

## 2005-2009 SUSTAINABLE FORESTRY INITIATIVE® STANDARD GUIDANCE DOCUMENT

The following information serves as “guidance” to provide more detail and definition on biodiversity hotspots and major tropical wilderness areas, forests with exceptional conservation value, invasive exotic species, BMP monitoring and surveillance audits.

### 1.0 Descriptions of Biodiversity Hotspots and Major Tropical Wilderness Areas

The SFIS calls for procurement policies that promote conservation of forests in areas outside of the United States and Canada identified as biodiversity hotspots and major tropical wilderness areas. This document provides additional descriptive information drawn from Conservation International’s poster/map entitled “Biodiversity Hotspots—Earth’s Biologically Richest and Most Endangered Terrestrial Ecoregions”. Two of the areas (California Floristic Province and Caribbean) are wholly or partially within the United States and for the purposes of the SFIS those portions within the U.S. are addressed by the NatureServe or equivalent processes that are being implemented in North America for identification of critically imperiled and imperiled species and communities. Compliance with the SFIS does not mean that that SFI Program Participants must cease all raw material or procurement activities from all unmanaged forests within these areas. Rather, emphasis is on seeking assurance that fiber and logs are secured from areas harvested legally and at the same time avoiding actions that serve to cause or encourage further destruction of remaining original primary vegetation. Working to increasingly meet fiber and wood production needs from plantations and managed forests enhances efforts to protect remaining biologically diverse habitats. Program Participants can work with Conservation International, World Wide Fund for Nature, The Nature Conservancy and others to provide additional guidance on aligning business and conservation objectives within these regions. At the same time collaborative efforts between and among governments, conservation interests and the private sector will be necessary to implement conservation strategies within or apart from the SFIS to achieve biodiversity goals within these areas while addressing social and political circumstances unique to each country of origin.

#### 1.1 Biodiversity Hotspots

The most recent analysis applying the defining characteristics (exceptional concentrations of endemic species and extraordinary degree of threat) of “biodiversity hotspots” identified the following 25 areas:

**1. Tropical Andes**—The most diverse of all hotspots. The Andes are home to 20,000 endemic plants and at least 1,567 endemic terrestrial vertebrates. Unique species include the spectacled bear, the only bear species in South America, and the mountain tapir. The region is also home to a spectacular array of birds and amphibians. Toucans,

hummingbirds and tanagers are particularly diverse in the Tropical Andes.

**2. Mesoamerica**—Forming a land bridge between North and South America, the Mesoamerica hotspot is a huge transition zone characterized by species lineages from both continents. The spider monkeys, howler monkeys, Baird’s tapir and the resplendent quetzal are a few of Mesoamerica’s most dramatic species. This region is one of the richest and most diverse hotspots on Earth, combining lowland rain forest with montane cloud forest.

**3. Caribbean**—The Caribbean hotspot has one of the highest concentrations of endemic species on Earth. Reptiles such as the Anolis lizards, are particularly diverse: 497 reptile species are found here, 80 percent of which are endemic. Total terrestrial vertebrates in this hotspot number 1,518, more than half of which are unique to the Caribbean. At least 10 parrot species and 33 mammal species have been driven to extinction over the last few centuries.

**4. Choco-Darien-Western Ecuador**—Contains some of the wettest rain forests on Earth with amphibians, plants and birds being particularly diverse. Of the 350 amphibian species found here 210 are endemic—one of the highest levels of endemism of any hotspot. The poison dart frogs are among the area’s best-known amphibians.

**5. Atlantic Forest Region (of South America)**—Once covering an area three times the size of California, the Atlantic Forest has been reduced to less than a tenth of its original extent. It is famous for 25 different species and subspecies of primates, 20 of which are found only in this hotspot, including the critically endangered muriquis and lion tamarins. Murici in Alagoas state, at the northern end of the Atlantic forest, may be the world’s most important forest for bird conservation, holding 14 globally threatened bird species in 15 square kilometers.

**6. Brazilian Cerrado**—A vast area of savanna and dry forest, the Cerrado is Brazil’s new agricultural frontier and has been heavily impacted in the past few decades. It is home to 4,400 endemic plants and several unique mammal species, including the giant anteater and the maned wolf. Fire, both natural and human-induced, is an important feature of the ecology of the Cerrado.

