</u>	lace cactus	LAMR
<u>Echinocereus rechenbachi</u>	hedgehog cactus	LAMR
<u>Ephedra viridis</u>	Mormon tea	ARCH
<u>Epigaea repens</u>	trailing arbutus	GRSM, ACAD
<u>Erigeron pulchellus</u>	white snake root	BISO
<u>Euonymus spp.</u>	strawberry bush	RUCA
<u>Euphorbia antisyphilitica</u>	candelilla	BIBE
<u>Ferocactus viridescens</u>	coast barrel cactus	CABR
<u>Fouquieria splendens</u>	ocotillo	BIBE, JOTR

<u>Fraxinus</u> spp.	ash	CHOH
<u>Fraxinus americana</u>	green ash	NCPE
<u>Galax rotundifolia</u>	galax	BLRI
<u>Galearis spectabilis</u>	showy orchid	GRSM
<u>Gaultheria shallon</u>	salal	OLYM
<u>Hydrastis canadensis</u>	goldenseal	BISO
<u>Hypnum</u> spp.	log moss	GRSM
<u>Ilex montana</u>	holly bushes	BISO
<u>Ilex opaca</u>	American holly	COSW,
		GREE, NCPE
<u>Ilex verticillata</u>	winterberry	CACO
<u>Iris cristata</u>	dwarf crested iris	GRSM
<u>Iris setosa</u>	beached iris	ACAD
<u>Juniperus scopulorum</u>	Rocky Mountain juniper	BADL
<u>Kalmia latifolia</u>	mountain laurel	BLRI, BISO
<u>Lilium</u> spp.	lily	YOSE
<u>Limonium nashii</u>	sea lavender, sea heather	CACO, ACAD
<u>Lycopodium</u> spp.	club moss, ground pine	GREE,
		SARA, ACAD
<u>Mammillaria</u> spp.	pincushion cactus	SAGU
<u>Mammillaria dioica</u>		CABR
<u>Opuntia</u> spp.	prickly pear cactus, cholla	SAGU,
		CANA
<u>Opuntia parryi</u>	jumping cholla	CABR
<u>Opuntia polycantha</u>	prickly pear cactus	ARCH, THRO
<u>Opuntia violaceae</u>	purple prickly pear	BIBE
<u>Panax quinquefolium</u>	ginseng	BISO,
		BLRI, CUGA, GRSM, MACA, NATR, RUCA
<u>Pediocactus sileri</u>	silver pincushion	PISP
<u>Pediocactus simpsoni</u>	mountain barrel cactus	CURE
<u>Phoradendron flavescens</u>	mistletoe	NATR
<u>Picea glauca</u>	white spruce	GAAR
<u>Picea mariana</u>	black spruce	GAAR
<u>Picea rubens</u>	red spruce	GRSM
<u>Pinus longaeva</u>	bristlecone pine	GRBA
<u>Pinus monophylla</u>	pinyon pine	JOTR
<u>Pinus ponderosa</u>	ponderosa pine	CODA
		BADL, ELMA
<u>Pinus strobus</u>	white pine	GRSM
<u>Podophyllum peltatum</u>	may apple	RUCA
<u>Polypodiaceae</u> spp.	fern	OLYM
<u>Populus sargentii</u>	cottonwood	LAMR
<u>Populus tremuloides</u>	aspen	GRBA
<u>Pseudotsuga menziesii</u>	Douglas fir	MORA
<u>Pteridium aquilinum</u>	bracken fern	YOSE,
		COSW, MORA
<u>Quercus alba</u>	white oak	CHOH
<u>Quercus rubra</u>	red oak	NCPE
<u>Rhamnus purshiana</u>	cascara (bark)	OLYM
<u>Rhododendron calendulaceum</u>	flame azalea	GRSM

