

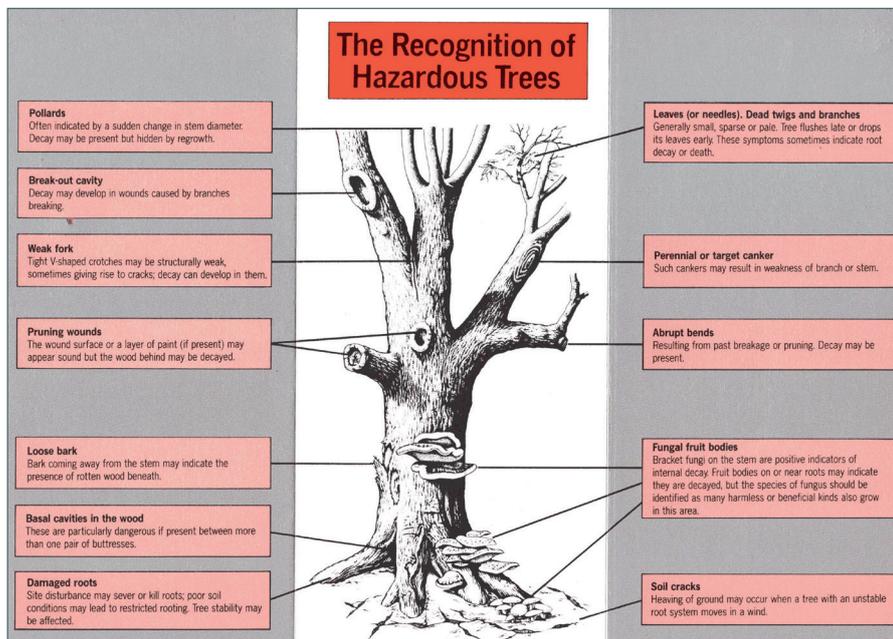


Is my family's home your obvious defect?
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Taking the 'defect' out of tree risk-benefit assessment

David Evans

We've grown up being told that when we assess tree risk we should be looking out for tree 'defects'. The problem with this approach is what are commonly labelled as defects often aren't defects at all.



Hollows, cavities, decay colonies, and deadwood, are natural features of older trees that usually have valuable habitat benefits. It's seldom these natural features, with benefits, are risks that are not Acceptable or Tolerable. So why are we labelling them as defects *before* we carry out a risk assessment?

Last year, the word *defect* was removed from all of VALID's Tree Risk-Benefit Management Strategies. Obvious Tree Defects was replaced by Obvious Tree *Risk Features*. Now defect is finally going to be removed as the D-word in the VALID mnemonic.

The tree risk defect issue has been knocking at the door of reasonable, proportionate and reasonably practicable tree risk-benefit assessment management for some time now. Here's the case for an evolution in our tree risk vocabulary and how it can improve our decision-making.

The rise and fall of defect

This is a potted history of defect evolution in the world of arboriculture.

- 1987 The Forestry Commission's 'The Recognition of Hazardous Trees' brochure (Fig. 1). No defects are mentioned. Neither is risk.
- 1994 Matheny and Clark's *A Photographic Guide to the Evaluation of Hazard Trees in Urban Areas* has a short section called 'Wood Decay and Tree Defects'.
- 2000 David Lonsdale's Forestry Commission Practice Guide *Hazards from Trees: A General Guide*. We have reference to 'mechanical defects' as a cause of hazards. 'Appendix 1 Tree Hazards: Recognition and Recommendations' doesn't include the defect word.
- 2000 The Ancient Tree Forum's *Veteran Trees: A Guide to Risk and Responsibility* by Neville Fay, Charles Mynors and Caroline Davis first raises the existential issue at the heart of the matter: that defects might not be weaknesses. A defect is a 'significant potential for failure', and we have our first mention of risk.
- 2003 US Department of Agriculture's *Urban Tree Risk Management* publication has a chapter on 'How to Detect and Assess Hazardous Defects in Trees'.

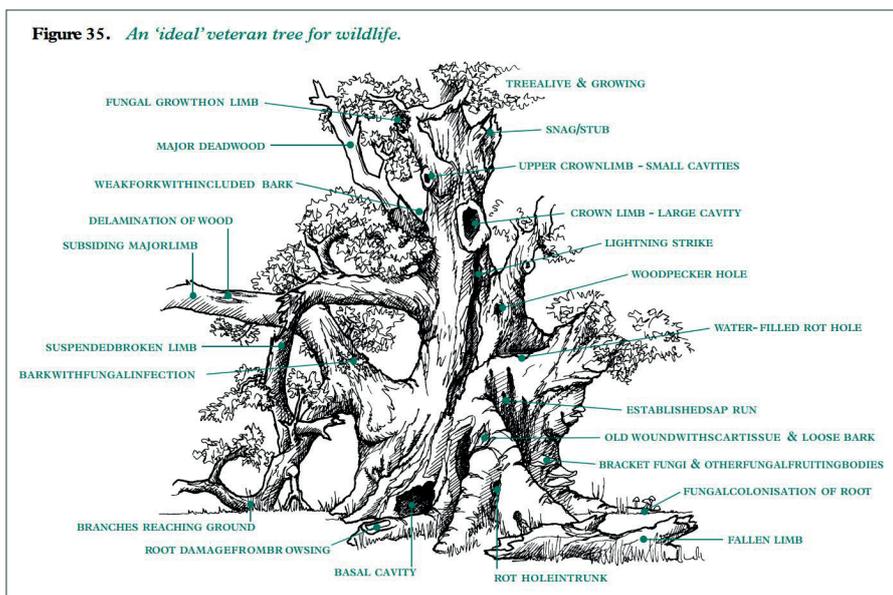


Figure 1: Defects & Hazards v. Habitats & Benefits. (Sources: (top) Forestry Commission, 'The Recognition of Hazardous Trees', 1987; (bottom) Helen Read, *Veteran Trees: A Guide to Good Management*, Ancient Tree Forum/English Nature, 2000, p. 72.)