**7. Central Chile**—Bearing more resemblance to California than to anywhere in the Southern Hemisphere, this hotspot combines an arid region with a Mediterranean-type zone. It is best known for its variety of plant species but also holds interesting fauna species, including the chinchilla, the pudu, and the Andean condor.

**8. California Floristic Province**—Located largely within the state of California and extending into Oregon and northern Mexico, this is one of five hotspots characterized by a Mediterranean-type climate of hot, dry summers and cool, wet winters. Encompassing both mountain and coastal landscapes, the California Floristic Province is especially rich in plants; 48 percent of its 4,426 higher plants are endemic.

**9. Madagascar & Indian Ocean Islands**---Often considered a mini-continent, Madagascar is famous for its reptiles, birds, and primates. Tattersall's sifaka is one of this hotspot's 51 lemur taxa – unique primates found only on Madagascar and surrounding islands. Madagascar is thought by many to be the world's top conservation priority due to its remarkable biodiversity and extensive deforestation.

**10. Eastern Arc Mountains & Coastal Forests of Tanzania & Kenya**--A chain of upland and coastal forests, this hotspot claims one of the densest concentrations of unique plant and primate species in the world. It is home to the well-known African violets and 4,000 other plant species, as well as the 1,500 remaining Zanzibar red colobus monkeys and many other endangered primates.

**11. Cape Floristic Province**—This Mediterranean-type hotspot harbors an incredible 8,200 plant species, 5,682 of which are endemic, in an area the size of Ireland. The Cape Floristic Province has the greatest concentration of non-tropical plant species in the world. Agriculture and the invasion of non-native plant species represent the greatest threats to this hotspot.

**12. Succulent Karoo**—The Succulent Karoo is the only hotspot that is entirely arid. Renown for its unique succulent flora, the hotspot is home to 4,849 species of vascular plants, 40 percent of which are endemic, and is a center of diversity for reptiles and invertebrates.

**13. Guinean Forests of West Africa**—The Guinean Forests harbor the highest mammal diversity of any hotspot. The hotspot's 551 mammal species represent almost half of the mammal species of continental Africa. The Guinean Forests are home to the rare pygmy hippopotamus, the zebra duiker, and one of Africa's most endangered primates—the drill. Guinean Forest species have been heavily impacted by large-scale deforestation and hunting.

**14. Mediterranean Basin**—This hotspot is the largest of the five Mediterranean-type hotspots. Best known for its 13,000 endemic plant species, the Mediterranean is also home to a number of interesting vertebrates like Hermann's tortoise, the Barbary macaque, and the Mediterranean monk seal. The site of many ancient and modern civilizations, it is one of the most heavily impacted of all hotspots.

**15. Caucasus**--Situated between the Black Sea and the Caspian sea, the Caucasus hotspot ranges from temperate forests to grasslands. The Caucasus is a transition zone between Europe and Asia, holding flora and fauna representative of both continents. Its diversity of vascular plant species is particularly noteworthy, of the 6,300 species that have been recorded, more than 1,600 are endemic.

**16. Sundaland**--Including some of the largest islands in the world, the Sundaland hotspot is home to a number of unique species, including the endangered orangutans of Sumatra and Borneo, the clouded leopard, two species of rhinoceros, and 10 species of hornbills. The second richest hotspot in endemic plants, Sundaland is also well known for its

mammal diversity, with 328 species recorded.

**17. Wallacea**—Named for the renowned 19th century naturalist Alfred Russel Wallace, this hotspot includes the large Indonesian island of Sulawesi, the Moluccas and many smaller islands. The area is particularly rich in endemic birds and mammals, among them the Sulawesi redknobbed hornbill, the Celebes macaque, and the babirusa. Wallacea is also home to the Komodo dragon.

**18. Philippines**--One of the highest priority hotspots, the primary forests of the Philippines have been reduced to 3 percent of their original extent. The hotspot is especially rich in endemic mammals and birds, holding incredible species such as the Palawan peacock pheasant, the Philippine eagle, the tamaraw, and flying foxes.