<u>Rhododendron catawbiense</u>	rhododendron	BLRI, BISO, GRSM
<u>Rhododendron minus</u>	rhododendron	GRSM
<u>Rhododendron maximum</u>	rhododendron	BLRI, GRSM
<u>Sabal palmetto</u>	cabbage palmetto	CANA
<u>Sanguinaria canadensis</u>	bloodroot	BISO
<u>Sarraccenia purpurea</u>	pitcher plant	ACAD
<u>Serenoa repens</u>	saw palmetto	CANA
<u>Tillandsia usneoides</u>	Spanish moss	BISO, CANA, COSW
<u>Trillium spp.</u>	trilliums	GRSM
<u>Trillium undulatum</u>	painted trillium	ACAD
<u>Tsuga canadensis</u>	eastern hemlock	CATO, GRSM
<u>Typha spp.</u>	cattails	CAHA
<u>Typha angustifolia</u>	narrow leaved cattail	SAIR
<u>Uniola paniculata</u>	sea oats	CAHA
<u>Vinca minor</u>	periwinkle	HAFE, NATR
<u>Vitis spp.</u>	grapevines	SARA, GATE
<u>Xanthorhiza simplicissima</u>	yellow root	BISO
<u>Yucca brevifolia</u>	Joshua tree	JOTR
<u>Yucca glauca</u>	yucca	CURE, THRO
<u>Yucca harrimaniae</u>	yucca	ARCH
<u>Zephyranthes atamasco</u>	Atamasco lily(easter lily)	COSW

EXHIBIT III

NATIVE PLANT SPECIES ILLEGALLY COLLECTED IN UNITS OF THE NATIONAL PARK SYSTEM IN 1991

<u>Species</u>	<u>Common Name</u>	<u>Park(s)</u>
<u>Abies balsamea</u>	balsam fir	ACAD, BLRI
<u>Abies fraseri</u>	Fraser fir	GRSM
<u>Acacia greggii</u>	cat's claw	JOTR
<u>Allium tricoccum</u>	ramps (or wild leeks)	GRSM
<u>Arctostaphylos uva-ursi</u>	bearberry	CACO
<u>Argyroxiphium sandwicense</u>	Haleakala silversword	HALE
<u>Arisaema stewardsonii</u>	northern jack-in-the-pulpit	ACAD
<u>Arisaema triphyllum</u>	jack-in-the-pulpit	RUCA, COSW
<u>Arundinaria gigantea</u>	switch cane	COSW
<u>Betula spp.</u>	birch	KLGO
<u>Betula papyrifera</u>	white birch	ACAD
<u>Cereus giganteus</u>	saguaro ribs	SAGU
<u>Cerocarpus ledifolius</u>	mountain mahogany(carving)	LABE
<u>Chamaecyparis nootkatensis</u>	Alaska cedar	OLYM
<u>Clarkia lingulata</u>	Merced River Clarkia	YOSE
<u>Cornus nuttallii</u>	mountain dogwood	YOSE
<u>Coryphantha missouriensis</u>	ball cactus	THRO
<u>Coryphantha vivipara</u>	desert spiny star cactus	GUMO
<u>Cypripedium acaule</u>	pink lady's slipper	CARL, ACAD, GRSM
<u>Cypripedium calceolus</u>	yellow lady's slipper	ACAD
<u>Cypripedium pubescens</u>	yellow lady's slipper orchid	GRSM
<u>Dracocephalum virginianum</u>	obidient plant	CARL
<u>Echinocereus lloydii</u>	lace cactus	LAMR
<u>Echinocereus rechenbachii</u>	hedgehog cactus	LAMR
<u>Echinocereus triglochidiatus</u>	claret cup	GUMO
<u>Ephedra torreyana</u>	Mormon tea	COLM
<u>Ephedra viridis</u>	Mormon tea	ARCH
<u>Epigaea repens</u>	trailing arbutus	ACAD, GRSM
<u>Euonymus spp.</u>	strawberry bush	RUCA
<u>Ferocactus viridescens</u>	coast barrel cactus	CABR
<u>Fouquieria splendens</u>	Ocotillo	JOTR
<u>Galax rotundifolia</u>	galax	BLRI
<u>Galearis spectabilis</u>	showy orchid	GRSM
<u>Gaultheria shallon</u>	salal	OLYM
<u>Hypnum spp.</u>	log moss	GRSM
<u>Ilex opaca</u>	American holly	COSW, GREE
<u>Ilex verticillata</u>	winterberry	CACO

