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## Welcome to 2018!

By Hannel Ham

This year promises to be a special one, not only as it starts on a Monday. There is something for everyone with global events including:

- Winter Olympics (February) in Pyeongchang, South Korea.
- NASA plans to launch the exoplanet-seeking TESS mission in March.
- 2018 Commonwealth Games (April) in Australia (Gold Coast, Queensland).
- NASA's InSight (May) will start preparation to be launched to Mars in November for geological research.
- Wedding of Prince Harry and Meghan Markle (May).
- Implementation date of General Data Protection Regulation (May).
- The 2018 FIFA World Cup in Russia (June).
- Saudi Arabia will allow women to drive (June).
- Mars will make its closest approach to Earth since 2003 (July).
- Unmanned European-Japanese BepiColombo spacecraft to be launched to Mercury (October).
- The U.S. missile defense complex in Poland is expected to be operational.
- The second capsule of The Helium Centennial Time Columns Monument is expected to be opened 50 years after the time capsule was locked in 1968.
- NASA's Solar Probe Plus is expected to orbit the Sun.
- Israel is expected to begin to release classified information held in its state archives from the first two decades of its existence.
- JAXA's robotic SELENE-2 lunar mission is expected to be launched in 2018.
- Two space tourists are scheduled to fly around the Moon in a Falcon Heavy rocket, marking the first time that humans have ventured beyond low-Earth orbit since 1972.



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Certainly, the most exciting event for the SAIF is its 50<sup>th</sup> birthday. The number 50 in itself is special as it is the smallest number that is the sum of two non-zero square numbers in two distinct ways:  $50 = 1^2 + 7^2 = 5^2 + 5^2$ . It is also the sum of three squares,  $50 = 3^2 + 4^2 + 5^2$ , and the sum of four squares,  $50 = 6^2 + 3^2 + 2^2 + 1^2$ . Fifty is a Harshad number (divisible by the sum of its digits), atomic number of tin, fifth magic number in nuclear physics, and the percent of genetic overlap of a full sibling, a parent and offspring.

May 2018 be a prosperous year to remember.



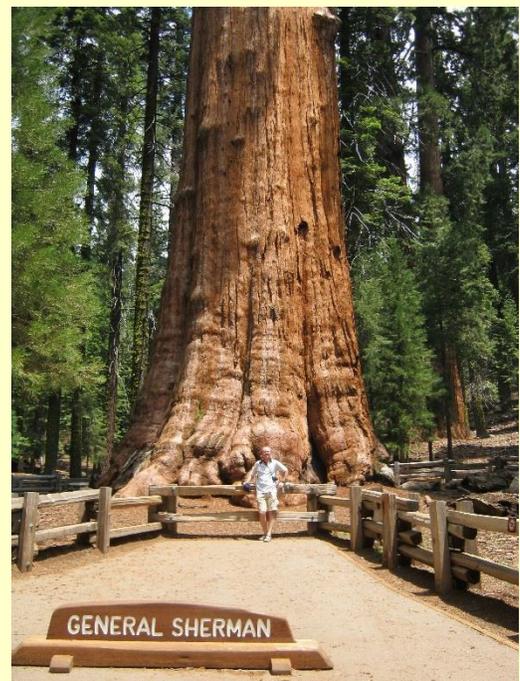
## The largest trees on earth

By Andrew McEwan

As a forester, I had always dreamt of visiting two specific trees. The one is the largest tree in the world (wood volume) and the other is tallest. The tallest tree in the world is a *Sequoia sempervirens* (coast redwood) going by the name of "Hyperion". It was discovered in 2006, and is 115.7 m tall. This species is located on the northern coast of California. This tree is still on my bucket list. A number of years back, I had the privilege of visiting the largest tree in the world in the Sequoia National Park in the Sierra Nevada mountain range of California, USA. This largest tree on earth is a *Sequoiadendron sempervirens* (giant sequoia) called "General Sherman". Before giving more information on this monstrous tree, let's look at some information regarding this remarkable species.

In terms of volume of wood, the giant sequoia is the largest living tree on earth. It has a conical trunk - like a club, not a walking stick. There is at least one species that lives longer, one has a greater diameter, three grow taller, but none is larger. The giant sequoia only grows naturally on the west slope of the Sierra Nevada between 1,500 and 2,100 m. They can grow to over 3,000 years old. There are 75 groves of the trees in total. One of the included pictures shows my wife standing in one of these groves. Its bark can be up to 60 cm thick, its sapwood is not able to burn easily, and its heartwood is resistant to rot. Most don't die of old age as they are resistant to fire and insect damage. They usually die by toppling over. The trees sprout from seeds as small as oat flakes.

Mature trees annually bear 2,000 egg sized cones that produce 400,000 seeds, which only disperse when the cones open. The cones hang on the trees, green and closed, for up to 20 years. Fire is the key to seed dispersal and seedbed fertility. It makes the cones dry, open and drop seeds. It also allows sunlight in and burns logs and branches on the forest floor to ashes as fertilizer.



