Research on Grevillea robusta—silk oak trees

Research done by Sugarhill POA to determine the viability of removal of two Grevillea robusta—silk oak trees from the Jensen Beach Ave entrance area (not owned but maintained by Sugarhill). Removal is at the request of the owner of the strip mall that rents space to Winn-Dixie and other tenants. These trees have been estimated by licensed arborists to be over-mature trees and both trees show significant damage to their core. Because Sugarhill maintains the area west of the fence including the fence and shares the responsibility of irrigation maintenance with the mall owner and because our light posts along that area has electricity provided by the mall owner, he has requested we remove two mature Grevillea robusta—silk oak trees. We agree the trees do need to be removed. Here is our research regarding the validity of removing the trees. **This does not reflect the circumstance of our obligation to act on this request only on weather or not the trees qualify for removal**. Most of the board feels the status of the trees meets tree removal.

Older Tree Management

• **Consider life span when managing urban forests for wind resistance**. **Over-mature trees should be removed and replaced by new trees**.
• **Remove hazard trees before the wind does**. Have a certified arborist inspect your trees for signs of disease and decay in trees.
• **Consider removing tree species that have demonstrated poor survival in hurricanes, especially if they are over-mature and endangering lives and property.**
• Be careful not to damage or cut main support roots during construction. Be aware that when the tree roots are cut, the anchoring system of the tree may be harmed and compromised.
• Establish a preventive structural pruning program of both young and mature trees.

Recommendation 1
Make sure that planting sites have 3 feet of soil depth with a **deep water table** to allow healthy root system development.

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Common Defects

Defects are injuries, abnormal growth patterns, decay, or other conditions that reduce a tree's structural strength. Taking time to look at your tree's crown, main structural branches, trunk, and roots can reveal a great deal about the current health and structural integrity of a tree. If you find any of the following easily recognizable defects in a tree around your home you should consider having the tree examined by a qualified arborist.

Dead Branches

Dead branches may have loose or missing bark and will have dead or absent foliage and buds (Figure 1). If a branch has been dead for some time, it may look coarse or stubby, as smaller twigs gradually break off. The absence or presence of leaves alone should not be used to determine whether a tree has died. A number of Florida trees are deciduous—naturally losing their leaves for a portion of the year. While some decay-resistant tree species will hold on to dead branches for several years, dropping of the dead limb is inevitable. **Though dead branches typically break off during storms**, they may also drop during less severe weather conditions. In some cases partial failure of

dead branches may already have begun (see Broken/Hanging Branches below). **Large branches high up in a tree are of greatest concern, since they have the potential to hit a target with higher velocity.**

Broken/Hanging Branches

Broken or partially attached branches are already in a state of failure and typically are associated with mechanical damage or advanced states of decay. Dropping of broken and hanging branches is just a matter of time and can occur during calm weather conditions.

Decay

Wood decay is the breakdown of wood by micro-organisms or extreme environmental exposure. Most tree decay is caused by fungi that feed on the various components of wood (e.g., cellulose, hemicellulose, or lignin). Decay can affect any portion of a tree and can **greatly reduce the structural strength of the parts afflicted**. Wood decay can be difficult to detect and, once detected, it can be even harder to assess its significance or extent into the tree. Some easily recognizable visual signs of decay are the presence of conks and other fungal fruiting bodies (Figure 3), **cavities** (see section below), **carpenter ants, and animal nesting holes**. Once these visual indicators are confirmed, arborists can conduct more advanced tests to assess the location and extent of the decay in order to determine what risk-management actions are most appropriate.

Cavities

Cavities are often sites of past injuries or pruning cuts and are a point of entry for decay fungi (Figure 4). The original cause of the cavity, its current age, and its condition/location on the tree can be used by an arborist to determine the extent of internal decay and appropriate management actions needed to reduce the risk of whole or partial tree collapse. When initially examining a cavity, be careful and check first to see if it is occupied by wildlife or insects.

Brittle Trees

At the other end of the scale are the trees noted for dropping branches or splitting apart under stress. Losing leaves or twigs in a high wind will make a garden untidy, but may give the trees an advantage by reducing the stress on the main branches. The trees on this list are likely to lose major limbs.

- *Acacia auriculiformis*—earleaf acacia
- *Bischofia javanica*—bischofia
- *Enterolobium cyclocarpum*—ear tree
- *Eucalyptus* spp.—eucalyptus
- ***Grevillea robusta*—silk oak**
- *Hibiscus tiliaceus*—sea hibiscus
- *Persea americana*—avocado
- *Spathodea campanulata*—African tulip tree

Most species fall between the extremes and have a good chance of surviving a moderate to strong storm intact, **provided they have had proper pruning.**

