

When a Tree Falls in the Forest...

Essay

Katherine Crain

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“I know a green cathedral, a shadowed forest shrine,
Where leaves in love join hands above and arch your prayer and mine.
Within its cool depths sacred, the priestly cedar sighs,
And the fir and pine lift arms divine unto the pure blue skies...”
Excerpt from “The Green Cathedral” by Carl Hahn

I really enjoy wandering through a forest with a child. Their keen eyesight and imagination can create a whole new kingdom amid the tall trees, scatter of leaves, stumps, and knobby roots. That new kingdom blossoms into life when a child comes upon a “nurse log” or “nurse stump.” “Is this where the fairies live?” And I must admit thinking about fairies dancing through a forest on occasion can be more fun than reflecting on the slow process of natural forest regeneration.

Nurse Log *n.* a fallen tree providing nutrients, water, and protection for the saplings that will make up the next generation of the forest

We in the Southern Appalachians and persons in the Pacific Northwest and Alaska seem to be perfectly placed to see “nurse logs” and “nurse stumps” as they are common in older forests on moist sites. On the undeveloped portions of our property in Haywood County, North Carolina we have a rich stand of oak, hickory, poplar, maple, and hemlock trees along with an understory of rhododendron thickets. The overgrowth provides shade and a moist forest floor. The “nurse logs” and “nurse stumps” are scattered throughout the area. Observing these amazing gifts brings all kinds of questions to mind.

The remaining jagged upper edges of the stumps are draped in the roots of rhododendron bushes. The rhododendrons perch on top of the stump securely anchored with long thick roots extending into the ground. It is easy to imagine the roots of the rhododendrons looking like the tentacles of an octopus suspended in the air once the stump has totally decayed.

The old partially decayed log provides a place for rhododendron bushes but also for moss, ferns, fungi, and sprouts of various sorts. On occasion chipmunks and rabbits have been known to find refuge within it.

Ed Frank, a writer and photographer on such things, says these stumps and logs are “a vignette of the cycle of life in the forest.” A tree is blown over or is felled and a log or stump is left behind. The life in the tree fades but new life begins as insects, fungi and seedlings take root. The tree becomes a “nurse log.” The term “nurse log” seems to have come from the idea that these fallen logs or stumps “become a nursery for all kinds of new growth” providing nutrients and moisture. The term most likely was first used by an arborist. Some writers have gone as far as to say nurse logs and nurse stumps act as a cradle for new life. The main purpose of the tree has changed from photosynthesis, transpiration, and reproduction to a supporting role in the regeneration of the forest.

What is it that draws me to the stumps and the log? If you need a one-word answer, my best thought is interconnectedness or in a phrase as quoted earlier, “the cycle of life.” The stumps and log are large which means they have some age on them.

The rhododendrons are quite large and have been growing for a number of years. What historical events have they lived through and what future events will they be alive for? Not too many years ago before homes were built along the logging roads of the area, a narrow-gauge railway ran nearby allowing for the harvest of chestnut trees from this property. If we were to return in oh say, fifty years from now, what would the legacy of the stumps and log be? A whole new generation of rhododendrons and trees will have grown from the decaying remains of these giants of the forest.

These nurse logs and nurse stumps are a dramatic sight in a forest. But what is really happening and why?

When we observe a forest, we are seeing "a highly dynamic system, with generations of plants and other organisms living, dying, and being replaced all the time. It is also a very competitive system, with many resources that are essential for life being in short supply." (John Palka, (<https://naturesdepths.com/nurse-logs/>) The space on the forest floor is limited so nurse logs and stumps are preferred germination locations for new trees and shrubs. Other limited resources provided by these decaying trees are access to sunlight, moisture, nutrients, and places for seeds to sprout. Once the seeds germinate, the seedlings continue to find nourishment in these logs and stumps.

Palka, a neuroscientist who describes himself as one who loves plants and ponderer of big questions, gives an example in his article of what most likely happens but when adapted to our wooded area could go like this: Imagine that you are a tiny

seed, one among the many shed each year by the hemlock trees, maples, oaks and rhododendrons. Below you the forest floor is covered with leaf litter, ferns, and mosses. The chance of landing on a bit of exposed soil needed for germination is not great much less finding soil with adequate light for germination and growth. Decaying logs or stumps provide the height from the forest floor to get light and the decaying wood (humus) provides the needed nutrients for germination and growth (photosynthesis).

One of the more interesting nurse stumps on our property, is one ringed by hemlock saplings. The hemlock cones filled with seeds must have dropped or were blown on the wind to the area of the stump. The seeds disbursed around the stump in a circle. This must be an ideal place for germination and growth as the seedlings have grown into 8-foot saplings encircling the stump. Acting as a crown in the center of the stump is a rhododendron bush with its roots reaching over the sides of the stump and into the ground.

Palka reminds us that fallen trees in a forest area are a wide variety of ages and have fallen for various reasons. He quotes a rule of thumb: a tree takes as long to decay as it took to grow before it fell. This means that nurse logs and stumps will remain available for more than one new generation of trees to grow from them before they vanish into the forest floor. Scientists estimate that in death the nurse logs and nurse stumps support five times as much life as they did when they were upright.

Over the years, centuries in some forests, the nurse logs and nurse stumps continue to soften, settle, disintegrate, virtually dissolving into the ground from which they grew. But above them and around them the new trees and understory growth takes shape, roots growing over them into the ground and treetops on sturdy trunks reaching towards the sky. Centuries later there is no sign the great trees were ever there except for the bizarre root formations of their descendants.

John Palka shares this note about the importance of nurse logs in forest regeneration in their dynamic context: “They are especially spectacular in temperate coastal rain forests, but they have been found from sea level to timberline and from the tropics to the boreal forests of the far North. Traces have even been seen in petrified forests in Argentina, in trees that grew around 300 million years ago when the continents were not even separated as we know them today but were sutured edge-to-edge in a mass call Gondwanaland.”

I appreciate the fact that these nurse stumps and nurse log remain on our property to follow a natural process of forest regeneration. These nurse stumps and logs will eventually disintegrate completely, and the new trees or rhododendron bushes will remain standing on stilt-like roots with nothing but a “ghost log” beneath.

During your next walk in the forest, take time to look for nurse logs and nurse stumps remembering the role they fulfill throughout the years, decades, centuries, and millennia or for as long as the forest persists.

Perhaps a few words from poet Mary Oliver's poem, "When I Am Among the Trees" will be my final words:

Around me the trees stir in their leaves
and call out, "Stay awhile."
The light flows from their branches.

Other general reading research:

"Kind of Curious" posted September 28, 2010

"Nurse Logs" by Sarah Gage posted Dec 01

"Nurse Log" by Sharon Pegany posted Winter 2018

"The Private Life of Plants" (08/21/1995) page 180; by David Attenborough