

Comments on Permit applications 08-011-116rm and 08-014-101rm received from ArborGen LLC

The Florida Exotic Pest Plant Council (FL EPPC) has serious concerns about the proposal submitted to the USDA APHIS by ArborGen for widespread planting of a transgenic hybrid cultivar of *Eucalyptus grandis* x *E. urophylla* and about the Environmental Assessment that has been prepared.

Florida EPPC is a not-for-profit organization of professional land managers, researchers, consultants, and others who share the objective to support the recognition and management of invasive exotic plants in Florida's natural areas by providing a forum for the exchange of scientific, educational, and technical information. Roughly one third of Florida's flora is non-native, resulting in substantial ecological and economic costs. Our membership represents the state's experts in understanding and addressing the difficulties and expense of control of invaders as they spread into natural areas. FL EPPC, like many others, is fully in favor of pursuit of energy sources that will significantly reduce anthropogenic contributions to greenhouse gases. However, we caution against trading one environmental impact for another. Invasive plants negatively affect our native species, which add to the other stresses threatening their viability under changing climate and rising sea levels. Control of invaders requires use of equipment, herbicides, and materials that contribute to carbon releases and have other impacts.

Our primary concern is whether this cultivar will become invasive across some or all of the intended planting range. Whereas the best predictor of whether a taxon might be invasive in a new range is whether it has become invasive elsewhere (e.g., Reichard and Hamilton 1997), we have no such information for novel taxa such as this one. Our understanding is that the smaller-scale plantings have only been in place for a few years. This timeframe is insufficient to understand the potential invasiveness of the taxon or any reversion to parental traits of seed production. Woody species have been documented to take over 100 years, on average, to demonstrate potential invasiveness (Kowarik 1995).

However, we do know that *E. grandis*, one of the parent species of this cultivar, is invasive in other habitats. Unlike the statement on p. 16 of this EA, that no *Eucalyptus* species have escaped cultivation in the southeastern U.S., Florida's on-line flora (<http://www.florida.plantatlas.usf.edu>) shows that *E. grandis*, *E. robusta*, and *E. torelliana* are all naturalized in the state (these data appear also to have been ignored in the earlier assessment of permit 06-325-111r). In South Africa *E. grandis* is a Category 2 Declared Invader (Henderson 2001). It is also naturalized in New Zealand (New Zealand Plant Conservation Network 2005) and Ecuador ([http://www.invasorasecuador.org/ver\\_especie\\_sistemica.asp?id\\_especie=60](http://www.invasorasecuador.org/ver_especie_sistemica.asp?id_especie=60)). Daehler (1998) listed *E. grandis* as an invader of natural areas. These and other data were used in the University of Florida's IFAS Assessment of Non-native Plants in Florida's Natural Areas. While this reference is cited in the EA (p. 16), the results are now out-of-date. The Assessment conclusion for *E. grandis* is now: "Predicted to be invasive: recommend only under specific management practices that have been approved by the IFAS Invasive Plant

Working Group" ([http://plants.ifas.ufl.edu/assessment/predictive\\_response\\_forms.html](http://plants.ifas.ufl.edu/assessment/predictive_response_forms.html)). Specific management practices for four specific cultivars of *E. grandis* have been approved by the Working Group (<http://plants.ifas.ufl.edu/assessment/>).

As stated in the EA (p. 16), the FL EPPC has not listed any of these species as Category I or II invaders; however, these lists are reserved for those species that are clearly already a problem and should receive the highest priority for management efforts. The naturalized *E. grandis* does not currently show those impacts. However, if the proposed transgenic taxon produces any viable pollen, crosses with existing *Eucalyptus* species in Florida might alter their invasiveness, even if the hybrid is not invasive. *Eucalyptus grandis* does produce flowers and seed in Florida and may cause pollen production in the transgenic taxon. Ironically, while one of the primary intents of the proposed cultivation is to allow flower production, the specific management practices under which the four cultivars of *E. grandis* are recommended by the University of Florida include harvest of all biomass before seeds are produced.

Lastly, the characteristic of the parent species that this transgenic hybrid alters is cold tolerance. Our understanding is that naturalization of *E. grandis* is currently limited to south and central Florida. While we do not know the full range of experimental outplantings of this species, intolerance to cold likely currently limits expansion in this introduced range. If sterility of the transgenic hybrid is not permanent and 100%, both current *Eucalyptus* in Florida and the hybrid itself may acquire the ability to become invasive across the southeastern U.S.

For these reasons we oppose the proposed scale of cultivation of a genotype that has one parent already naturalized in the southern U.S. Before any such large field trials are approved, a complete EIS that incorporates these and other data should be prepared. We urge that any approved alternative in the EIS would exclude Florida from the trial to reduce the risk of increasing cold tolerance in *Eucalyptus* species that have already escaped.

Thank you for your consideration of these comments. Please feel free to contact me with any questions.

Sincerely,

Jim Burney  
Chair, Florida Exotic Pest Plant Council

Literature cited:

Daehler, C.C. 1998. The taxonomic distribution of invasive angiosperm plants: ecological insights and comparison to agricultural weeds. *Biol Conserv* 84: 167-180.

- Henderson, L. 2001. Alien weeds and invasive plants: a complete guide to declared weeds and invaders in South Africa. Plant Protection Research Institute, Handbook 12. (Weeds SAfr 2001).
- Kowarik, I. 1995. Time lags in biological invasion with regard to the success and failure of alien species. Pages 15-38 *in* P. Pysek, M. Rejmánek, and M. Wade, eds. Plant Invasions- General Aspects and Special Problems. The Netherlands: SPB Academic Publishing, Amsterdam.
- New Zealand Plant Conservation Network (2005) New Zealand Adventive Vascular Plant List. [http://www.nzpcn.org.nz/exotic\\_plant\\_life\\_and\\_weeds/weed\\_list.asp](http://www.nzpcn.org.nz/exotic_plant_life_and_weeds/weed_list.asp).
- Reichard, S.H. and C.W. Hamilton. 1997. Predicting invasions of woody plants introduced into North America. *Conserv. Biol.* 11: 193-203.