<u>Iris cristata</u>	dwarf crested iris	GRSM
<u>Iris setosa</u>	beached iris	ACAD
<u>Juniperus osteosperma</u>	Utah juniper	COLM
<u>Juniperus scopulorum</u>	Rocky Mountain juniper	BADL
<u>Kalmia latifolia</u>	mountain laurel	BLRI
<u>Lilium</u> spp.		YOSE
<u>Limonium nashii</u>	sea lavender, sea heather	CACO, ACAD
<u>Lonicera sempervirens</u>	honeysuckle	NATR
<u>Lycopodium</u> spp.	club moss, ground pine	GREE, ACAD
<u>Mammillaria dioica</u>		CABR
<u>Opuntia</u> spp.	prickly pear cactus	BISO
<u>Opuntia parryi</u>	jumping cholla	CABR
<u>Opuntia polyacantha</u>	prickly pear cactus	ARCH, THRO
<u>Panax quinquefolium</u>	ginseng	BISO,
	BLRI, CUGA, GRSM, MACA, NATR, RUCA	
<u>Pediocactus sileri</u>	silver pincushion	PISP
<u>Phoradendron tomentosum</u>	mistletoe	JELA
<u>Picea glauca</u>	white spruce	GAAR
<u>Picea mariana</u>	black spruce	GAAR
<u>Picea rubens</u>	red spruce	GRSM
<u>Pinus contorta</u>	lodgepole pine	YELL
<u>Pinus ponderosa</u>	ponderosa pine	CODA
		BADL, ELMA
<u>Pinus strobus</u>	white pine	GRSM
<u>Podophyllum peltatum</u>	may apple	RUCA
<u>Populus fremontii</u>	cottonwood	JOTR
<u>Populus sargentii</u>	cottonwood	LAMR
<u>Prosopis glandulosa</u>	mesquite	AMIS,
		JOTR
<u>Pseudotsuga menziesii</u>	Douglas fir	MORA
<u>Pteridium aquilinum</u>	bracken fern	YOSE,
		MORA, COSW
<u>Rhamnus purshiana</u>	cascara (bark)	OLYM
<u>Rhododendron calendulaceum</u>	flame azalea	GRSM
<u>Rhododendron catawbiense</u>	rhododendron	BLRI,
		GRSM
<u>Rhododendron maximum</u>	rhododendron	BLRI,
		GRSM
<u>Rhododendron minus</u>	rhododendron	GRSM
<u>Sabal palmetto</u>	cabbage palmetto	CANA
<u>Sarraaccenia papyrifera</u>	pitcher plant	ACAD
<u>Serenoa repens</u>	saw palmetto	CANA
<u>Simmondsia chinensis</u>	jojoba	SAGU
<u>Taxus brevifolia</u>	Pacific Yew	MORA
<u>Tillandsia</u> spp.		BISO
<u>Tillandsia usneoides</u>	Spanish moss	COSW
<u>Trillium undulatum</u>	painted trillium	ACAD
<u>Tsuga canadensis</u>	eastern hemlock	CATO, GRSM
<u>Typha</u> spp.	cattail	CAHA
<u>Typha angustifolia</u>	narrow leaved cattail	SAIR
<u>Uniola paniculata</u>	sea oats	CAHA

<u>Vinca minor</u>	periwinkle	NATR
<u>Vitis cordifolia</u>	frost grape	NATR
<u>Vitis labrusca</u>	fox grape	NATR
<u>Vitis rotundifolia</u>	muskadine grape	NATR
<u>Xerophyllum tenax</u>	bear grass	MORA
<u>Yucca brevifolia</u>	Joshua tree	JOTR
<u>Yucca glauca</u>	yucca	THRO
<u>Yucca harrimaniae</u>	yucca	ARCH
<u>Yucca schidigera</u>	Mojave yucca	JOTR
<u>Zephyranthes atamasco</u>	Atamasco lily(easter lily)	COSW

