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The Contribution of Rainforest Alliance/ Forest Stewardship Council Certification to the Conservation of World Heritage Sites

Introduction

Since the passing of the UNESCO World Heritage Convention in 1972, the designation 'World Heritage Site' has been awarded to 911 properties of outstanding natural or cultural importance. Natural World Heritage sites have exceptional natural beauty and/or outstanding biodiversity,[1] and typically have a national-level designation such as National Park or Wildlife Preserve in addition to their World Heritage status.

Protected areas are the cornerstone of in situ conservation; safeguarding them remains the most effective means of conserving habitats essential for the survival of threatened species and the flow of ecosystem services that benefit communities, enterprises, and entire countries.[2–3] However, the activities occurring in the zone around protected areas—the zone that we call the buffer area—also influence a protected area's ability to maintain habitat quality and ecosystem services. Buffer areas contribute to the creation of biological corridors, which have been shown to expand the effective area of otherwise isolated habitats, and enhance ecological processes such as pollination and seed dispersal.[4] Good management practices in the buffer area can also reduce the potential for fire or invasive species to spread to the protected area.

From a socioeconomic perspective, the buffer area also has a role to play. If the farms, forest companies and other industries that are located within the buffer area provide good jobs, they can reduce the number of unemployed or disenfranchised residents who might otherwise turn to illicit activities such as illegal logging or wildlife poaching within the protected area. The presence of jobs and law enforcement within the buffer area can also counter the negative spillover effects that have been observed when protected areas become off-limits for certain economic activities that were previously allowed.

The standards of the Forest Stewardship Council (FSC) are internationally-accepted principles and criteria of good forestry, which are adapted to local contexts by working groups made up of scientists, community members, and members of the forestry sector. The resulting set of indicators and verifiers essentially denotes best practices for sustainable forestry in a given region. Interested forestry operations are then audited by third-party certifiers such as the Rainforest Alliance's SmartWood program, which conducts extensive site and office visits to determine whether an operation is in compliance with the FSC standards.

For forestry operations located within the buffer area of a World Heritage site, there are many elements of the FSC standards that, when implemented, could improve the ability of the site to function as an intact and robust ecosystem. These include requirements that FSC-certified forestry operations identify and conserve High Conservation Value Forests (HCVFs) and habitat for threatened and endangered species; that they have systems in place to prevent fires and the movement of invasive species; that they pay workers fairly; and that local communities benefit from employment and access to the forest for cultural practices and the harvesting of non-timber forest products. These sustainable forestry practices, within a landscape matrix, can also serve as an important link between multiple protected areas.

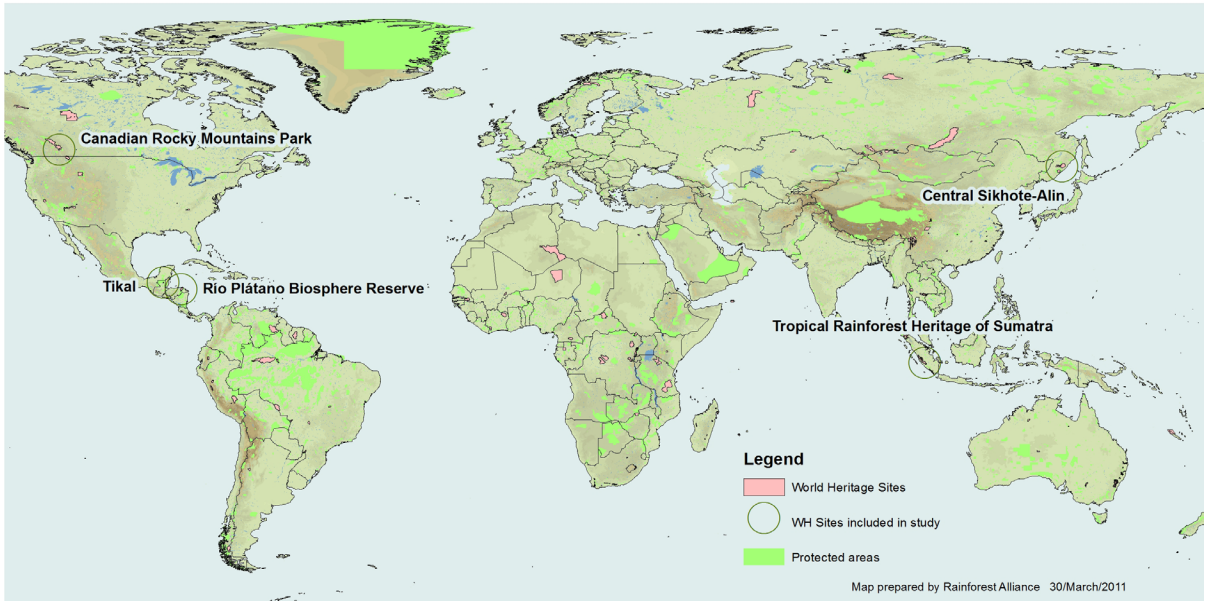
The purpose of this report is to explore the relationship between natural World Heritage sites and FSC-certified forests,[5] and describe the potential contribution of certified forestry to the integrity of World Heritage sites.