**19. Indo Burma**—Stretching from the eastern slopes of the Himalayas through Burma and Thailand to Indochina, this is one of the richest of all the hotspots. It holds the world's highest freshwater turtle diversity and an array of mammals, including the endemic pileated gibbon. Indo-Burma also holds 24 species of pheasants. The region is poorly known biologically; a number of large mammals, such as the saola and giant muntjac, have been discovered here in the last decade.

**20. Mountains of South-Central China**--An area of extreme topography and likely the most biologically rich temperate area on Earth, these mountains are home to several of the world's best-known species, including the giant panda, the red panda and the Chinese golden monkey. This hotspot is still largely unexplored and may hold many undiscovered species.

**21. Western Ghats & Sri Lanka**--The Western Ghats mountain chain of India and the adjacent island of Sri Lanka harbor high concentrations of endemic reptiles. Of the hotspot's 259 reptile species, 161 are found nowhere else on Earth. This hotspot is also home to a number of distinctive species, including the lion-tailed macaque and the Nilgiri tahr. Human population pressure and coffee cultivation are two of the region's greatest threats.

**22. New Caledonia**—New Caledonia is one of the smallest hotspots, yet its concentration of unique plants is unmatched. It is home to five plant families found nowhere else on Earth. This hotspot is also characterized by a large number of endemic birds such as the notou pigeon and the kagu, a rain forest bird that is the only representative of its entire family.

**23. New Zealand**—This hotspot claims a number of world-famous species, including the kiwis, the tuatara, and the weta cricket. The kakapo - a large, flightless nocturnal parrot - is one of New Zealand's most unusual and critically endangered endemic species. The hotspot also has four endemic bird families, a high number for such a small land area. About 50 bird species have become extinct since the island's colonization 700 years ago.

**24. Polynesia & Micronesia**—Comprised of thousands of tiny islands--scattered over

the Pacific from Hawaii to Fiji to Easter Island—this hotspot is noteworthy for its land snails, birds, and reptiles. The biota of this hot spot is under intense pressure from human-induced disturbance and non-native species introductions, and its plants and animals are among the most highly endangered in the world. This hotspot has already suffered at least 1,000 bird species extinctions over the last 2,000 years.

**25. Southwest Australia**—A Mediterranean-type region, this hotspot is rich in endemic plants, reptiles, and marsupial mammals. The Southwest Botanical Province has a total of 5,469 plant species, of which 19 percent are endemic. It harbors some of the world’s tallest trees, including several giant Eucalyptus species. The numbat, the honey possum, and the quokka are some of the area’s best-known vertebrate species.

## 1.2 Major Tropical Wilderness Areas

**1. Amazonia Wilderness Area**—The largest tropical wilderness area left on Earth, Amazonia covers some 7 million square kilometers. Although shared by nine countries, more than 60 percent of the region occurs within the borders of Brazil. The Guayana Shield in northeast Amazonia holds the world’s most pristine, unfragmented blocks of tropical forest. Amazonia as a whole has very high levels of diversity and endemism, including more freshwater fish and primate species than anywhere else on Earth.

**2. Congo Basin Wilderness Area**—Covering six nations and nearly 2 million square kilometers, the Congo Basin is the second-largest tropical rain forest region on Earth. Although much of the forest remains intact, it is increasingly being impacted by logging and bushmeat hunting. Among the most noteworthy species are the lowland gorilla, the chimpanzee, the bonobo, the okapi, the Congo peacock, and the forest elephant.

**3. New Guinea Wilderness Area**—The island of New Guinea and the surrounding Melanesian archipelago make up the largest remaining tropical wilderness area in the Asia Pacific region and covers an area about 800,000 square kilometers. Politically, New Guinea is shared by two countries, with the eastern half belonging to Papua New Guinea and the western half forming the Indonesian province of Papua. Among the region’s spectacular species are the birds of paradise and tree kangaroos.

## 2.0 Forests With Exceptional Conservation Value

Beginning in July of 2002, The SFB has adopted a series of changes to the SFI Standard (SFIS) designed to expand protection of forests with exceptional conservation value (FECV). In short, these enhancements:

- A. Require the use of NatureServe or equivalent processes in North America to identify and protect species and communities that are identified as critically imperiled or imperiled;
- B. Call for procurement provisions to address biodiversity hotspots and major tropical wilderness areas outside of the United States and Canada; and
- C. Added new performance measures and indicators designed to help thwart illegal logging.