EXHIBIT IV

PLANTS IN UNITS OF THE NATIONAL PARK SYSTEM FOR WHICH A KNOWN MARKET DEMAND WAS REPORTED

Species	Common Name	Parks Reporting
<u>Abies balsamea</u>	balsam fir	ACAD, BLRI
<u>Abies grandis</u>	grand fir	SAJH
<u>Abies lasiocarpa</u>	subalpine fir	YELL
<u>Acer</u> spp.	maple	NATR
<u>Agave</u> spp.	agave, century plant	CABR, GUAD
<u>Agave shawii</u>	Shaw's agave	CABR
<u>Allium tricoccum</u>	ramps	BLRI, GRSM
<u>Amanita muscaria</u>	fly amanita (poisonous)	FOCL
<u>Ancistrocactus scheeri</u>	fish-hook cactus	AMIS
<u>Arctostaphylos uva-ursi</u>	bearberry	CACO
<u>Arethusa bulbosa</u>	dragon's mouth	GROP
<u>Arisaema triphyllum</u>	Jack-in-the-pulpit	RUCA
<u>Asplenium kentuckiense</u>	ferns	BISO
<u>Betula</u> spp.	birch (bark)	NOAA
<u>Boletus</u> spp.	mushroom	OLYM
<u>Botelus edulis</u>	Boletus (edible)	FOCL
<u>Calocedrus decurrens</u>	incense cedar	ORCA
<u>Calochortus nuttallii</u>	Sego lily (tuber collected)	FOBU
<u>Calypso bulbosa</u>	lady's slipper calypso orchid	OLYM
<u>Campanula piperi</u>	Piper's bellflower	OLYM
<u>Cantharellus</u>	chanterelle (edible variety)	FOCL
<u>Carya</u> spp.	hickory	NATR
<u>Castilleja levisecta</u>	golden paintbrush	EBLA
<u>Celastrus scandens</u>	bittersweet	SLBE
<u>Cerocarpus ledifolius</u>	mountain mahogany (carving)	LABE
<u>Chamaecyparis lawsoniana</u>	Port Orford cedar	ORCA
<u>Chamaecyparis nootkatensis</u>	Alaska cedar	OLYM
<u>Cornus canadensis</u>	bunchberry dogwood	ACAD
<u>Coryphantha vivipara</u>	desert spiny star cactus foxtail cactus	GUMO JOTR
<u>Cypripedium acaule</u>	pink lady's slipper	GRSM
<u>Cypripedium arietinum</u>	ram's head lady's slipper	GROP
<u>Cypripedium candidum</u>	small white lady's slipper	GROP
<u>Dasyilirion leiophyllum</u>	bluebonnets	BIBE
<u>Dionaea muscipula</u>	Venus' fly-trap	MOCR
<u>Echinocactus horizonthalonius</u>	devil's head	AMIS

<u>Echinocactus polycephalus</u>	cottontop cactus	JOTR
<u>Echinocereus enneacanthus</u>	pincushion cactus	AMIS
<u>Echinocereus occidentalis</u>	white spine lace cactus	AMIS
<u>Echinocereus rigidissimus</u>	rainbow cactus	AMIS
<u>Echinocereus sinuatus</u>	lower Rio Grande barrel cactus	AMIS
<u>Echinocereus stramineus</u>	strawberry cactus	AMIS
<u>Echinocereus triglochidiatus</u>	claret cup	GUMO, AMIS
<u>Ephedra viridis</u>	Mormon tea	ARCH
<u>Epigaea repens</u>	trailing arbutus	CATO
<u>Epithelantha micromeris</u>	button cactus	AMIS
<u>Erigeron pulchellus</u>	white snake root	BISO
<u>Euonymus</u> spp.	strawberry bush	RUCA
<u>Euphorbia antisyphilitica</u>	candililla	BIBE
<u>Fagus</u>	beech	SAGA
<u>Ferocactus acanthodes</u>	barrel cactus	LAME, JOTR
<u>Fouquieria splendens</u>	Sotol, Ocotillo	IBE, LAME, JOTR
<u>Galax rotundifolia</u>	galax	BLRI
<u>Gypfophia paniculata</u>	baby's breath	CODA
<u>Hydrastis canadensis</u>	goldenseal	GRSM, OZAR
<u>Hymenocallis occidentalis</u>	spider lily	JELA
<u>Hypnum</u> spp.	log mosses	GRSM
<u>Ilex opaca</u>	American holly (at Christmas)	GATE, COSW
<u>Ilex verticillata</u>	winterberry	CACO
<u>Iris fulva</u>	red iris	JELA
<u>Iris gigantacaerulea</u>	giant blue iris	JELA
<u>Iris occidentalis</u>	red iris	NATR
<u>Iris versicolor</u>	iris(blue flag)	ACAD
<u>Juniperus</u> spp.		CHIR
<u>Juniperus scopulorum</u>	Rocky Mtn.juniper (firewood)	GRBA
<u>Juniperus virginiana</u>	eastern red cedar	NATR
<u>Kalmia latifolia</u>	mountain laurel	BISO, BLRI
<u>Lilium</u> spp.	lily	YOSE
<u>Limonium nashii</u>	sea heather, sea lavender	ACAD, CACO
<u>Listeria auriculata</u>	auricled twayblade	GROP
<u>Lobelia cardinalis</u>	cardinal flower	JELA
<u>Lonicera sempervirens</u>	honeysuckle	NATR
<u>Lupinus havardii</u>	lupine	BIBE
<u>Lycopodium</u> spp.		GROP, SARA
<u>Lycopodium porophyllum</u>	rock club moss	OZAR, GROP
<u>Malaxis paludosa</u>	adder's mouth	GROP
<u>Mammillaria meiacantha</u>	Heyder nipple cactus	AMIS
<u>Mammillaria roberti</u>	junior Tom Thumb cactus	AMIS
<u>Morchella</u> spp.	morel mushrooms	WICR
<u>Myrica cerifera</u>	wax myrtle	JELA
<u>Nolina microcarpa</u>	beargrass (baskets)	CHIR
<u>Nolina parryi</u>	nolina	JOTR
<u>Opuntia</u> spp.	cactus	COLM