Approach

Using GIS, we first overlaid polygons of the World Heritage Sites[6] with those of FSC-certified operations that were audited by the Rainforest Alliance (referred to as 'RA/FSC-certified operations' in this

[1] *For a full list of criteria for World Heritage Site designation see http://whc.unesco.org/en/criteria.*
[2] *Chape S, Harrison J, Spalding M, Lysenko I (2005) Measuring the extent and effectiveness of protected areas as an indicator for meeting global biodiversity targets. Philos. Trans. R. Soc. London 1454.*
[3] *Bruner AG, Guillison RE, Rice RE, Fonseca GAB (2001) Effectiveness of parks in protecting tropical biodiversity. Science 291: 125–128.*
[4] *Tewksbury, L. T., R. A. Casagrande, B. Blossey, M. Schwarzlaender and P. Haefliger. 2002. Potential for biological control of* Phragmites australis *in North America. Biological Control 23: 191–212.*
[5] *Our analysis only includes those forestry operations that were certified to the FSC standards by the Rainforest Alliance.*
[6] *From the UNEP-WCMS World Database on Protected Areas.*

Map 1. Location of World Heritage sites with RA/FSC-certified operations adjacent or within 20 km.



report). We then identified those operations that were adjacent to or at least partially within 20 km (12 miles) of the World Heritage sites.

Out of 375 RA/FSC-certified operations, nine met these criteria. As shown on Map 1, these nine operations are located around the following six World Heritage sites: Canadian Rocky Mountain Parks and Waterton Glacier International Peace Park (Canada/US border), Río Plátano Biosphere Reserve (Honduras), the Tropical Rainforest Heritage of Sumatra (Indonesia), Central Sikhote-Amin (Siberia, Russia), and Tikal National Park (Guatemala).

Next, we examined the certification assessment reports for each of these nine operations. Among other things, the assessment report identifies areas of non-conformance—areas where the candidate forestry operation is not in compliance with the FSC standards. When this happens, operations are issued a Corrective Action Request, or 'CAR,' that clearly specifies the action that must be taken to come into compliance with the standard. If the non-conformance is minor, the FSC certificate is awarded and the operation is given time—typically one year—to implement the CAR. If the infraction is severe, a major CAR is issued and the FSC certificate is not awarded until CAR implementation is verified.[7]

Though not a perfect proxy for impact, we believe that the CARs issued to an operation do provide valuable insights into the areas where certification has resulted in forest management improvements. Because we were specifically interested in the changes that RA/FSC-certified companies made that might affect the adjacent World Heritage sites, we looked for CARs that required operations to take corrective actions that would:

- Improve High Conservation Value Forest (HCVF) assessment
- Conserve HCVFs
- Protect rare, threatened or endangered species or their habitats
- Limit the movement of invasive species
- Prevent or contain forest fires
- Improve worker wages or working conditions
- Enhance the viability of local communities

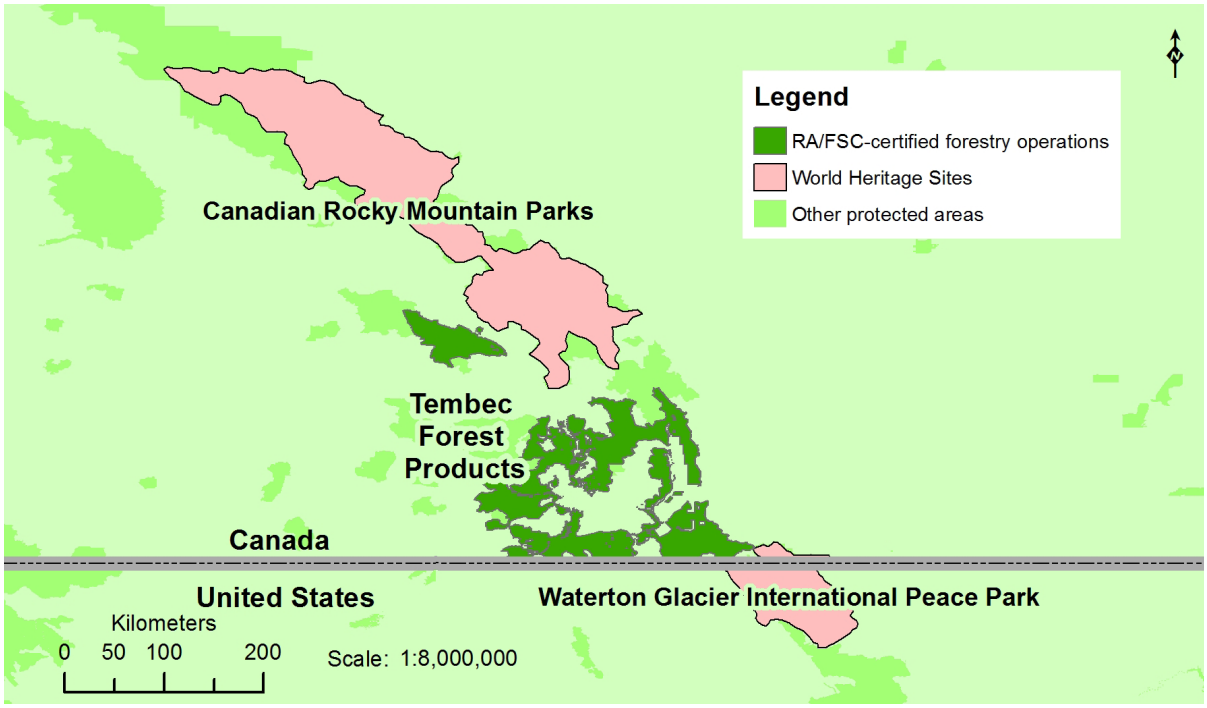
In the sections that follow, we identify those World Heritage sites with adjacent RA/FSC-certified forestry operations, outline the current threats that these sites face, and describe the ways that their certified neighbors might be contributing to their effectiveness and integrity.