### 2.1 Processes NatureServe Uses to Identify Global Rank and Occurrence Rank

Identification and protection of critically imperiled and imperiled species and communities is a step-wise process. First, the “global rank” which reflects the rarity / imperilment of the species or community is determined. Second, the viability of particular occurrences of critically imperiled and imperiled species and communities is assessed. A viable species or community is one that is of sufficient quality to likely survive long-term. Clearly, little conservation benefit is gained unless protected occurrences have a good likelihood of long-term survival. NatureServe inventory and conservation activities focus on locating, maintaining records on and working with partners to conserve viable occurrences of conservation elements. NatureServe / Heritage Programs rank viability of element occurrences (community or species) using standard methodologies to yield an Element Occurrence (EO) Ranking. A standard set of EO RANK Specifications is developed and maintained for each element and then applied against individual occurrences of the element. The basic EO RANKS are:

#### **Basic EO Ranks**

- A: Excellent estimated viability
- B: Good estimated viability
- C: Fair estimated viability
- D: Poor estimated viability
- E: Verified extant (viability not assessed)
- H: Historical
- F: Failed to find
- X: Extirpated

The SFIS requires that Program Participants have “plans to locate and protect known sites associated with viable occurrences of critically imperiled and imperiled species and communities”. In determining the viability and potential to protect occurrences, Program Participants are encouraged to seek additional information from NatureServe (<http://whiteoak.natureserve.org/eodraft/5.pdf>) for info on occurrence ranking) and/or

collaborate with qualified conservation experts. Historic (H) and Extirpated (X) occurrences are clearly nonviable, and no protection activity is warranted. Occurrences that are ranked F are not covered under the SFIS since only known occurrences are included. Element occurrences with poor estimated viability (i.e., D-ranked) would not be protected under the SFIS. A D-rank might result because the acreage of a community or the population of a species is too small, the quality is very low, and/or the ecological processes required to maintain the occurrence are fundamentally altered and un-restorable. Under the SFIS, A- and B-ranked occurrences of critically imperiled and imperiled species and communities are to be protected. C-ranked occurrences should be reviewed and addressed on a case by case basis. Those with greater potential to be viable (C+) should be protected. Those with a lesser potential ability to be viable (C-) are to be managed at the Program Participant's discretion. To the extent practical, E-ranked occurrences (extant but viability not assessed) should be presumed viable and protected until assessed and determined to be of C- or D quality. *The following material provides additional information on the standards and methodologies employed by NatureServe in determining the quality or viability of occurrences.*

## 2.2 Occurrence Quality

For an ecological assessment, scientists and managers want to know if each occurrence is of sufficient quality, or feasibly restorable, before including in management planning. With adequate information, ecologists evaluate and rate the quality of element occurrences using criteria grouped into three categories: size, condition, and landscape context.

### 2.21 Criteria for Evaluating Element Occurrences

Characterizing the quality of an occurrence provides the basis for assessing stresses—the degradation, or impairment—of element occurrences at a given site. To assess the quality of element occurrences, ecologists must identify the key ecological factors (processes, disturbance regimes, composition or structure, etc.) that support them. Once these are identified, one may describe their expected ranges of variation and assess whether the on-site factors are within those ranges or requires significant effort to be maintained or restored to its desired status. Key ecological factors vary by element type, but all are grouped into three categories of size, condition and landscape context. Each of these three categories is reviewed and ranked for each occurrence as A (very good), B (good), C (fair), and D (poor). The break between C and D establishes a minimum quality threshold for occurrences. Occurrences Ranked D are typically presumed to be beyond practical consideration for ecological restoration. In subsequent management planning, these ranks and underlying criteria aid in focusing conservation activities and measure progress toward local conservation objectives. Definitions of these criteria are:

**Size** is a measure of the area or abundance of the conservation element's occurrence. For any conservation element, size may simply be a measure of the occurrence's patch size or geographic coverage. It may also include an estimate of sub-population size or density. Minimum dynamic area, one aspect of size, is the area needed to ensure

survival or re-establishment of a population or community after natural disturbance.

