ACADIAN EXEMPLARY FORESTRY: STANDARDS AND METRICS

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Defining Exemplary Forest Management[A] in the Acadian Forest

As stated earlier, these guidelines are for actively managed lands rather than ecological reserves (also an important part of the landscape) and are intended to be implemented in the context of the landscapes where NEFF's lands occur. Thus, for example, one kind of habitat may be missing in a particular landscape and quite a different habitat in another landscape. Likewise, maintaining connectivity between habitats across the landscape is also important and will influence implementation on any given parcel. In addition to implementing these standards, NEFF intends to maintain dual third-party certification of its lands. With these understandings, Exemplary Forestry includes:

1. **Implementing Best Management Practices to protect and improve forest conditions**. Employing accepted "Best Management Practices" to protect soils, riparian and aquatic habitat, special habitats, wildlife trees, etc. (see the section which follows on this topic).
2. **Implementing advanced silviculture**. Practicing forestry which results in:
   a. **Continuously improving forest stands** over time in terms of both quality and quantity.
   b. **Conditions which are well suited to the umbrella wildlife species** known to be representative of the habitat needs of more than 75% of native species.[B]

Umbrella Wildlife Species	Percent of Landscape	Forest Stand Condition Described
American Marten[C]	16%	Blocks of at least 640 acres that are at least 80% stocked at over 80 ft^2 of basal area (approximately 16 cords/acre)
Canada Lynx[c]	27%	Even-aged blocks $\geq$15 acres in size which are regenerated to spruce and fir on a revolving schedule.[D]

   c. A **diverse size class distribution** of 5-15% of stands in seedlings, 30-40% in saplings and poles, 40-50% sawtimber (DeGraaf, et al. 2005) (including 10% of the total area in large diameter multi-storied stands [see also Ten Broeck 2018]—note 9% of NEFF's existing lands are, or will become, such stands over time).
   d. **Growing tree species**[E] well-suited to each site[F], (e.g., matched to soil and physiographic conditions as well as expected changes in climatic conditions).
   e. **Stocking that fully occupies the sites**; this is an average at least "B" line stocking for stands not currently being regenerated.[G] For example, in 8-10" diameter stands of mixed wood this would be approximately 20 cords/acre.
   f. **Growing and harvesting quality timber** at an average of 0.5 cords/acre/year,[H] and targeting increasing the stocking of high-quality products.
3. **Addressing climate change** as the knowledge base becomes available, and increasing the resistance and resilience to, adaptation for, and mitigation of, climate change.[I] This includes but is not limited to using forests and forest products to sequester more carbon and substitute for steel and concrete, thereby reducing greenhouse gas emissions.
4. **Diversifying management approaches**. To the extent that site conditions and the landscape context allow, NEFF intends to manage significant portions of its properties using both the even- and uneven-aged management approaches described earlier.[J]
5. **Aesthetics**. Public support for forest management depends in many cases on how forests look. In this regard, NEFF intents to manage its lands to maximize aesthetic benefits particularly in key areas (e.g., attractive roadsides, trails and shorelines) and minimize adverse effects (e.g., careless looking harvests).[K]

Notes

[A] For actively managed properties or portions thereof, this is specifically not intended to obviate the need for strategically located ecological reserves and withhold portions of otherwise actively managed parcels from harvesting, e.g., steep slopes, wetlands, rare plant sites, legacy patches, etc.

[B] The US Fish & Wildlife Service, as well as state wildlife management agencies, can provide recommendations on the best species to select. These species too may change over time.

[C] Management suggestions from the work of Dr. Dan Harrison. Note the fact that only 16% of the landscape is to be specifically managed for marten does not mean that is the proportion of the landscape that will be in relatively closed canopy forests. Indeed, most of it will be including the patches created for early successional habitat as they mature.

[D] Harvest blocks being regenerated are intended to include legacy trees and patches (see Bennett 2010, Tubbs, et al. 1987).

[E] Decisions of what tree species are "best suited" to each site can be guided by the recommendations contained in soil surveys prepared by the Natural Resources Conservation Service with site conditions verified by a qualified forester or soil scientist. The selection of species should also take into account the changes expected in climatic conditions and their impact on tree growth (Anderson and Palik 2011, USDA NRCS n.d.).

[F] This requires matching the silvicultural system to the site and may require controlling invasive species and/or excessive browsing (see Leak 2014, Leak, et al. 2014, Bennett 2010, Rawinski 2014).

[G] 20 cords/acre (see Leak et al. 2014). NEFF's lands, mostly south of the Acadian Forest, average >30 cords per acre.

[H] This will not be possible on some properties when they are acquired, e.g., if they have been depleted, also over time the value of the timber should be enhanced (more and better quality sawlogs). Overall, NEFF's properties are currently estimated to grow approximately 2% per year, or 1.25 tons/acre/year (Chris Pryor, pers. comm., 03/26/18). This is approximately 0.5 cords/acre/year depending on species.

[I] USFS guidance on how to increase forest resistance and resilience and facilitate adaptation will be followed.

[J] Achieving the several objectives outlined here may in the future require management using the "triad" approach. That is, setting aside a modest portion of the property for passive or light-handed management, while dedicating another modest portion for intensive management to produce the desired volume of wood, and yet the majority to forest management that mimics patterns of natural disturbances—with a specific objective of addressing the challenges presented by climate change. For more on this topic see Seymour, et al. (1992).

[K] USDA Forest Service. 1995. Landscape aesthetics: A handbook for scenery management. Agriculture Handbook No. 701. 104 p.