Canadian Rocky Mountain Parks and Waterton Glacier International Peace Park

The Canadian Rocky Mountain Parks World Heritage site includes the Banff, Jasper, Kootenay and Yoho National Parks and three adjacent Provincial Parks, for a combined area of 2,306,884 hectares (5,700,434 acres). These parks contain montane, subalpine and alpine ecoregions, as well as glaciers and the Burgess Shale fossil site.[8] The Waterton Glacier International Peace Park combines the Waterton Lakes National Park in Canada and Glacier National Park in Montana, and is 457,614 hectares (1,130,788 acres) in size, also with a wide variety of ecosystems.[9] These sites are exceptionally rich in plant and mammal species, and are home to bighorn sheep, hoary marmot, moose, caribou, grey wolf, grizzly bear, black bear, wolverine, lynx and puma.[10]

Much of the land bordering these parks is used for logging, the extraction of oil and gas, and rec-

[7] *Unless otherwise noted, RA auditors confirmed that all CARs discussed in the report were in fact implemented within the required time period.*
[8] *http://www.eoearth.org/article/Canadian_Rocky_Mountain_Parks,_Canada*
[9] *http://whc.unesco.org/en/list/354*
[10] *http://whc.unesco.org/en/list/304*



Map 2. Canadian Rocky Mountain Parks, Waterton Glacier International Peace Park, Tembec Forest Products.

reational activities such as skiing. The roads for these activities have facilitated increased public access to formerly remote areas and increased wildlife mortality. Roads are considered one of the primary threats to the integrity of these parks and to the viability of the ungulate migration routes that run through them.[11]

Tembec is a large integrated Canadian forest products company that sells solid wood, pulp and paper products in over 50 countries. Its FSC certificate in this region includes the Kootenay Lake and Cranbrook Timber Supply Areas (TSAs), which total approximately 267,834 hectares (661,832 acres).[12] The company operates on Crown land, which is owned by the government and managed by Tembec through volume-based forest licenses. In total, 29 communities are considered local to Tembec's Kootenay Lake and Cranbrook TSAs.

Wildlife surveys reveal that 47 wildlife species found within the Kootenay Lake and Cranbrook TSAs have been designated as red- or blue-listed nationally. Natural disturbances such as insects, fire and disease have created a mosaic of seral stages and age classes in this area. Large fires occurred in 1985 and 2003, and at present an unprecedented outbreak of mountain pine beetle is affecting vast areas of lodgepole pine throughout Tembec's tenure and many other areas in British Columbia.

Tembec's Kootenay Lake and Cranbrook TSAs were first assessed by the Rainforest Alliance in 2005. The operation received three major and 23 minor CARs. These CARs were issued in all seven thematic areas that we examined, except forest fire prevention and containment. Tembec's CARs required the assessment and management of HCVF areas, and the creation of larger 'protected reserve' areas. Practices within riparian zones were also addressed, with one CAR requiring the creation of a 7-meter (23-foot) machine-free zone along all water bodies, except where machines are required for stream crossings. Tembec was also required to mitigate the damages associated with mineral exploration roads in areas designated as HCVFs.