The General Sherman is estimated at 2,200 years old. It stands 83 m tall and is over 11 m in diameter at the base. Its circumference at ground level is 31.1 m. Sequoia trunks remain wide high up. 18 m above the base, the Sherman tree is 5.3 m in diameter; and at 55 m it still has a 4.3 m diameter! Its largest branch has a diameter of 2.1 m. Its first branch is 40 m above the ground and it has an average crown spread of 33 m.

Every year the Sherman grows enough new wood to make another 18 m tree of equal proportions. Its trunk weighs an estimated 1,385 tons. Unfortunately, photos of the Sherman are not that impressive as the closest viewing point to the tree is about 10 m away to protect its shallow roots - making the scale of its enormity difficult to capture.

## Forest Distribution Change in Table Mountain National Park During the 20th Century

By Zoë C Poulsen & M Timm Hoffman

South Africa is home to some of the most species rich temperate forests on earth. They cover just 0.56% of the country, forming an archipelago of patches extending from the south-west on the Cape Peninsula to the north east in Limpopo with species richness increasing across this gradient. Despite being relatively species depauperate, the forests of Table Mountain National Park are of high conservation importance. They are home to several endemic species including two species of moss, numerous arthropods and the Critically Endangered Table Mountain Ghost frog.

Afrotropical and coastal forest patches on the Cape Peninsula are found in fire refugia where moisture availability is high. Fire frequency is one of the main controls of forest distribution dynamics: Forest areas will expand in the absence of fire and become smaller if the adjacent fynbos is burnt at high fire frequencies. In areas where urban development has restricted the spread of fire through the landscape, forest vegetation has expanded into the surrounding fynbos. Concerns have also been raised about the risk of increasing fire frequencies in the face of changing climate causing forest areas to shrink. We knew little about forest distribution change dynamics in Table Mountain National Park so more research was therefore needed.

Research into forest distribution change using ground based repeat photography and aerial photography revealed that indigenous forest cover on the Cape Peninsula had increased by more than 65% since 1944. The number of forest patches recorded had increased from 149 to 174. With exception of the work of Luger and Moll in 1993 in Orange Kloof on Table Mountain, this is the first time that such high rates of increase in forest cover had ever been recorded in South Africa. General linear modelling showed that local variation in forest patch size, mean annual temperature, rainfall and geology were significant drivers of change but this only explained 39% of variation found. It was therefore important to consider further clues encompassed in the historical literature to explain the extent of forest change.

The Cape Peninsula has a long history of anthropogenic fire use first by the Khoisan to increase the presence of geophytes for food and then latterly by the early colonists to increase forage in fynbos for livestock grazing. Fire frequencies increased to one fire every one to three years to the severe detriment of the environment and vegetation and caused significant decrease in forest cover. This suggests that the changes seen are at least in part driven by long term human influence on fire frequency on the Cape Peninsula. Following a decrease in fire frequency forests are recovering from too frequent agricultural burning and therefore increasing in extent. Urbanisation has also played a part, creating fire shadows which do not burn for decades at a time, leading to rampant forest expansion in these areas. Orange Kloof and Blinkwater Ravine are key examples.

These findings hold significance for the management of forest and fynbos vegetation in Table Mountain National Park, particularly in the context of fire management. It is critical that further research is undertaken to further understand the impact of these findings, particularly in the face of changing climate.



## If it feels wrong, then it probably is

By Rob Thompson

As forestry practitioners, we are all exposed to the wonders of modern technology on a daily basis. We use all manner of apps for virtually every aspect of our private and professional lives.

We rest, assured, that we are at the cutting edge of development and are equipped with the best and most applicable tools to execute our functions at maximum efficiency levels.

We can predict the weather, weeks in advance. Fire danger indices are forecast using the most intricate scientific instrumentation. Soil pH and fertility meters give us every indication of the capacity of the surface that we are dealing with, whilst Lidar, and unmanned aerial vehicles (drones), provide optimum high altitude intelligence of ground truths.

With all this technology and more, surely we cannot go wrong? Just that assumption appears wrong from onset, given that one sees countless examples of land degradation, over exploitation, waste and general neglect in most land based disciplines right across the globe.

At time of writing this article, the Christmas spending frenzy is at its peak. Resources being wasted via flippant expenditure. The beaches of KZN are covered with plastic nurdles after a container disaster and the fynbos along Bainskloof is ablaze...again.

With these opening thoughts, I feel that it would be most opportune to start 2018 off by introducing you to Aldo Leopold, born in Iowa USA, in 1887. In 1909 he joined the US Forest Service where his instinctive understanding of ecological matters elevated him to ultimately becoming conservation advisor to the United Nations in 1948. He is best known for his book "A Sand County Almanac" which comprises a collection of essays and sketches from his daily interactions with nature. This man was a forestry practitioner well ahead of his time. He did not have access to any of the modern technology that we rely on today. His most reliable tool was his instinct and "feel" for the inter-connectedness of all things. We should all be proud that our profession has created such a luminary and we should certainly challenge ourselves to emulate at least some of Leopold's thoughtful characteristics.

