



FSC Certification of Plantations: A Discussion Paper
from the
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I. Background

The National Wildlife Federation (NWF) appreciates the opportunity to provide feedback to the FSC community on measures that would strengthen the value and implementation of FSC's certification of plantations. NWF is a U.S.-based conservation organization with 4 million members and supporters, 47 state-level affiliate organizations, and NWF produces several educational magazines for adults and children including: *National Wildlife*, *Ranger Rick*, *Your Big Backyard* and *Wild Animal Babies*. (*Wild Animal Babies* was the first US magazine to be produced with FSC certified paper in June, 2004). Overall, NWF works for common sense solutions to habitat and wildlife conservation and to build wider support for wildlife, wild places, and a healthy environment.

NWF's forestry program is defined largely by work with private landowners, restoration of habitat and ecosystem processes, and support for market incentives encouraging forest conservation. NWF was represented at FSC's founding assembly in 1993 and has actively supported FSC's growth and development through serving on International Working Groups and Technical Committees, serving on the Board of FSC-US, and working closely with FSC-accredited certifiers to recruit and provide certification services to forestland owners and managers. More recently we have worked to educate our members and drive a market for FSC products through our own purchases, as well as foster certified manufacturing cooperatives at the local level. We are also currently engaged in research exploring the role of plantations in biodiversity conservation and the FSC system, given the dramatic increase in forest plantations within the U.S. landscape, and emerging opportunities to better integrate (and demonstrate) ecological and wildlife considerations in plantation management settings.

NWF will publish a report in 2005 highlighting operations that have implemented management systems and techniques that integrate ecological practices and protections into financially viable plantation operations. Our goal is to stimulate an educated and constructive discussion among the forest products, conservation, and forest policy communities in the U.S. *leading towards higher level acceptance and expectations regarding ecological best practices* that can be achieved in different plantation systems, even in intensively managed operations. We naturally hope this will contribute to the evolution of P10, and create incentives for expansion of the FSC system in plantation settings.

Our preliminary research (of both FSC certified and non-certified operations) into different adaptations of "typical" plantation management systems have highlighted a number of ecological "best practices." These adaptations have been proposed by forest ecologists, silviculturalists, wildlife biologists, field foresters and others, and implemented in plantation forests by forest landowners interested in optimizing multiple objectives including biodiversity concerns as well as economic returns. Several of these

practices are mentioned in the current P10 criteria, but it is the *application of these concepts in detail and example that we intend to highlight* rather than the theory behind them, by showcasing those companies and land managers on the frontier of this work. We welcome the advice of the FSC community, and in turn hope this work can contribute to the new P10 discussions getting underway within the FSC.

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II. Promoting Ecological Values in a Plantation Context

Several of the major ecological considerations and certification issues are already framed by the current P10 criteria and in background materials prepared for the FSC Plantations Session scheduled for September 9, 2004 in Bonn. To reinforce many of these issues, NWF has found that ecological outcomes in plantation management are most directly influenced by: siting and layout, choice of species, level of management, timing of harvesting, and land uses external to the FMU or plantation management unit (PMU).

The proper *siting and layout* of a plantation will define many of the options for ecological adaptation and improvement. We believe that this is a primary place to focus forest manager's and landowner attention, since many problems in plantation management result from poor siting decisions. Questions that relate to this include:

- Was the plantation established on former agricultural lands, converted from a natural forest type, or does it represent restoration goals?
- Are there native forest areas left on the site?
- If not, is there natural forest in a proximity to the plantation such that linkages could be created between native forest areas?
- Have water, soil systems, and other ecological processes been assessed to assure proper site selection for the species desired, and to provide a benchmark against which future impact can be measured?
- Is there High Conservation Value Forest within, or in close proximity of the proposed site?
- Was the plantation matrix carefully designed to encourage structural and functional diversity through varying block sizes, shapes and patterns? If not, can this be altered over time? (e.g. similar to rotational grazing systems)
- What proportion of forestland has been set aside as native forest restoration or protection areas? How were the protected and/or restored areas chosen? Are riparian zones included within the protected areas?
- Is the native plant understory allowed to remain in some areas of the property?

Following establishment of the plantation, the *type and extent of management activities* undertaken will affect whether biodiversity values are maintained or enhanced through the plantation's cycle. In particular, vegetation control and thinning decisions will influence whether and when native understory can grow with sufficient vigor to provide additional benefits to other native plants, wildlife and pollinators.