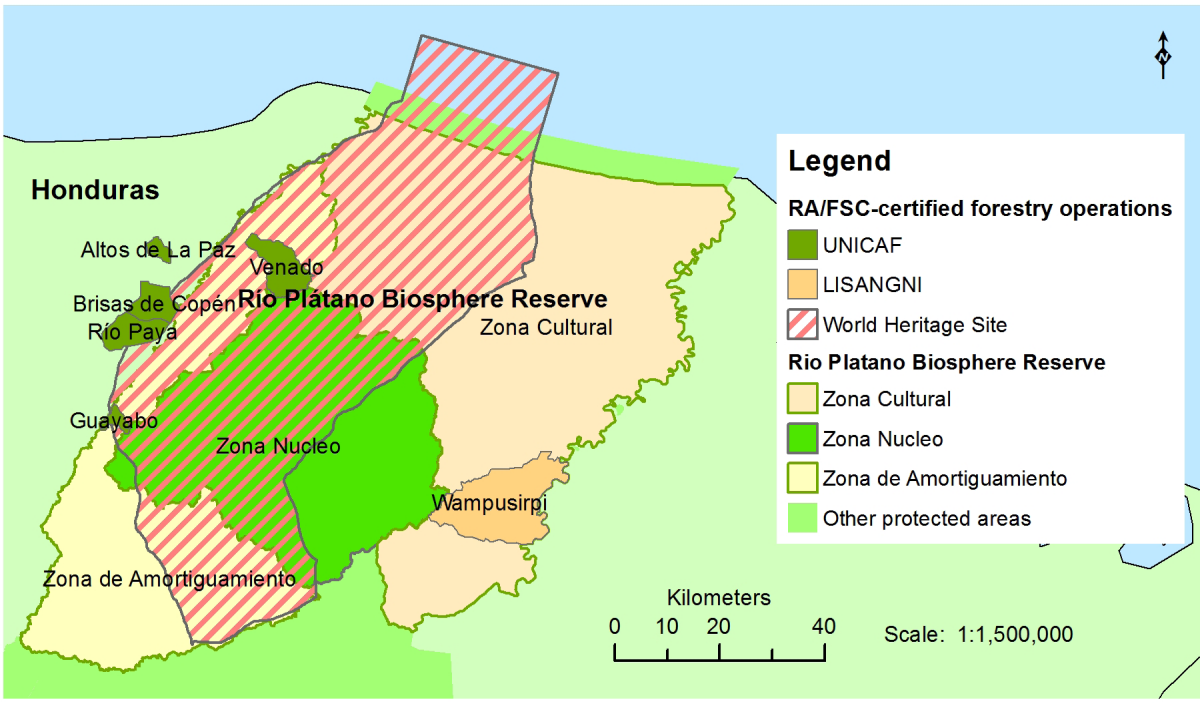
A CAR was issued that required Tembec to prevent cattle grazing in riparian areas, with the aim of decreasing the ability of invasive species to gain a foothold in the area.

A number of actions were required to ensure that workers were operating safely on steep slopes, including, among others, training on the risk rating system for steep slopes and information on their right to refuse unsafe work without discrimination. Finally, a CAR was issued that required the implementation of the company's local purchasing policy, and the identification of local employment opportunities in the town of Creston.

Río Plátano Biosphere Reserve

At 500,000 hectares (1.2 million acres) in size, the Río Plátano reserve is the largest remaining undisturbed tropical rainforest in Honduras, and one of the few remaining humid tropical rainforests in Central America. The majority of the area is covered by mature broadleaf forests, with pine savannahs, mangroves, swamp forest and hardwood gallery forest found along the Plátano river and its tributaries. Over 2,000 indigenous people have preserved their traditional way of life within this mountainous landscape.[13]

[11] *http://www.eoearth.org/article/Canadian_Rocky_Mountain_Parks,_Canada*
[12] *Tembec East Kootenays Certification Re-assessment Report, 2009*



Map 3. Río Plátano Biosphere Reserve, UNICAF and LISANGNI.

This World Heritage site is under threat from agricultural expansion into the southern and western sides of the reserve and illegal logging for species such as mahogany (*Swietenia macrophylla*). Wildlife within the reserve is under threat from uncontrolled commercial hunting and the introduction of exotic species.[14] A lack of park staff has been cited as compounding the problem.[15]

Two RA/FSC-certified forestry operations are located within or adjacent to the Río Plátano Biosphere Reserve (RPBR). The first is UNICAF-BRP, an organization that was created in 2008 with the goal of sustainable management and sale of timber and non-timber forest products, environmental services such as carbon retention and sequestration, ecotourism and others. The group is composed of five FSC-certified operations, each managing its own forest resources within the RPBR's buffer and cultural zone.

This cooperative was assessed by the Rainforest Alliance in August 2010. Most wood is harvested for export, with the main species being mahogany. The total land area is 14,795 hectares (36,559 acres), of which 9,839 hectares (24,312 acres) are designated as no-harvest areas.

The operation 'Empresa de Servicios Múltiples LISANGNI' was created in 2008 by a group of 37 citizens representing 16 groups from communities in the Municipality of Wampusirpe. The group produces oil from the seed of *cedro macho* (*Carap guianensis*), a non-timber forest product that is used in cosmetics. In total, LISANGNI manages 24,686 hectares (61,000 acres) and provides employment for indigenous people in a region where few other opportunities exist.

UNICAF was issued 17 CARs (5 major and 12 minor), and LISANGNI was issued 23 (10 major and 13 minor). Because the assessments were both conducted within the past year, a follow-up audit to confirm that the CARs were addressed has not yet occurred.

Auditors issued CARs related to HCVFs for both operations. UNICAF was required to implement the HCVF identification and monitoring methodology that they had previously developed. LISANGNI was required to identify both HCVFs and the actions they are taking to protect them.