**Condition** is an integrated measure of the composition, structure, and biotic interactions that characterize the occurrence. This includes factors such as reproduction, age structure, biological composition (e.g., presence of native vs. invasive exotic species; presence of characteristic patch types), physical and spatial structure (e.g., canopy, understory, and groundcover; spatial distribution and juxtaposition of patch types or seral stages in an ecological system), and biotic interactions that directly involve the element (e.g., competition and disease).

**Landscape context** measures two factors: the dominant environmental regimes and processes that establish and maintain the element occurrence, and connectivity. Dominant environmental regimes include hydrologic and water chemistry regimes (surface and groundwater), geomorphic processes, climatic regimes (temperature and precipitation), fire regimes, and natural disturbances. Connectivity includes such factors as species elements having access to habitats and resources needed for life cycle completion, fragmentation of ecological communities and systems, and the ability of any element to respond to environmental change through dispersal, migration, or re-colonization. Criteria for ranking ecological communities vary by type. In many instances, criteria are developed for ecological systems, then modified (mostly with size attributes) for application to occurrences of individual rare plant associations that may occur among the more broadly defined ecological system.

### 3.0 Invasive Exotic Species

According to the USDA Animal and Plant Health Inspection Service, an invasive exotic species is “any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem, whose introduction does or is likely to cause economic or environmental harm or harm to human health.” (www.invasive.org: accessed December 2, 2004) Examples would include gypsy moth and kudzu, but not the barred owl.

New indicator 4.1.7 does not require a SFI Program Participant to eliminate invasive exotic species on its land. SFI Program Participants should become knowledgeable about invasive exotic species within their area of operation. The expectation is that SFI Program Participants will participate in cooperative efforts by others (e.g. government agencies or ENGOs) and work proactively within its own programs (e.g. erosion control or seed selection for wildlife plots) to limit the introduction, impact and spread of invasive exotic species. In some places invasive exotics are well established and eradication by the SFI Program Participant is unrealistic. Experts in this area believe the most effective means of addressing invasive exotic species include:

- a. awareness building,
- b. monitoring,
- c. preventing new introductions, and
- d. eliminating new occurrences.



SFI Program Participants should emphasize these as priorities in their programs. Forest practices that reduce the abundance of invasive exotic species are preferred, if they can be addressed within the context of the Program Participant's overall management objectives.

#### **4.0 BMP Monitoring**

New indicator 8.4.1 does not require a SFI Program Participant to inspect the harvesting activities of every wood producer to assess their BMP compliance. A Program Participant can use a broad range of data to address this measure (e.g. state monitoring programs and certification status of wood producers). If the SFI Program Participant can use state data on its wood producers to accurately reflect BMP compliance rates, this data may be sufficient. If the state data do not accurately characterize BMP compliance rates for a SFI Program Participant's wood producers, then the SFI Program Participant will need to implement, either individually, cooperatively or through a third party, a process to evaluate their wood producers on the ground compliance. This process may include sampling to generate a representative assessment of wood producer compliance. If the wood producer is a wood dealer, the SFI Program Participant should assess the BMP compliance rates related to the wood being supplied by the wood dealer.

#### **5.0 Surveillance Audits and Continuous Certification**

Surveillance audits are intended to periodically monitor the ongoing effectiveness of a Program Participant's SFI program during the 5-year period between full third-party certification audits. A surveillance audit is used to assess the overall functionality of the Program Participant's SFI system, conformance to any new indicators, and would review completion of corrective action plans, if applicable. This option still requires the full audit at the end of the 5 year certification period. The surveillance audit is not intended to assess conformance to all SFI Indicators nor is it likely to require a full audit team. The interval between surveillance audits cannot exceed 18 months.

The continuous certification option is one way to meet the periodic surveillance audit requirement in the SFI Standard. As an alternative to the combination of surveillance audits and the full audit at the end of the 5 year certification interval, SFI Program Participants can implement partial audits performed every 12 – 18 months that address all SFIS Objectives. Approaches can vary among SFI Program Participants. For example, a SFI Program Participant could audit to the entire SFI Standard on different operating units throughout the organization over the 5 year certification cycle. Or, the SFI Program Participant could, on a periodic basis, audit to a subset of the SFI Standard indicators throughout the entire organization, but must address all of the indicators over the 5 year cycle in subsequent audits. The interval between audits cannot exceed 18 months.