The *choice of species* to plant, or emphasize, will similarly affect the biodiversity potential of a plantation. Species native to a specific site will be most adapted and hospitable to supporting local flora and fauna. Questions to consider here include:

- Is the plantation necessarily monoculture or are multiple species combinations possible? If there are multiple species, are these in mixed stands or species-specific stands? A mixed species plantation will generally offer greater diversity and value for wildlife than a monoculture.
- Were management blocks designed so that there is a “mosaic” or matrix of ages and structure even within single species? Is there a place for the presence of native understory vegetation?

Naturally, the implications of harvesting, and the *harvesting methods* chosen, can strongly influence biodiversity values. Many of the harvesting and fiber utilization issues considered in a natural forest FSC assessment are appropriate here as well, such as:

- Will the plantation be harvested through a one-time intensive mechanical clear-cutting, or more selectively? Will “low-impact” equipment be used to protect plant understory, and is the timing of the harvest schedule to minimize soil compaction, erosion, or changes in soil chemistry and understory plants resulting from thermal stress?
- Will coarse, woody debris be left on site or will the site be entirely cleared prior to plantation re-establishment? Are “leave trees”, “snag trees” or “patches” integrated into harvesting plans?
- Has the harvest schedule been staggered among the plantation blocks in such a way as to provide structural diversity?
- Has there been consideration of extending the length of rotations on some areas of the plantation for biodiversity values, as well as to explore different markets for other products?

The considerations listed above are just a few among the many considerations in establishing and maintaining plantations. The precise combination of actions and decisions will be determined by plantation owners and managers as they best respond to site circumstances and economic realities, but increasingly they must also meet society’s expectations for minimum ecological benefits-- whether for native plant diversity, drinking water protection, or carbon sequestration.

Plantation forests can not replace natural forests or the precise suite of ecological values that they provide but, within the FSC system, they can not be allowed to become devoid of these values either. Given the role of FSC, and the profound effect that the FSC has already had in defining, demonstrating and implementing sustainable forest management in natural forests worldwide, the FSC must similarly view itself as a catalyst for encouraging and supporting best practices in plantation management. This catalytic role should be highly informed by on-the-ground experience and scientific research.

III. Critical Issues for Plantation Technical Working Group to Consider

The third and final section highlights some of the specific FSC policy and technical issues that we hope will be addressed as a Working Group review goes forward. As a starting point, it is NWF's strong belief that within all FSC certified forestlands - even on intensively managed, high-yield, short-rotation plantations - there should be real and substantive forest biodiversity values achieved. The goal is to improve the management of plantations within real world financial and social constraints. Biodiversity values should be seen in relation to the natural forest that would normally occupy a given site rather than, as some have argued, in relation to the threat of "no forest at all" because of development or other conversion pressures. FSC's mission is to improve forest health and forest livelihoods by recognizing operations that explicitly and equitably integrate social, environmental, and economic factors in their management equation—not arbitrate between different land uses or values. While the achievement of this mission may lead to, and support, improvements in forest productivity, increased productivity is not the mission of the FSC by itself. Overall, many plantations can be managed to support a higher level of ecological benefits and, appropriately designed and linked to a protected area strategy may in the future serve to take pressure off critical natural forest areas.

Other specific issues in the FSC system are:

1. **When to Use Principle 10?** In our experience, it is not always immediately clear under which circumstances P10 must be used, and there may be cases when P10 should have been used and was not. There are a wide range of plantation types that can meet FSC's definition ranging from industrial plantations to an intensively managed secondary forest. The closer one gets to the intensively managed secondary forest (e.g. enhancement plantings within natural forest) the harder it is to objectively identify when the P10 threshold has been crossed. If only a small proportion of the total forest management unit (FMU) meets a plantation, or planted stand, definition, does P10 need to be used? If a plantation is near the end of its productive lifespan, and intended to revert to natural forest, must P10 be used? Similar to the SLIMFs process, does the FSC need to establish a minimum threshold until national initiatives can refine this standard? Are the regional P10 standards endorsed to date working, or are they a deterrent to participating in FSC?
2. **One or Two Standards?** At this time, NWF feels there should be one standard applied to all certified forestlands in keeping with other categories of FSC certification. This was an important topic considered in the SLIMFs technical discussions, and it was felt that the creation of two standard levels would be technically difficult and symbolically disastrous for the FSC. Thus the emphasis on process, appropriate new review criteria, minimum thresholds and so forth. There is also the danger that two standards create a perverse incentive to call a forest management system something that it is not, especially if it comes at the expense of maintaining natural forest values. It would better in our view to provide guidance to certifiers and plantation managers through the use of