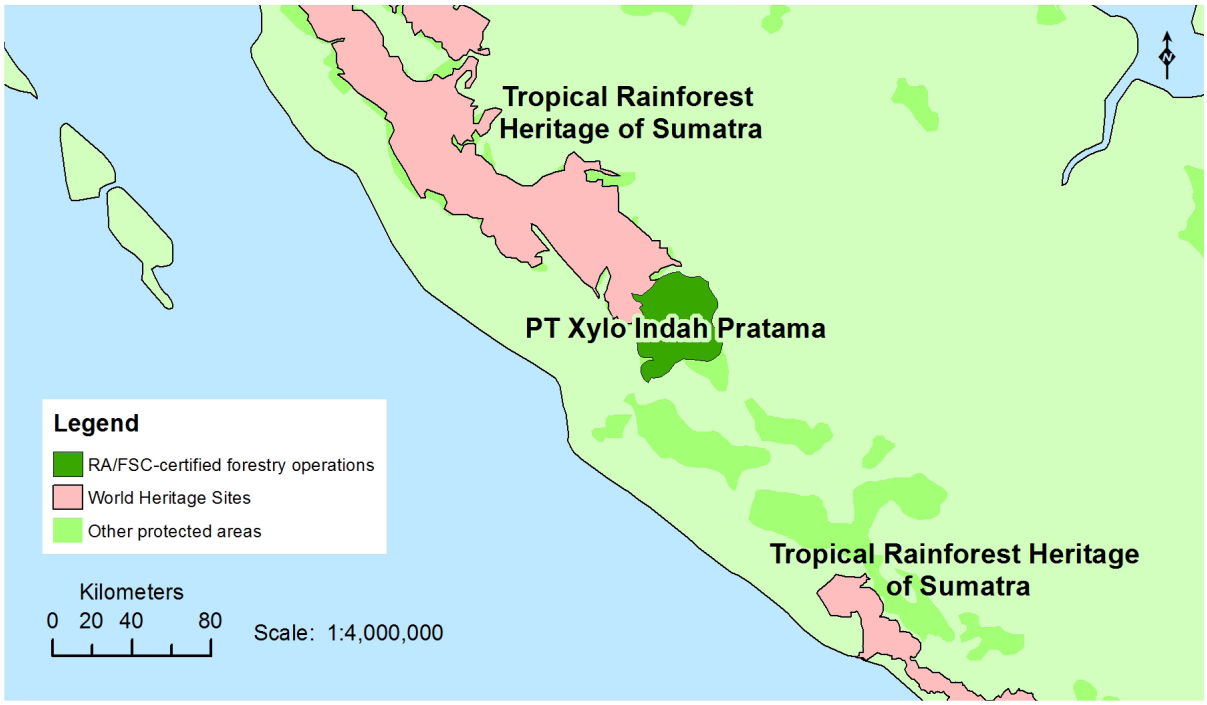
UNICAF was issued a CAR requiring the implementation of a fire prevention program.

Both operations had CARs that required improvements to worker conditions. UNICAF was required to ensure that in the future all workers are paid the minimum wage and benefits, and use adequate safety equipment. LISANGNI was required to create a fund to pay for the medical treatment for accidents, and to provide protective equipment for use during seed extraction and processing.

Tropical Rainforest Heritage of Sumatra

The three Indonesian National Parks that make up the Tropical Forest of Sumatra World Heritage site contain rich and diverse habitats that range from costal lowlands to subalpine volcanic mountains. This wide range of vegetation and habitat types,

[13] *http://whc.unesco.org/list/196*
[14] *http://www.eoearth.org/article/R%C3%ADo_P1%C3%A1tano_Biosphere_Reserve,_Honduras*
[15] *http://www.eoearth.org/article/R%C3%ADo_P1%C3%A1tano_Biosphere_Reserve,_Honduras*



Map 4. Tropical Rainforest Heritage of Sumatra and PT Xylo Indah Pratama.

combined with physical barriers, have increased sub-speciation and resulted in a rich mammalian fauna, numbering around 180 species and including the endemic Sumatran orang-utan (*Pongo abelii*).[16] Fifty-eight bird species in the site are listed in the 2000 IUCN global Red List. There are around 200 species of herpetofauna, at least 30 fish species, along with a rich diversity of invertebrates. The three parks have a combined area of 2,595,124 hectares (6,412,691 acres).

There are many threats to the integrity of the Sumatran forests. Illegal logging is a critical issue. The clearing of forests for agriculture or settlements, through fire or logging, has lead to serious degradation and fragmentation of the area within the parks. The poaching of large animals such as rhinoceroses, tigers and elephants is a serious threat to these species' survival. All of the above threats are exacerbated by road building, which is providing access to previously remote areas.

Law enforcement activities and management planning have not been able to quell these threats. There are insufficient funds for law enforcement staff, vehicles and equipment.[17] Park managers' successes in limiting logging, poaching and the building of new roads have sometimes alienated local governments and communities, whose poverty and, in some cases, attitude that the forest is theirs to use by right, have sometimes led to conflict and a lack of cooperation.[18]

The forestry company PT Xylo Indah Pratama (PT XIP) was first certified to the FSC standard in 2000. This certificate was suspended in 2004 due to a failure to address the Corrective Action Requests. A re-assessment was conducted by the Rainforest Alliance in 2006, which is the assessment that is discussed in this report. This most recent assessment is limited to the production of wood from pulai (*Alstonia scolaris* and *Alstonia angustiloba*) and labu (*Endospermum* sp), which are grown in smallholder rubber plantations and community forestry plantations under joint management agreements between PT XIP and farmers. PT XIP has no concession area of its own.

