



Dead Trees and Their Role – A Naked Encounter

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It was late afternoon as I was driving home after a long day of works. Sun was setting, and the sky was still blue. Such a good drive from Bridgewater, SA. I could see birds flying in flocks and a great range of tree species alongside the road.

Suddenly, my eyes were distracted by a surreal dead tree. As arborists, we know what a dead tree looks like. Trunk shapes and colouration can change according to the species. This one was unique. It was a large stringybark (*Eucalyptus obliqua*) near the footpath.

I could not just drive away; I had to stop and contemplate its magnitude. Moving closer, I noticed several hollows from the bottom up. So curious to imagine that even dead, this tree is still thriving as an essential organism among the local ecosystem.

I do not know what it is inside the hollows, but it seems to be quite busy.

This encounter made me think about the role and interaction that this dead tree has within the rest of the living beings, which inhabit the different hollows and structure. So, I decided to research it.

By the way, this tree was located in a natural reserve.

A Dead Heavy Body Overlooking the Valley

Complex reasons emerge to justify why dead trees are important and how much they contribute to a sustainable environment.

It could make urban foresters more environmentally aware when they are not dealing with dead trees as a threat or as an ugly object compromising some sort of aesthetic landscape due to our intense urban sanitation. I guess nature has somewhat better ways to use it, though.



Rotten log and fungi colony / Source: T. Miranda 2020

Deadwood and dead trees have similar purposes, and we are only beginning to appreciate their complexity of patterns [Franklin, Shugart, Harmon 1987]. Several scientific journals and papers were written significantly about dead trees and deadwood and their environmental interactions. Most of them are represented in a forest scenario, which helps in several ways to understand clearly their role in mystified terms.

That said, this is an observation that applies in a park or a natural reserve, and more even in a suburban area with the correct risk management in place.

From an ecological perspective, focusing on ecosystems, communities, populations, physiology, and evolution all find tree death significant to their stands. According to **Shigo** (1985), most “*disease-causing agents injure organisms that have been predisposed to sieves*”, showing that a tree can suffer injuries or prone to it in whatever state of their lives, and some may be declining already before our eyes can notice.

In a forest scenario, tree death removes a distinct individual from the group, but it also provides additional resources to the ecosystem. It is from here that we want to expand our loom to dead trees and deadwood.



Dead stringybark / Source: T. Miranda 2020

Apart from the common sense of trees being a primary producer, a storage compartment and a support structure, their functions post-life still considered essential to continue the nutrient cycle and nitrogen fixation.

These are both critical natural processes that integrate life and death to create more energy and sustain future generations' organisms. Soil depletion and compaction in farmlands are probably caused by our lack of understanding that land clearing removes all debris necessary for recycling, halting its renovation job that eventually could take several years to accomplish.

Deadwood, which we deal with as arborists every day, can provide the health of woodlands and garden areas by releasing nitrogen slowly into the soil where other plants use due to its decaying process.

Hence, it acts as a carbon storage system, capturing during the tree's life and locking it into the ground to provide paybacks for the rhizosphere microbiome. Moreover, logs and snags offer critical habitat for sheltering and feeding a variety of animal species.

Also, it provides a habitat for plants of higher orders. According to **Franklin, Shugart and Harmon** on "*Tree Death as an Ecological Process*", the seedbeds provided by "*nurse logs*" may be the primary sites for tree reproduction in some ecosystems. In slope terrain, some large deadwood



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can hold erosion and diverge soil composition by separating elemental particles of its biomass, which some specialists called the *geomorphic process*.



Dead standing "hotel" / Source: T. Miranda 2020



Fallen limb with habitat / Source: T. Miranda 2020

Although there are several reasons why this consideration is valuable, we would like to grasp how we could apply this manner to keep dead structures still standing safe and sound.

Tree species selection plays an excellent role in the correct habitat form and risk factor. Location and the primary purpose of hollow habitat also come together, putting all into evaluation. Establishing a certain trunk height can give peace of mind to the responsible arborist and public safety.

From one way or another, we all know the benefits of hollows, as mentioned above. I could also extend to another article that could correlate to a better understanding of dead trees' benefits.

Meanwhile, accepting the ecological changes by the death of tree cards, our ability to rely merely on tree death causes and focus on how this can contribute to ecosystems' forthcoming.



As a few studies say, environmental changes can alter tree populations, alter communities' structure, shift from biomass to necromass [Franklin, Shugart, Harmon 1987], resources such as light in a forest, nutrients and moisture, and resources stored by decomposers.

According to **Shugart** (1987), tree death can be categorised in a variety of ways, including such dichotomies as abiotic and biotic, allogenic and autogenic, extrinsic and intrinsic.

Overall, we are only beginning to appreciate the complexities of patterns and causes of tree death.

As professionals and nature lovers, our tolerance of such intricate and evident factor can transform and differentiate our attitude towards dead trees.

What's more, their contribution and establishment might coincide into a future of land improvement that hopefully could provide better results during this climate change era. We always hope so.



Panoramic view of forest / Source: T. Miranda 2020



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