- indicators or verifiers, and to add *definitions* to the standards. Definitions which differentiate among major plantation types (e.g. industrial plantations, restoration plantations, managed secondary forest with plantings, single vs. mixed species, etc) would provide the basis for differentiating key indicators and expected ecological performance. For consistency, the decision regarding whether there should be one or two standards should be taken by FSC International, not at the National Initiative level.
3. **Restoration Areas.** A better definition of FSC’s expectations (P10.5) for restoration areas within plantations is critical. The definition should be descriptive, rather than prescriptive, and consistent across boundaries unless variations can be justified by national initiatives. It is NWF’s belief that restoration—as defined in a plantation setting-- would include species, structure, and age attributes that are similar to the native forest cover on a given site. Dependent upon the circumstances within a specific FMU/PMU, this may require only protecting existing native forest areas which are not actively managed, or it may require a change in land use from plantation to restoration. Unless the prescribed use of exotic, non-invasive species is necessary to provide the initial conditions for the return of native species, restoration areas should be composed of native species. Restoration areas should not be managed for timber production, but may be managed to move them towards the species, structure, and age attributes that would be expected on this site.
 4. **Ecological Functions and Values: Reconciling P6 with P10.** Requiring that ecological functions be maintained intact, enhanced or restored should be applicable to **all** operations under assessment for FSC certification. However, it is not always apparent how the emphasis in P6, especially the in 6.3 (“forest regeneration and succession”; “genetic, species, and ecosystem diversity”; and, “natural cycles that affect the productivity of the forest ecosystem.”) should be interpreted in plantation settings relative to P10 criteria which touch on many of the same issues. This is a procedural issue more than an ecological one. If for example, a national initiative sets a specific expectation for the proportion of a plantation that should be set aside for restoration under 10.5, then this may well satisfy some elements of P6, and not others. Similarly, a company who has already restored or protected native forests on a mixed FMU/PMU should not be penalized for their proactive protection. And where there are reasons for a higher level of protection (e.g. HCVF designation) defined in the certification standards, then it would be appropriate to expect a higher level of protection than the minimum level identified in P10.
 5. **Exotic species.** NWF recognizes that many short-rotation, high-yield plantations are based on exotic species with productivity levels that native species can not achieve. Per 10.4 **if** native species are present in restoration and protection areas, and **if** the exotics used are non-invasive, and **if** other FSC Principles and Criteria are met, **then** a plantation composed of exotic species that fit with a given site’s ecological attributes should be allowed to be certified. That said, ideally a

plantation would be composed of multiple species representing multiple age distributions, and native species would be preferred. However, two important considerations are: a) the definition of native species should indicate native *at the site level*, as opposed to country or regional level; and b) the existing language in P10.4 suggests that “greater performance”—however that is defined—may be used to justify the use of exotic species. We find this standard too ambiguous.

6. **Diversification of products, and non-timber services.** FSC should not be prescriptive in requiring multiple timber products where a single species yielding a single product (e.g. pulp chips) is the primary focus. However, the FSC may want to give weight to other types of non-timber economic values in P10 reviews where plantation management provides services that have actual monetized value at the site level (e.g. carbon, drinking water benefits, or wildlife tourism) Indicators could be written to provide this guidance in either criteria 5.4. or in 10.3 . However, it is our sense that a plantation that is based exclusively on monoculture management, that is entirely reliant on exotic species, and has no within-unit restoration or set asides is unlikely to meet FSC’s certification standards.
7. **Limits on Block Size?** Should there be limits on the size and scale of plantation management units (PMUs) eligible for FSC certification? NWF does not have a firm opinion, however, we feel again this is strongly dependent on the site and layout of the PMU, (spatial arrangement), whether it is a single or multi-species plantation system and what the natural scale of “disturbance” for a given forest type would look like. For example, if wind throw of 10-15 acre (5-6 ha) patches is the primary ecological disturbance in given natural forest setting, then perhaps individual PMUs should be established to this scale, or buffer zones need to mimic this pattern. While the parameters will differ for different species and disturbance regimes at a regional or local level, FSC could define a maximum size at the international level which could then be refined by National Initiatives as appropriate.
8. **Certifying the forest management of “non-forest vegetation”.** Certifying the forest management of non-forest vegetation seems only to make sense if it is part of, and integrated into, the management system and certification of a larger FMU or PMU. While we recognize that there may be significant biodiversity values achieved through the clearance and conversion of plantations to non-forest areas to satisfy other biodiversity objectives, the need to certify them under the FSC system isn’t immediately apparent. This is perhaps a topic for clarification under P10.5.
9. **Role of landscape-level biodiversity values.** There is a need for better description and definition of the role of landscape values in certified plantation management, but this description must be pragmatic and not overly prescriptive. For example, it is unreasonable to expect that there will be multiple tree species within each hectare in a small scale plantation. In fact, this may not prove as