In its 2006 re-assessment, PT XIP was issued 29 CARs (8 major and 21 minor). Development of an HCVF management system, including stakeholder consultation and an annual monitoring system, as well as an assessment of rare and threatened ecosystems and species, were issued as CARs.

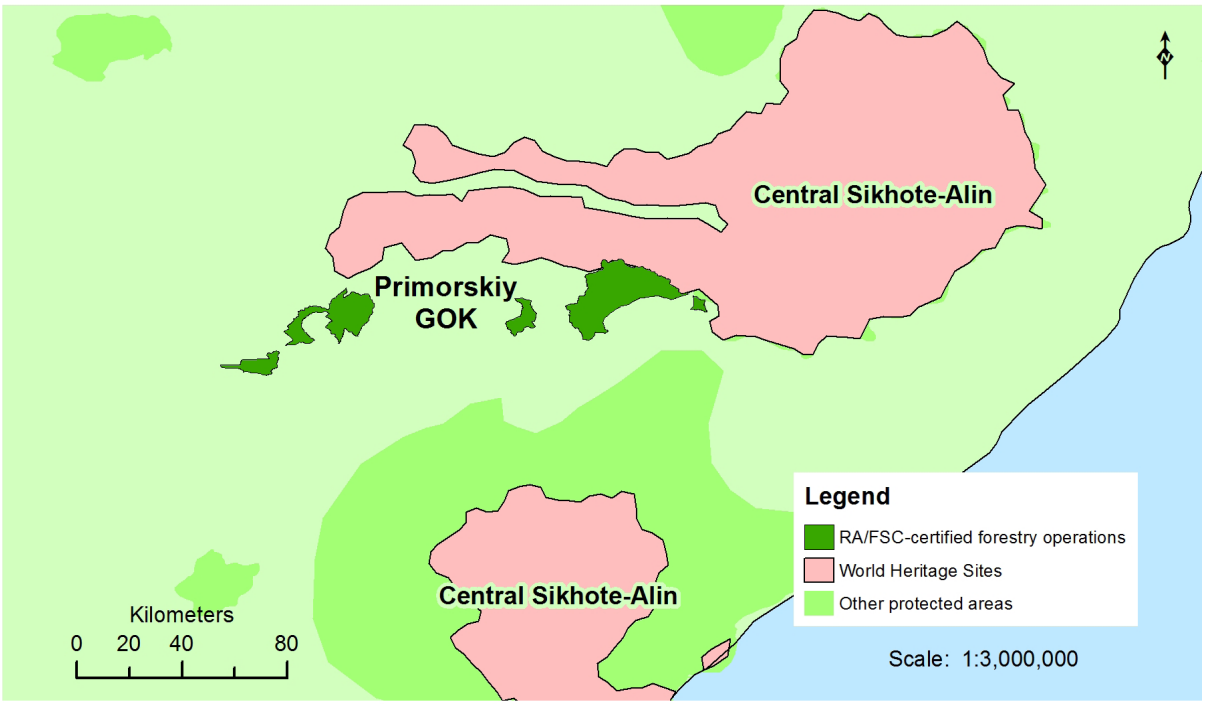
CARs also addressed socioeconomic issues. Auditors required PT XIP to improve worker safety through the development and implementation of safety procedures, and pay all delinquent retribution payments, taxes, fees and royalties. In addition, PT XIP was required to establish a mechanism to resolve current and future land conflicts with local communities and farmers, who were dissatisfied with the growth rate of the pulai trees and were reportedly disputing the area for which they could claim compensation for lost productivity.

Sikhote-Alin Nature Preserve

The Sikhote-Alin Nature Preserve is 1,553,928 hectares (3,839,839 acres) in size and located in the

[16] *http://www.eoearth.org/article/Tropical_Rainforest_Heritage_of_Sumatra,_Indonesia*
[17] *http://www.unep-wcmc.org/sites/wh/pdf/SUMATRA%20RAINFOREST.pdf*
[18] *http://www.eoearth.org/article/Tropical_Rainforest_Heritage_of_Sumatra,_Indonesia*

Map 5.
Central Sikhote-Alin and Primorskiy GOK.



Southeastern corner of Russia, where taiga and subtropics meet and southern species such as the tiger and Himalayan bear cohabit with northern species such as the brown bear and lynx. The site contains many endemic species, and is important for the survival of the endangered Amur tiger.[19]

Fire is the primary threat to this World Heritage site. Lightning and neighboring agricultural burns are both sources of wildfires in the region, and reports suggest that there is inadequate state funding for firefighting.[20] Due to the low population densities in this region, economic activities such as tourism are essentially absent from the preserve. However, 60% of the population is involved with the forest in some way, primarily the harvest of non-timber forest products or firewood. Some concern has been raised about poaching of wild animals and valuable plant material.[21]

The forestry operation JSC Primorskiy GOK is 49,018 hectares (121,126 acres) in size and operates on a long-term concession on state lands. The forest was exploited heavily in the 20th century and at the time of assessment primarily consisted of secondary forests. Local communities have free access to the concession area for berry and mushroom picking, hunting and recreation.