Medium–Low Wind Resistance	Lowest Wind Resistance
Dicots	**Dicots**
Acer rubrum, red maple *Bauhinia blakeana*, Hong-Kong orchid *Bucidas buceras*, black olive *Callistemon spp*, bottlebrush *Cinnamomum camphora,* camphor[b] *Delonix regia*, royal poinciana[c] *Enterolobium cyclocarpum*, ear tree *Eriobotrya japonica*, loquat[c] *Eucalyptus cinerea,* silverdollar eucalyptus *Ficus aurea*, strangler fig *Kigelia pinnata*, sausage tree *Myrica cerifera,* wax myrtle *Persea borbonia,* redbay *Platanus occidentalis,* sycamore *Quercus laurifolia,* laurel oak *Tabebuia heterophylla*, pink trumpet tree *Terminalia catappa*, tropical almond[c]	*Casuarina equisetifolia*, Australian pine[a] *Cassia fistula*, golden shower *Chorisia speciosa*, floss-silk tree *Ficus benjamina*, weeping banyan ***Grevillea robusta*, silk oak** *Jacaranda mimosifolia*, jacaranda *Melaleuca quinquenervia*, melaleuca[a] *Quercus nigra*, water oak *Peltophorum pterocarpa*, yellow poinciana *Prunus caroliniana*, Carolina laurelcherry *Sapium sebiferum,* Chinese tallow[a] *Spathodea campanulata*, African tuliptree *Tabebuia caraiba*, silver trumpet tree *Ulmus parvifolia*, Chinese elm

Table 3. Survey results for wind resistance of tropical and subtropical tree species*

Scientific Name	Common Name	Wind Resistance						p-value	Total N
		High		Medium		Low			
		N	%	N	%	N	%		
Acer rubrum	red maple	12	**20**	32	**52**	17	**28**	0.0049	61
Annona glabra	pond apple	10	**71**	4	**29**	0	**0**	n.s.	14
Araucaria heterophylla	Norfolk Island pine	8	**18**	14	**31**	23	**51**	0.0224	45
Averrhoa carambola	star-fruit or carambola	3	**18**	6	**35**	8	**47**	n.s.	17
Bauhinia blakeana	Hong Kong orchid	1	**5**	9	**41**	12	**54**	0.0122	22
Bucida buceras	black olive	8	**30**	14	**52**	5	**18**	0.0538	27
Bursera simarouba	gumbo limbo	21	**64**	10	**30**	2	**6**	0.0007	33
Callistemon spp	bottlebrush	8	**21**	23	**61**	7	**18**	0.0018	38
Calophyllum calaba[c] (in S. FL)	Brazilian beautyleaf	6	**38**	8	**50**	2	**12**	n.s.	16
Cassia fistula	golden shower	4	**18**	7	**32**	11	**50**	n.s.	22
*Ceiba (*or *Chorisia) speciosa*	floss-silk	4	**18**	12	**55**	6	**27**	0.0498	22

Chrysobalanus icaco	cocoplum	18	**78**	5	**22**	0	**0**	0.0067	23
Chrysophyllum oliviforme	satinleaf	11	**61**	7	**39**	0	**0**	n.s.	18
Citrus spp.	citrus (lime, orange, etc.)	18	**44**	18	**44**	5	**12**	0.0162	41
Coccoloba diversifolia	pigeon plum	11	**58**	8	**42**	0	**0**	n.s.	19
Coccoloba uvifera	sea grape	18	**50**	12	**33**	6	**17**	0.0498	36
Conocarpus erectus	buttonwood	11	**35**	17	**55**	3	**10**	0.0084	31
Cordia sebestena	geiger tree	8	**33**	13	**54**	3	**12**	0.0439	24
x *Cupressocyparis leylandii*	leyland cypress	7	**22**	13	**41**	12	**37**	n.s.	32
Delonix regia [c] (in S. FL)	royal poinciana	2	**6**	20	**63**	10	**31**	0.0005	32
Enterolobium cyclocarpum	ear tree	1	**5**	7	**33**	13	**62**	0.0058	21
Eriobotrya japonica [c] (in S. & C. FL)	loquat	9	**24**	24	**63**	5	**13**	0.0004	38
Eucalyptus cinerea	silver dollar eucalyptus	2	**13**	9	**56**	5	**31**	n.s.	16
Eugenia axillaris	white stopper	7	**64**	3	**27**	1	**9**	n.s.	11
Eugenia foetida	boxleaf, Spanish stopper	7	**64**	2	**18**	2	**18**	n.s.	11
Ficus aurea	strangler fig	4	**36**	5	**46**	2	**18**	n.s.	11
Ficus benjamina	weeping banyan	0	**0**	2	**18**	9	**82**	0.0348	11
Grevillea robusta	**silk oak**	1	**4**	8	**32**	16	**64**	0.0012	25

NOTE The last part of this table has been removed for brevity and lack of relevance.

***Results of the survey of arborists, scientists, and urban foresters in Florida with their rankings for wind resistance of tropical and subtropical tree species. N is the number of respondents for each species, out of a total of 85 experts. P-values from the chi-square test for equal proportions indicate the significance level for one or more of the categories being different from the others; n.s. means that there is no significant difference between the categories of high, medium, and low (p>0.05).**

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