beneficial as larger-scale native patches interspersed within the plantation, or creating connectivity corridors in the plantation matrix for ecological values. The landscape context does not suggest that a FMU or PMU can, in every instance, use the protected nature of lands around them or near them to avoid restoration and protection activities within their ownership. The design and layout of plantations will be critical in integrating plantations into the larger landscape.

10. **Very short rotations & the “3M Principle”.** Industrial plantations are typically based on investment cycles and species which favor shorter rotations, as little as 5-7 years in some parts of the world depending on the products desired. This abbreviated rotation length with high intervention to achieve high productivity presents the greatest site level concern from an environmental standpoint. In general NWF believes that a “3M principle” may be needed here, meaning that: increasing **monoculture & management** intensity should be met by higher levels of **mitigation** to achieve FSC certification. Mitigation can be accomplished either within the structure of a mixed FMU (containing natural and plantation forests), or within a stand alone PMU (through restoration and set-asides) or possibly under #11 below through mitigation that is external to the PMU. Whatever mitigation is achieved, certifiable short-rotation plantations must be sited to assure that basic soil and water characteristics (P10.6) are not unduly compromised.
11. **External Mitigation?** Plantation systems in general, and very short rotation intensive plantations in particular, present a theoretically attractive trade-off between providing high levels of productivity per unit of land in exchange for less impact and less pressure on natural forests, especially HCVF regions. This has been discussed in various forums and argued rhetorically, but we have not found clear instances where this is linked in a meaningful way on the ground. However, NWF believes that high intensity plantation management, again with minimum thresholds per 10.6, could be FSC certified **if** this theoretical equation can be tangibly demonstrated and verified. In fact, this would be a tremendous credit to the FSC--and biodiversity conservation as a whole-- if the FSC system could provide pragmatic models for this theoretically attractive “landscape-level bargain” to become reality. But the bargain needs to be achieved within the same forest type, the same FSC regional standards, and ideally within the same watershed on forestland that is near, if not directly adjacent, to the PMU.
12. **Chemical issues & GMOs.** At this time we believe that the FSC has necessary systems in place for chemical management and reduction in terms of the emphasis in P10, and other parts of the P&C’s. However, with the use of biological controls in plantation settings, particular care is needed given their potential for adverse and unintended effects on other desired species. Some studies have indicated the value of moving away from monocultures towards mixed-species stands, or the use of buffer zones, in order to reduce the likelihood and intensity of pest outbreaks on plantations. FSC may want to revisit this. A recurring question is to what extent thoughtful plantation design, layout and species

selection can compensate and help reduce the need for high levels of chemical inputs and pest management. With respect to GMOs, it is a reality that many plantation species are already derived from hybrid or genetically altered species (e.g. poplar, eucalypts, pine). The key issue is whether such species are invasive by nature and whether they have the potential to threaten other native flora and fauna, especially pollinators. Invasive species, to the extent they are used at all in plantations, should be forbidden in the FSC system. The moratorium on GMOs should continue until scientific field trials and a consensus body of peer-reviewed research can prove that specific species pose insubstantial risks to forest ecosystems.

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IV. Conclusion

In keeping with the purposes of this paper, this discussion is not meant to be an exhaustive list of issues related to plantation management, or the P10 criterion. Rather, it is intended to highlight some of the key topics; ones that we are actively exploring through our own research, and some of the ways they intersect with the FSC system.

Finally we emphasize that, as a US based conservation group, our work is naturally focused towards the North American context of plantation management and performance around biodiversity and wildlife habitat conservation. In general we believe that plantation management in the US, although it is growing rapidly, is *weaker* from an ecological standpoint than plantation systems in many other parts of the world. So our research is drawing heavily on examples outside the U.S.

Nevertheless, our challenges in upgrading the ecological performance of plantation management are similar to other places as well. NWF believes that the FSC system can and will make a positive and pragmatic contribution to meeting these challenges, and looks forward to assisting in that effort.