A pre-assessment visit was conducted in 2007. Afterwards, the Amur branch of WWF-Russia aided with the identification and mapping of the key habitats, biotopes and High Conservation Value Forests, developed an ecological monitoring system and held training courses with company staff.

The Rainforest Alliance conducted the formal assessment of the concession in 2008. A certificate was awarded, with 12 minor Corrective Action Requests issued.

The CARs related to the seven categories we examined mainly centered on the identification, mapping and conservation of High Conservation Value Forests, and potential habitats of rare and endangered plant and animal species.

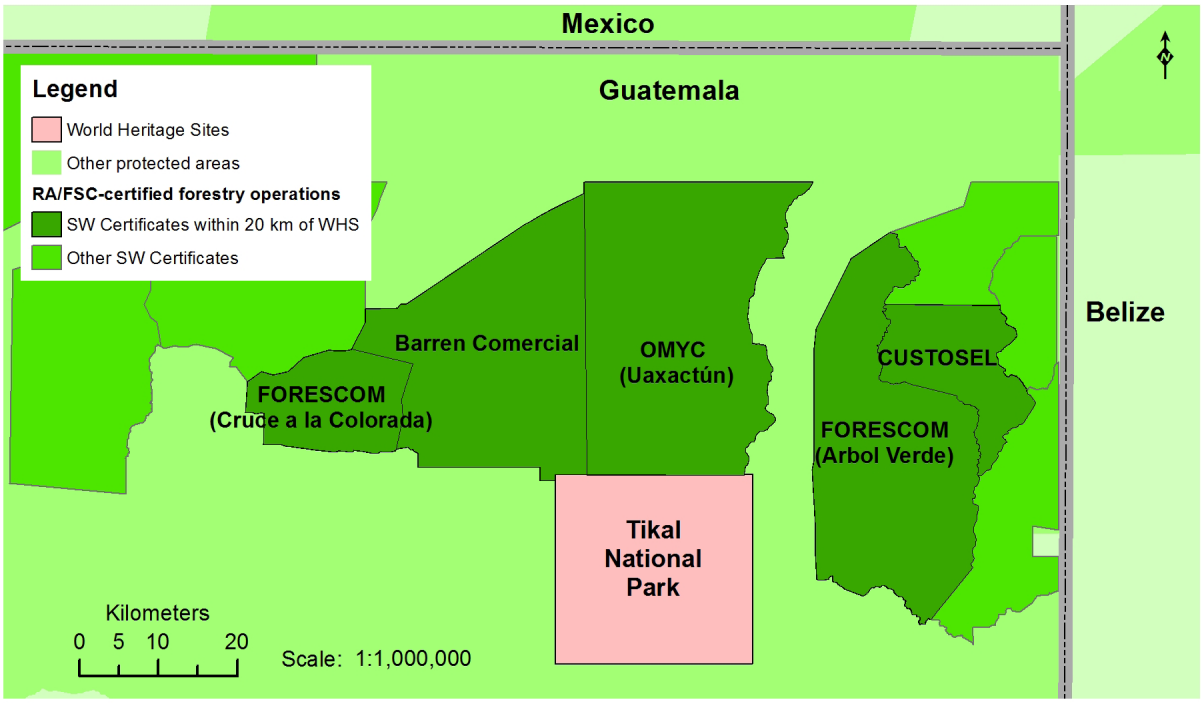
Tikal National Park

The 57,600-hectare (142,332-acre) Tikal National Park is located within the 1.6 million-hectare (3.9 million-acre) Maya Biosphere Reserve (MBR), in the Petén region of Guatemala. The MBR is the largest stretch of tropical rainforest in Guatemala and Central America, consisting of large tracts of broad-leaved forests and more than 300 tree species, including mahogany. There are abundant palms, epiphytes, orchids and bromeliads within the reserve, as well as a large number of threatened and CITES-listed species.

Tikal National Park is best known for its Mayan ruins. The site contains over 3,000 buildings dating between 600 BC to 900 AD, including temples, tombs, residences and religious monuments decorated with hieroglyphics. Much of the area remains to be excavated.[22]

Poaching is a threat to the species of Tikal, as is the annual burning of pasturelands, which can affect nesting birds such as the endangered ocellated turkey. In the nearby buffer and multiple use

[19] *http://whc.unesco.org/en/list/766*
[20] *http://www.eoearth.org/article/Central_Sikhote-Alin,_Russian_Federation*
[21] *http://www.eoearth.org/article/Central_Sikhote-Alin,_Russian_Federation*
[22] *http://www.eoearth.org/article/Tikal_National_Park,_Guatemala*



Map 6. Tikal National Park and RA/FSC-certified operations that are adjacent or within 20 km.

zones of the MBR, human settlements, grazing and industrial development have been cited as significant threats. Some theft of archaeological artifacts have been reported within Tikal.[23]

Four RA/FSC-certified operations are located adjacent to or within 20 km (12.4 miles) of Tikal National Park: OMYC (Sociedad Civil Organización, Manejo y Conservación Concesionaria de la Unidad de Manejo Uaxactún), CUSTOSEL (Sociedad Civil Custodios de la Selva, Unidad de Manejo "La Unión"), FORESCOM (Empresa Comunitaria de Servicios del Bosque, S.A.), and Baren Comercial (or Barrios Comercial / La Gloria). These operations have a total combined area of 273,898 hectares (676,816 acres). They primarily extract mahogany and cedar, in addition to non-timber forest products such as *chicle*, *xate* and pepper.