As I share with you some extracts from his writings, remind yourself that these were the words of a man writing some 80 years ago!

He opens his book thus:-

"There are some who can live without wild things, and some who cannot. These essays are the delights and dilemmas of one who cannot. Like winds and sunsets, wild things were taken for granted until progress began to do away with them. Now we face the question whether a still higher

'standard of living' is worth its cost in things natural, wild and free. For us of the minority, the opportunity to see geese is more important than television, and the chance to find a pasque-flower is a right as inalienable as free speech. These wild things, I admit, had little human value until mechanisation assured us of a good breakfast, and until science disclosed the drama of where they come from and how they live. The whole conflict thus boils down to a question of degree. We of the minority see a law of diminishing returns in progress; our opponents do not."

Leopold goes on to explore the community concept of land management:-

All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts. His instincts prompt him to compete for his place in that community, but his ethics prompt him also to co-operate (perhaps in order that there be a place to compete for).

The land ethic simply enlarges the boundaries of the community to include soils, waters, plants and animals, or collectively: the land.

This sounds simple: do we not already sing our love for and obligation to the land? Yes, but just what and whom do we love? Certainly not the soil, which we are sending helter-skelter downriver. Certainly not the waters, which we assume have no function except to turn turbines, float barges, and carry off sewage. Certainly not the plants, of which we exterminate whole communities without batting an eye. Certainly not the animals, of which we have already extirpated many of the largest and most beautiful species. A land ethic of course cannot prevent the alteration, management and use of these 'resources,' but it does affirm their right to continued existence, and, at least in spots, their continued existence in a natural state.

In short a land ethic changes the role of Homo sapiens from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members and also respect for the community as such.

May these extracts inspire you towards becoming a citizen of the land community in 2018.

In your quest for citizenship, I really do recommend that you read Leopold's book. Once you start you will struggle to put it down again!

Be proud. The wisdom shared in the book comes from one of our fellows. Forestry practitioners really do have a contribution to make.

Go with your instinct into 2018. If whatever you are doing or are causing to be done, feels wrong. Then it probably is!

## Examining SAFCOL's Kaapschehoop Hiking Trail

The Kaapschehoop Hiking Trail is located near Nelspruit in Mpumalanga.

On this trail, hikers can see several buildings that were built during the gold rush in the early 1880's.

Another interesting sight includes the blue swallow plain, which is a section of grassland that has specifically been set aside for the protection of the blue swallow's habitat. Another highlight is the wild horses', for which Kaapschehoop is famous for.

Hikers also get the opportunity to explore the Kaapschehoop village with its arts and crafts shops.

The Kaapschehoop Hiking Trail has various trail options ranging from two-to four -nights.

The trail can be started from Barretts (train) Coaches or the Kaapschehoop Hut.

The Hiking Trail has four huts namely, Kaapschehoop hut, Barretts Coaches, Wattles hut and Florence Hill hut.

- Kaapschehoop hut: It has 16 bunk beds, a donkey boiler for hot water, 2 showers and 2 toilets, a braai area with firewood, no electricity but no cooking utensils.



- Barretts Coaches (two train coaches): 50 bunk beds, has electricity, 3 toilets, 2 showers, a braai area with firewood but no cooking utensils.



- Wattles Hut: Has 24 bunk beds, 3 toilets and 4 showers, a donkey to provide hot water, a fireplace with firewood provided but no cooking utensils.



- Florence Hill Hut: Has 10 bunk beds, 2 toilets, 2 showers, a gas heater for hot water, a fireplace provided with firewood, no cooking utensils.



For more enquiries or bookings please contact us at:

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## January 2018 birthdays



03-Jan	BALLANTYNE J.R	17-Jan	OPPERMAN I.
06-Jan	MORTIMER J.H.	18-Jan	LÄNGIN D.
06-Jan	LOUW W.J.A.	18-Jan	ERWEE J.J.
08-Jan	ROOTHMAN D.	19-Jan	RUTHERFOORD C.L.
08-Jan	KRUGER P.	20-Jan	ADE E.C.L.
09-Jan	NORRIS C.H.	21-Jan	DYER S.T.
10-Jan	SWAIN T.	21-Jan	LANE D.
11-Jan	ODELL P.	21-Jan	SEELE C.A.
11-Jan	BADENHORST J.E.F.	24-Jan	BURNHAMS G.W.
12-Jan	DOBSON D.	25-Jan	SCRIBA J.H.
12-Jan	VERSFELD D.B.	25-Jan	VAN VUGT L.
13-Jan	VON BUDDENBROCK P.E.	26-Jan	MULLER R.B.
15-Jan	MALAN F.S.	29-Jan	KACHALE T.G.
16-Jan	NYAMBIYA T.	30-Jan	MKWALO A.C.
16-Jan	HOOGHIEMSTRA G.	30-Jan	TRUTER P.J..
16-Jan	DROOMER A.E.P.	31-Jan	LIVERSAGE R.T.
16-Jan	EGGERS F.M.	31-Jan	SWART J.N.
17-Jan	CUNNINGHAM L.R.		