<u>Opuntia basilaris</u>	beavertail cactus	LAME, JOTR
<u>Opuntia erinacea</u>	old man/grizzly cactus	JOTR
<u>Opuntia polycantha</u>	prickly pear cactus	ARCH
<u>Orchis spectabilis</u>	showy orchid	CATO
<u>Osmorhiza obtusa</u>	blunt fruited	GROP
	sweet cicely	
<u>Panax quinquefolium</u>	ginseng	OZAR, SLBE,
	CATO, BISO, CUGA, GRSM, MACA, NATR, RUCA, BLRI	
<u>Pediocactus sileri</u>	silver pincushion	PISP
<u>Pediocactus winkleri</u>		CARE
<u>Phoradendron tomentosum</u>	American mistletoe	JELA
<u>Phragmites australis</u>	common reed	JELA
<u>Picea engelmannii</u>	Engelmann spruce	YELL
<u>Picea glauca</u>	white spruce	NOAA
<u>Pinus</u> spp.	pinus	CHIR
	(lumber & firewood)	
<u>Pinus contorta</u>	lodgepole pine	YELL
<u>Pinus echinata</u>	shortleaf pine	NATR
<u>Pinus edulis</u>	pinyon pine	COLM
<u>Pinus glabra</u>	spruce pine	NATR
<u>Pinus monophylla</u>	pinyon pine (firewood)	GRBA
<u>Pinus ponderosa</u>	ponderosa pine	CODA
<u>Pinus strobus</u>	white pine	SAGA
<u>Pinus taeda</u>	loblolly pine	NATR
<u>Pinus virginiana</u>	Virginia pine	NATR
<u>Platanthera clavellata</u>	club-spur orchid	GROP
<u>Platanthera flava</u>		
var. <u>herbiola</u>	tubercled rain orchid	GROP
<u>Platanthera praeclara</u>	western prairie	GROP
	fringed orchid	
<u>Pleurotus</u> spp.	mushroom	OLYM
<u>Podophyllum peltatum</u>	may-apple	RUCA
<u>Polyodiaceae</u> spp.	ferns	OLYM
<u>Populus tremuloides</u>	aspen (firewood)	GRBA, YELL
<u>Populus sargentii</u>	cottonwood (firewood)	LAMR
<u>Prosopis</u> spp.	mesquite (firewood)	CHIR
<u>Pseudophoenix sargentii</u>	Sargent's cherry palm	BISC
<u>Pseudotsuga menziesii</u>	Douglas fir	SAJH, CODA
	(Christmas, firewood)	CHIR, GRBA
<u>Psoralea esulenta</u>	prairie turnip	BADL
<u>Pteridium aquilinum</u>	bracken fern(fronds)	YOSE
<u>Quercus</u> spp.	oak	SAGA, NATR, CHIR
<u>Rhamnus purshiana</u>	cascara	OLYM
<u>Rhododendron calendulaceum</u>	flame azalea	CARL
<u>Rhododendron canadense</u>	rhodora	ACAD
<u>Rhododendron catawbiense</u>	Rhododendron	BLRI, BISO
<u>Rhododendron maximum</u>	Rhododendron	BLRI
<u>Sabal minor</u>	dwarf palmetto	JELA
<u>Sabal palmetto</u>	cabbage palmetto	CANA