These operations are all located within the Maya Biosphere Reserve, and thus operate under a broader framework of sustainable management established for the MBR by the Guatemalan government, which requires FSC certification as a condition of land tenure. Fauna registries report 24 species of large mammals, about 303 species of birds, and a rich diversity of plants in the MBR. On average, over 25% of the certified operations' land is set aside for protection of natural ecosystems and archeological sites.

All four RA/FSC-certified operations were assessed between May 2001 and December 2003 and have remained certified since. All combined, they were issued 126 major CARs and 24 minor CARs.[24] Many of these CARs required improved assessment and protection of HCVFs, as well as the safeguarding of rare, threatened and endangered species. One operation was required to map its members' conservation areas, and adjust or add areas to the conservation zone to fill gaps and improve landscape-level conservation. Another operation was required to create corridors for the movement of rare, threatened and endangered species. One CAR was issued that required training on firefighting, and the acquisition of firefighting equipment.

CARs that addressed worker and community issues included the requirement that all workers have access to social security benefits and first aid kits that are adequately stocked with supplies and medicine. Local communities will also benefit from the requirement that *chicleros* and *xateros*—the men and women who harvest *chicle* and *xate*—are consulted with, and their opinions are incorporated into forest management plans.

Reflections on the Contributions of RA/FSC-Certified Forests to the Integrity of World Heritage Sites

On average, RA/FSC-certified operations were given CARs that required improvement in five of the seven thematic areas that we consider important influences on the health and viability of neighboring World Heritage sites (shown in Table 1). Often, these CARs directly addressed one or more of the external threats to the site, such as roadbuilding (in the case of the Canadian Rocky Mountain / Waterton Glacier) and fire prevention (in the case of Tikal National Park).

As shown in Table 1, all certified operations

[23] *http://www.eoearth.org/article/Tikal_National_Park,_Guatemala*
[24] *Due to space constraints we will describe the CARs from each of the six RA-certified operations combined.*

Table 1. Thematic areas in which Corrective Action Requests were issued for RA/FSC-certified forestry operations adjacent to or within 20 km of World Heritage Sites.

Thematic Areas	World Heritage Sites				
	Canadian Rocky Mtn/ Waterton Glacier	Sikhote-Alin Nature Preserve	Tropical Rainforest Heritage of Sumatra	Tikal National Park	Río Plátano Biosphere Reserve
Improve HCVF assessment	✓	✓	✓	✓	✓
Conserve HCVFs	✓	✓	✓	✓	✓
Protect rare, threatened or endangered species or their habitats	✓	✓			
Limit the movement of invasive species	✓				
Prevent or contain forest fires				✓	✓
Improve worker wages or working conditions	✓		✓	✓	✓
Enhance the viability of local communities	✓		✓	✓	✓

located near World Heritage sites were required to improve the way they assess and conserve High Conservation Value Forests (HCVFs). Characteristics of HCVFs range from areas of high biodiversity to areas that provide important ecosystem services such as freshwater flows for downstream beneficiaries, climate mitigation and adaptation benefits and soil stability for surrounding production lands. Having functional HCVFs near or adjacent to the World Heritage sites enhances the range of habitats available for their wildlife species, acts as a source of genetic material, and enhances the flow of these ecosystem services. In one case, near Tikal in Guatemala, an RA/FSC-certified forestry operation was explicitly required to develop wildlife corridors that would aid the movement of rare, threatened and endangered species. Near two other World Heritage sites, RA auditors required certified operations to identify and conserve the habitats of rare, threatened and endangered species.

RA/FSC-certified operations were also required to undertake actions that buffer the World Heritage sites from external threats. In one case auditors required measures to minimize the movement of invasive species. In two cases, auditors required actions that would prevent or contain forest fires, such as the acquisition of firefighting equipment and training of staff in its use.

In the RA/FSC-certified operations around four out of five WH sites, worker wages and/or working conditions and safety were addressed, as were the viability of local communities through local purchasing and hiring. The importance of well-paying, safe jobs around protected areas is known to be critical for countering perverse incentives for illicit activities within protected areas, such as illegal logging or wildlife poaching—activities that often have immediate economic interest to local communities. These findings suggest that RA/FSC certification contributes to this end in a meaningful way.

Based on this analysis, the future potential for forest certification to enhance the functionality and integrity of World Heritage sites seems high. By explicitly targeting the areas around World Heritage sites and other protected areas for RA/FSC certification, the benefits of certified forestry will likely extend beyond the operation's boundaries and into nearby forests and communities.

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