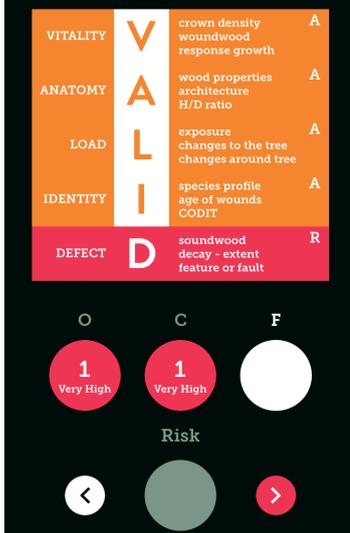


Figure 2: Defect is anchoring our likelihood of failure decision-making.



Figure 3: Symbiosis? *Phellinus badius* coexisting with *Eucalyptus saligna*. (Photo: Mark Hartley)

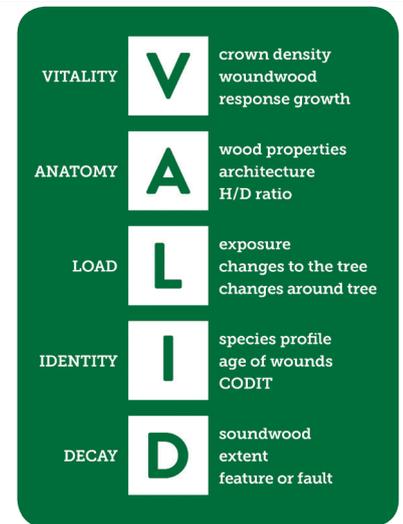


Figure 4 Defect to be replaced by Decay.

- 2005 'Quantified tree risk assessment used in the management of amenity trees' by Michael Ellison (*Journal of Arboriculture* 31(2)) raises a defect as something that's increasing the probability of failure.
- 2011 The National Tree Safety's Group's *Common Sense Risk Management of Trees* introduces us to 'obvious defects'. It looks to get to grips with several problems of terminology in a section titled, 'Defect, obvious defect, hazard and risk'. In this, the authors point out that defect, hazard and risk can all be confused with each other. The NTSG proposes this definition for defect: 'a defect in the context of the growing environment of a tree is a structural, health or environmental condition that could predispose a tree to failure'.
- 2016 VALID Tree Risk-Benefit Assessment & Management. Defect is the D-word in VALID.
- 2020 VALID Obvious Tree Defects Guide updated to become the Obvious Tree Risk Features Guide

categorise as defect-free. A tree with good vitality that's hosted a decay colony for a long time is likely to be stronger and stiffer than if it had had a 'sliding doors' parallel life where it remained decay-free (Fig. 3). This is down to a combination of the improved material properties of response growth and the geometric benefits of increased section-modulus (double the diameter and the load-bearing capacity increases by a factor of 8).

Careless talk can cost life

The language we use affects how we think and influences our decision-making. Calling a natural tree feature, with habitat benefits, a defect *before* assessing the risk is a begging-the-question fallacy. It's a similar problem to calling high-use zones, high-risk zones ('The high tree risk twilight zone', *ARB Magazine* 190, autumn 2020). You may remember this is a circular form of reasoning where the *premise* assumes the *conclusion*. Here, the *premise* that you're looking at a defect is pulling you to the *conclusion* that the tree part is defective and therefore something needs

doing. Not only is it tugging away at our own biases when we're assessing and managing tree risk, the common understanding of what defect means will also be in the minds judges, coroners and members of the public.

It's all too common for a tree defect, obvious or not, to be read as shorthand for a tree risk that needs reducing. The D-word's become a synonym for hazard, with all the problems of risk-aversion that comes with the H-word. With tree risk-benefit assessment and management, the time has finally come for us to take to the next rung of this evolutionary ladder. If we see something conspicuous in a tree that triggers a closer look, it's not a defect. It's an *obvious tree risk feature* until it's been assessed.



David Evans is the Director of VALID, a not-for-profit organisation dedicated to providing tree risk-benefit training and guidance.

The horns of the D-dilemma

When I was putting VALID together as a likelihood of failure decision-making helper in 2016, I ran some field trials to test it out. David Lonsdale came along to the Great Windsor Park outing. He astutely pointed out that whilst Vitality, Anatomy, Load and Identity are all neutral words, Defect was pejorative, because defect commonly means something that's a shortcoming, an imperfection, or a flaw: it's not a neutral, amber word. Its influence on tree risk assessment and likelihood failure decision-making is entirely negative. It's a red word. Defect is anchoring you by pulling you to a red benchmark before you've evaluated what you're looking at (Fig. 2).

Two sides of the same coin

Trees that host decay colonies, and have hollows or open cavities, often have high safety factors – a safety factor is how much stronger a tree is than it needs to be for an expected wind load. Our owl's family home, which we're currently labelling as a defect, is usually much stronger and stiffer than early mature trees that we're happy to

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