<u>Sanguinaria canadensis</u>	bloodroot	BISO
<u>Sclerocactus wrightii</u>		CARE
<u>Serenoa repens</u>	saw palmetto (fruits)	CANA
<u>Taxus brevifolia</u>	Pacific yew	EBLA,
	MORA, OLYM, ORCA,	SAJH
<u>Thuja occidentalis</u>	white cedar	ACAD
<u>Thuja plicata</u>	western red cedar	SAJH
<u>Tillandsia usneoides</u>	Spanish moss	COSW, JELA, BISO
<u>Tricholoma ponderosum</u>	Matsutake mushroom	ORCA
<u>Trillium</u> spp.	trillium (all trilliums)	GRSM
<u>Trillium ovatum</u>	trillium	EBLA
<u>Tsuga heterophylla</u>	western hemlock	SAJH
<u>Vaccinium angustifolium</u>	lowbush berry	ACAD
<u>Viburnum alnifolium</u>	hobblebush	ACAD
<u>Viburnum cassinoides</u>	witherod(wild raisin)	ACAD
<u>Vitus</u> spp.	grapevines	SARA
<u>Vitus cordifolia</u>	frost grape	NATR
<u>Vitus labrusca</u>	fox grape	NATR
<u>Vitus rotundifolia</u>	muskadine grape	NATR
<u>Xanthorhiza simplicissima</u>	yellowroot	BISO
<u>Xerophyllum tenax</u>	bear grass	MORA
<u>Yucca</u> spp.	Yucca	COLM, CURE, GUMO
<u>Yucca brevifolia</u>	Joshua tree	JOTR
<u>Yucca harrimaniae</u>	Yucca	ARCH
<u>Yucca schidigera</u>	Mohave yucca	JOTR
<u>Zephyranthes atamasco</u>	Atamasco lily (Easter lily)	COSW

EXHIBIT V

NATIVE PLANTS FEDERALLY LISTED ENDANGERED OR THREATENED AND/OR PROTECTED UNDER STATE LAW THAT ARE BEING ILLEGALLY COLLECTED IN UNITS OF THE NATIONAL PARK SYSTEM

Region	Park(s)	Scientific Name	Common Name
Status: Endangered			
RMR	PISP	<u>Pediocactus sileri</u>	silver pincushion cactus
SWR	LAMR	<u>Echinocereus lloydii</u>	lace cactus
Status: Threatened			
SWR	BIBE	<u>Echinocereus chisoensis</u>	Chisos hedgehog cactus
SER	BISO	<u>Conradina verticillata</u>	Cumberland rosemary
Status: Category 1 Candidates for Possible Addition to the Federal List of Endangered and Threatened Plants			
WR	HALE	<u>Argyroxiphium sandwicense</u>	
WR	YOSE	<u>Clarkia lingulata</u>	Merced River Clarkia
Status: Category 2 Candidates for Possible Addition to the Federal List of Endangered and Threatened Plants			
SER	BISO	<u>Cypripedium kentuckiense</u>	Kentucky lady's slipper
SER	GRSM	<u>Abies fraseri</u>	Fraser fir
WR	CABR	<u>Ferocactus viridescens</u>	coast barrel cactus

Status: Protected Under State Law

SER	BLRI, GRSM	<u>Panax quinquefolius</u>	ginseng
SER	GRSM	<u>Cypripedium acaule</u>	pink lady's slipper orchid
SER	CANA	<u>Tillandsia</u> spp.	air plants
WR	CHIR	<u>Prosopis</u>	mesquite
WR	CHIR	<u>Apacheria</u>	Chiricahua rock daisy
WR	CHIR	<u>Aster lemonii</u>	aster
WR	CHIR	<u>Coryphantha robbinsorum</u>	
WR	CHIR	<u>Cynanchum wigginsii</u>	
WR	GRBA	<u>Pinus longaeva</u>	bristlecone pine
WR	SAGU	<u>Cereus giganteus</u>	saguaro cactus
WR	SAGU	<u>Mammillaria</u> spp.	pincushion cactus
WR	SAGU		cholla cactus

National Park Service
Natural Resource Protection Program
1st Priority FTE Needs to Reduce the
Illegal Collection of Native Plants in Parks

Park Position 1st Priority	Grade	FTE
** Region AR		
GAAR Botanist	GS-7/9	1.00
KLGO		0.00
** Subtotal **		1.00
** Region MWR		
APIS		0.00
GRPO		0.00
GWCA		0.00
OZAR 401	GS5/7	3.00
SLBE		0.00
** Subtotal **		3.00
** Region NAR		
ACAD Seasonal LE Ranger	GS-5	0.50
CACO		0.00
CHOH Natural Resource Special.	GS-5/7	3.00
GATE Resource Management Staff		0.00
SAGA		0.00
SAIR		0.00
SARA Protection/LE Ranger	GS-9	1.00
** Subtotal **		4.50
** Region NCR		
CATO Park Ranger-Resource Mgt.	GS-5/7	1.00
GREE		0.00
HAFE Resource Management Spec.	GS-9	1.00
NACE	GS-5	4.00
** Subtotal **		6.00
** Region PNW		
CODA		0.00
EBLA		0.00
FOCL		0.00
MORA 025	GS 7	1.00
OLYM Seasonal Rangers	GS-5	2.50
ORCA LE/RM Ranger	GS-7	1.00
SAJH Resource Mgmt. Specialist	GS-7/9	1.00
** Subtotal **		5.50
** Region RMR		
ARCH Seasonal Backcountry		0.00

National Park Service
Natural Resource Protection Program
1st Priority FTE Needs to Reduce the
Illegal Collection of Native Plants in Parks

Park Position 1st Priority	Grade	FTE
BADL Seasonals (two)	GS-5	1.00
BLCA Park Ranger	GS-7	1.00
CARE Botanist		1.00
COLM Resource Mgmt. Specialist	GS-9	0.50
CURE		0.00
PISP Seasonal Park Ranger	GS-04	1.00
THRO		0.00
TICA		0.00
WICA		0.00
YELL		0.00
** Subtotal **		4.50
** Region SER		
BISO Commissioned Rangers	GS-7	2.00
BLRI Resource Protection Spec.	GS5/7	6.00
CANA Park Ranger	GS-7	1.00
CARL Part-time Ranger		0.25
COSW Seasonal Rangers	GS-5	1.00
CUGA Seasonal LE Rangers	GS-5	0.60
GRSM Protection Rangers	GS-7	2.00
MACA Seasonal LE Rangers		1.00
NATR Park Ranger	GS-7	1.00
RUCA Resource mgt.	GS-5	0.50
** Subtotal **		15.35
** Region SWR		
AMIS Law Enforcement Rangers	GS-7	3.00
BIBE GS 401 (vegetation)	GS-7/9	1.00
CHCU Backcountry Ranger	GS-4	0.50
ELMA Ranger(LE & knows plants)	GS-5	2.00
GUMO Park Ranger (L.E.)	GS-5	0.25
LAMR Full time		1.00
** Subtotal **		7.75
** Region WR		
CABR Law Enforcement	GS-5	0.50
CHIR		0.00
GRBA Biotech	GS-5	1.00
HALE Law Enforcement Rangers	GS-5/7	2.00
JOTR Biological Technician	GS-5	1.00
LABE Patrol and Monitoring		0.25
LAME		0.00
SAGU Backcountry Ranger	GS-5	1.00
YOSE	GS-5/7	0.17

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National Park Service
Natural Resource Protection Program
1st Priority FTE Needs to Reduce the
Illegal Collection of Native Plants in Parks

Park Position
1st Priority

Grade

FTE

** Subtotal **

5.92

*** Total ***

53.52

EXHIBIT VII

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National Park Service
Natural Resource Protection Program
2nd Priority FTE Needs to Reduce the
Illegal Collection of Native Plants in Parks

Park	Position 2nd Priority	Grade	FTE
** Region AR			
GAAR	Patrol Seasonal	GS-5	0.25
KLGO			0.00
** Subtotal **			0.25
** Region MWR			
APIS			0.00
GRPO			0.00
GWCA			0.00
OZAR			0.00
SLBE			0.00
** Subtotal **			0.00
** Region NAR			
ACAD	Biological Technician	GS-5	0.50
CACO			0.00
CHOH			0.00
GATE			0.00
SAGA			0.00
SAIR			0.00
SARA	Seasonal LE Rangers		2.00
** Subtotal **			2.50
** Region NCR			
CATO			0.00
GREE			0.00
HAFE			0.00
NACE			0.00
** Subtotal **			0.00
** Region PNW			
CODA			0.00
EBLA			0.00
FOCL			0.00
MORA	025	GS-5	5.00
OLYM			0.00
ORCA			0.00
SAJH	Law Enforcemt Specialist	GS-5/7	1.00
** Subtotal **			6.00
** Region RMR			
ARCH			0.00

National Park Service
Natural Resource Protection Program
2nd Priority FTE Needs to Reduce the
Illegal Collection of Native Plants in Parks

Park	Position 2nd Priority	Grade	FTE
BADL			0.00
BLCA	Seasonal Park Ranger	GS-4	0.25
CARE			0.00
COLM	Law Enforcement Ranger	GS-5/7	1.00
CURE			0.00
PISP			0.00
THRO			0.00
TICA			0.00
WICA			0.00
YELL			0.00
** Subtotal **			1.25
** Region SER			
BISO			0.00
BLRI			0.00
CANA			0.00
CARL			0.00
COSW			0.00
CUGA	Research Personnel	GS-4	0.50
GRSM	Vegetation Specialist		1.00
MACA			0.00
NATR	Natural Resource Special.	GS-7	0.50
RUCA			0.00
** Subtotal **			2.00
** Region SWR			
AMIS	Resource Mgmt. Trainee	GS-9	1.00
BIBE	3 R.M. Protection Rangers	GS-5/7	3.00
CHCU	Resource Management	GS-5	0.50
ELMA			0.00
GUMO	Park Ranger (L.E.)	GS-5	0.25
LAMR			0.00
** Subtotal **			4.75
** Region WR			
CABR	Resource Management	GS-9	0.50
CHIR			0.00
GRBA	LE Backcountry Ranger	GS-5	1.00
HALE	Law Enforcement Ranger	GS-5	0.90
JOTR	Law Enforcement Ranger		1.00
LABE			0.00
LAME			0.00
SAGU	Seasonal Rangers		0.50
YOSE			0.00

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National Park Service
Natural Resource Protection Program
2nd Priority FTE Needs to Reduce the
Illegal Collection of Native Plants in Parks

Park	Position 2nd Priority	Grade	FTE
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** Subtotal **

3.90

*** Total ***

20.65

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National Park Service
Natural Resource Protection Program
Equipment Needed to Protect
Native Plants in the Parks from Illegal Collection

Park Equipment Needed
1st Priority

Equipment Needed
2nd Priority

Equipment Needed
3rd Priority

** Region AR

GAAR patrol equipment
KLGO

** Region MWR

APIS
GRPO
GWCA
OZAR
SLBE

** Region NAR

ACAD ground sensors	time lapse photogr.	
CACO night scopes	ground sensors	
CHOH two patrol vehicles		
GATE cyclone fencing	guide rails	lumber - boardwalks
SAGA		
SAIR Interpretive signage		
SARA		

** Region NCR

CATO
GREE
HAFE
NACE

** Region PNW

CODA
EBLA
FOCL
MORA remote sensing-audio remote sensingvisual
OLYM support for seasonal vehicles (off road) remote sensing
ORCA
SAJH

** Region RMR

ARCH
BADL two vehicles
BLCA vehicle
CARE
COLM
CURE
PISP
THRO GIS system
TICA
WICA
YELL

National Park Service
Natural Resource Protection Program
Equipment Needed to Protect
Native Plants in the Parks from Illegal Collection

Park	Equipment Needed 1st Priority	Equipment Needed 2nd Priority =	Equipment Needed 3rd Priority
** Region SER			
BISO	4x4 utility veh.(2)	5watt port. radio(2)	110w mobile radio(2)
BLRI	vehicles (6)	surveillance cameras	portable radios
CANA	communications equip	vehicle 4wheel drive	
CARL			
COSW	Loran Unit (\$750)		
CUGA	4x4 vehicle	binoculars	two fatigues
GRSM	'point+shoot' cameras	altimeters	
MACA			
NATR	remote camera (2)		
RUCA			
** Region SWR			
AMIS	shallow draft boats	boat engines	4 wheel drive vehic.
BIBE	vehicle support	35 mm camera	global positioning
CHCU	binoculars	radio equipment	
ELMA			
GUMO			
LAMR			
** Region WR			
CABR			
CHIR	vehicle	tools	
GRBA			
HALE			
JOTR	vegetation mapping	computer	vehicles
LABE	infrared detection		
LAME	motion detectors	video equipment	aerial photography
SAGU	remote detection dev		
YOSE			